D-Link®
Building Networks for People

DCS-5300
Version 2.0

10/100 Pan/Tilt Network Camera

User Manual

Business Class Networking

Table of Contents

Package Contents

- D-Link SecuriCam DCS-5300 Network Camera
- Power Adapter
- Installation software and manual on CD
- Quick Installation Guide
- Camera Stand
- Category 5 Ethernet Cable

Note: *Using a power supply with a different voltage than the one included with the DCS-5300 will cause damage and void the warranty for this product.*

If any of the above items are missing, please contact your reseller.

System Requirements

- Internet Explorer 6.x or above Internet Web Browser
- CPU: Pentium III, 800 MHz or above (Pentium 4, 2Ghz plus processor with 512Mb memory)
- Memory Size: 128 MB or above
- VGA card resolution: 800 x 600 or above

Introduction

The SECURICAM Network™ DCS-5300 Network Camera is a full featured surveillance system that connects to an Ethernet, Fast Ethernet or broadband Internet connection to provide remote high-quality audio and 4x digital zoom[1]. The DCS-5300 is the latest product added to the D-Link Network Camera line. The camera features a motorized pan and tilt function found on more expensive cameras. This function allows the viewing area of the camera to extend 270° side-to-side and 90° up and down. The DCS-5300 gives you the ability to monitor your home/office when you can not be there. Place the camera anywhere you would like to monitor with no PC required on location!

Features and Benefits

The SECURICAM Network™ DCS-5300 Network Camera is a stand-alone system requiring no special hardware or software such as PC frame grabber cards. All that is required is a computer with Internet Explorer Web browser (version 6.x or above). Just plug in the camera and view the picture from your Network Camera with a valid IP Address. The DCS-5300 also features 4x digital zoom for closer viewing.

- **Motorized Pan and Tilt Operation** - The DCS-5300 has a pan and tilt function that can expand your viewing area to cover a wide 270° angle side-to-side and a 90° angle up and down.

- **CCD Sensor** - The DCS-5300 comes standard with a high quality CCD sensor that is superior to a CMOS type sensor. The fixed focus glass lens will facilitate the use of the DCS-5300 providing crystal clear and sharp images. You can view up to 30 frames per second of live motion video with 380 TV lines of resolution.

- **Supports a Variety of Protocols** - In addition, the DCS-5300 supports a variety of platforms including FTP, SMTP, NTP, and HTTP. The camera also supports UPnP and DDNS. DDNS allows the camera to use an easier to remember naming format rather than an IP address. UPnP will allow users of Windows® XP and Me to install the camera with the click of a mouse.

[1] 4x digital zoom enlarges an image by magnifying the pixels in a selected portion of the image by 4 times.

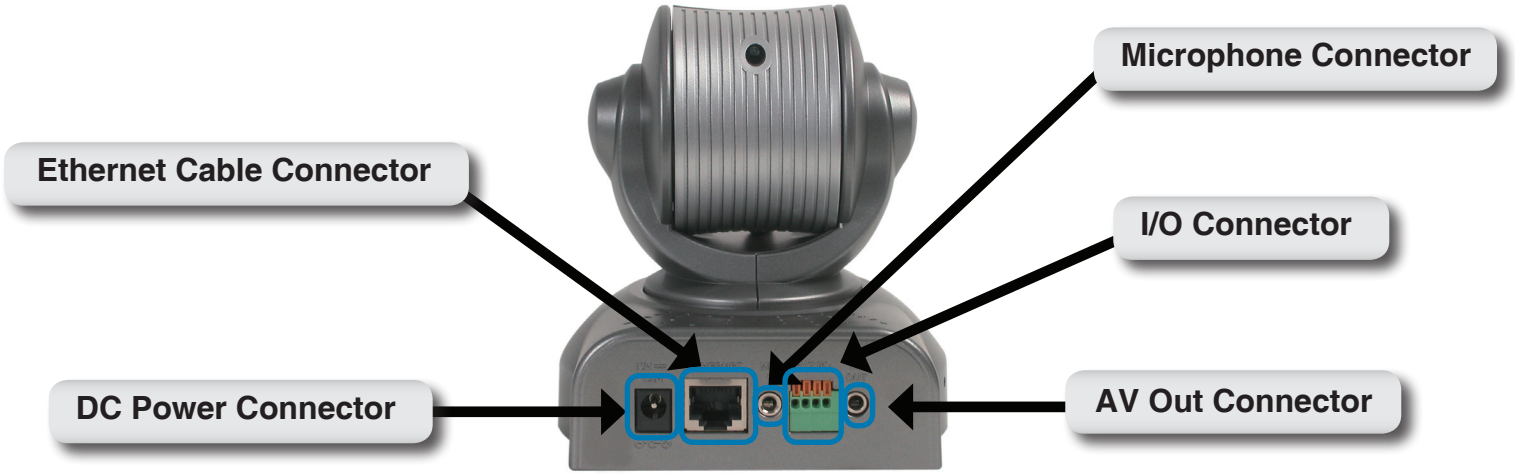
- **A/V Output** - The SecuriCam DCS-5300 comes with an A/V output allowing you to connect to your TV for local viewing. The DCS-5300 can also be connected to your VCR to record activities directly to a VHS tape.

- **Surveillance Software** - The surveillance software allows you to view up to 16 cameras simultaneously. This software also allows control of up to 16 cameras by linking each one to its own web page. Images can be monitored and recorded to a hard drive.

- **Internal/External Microphone** - The SecuriCam DCS-5300 allows you to monitor video as well as audio through the web browser. You have the option of using the DCS-5300's integrated microphone or your own external microphone using the connection located at the rear of the unit.

Note: *Use of audio or video equipment for recording the image or voice of a person without their knowledge and consent is prohibited in certain states or jurisdictions. Nothing herein represents a warranty or representation that the D-Link product provided herein is suitable for the end-user's intended use under the applicable laws of his or her state. D-Link disclaims any liability whatsoever for any end-user use of the D-Link product, which fails to comply with applicable state, local, or federal laws.*

Hardware Overview
Connections



Ethernet Cable Connector - The DCS-5300 back panel features an **RJ-45** connector for connections to 10Base-T Ethernet cabling or 100Base-TX Fast Ethernet cabling. This network port supports the **NWay protocol**, allowing the Network Camera to automatically detect or negotiate the transmission speed of the network.

The Ethernet cable included with the DCS-5300 Network Camera is a Category 5 "straight through" cable. This is the recommended cable type when the camera is connected to a 100 Mbps Fast Ethernet network hub or switch.

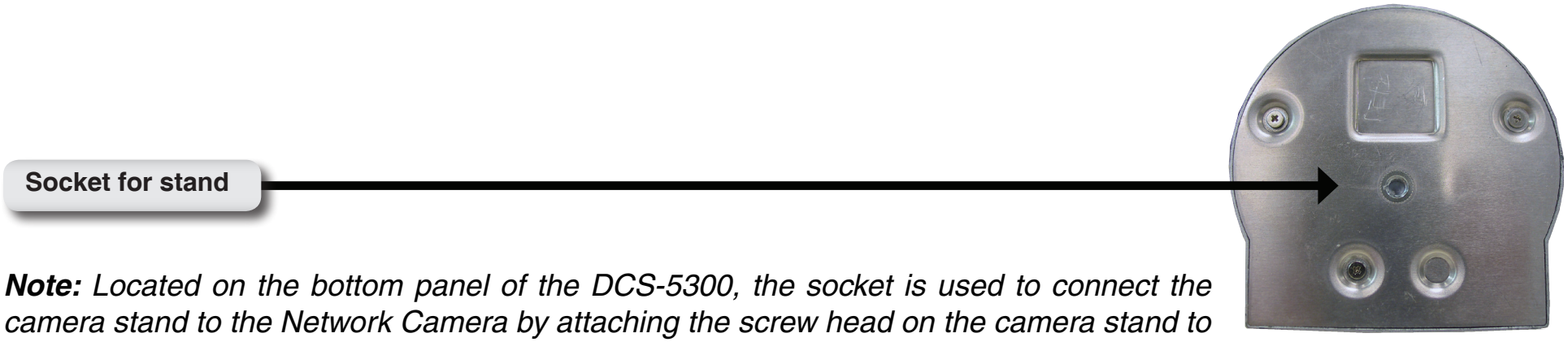
DC Power Connector - The DC power input connector is located on the DCS-5300 Network Camera's back panel and is labeled **DC 12V** with a single socket to supply power to the Network Camera.

Microphone - The DCS-5300 Network Camera has an internal microphone. However, you have the option of using an external microphone by plugging it into the microphone connector.

AV Out - Plug the included A/V cable into the A/V out connector to use the DCS-5300 with a television or VCR.

I/O Connector - The DCS-5300 provides a terminal block with two pairs of connectors situated on the back panel. One pair is for input and the other is for output. The I/O connectors provide the physical interface to send and receive digital signals to a variety of external alarm devices. **Please refer to the appendix in this manual for detailed information.**

Bottom Panel



Note: *Located on the bottom panel of the DCS-5300, the socket is used to connect the camera stand to the Network Camera by attaching the screw head on the camera stand to the Network Camera.*

Power LED

The Power LED (Light-Emitting Diode) is positioned on the right side of the Network Camera lens. As soon as the power adapter is connected to the Network Camera, the power LED will flash **red** and **green** several times. The DCS-5300 is conducting a self-test. Upon passing the self-test, the LED will turn **green** to indicate a good connection to an Ethernet port or **red** to indicate no connection has been made.

Hardware Installation

Connect an Ethernet cable
Connect an Ethernet cable to the network cable connector located on the DCS-5300's back panel and attach it to the network.

Attach the external power supply
Attach the external power supply to the DC power input connector located on the DCS-5300's back panel labeled **12VCD** and connect the other end to your wall outlet.

When you have a proper connection, the LED will turn from red to green. If you are directly connected to the camera via a crossover cable, the light may cycle on and off and your computer may show an intermittent loss of connectivity. This is normal until you have configured your Network Camera.

Attaching the Network Camera to the Camera Stand
The Network Camera comes with a camera stand with a swivel ball screw head that can be attached to the Network Camera bottom socket cavity. Attach the camera stand to the Network Camera and station it for your application. There are holes located in the base of the camera stand allowing the Network Camera to be mounted to the ceiling, or any wall securely.

Installation Wizard

After you have successfully completed the hardware installation of the DCS-5300 Network Camera, it is necessary to install software to configure and operate the camera. The first step is to install the Installation Wizard program from the CD. The Installation Wizard will allow you to configure the Network Camera to your network.

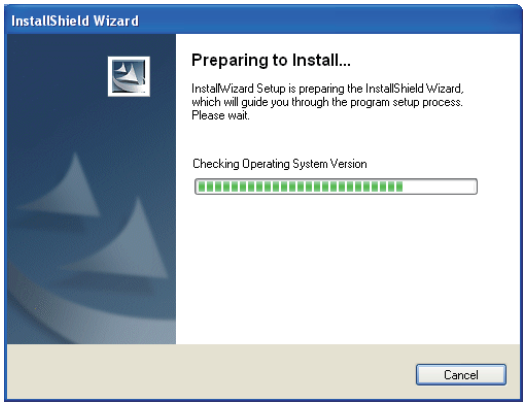
After the Installation Wizard software program is completed, you will have an operating and controllable Network Camera. From your Internet Explorer Web browser you will be able to access the video and sound from the Network Camera. The camera has a built-in Web server. This Web server will allow the camera to access the Internet without being attached to a computer and permits users to view the video and audio remotely.
After running the Installation Wizard, you will be able to operate the DCS-5300 and view the camera remotely through Internet Explorer 6.x and above.

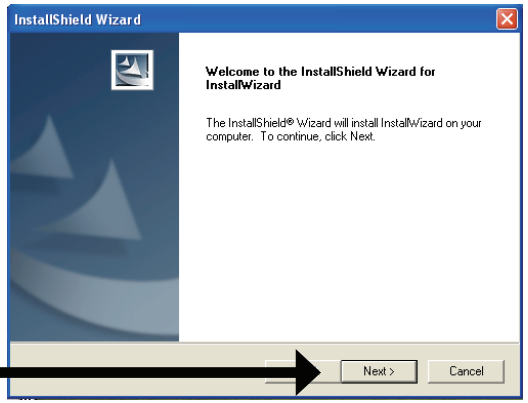
Launching the Installation Wizard program

Insert the CD that is included with the DCS-5300 Network Camera. The DCS-5300 installation menu will start up automatically from the CD. If the CD Autorun function does not automatically start on your computer, go to **Start** > **Run**. In the run box type "**D:\DCS5300.exe**" (where ***D:*** represents the drive letter of your CD-ROM drive).

Click **Installation Wizard**

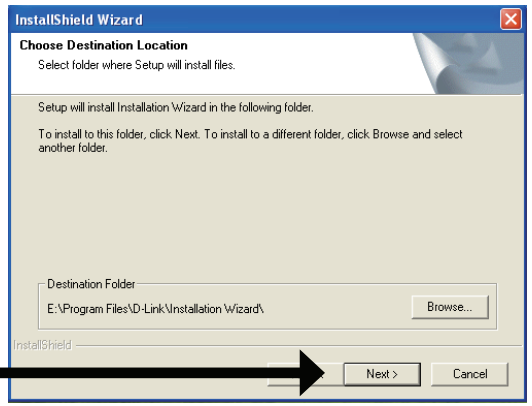
Please wait while the InstallShield Wizard prepares to install.





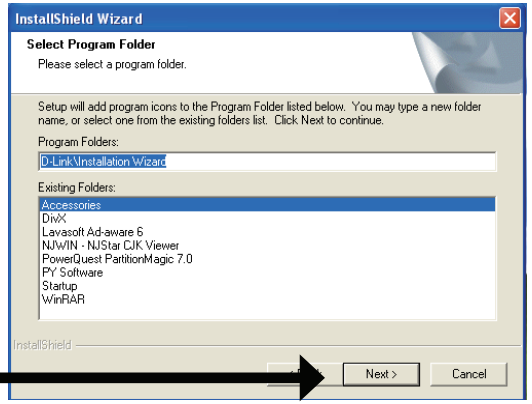
Click **Next**

The InstallShield will install in the following folder. To install into a different folder, click **Browse** and select another folder.



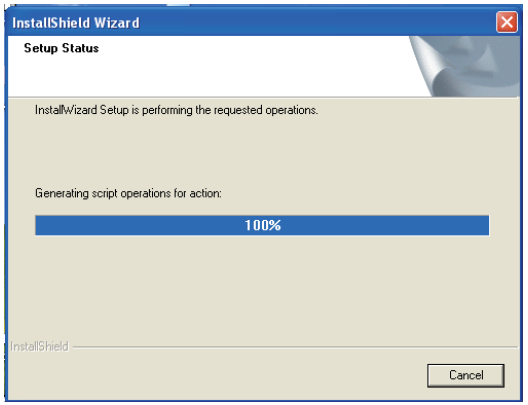
Click **Next**

Select the Program folder that Setup will add program icons to. You may type a new folder name, or select one from the existing folders list.

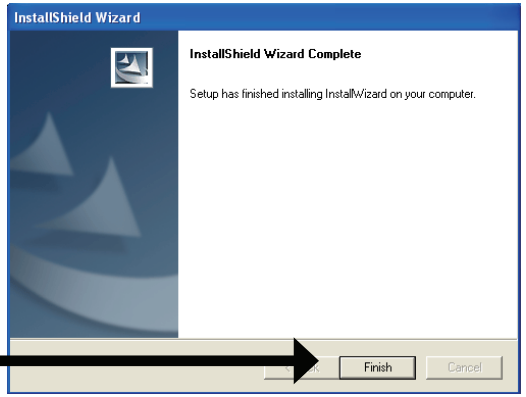


Click **Next**

Please wait while the Installation Wizard is installed.



