



LevelOne

FCS-0010 10/100Mbps Network Camera /
WCS-0010 11g Network Camera



User's Manual

Ver. 2.1.0-0809

Copyright (c) 2007 Digital Data Communications Co., Ltd. All Rights Reserved

All the features and functions are subject to change without notice. Please visit www.level1.com for the latest ones.

Table of Contents

CHAPTER 1 INTRODUCTION	1
Overview	1
Physical Details	4
Package Contents	6
CHAPTER 2 BASIC SETUP	7
System Requirements	7
Installation	8
Setup using the Windows Wizard	9
CHAPTER 3 VIEWING LIVE VIDEO	12
Overview	12
Requirements	12
Connecting to a Camera on your LAN	12
Connecting to a Camera via the Internet	14
Viewing Live Video	16
CHAPTER 4 ADVANCED VIEWING SETUP	17
Introduction	17
Adjusting the Video Image	17
Controlling User Access to the Video Stream	20
Making Video available from the Internet	21
Viewing Live Video via the Internet	23
Motion Detection Alerts	24
CHAPTER 5 WEB-BASED MANAGEMENT	25
Introduction	25
Connecting to Network Camera	25
Welcome Screen	26
Administration Menu	27
System Screen	28
Network Screen	30
Wireless Screen (WCS-0010 Only)	32
DDNS Screen	34
Video Image Screen	36
Video Access Screen	38
User Database Screen	40
Motion Detection Screen	41
E-Mail Screen	42
FTP Screen	43
HTTP Screen	44
Event Trigger Screen	45
Maintenance Screen	47
Status Screen	49
Log Screen	51
CHAPTER 6 TROUBLESHOOTING	52
Overview	52
Problems	52
APPENDIX A SPECIFICATIONS	54
Network Camera	54
Regulatory Approvals	54
Copyright Notice	55

APPENDIX B STREAMING VIDEO/AUDIO SOLUTION	72
Overview	72
Streaming Video/Audio through Internet Camera.....	72

Chapter 1

Introduction



This Chapter provides details of the FCS-0010/WCS-0010's features, components and capabilities.

Overview

FCS-0010/WCS-0010 has an Integrated Microcomputer and a high quality CMOS digital-Image-Sensor, enabling it to display high quality live streaming video over your wired LAN, the Internet, and for the WCS-0010, an 802.11g Wireless LAN.

Using enhanced MPEG-4 technologies, FCS-0010/WCS-0010 is able to stream high quality video and audio directly to your PC. The high compression capabilities of MPEG-4 reduce network bandwidth requirements to amazingly low levels.

A convenient and user-friendly Windows program is provided for both viewing and recording video. If necessary, you can even view video using your Web Browser, on a variety of software platforms.

Features

- **Standalone Design.** FCS-0010/WCS-0010 is a standalone system with built-in CPU and Video encoder. It requires only a power source and a connection to your LAN or Wireless LAN.
- **Dual Video Support.** FCS-0010/WCS-0010 can support both MEPEG4 and MJPEG video for different image compression.
- **Stream Live Video to Multiple Users.** The MPEG4 encoder and HTTP server built into the camera generate a ready-to-view video stream. Just connect to FCS-0010/WCS-0010 using your Web browser or the provided Windows utility to view live video.
- **Suitable for Home, Business or Public Facilities.** Whether for Home, Business or Public Facility surveillance, or just for entertainment and fun, FCS-0010/WCS-0010 has the features you need.
- **Multi-Protocol Support.** Supporting TCP/IP networking, SMTP (E-mail), HTTP and other Internet related protocols, FCS-0010/WCS-0010 can be easily integrated into your existing network.
- **Easy Configuration.** A Camera Wizard is provided for initial setup. Subsequent administration and management can be performed using a standard web browser. The administrator can configure and manage FCS-0010/WCS-0010 via the LAN or Internet.
- **Viewing/Recording Utility.** IP CamSecure Lite version is provided for viewing live video. For periods when you are absent, or for scheduled recording. Users can monitor up to 32 channels simultaneously.
- **Motion Detection.** This feature can detect motion in the field of view. FCS-0010/WCS-0010 will compare consecutive frames to detect changes caused by the movement of large objects. This function only works indoors due to the

sensitivity of the CMOS sensor. When motion is detected, an E-mail alert can be sent, or some other action may be triggered.

- ***Flexible Scheduling.*** You can limit access to the video stream to specified times using a flexible scheduling system. The Motion Detection feature can also have its own schedule, so it is active only when required.
- ***Syslog Support.*** If you have a Syslog Server, FCS-0010/WCS-0010 can send its log data to your Syslog Server.
- ***Audio Support.*** You can listen as well as look! Audio is encoded with the video if desired.

Internet Features

- ***User-definable HTTP port number.*** This allows Internet Gateways to use "port mapping" so the FCS-0010/WCS-0010 and a Web Server can share the same Internet IP address.
- ***DDNS Support.*** In order to view video over the Internet, users must know the Internet IP address of the gateway used by the FCS-0010/WCS-0010. But if the Gateway has a dynamic IP address, DDNS (Dynamic DNS) is required. Since many existing Gateways do not support DDNS, this function is incorporated into the FCS-0010/WCS-0010.
- ***NTP (Network-Time-Protocol) Support.*** NTP allows the FCS-0010/WCS-0010 to calibrate its internal clock from an Internet Time-Server. This ensures that the time stamp on Video from the FCS-0010/WCS-0010 will be correct.

Security Features

- ***User Authentication.*** If desired, access to live video can be restricted to known users. Users will have to enter their username and password before being able to view the video stream. Up to 10 users can be entered.
- ***Password-Protected Configuration.*** Configuration data can be password protected, so that it only be changed by the FCS-0010/WCS-0010 Administrator.

Wireless Features

- **Standards Compliant.** The WCS-0010 complies with the IEEE802.11g (DSSS) specifications for Wireless LANs.
- **Supports both 802.11b and 802.11g Standards.** The WCS-0010 supports both 802.11b and 802.11g standards.
- **Speeds to 54Mbps.** All speeds up to the 802.11g maximum of 54Mbps are supported.
- **Wired and Wireless Network Support.** The WCS-0010 supports either wired and wireless transmission.
- **WEP Support.** Full WEP support (64/128 Bit) on the Wireless interface is provided.
- **WPA/WPA2-PSK Support.** The WPA/WPA2-PSK standard is also supported, allowing advanced encryption of wireless data.

Physical Details

Front Panel

Lens	No physical adjustment is required or possible for the lens, but you should ensure that the lens cover remain clean. The image quality is degraded if the lens cover is dirty or smudged.
Microphone	The built-in microphone is mounted on the front.
Power LED (Green)	On - Power on. Off - No power. Blinking - The <i>Power</i> LED will blink during start up. This will take 15 to 20 seconds.
Active LED (Green)	Off - No user is viewing the camera. Blinking - User(s) is viewing the camera.
Network LED (Green)	On - Wireless or LAN connection is detected. Off - Wireless or LAN connection is not detected Blinking - Data is being transmitted or received via the LAN or Wireless connection.

Rear

Antenna (WCS-0010 Only)	Attach the supplied antenna here. The antenna is adjustable; best results are usually obtained with the antenna positioned vertically.
SPKR out	If required, an external speaker can be plugged in here.
Power Input	Connect the supplied 5V power adapter here. Do not use other power adapters; doing so may damage the camera.
LAN port	Use a standard LAN cable to connect FCS-0010/WCS-0010 to a 10/100BaseT hub or switch. Note: <ul style="list-style-type: none">• Attaching the LAN cable will disable the Wireless interface. Only 1 interface can be active at any time.• The LAN cable should only be connected or disconnected when the camera is powered OFF. Attaching or detaching the LAN cable while the camera is powered on does NOT switch the interface between wired and wireless.
Reset Button	This button is recessed; you need a pin or paper clip can be used to depress it. It can be activated at any time the camera is in the "ready" mode. <ul style="list-style-type: none">• Restore to Default IP Address. When pressed and released, the FCS-0010/WCS-0010 will reset to DHCP Client.• Restore to Factory Default setting including IP Address, Administrator ID, and Administrator password. When pressed and held for 3 seconds, the <i>IP</i>

address, Administrator ID, and Administrator Password settings will be set to their default values.

- IP address: DHCP Client
- Administrator ID: administrator
- Administrator Password: null (no password)

Note:

After this procedure is completed, the *Power* LED will blink three times to confirm that the reset was completed successfully.

Package Contents

The following items should be included: If any of these items are damaged or missing, please contact your dealer immediately.

1. FCS-0010/WCS-0010
2. Power adapter
3. Antenna (WCS-0010 Only)
4. Camera Stand
5. CD Manual/Utility
6. Quick Installation Guide

Chapter 2

Basic Setup



This Chapter provides details of installing and configuring the FCS-0010/WCS-0010.

System Requirements

- To use the wired LAN interface, a standard 10/100BaseT hub or switch and network cable is required.
- To use the Wireless interface on the Network Camera, other Wireless devices must be compliant with the IEEE802.11b or IEEE802.11g specifications. All Wireless stations must use compatible settings.



Note

The default Wireless settings are:

Mode: Infrastructure

ESSID: ANY

Wireless Security: Disabled

Domain: USA

Channel No.: Auto

Installation

1. Assemble the Camera

For WCS-0010, screw the supplied antenna to the mounting point on the rear.
Attach the Camera Mount to the camera.

