VGA2Ethernet™ User Guide

Epiphan Technical

Documentation

February 2011

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You can go to the Frame Grabbers page of the Epiphan website to get information about the VGA2Ethernet.

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Epiphan is staffed by a professional support team. If, after checking the FAQs for your product on the Epiphan website and re-installing the Epiphan driver software (where applicable), you continue to have outstanding issues, email a problem report to support@epiphan.com. To help us solve the problem efficiently, include the following info:

- Your VGA2Ethernet serial number.
- The behavior of your VGA2Ethernet LED indicators.
- Technical description of the signal source including resolution, refresh rate, synchronization, type of hardware.
- Complete description of the problem you are experiencing.

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VGA2Ethernet User Guide

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1. Introduction

The Epiphan VGA2Ethernet™ is a compact external DVI/VGA/composite frame grabber that is capable of capturing single link DVI and VGA signals at rates of up to 60 frames per second. VGA2Ethernet also supports a stereo 3.5mm audio input. Designed for high speed and high precision military, medical and industrial applications, Epiphan Systems VGA2Ethernet uses the common RJ45 Ethernet port to interface itself with the target computer, allowing for up to 1 Gigabit transfer rates.
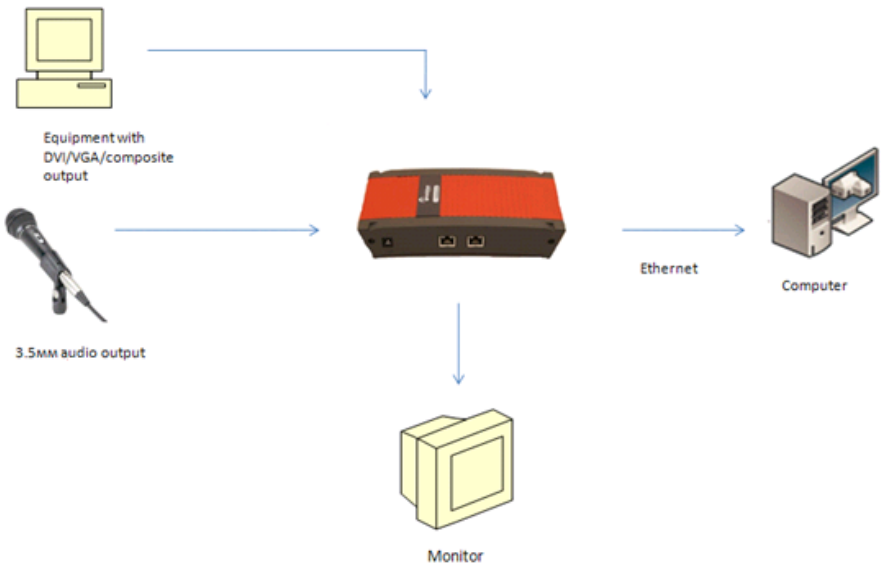
This is the only frame grabber capable of capturing both DVI and VGA signals and sending the data over Ethernet. Using the latest state-of-the-art pre-compression technologies developed by Epiphan Systems specifically for the VGA2Ethernet, you are able to acquire diagnostic-quality 100% lossless images from any DVI/VGA/RGB source.

This solution is also able to capture a composite video signal using a composite to VGA converter cable, purchased separately.

The VGA2Ethernet is part of Epiphan's complete line of video signal capture,

broadcasting and recording products. For more information about all of Epiphan's broadcasting products, please see the Broadcaster Products Overview on the Epiphan website.

2. Installation

This chapter describes the basics of how to connect a VGA2Ethernet device to a VGA, DVI source and to an Ethernet network.

The VGA2Ethernet device uses an Ethernet network connection to send captured image data to a video capture workstation. A video capture workstation is any PC or Mac on which you have installed the VGA2Ethernet drivers and application and that is connected to the same Ethernet network as the VGA2Ethernet device.

VGA2Ethernet Hardware Features

The VGA2Ethernet device is a 202mm x105mm x35mm (7.95"x4.13"x.1.38") unit. The front panel includes power and capture activity LEDs, DVI In and Out, audio In and Out ports. The back panel includes 2 10/100/1000 Ethernet ports, and a power connector.

