



Medusa

Version 3.0

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Chapter 1

System Overview

The Medusa system is a multi-camera web cam system that broadcasts images from a single PC to any HTTP compatible web server. The system can operate over the Internet, or in some cases, a corporate intranet. These images can be viewed using any standard HTTP browser that can connect to the web server. The Medusa system consists of the following components:

- **Video Capture Card(s):** The Medusa 6C Video Capture is a PCI card that accepts video input from 1-6 cameras. A single PC can install up to 4 capture cards, enabling it to accept video from 24 video cameras. Each video capture card requires a single PCI slot on the computer motherboard.
- **Web-casting software:** The Medusa Webcaster is the application that broadcasts images to a web-server. The software must be installed on the same system that has the video capture cards installed.
- **Web-server Scripts:** A collection of Perl CGI or VBScript ASP scripts used to receive the broadcasted images and save them to a directory on the web-server. The saved images can be displayed directly (if saved in a publicly viewable directory) or indirectly through a CGI script. We have also provided several scripts to display the images and prevent browser caching.

General Information and Additional Requirements

To setup the Medusa Web Cam system, you need several essential items in addition to the software and hardware provided:

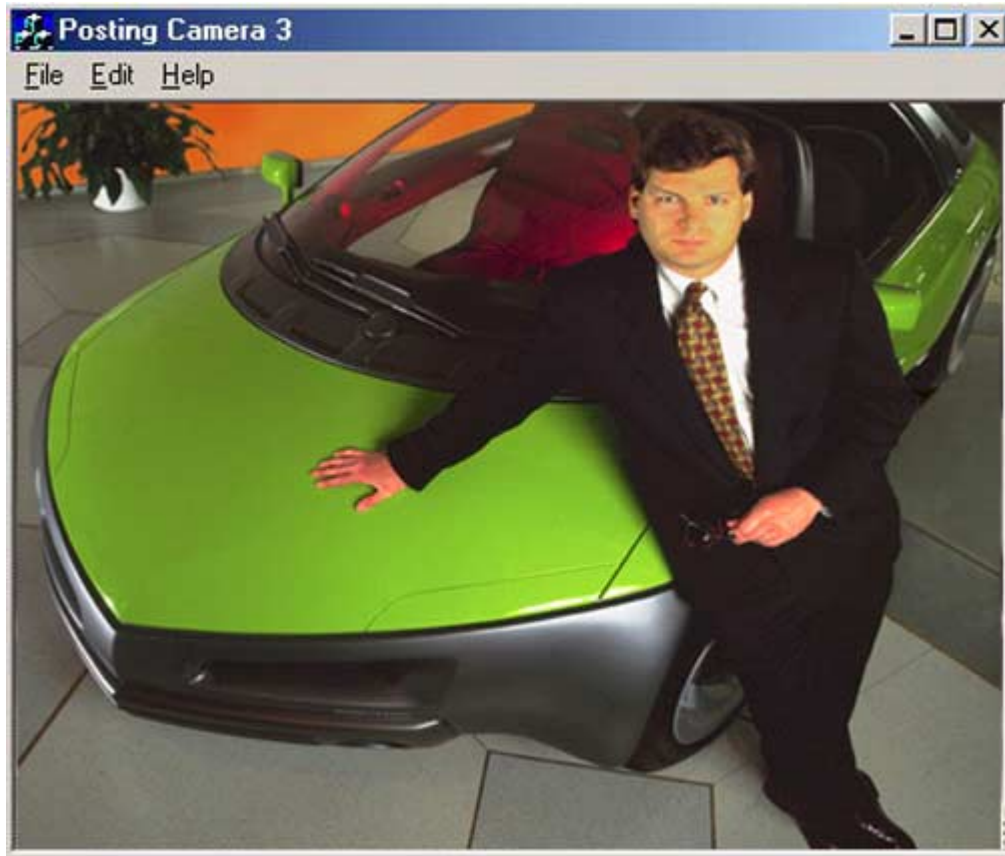
- The PC with the video capture cards must have a connection to the Internet. This connection may be through a dial-up ISP, or a dedicated Internet/Intranet connection (ISDN, Cable Modem/DSL, LAN).
- A video card capable of display 640x480 or higher resolutions in 16-bit, 24-bit, or 32-bit color.
- The network server where you store the images must be capable of hosting an HTTP website and allow you to utilize Perl CGI v5.0 (Unix) or ASP (Windows NT) scripting. The HTTP server must also have permission to read and write the directory where the images will be stored. Please contact your web-hosting provider to ensure that your account has the correct access and privileges to run the scripts.