2. Connect the LAN Cable

Connect the FCS-0010/WCS-0010 to a 10/100BaseT hub or switch, using a standard LAN cable.



For the WCS-0010 Network Camera, this disables the Wireless Interface, because only one interface can be active.

The LAN cable should only be connected or disconnected when the camera is powered OFF. Attaching or detaching the LAN cable while the camera is powered on does NOT switch the interface between wired and wireless.

3. Power Up

Connect the supplied 5V power adapter to the FCS-0010/WCS-0010 and power up. Use only the power adapter provided. Using a different one may cause hardware damage.

4. Check the LEDs

- The *Power* LED will turn on briefly, then start blinking. It will blink during startup, which takes 15 to 20 seconds. After startup is completed, the *Power* LED should remain ON.
- The *Network* LED should be ON.

For more information, refer to *Physical Details* in Chapter 1.

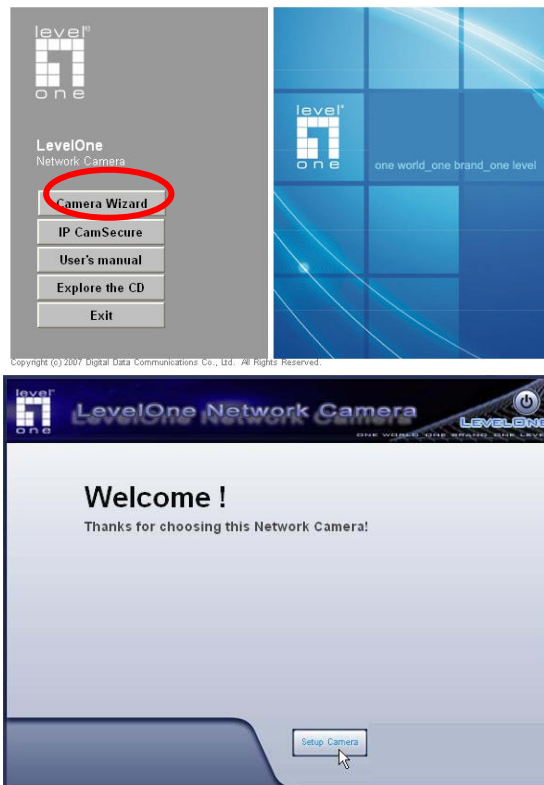
Setup using the Windows Wizard


Initial setup should be performed using the supplied Windows-based setup Wizard. This program can locate the FCS-0010/WCS-0010 Network Camera even if its IP address is invalid for your network. You can then configure the FCS-0010/WCS-0010 Network Camera with appropriate TCP/IP settings for your LAN.

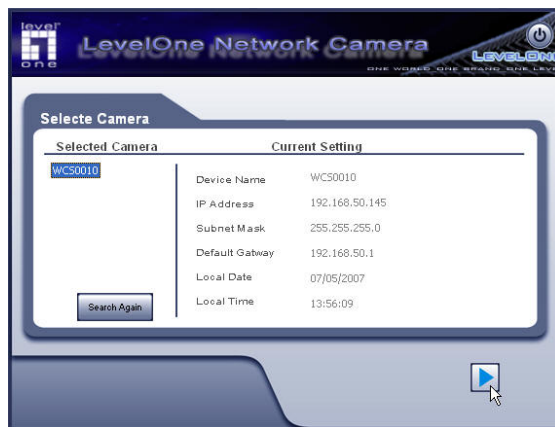
Subsequent administration can be performed with your Web browser, as explained in **Chapter 5 - Web-based Management**.

Setup Procedure


1. Insert the supplied CD-ROM into your drive. If the setup program does not start automatically, select your CD-ROM drive manually to open the set up page.
2. Select **"Camera Wizard"**->**"Setup Camera"** to initiate the installation.



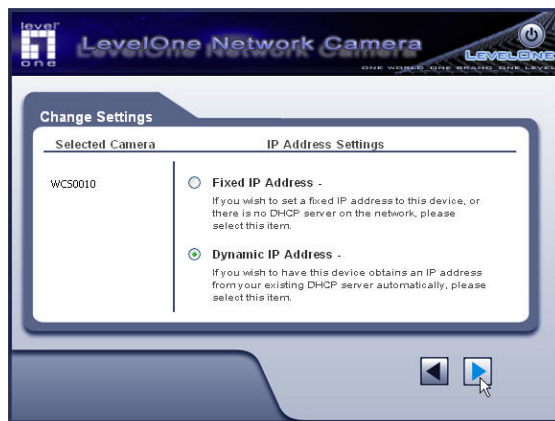
3. The screen will list all the Network Cameras on the LAN. Select the desired camera from the list on the left. The settings for the camera will be displayed on the right, then click .



4. You will be prompted to enter the *Administrator Name* and *Administrator Password*, as shown below. Enter “**administrator**” for the name, and leave the password blank. Otherwise, enter the *Administrator Name* and *Administrator Password* set on the **Maintenance** screen.

5. This screen allows you to enter a suitable **Description**, and set the correct **Time Zone**, **Date**, and **Time**. Make any desired changes, then click  to continue.

6. On the following **IP Address Settings** screen, shown below, choose *Fixed IP Address* or *Dynamic IP Address*. Click  to continue.





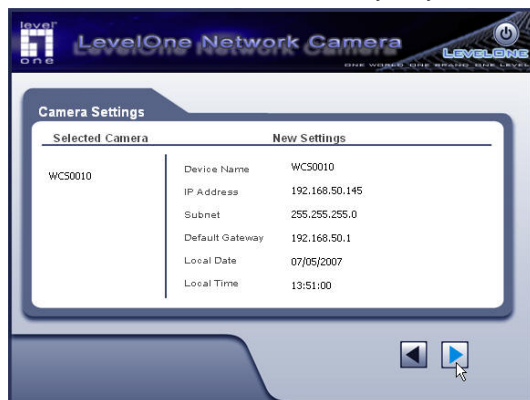
- *Fixed IP Address* is recommended, and can always be used.
- *Dynamic IP Address* can only be used if your LAN has a DHCP Server.

If you chose *Fixed IP Address*, the following **TCP/IP Settings** screen will be displayed.

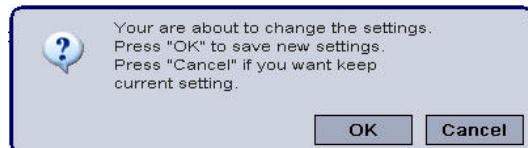
- Enter an unused **IP Address** from within the address range used on your LAN.
- The **Subnet Mask** and **Default Gateway** fields must match the values used by PCs on your LAN.
- The **Primary DNS** address is required in order to use the E-mail alert or Dynamic DNS features. Enter the DNS (Domain Name Server) address recommended by your ISP.
- The **Secondary DNS** is optional. If provided, it will be used if the Primary DNS is unavailable.

Click  to continue.

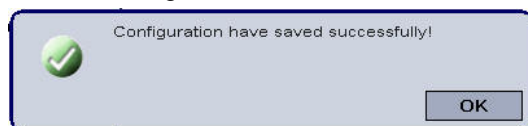
- The screen displays all details of the Network Camera. Click  if the settings are correct, or click  to modify any incorrect values.



- Click **OK** to save the new settings. Or click **Cancel** to cancel your changes,



- The configurations have been saved. Click **OK** to quit the program.



Chapter 3

Viewing Live Video



This Chapter provides basic information about viewing live video.

Overview

After finishing setup via the Camera Wizard, all LAN users can view live video using a variety of browsers on Windows/MAC/Linux.

For MPEG4 video: Internet Explorer in Windows.

For MJPEG video: Internet Explorer in MAC, Firefox, Mozilla, Netscape.

This Chapter has details of viewing live video using Internet Explorer.

But many other powerful features and options are available:

- To view multiple cameras simultaneously, or record video (either interactively or by schedule), you should install the IP CamSecure. Refer to the user's manual in the software *CD* for details on installing and using this program.
- The camera administrator can also adjust the Video Stream, and restrict access to the video stream to known users by requiring viewers to supply a username and password.
- To make Live Video from the camera available via the Internet, your Internet Gateway or Router must be configured correctly.

Requirements

To view the live video stream generated by the FCS-0010/WCS-0010, you need to meet the following requirements:

- Windows 98/98SE, Windows 2000, Windows XP, Windows VISTA.
- Internet Explorer 5.5 or later.

Connecting to a Camera on your LAN

To establish a connection from your PC to the FCS-0010/WCS-0010:

1. Use the *Camera Wizard* to get the IP address of the FCS-0010/WCS-0010Network Camera.
2. Start Internet Explorer.
3. In the Address box, enter "HTTP://" and the IP Address of the FCS-0010/WCS-0010 Network Camera.
4. When you connect, the following screen will be displayed.



5. Click *View Video*.
6. If the Administrator has restricted access to known users, you will then be prompted for a username and password.
Enter the name and password assigned to you by the FCS-0010/WCS-0010 Network Camera administrator.
7. The first time you connect to the camera, you will be prompted to install an ActiveX component (OCX or CAB file), as in the example below.
You must install this ActiveX component (OCX or CAB file) in order to view the Video stream in Internet Explorer.
Click the "Yes" button to install the ActiveX component.