Figure 1.   VGA2Ethernet (front view)

Figure 2. **VGA2Ethernet (rear view)**

Figure 3. **VGA to DVI Cable**
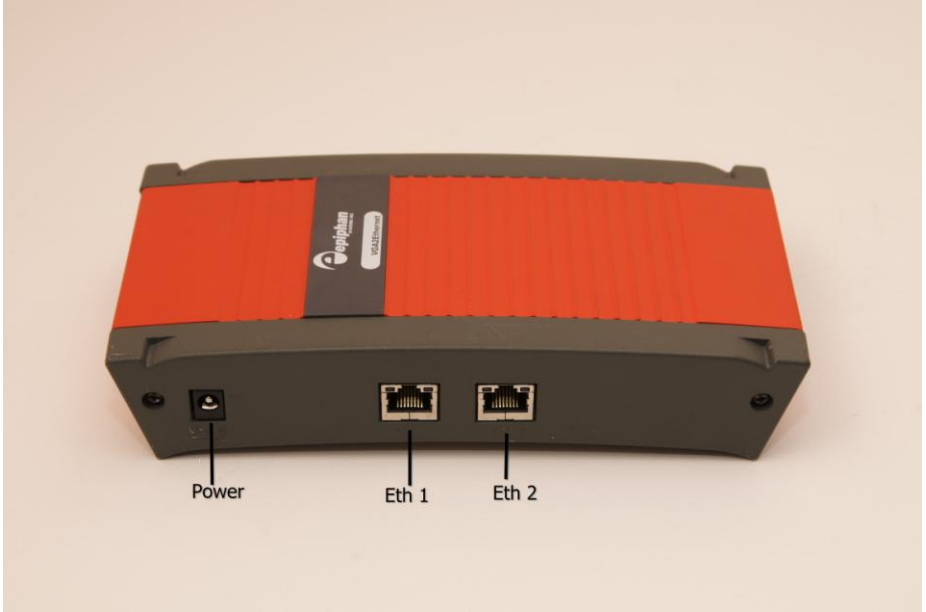
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Figure 4.   Composite video to DVI converter (not included)

Table 1: Connector, Interface and LED Descriptions

ETH1	Primary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port to connect the VGA2Ethernet device to an Ethernet network. The VGA2Ethernet device Ethernet port is auto-sensing.
ETH2	Secondary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port. This port is useful in case you need to configure the Ethernet Bridge when there is only one Ethernet connection. See Configuring the Ethernet Bridge For Use if You Have Only One Ethernet Connection.
Power	Connect the AC adapter to the VGA2Ethernet power connector and to a power outlet
LEDs	**Red LED:** during operation the red LED blinks each time the VGA2Ethernet captures an image. You can use the red LED as an indicator that the VGA2Ethernet is capturing images. **Green and blue LEDs**: when the VGA2Ethernet device first starts up, the blue LED lights up. A few seconds later the green LED lights up. After about another 20 seconds the blue

	LED turns off, leaving the green LED on indicating that the VGA2Ethernet has started up and can start capturing images. During operation the blue LED blinks during video signal test operation and when the system tunes video parameters (e.g. VGA parameters)
DVI In	Connect a DVI source to the VGA2Ethernet device using a DVI cable. You can also connect a VGA source using a VGA to DVI adapter (included). To identify this cable please see Figure 3. If you want to connect a composite video source, use a composite video to DVI converter (not included). To identify this converter please see Composite video to DVI converter (not included).
DVI Out	This port allows you to check the presence of the signal. Connect a DVI monitor or projector using a DVI cable or a VGA monitor using DVI to VGA cable.
Audio In	Connect a microphone if you need to acquire audio.
Audio Out	Connect audio equipment (e.g. headphones or speakers) to control how audio stream is currently being captured by VGA2Ethernet.

The VGA2Ethernet device will not capture images until a video capture workstation has found the device on the network and an application is requesting captured images. Even if the device is properly connected to a VGA source the red LED will not flash unless a video capture workstation is receiving captured images.

VGA2Ethernet Software Features

Use the following software features to install and configure the VGA2Ethernet device.