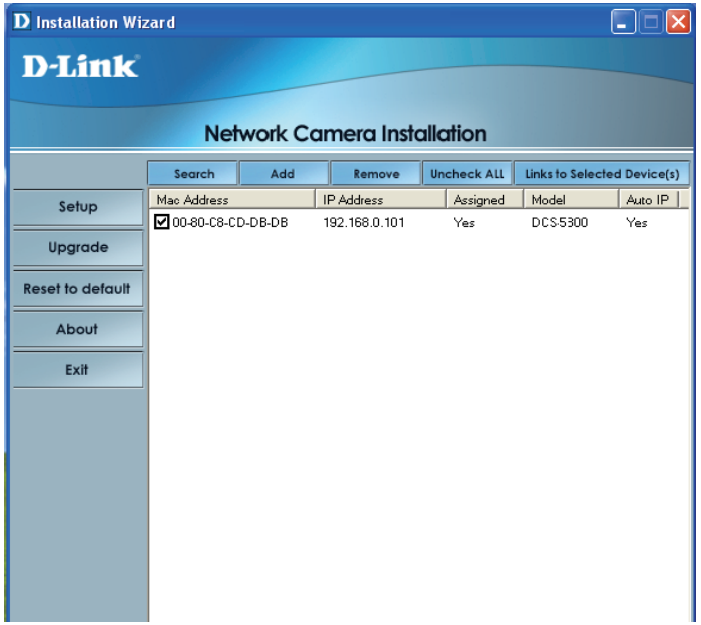
Installation is now complete.



Click **Finish**

To access the Installation Wizard screen, click on the **Installation Wizard** icon on your desktop.

The opening Installation Wizard screen will appear and show a MAC address of the DCS-5300 and an IP Address (which may or may not be correct depending on what you have your DCS-5300 connected to). If you have a DHCP* server on your network, there will be a valid IP Address displayed here, indicated by a "Yes" under the assigned column.
*A DHCP server is a device that supplies IP Addresses to its clients that are on the same network.

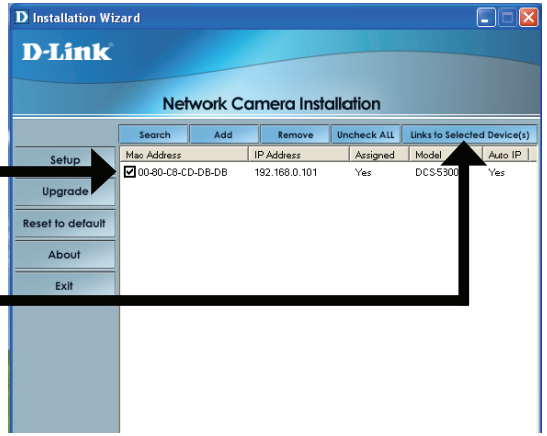


IMPORTANT:
A hardware reset of the Network Camera may be required if the Installation Wizard cannot find the camera. To accomplish this reset, lightly insert a paper clip (or a similar sized tool) into the reset hole on the back of the camera (see page 64 for the location of the reset hole). The LED on the front of the camera will begin blinking orange. When it stops the blinking cycle continue to hold in the reset button until a second cycle of blinking red and green lights indicates a second reset cycle has completed. This will take approximately 5-7 seconds.

The Installation Wizard will now show a MAC address for the DCS-5300 and an IP address. This IP address may not be correct at this step in the installation until you see “Yes” under the assigned column. The camera is now automatically configured with an IP address consistent to the device it is connected to.

Select the MAC address

Click on the **Link to Selected Devices** button.



For more information regarding the functions of this screen, see the following section titled “Installation Wizard Screen.”

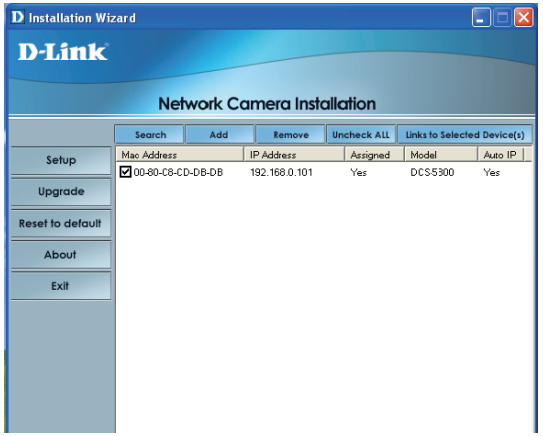
After you click on the **Link to Selected Devices** button, Installation Wizard will automatically open your Internet browser to the IP Address of the DCS-5300, in this example it is: http://192.168.0.146.

Your DCS-5300 may have a different IP Address.

You have now completed the Setup Wizard and are ready to use your camera!

Installation Wizard Screen

The following options are available on the Installation Wizard screen by clicking on the corresponding tab:



Search: Click to search for any available cameras to connect to the network.

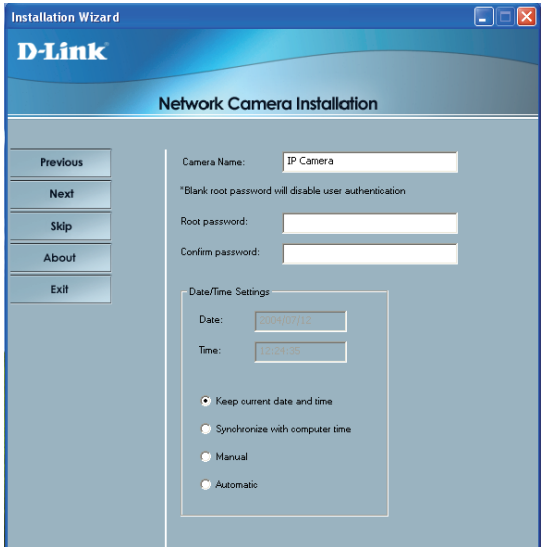
Add: Click to manually add a camera to the network. A window will appear, prompting you to enter the camera's IP address or domain name. A second window will appear, prompting you to enter the port number.

Remove: Click to remove the selected camera(s) from the network.

Uncheck All: Click to uncheck all selected cameras.

Links to Selected Devices: Click to link all selected devices to the network.

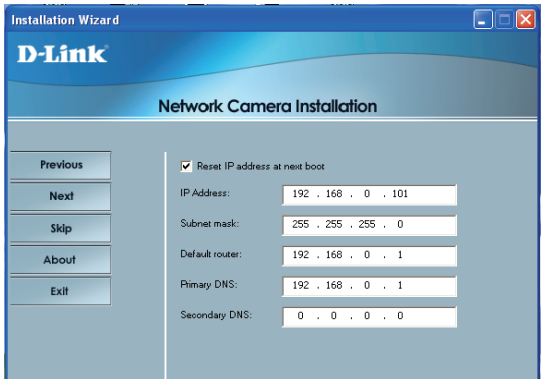
On the initial Setup Screen you can configure System and Date/Time settings for each camera. Click **Next** to configure Network settings for the camera.



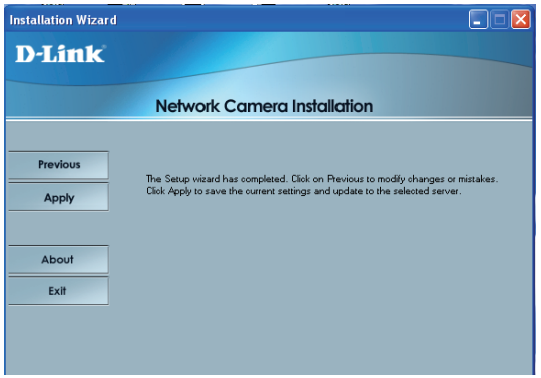
System Settings: Enter a Camera Name and create a Root password for the camera.

Date/Time Settings: Enter the Date and Time for each camera. These settings can also be configured on the **Tools > System** screen (page 53) when configuring the camera via a Web browser.

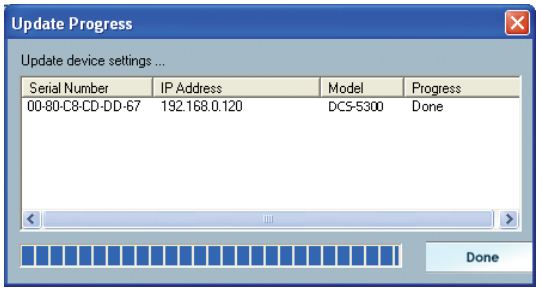
Network Settings: Here users can configure the Network Settings for the camera. Enter the IP address, Subnet mask, Default router IP, Primary DNS, and Secondary DNS. Automatically, the option to reset IP address at boot is selected. If you would like to save your IP address settings, make sure to uncheck this box. These settings can also be configured on the **Advanced > Network screen** (page 38) when configuring the camera via a Web Browser.



Click **Next** and then **Apply** to save the configured settings. Users can click **Previous** to modify changes or mistakes.



After the settings have been saved, click the **Done** button that appears.



Upgrade: The upgrade window allows users to upload a saved firmware file. If the firmware is older than that currently on the camera, a screen will appear indicating so and prompting the user to confirm the upload.

Package Information: This displays information about the firmware and plugin currently installed on the camera.

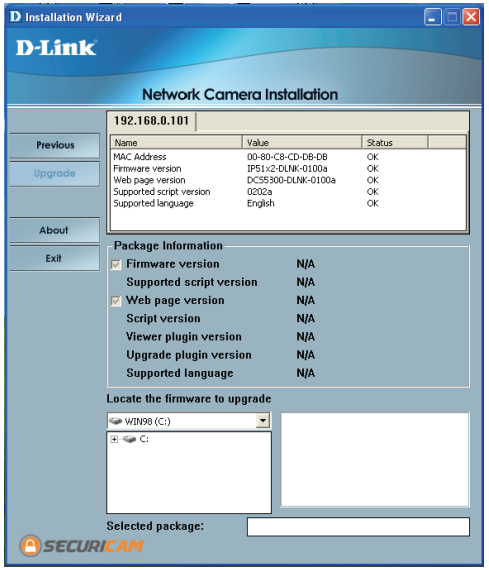
Locate the Firmware to Upgrade: Indicate the location of the firmware to be uploaded to the camera.

Selected Package: This displays the file name of the firmware selected for upload.

Reset to Default: Click the **Reset to Default** tab to reset the camera's settings to factory defaults.

About: Click **About** to display the current version and date.

Exit: Click the **Exit** tab to exit the Installation Wizard screen.

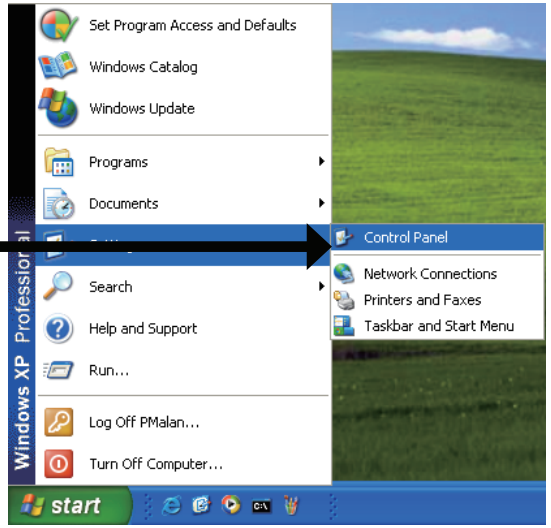


Enabling UPnP™ for Windows® XP

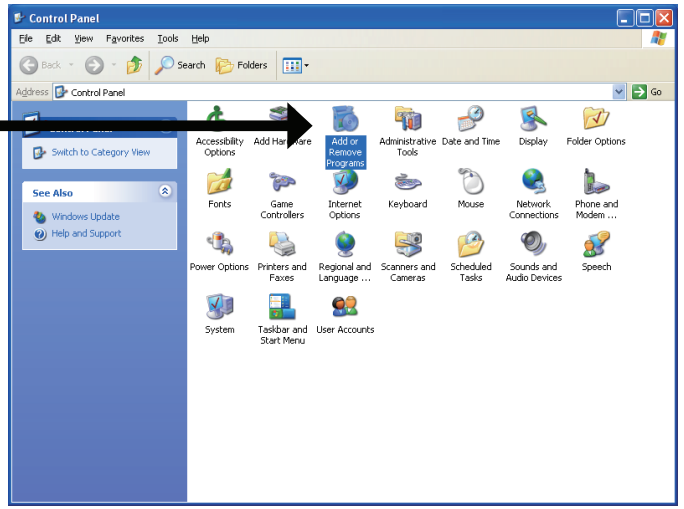
UPnP™ is short for Universal Plug and Play, which is a networking architecture that provides compatibility among networking equipment, software, and peripherals. The DCS-5300 is a UPnP™ enabled Network Camera. If your operating system is UPnP™ enabled, the device will be easier to configure. If you do not want to use the UPnP™ functionality, it can be disabled by unselecting "**Enabled**" on the DDNS/UPnP™ settings page under "Advanced" in the configuration menu. Use the following steps to enable UPnP™ (Universal Plug and Play) settings only if you are running Windows® XP/Me. If you are running Windows 98/2000, UPnP™ is not available.

Go to **Start > Settings**.