8. Video will start playing automatically. There may be a delay of a few seconds while the video stream is buffered.

Connecting to a Camera via the Internet

You can NOT connect to a camera via the Internet unless the camera Administrator has configured both the camera and the Internet Gateway/Router used by the camera.

See *Making Video available from the Internet* in **Chapter 4 - Advanced Viewing Setup** for details of the required configuration.

Also, you need a broadband Internet connection to view video effectively. Dial-up connections are NOT supported.

To establish a connection from your PC to the FCS-0010/WCS-0010 Network Camera via the Internet:

1. Obtain the following information from the Administrator of the camera you wish to connect to:
 - Internet IP Address or Domain Name of the camera.
 - Port number for HTTP connections.
 - Login (username, password) if required.
2. Start Internet Explorer.
3. In the Address box, enter the following:

HTTP://Internet_Address:port_number

Where Internet_Address is the Internet IP address or Domain Name of the camera, and port_number is the port number used for HTTP (Web) connections to the camera.

Examples using an IP address:

HTTP://203.70.212.52:1024

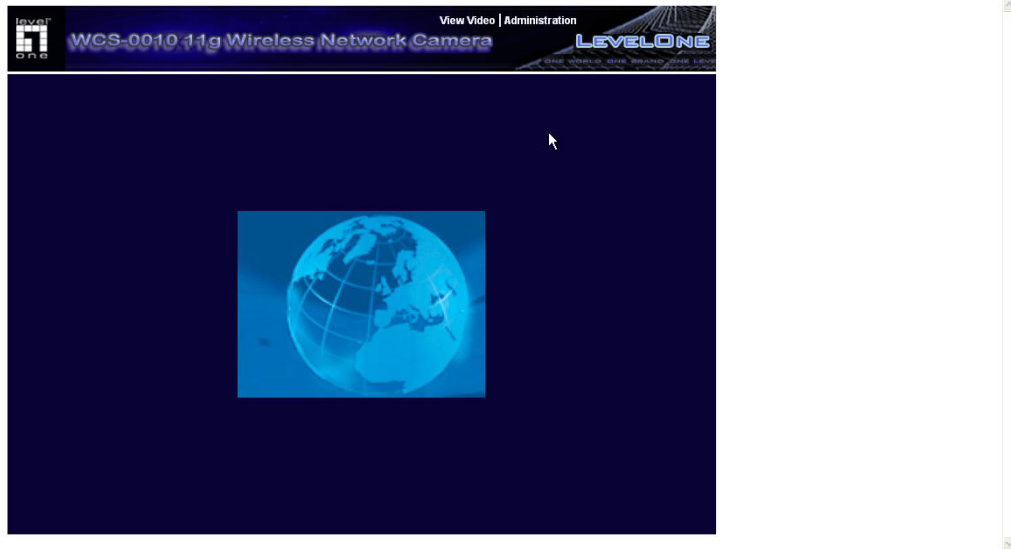
Where the Internet IP address is 203.70.212.52 and the HTTP port number is 1024.

Example using a Domain Name:

HTTP://mycamera.dyndns.tv:1024

Where the Domain name (using DDNS in this example) is mycamera.dyndns.tv and the HTTP port number is 1024.

4. When you connect, the following screen will be displayed.



5. Click *View Video*.
6. If the Administrator has restricted access to known users, you will then be prompted for a username and password.
Enter the name and password assigned to you by the Network Camera administrator.
7. The first time you connect to the camera, you will be prompted to install an ActiveX component (OCX or CAB file), as in the example below.
You must install this ActiveX component (OCX or CAB file) in order to view the Video stream in Internet Explorer.
Click the "Yes" button to install the ActiveX component.



8. Video will start playing automatically. There may be a delay of a few seconds while the video stream is buffered.

Viewing Live Video

After installing the ActiveX component, you will be able to view the live video stream in its own window, as shown below.



There are a number of options available on this screen, accessed by select list, button or icon. See the table below for details.

General Options

These options are always available, regardless of the type of camera you are connected to.



Resolution. Use this drop-down list to select the desired video size.



Zoom. A digital zoom feature is available. To zoom in on a section of the window, click this icon. Then use your mouse to select the section you want to magnify. Click the icon again to disable the zoom feature.



Snapshot. Click this to take a single JPEG "snapshot" image of the current video.



Flip. Click this to have the image swapped top-to-bottom.



Mirror. Click this to have the image swapped left-to-right.



Audio On. This icon is displayed if audio is On. Click on the icon to turn audio Off.



Volume. If audio is enabled, use this slider to adjust the volume.



Setup. Select the desired setup format from the drop-down list.

Chapter 4

Advanced Viewing Setup



This Chapter provides information about the optional settings and features for viewing video via the FCS-0010/WCS-0010 Network Camera. This Chapter is for the Camera Administrator only.

Introduction

This chapter describes some additional settings and options for viewing live Video:

- Adjusting the video image
- Controlling user access to the live video stream
- Making video available from the Internet
- Using the *Motion Detection* feature

Adjusting the Video Image

If necessary, the Network Camera Administrator can adjust the Video image.

To Adjust the Video Image:

1. Connect to the Web-based interface of the FCS-0010/WCS-0010 Network Camera. (See **Chapter 5 - Web-based Management** for details.)
2. Select *Administration*, then *Video Image*. You will see a screen like the example below.

3. Make the required adjustments, as explained below, and save your changes.

MPEG-4 Settings	
Resolution	Select the desired video resolution format. The default resolution is set to 320*240.
Video Quality Control	<ul style="list-style-type: none"> Constant Bit Rate: Select the desired bit rate. The default is set to 1.2 Mbps. Fixed Quality: Select the desired option. The default fix quality is set to Normal.
Max. Frame Rate	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.</p> <p>The default value for bandwidth is Unlimited, which allows you to specify the desired frame rate.</p>
MJPEG Settings	
Resolution	Select the desired video resolution format. The default resolution is set to 320*240.
Fixed Video Quality	Select the desired fix quality. The default fix quality is set to Normal.

Max. Frame Rate	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.</p> <p>The default value for bandwidth is Unlimited, which allows you to specify the desired frame rate.</p>
Mobil Settings	
Enable Mobil Streaming	Enable streaming video for the mobile device by checking this checkbox.
Resolution	The default resolution is set to 160x120.
Video Quality Control	<ul style="list-style-type: none"> Constant Bit Rate: Select the desired fix bit rate. Fixed Quality: Select the desired option. The default fix quality is set to Normal.
Max. Frame Rate	Select the desired Maximum bandwidth for the video stream.
Access Code	Enter the code for accessing the live video from camera through cell phone connection.
Video Adjustment	
Power Line Frequency	Select the power line frequency (50Hz or 60Hz) used in your region, to improve the picture quality under florescent lighting.
White Balance	Select the desired option to match the current environment and lighting.
Brightness	If necessary, you can adjust the brightness to obtain a better image. For example, if the camera is facing a bright light, the image may be too dark. In this case, you can increase the brightness.
Sharpness	Select the desired option for the sharpness. You can select a Sharpness value between -3 and 3.
Options	
Microphone	Enable microphone by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.
Speaker	Enable speaker by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.
Time Stamp	If enabled, the current time will be displayed on the Video image.
Text Display	Enable this setting if you want text to be displayed on the Video image, and enter the desired text - up to 20 characters. This feature is often used to identify each camera when multiple cameras are installed.

Controlling User Access to the Video Stream

By default, anyone can connect to the FCS-0010/WCS-0010 Network Camera and view live Video at any time.

If desired, you can limit access to scheduled times, and also restrict access to known users.

To Control User Access to Live Video:

1. Connect to the Web-based interface of the FCS-0010/WCS-0010 Network Camera. (See **Chapter 5 - Web-based Management** for details.)
2. Select *Administration*, then *Video Access*.
3. Set the desired options for **Access**.

Access

If the Video Access is disabled, users cannot connect using either their Web Browser or the Windows utility. However, viewing video is still possible by logging in as the Administrator.

User Access:	<input type="checkbox"/> Enable Security Checking
Video Access:	<input checked="" type="checkbox"/> Enable Scheduled Video Access

See **Chapter 5 - Web-based Management** for further details about using the *Video Access* and *User Database* screens.

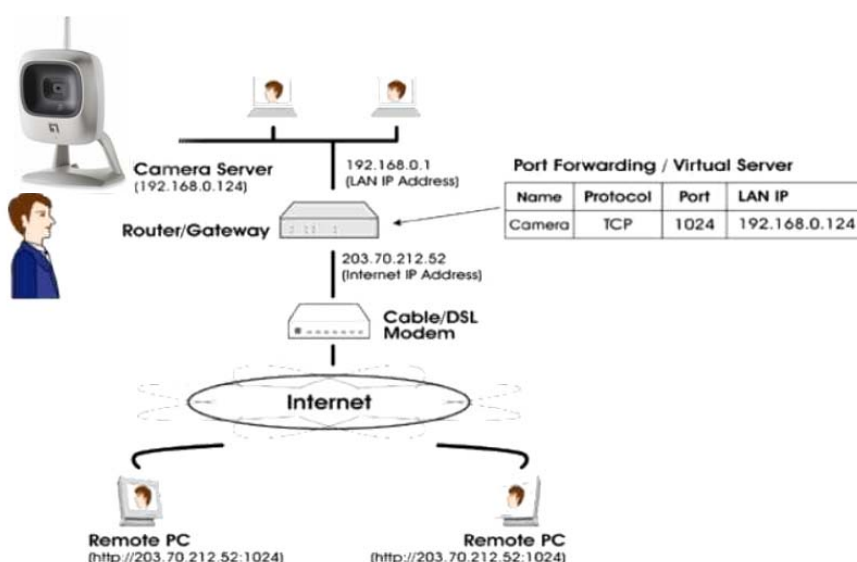
Making Video available from the Internet

If your LAN is connected to the Internet, typically by a Broadband Gateway/Router and Broadband modem, you can make the FCS-0010/WCS-0010 Network Camera available via the Internet. You will need to configure your Router or Gateway to allow connections from the Internet to the camera.