For most users, purchasing a dial up account for dedicated use by the Medusa system provides all of the above items. If you purchase an account with a vendor who does not allow websites, or CGI script use, it is possible to find hosting free or inexpensively on the Internet. Either a Unix-based or NT-based web-host will work with our script software.

The Medusa software encodes your images into a JPG format to reduce size before transmission. Even with this size reduction, binary image files can be quite large. The encoding process also takes a small amount of time. If you want to send images at higher refresh rates, (1 image every 3 seconds or faster), we recommend limiting the size of your posted images to 320x240 pixels or smaller for best results at dial-up, Internet transmission rates.

An image size of 640x480 is standard when transmitting images over cable modem or DSL connections. A 640x480 image should update in 4 seconds over these types of connections; however, transmission rates will vary due to LAN activity. For more information, see section 3, setting up the software.

Image 1-A: Screen shot of the Medusa PC software



Chapter 2

Hardware Installation

Installing the Medusa 6C Video Capture Board

Step 1 - Set the Medusa 6C Video Capture Card jumper switches (only if necessary)

There are jumpers on the various Medusa boards that may need to be changed from the factory default setting, depending on your particular situation. Most of the time, you will not need to make any changes. Changes from the factory default settings are only needed for special features. Always try the default settings first. More information on jumper settings can be found in Appendix B.

Step 2 - Power off your computer and peripherals

Step 3 - Disconnect the monitor and other peripherals from the computer. Remove anything connected to your computer that might inhibit you from removing the cover.

Step 4 - Ground yourself to remove static electricity before touching your board or any components inside your computer.

Before opening your computer and installing your Medusa 6C Video Capture Card, ground yourself by touching a grounded surface or by putting on a grounding strap. You can also ground yourself by touching any unpainted metal surface on your computer before you remove its power cord. Once you have grounded yourself make sure that you don't walk around without grounding yourself again. While you perform this installation, you should periodically ground yourself to ensure that you remain static free.

Step 5 - Unplug the computer from the power source. This will ensure that no power is available within the computer while you are installing your Medusa Video Capture card.

Step 6 - Carefully remove the computer's cover. If necessary, consult your computer system manual for instructions.

Step 7 - For New Computers without an existing video card:.

- Select an empty expansion slot.
- Remove the slot cover screw and the cover. Grasp the card by the top edge and carefully seat it firmly into the slot using a slight rocking motion. Fasten the retaining bracket to the chassis with the slot cover screw.

Step 8 - Reinstall the cover

Step 9 - Attach and activate power to your cameras

Step 10 - Power up the monitor and computer

Chapter 3

Driver Installation

The Medusa system uses proprietary web-casting software in conjunction with drivers designed for use with the Medusa 6C Video Capture Card.

QUICK STARTS

Quick Start for Windows 95/98, Windows NT 4.0

Step 1 - After installing the Medusa 6C Capture Card, power on the PC.

Step 2-The operating system should automatically detect a new card, and prompt you for the driver.
Hit Cancel.

Step 3- Install the Medusa Installation CD and run the Setup.exe file found in the /Drivers directory of the CD. Follow the on-screen instructions for driver installation.

Step 4- Reboot the PC.

Step 5- Your operating system should automatically detect the new card, and prompt you to use the FlashBus drivers. Proceed with installation using default settings and click finish.