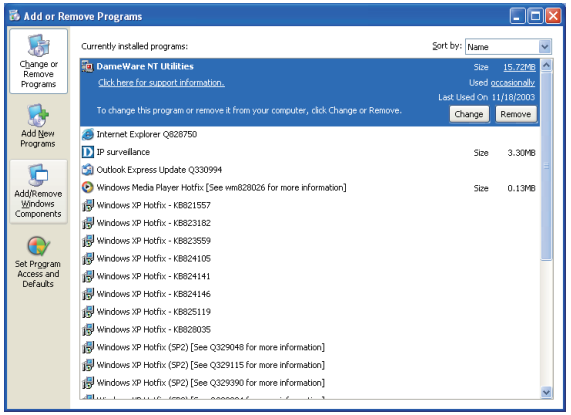
Click **Control Panel**



Click **Add or Remove Programs**

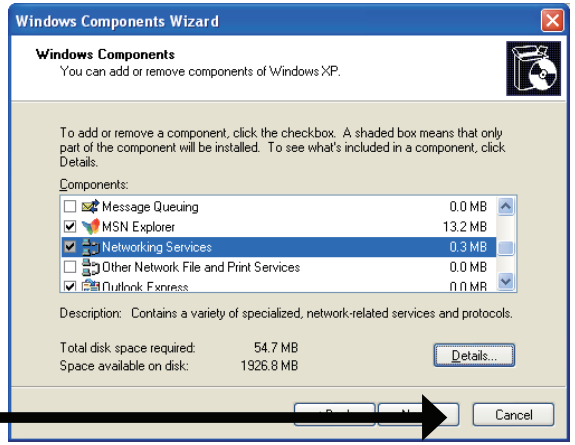


Click **Add/Remove Windows Components**



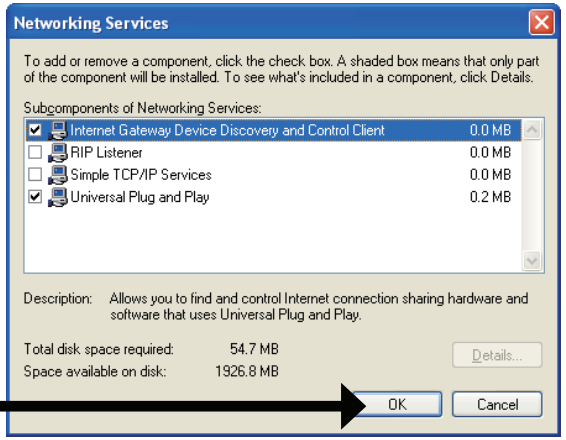
The following screen will appear:

Click **Add/Remove Windows Components**



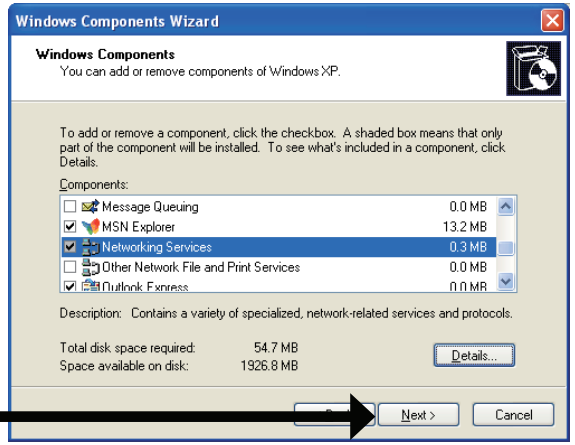
Click **Details**

Click **Universal Plug and Play**

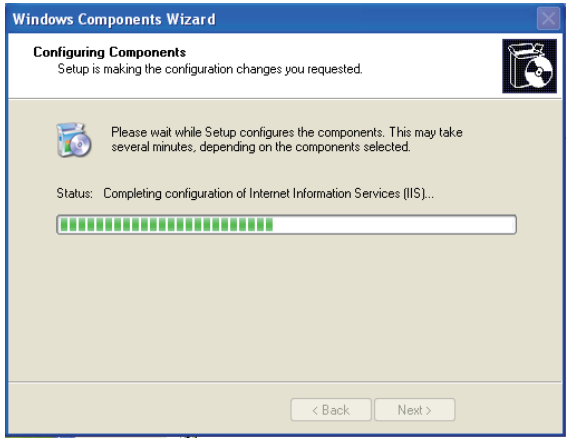


Click **OK**

Click **Next**



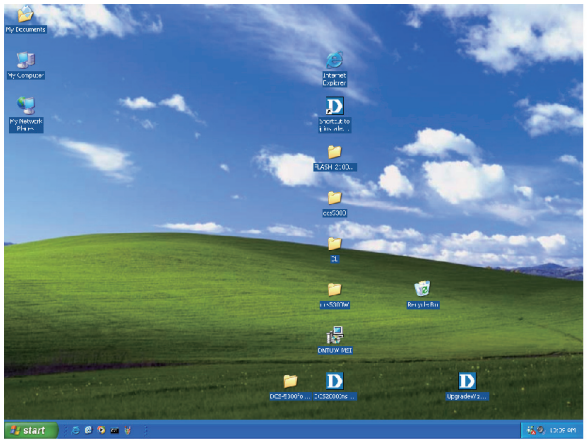
Please wait while Setup configures the components.



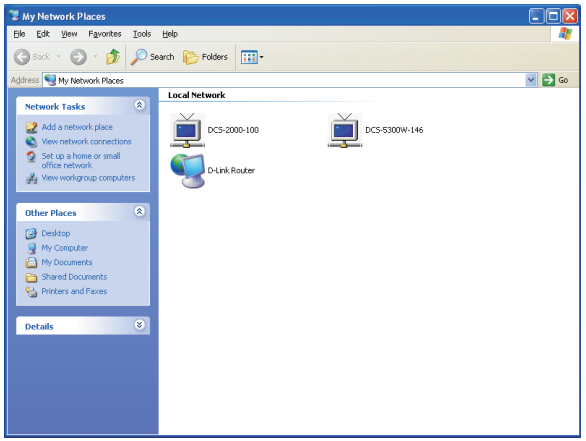
Click **Finish**

To view your DCS-5300 Network Camera in an Internet browser, go to your Desktop and click **My Network Places**.

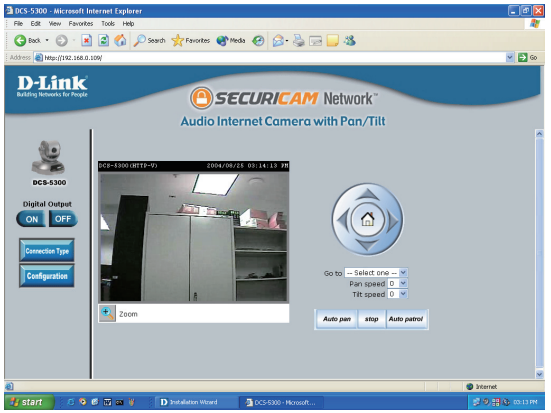
Click **My Network Places**



The last three digits (146), represent the fourth octet of your Network Camera's IP address (in this example, 198.168.0.146). DCS-5300-146



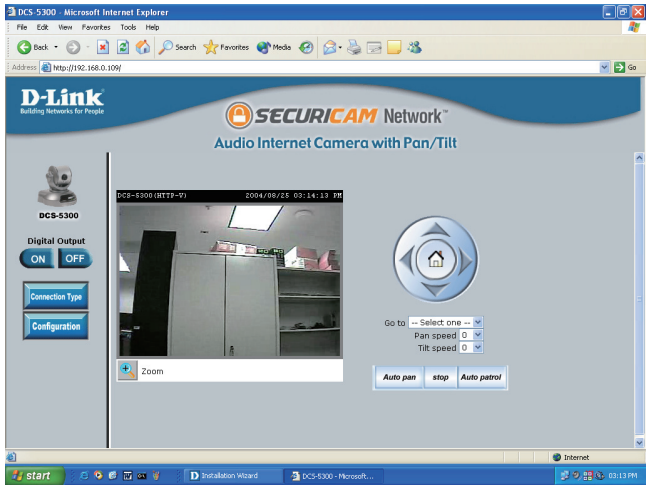
After you click on the **DCS-5300-146** icon, your Internet browser will automatically be opened to the IP Address of the DCS-5300, in this example it is: http://192.168.0.146. Your DCS-5300 may have a different IP Address.



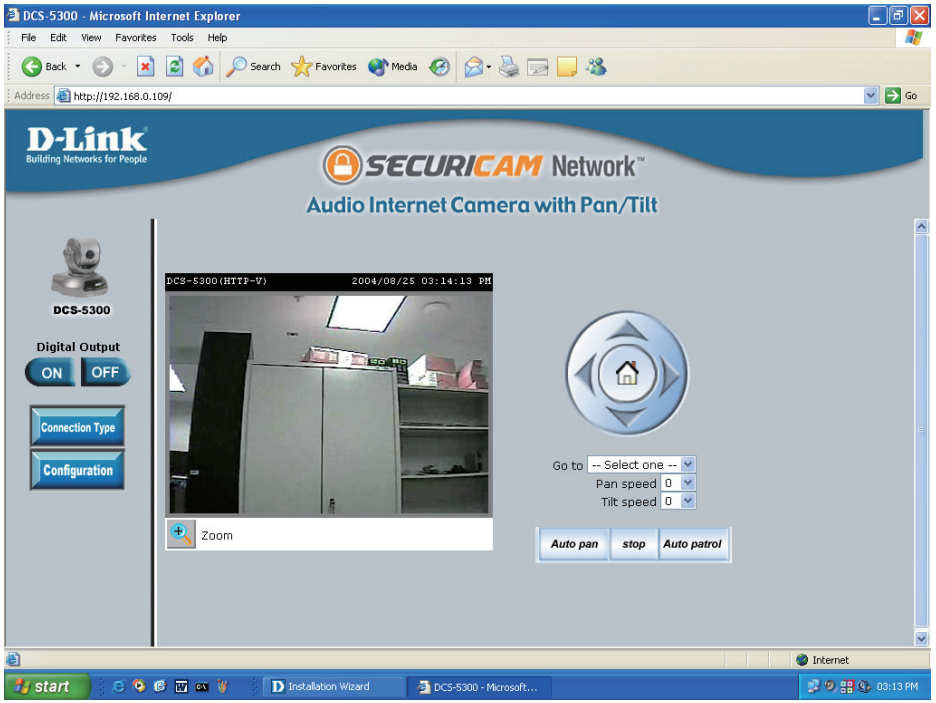
Testing the DCS-5300 Network Camera

Open your Internet browser and type in the IP address of the DCS-5300. In this example the address is:

http://192.168.0.146 (your DCS-5300 may have a different IP address based on what you found with the Installation Wizard program.)

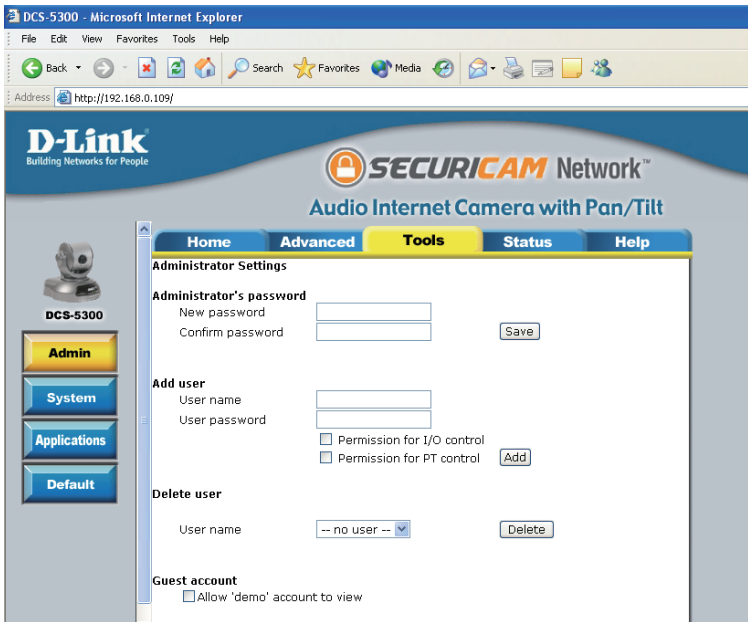


The window in the center of your browser is the camera image window. You should now see a video image and hear the audio over your computer speakers from the DCS-5300. If you are having problems please consult the **FAQ** section of this manual (page 124).



Security

At this point it is highly recommended that you click on the **Configuration** button on the Home screen, and then the **Tools** tab to bring you to the **Admin** screen. Enter a **password** for security purposes.



To ensure the highest security and prevent unauthorized use of the Network Camera, the *Administrator* has the exclusive privilege to access the **System Administration** settings to allow users entry and authorize privileges for all users. The Network Camera supports multi-level password protection/access to the Network Camera that can be restricted to defined users who have a **User Name** and **User Password,** which is assigned by the Administrator.

The Administrator can release a public user name and password so that when remote users access the Network Camera they will have the right to view the image transmitted by the Network Camera.

When the Network Camera is used for the first time, it is highly recommended that the Administrator set the **Administrator Password** to constrain user access to the Network Camera since the Default settings are Null String (no password). Once the Password is defined, only the Administrator has access to the management of the Network Camera. This procedure should be done as soon as possible since the security features of the Network Camera will not be enabled until the **Administrator Password** is defined.

Using & Configuring the DCS-5300 with a NAT Router

D-Link's DCS-5300 is a versatile and cost effective Network Camera offering both video and audio monitoring. It can also serve as a powerful surveillance system in security applications. The DCS-5300 can be used with any wired or wireless router. This section explains how to view the camera from either the Internet or from inside your internal

Materials Needed:

- 1 DCS-5300 Network Camera
- 1 Ethernet Cable
- A Wired or Wireless router such as the D-Link DI-614+ Wireless Router
- Ethernet based PC for system configuration

SETTING UP THE DCS-5300 FOR USE BEHIND A ROUTER

Installing a DCS-5300 Network Camera on your network is an easy 4–step procedure:

- Assign a local IP Address to your Network Camera
- View the Network Camera Using Your Internet Explorer Web browser
- Access the Router with Your Web browser
- Open Virtual Server Ports for Your Router (Enable Remote Viewing)

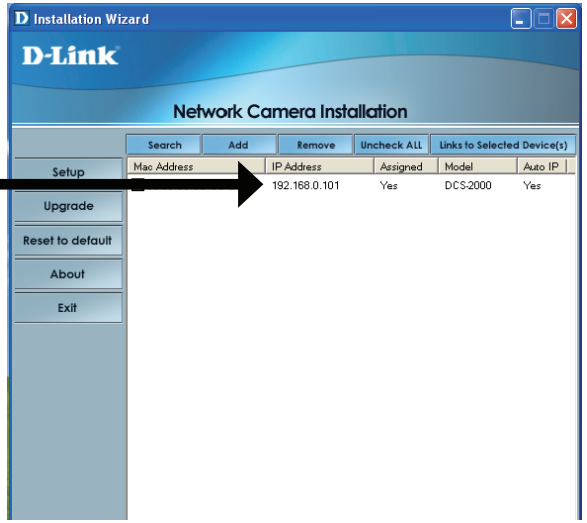
This section is designed to walk you through the setup process for installing your camera behind a router and enable remote video viewing. For the basic setup of the DCS-5300, follow the steps outlined in the **Quick Installation Guide.**

After you have completed the setup of the DCS-5300 outlined in the **Quick Installation Guide** you will have an operating camera that has an assigned IP Address. Because you are using a router to share the Internet with one or more PCs, the IP Address assigned to the Network Camera will be a local IP Address. This allows viewing within your Local Area Network (LAN) until the router is configured to allow remote viewing of the camera over the Internet.

• Assign a Local IP Address for Your Camera

Run the Installation Wizard program from the CD included with the DCS-5300. Follow the steps in the **Quick Installation Guide** to configure the DCS-5300. The camera will be assigned a local IP Address that allows it to be recognized by the router.

This is the IP Address assigned to your camera. Write it down for later use. 192.168.0.101 is only an example. You will probably have a different IP Address.

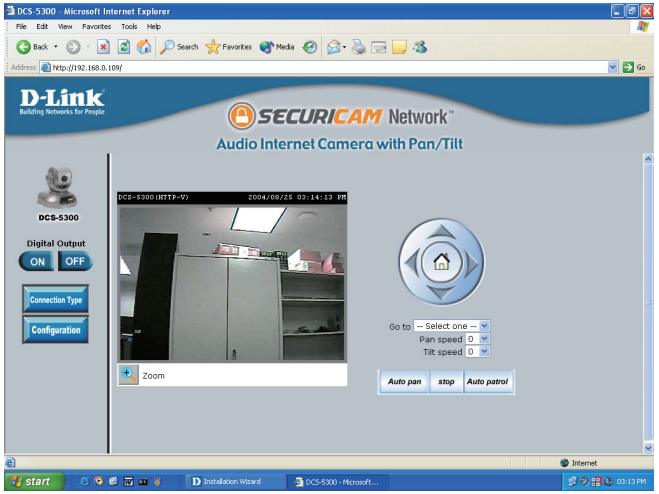


- **View the Network Camera using your Internet Explorer Web browser**

Run your Internet Explorer Web browser. In the address bar, type in the IP Address that was assigned to the Network Camera by the Installation Wizard program. The DCS-5300 Home Page appears with a window displaying live video from the camera. You are able to view this screen from any PC running Internet Explorer on your LAN.