Router/Gateway Setup

Your Router or Gateway must be configured to pass incoming TCP (HTTP) connections (from Internet Viewers) to the FCS-0010/WCS-0010 Network Camera. The Router/Gateway uses the *Port Number* to determine which incoming connections are intended for the FCS-0010/WCS-0010 Network Camera.

This feature is normally called *Port Forwarding* or *Virtual Servers*, and is illustrated below. The Port Forwarding/Virtual Server entry tells the Router/Gateway that incoming TCP connections on port 1024 should be passed to the FCS-0010/WCS-0010 Network Camera. If necessary, check the user manual for your Router/Gateway for further details.



The "Port" for the *Port Forwarding / Virtual Server* entry above is the "Secondary Port" number specified on the *Network* screen of the Network Camera.

Network Camera Setup

The FCS-0010/WCS-0010 Network Camera configuration does NOT have be changed, unless:

- You wish to change the port number from the default value (1024).
- You wish to use the DDNS (Dynamic DNS) feature of the FCS-0010/WCS-0010 Network Camera.

HTTP Port Configuration

Normally, HTTP (Web) connections use port 80. Since the Network Camera uses HTTP, but port 80 is likely to be used by a Web Server, you can use a different port for the Network Camera. This port is called the *Secondary Port*.

The default *Secondary Port* is 1024. If you prefer to use a different port number, you can specify the port number on the Network Camera's **Network** screen, as shown below.

Secondary Port:	<input type="checkbox"/> Enable HTTP Secondary Port	<input type="text" value="1024"/> (1024-65535)
-----------------	---	--

See **Chapter 5 - Web-based Management** for further details on using the **Network** screen.



Viewers need to know this port number in order to connect and view live Video, so you must inform viewers of the correct port number.

DDNS (Dynamic DNS)

Many internet connections use a "Dynamic IP address", where the Internet IP address is allocated whenever the Internet connection is established.

This means that other Internet users don't know the IP address, so can't establish a connection.

DDNS is designed to solve this problem, by allowing users to connect to your LAN using a domain name, rather than an IP address.

To use DDNS:

1. Register for the DDNS service with a supported DDNS service provider. You can then apply for, and be allocated, a Domain Name.
2. Enter and save the correct DDNS settings on the **DDNS** screen of the Network Camera.

LevelOne WCS-0010 11g Wireless Network Camera

Home | View Video | Logout

Setup

☒ Enable DDNS

Service Provider: DynDNS.org Web Site

Domain (Host) Name: wcs0010.dyndns.org

Account/E-Mail: ddcwinson

Password/Key:

Check WAN IP Address: Every 10 mins

Starting at 12 Hour(s) 00 Minute(s)

Save Cancel Help

3. Operation is then automatic:

- The Network Camera will automatically contact the DDNS server whenever it detects that the Internet IP address has changed, and inform the DDNS server of the new IP address.
- Internet users can then connect to the camera using the Domain Name allocated by the DDNS service provider.

Viewing Live Video via the Internet

Clients (viewers) will also need a broadband connection; dial-up connections are NOT recommended.

Viewing Live Video Using your Web Browser

If using your Web browser, you need to know the Internet IP address (or the Domain name) of the camera's Router/Gateway, and the correct port number.

Enter the Internet address of the Router/Gateway, and its port number, in the *Address* (or *Location*) field of your Browser.

Example - IP address:

HTTP://203.70.212.52:1024

Where the Router/Gateway's Internet IP address is 203.70.212.52 and the "Secondary Port" number on the Network Camera is 1024.

Example - Domain Name:

HTTP://mycamera.dyndns.tv:1024

Where the Router/Gateway's Domain name is mycamera.dyndns.tv and the "Secondary Port" number on the Network Camera is 1024.

Motion Detection Alerts

The *Motion Detection* feature can generate an Alert when motion is detected.

The Network Camera will compare consecutive frames to detect changes caused by the movement of large objects.

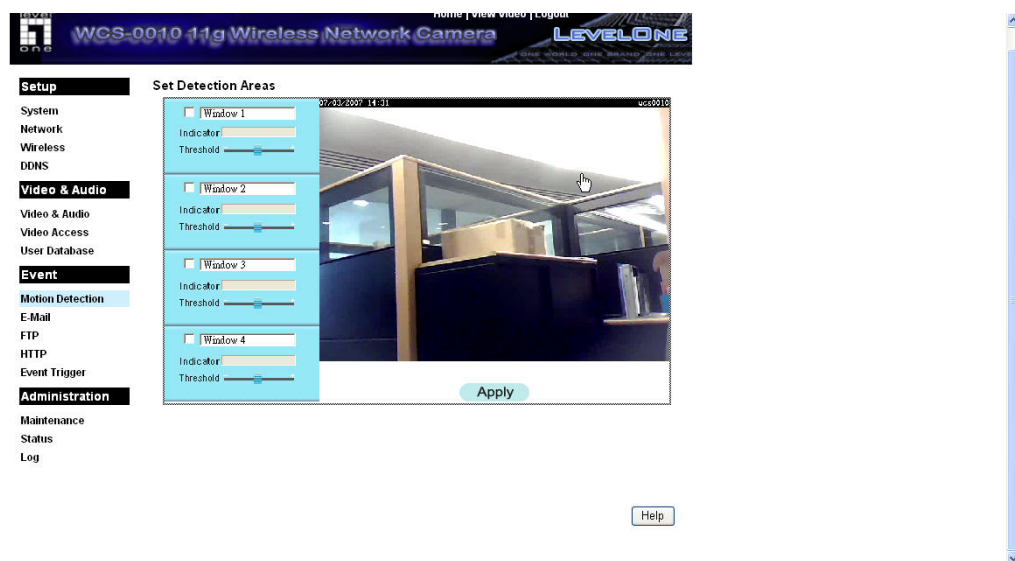
But the motion detector can also be triggered by:

- Sudden changes in the level of available light
- Movement of the camera itself.

Try to avoid these situations. The motion detection feature works best in locations where there is good steady illumination, and the camera is mounted securely. It cannot be used outdoors due to the sensitivity of the CMOS sensor.

To Use Motion Detection Alerts

Using the Web-based interface on the Network Camera, select the *Motion Detection* screen, then configure this screen as described below.



1. Enable the *Motion Detection* feature.
2. Set the area or areas of the video image to be examined for movement. You can define up to 4 areas, and set the motion threshold individually for each area.
3. If using a schedule, define the desired schedule in *Event Trigger* screen.
4. Save your changes.
5. Select the *E-Mail* screen to have alerts sent by E-mail:
 - Enable and enter at least one (1) E-mail address
 - Select or enter the desired options for *Video Attachment*, *Show "From" as* and *Subject* fields.
 - Enter details of the SMTP Server used to send the E-mail.



If the Motion Detection feature is enabled, but E-Mail is not enabled, then the only action when motion is detected is to log this event in the system log.

Chapter 5

Web-based Management



This Chapter provides Setup details of the Network Camera's Web-based Interface. This Chapter is for the Camera Administrator only.

Introduction

The Network Camera can be configured using your Web Browser. The Network Camera must have an IP address which is compatible with your PC.

The recommended method to ensure this is to use the supplied *Camera Wizard*, as described in **Chapter 2 - Basic Setup**.

Connecting to Network Camera

- If using your Web Browser, use the following procedure to establish a connection from your PC to the Network Camera:
- Once connected, you can add the Network Camera to your Browser's *Favorites* or *Bookmarks*.

Connecting using your Web Browser

1. Use the *Camera Wizard* utility to get the IP address of the Network Camera.
2. Start your WEB browser.
3. In the *Address* box, enter "HTTP://" and the IP Address of the Network Camera.
4. You will then be prompted for a username and password.
 - If using the default values, enter **administrator** for the name, and leave the password blank.
 - Otherwise, enter the *Administrator ID* and *Administrator Password* set on the **Maintenance** screen.

Welcome Screen

When you connect, the following screen will be displayed.



The menu options available from this screen are:

- **View Video** - View live Video using your Web Browser. See **Chapter 3 - Viewing Live Video** for details.
- **Administration** - Access the Administration menu.

Administration Menu

Clicking on **Administration** on the menu provides access to all the settings for the Network Camera.

The **Administration** menu contains the following options:

Setup

- System
- Network
- Wireless
- DDNS

Video Stream

- Video Image
- Video Access
- User Database

Event

- Motion Detection
- E-Mail
- FTP
- HTTP
- Event Trigger

Administration

- Maintenance
- Status
- Log

System Screen

After clicking *Administration* on the main menu, or selecting *System* on the *Administration* menu, you will see a screen like the example below.