Note: If you are not prompted to select the driver after reboot, check to see if the cards were detected by checking Hardware Profiles under the System option. The cards can either be found under "OTHER DEVICES" if the driver was not installed, or under Sound, Video, and Game controllers. Double click on the FlashBus Icon, go to the Driver tabbed folder and click update driver. Follow the instructions in step 5.

Chapter 4

Webcaster Installation

The Medusa Webcaster software is the heart of the Medusa remote monitoring system. This software transfers the images from the Medusa 6C capture card and broadcasts them to a remote web server via an HTTP connection. The software allows you to set the image filename, control image size, image quality, and the capture rate.

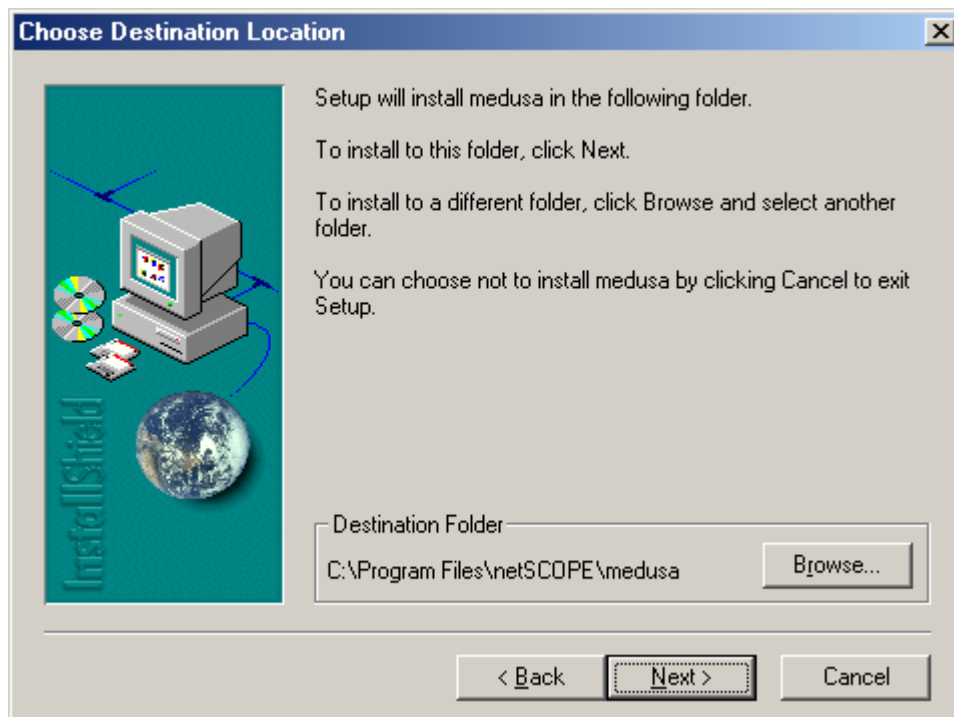
Installation

Step 1- Insert the Medusa Installation CD

Step 2- Open the Webcaster directory on the installation CD, and run Setup.exe

Step 3- Follow the on-screen instructions provided by the installation program.

Image 4-A: Sample Installation Screen



Configuration and Usage

The first time you run the Medusa Webcaster, you will be prompted to configure the software using the Preferences Screen.