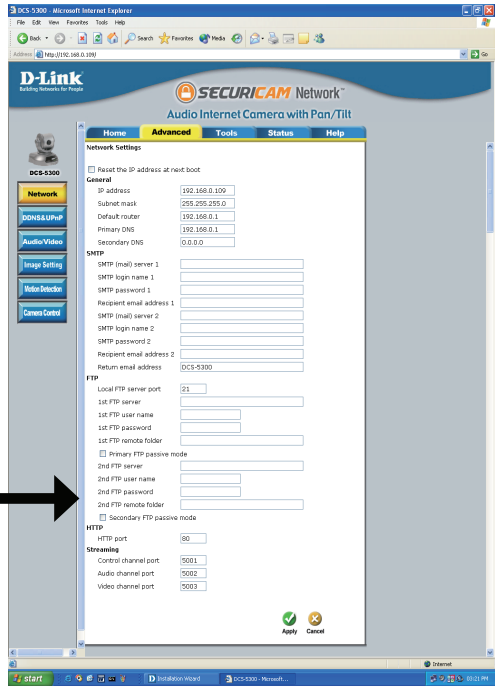
Click on the **Configuration** button on the left side of the display. Scroll to the bottom of the Network Configuration page to display the ports used by HTTP and Streaming audio and video.

Click on the **Configuration** button



Viewing the Video on the browser to test the connection

These are the port settings for your camera. If necessary, these ports can be changed if they are already in use by other devices (e.g. in a multiple camera environment).

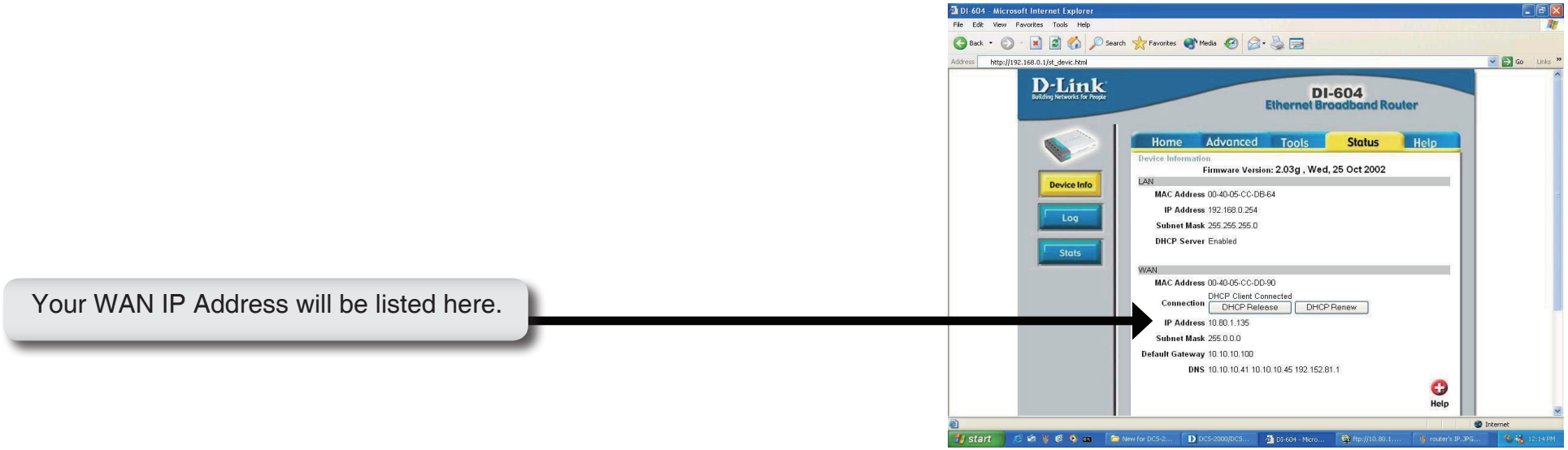


Router Set-Up and Installation

The following steps generally apply to any router that you have on your network. The D-Link DI-614+ is used as an example to clarify the configuration process. Configure the initial settings of the DI-614+ by following the steps outlined in the **DI-614+ Quick Installation Guide**.

• Access Your Router on Your Web Browser

If you have cable or DSL service, you will most likely have a dynamically assigned WAN IP Address. 'Dynamic' means that your router's WAN IP address can change from time to time depending on your ISP. A dynamic WAN IP Address identifies your router on the public network and allows it to access the Internet. To find out what your router's WAN IP Address is, go to the **Status** screen on your router and locate the WAN information for your router. As shown on the next page the WAN IP Address will be listed. This will be the address that you will need to type in your web browser to view your camera over the Internet. Be sure to uncheck the **Reset IP address at next boot** button at the top of the screen after modifying the IP address. Failure to do so will reset the IP address when you restart your computer.



Determine Your Router's IP Address (WAN)

Note: *Because a dynamic WAN IP can change from time to time depending on your ISP, you may want to obtain a Static IP address from your ISP. A Static IP address is a fixed IP address that will not change over time and will be more convenient for you to use to access your camera from a remote location.*

• Open Virtual Server Ports to Enable Remote Image Viewing

The firewall security features built into the DI-614+ router prevent users from accessing the video from the DCS-5300 over the Internet. The router connects to the Internet over a series of numbered ports. The ports normally used by the DCS-5300 are blocked from access over the Internet. Therefore, these ports need to be made accessible over the Internet. This is accomplished using the **Virtual Server** function on the DI-614+ router. The Virtual Server ports used by the camera must be opened through the router for remote access to your camera. Virtual Server is accessed by clicking on the **Advanced** tab of the router screen.

Follow these steps to configure your router's Virtual Server settings:

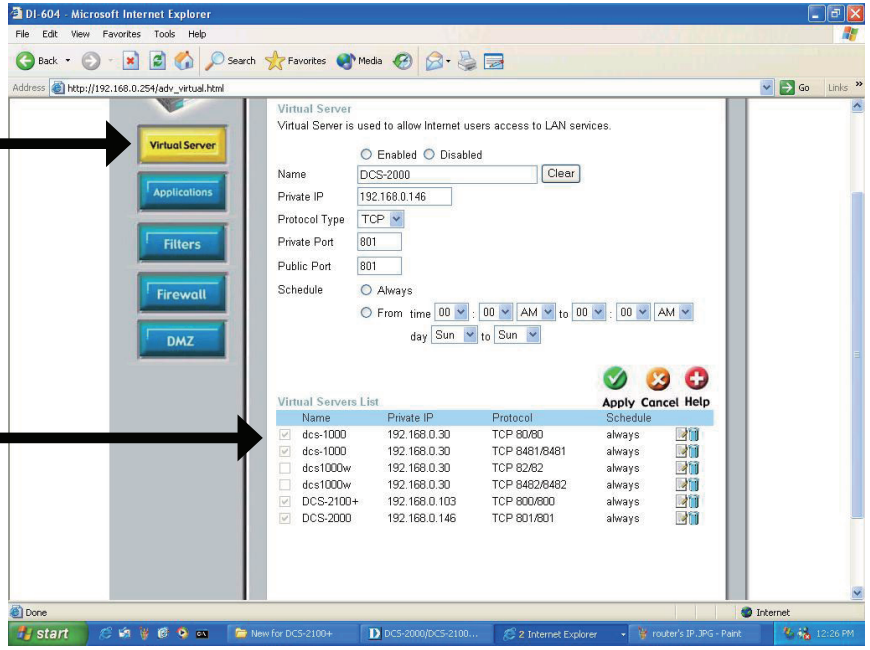
- Click **Enabled**.
- Enter a unique name for each entry.
- Select **Both** under **Protocol Type** (**TCP** and **UDP**)
- Enter your camera's local IP Address (e.g., **192.168.0.146** in the example on page 28) in the **Private IP** field.
- If you are using the default camera port settings, enter **80** in to the **Public** and **Private Port** section, click **Apply.**
- **Scheduling** should be set to **Always** so that the camera images can be accessed at any time.

Repeat the above steps adding ports **5001**, **5002** and **5003** to both the **Public** and **Private Port** sections. A check mark appearing before the entry name will indicate that the ports are enabled.

Important: Some ISPs block access to port 80. Be sure to check with your ISP so that you can open the appropriate ports accordingly. Some ISPs block traffic on commonly used ports to conserve bandwidth. If your ISP does not pass traffic on port 80, you will need to change the port the camera uses from 80 to something else, such as 800. Not all routers are the same, so refer to your user manual for specific instructions on how to open ports.

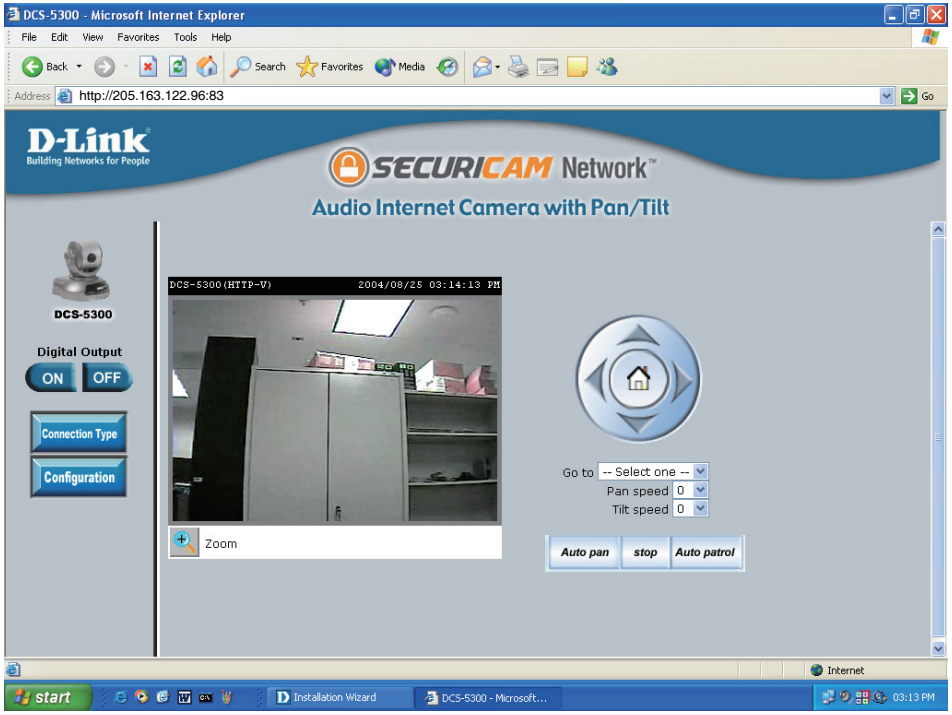
Enter valid ports in the **Virtual Server** section of your router

Please make sure to check the box on this line to enable settings



Viewing Your Camera

After all settings have been entered correctly, a PC user inside or outside your network will have access to the camera through the Internet Explorer Web browser. To access the camera from the Internet, type the IP Address of the router given to you by your ISP, followed by a colon, and the port number that you gave your camera (e.g., **http://205.163.122.96:83**). It is not necessary to enter the colon and port number if you are using the default Web server port 80. To access from a computer on your local (home) network, simply enter the local IP Address of the Camera followed by a colon and the port number (e.g., **http://205.163.122.96:83**).



Viewing the DCS-5300 Remotely

Using the DCS-5300 with an Internet Browser

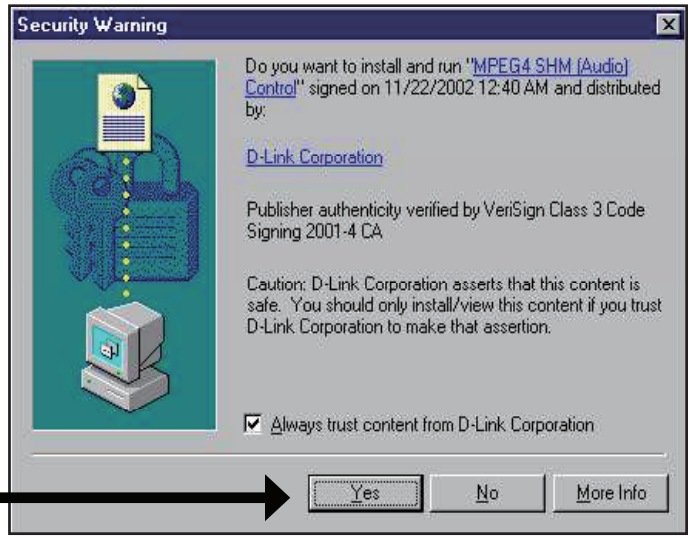
If you are following this manual in the order it is presented, you should now have an operating DCS-5300 Network Camera configured with the Installer program. This section of the manual will deal with using the Network Camera:

- Using the DCS-5300 with an Internet Browser and accessing the screens to control and monitor the camera.

Open your Internet Explorer Web browser and enter the IP address for your Network Camera.

Note: *In the current example, the address is 192.168.0.146. Your address may differ.*

If a window appears asking to install a Verisign certificate for authentication. Click **Yes**. This allows the proprietary MPEG4 video stream to be recognized by Internet Explorer.



Home Page Screen

The image from the DCS-5300 should be visible from the Home Page on your computer monitor. To the right of the image are controls that allow you to pan and tilt the camera. Pan and tilt can also be controlled within the image. Clicking on any part of the image will cause the camera to reposition itself so that the point will be the center of the image.

Return to home position.

Tilt/navigate camera using arrows

Pull down menu: Select a preset position to move the camera to.

Pan/Tilt Speed: Select the speed at which the camera will pan or tilt.

Auto Pan: Pans the camera one full cycle.

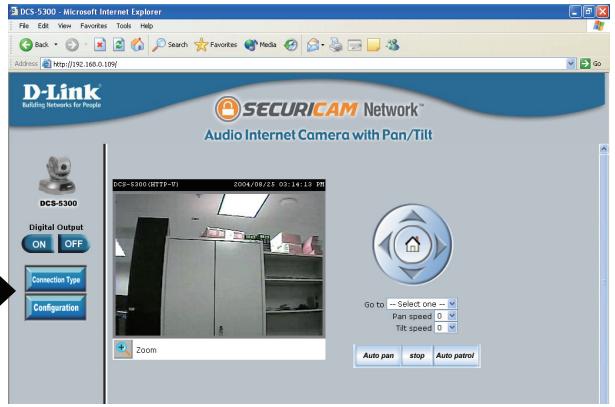
Stop: Stops movement of the camera during pan.

Auto Patrol: Enables the Auto Patrol feature.

Click the **Zoom** button below the image to display the digital zoom control panel. Using the bar, you can select to view the image up to 400% of the original size.

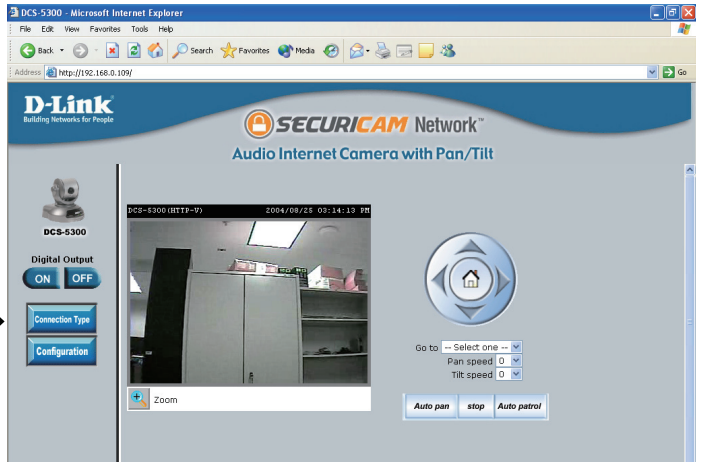
The image from the DCS-5300 should be visible from the Home Page on your computer monitor.