Factory default IP address and network mask	**IP:** 192.168.255.250 **Netmask:** 255.255.255.252 Refer to the **Restoring the VGA2Ethernet Default Factory Configuration** section to know more about restoring factory default configuration.
IP address from a DHCP server	The VGA2Ethernet device can get an IP address on the network from a DHCP server if the network has one. If the network does not have a DHCP server, see the "If the Network Does Not Have a DHCP Server" section.
Web admin interface	Use the VGA2Ethernet Web admin interface for changing the VGA2Ethernet IP address, making device adjustments, and installing new firmware. You can log into the Web admin interface by selecting **Web config** from the Network Discovery Utility or by opening a web browser and browsing to: `http://< VGA2Ethernet_IP_Address>/admin/` **User Name:** admin (no password) The Web admin interface is described in Chapter 3 of this User Guide.

Optimizing VGA2Ethernet Performance

For best performance, the capacity of the Ethernet connection between the VGA2Ethernet device and the video capture workstation should be as high as possible. The video capture workstation should have a 1-gigabit Ethernet port and the network should be a 1-gigabit network that includes high-bandwidth 1-gigabit switches.

You can improve performance by using Ethernet cables with 4 pairs of wires. Cat5e or Cat6 cables are preferred to Cat5.

You can also improve performance by connecting the VGA2Ethernet device directly to your video capture workstation. This connection makes all of the 1-gigabit bandwidth available for transmitting captured image data. See Direct Connection of VGA2Ethernet to Workstation.

Connect and Power on a VGA2Ethernet Device

To connect a VGA2Ethernet device you need:

- A DVI or VGA video source. If connecting a VGA source, you will need to connect a VGA to DVI cable (provided).
- A video capture station.
- An Ethernet connection between the VGA2Ethernet device and the video capture workstation (in case the workstation is not located near VGA2Ethernet). The video capture workstation and the VGA2Ethernet device must be on the same Ethernet subnet.

Figure 5. Connecting the VGA2Ethernet device to a network
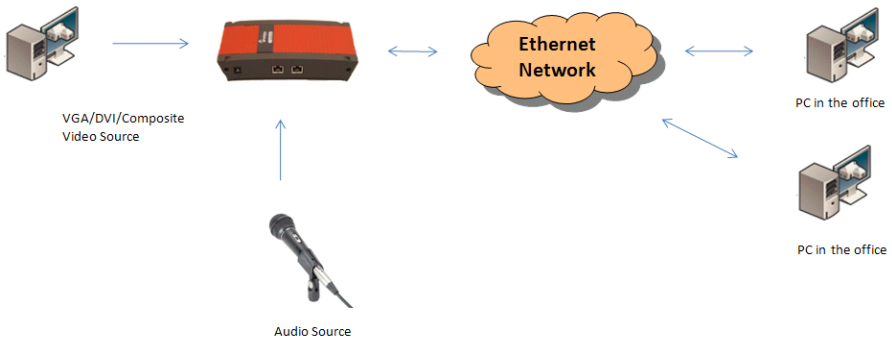
To connect and turn on the VGA2Ethernet device

1. Use a DVI cable to connect the DVI source to the VGA2Ethernet DVI IN port on the front panel of the device. If connecting a VGA source, you will also need a VGA to DVI cable to connect the VGA source and the DVI IN port. You can use an active VGA splitter to split the video signal between a monitor and the VGA2Ethernet. The monitor should be connected to VGA2Ethernet through the DVI OUT port. Splitting the signal may reduce the image quality.

2. Use a 3.5 mm mini-jack connector to connect the source's audio output (if any) to an audio input of VGA2Ethernet.

3. Use an RJ-45 Ethernet cable to connect the VGA2Ethernet Eth1 port to the 10/100/1000 Base-T Ethernet network. For best performance, connect the VGA2Ethernet device to a 1000 Base-T Ethernet link to your network. The network must be running the TCP/IP protocol. You can optionally connect the VGA2Ethernet device directly to a video capture workstation 1-gigabit Ethernet port.

4. Connect the power cable to the VGA2Ethernet device. The VGA2Ethernet device powers on and the power and image capture activity LEDs light up as the device starts up.