Image 4-B: Medusa Preferences Dialog

Medusa Preferences

Image Attributes
Filename: medusa_test Size: 640x480 Quality: High

Application Attributes
Start Time: 12:00:00 AM Stop Time: 12:00:00 AM Delay: 250
Server: www.netscopeinc.com CGI Path: /cgi-post/postImage.cgi Background:

Camera Attributes

Camera 1:	<input checked="" type="checkbox"/>	Camera Caption	Camera 13:	<input type="checkbox"/>	
Camera 2:	<input checked="" type="checkbox"/>	Camera Caption	Camera 14:	<input type="checkbox"/>	
Camera 3:	<input checked="" type="checkbox"/>	Camera Caption	Camera 15:	<input type="checkbox"/>	
Camera 4:	<input checked="" type="checkbox"/>	Camera Caption	Camera 16:	<input type="checkbox"/>	
Camera 5:	<input checked="" type="checkbox"/>	Camera Caption	Camera 17:	<input type="checkbox"/>	
Camera 6:	<input checked="" type="checkbox"/>	Camera Caption	Camera 18:	<input type="checkbox"/>	
Camera 7:	<input type="checkbox"/>		Camera 19:	<input type="checkbox"/>	
Camera 8:	<input type="checkbox"/>		Camera 20:	<input type="checkbox"/>	
Camera 9:	<input type="checkbox"/>		Camera 21:	<input type="checkbox"/>	
Camera 10:	<input type="checkbox"/>		Camera 22:	<input type="checkbox"/>	
Camera 11:	<input type="checkbox"/>		Camera 23:	<input type="checkbox"/>	
Camera 12:	<input type="checkbox"/>		Camera 24:	<input type="checkbox"/>	

You can modify the following settings on the Medusa Webcaster:

Image Attributes

- **Filename:** The filename used when saving the image on the server. The filename will automatically have the camera number appended to it. For example, if medusa_test is specified as the filename, the file will be saved on the server as medusa_test1.jpg.
- **Size:** The resolution that the file will be saved at. Resolutions include: 640x480, 480x360, 422x317, 320x240, and 210x158. The larger the resolution, the larger the image will be, decreasing the refresh rate.
- **Quality:** The quality that the image will be saved at. Maximum, High, Medium, Low. The higher the image quality, the larger the image.

Application Attributes

- **Start Time:** The time the application will begin broadcasting images.
- **Stop Time:** The time the application will stop broadcasting images.

NOTE: If the Start Time and Stop Time are both set to the same value, the application will broadcast images until it is shut down. If the stop time is before the start time (i.e. start time = 7PM, stop time = 4AM) the application will assume the stop time occurs on the day after the start time.

- **Delay:** The time in milliseconds between switching to a new camera, and saving the image. This value is used to allow the camera to synchronize the signal with the card before saving the image (preventing a blurry or fuzzy image). If your images have a lot of horizontal or vertical lines, increase this value. Decreasing this value can improve the refresh rate.
- **Server:** The DNS name or IP address of the web host that will be receiving the image.
- **CGI Path:** The server path to the CGI script that will be receiving the image and saving the image to the http server. For information installing this script please see Chapter 5: Web Server Installation.
- **Background:** Click this box if you want to paint a solid background behind the text captions on the image. Leave this box unchecked if you want to paint the text with a transparent background.

Camera Attributes

You can set the attributes for each of the 24 cameras. Only those cameras that are visible to the system will be enabled. For example, if you have one Medusa 6C Video Card installed, only cameras 1-6 will have their attributes enabled. The attributes are:

- **Use Camera Checkbox:** Check the box if you want to broadcast the image from this camera. Leaving the option unchecked will cause the camera to be skipped when broadcasting images. NOTE: At least one camera must be checked. If no cameras are checked, camera one will be checked by default.
- **Camera Caption:** This defines the caption to print on the camera when saved. For example, the caption "Camera One" will cause "Camera One" along with a time/date stamp to be saved at the bottom of the image.

Once configuration is complete, the application will automatically start broadcasting the images to the server.

Using the Application

To start the Medusa Webcaster, click on the Medusa icon in the installation directory, or choose Start->Program Files->Netscope->Medusa.

Once started, the Medusa will automatically start broadcasting images. To stop the application from broadcasting, select "Exit" on the menu bar. To configure the application, choose "Preferences" on the menu.