There are two buttons on the left side of the **Home** Page: **Connection Type** and **Configuration**.



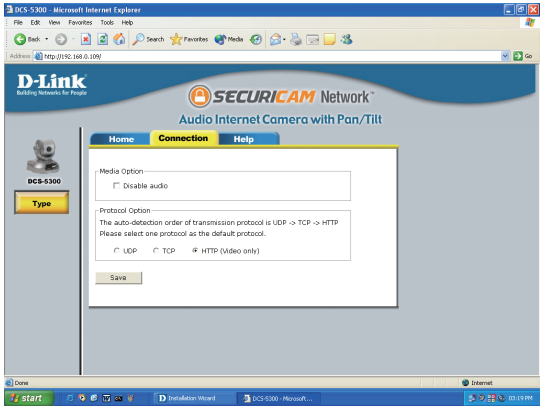
Click on the **Connection Type** button to change settings related to the connection.

There are two buttons on the left side of the **Home** Page: **Connection Type** and **Configuration**.



Home > Connections Screen

The following options are available from the Connections settings screen:



Media Option: Option for users to disable or enable audio when viewing video.

Protocol Option: The UDP Protocol should be chosen for most users. Generally the client computer will automatically try these protocols in the following order, UDP -> TCP -> HTTP.

After the client connects to the DCS-5300 successfully, the working protocol will be displayed in "**Protocol Option**". The chosen protocol will be recorded in the user's PC and used for the next connection. If the network environment is changed or users want to let the web browser automatically detect the protocol, select UDP manually and click **Save** to change the setting and return **Home** to reconnect with the new setting.

UDP Protocol: Offers the highest image and video quality. However, packet losses will diminish image quality when bandwidth becomes restricted.

TCP Protocol: Packet loss is less likely to occur compared to UDP when bandwidth is restricted.

HTTP Protocol: If the network is protected by a firewall and it opens HTTP port (80) only, HTTP protocol must be selected. In this mode, audio is disabled and only video can be viewed. TCP and UDP connections will not be available to remote users if all four ports have not been forwarded (as shown on page 31). Only the HTTP port must be forwarded for remote users to make an HTTP connection (video only).

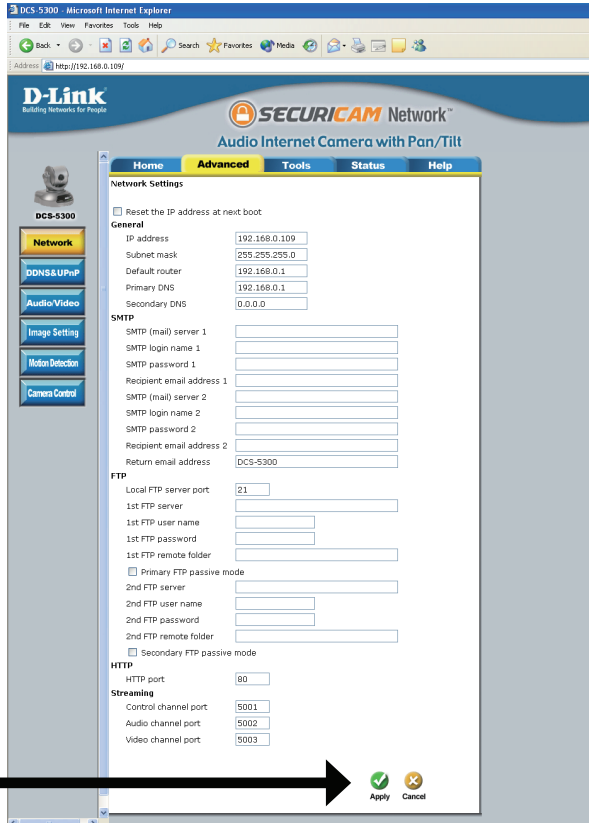
Click the **Home** tab to return to the DCS-5300 Home Page.

Home > Configuration

Click on the Configuration button on the Home Page:

Click **Configuration**

There are 5 tabs across the top of the **Configuration** screen. From each tab, different elements of the DCS-5300 can be configured. The **Advanced** tab is the default screen in **Configuration** and **Network** is the default screen under **Advanced**.



Any changes made to these settings will require the system to restart. Make sure every field is correct before clicking on **Apply**.

Configuration > Advanced > Network

Reset IP Address at next boot: Once the DCS-5300 is configured, this box should be unchecked at all times. If the box has been checked and the connection is lost, run Installation Wizard to find the camera's IP address.

General Settings

IP address: Necessary for network identification.

Subnet mask: Used to determine if the destination is in the same subnet. The default value is "255.255.255.0."

Default router: The router used to forward frames to destinations in a different subnet. Invalid router settings may cause the failure of transmissions to a different subnet.

Primary DNS: Primary domain name server that translates names to IP addresses.

Secondary DNS: Secondary domain name server to backup the primary one.

SMTP

SMTP (mail server 1: The domain name or IP address of external mail server.

SMTP account name 1: The user name used to log into your e-mail account (e.g. jdoe or jdoe@yourisp.com depending on your ISP).

SMTP password 1: The password used to log into your e-mail account. (The password will appear as dots instead of entered characters.)

Recipient email address 1: The e-mail address of recipients for snapshots or a system log file. Multiple recipients must be separated by a semicolon ";"

SMTP (mail) server 2: The domain name or IP address of a secondary mail server used only if the primary mail server is unreachable.

SMTP account name 2: The user name for the second SMTP server.

SMTP password 2: The password used to log into the second e-mail account. (The password will appear as dots instead of entered characters.)

Recipient email address 2: The e-mail address of recipients for the secondary server.

Return email address: The return e-mail address to use if the snapshot or system log e-mail fails to send. (This address should be within the SMTP server's domain for authentication purposes.)

FTP Settings

Local FTP server port: Can be other than default port 21. If you find that you want to change the port to a port number other than 21, you will need to specify the port when connecting to the FTP server. For example FTP://68.5.1.81:60 (if you are to use port 60 for your FTP server port).

1st FTP server: The domain name or IP address of the external FTP server. The following user settings must be correctly configured for remote access.

1st FTP user name: Granted user name on the external FTP server.

1st FTP password: Granted password on the external FTP server.

1st FTP remote folder: Granted folder on the external FTP server. The string must conform to the external FTP server. Some FTP servers cannot accept a preceding slash symbol before the path if there is no virtual path mapping. Refer to the instructions of the external FTP server for details. The folder privilege must be open for upload.

Primary FTP Passive Mode: If the DCS-5300 is located inside a network that is protected by a firewall, a data connection for FTP may be prohibited. Passive mode FTP can bypass this rule and allow the uploading of snapshots. If the passive mode is selected, the DCS-5300 can automatically attempt to upload in active mode if the external FTP server does not support passive mode.

2nd FTP server: The domain name or IP address of the external FTP server. Note that the 2nd FTP server will only be used if the 1st FTP is unavailable. If image upload to the 1st FTP is successful, no attempts will be made to connect to the 2nd FTP server.

2nd FTP user name: Granted user name on the backup FTP server.

2nd FTP password: Granted password on the backup FTP server.

2nd FTP remote folder: Granted folder on the backup FTP server.

Secondary FTP passive mode: Passive mode setting for the backup FTP server.

HTTP Settings

HTTP Port: Can be set to other than the default port 80. When the administrator changes the HTTP port of the DCS-5300 (which has an IP address of **192.168.0.146**) from 80 to 8080, users must type **http://192.168.0.100:8080** in the Web browser bar.

Streaming Settings

Control channel Port: Can be set to other than the default port **5001** to correspond with the port opened by the firewall.

Audio channel Port: Can be set to other than the default port **5002** to correspond with the port opened by the firewall.

Video channel Port: Can be set to other than the default port **5003** to correspond with the port opened by the firewall.

Improve audio quality in low bandwidth environment: In a low bandwidth network environment you can check this option to improve audio quality by sacrificing some real-time synchronization.

Click **Apply**

Invalid settings may cause the DCS-5300 to not respond. Change the configuration settings only if necessary. Consult with your network administrator or your Internet Service Provider (ISP) if you do not have the necessary information. If you cannot connect to the camera, refer to page 64 for camera **reset** and **restore** factory settings procedures.

Configuration > Advanced > DDNS & UPnP

Click the **DDNS & UPnP** button from the Configuration screen to access DDNS & UPnP settings.

Click **DDNS & UPnP**

DDNS

Dynamic DNS (Domain Name Service) is a method of keeping a domain name linked to a changing (dynamic) IP address. With most Cable and DSL connections, you are assigned a dynamic IP address and that address is used only for the duration of that specific connection. With the DCS-5300, you can setup your DDNS service and the DCS-5300 will automatically update your DDNS server every time it receives a different IP address. Depending on the service, this update may take a few hours.

Enable DDNS: Click to enable the DDNS function.

Provider: Select your Dynamic DNS provider from the pull down menu.

Host name: Enter the host name of the DDNS server.

Username/E-mail: Enter your username or e-mail used to connect to the DDNS server.

Password/Key: Enter your password or key used to connect to the DDNS server.

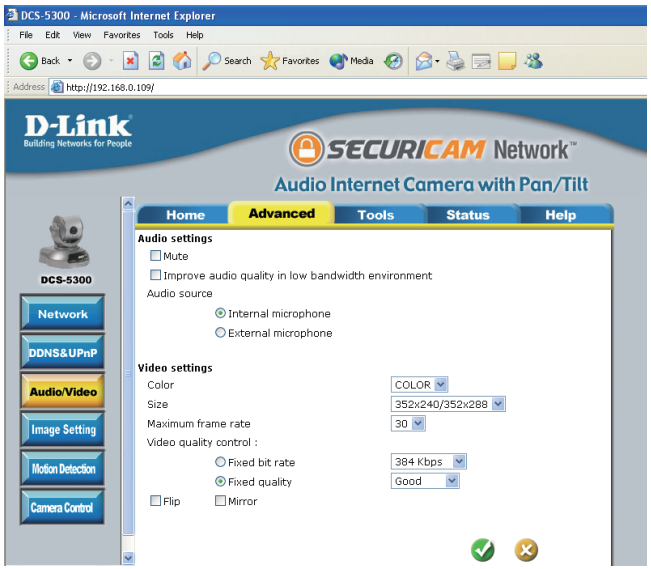
UPnP

UPnP is short for Universal Plug and Play, which is a networking architecture that provides compatibility among networking equipment, software, and peripherals. The DCS-5300 is a UPnP enabled Network Camera. If your operating system is UPnP enabled, the device will be easier to configure. If you do not want to use the UPnP functionality, it can be disabled by unselecting "**Enable UPnP**".

Configuration > Advanced > Audio/Video

Click the **Audio/Video** button from the Configuration screen to access video settings that affect how the video image appears.

Click **Audio/Video**



Audio Settings: Check boxes to mute audio and/or improve audio quality in a low bandwidth environment.

Audio Source: Select either an internal or external microphone as the audio source. If you choose to use an external microphone, connect it to the microphone connection at the rear of the DCS-5300.

Color: Select the option for color or monochrome video display.

Size: Three options exist for the sizes of the video display. You can select between **176x120/176x144**, **352x240/352x288**, or **704x480/401x576**. The first value represents the PAL format of video and the second value represents the NTSC format. In **704x480/401x576** mode, the frame rate will be reduced to 10fps and increased to 30fps automatically when it is switched back to a lower image size.

Maximum frame rate: Limits the maximum refresh frame rate. The frame rate is used with the **Video quality control** setting (below) to optimize bandwidth utilization and video quality.

Video quality control: To fix the bandwidth utilization regardless of the video quality, choose **Fix bit rate** and select the desired bandwidth. The video quality may be reduced in order to send maximum frames with limited bandwidth, especially when images change drastically. For higher video detail regardless of the bandwidth selection, select **Fix quality** and select a video quality level. This setting will utilize more bandwidth to send the maximum frames when images change drastically.

Flip: Vertically rotate the video.

Mirror: Horizontally rotate the video. Check both **flip** and **mirror** if the DCS-5300 is to be installed upside down.

White balance: Choose the suitable option for the best color temperature.

Click **Apply**

Recommendations for setting video for the best performance:

"Best performance" means the image refresh rate should be the fastest possible and the video quality should be the best possible at the lowest network bandwidth possible. Three factors, **Maximum frame rate**, **Fix bit rate**, and **Fix quality** in the **Video Configuration** page, are related to performance.

Recording settings for real-time motion images

To achieve a real-time visual effect, the network bandwidth should be large enough to transmit 20 image frames per second (fps) or more. If you are on a broadband network over 1 Mbps, you can set **Fix bit Rate** to 1000Kbps or 1200Kbps, or set **Fix quality** to achieve the maximum frames. The maximum frame rate is 25 in 50Hz system and 30 in 60Hz system. If your network bandwidth is more than 384Kbps, you can adjust **Fix bit rate** according to your bandwidth and set the maximum frame rate of 25 to 30.

If the images vary dramatically in your environment, you may slow down the maximum frame rate to 20 to decrease the transmitted data for better video quality. Since the human eye could not easily differentiate between 20 and 25 or 30 frames per second, the slower frame rate will not be noticed. If your network bandwidth is below 384Kbps, you should adjust the bit rate according to your bandwidth and experiment to allow for the best frame rate that can be achieved. The faster frame rate in a slow network will blur the images. You may also try to choose **352x240/352x288** in size option for better images or **704x480/704x576** for larger image size. Because the network has burst constraints and everyone's environment is not the same, any poor connection will impair normal performance.

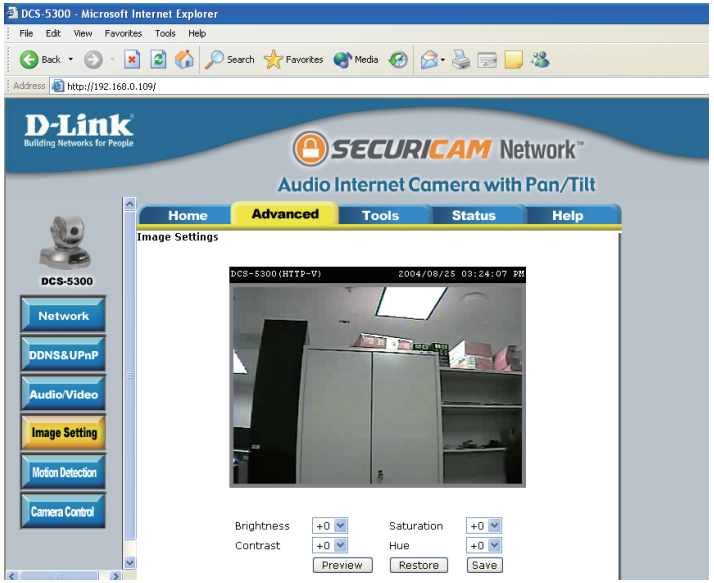
Recording settings for clear identification for each image

To have the best video quality, you should set **Fix quality** to **detailed** or **excellent** and tune the **Maximum frame rate** to suit your network bandwidth. If you get some broken pictures in a slow network, you can set **TCP protocol** in **Connection type** for a more accurate transmission but the received images may have a lag. Note that any slow connection with multiple users will impair performance.

Recording settings to compromise between real-time and clear images
If you have a broadband network, set **Fix quality** to **Good** image quality, or higher, instead of setting the **Bit rate**. Otherwise, fix the bit rate according to your actual network speed and set the frame rate to 30. If the image quality is low, select a lower frame rate above 15. If the image quality is still not improved, select a lower bit rate.