5. Start up the video source.

6. Install the VGA2Ethernet drivers and the application (see Installing the Drivers and Application for Windows) and confirm that a captured image appears in the VGA2Ethernet user interface or Network Discovery utility.

If a captured image does not appear, check the video source to make sure it is transmitting a video image. Also check the cable between the VGA2Ethernet and the video source to make sure it is connected correctly.

Installing the Drivers and Application for Windows

To view and record images captured by the VGA2Ethernet device, you must install the VGA2Ethernet drivers and application on a video capture workstation. The drivers and application include the following components:

- The **Epiphan device drivers** that receive captured images from the VGA2Ethernet device over the network.
- The **VGA2Ethernet user interface** that you can use to view, print, save, record and broadcast captured images.
- The **Network Discovery Utility** that you can use to find Epiphan devices connected to the network.

To install the drivers and application

1. Find the latest drivers and application on the VGA2Ethernet download page: http://www.epiphan.com/products/frame-grabbers/vga2ethernet/download/
2. Select Download VGA2Ethernet drivers and application to download the Installer package file.
3. Double-click the installer package file to start the setup wizard and install the application.
4. Follow the prompts.

Figure 6. VGA2Ethernet download page
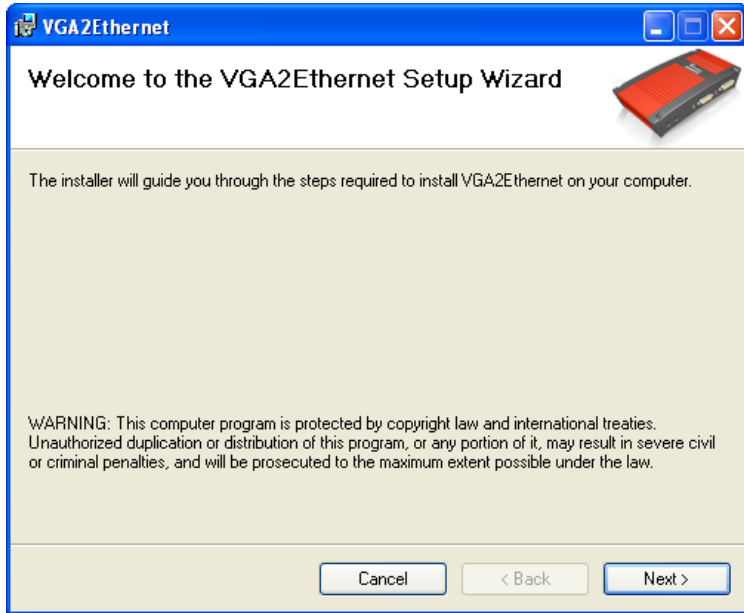
5.   On the video capture workstation, run the VGA2Ethernet user interface. From the Windows Start menu select **Start > Epiphan VGA2Ethernet > VGA2Ethernet GUI**. The VGA2Ethernet user interface starts up and looks for VGA2Ethernet device on your network.

Once the drivers and application are installed, you can start the VGA2Ethernet user interface by selecting **Start > Epiphan VGA2Ethernet > VGA2Ethernet GUI**. The user interface starts up and finds the VGA2Ethernet device if the device is connected to your network and operating.

If the VGA2Ethernet user interface cannot find the device, you use the following utility: **Start > Epiphan VGA2Ethernet > VGA2Ethernet DirectShow Configuration Utility**.

This section assumes your network has a DHCP server and that the DHCP server gives the Epiphan device an IP address on your network. If your network does not have a DHCP server, see the "If the Network Does Not Have a DHCP Server" section.

If the device is operating, has received an IP address from a DHCP server, and is connected to the network, the VGA2Ethernet user interface should find it and the image being captured by the device should appear on the user interface display.

If the device is not capturing images, the device name and serial number still appear in the title bar and the IP address of the device still appears in the status bar, but instead of a captured image, the user interface displays **No signal detected**.