Data - System Screen

System Settings	
Device ID	This displays the name for the Network Camera.
Description	This field is used for entering a description, such as the location of the Network Camera.
Date & Time	
Date Format	<p>Select the desired date format, it will also be used to display the date and time as an overlay on the video image.</p> <p>The abbreviations used to predefine the date formats are list as follows:</p> <ul style="list-style-type: none"> • YYYY-MM-DD = Year-Month-Day, e.g. 2006-01-31 • MM/DD/YYYY = Month/Day/Year, e.g. 01/31/2006 • DD/MM/YYYY = Day/Month/Year, e.g. 31/01/2006
Current Date & Time	<p>This displays the current date and time on the camera.</p> <p>If it's not correct, click the Change button to modify the date/time settings. This button will open a sub-screen where you have 2 options:</p> <ul style="list-style-type: none"> • Set the camera's date and time to match your PC. • Enter the correct date and time.
Time Zone	<p>Choose the Time Zone for your location from the drop-down list.</p> <p>If your location is currently using Daylight Saving, enable the Adjust for daylight saving checkbox.</p> <p>You must UNCHECK this checkbox when Daylight Saving finishes.</p>

Network Time Protocol	<p>Enable or disable the Time Server feature as required.</p> <p>If Enabled, the Network Camera will contact a Network Time Server at regular intervals and update its internal timer.</p>
NTP Server Address	<p>Enter the address for the desired NTP server.</p>
Update	<p>The Schedule determines how often the Network Camera contacts the NTP Server.</p> <p>Select the desired options.</p>
LED Operation	<p>Enable this if you want to use this function.</p>

Network Screen

This screen is displayed when the *Network* menu option is clicked.

Data - Network Screen

Network	
Obtain an IP Address Automatically	If selected, the Network Camera will obtain its IP address and related information from a DHCP Server. Only select this option if your LAN has a DHCP Server.
Use the following IP Address	<p>If selected, you must assign the following data to the Network Camera.</p> <ul style="list-style-type: none"> IP Address - Enter an unused IP address from the address range used on your LAN. Subnet Mask - Use the same value as PCs on your LAN. Default Gateway - Use the same value as PCs on your LAN.
Obtain DNS server address automatically	If selected, the Network Camera will use the DNS address or addresses provided by the DHCP server. This option is only available if the IP address setting is <i>Obtain an IP address Automatically</i> .
Use the following DNS server address	<p>Primary DNS server - Use the same value as PCs on your LAN. Normally, your ISP will provide this address.</p> <p>Secondary DNS server - This is optional. If entered, this DNS will be used if the Primary DNS does not respond.</p>

Secondary Port	<p>This sets the port number for HTTP (Web) connections to the Camera, whether for administration or viewing video.</p> <p>If enabled, you can connect using either port 80 or the Secondary port. You must enter the Secondary port number (between 1024 to 65535) in the field provided.</p> <p>Note that when using a port number which is not 80, you must specify the port number in the URL. For example, if the Camera's IP address was 192.168.1.100 and the Secondary port was 1024, you would specify the URL for the Camera as follows:</p> <p style="text-align: center;">http://192.168.1.100:1024</p>
RTP/RTSP	<p>The RTSP (Real Time Streaming Protocol), a standard for connected client(s) to control streaming data (MPEG-4) over the World Wide Web. Enter the RTSP Port number (between 1024 and 65535) in the field provided. The default RTSP Port is 554.</p> <p>The RTP (Real Time Transport Protocol), an Internet protocol for transmitting real-time data such as audio and video.</p> <p>Max RTP Data Packet field will let users limit the size of the file. Enter the desired value between 400 and 1400.</p>
Video Address	Enter the address of video.
Video Port	Enter the desired value (between 1024 to 65534) in the field provided. The number you entered must be even values.
Audio Address	Enter the address of the audio.
Audio Port	Enter the desired value (between 1024 to 65534) in the field provided. The number you entered must be even values.
Time to Live	Enter the desired length of time, if the packets fail to be delivered to their destination within. The Time to Live you entered must be in-between 1 to 255.
UPnP	
Enable Discovery	If enabled, the Network Camera will broadcast its availability through UPnP. UPnP compatible systems such as Windows XP will then be able to detect the presence of the Network Camera.
Enable Traversal	If enabled, HTTP connections can use secondary port instead of port 80 (the standard HTTP port) to access the camera.
QoS	
Enable QoS Mode	If enabled, the throughput level (for Video and Audio) is guaranteed through QoS (Quality of Service).

Wireless Screen (WCS-0010 Only)

This screen is displayed when the *Wireless* menu option is clicked.

Data - Wireless Screen

Wireless Network	
Network Type	<p>This determines the type of wireless communication used by the Network Camera.</p> <ul style="list-style-type: none"> If you have an Access Point, select <i>Infrastructure</i>. Otherwise, select <i>Ad-hoc</i>.
SSID	<p>This must match the value used by other devices on your wireless LAN.</p> <p>Note! The SSID is case sensitive.</p>
Domain	<p>Select your region from the drop-down list.</p>
Channel No.	<ul style="list-style-type: none"> In <i>Infrastructure</i> mode, this setting is ignored. The Network Camera will use the Channel set on the Access Point. For <i>Ad-hoc</i> mode, select the Channel you wish to use on your Network Camera. Other Wireless stations should use the same setting. If you experience interference (shown by lost connections and/or slow data transfers) you may need to experiment with different channels to see which one is the best.

Security	
Security System	<p>Select the desired option, and then enter the settings for the selected method:</p> <ul style="list-style-type: none"> • Disabled - No security is used. Anyone using the correct SSID can connect to your network. • WEP - The 802.11b standard. Data is encrypted before transmission, but the encryption system is not very strong. • WPA/WPA2-PSK Personal - Like WEP, data is encrypted before transmission. WPA is more secure than WEP, and should be used if possible. WPA Personal is the version of WPA which does NOT require a Radius Server on your LAN.
WEP	
Authentication Type	<p>Normally this can be left at the default value of "Automatic." If that fails, select the appropriate value - "Open System" or "Shared Key." Check your wireless card's documentation to see what method to use.</p> <p>Note: In <i>Infrastructure</i> mode, either setting will normally work, since most Access Points can use both methods.</p>
WEP Encryption	<p>Select the WEP Encryption level:</p> <ul style="list-style-type: none"> • 64-bit (sometimes called 40-bit) encryption • 128-bit encryption
Passphrase	<p>Enter a word or group of printable characters in the Passphrase box and click the "Generate Key" button to automatically configure the WEP Key(s). If encryption strength is set to 64-bit, then each of the four key fields will be populated with key values. If encryption strength is set to 128-bit, then only the selected WEP key field will be given a key value.</p>
WEP Keys	<ul style="list-style-type: none"> • Use the radio buttons to select the default key. • Enter the key value you wish to use. Other stations must have the same key values. • Keys must be entered in Hex. Hex characters are the digits (0 ~ 9) and the letters A ~ F. • Click <i>Clear Keys</i> to set the Keys to be blank.
WPA/WPA2-PSK Personal	
Shared Key	<p>Enter the key value. Data is encrypted using a key derived from the network key. Other Wireless Stations must use the same network key. The PSK must be from 8 to 63 characters in length.</p>

DDNS Screen

Many internet connections use a "Dynamic IP address", where the Internet IP address is allocated whenever the Internet connection is established.

This means that other Internet users don't know the IP address, so can't establish a connection.

DDNS is designed to solve this problem, as follows:

- You must register for the DDNS service with a DDNS service provider. The DDNS Service provider will allocate a Domain Name to you upon request.
- The DDNS settings on the **DDNS** screen above must be correct.
- The Network Camera will then contact the DDNS server whenever it detects that the Internet IP address has changed, and inform the DDNS server of the new IP address. (The *Check WAN IP Address* determines how often the Network Camera checks if the Internet IP address has changed.)

This system allows other internet users to connect to you using the Domain Name allocated by the DDNS service provider.

This screen is displayed when the *DDNS* menu option is clicked.

LevelOne WCS-0010 11g Wireless Network Camera

Home | View Video | Logout

Setup ☒ Enable DDNS

Service Provider: DynDNS.org Web Site

Domain (Host) Name: wcs0010.dyndns.org

Account/E-Mail: ddcwinson

Password/Key:

Check WAN IP Address: Every 10 mins

Starting at 12 Hour(s) 00 Minute(s)

Save Cancel Help

Data - DDNS Screen

DDNS	
Enable DDNS	Enable or disable the DDNS function, as required. Only enable this feature if you have registered for the DDNS Service with a DDNS Server provider.
Service Provider	Choose a service provider from the list.
Web Site Button	Click this button to open a new window and connect to the Web site for the selected DDNS service provider.
Domain (Host) Name	Enter the Domain Name (Host Name) allocated to you by the DDNS Server provider.
Account/E-Mail	Enter the login name for the DDNS account.
Password/Key	Enter the password for the DDNS account.

Check WAN IP Address	<p>Set the schedule for checking if the Internet IP address has changed. If the IP address has changed, the DDNS Server will be notified.</p> <p>NOTE: If the DDNS Service provided some software to perform this IP address update or notification, you should NOT use this software. The update is performed by the camera.</p>
-----------------------------	---

Video Image Screen

This screen is displayed when the *Video Image* menu option is clicked.