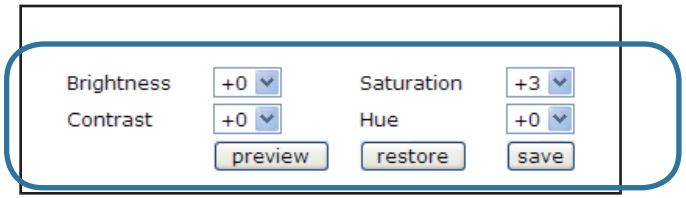
Configuration > Advanced > Image Setting

Click **Image Settings**



Click the **Image Setting** button from the Configuration screen to access additional settings that affect how the video image appears.

Click the **Video** button from the Configuration screen to access video settings that affect how the video image appears.



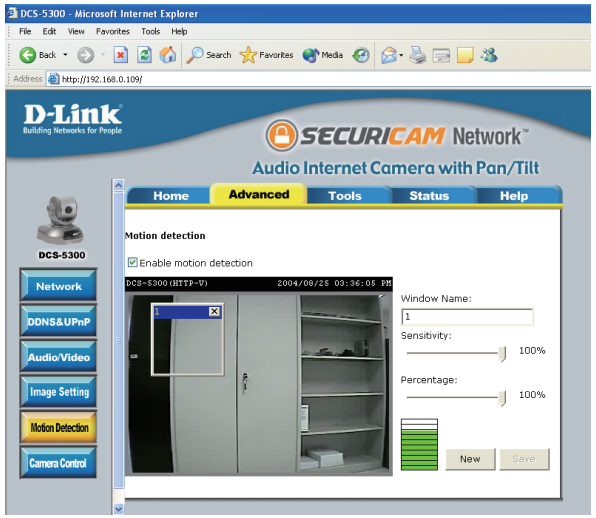
From this screen you can fine tune the video image.
Image **Brightness, Contrast, Saturation** and **Hue** are all adjusted in the same manner. For each video compensation you can set from among eleven levels ranged from -5 to +5.

You may press preview to fine-tune the image and see what effect the setting will have on the image. When the image is acceptable, press Save to store the image settings, or restore to recall the original settings. If settings are changed without saving, they will be used until the next system start-up.

Configuration > Advanced > Motion Detection

Click the **Motion Detection** button from the **Configuration** screen to access settings that effect how the DCS-5300 Network Camera can serve as a security device by recording only when motion is detected.

Click **Motion Detection**



Enable motion detection: Check this option to turn on the motion detection.

Window Name: The text entered here will show at the top of the motion window.

Sensitivity: Sets the measurable difference between two sequential images that would indicate motion.

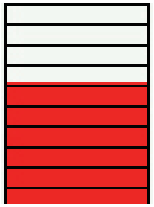
Percentage: Sets the amount of motion in the window being monitored that is required to initiate a motion detected alert. If this is set to 100%, this means that motion is detected within the whole window to trigger a snapshot.

Note: *Setting a higher sensitivity and a lower percentage will make any motion more easily detected.*

New: Click to add a new window. A maximum of three motion windows can be opened simultaneously. Use your mouse to drag the window frame to resize or the title bar to move. Clicking on the 'x' at the upper right corner of the window will close the window.

Save: Saves the related settings of that window.

To display motion detection, a graphic bar will rise or fall depending on the image variation.



A green bar means the image variation is under the monitoring level, and no motion detection alert is triggered. A red bar means the image variation is over the monitoring level and a motion detected alert is triggered. When the bar goes red, the window that the motion is detected in will also be outlined in red (***Note:*** *remember that you can have up to 3 windows selected for motion detection*). You can return to the DCS-5300 Home Page and the monitored window will not be visible, but the red frame will show on the home page when motion is detected.

Configuration > Advanced > Camera Control

Click the **Camera Control** button from the **Configuration** screen to access settings that affect how the DCS-5300 Network Camera can pan and move to preset locations.

Click **Camera Control**

Pan Speed: Select the speed at which the camera will pan for a full cycle from the pull down menu. Select a value between -5 and +5, -5 being the slowest setting.

Tilt Speed: Select the speed at which the camera will tilt for a full cycle from the pull down menu. Select a value between -5 and +5, -5 being the slowest setting.

Auto Pan/Patrol Speed: Select the speed at which the camera will pan during auto patrol. Select a value between 1 and 5, 1 being the slowest setting.

Enable IR Control: Click this to allow the DCS-5300 to be controlled by the included remote.

Current Position: Enter a name for the position at which you would like to preset the DCS-5300. Click **Add** to add the new preset position to the **Preset Locations** list.

Preset Position: Using the pull down menu, you can delete a preset position by selecting it and clicking **Delete**.

Dwelling Time: Set the value of time that the camera will remain on each preset position before moving to the next. The dwelling time can be set between 1 and 255 seconds.

Patrol Selection: To use the Auto Patrol feature, select the desired preset positions from the **Preset Locations** list and add them to the **Selected Locations** list by clicking **Select**. You can then select the order in which the camera will patrol through the preset locations by selecting a location and clicking **UP** or **DN**. Click **Remove** to remove a location from the list.

Click **Apply**

Configuration > Tools > Admin

Click on the **Tools** tab to access 4 utility screens for controlling and administering the DCS-5300. The default screen in **Tools** is the **Admin** screen.

The DCS-5300 is manufactured without any passwords by default. This allows the ability to access the DCS-5300 (including the Configuration) by anyone as long as the IP address is known. It is recommended that you enter a password to restrict others from accessing your camera.

Type a password in the **New Password** field to enable protection, and then confirm the password in **Confirm Password** field.

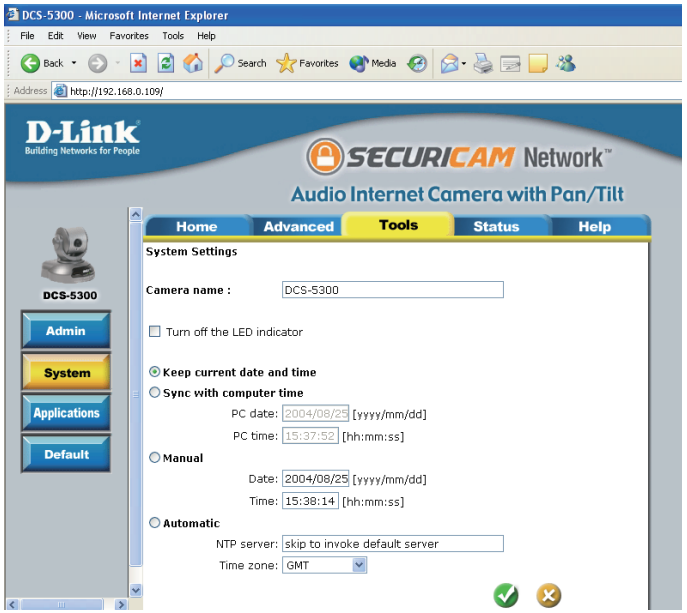
This password is used to identify the administrator. You can add accounts with **User name** and **User Password** for other users in the **Add user** section.

You can provide up to twenty accounts for other users / visitors. Each account identifies the access right. This allows multiple visitors to share the same account of different levels. The options **Permission for I/O Control** (Digital In/ Digital Out) and **Permission for PT Control** are provided for each account. Some users may need to be prohibited from controlling your attached security devices.

Guest Account: This option allows a user to connect to a camera with view -only privileges. User name is "**demo**". No password is required. This is useful for demonstrations and keeps guests separate from users with accounts.

Configuration > Tools > System

Click on the **System** button to access the System settings from the **Tools** menu.



Camera name: The text will display as the title of the window within the Windows operating system. This name will also appear on the log-in screen (once a password has been set).

Turn off the LED indicator: Check this option to shut off the LED at the base of the camera. This will prevent anyone from observing the operation of the Network Camera.

Keep current date and time: Click to save the current date and time of DCS-5300. An internal real-time clock maintains the date and time even when the power is off.

Sync with computer time: Synchronize the date and time of DCS-5300 with the local computer. The date and time of the PC is displayed and updated in the DCS-5300.

Manual: Adjust the date and time according to what is entered by the administrator. Notice the format in the related field while typing.

Automatic: Synchronize with the NTP server over the Internet whenever the DCS-5300 starts up. It will fail if the assigned timeserver cannot be reached.

NTP server: Assign the IP address or domain name of the timeserver. Leaving the text box blank will let DCS-5300 connect to default time servers.

Time zone: Used to adjust the hour of timeservers for local settings.

Click **Apply**

Configuration > Tools > Applications

Click on the **Applications** button to access the Applications settings from the **Tools** menu.

Weekly Schedule

Sunday through Saturday: Select the weekdays that should perform the following operations:

Snapshots begin at: Set the time to start operations. Setting the **begin** time the same as the **stop** time will force the operations to run continuously.

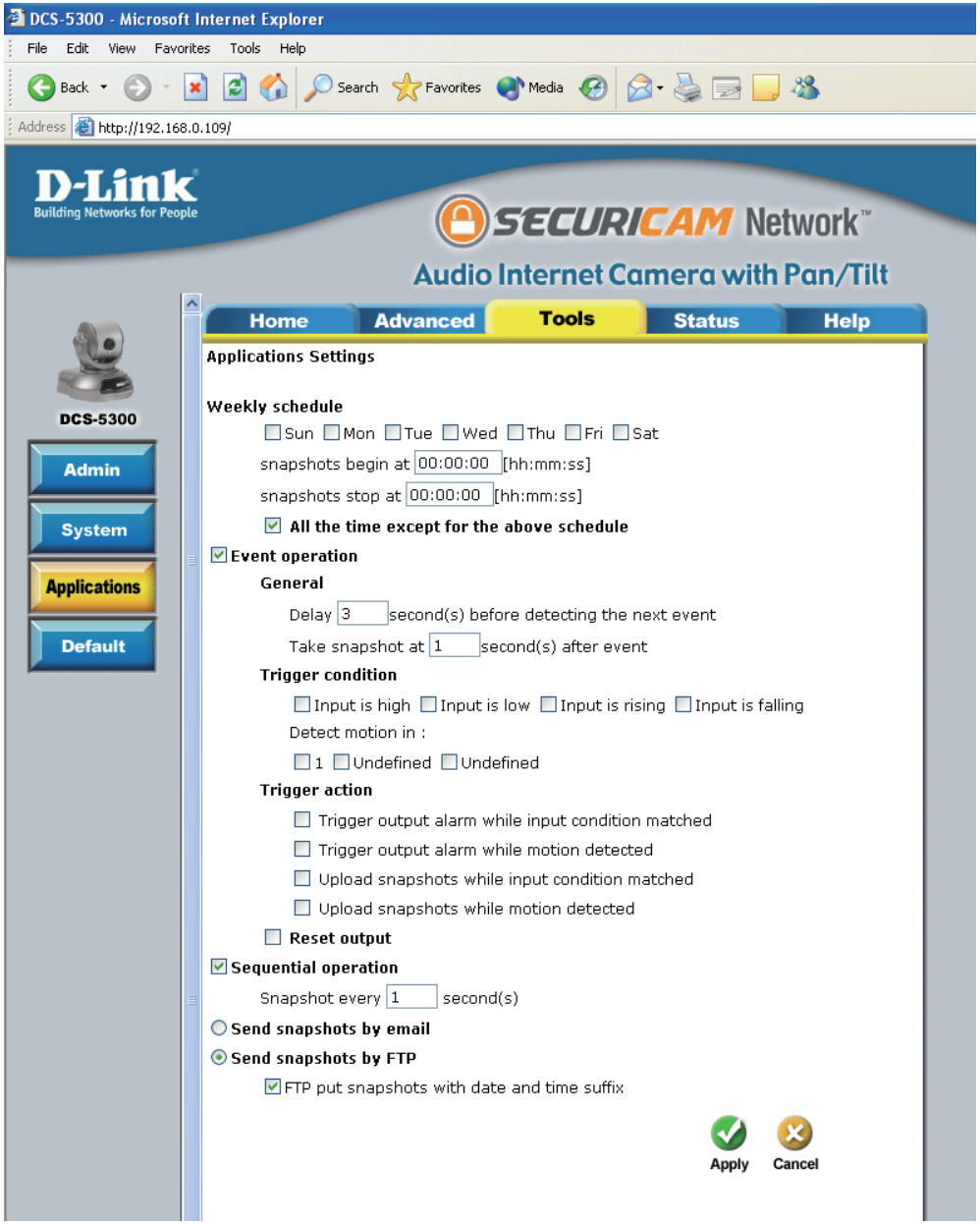
Snapshots stop at: Sets the time to stop the operations.

All of the time except for the above schedule: If you do not wish to set a schedule, this box must be checked.

Event Operation

Delay second(s) before detecting next event: Sets the time delay before restarting to check the trigger condition when the current condition is triggered.

Take snapshots at second(s) after event: After a snapshot is taken because of a trigger, another snapshot will be taken after the configured time in seconds.



Trigger condition: There are 4 conditions related to the digital input and three windows for motion detection. There can be multiple selections. Select the appropriate digital input condition according to the characteristics of the external device. “High”, “low” indicate external voltage input for level trigger, while “rising”, “falling” is for edge triggers. There are three windows shown for the names you defined for motion detection. “Undefined” will show instead of the window title if motion detection is not setup yet. An active, named motion window must be checked for motion detection to be possible.

Reset output: Check and save this option to reset the external device at the digital output back to the original state.

Trigger action: There are four options for two actions regarding either trigger condition. They can have multiple selections. While choosing the trigger output alarm, the digital output will short both pins to connect the circuit of the attached external device; otherwise both pins will be open. While choosing to upload snapshots, the method can be either email or FTP. The snapshot names will be “videopre.jpg”, videotrg.jpg”, and “videopos.jpg” respectively for the snapshots before event, right upon event, and after event. The date and time suffix may be added according to the option. Confirm the external mail or FTP server settings in network configuration.

Sequential Operation

Snapshot every second(s): The DCS-5300 will send snapshots at the specified interval to the external server according to the chosen method. Remember this operation is dependent to the weekly schedule.

Send snapshots by email: Any upload action specified in the options above will use the method chosen here. The captured snapshot named “video.jpg” will be attached in the email with subject “Periodic snapshots.”

Send snapshots by FTP: The captured snapshots will upload to the external FTP server with the file name depending on the next option. It can be used to refresh the captured image stored in the external web server to build creative homepages.

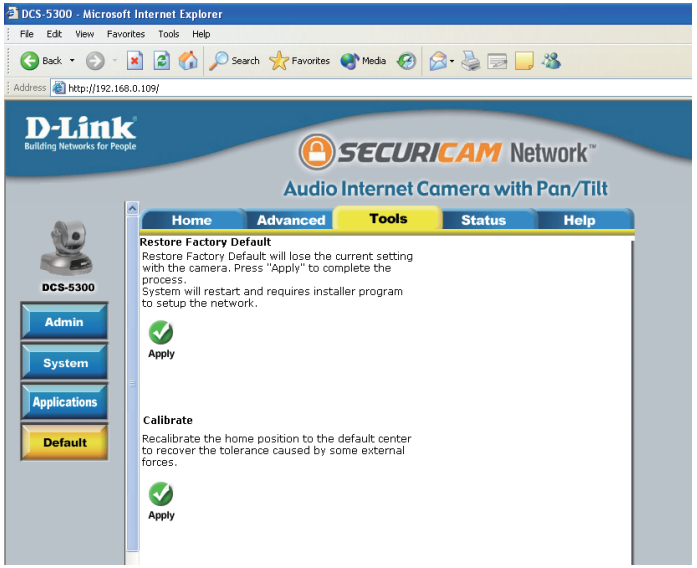
FTP put snapshots with date and time suffix: If the suffix is added, the captured date and time can be easily differentiated from the snapshot file name in either sequential or event operation. For instance, “video@20020102030405.jpg” means the JPEG image was captured at 4 minutes and 5 seconds after 3 o’clock, January 2nd, A.D. 2002. If the suffix is omitted, the file named “video.jpg” on the external FTP server will be refreshed at the specified interval.