Figure 7.   VGA2Ethernet GUI interface

Title Bar	Displays the product name and serial number of the VGA2Ethernet device as well as the VGA mode and refresh rate of the video source. The title bar also displays the screen resolution and refresh rate of the video source.
Menu	Select commands from the menus. You can save and print captured images, start and stop recording, configure recording settings, and configure capture settings.

Toolbar	Save, print, and copy a snapshot of the current captured image. Start, stop, pause and resume recording images.
Captured Image	The image currently being captured by the device.

If the VGA2Ethernet User Interface Cannot Find the Device

If the user interface cannot find the VGA2Ethernet device, make sure the device is turned on and check the network connections. If you find and correct the problem the device should automatically be detected by the user interface.

If you still cannot see the VGA2Ethernet device, it may not have obtained an IP address from your DHCP server. See the "If the Network Does Not Have a DHCP Server" section to change the device's IP address.

Finding the VGA2Ethernet Device Manually

You can find the VGA2Ethernet device from the VGA2Ethernet user interface by selecting **Select Device** from the **Capture** menu in the VGA2Ethernet GUI application. The user interface lists all Epiphan devices that can be found on the network. Select the VGA2Ethernet device from the list and select **OK**. The VGA2Ethernet user interface connects to the selected device.

Figure 8.   The VGA2Ethernet GUI's Select Device window
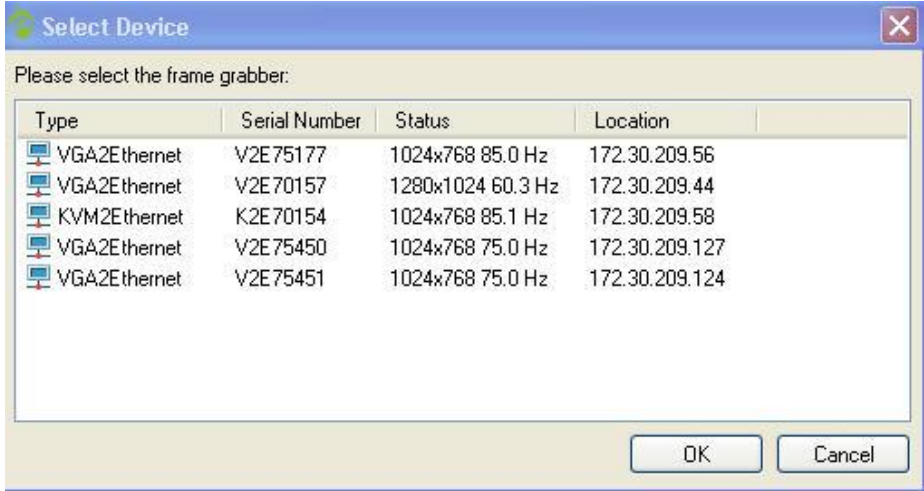
Using the Network Discovery Utility to Find the VGA2Ethernet

You can also use the Network Discovery Utility to find the VGA2Ethernet device. From the Windows Start menu select **Start > Epiphan VGA2Ethernet > VGA2Ethernet DirectShow Configuration Utility**. When the utility starts up, select the **Search** button to find the Epiphan devices on your network.

If the Epiphan device is operating, has received an IP address from a DHCP server, and is connected to the network, the Network Discovery Utility should find it and display the device's IP address. Press the **Web config…** button to display the Web admin interface.

If the device is capturing images, the current captured image should appear on the Network Discovery Utility interface and the status of the device should be **Device OK**, shown with a green indicator. If the device is not capturing images, the **Device OK** indicator can still appear but the Network Discovery Utility display will not show a captured image.