The screenshot shows the 'Video Image' configuration screen for a LevelOne WCS-0010 41g Wireless Network Camera. The interface includes a sidebar menu with various settings categories. The main content area is organized into several sections:

- MPEG-4 Settings:** Includes Resolution (640*480), Video Quality Control (Constant Bit Rate or Fixed Quality), and Max Frame Rate (30 fps).
- MJPEG Settings:** Includes Resolution (320*240), Fixed Video Quality (Normal), and Max Frame Rate (30 fps).
- Mobile Settings:** Includes a checkbox for 'Enable Mobile Streaming', Resolution (160*120), Video Quality Control (Constant Bit Rate or Fixed Quality), and Max Frame Rate (15 fps).
- Video Adjustments:** Includes Power Line Frequency (60Hz), White Balance (Auto), Brightness (Normal), and Sharpness (Normal).
- Options:** Includes checkboxes for 'Enable Microphone', 'Enable Time Stamp', and 'Enable Text Display', along with an 'Access Code' field.

At the bottom of the settings area are buttons for 'Save', 'Cancel', and 'Help'.

Data - Video Image Screen

MPEG-4 Settings	
Resolution	Select the desired video resolution format. The default resolution is set to 320*240.
Video Quality Control	<ul style="list-style-type: none"> Constant Bit Rate: Select the desired bit rate. The default is set to 1.2 Mbps. Fixed Quality: Select the desired option. The default fix quality is set to Normal.
Max. Frame Rate	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.</p> <p>The default value for bandwidth is Unlimited, which allows you to specify the desired frame rate.</p>
MJPEG Settings	
Resolution	Select the desired video resolution format. The default resolution is set to 320*240.
Fixed Video Quality	Select the desired fix quality. The default fix quality is set to Normal.

Max. Frame Rate	<p>Select the desired Maximum bandwidth for the video stream. Note that you can specify EITHER the Bandwidth OR the Frame Rate, not both. If the Bandwidth is defined, the frame rate will be adjusted as necessary to achieve the specified frame rate.</p> <p>The default values for bandwidth is Unlimited, which allows you to specify the desired frame rate.</p>
Mobil Settings	
Enable Mobil Streaming	Enable streaming video for the mobile device by checking this checkbox.
Resolution	The default resolution is set to 160x120.
Video Quality Control	<ul style="list-style-type: none"> • Constant Bit Rate: Select the desired fix bit rate. • Fixed Quality: Select the desired option. The default fix quality is set to Normal.
Max. Frame Rate	Select the desired Maximum bandwidth for the video stream.
Access Code	Enter the code for accessing the live video from camera through cell phone connection.
Video Adjustment	
Power Line Frequency	Select the power line frequency (50Hz or 60Hz) used in your region, to improve the picture quality under florescent lighting.
White Balance	Select the desired option to match the current environment and lighting.
Brightness	If necessary, you can adjust the brightness to obtain a better image. For example, if the camera is facing a bright light, the image may be too dark. In this case, you can increase the brightness.
Sharpness	Select the desired option for the sharpness. You can select a Sharpness value between -3 and 3.
Options	
Microphone	Enable audio by checking this checkbox. Using Audio will increase the bandwidth requirements slightly.
Time Stamp	If enabled, the current time will be displayed on the Video image.
Text Display	Enable this setting if you want text to be displayed on the Video image, and enter the desired text - up to 20 characters. This feature is often used to identify each camera when multiple cameras are installed.

Video Access Screen

This screen is displayed when the *Video Access* option on the *Administration* menu is clicked.

The screenshot shows the 'Video Access' configuration page. On the left is a sidebar menu with categories: Setup, System, Network, Wireless, DDNS, Video & Audio, Event, and Administration. The 'Administration' category is selected, and 'Video Access' is the active sub-menu. The main content area is divided into two sections: 'User Access' and 'Video Access'. Under 'User Access', there are checkboxes for 'Enable Security Checking' and 'Enable Scheduled Video Access'. Below these is an 'Access Schedule' table, which is currently empty. A 'Delete' button is located below the table. The 'Add New Schedule' section contains a 'Day' dropdown menu (set to 'Every day'), 'Start Time' and 'End Time' fields (each with hour and minute dropdowns), and 'Add' and 'Clear' buttons. At the bottom of the page are 'Save', 'Cancel', and 'Help' buttons.

Data - Video Access Screen

User Access	
Enable Security Checking	<ul style="list-style-type: none"> If disabled - No login required, users do not have to provide a username and password when they connect to the camera to view video. If enabled - Require login, users will be prompted for a username and password when they connect to the camera to view video. The camera administrator must use the "User Database" menu option to create the desired users.
Video Access	
Enable Scheduled Video Access	<ul style="list-style-type: none"> If enabled - Camera is available during the scheduled periods, and unavailable at other times. If this option is selected, you need to define a schedule. If no schedule is defined, this option is always disabled. If disabled – The option will remain disabled until you enable it. <p>Note that regardless of which setting is chosen, the Administrator can ALWAYS access the camera and view live video.</p>
Access Schedule	
Scheduled Periods	This displays all periods you have entered into the database. If you have not entered any periods, this list will be empty.
Delete	Use the Delete button to delete the selected item in the list.
Add Period	
Day	Choose the desired option for the period.

Start Time	Enter the start time using a 24 hr clock.
End Time	Enter the end time using a 24 hr clock.
Add	Click this button to add a new period.

User Database Screen

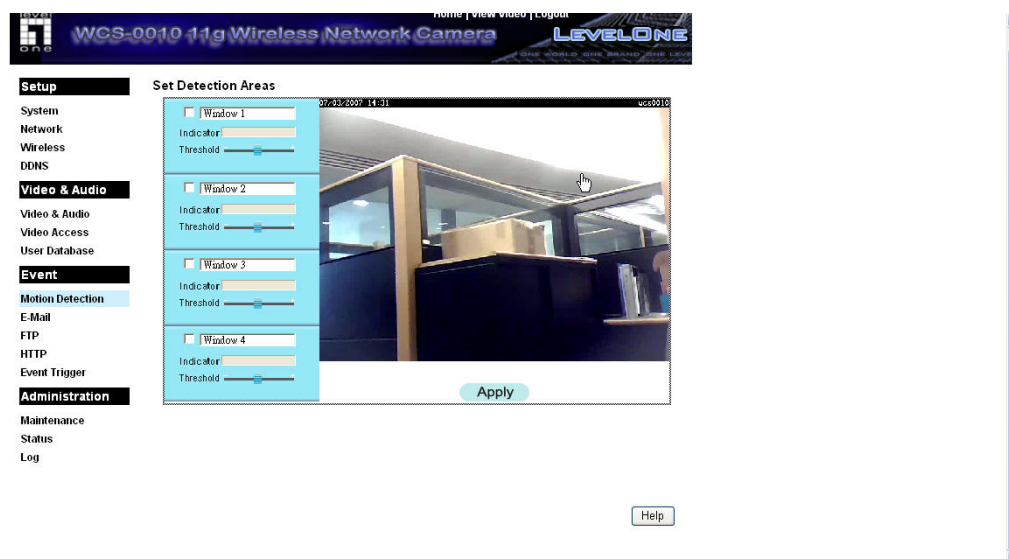
This screen is displayed when the *User Database* option on the *Administration* menu is clicked.

Data - User Database Screen

Existing Users	
User List	This displays all users you have entered into the User database. If you have not entered any users, this list will be empty.
Edit, Delete, Delete All	Use these buttons to manage the user database.
User Properties	
User Name	Enter the name for the user here. <ul style="list-style-type: none"> Spaces, punctuation, and special characters must NOT be used in the name. The name is case insensitive (case is ignored), so you can not have 2 names which differ only by case.
User Password	The password for this user.
Confirm Password	Re-enter the password for the user, to ensure it is correct.
Add Button	Click this button to add a new user, using the data shown on screen.
Clear Button	Use this button to clear the input fields, ready to add a new user.

Motion Detection Screen

This screen is displayed when the *Motion Detection* option on the *Event* menu is clicked.



Data - Motion Detection Screen

Motion Detection	
Set Detection Areas	<p>You can set the full screen or areas of the video image to be examined.</p> <p>Note: Motion detection can be triggered by rapid changes in lighting condition, as well as by moving objects. For this reason, it should only be used indoors.</p>
Threshold	<p>Adjust the threshold of detection for each area.</p>

E-Mail Screen

This screen is displayed when the *E-Mail* option on the *Event* menu is clicked.

Data - E-Mail Screen

Primary/Secondary SMTP Server	
SMTP Server Address	Enter the address of the SMTP (Simple Mail Transport Protocol) Server to be used to send E-Mail.
Authentication	Select the desired Authentication type for the SMTP Server.
SMTP Login name	Enter your login name for the SMTP Server.
SMTP Password	Enter your password for the SMTP Server.
POP server name	Enter the name for the POP Server.
Secondary SMTP	Check the box to upload to the Secondary SMTP if the camera can not connect to the primary SMTP.
E-Mail Setup	
E-mail Address	Enter at least one (1) E-Mail address; the 2nd and 3rd addresses are optional. The E-Mail alert will be sent to the E-Mail address or addresses specified here.
Subject	Enter the desired text to be shown as the "Subject" for the E-Mail when it is received. Subject can not exceed 48 alphanumeric characters.
Show "From" as	Enter the E-Mail address to be shown in the "From" field when the E-Mail is received.