Image 4-C: The Medusa Web-casting application



Chapter 5

Web Server Installation

To receive the broadcasted images on the HTTP server, a cgi-script must be installed to receive the images. Currently there are two scripts that can be used:

- `postImage.cgi`: A Perl 5 script for Unix-based web hosts
- `postImage.asp`: A VBScript Active Server Page for NT based web-hosts.

These scripts can be found in the `SCRIPT` directory of the Medusa Installation CD.

Installing the Scripts:

Step 1- Copy the scripts to your web server and save them in the `cgi-bin` directory (or any directory that can execute cgi scripts). If using a Unix server, copy both `postImage.cgi` and `filelib.pl` into the `CGI-BIN` directory. For Windows NT IIS servers, use the ASP script.

Step 2- Edit the scripts and change the **basepath** variable. The basepath is the directory where the images will be stored. NOTE: This is the path of the file system, not the web-server. For example, a NT server may use the path: `F:/web/mycomapany/capture/`. Be sure to leave the trailing backslash or slash (OS dependent) to signal the directory. Also be sure that the web-server account has permission to write files to that directory.

Step 3-Ensure the script has permission to execute.

Step 4-Configure the Webcaster to use the correct server name and cgi-path. I.e. `/cgi-bin/postImage.cgi` if you saved the `postImage.cgi` script in your `cgi-bin` directory.

Writing your own scripts:

You can write you own scripts to receive images and save them to disk, database, etc. The Webcaster sends the image as a HTTP POST command. The image filename and binary data is sent as the binary part of the post. No headers are sent along with the image.

The format of the posted image data is as follows: `<image name><separator token><image data>`

- Image name is the name of the image being sent: i.e. `medusa_test1.jpg`
- The separator token the string the Webcaster uses to signal where the filename ends and the image data begins. The Webcaster uses the following string: `-{}-`
- The image data is the raw bytes of the image file.

As sample binary string might look like this: `medusa_test1.jpg-{}-0000000000000000`

In this example, the filename is medusa_test1.jpg, the token is -{}- and the 0's represent the raw binary data.

To write your own script, you must be able to grab the binary data stream from the post command, and then parse it separating the image name, token, and binary data. Look to the postImage.cgi and postImage.asp for an example of how this can be done in Perl and CGI.

Displaying Images

Images uploaded by the Medusa system are standard JPEG files. They can be displayed directly by the browser if the save directory is readable by the HTTP server. For example, an HTML file could use the tag: .

When displaying Medusa images on a website, we recommend that you configure the server to prevent the images from caching on the client browser. One method of doing is to configure the web server to send the "Expires:0" and "pragma:no-cache" headers when the image is served. Please consult with you web host provider or administrator to configure these headers.

Another method of preventing browser caching is to send the images with a CGI script. We have included some simple CGI scripts to display the images and prevent browser caching. These are located in the SCRIPTS/NOCACHE directory of the installation CD. To install these scripts:

Step 1- Copy the nocache.cgi and filelib.pl scripts to the CGI-BIN directory of the web server.

Step 2- Edit the script and modify the **imagefile** variable to specify the path of the image you would like to display. The path should be a file system path (i.e. F:\web\capture\medusa_test1.jpg)

We recommend making several copies of nocache.cgi, one for each image being broadcasted to the server. For example, the script for an image called medusa_test1.jpg would be called medusa_test1.cgi. Its imagefile variable would be set to the local path of the image being displayed (i.e. /web/netscopeinc.com/capture/medusa_test1.jpg).

The image can be loaded by a web-page using a standard image tag:

```
<img src=http://www.netscopeinc.com/cgi-bin/medusa\_test1.cgi>
```

Each time the page is re-loaded, the image will refresh with the most recent copy saved to the server.

Refreshing Images

Using <META REFRESH> to Automatically Refresh the Image

To automatically refresh the image, you can include the following header on the web page that contains the Medusa image:

```
<META HTTP-EQUIV="refresh" content="60">
<head><title>Medusa Test Image</title></head>
<body>
<img src=/captureimages/medusa_test1.cgi" >
</body>
```

The highlighted META command will force the web page to reload every 60 seconds. The META command is compatible with most browser versions.