Figure 9.   Network Discovery Utility connected to VGA2Ethernet
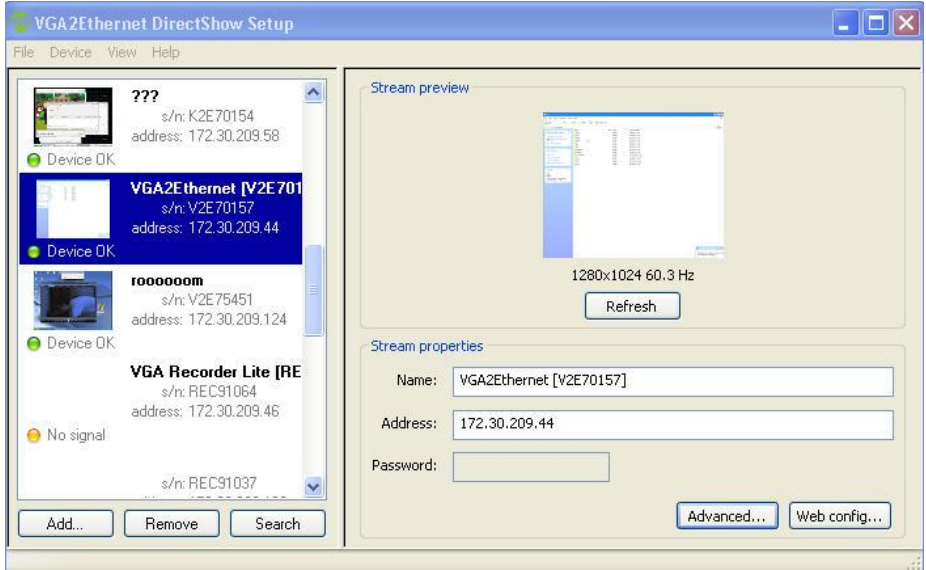
Note: When you restart the Network Discovery Utility and an Epiphan device is found, the utility shows the status as **Detecting** and the indicator will be amber. If the Network Discovery Utility is not capturing signal from a previously found Epiphan device, the status will change to **No Signal** and the indicator will be amber. If the Network Discovery Utility cannot find a previously found Epiphan device, the status will change to **Not Found** and the indicator will be red. You should always select **Search** after starting the Network Discovery Utility to make sure it displays the most up-to-date information.

Installing the Drivers and Applications for Mac OS X

To view and record images captured by the VGA2Ethernet device, you must install the VGA2Ethernet drivers and application on a video capture workstation. This single download includes the VGA2Ethernet user interface command line capture application (v2u), VGA2Ethernet system preferences, and the QuickTime digitizer (vdig).

This section assumes your network has a DHCP server and that the DHCP server gives the Epiphan device an IP address on your network. If your network does not have a DHCP server, see the "If the Network Does Not Have a DHCP Server" section.

To install the drivers and application

1. Find the latest drivers and software on the VGA2Ethernet download page, section Mac OS X:

   http://www.epiphan.com/products/frame-grabbers/vga2ethernet/download/

2. Download the latest version of the drivers and application that will run on the video capture workstation.

   Tip: Make sure you note the download destination folder.

3. Double-click on the .dmg file to unpack it if it doesn't unpack automatically.

4. Double-click on the .pkg file and follow the prompts.

Note: The final step of the installation requires restarting the video capture workstation.

5. On the video capture workstation, run the VGA2Ethernet user interface. From the Applications folder, select **VGA2USB.app**. The VGA2Ethernet user interface starts up.

6. From the **File** menu, select **Open Network Grabber**.

7. If you know the IP address of the device you can enter it manually. If you do not know the IP address of the device or you want to see a list of available VGA2Ethernet devices on the network, select the triangle next to the IP address field.

8. Select a device from the list and select connect.

9. If the device is operating, has received an IP address from a DHCP server, and is connected to the network, the image being captured by the device should appear in the capture window. If you have added a viewer password, you will be prompted to enter the password before the image being captured by the device appears in the capture window.

10. If the device is not capturing images, the device name appears in the title bar but instead of a captured image, the user interface displays **No signal detected**.

## *If the VGA2Ethernet User Interface Cannot Find the Device*

If the user interface cannot find the VGA2Ethernet device, make sure the device is turned on and check the network connections. If you find and correct the problem the device should automatically be detected by the user interface.

If you still cannot see the VGA2Ethernet device, it may not have obtained an IP address from your DHCP server. See the "If the Network Does Not Have a DHCP Server" section.