FTP Screen

This screen is displayed when the *FTP* option on the *Event* menu is clicked.

The screenshot shows the LevelOne WCS-0010 11g Wireless Network Camera configuration interface. The top bar includes 'Home | View Video | Logout' and the LevelOne logo. The left sidebar lists menu items: Setup, System, Network, Wireless, DDNS, Video & Audio, Video Access, User Database, Event, Motion Detection, E-Mail, FTP (highlighted), HTTP, Event Trigger, Administration, Maintenance, Status, and Log. The main content area is titled 'Primary FTP' and contains fields for 'FTP Server', 'Port' (set to 21), 'Login Name', 'Password', and 'File Path Name'. There is an unchecked checkbox for 'Enable Passive Mode'. Below this is the 'Secondary FTP' section, which includes a checkbox for 'Secondary FTP (enable this if the camera can not connect to the primary FTP)', and similar fields for 'FTP Server', 'Port' (set to 21), 'Login Name', 'Password', and 'File Path Name'. At the bottom, there are 'Save', 'Cancel', and 'Help' buttons.

Data - FTP Screen

Primary/Secondary FTP	
FTP Server	Enter the address of the FTP Server.
Port	Enter the Port of the FTP Server to be connected.
Login name	Enter your login name for the FTP Server.
Password	Enter your password for the FTP Server.
Enable Passive Mode	Check the box to enable the Passive mode feature of the FTP.
File Path Name	Enter the file path/name of the FTP.
Secondary FTP	Check the box to upload to the Secondary FTP if the camera can not connect to the primary FTP.

HTTP Screen

This screen is displayed when the *HTTP* option on the *Event* menu is clicked.

LevelOne WCS-0010 11g Wireless Network Camera LEVELONE

Home | View Video | Logout

Setup HTTP Notification ☒ Enable

System URL:

Network Proxy Server Name: (optional)

Wireless Port Number:

DDNS Method:

Video & Audio

Video & Audio

Video Access

User Database

Event

Motion Detection

E-Mail

FTP

HTTP

Event Trigger

Administration

Maintenance

Status

Log

Save Cancel Help

Data - HTTP Screen

HTTP Notification	
Enable	Enable this checkbox to use the HTTP Notification.
URL	Enter the URL of your HTTP notification server.
Proxy Server Name	Specify the proxy server name in the provided field if the camera needs to pass through a Proxy Server to do the HTTP notification.
Port Number	Enter the port number for the proxy server.
Method	Select the desired method of form data encoding. <ul style="list-style-type: none">Get - It should be used if and only if the form processing is independent, which typically means a pure query form. Generally it is advisable to do so.Post - If there are problems related to long URLs and non-ASCII character repertoires, which can make it necessary to use "POST" even for independent processing.

Event Trigger Screen

This screen is displayed when the *Event Trigger* option on the *Event* menu is clicked.

Data - Event Trigger Screen

Event Schedule	
Schedule List	<p>The Event Schedule shows all of the event types currently configured in the Network Camera, along with various information about their configuration, as listed below:</p> <ul style="list-style-type: none"> • Name - the descriptive event name set by the user. • Effective Time Frame - shows when the event at a set time will be triggered. • Trigger by - shows what kind trigger activate the event. • Action - shows what kind of the actions will be issued when the event been triggered
New Schedule	
Effective Time Frame	Choose the desired option for the period.
Start Time	Choose the desired start time using a 24 hr clock.
End Time	Choose the desired end time using a 24 hr clock.
Trigger Event	
Motion Detection	If enabled, movement in a motion detection window can be used to trigger events.
Interval	Select the desired option for the events interval. (* "0" = No Delay)

Actions	<ul style="list-style-type: none"> • E-Mail - If checked, an E-Mail (with "Attachment") will be delivered to the SMTP server. (SMTP Server must be configured on the E-Mail page.) • FTP - If checked, an FTP upload will be activated to the FTP server. (FTP servers must be configured on the FTP page.) • HTTP - If checked, an Instant Messaging (IM) will be delivered to the Jabber server. (Jabber server must be configured on the Instant Messaging page.)
Attachment Type	<ul style="list-style-type: none"> • JPEG Image: Frame Rate - Select the desired capture rate for the JPEG image(s) here. Pre/Post Capture - Select the desired length. The snapshot(s) of the JPEG image depends on this setting, and also the file size and degree of compression. • Video: Video Format - Select the desired type for the video file. Pre/Post Capture - Select the desired length. The size of the file depends on this setting, and also the Video size and degree of compression.

Maintenance Screen

levelOne WCS-0010 11g Wireless Network Camera LEVELONE

Home | View Video | Logout

Setup

System
Network
Wireless
DDNS
Video & Audio
Video & Audio
Video Access
User Database
Event
Motion Detection
E-Mail
FTP
HTTP
Event Trigger
Administration
Maintenance
Status
Log

Administrator Login

Administrator ID:

Administrator Password:

Verify Password:

Firmware Upgrade

Upgrade File:

Backup & Restore

Backup Configuration File:

Restore Configuration File:

Restore Factory Defaults:

Restart Camera:

Data - Maintenance Screen

Administrator Login	
Administrator ID	Enter the name for the Administrator here. Spaces, punctuation, and special characters must NOT be used in the name.
Administrator Password	The password for the Administrator.
Verify Password	Re-enter the password for the Administrator, to ensure it is correct.
Firmware Upgrade	
Upgrade File	Click the "Browse" button and browse to the location on your PC where you stored the Firmware file. Select this file.
Start	Click this button to start the Firmware. When the upgrade is finished, the Network Camera will restart, and this management connection will be unavailable during the restart.
Clear File Name	This does NOT stop the Upgrade process if it has started. It only clears the input for the "Upgrade File" field.
Backup & Restore	
Backup Configuration File	Click <i>Backup</i> button to save the current configuration information to a text file.
Restore Configuration File	Click <i>Restore</i> button to reinitialize the camera to load the new updated software. Do this after loading the upgrade file.

Clear File Name	This does NOT stop the Restore process if it has started. It only clears the input for the "Restore Configuration File" field.
Restore Factory Defaults	Click <i>Defaults</i> button to reloads all default settings on the camera.
Restart Camera	Click <i>Restart</i> button to restarts the camera.

Status Screen

levelONE WCS-0010 11g Wireless Network Camera LEVELONE

Home | View Video | Logout

Setup

System

Device Name: DDC000011

Description: descriptiontext

F/W version: V1.0.01

Network

MAC Address: 00:c0:02:00:00:11

IP Address: 192.168.50.145

Network Mask: 255.255.255.0

Gateway: 192.168.50.1

Wireless

WCS PIN Code: 00000178

Network Type: Infrastructure

SSID: ANY

Channel: N/A

Security: Disabled

Signal Strength: N/A

MPEG-4

Resolution: 640*480

Video Quality: Normal

Frame Rate: 30

MJPEG

Resolution: 320*240

Video Quality: Normal

Frame Rate: 30

[Help](#) [Refresh](#)

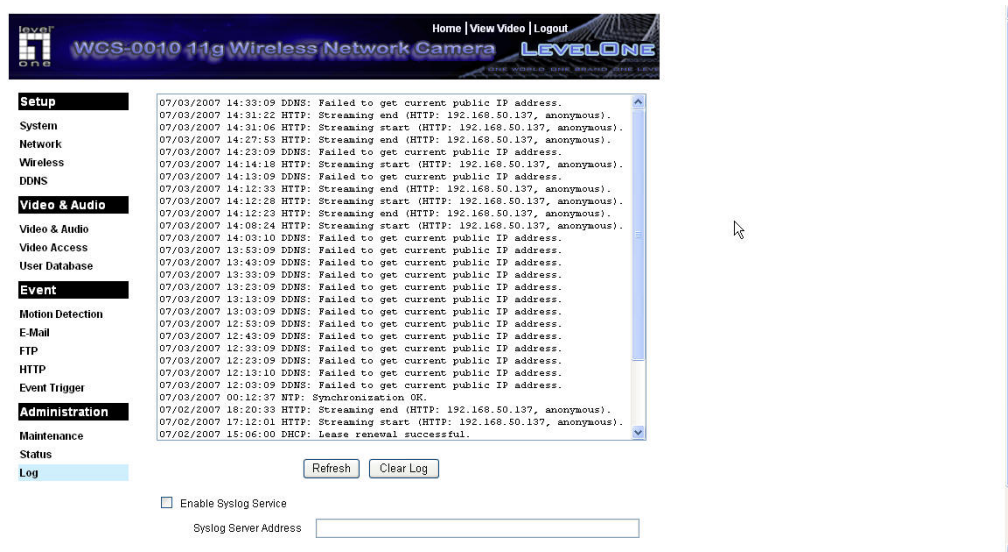
Data - Status Screen

System	
Device Name	This shows the name of the Network Camera.
Description	This shows the description of the Network Camera, such as location.
F/W version	The version of the current firmware installed.
Network	
MAC Address	The current IP address of the Network Camera.
IP Address	The IP Address of the Network Camera.
Network Mask	The network mask associated with the IP address above.
Gateway	The IP Address of the remote Gateway associated with the IP Address above.
Wireless	
Network Type	This shows the Network Type currently in use (Ad-hoc or Infrastructure).
SSID	This displays the wireless SSID.
Channel	This shows the wireless channel currently used.
Security	The current security setting for Wireless connections.
Signal Strength	This shows the strength of the signal.