Click **Apply**

Configuration > Tools > Default

Click on the **Default** button to access the factory setting restoration and camera calibration options from the **Tools** menu.

Click **Default**



Click **Apply** on the screen to restore factory default settings. This means **any** changes made will be lost and the system will be reset to the initial status when shipped from the factory. After confirmation, the system will restart and require the Installation Wizard software program to locate the IP address of the DCS-5300.

Click **Apply** under **Calibrate** to restore them camera's factory lens position. This means that the camera will be recalibrated to the default center to position to recover from any external forces that may have affected it.

Configuration > Status > Device Info

Click on the **Status** tab to access **Device Info** and a **Log** of DCS-5300 system activity. The **Device Info** is the default screen when you click on the **Status** tab.

The Device Info screen lists the following important settings that are currently set for the DCS-5300:

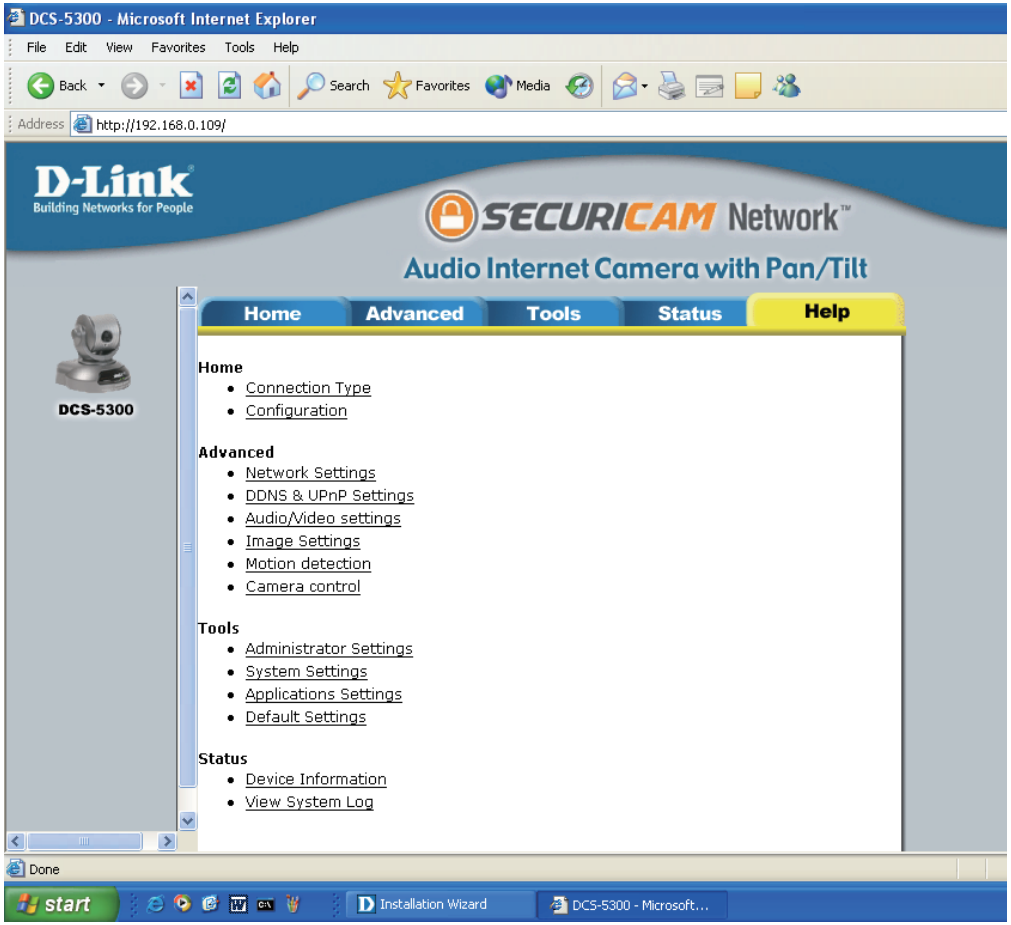
- Firmware Version number
- Mac Address
- IP Address
- Subnet Mask
- Default router address
- Primary DNS Address
- Secondary DNS Address

Configuration > Status > Log

Click on the **Log** button to access a system log of system activity from the **Status** menu**.** The content of the log file reveals useful information about the current configuration and connection logged after the DCS-5300 boots up.

Configuration > Help

Click on the **Help tab** to access descriptions of the particular function you need help with. The help screen is organized in the order of the tabs and then each menu item under that tab.



Record Snapshots to your FTP server with Motion Detection

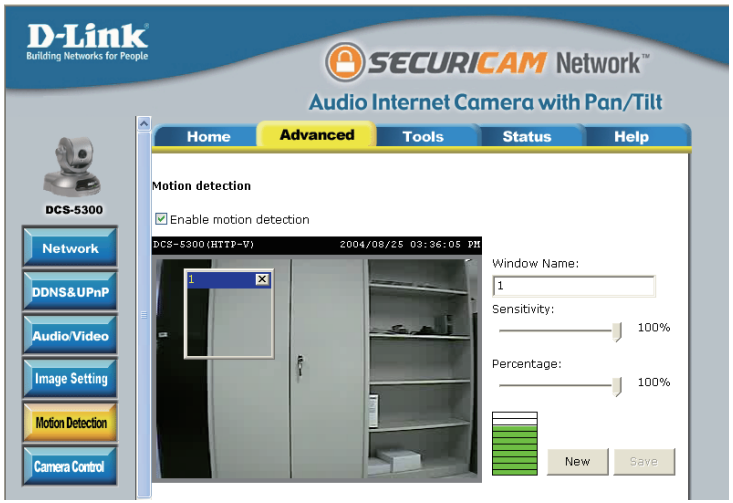
Administrators can combine options on the application page to perform many useful security tasks. There are two trigger sources available: from an external sensor or with built-in motion detection. There are also two kinds of actions that can respond to these events that include uploading snapshots over the internet and driving attached devices. To upload the snapshots, users can choose either email or FTP according to user's needs. Both e-mail and FTP use the network settings on the network page. This section describes how to enable motion detection and record snapshots to an FTP server.

If no external sensor is available, administrators can utilize the built-in motion detection to monitor any abnormal movement and then record the snapshots to an FTP or SMTP server.

Click the **Motion Detection** button under the **Advanced** tab from the **Configuration** screen to access settings that affect how the DCS-5300 Network Camera can serve as a security device by recording only when motion is detected.

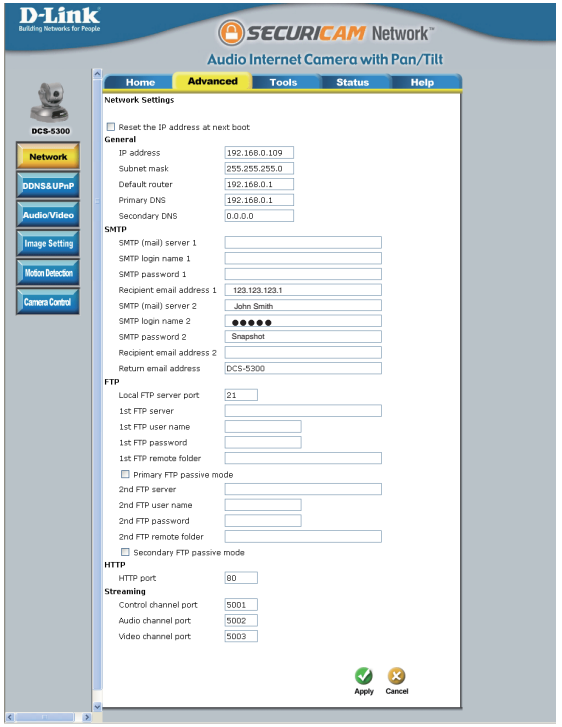
In this window, follow the steps below to ensure that motion detection is correctly enabled:

- Check **Enable motion detection**
- Click on **New** to have a new window to monitor video.
- Enter in a window name.
- Adjust the **Sensitivity** and **Percentage** levels according to the local environment. The highest sensitivity and lowest percentage provides the most sensitive setting.
- Click on **Save** to enable the activity display.



Next, click the **Network** button under the **Advanced** tab to set the FTP server settings for the DCS-5300.

In this window, enter the settings for the FTP server you wish to record to. Optionally, you can enter settings for a secondary backup FTP server.



Local FTP server port: The Default port is 21. To connect to an FTP sever, it is recommended that you do not change the port number unless your camera is behind a router. If your camera is behind a router, you can assign any port number to this field, but you must enable port forwarding on the router. Please refer to your router manual for more information on port forwarding.

1st FTP server: If you are going to upload snapshots to an FTP server, you will need to fill in the Domain name or IP address of your external FTP server such as ftp://dlink.com or ftp://123.123.123.1. (The server name and IP address will vary depending on the user.) The following user settings must be correctly configured for remote access.

1st FTP user name: Specify the user name to access the external FTP server (ex. John Smith).

1st FTP password: Specify the password to access the external FTP server (ex. 12345).

1st FTP remote folder: Specify the destination folder in the external FTP server (ex. snapshot).

Primary FTP passive mode: Passive mode will allow access to an external FTP server if your camera is behind a router protected by a firewall.

2nd FTP server: Specify the Domain name or IP address of your second external FTP server. This field is optional if you have already filled in the information for the first FTP server.

2nd FTP user name: Specify the user name to access your backup FTP server.

2nd FTP password: Specify the user password to your backup FTP server.

2nd FTP remote folder: Specify the destination folder on your external backup FTP server.

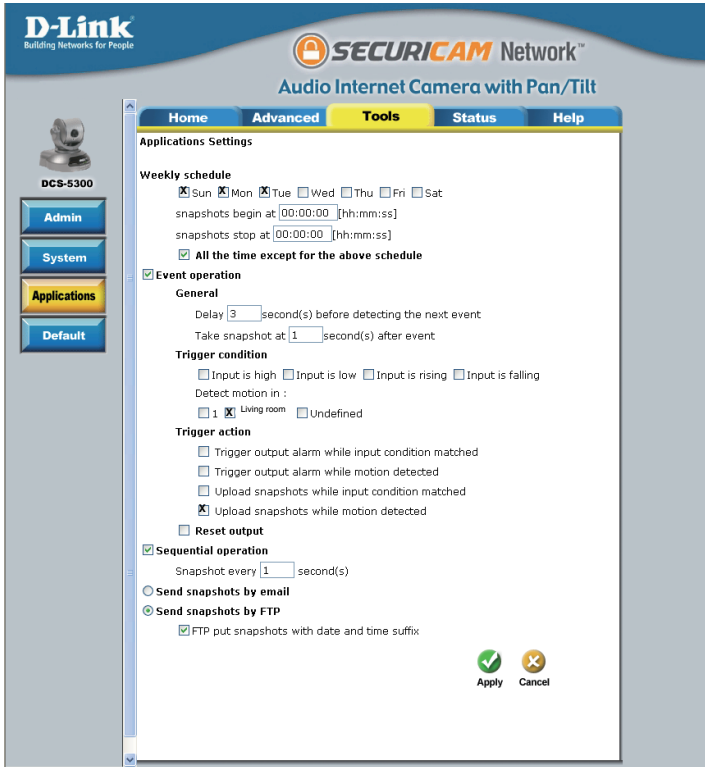
Secondary FTP passive mode: Passive mode will allow access to a second external FTP server if your camera is behind a router protected by a firewall.

For detailed information about each setting, please refer to **Configuration > Advanced > Network** in the section titled "Using the DCS-5300 With an Internet Browser" (page 28). Click the apply button when finished.

Next, click the **Applications** button under the **Tools** tab to set the application settings for the DCS-5300.

In this window, follow the steps below to set the application settings for snapshots to be recorded to an FTP site:

- Select the weekdays you would like to record and enter the "Snapshots begin" time and "Snapshots end" time for the weekly schedule, or select "All the time except for the above schedule" if you want to enable full time snapshot recording.
- Check **Event operation**
- Set the delay "before detecting next event" to avoid continuous false alarms following the original event.
- Set the delay to "take snapshots after event" to capture the direction of the moving object.
- Check the window name (in this case Living room).
- Check "Upload snapshots while motion detected."
- Click "Send snapshots by FTP" and check "FTP put snapshots with date and time suffix"
- Click the **Apply** button to save the settings.



Click the **Apply** button when finished. You are now able to record snapshots to your FTP server when motion detection is triggered.

Appendix

Frequently Asked Questions

Network Camera Features

Q: What is an Network Camera?
A: The Network Camera is a stand-alone system connecting directly to an Ethernet or Fast Ethernet network. It differs from a conventional PC Camera, the Network Camera is an all-in-one system with built-in CPU and web-based solutions providing a low cost solution that can transmit high quality video images for monitoring. The Network Camera can be managed remotely, accessed and controlled from any PC/Notebook over an Intranet or the Internet from a web browser.

Q: **What is the maximum number of users that can be allowed to access DCS-5300 simultaneously?**
A: The maximum number of users that can log onto the Network Camera at the same time is 10. Please keep in mind the overall performance of the transmission speed will slow down when many users are logged on.

Q: **What algorithm is used to compress the digital image?**
A: The Network Camera utilizes H.263+ MPEG-4 Short Header Mode image compression technology providing high quality images. MPEG is a standard for image compression and can be applied to various web browser and application software without the need to install extra software.

Q: Can I capture still images from the Network Camera?
A: Yes you are able to capture still images with the snapshot function from the software application CD supplied with the Network Camera.

Network Camera Installation

Q: Can the Network Camera be used outdoors?
A: The Network Camera is not weatherproof. It needs to be equipped with a weatherproof case to be used outdoors and it is not recommended.

Q: **When physically connecting the Network Camera to a network what network cabling is required?**
A: The Network Camera uses Category 5 UTP cable allowing 10 Base-T and 100 Base-T networking.

Q: Can the Network Camera be setup as a PC-cam on a computer?
A: No, the Network Camera is used only on an Ethernet or Fast Ethernet network. The D-Link DSB-C110, DSB-C310, can be used as a PC Camera (Webcam).

Q: **Can the Network Camera be connected to the network if it consists of only private IP addresses?**
A: The Network Camera can be connected to a LAN with private IP addresses.

Q: Can the Network Camera be installed and work if a firewall exists on the network?
A: If a firewall exists on the network, port 80 is open for ordinary data communication. The DCS-5300 uses port 5001 for control and synchronization, port 5002 for streaming audio and port 5003 for streaming video. These ports (or the ports you specify from the **Advanced** Tab in the Configuration screen if you change the default ports) need to be opened on the firewall. Please refer to page 27 for more information.

Q: Why am I unable to access the Network Camera from a web browser?
A1: If a router or firewall is used on the network, the correct ports for the DCS-5300 may not be configured on the router or firewall. To correct the problem, you need to determine if the DCS-5300 is behind a router or firewall and if the router or firewall is properly configured for the ports the DCS-5300 is using. Refer to Page 27 for help in opening the correct ports on a router or firewall for use with the DCS-5300.
A2: Other possible problems might be due to the network cable. Try replacing your network cable. Test the network interface of the product by connecting a local computer to the unit, utilizing a Ethernet crossover cable. If the problem is not solved the Network Camera might be faulty.