Direct Connection of VGA2Ethernet to Workstation

In case you do not need to transfer captured video over the network you can use VGA2Ethernet as a simple frame grabber that allows capturing data from a VGA/DVI/composite source and recording it on a workstation. Use the RJ-45 Ethernet cable to connect VGA2Ethernet and the workstation. When the VGA2Ethernet device is connected directly to the video capture workstation, this connection provides local network simulation. You can find the VGA2Ethernet device on this network using the Network Discovery Utility. This configuration makes all of the 1-gigabit bandwidth available for transmitting captured image data.

Figure 10.   VGA2Ethernet Direct Connection to Workstation

Equipment with DVI/VGA/composite output

DVI-DVI cable or appropriate adapters

RJ-45 Ethernet cable

Video capture workstation
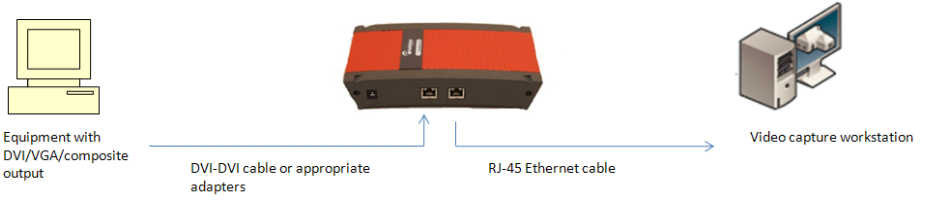
3. Windows VGA2Ethernet User Interface

This chapter describes common functions and features of the Epiphan VGA2Ethernet user interface (the Windows 2000, XP, Vista and 7 versions). This chapter assumes that you have followed the instructions in the chapter 2 of this *User Guide*. To start using this chapter you should have:

- A video capture workstation.
- A connected VGA2Ethernet device.
- Installed the VGA2Ethernet drivers and application on the video capture workstation as described in Installing the Drivers and Application for Windows.

Finding VGA2Ethernet Drivers and Application Updates

Find the latest VGA2Ethernet drivers and application on the VGA2Ethernet download page:

http://www.epiphan.com/products/frame-grabbers/vga2ethernet/download/

On these pages you will find the most recent versions of:

- VGA2Ethernet documentation.
- VGA2Ethernet firmware. See Upgrading the VGA2Ethernet Firmware.
- Drivers and application software including the Network Discovery Utility.

Follow the instructions in the Installing the Drivers and Application for Windows section to download and install the latest version of the VGA2Ethernet drivers and application.

Starting the VGA2Ethernet User Interface

Before starting the VGA2Ethernet user interface the VGA2Ethernet device must be connected to the same network as the video capture workstation. The device should also be connected to power.

To start the VGA2Ethernet user interface, from the Windows Start menu select **Start > Epiphan VGA2Ethernet > VGA2Ethernet GUI**. The VGA2Ethernet user interface starts up and looks for VGA2Ethernet devices on your network.

If the VGA2Ethernet device is operating, has received an IP address from a DHCP server, and is connected to the network, the VGA2Ethernet user interface should find it and the image being captured by the VGA2Ethernet device should appear on the VGA2Ethernet user interface display.

If the VGA2Ethernet device is not capturing images the device name and serial number still appear in the title bar and the IP address of the device still appears in the status bar but instead of a captured image, the VGA2Ethernet user interface displays **No signal**.

As the VGA2Ethernet user interface starts, the following messages may appear on the VGA2Ethernet user interface window:

- **Capture device not found** as the VGA2Ethernet user interface attempts to connect with VGA2Ethernet devices on your network. This message only displays for a few seconds unless the VGA2Ethernet user interface cannot find any devices or if all of the devices have a viewer password. To connect to a device with a viewer password, select **Select Device** or **Connect Network Device** from the **Capture** menu and when prompted enter the device's viewer password. For more information, see Adding or Changing the Viewer Password.
- **Detecting Video Mode** as the VGA2Ethernet user interface connects to a device and then determines the video mode of the device.

- **Tuning Capture Parameters** as the VGA2Ethernet user interface synchronizes and tunes capture settings and image adjustments (see Configuring Frame Grabber Adjustments for more information).
- **No Signal Detected** if the VGA2Ethernet user interface connects with a VGA2Ethernet device that is not connected to an active video source.

If the VGA2Ethernet user interface successfully connects to and synchronizes with the VGA2Ethernet device, it begins displaying captured images.