MPEG-4/MJPEG	
Resolution	The image size of the video stream.
Video Quality	This displays the image quality of the video stream.
Frame Rate	This displays the frame rate of the video stream.
Buttons	
Refresh	Update the log and any other data on screen.

Log Screen

This screen displays a log of system activity.



Data - Log Screen

Log	
System Log	This is a log of system activity.
Enable Syslog Service	Check the box to enable the System Log Server feature.
Syslog Server Address	Enter the address of the Syslog Server.
Refresh Button	Click this to update the data shown on screen.
Clear Log	Click this button to restart the log.

Chapter 6

Troubleshooting



This chapter covers the most likely problems and their solutions.

Overview

This chapter covers some common problems that may be encountered while using the Network Camera and some possible solutions to them. If you follow the suggested steps and the Network Camera still does not function properly, contact your dealer for further advice.

Problems

Problem 1: I can't connect to the Network Camera with my Web Browser to configure it.

Solution 1: It is possible that your PC's IP address is not compatible with the IP address of the Network Camera.
Use the Camera Wizard utility to configure the Network Camera with a valid IP address.

Problem 2: The Camera Wizard utility doesn't list any Network Cameras.

Solution 2: Check the following:

- The Network Camera is installed, LAN connections are OK, it is powered ON and startup is complete.
- Ensure that your PC and the Network Camera are on the same network segment. (If you don't have a router, this must be the case.)
- Ensure that your PC has the TCP/IP network protocol loaded. In Windows, this is done by using *Control Panel-Network*.
 - If an entry for TCP/IP -> Network card is not listed, use *Add - Protocol - Microsoft - TCP/IP* to add it.
 - You then need to select the new entry (TCP/IP -> Network card), click *Properties*, and configure the *IP Address* tab.
 - If your LAN has a DHCP Server, you can select "Obtain an IP Address automatically". Otherwise, you must select "Specify an IP Address", and enter values for *IP Address*, *Subnet Mask*, and *Gateway*. All devices on your LAN must use compatible values. Remember that each device needs a **unique** IP Address, and the **same** Subnet Mask.

Problem 3 When I try to connect to the Network Camera, I get prompted for a user name and password.

Solution 3 You SHOULD be prompted for a user name and password if trying to access the *Administration* menu.
Enter the *Administrator ID* and *Password* set on the *Maintenance* screen.

If you are just trying to view Video, the User Name/Password prompt indicates that the Administrator has restricted access to specified users. Ask the Administrator for your User Name and Password.

Problem 4 **I can't connect to the Network Camera using a Wireless connection.**

Solution 4 1) If a LAN cable is connected to the LAN port, the Wireless interface is disabled. Only one interface can be active.
2) Check that your PC and the Network Camera have compatible Wireless settings.

- Mode (Infrastructure or Ad-hoc) must be correct.
- ESSID must match.
- WEP settings must match.
- In Ad-hoc mode, the Channel should match, although this is often not required.

Problem 5 **Video quality may suddenly deteriorate.**

Solution 5 This can happen when an additional viewer connects to the Network Camera, overloading the camera or the available bandwidth. The image size and quality can be adjusted to cater for the required number of viewers and the available bandwidth.

Problem 6 **The motion detection feature doesn't send me any E-Mails.**

Solution 6 It may be that the SMTP (Simple Mail Transport Protocol) server used by the camera to send the E-Mail will not accept mail. (This is to prevent spam being sent from the server.). Try using a different SMTP server, or contact your ISP to see if SMTP access is being blocked.

Problem 7 **Using the motion detection feature, I receive E-Mails which don't show any moving objects.**

Solution 7 The motion detection feature doesn't actually detect motion. It compares frames to see if they are different. Major differences between frames are assumed to be caused by moving objects.

But the motion detector can also be triggered by:

- Sudden changes in the level of available light
- Movement of the camera itself.

Try to avoid these situations. The motion detection feature works best in locations where there is good steady illumination, and the camera is mounted securely. This feature can NOT be used if the camera is outdoors.

Problem 8 **The image is blurry.**

Solution 8 Try cleaning the lens, or adjusting the *Video Quality Control* setting on the **Video Image** screen. Video created with the lower settings will contain less detail; this is the trade-off for using less bandwidth.

Appendix A

Specifications



Network Camera

Model	Network Camera
Dimensions	114.3mm (W) * 141.6mm (H) * 41.4mm (D)
Operating Temperature	0° C to 40° C
Storage Temperature	-20° C to 70° C
Network Protocols:	TCP/IP, DHCP, SMTP, NTP, HTTP, FTP, NTP, RTP, RTSP, UPnP (Discovery only)
Network Interface:	1 Ethernet 10/100BaseT (RJ45) LAN connection
Wireless interface (WCS-0010 Only)	IEEE 802.11b/802.11g compatible, Infrastructure/Ad-hoc mode, WEP/WPA/WPA2-PSK security support, roaming support
LEDs	3
Power Adapter	5V DC External

Regulatory Approvals

CE Approvals

The Network Camera and the Ethernet Network Camera meet the guidelines of the European Union and comply with the 99/5/EEC and RTTE 99/5EG directives, including the following standards:

- EN60950
- EN300 328-2
- EN301 489-1
- EN301 489-17

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Copyright Notice

Many software components are covered by the GNU GPL (General Public License). Some are covered by other Licenses as listed in the table below.

Details of each applicable license are contained in the following section.

No Warranty

THIS SOFTWARE IS PROVIDED BY THE AUTHOR AND CONTRIBUTORS ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Network Camera copyright information

Package source codes	License
bootloader	GPL
arm-linux 2.6.5	GPL
arm-linux-gcc 3.4.1 library	LGPL
DM9000 lan driver	GPL
Busy-box	GPL
boa-0.94.13a	GPL
ez-ipupdate	GPL
dhcpcd-1.3.22	GPL
boa-0.94-13e11	GPL
WPA_suplicant	GPL
cron	Public domain (BSD & Lineo http://www.lineo.com/)
ntp-4.1.71	Public domain (http://www.ntp.org/)
libupnp-1.2.1	Intel (http://upnp.sourceforge.net/)

ntp-4.1.71 license

Copyright (c) David L. Mills 1992-2001

Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appears in all copies and that both the copyright notice and this permission notice appear in supporting documentation, and that the name University of Delaware not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. The University of Delaware makes no representations about the suitability this software for any purpose. It is provided "as is" without express or implied warranty.

Libupnp-1.2.1 License

Copyright (c) 2000 Intel Corporation. All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. Neither name of Intel Corporation nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL INTEL OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

cron license

Copyright (c) 1989 The Regents of the University of California. All rights reserved.

This code is derived from software contributed to Berkeley by Paul Vixie.

Redistribution and use in source and binary forms are permitted provided that the above copyright notice and this paragraph are duplicated in all such forms and that any documentation, advertising materials, and other materials related to such distribution and use acknowledge that the software was developed by the University of California, Berkeley. The name of the University may not be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

GNU General Public License

GNU GENERAL PUBLIC LICENSE

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc.

51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Library General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

GNU GENERAL PUBLIC LICENSE

Terms And Conditions For Copying, Distribution And Modification

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a

"work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.

c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:

a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,

c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.

6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program

at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Lesser GNU General Public License

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

Copyright (C) 1991, 1999 Free Software Foundation, Inc.

51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

GNU LESSER GENERAL PUBLIC LICENSE

TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

0. This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it

may be distributed under the terms of this Lesser General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered

independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a

derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties with this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Lesser General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

NO WARRANTY

15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

This product incorporates open source code into the software and therefore falls under the guidelines governed by the General Public License (GPL) agreement.

Adhering to the GPL requirements, the open source code and open source license for the source code are available for free download at <http://global.level1.com>.

If you would like a copy of the GPL or other open source code in this software on a physical CD medium, LevelOne (Digital Data Communications) offers to mail this CD to you upon request, for a price of US\$9.99 plus the cost of shipping.



Appendix B

Streaming Video/Audio

Solution



Overview

Streaming video is a sequence of "moving images" that are sent in compressed form over the Internet and displayed by the viewer as they arrive. With streaming, a Web user does not have to wait to download a large file before seeing the video or hearing the sound. Instead, the media is sent in a continuous stream and is played as it arrives.

Streaming Video/Audio through Internet Camera

To snapshot a JPEG image from the Internet Camera with specified resolution and quality:

[http://<ip>/img/snapshot.cgi?\[size=<value>\]&quality=<value>\]](http://<ip>/img/snapshot.cgi?[size=<value>]&quality=<value>])

Size = 1(160*128)

2(320*240)

3(640*480)

Quality = 5(Very low)

4(Low)

3(Normal)

2(High)

1(Very high)

To stream M-JPEG video from the Internet Camera (M-JPEG mode only)

<http://<ip>/img/mjpeg.cgi> or http://<ip>/img/main_mjpeg.htm

To stream video through the RTP/RTSP protocol from Internet Camera (MPEG-4 mode only)

<rtsp://<ip>/img/media.sav>

Note: Users need to specify the desired protocol in the players.

To snapshot a JPEG image (160*128, very low quality) through a mobile phone:

<http://<ip>/img/mobile.cgi>