Using JavaScript to Automatically Refresh the Image.

Another method is to use JavaScript. First we define an image tag with the following attributes: name and onLoad. **Name** allows you to assign a label to the tag. **OnLoad** executes JavaScript code when the image has finished loading. Another JavaScript function, **setTimeout** allows you to execute JavaScript after a specific amount of time (milliseconds). We can combine these to form an image tag that will automatically refresh itself, 10 seconds after it has finished loading:

```
<img src=/captureimages/medusa_test1.cgi"
      name="WEBIMG"
      onLoad="setTimeout('imageReload()', 10000) >
```

This example calls the imageReload function every 10 seconds. The imageReload function forces the image to refresh itself. The function can be defined as follows:

```
<SCRIPT>
function imageReload(){
document['WEBIMG'].src='/captureimages/medusa_test1.cgi';
window.status='Webcam Animation Active';
};
</SCRIPT>

</S P I D T >
```

The above JavaScript example works with Internet Explorer 5.0+ and Netscape Communicator 4.7+.

Appendices

Appendix A: Troubleshooting

Symptom	Resolution
Webcaster starts responding if another application is	Minimize the Webcaster before starting the application. This will prevent the Webcaster from stopping. If the Webcaster stops (when not minimized), you can also click on the web caster to re-start broadcasting, or restart the application.

Appendix B: Medusa 6C Capture Card Specifications

Analog Video Inputs	<ul style="list-style-type: none">• (6) Composite inputs• NTSC Video
IO Control	<ul style="list-style-type: none">• 1 optically isolated output trigger for flash interface• 1 TTL Input Trigger• 1 TTL Output Trigger
Video Decoder	<ul style="list-style-type: none">• Accepts NTSC, Composite• Genlocks to any NTSC video source including cameras, VCRs, laser disks, and still video players• 24/16/15/8 bit video digitizing• Square pixel digitizing resolution for NTSC (12.27 MHz at 640x480)• Digital control of offset, gain, brightness, contrast, hue, and saturation.• EEPROM for storing configuration and calibration settings
Video Format	<ul style="list-style-type: none">• 24/16/15 bit RGB
RGB Video Pixel Format	<ul style="list-style-type: none">• 888- 16.7 million colors• 565- 65 thousand colors• 555- 32 thousand colors• 8- 256 level monochrome
Video Throughput Performance	<ul style="list-style-type: none">• Full size, full speed video delivery to and from system or VGA memory• Full bandwidth PCI bus master read and write (up to 132 Mbytes/s)
Video Scaling Performance	<ul style="list-style-type: none">• High quality, still frame capture• Smooth, high-quality interpolated scaling in X (horizontal) and Y (vertical) directions.• Supports hardware cropping.
Video Output Display	<ul style="list-style-type: none">• Video-in-a window screen resolution of 640x480• 24/16/15-bit video displayed on up to 1600x1200 VGA desktop• Selectable refresh rate: 30 frames or 60 fields a second

Appendix C: Medusa 6C Capture Card Jumper Settings

Factory-default Jumper Settings for Medusa 6C Capture Card	JPI, JP2 and JP5 are disabled. JP3 and JP4 are enabled. A function is enabled when a jumper connects both posts.
JP1	Select Interrupt from the micro controller
JP2	Select Interrupt from the 7146 bus master.
JP3	Select TTL output for SWOUT1
JP4	Select opto-isolated contact closure for SWOUT1+/SWOUT- pair. DO NOT INSTALL JP4 SIMULTANEOUSLY WITH JP3
JP5	TTL for SWOUT0
JP6	Opto-Isolated contact closure for SWOUT1+/SWOUT-

Appendix D: Support

If you have questions or problems with the Installation of your Medusa web-casting system, please contact tech support at our website: www.netscopeinc.com or e-mail at: support@netscopeinc.com