Q: Why does the Network Camera work locally but not externally?

A1: This might be caused by network firewall protection. The firewall may need to have some settings changed in order for the Network Camera to be accessible outside your local LAN. Check with the Network Administrator for your network.
A2: Make sure that the Network Camera isn't conflicting with any Web server you may have running on your network.
A3: The default router setting might be a possible reason. Check that the configuration of the router settings allow the Network Camera to be accessed outside your local LAN. Please refer to page 27 for more information.

Q: I connected the Network Camera directly to a computer with a cross-over cable Ethernet cable and received the following Windows error upon running the Installation Wizard:

A1: This Windows error will occur if the Network Camera is connected to a computer that is not properly configured with a valid IP address. Turn off DHCP from the Network Settings in Windows and configure the computer with a valid IP address or connect the camera to a router with DHCP enabled.
A2: This error can also occur if the Installation Wizard icon is clicked on more than once from the setup wizard.

Q: The focus on the Network Camera is bad, how can I correct it?
A1: Adjust the Network Camera focus manually as described in **Adjusting the Network Camera Focus** in the Appendix section of this manual (page 133).

Q: Noisy images occur. How can I solve the problem?
A: The video images might be noisy if the Network Camera is used in a very low light environment. To solve this issue you need more lighting.

Q: The images appear to be of poor quality, how can I improve the image quality?

A1: Make sure that your computer's display properties are set above 256 colors. Using 16 or 256 colors on your computer will produce dithering artifacts in the image, making the image appear to be of poor quality.

A2: The configuration on the Network Camera image display is incorrect. Through the **Advanced > Image Setting** section of the Web management you need to adjust the image related parameters such as brightness, contrast, hue and power line frequency for fluorescent light . Please refer to the **Advanced > Image Setting** section on Page 47 and 48 for detailed information.

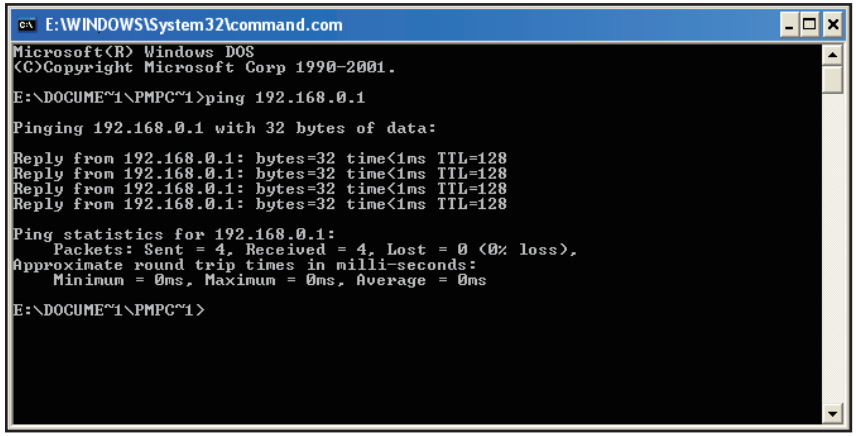
How to Ping Your IP Address

The PING (Packet Internet Groper) command can determine whether a specific IP address is accessible by sending a packet to the specific address and waiting for a reply. It can also provide a very useful tool to confirm if the IP address conflicts with Network Camera over the network.

Follow the step-by-step procedure below to utilize the PING command but first you must disconnect Network Camera from the network.

Start a DOS window.
Type ping x.x.x.x, where x.x.x.x is the IP address of the Network Camera.

The replies, as illustrated below, will help diagnose any connection problems.



Reset and Restore

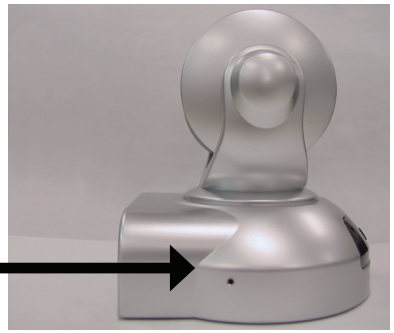
There is a button hidden in the pinhole beside the Ethernet socket. It is used to **reset** the system or **restore** the factory default settings. Sometimes resetting the DCS-5300 will return the system back to a normal state. If the system still has problems after reset, restore the factory settings and install again:

RESET:

1. Lightly insert a paper clip (or a similar sized tool) into the reset hole on the back of the camera, press lightly and then release the button.
2. The LED on the front of the camera will begin blinking red and green.
3. When the LED stops the blinking the reset has completed.

RESTORE:

1. Insert the paperclip or other tool and press on the button continuously.
2. Wait for the LED on the front of the camera to blink red and green and hold the button through two cycles of blinking (about 5-7 seconds.)
3. Withdraw the tool after the second cycle of the LED blinking and a factory restore has been completed.



Restoring the factory defaults will result in the loss of any previous settings and will require running the Installation Wizard to return the DCS-5300 to a normal state.

I/O Connector

I/O Connector Definition for the Network Camera

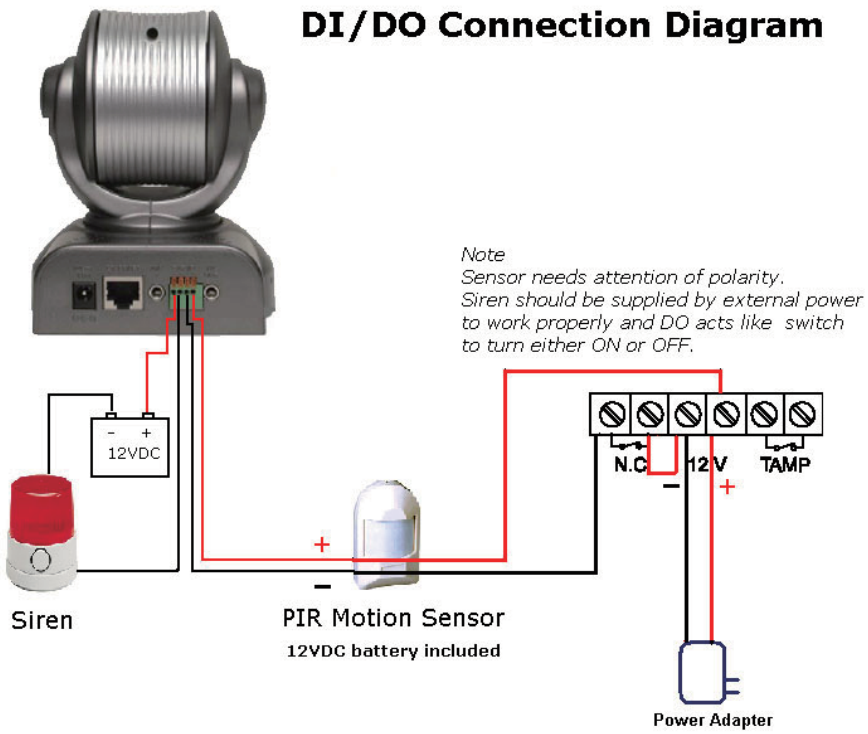
The DCS-5300 provides a general I/O terminal block with one digital input and one relay switch for device control. Pin 1 and pin 2 can be connected to an external sensor and the state of voltage will be monitored from the initial state 'LOW'. The relay switch of pin 3 and pin 4 can be used to turn on or off the external device.

The I/O connector provides the physical interface for digital output (DO) and digital input (DI) that is used for connecting a diversity of external alarm devices to the Network Camera such as IR-Sensors and alarm relays.

The digital input is used for connecting external alarm devices and once triggered images will be taken and e-mailed.

I/O Terminal Block:

1	DI+	INPUT (Max. 50mA, 12VDC)
2	DI-	INPUT (Initial state of DI is low)
3	SW_COMMON	OUTPUT (open from SW_OPEN at initial state) (close with SW_OPEN when set DO to ON)
4	SW_NOPEN	OUTPUT (Max. 1A, 24VDC or 0.5A, 125VAC)



The above diagram shows a typical wiring configuration for a normally closed PIR motion sensor. Please refer to your specific motion sensor for the power supply connection to the device since this will be critical to the success of your installation. Note that the positive from the PIR is connected to the D+ of the I/O port of the camera and the negative from the PIR is connected to the D- of the camera I/O port.

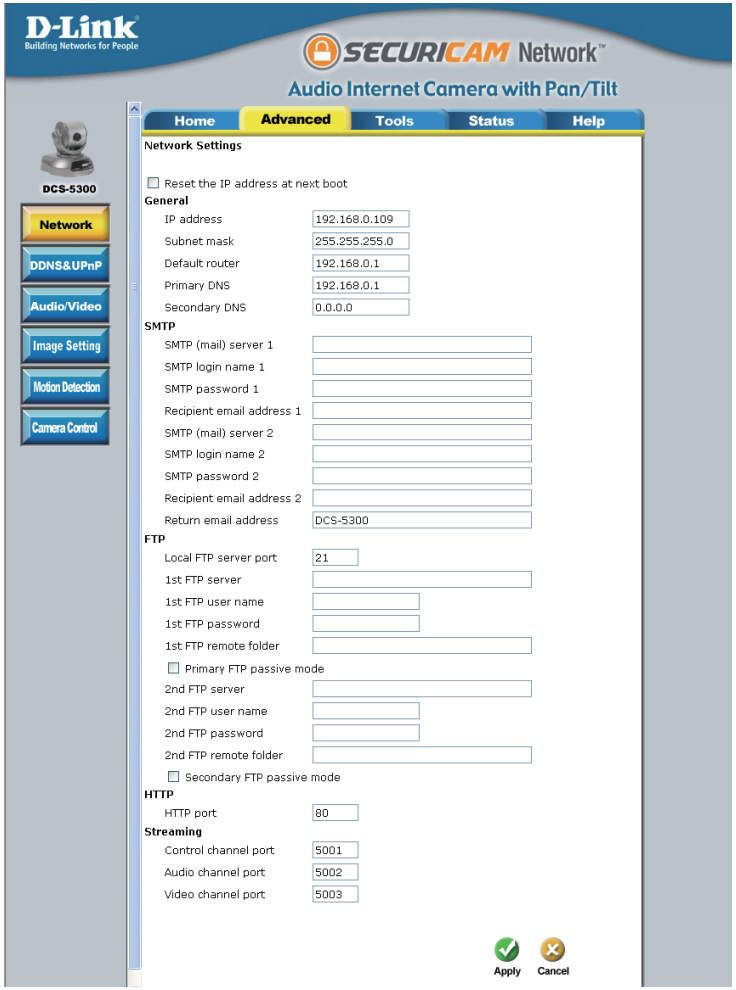
Configuring Your Camera for External Trigger Based Recording

To configure your camera to record when triggered by an external device, you must first set your SMTP or FTP settings in order to send snapshots to your email account or FTP server.

Configuring Your Camera for External Trigger Based Recording (continued)

Click the **Network** button under the **Advanced** tab to set the SMTP or FTP server settings for the DCS-5300.

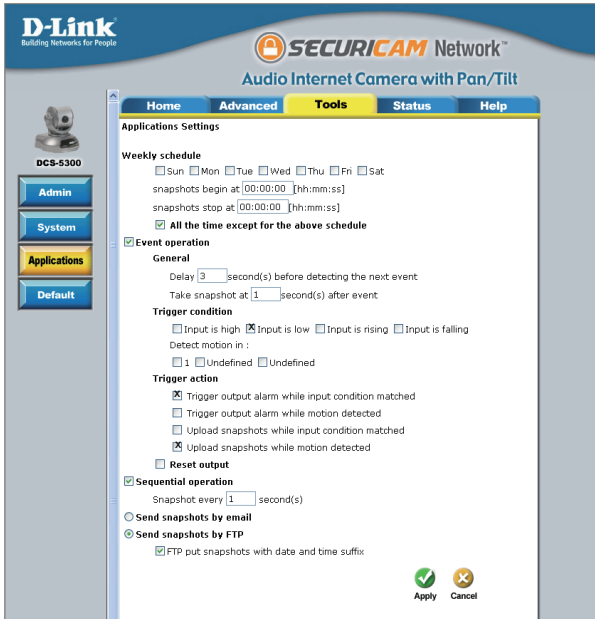
Click **Network**



In this window, enter the settings for the SMTP or FTP server to which recorded snapshots will be sent. For detailed information about each setting, please refer to **Configuration > Advanced > Network** in the section titled “Using the DCS-5300 With an Internet Browser” (page 33). Click the **Apply** button when finished.

Next, click the **Applications** button under the **Tools** tab to set the application settings for the DCS-5300.

Click **Application**



In this window, follow the steps below to set the application settings for snapshots to be sent to your email account or FTP server when triggered by a motion sensor or other external device:

- Select the weekdays you would like to record and enter the “Snapshots begin” time and “Snapshots end” time for the weekly schedule, or select **All the time except for the above schedule** if you want to enable full time snapshot recording.
- Check **Event operation**.
- Set the delay “before detecting next event” to avoid continuous false alarms following the original event.
- Set the delay to “take snapshots after event” to capture the direction of the moving object.
- Check the trigger condition for input and motion detection (in this case “Input is Low”).
- Check **Trigger output alarm while input condition matched** and **Upload snapshots while motion detected**.
- Select to either send snapshots by email or by FTP.

Click the **Apply** button when finished. You are now able to send snapshots, based on triggered recording, to your email account or FTP server.

Adjusting the Cameras Focus

To adjust the focus of the lens you will need to turn the lens slowly either clockwise or counterclockwise until the desired image appears. DO NOT over-turn the lens in either direction as it will be out of focus or may damage the camera.

To help you get the best image quality, keep in mind that while adjusting the DCS-5300's focus you can preview the image quality from your Web browser.

Note:
You can further adjust the Network Camera's image quality through the Web Configuration under:

Configuration > Advanced > Audio/Video (page 44)

Technical Specifications

Remote management
Configuration and system log can be accessed via Web browser, using Internet Explorer 6.X and above, and FTP application remotely

Networking
Protocol
TCP/IP, HTTP, SMTP, FTP, Telnet, NTP, DNS, and DHCP

Networking Application
DDNS support with several popular DDNS servers, UPnP support, SMTP client, FTP client, FTP server, HTTP server

Ethernet
10BaseT or 100BaseT Fast Ethernet

Video
Algorithm supported
H.263+ (MPEG-4 Short header mode)
Features
Three adjustable image size and quality intelligent motion detection windows with flexible bit rate, MPEG-4 short header mode compression for streaming video, JPEG compression for still image

Audio
24Kbps
Built-in omni-directional microphone

Video resolution
Up to 30 fps at 160x120
Up to 30 fps at 320x240

General I/O
1 opto-isolated sensor input (max. 12VDC 50mA)
1 relay output (max. 24VDC 1A, 125VAC 0.5A)

Security
Administrator and user group protected
Password authentication

LED indicator
2 Status indicators: 1) Power, 2) POST, connection, and heartbeat

Camera specification
1/4 inch color CCD sensor
AGC/AWB
Electronic shutter: 1/60 ~ 1/15000 second
Fixed focus glass lens, F2.0, 1 LUX

Power
12VDC 1.5A, external power supply

Weight
About 12.2 oz.

Dimension
4.0in.(L) x 4.1in.(W) x 4.4in.(H)

Viewing system requirement

Protocol
ActiveX
Operating system
Microsoft Windows® XP, 2000, ME or 98SE
Browser
Internet Explorer 6.x or above

Environmental

Operating
40°F to 113°F
Storage
-4°F to 158°F
Humidity
Max 95% RH

Safety

FCC class B
CE