Pausing, Copying, Saving, and Printing Images

Once the VGA2Ethernet user interface is displaying images captured by the Frame Grabber, you can pause, copy, save, and print the current image.

To pause and resume the image capture:

1. Select **Pause Capture** from the **Capture** menu or from the toolbar select .
2. While image capture is paused the VGA2Ethernet user interface stops receiving new images from the device. Pause also pauses video recording, image recording and web broadcasting. While paused you can save, print, and copy the captured image.
3. To resume image capture select **Resume Capture** from the **Capture** menu or from the toolbar select .

You can use the following procedure to copy the image currently displayed by the VGA2Ethernet user interface to the video capture workstation clipboard.

To copy a snapshot of the current image:

1. Select **Copy** from the **Edit** menu or from the toolbar select . You can also use the key combination **CTRL+C**. The current image is copied to the clipboard.

2. Paste the image into a document or other application as a bitmap image. The image is pasted as a device independent bitmap image.

You can use the following procedure to save the current image as a .bmp, .png, or .jpg file on the video capture workstation. You can optionally pause image capture before saving an image.

To save a snapshot of the current image as an image file:

1. Select **Save** from the **File** menu or from the toolbar select ⬜ or use the key combination **CTRL+S**. The status bar shows the location and name of the saved file.
2. The first time you save an image the **Save As** dialog appears and you can specify the file name, file type, and location of the saved image file.
3. When you select **Save** again, the VGA2Ethernet user interface saves the new image with the same file name and location, overwriting the previously saved file. You can select **Save As** to save the image with a different file name, file type, or location or use the key combination **CTRL+Shift+S**.
4. You can open the saved image file with most bitmap image editing applications.

To print a snapshot of the current image:

You can use the following procedure to print the current image on any printer that is connected to the video capture workstation. You can optionally pause image capture before printing an image.

1. Select **Print** from the **File** menu, select 🖨 from the toolbar or use the key combination **CTRL+P**. The current image is sent to the default printer. You can select **Print Setup** from the file menu or use the key combination **CTRL+Shift+P** to select a different printer and set printer options.

Note: You can also configure the VGA2Ethernet user interface to invert colors for printing. From the **Tools** menu select **Options** then select the **Display** tab and select **Invert colors for printing**.

Recording Captured Images

You can record captured images as a video file or as a series of image files. Before recording captured images as a series of image files, you must configure recording options by selecting **Options** from the **Tools** menu, selecting the **Recording** tab, and selecting **Record** as Images. You should also select the image file format and other image file settings. See Recording Image Files for the details.

To record captured images as a series of image files:

1. Select **Start Recording** from the **Capture** menu, from the toolbar select or use the key combination **CTRL+R**. As images are captured by the frame grabber they are recorded as a series of image files according to the image file settings on the **Recording** tab of the **Options** dialog (**Tools** menu). The Status bar shows the name and location of the last saved file. You can pause recording by using the key combination **CTRL+U,** selecting **Pause** from the

   Capture menu or from the toolbar. You can stop recording by selecting

   repeatedly **Stop Recording** from the **Capture** menu or from the toolbar. When you stop recording images, the status bar displays the number of image files saved.

Before recording captured images as a video file you must configure recording options by selecting **Options** from the **Tools** menu, selecting the **Recording** tab, and selecting **Record** as Video. See Recording Videos for all the details.

To record captured images as a video file:

1. Select **Start Recording** from the **Capture** menu or from the toolbar select

   .

2. In the **Save as** dialog enter the file name, select the location for saving the video file, and click **Save**.

   As images are captured by the frame grabber they are recorded to the video file. The status bar shows the name and location of the video file. The status bar also displays the amount of time that the video has been recording and the number of frames (or images) recorded.

   When the size of the video file reaches the AVI file size limit (see AVI file size limit) the VGA2Ethernet user interface does one of the following:

   o   stops recording
   o   starts a new video file and continues recording (Configuring Video File Recording Options describes how to specify the file name)
   o   overwrites the original video file and continues recording.

   You can pause recording by selecting **Pause Capture** from the **Capture** menu or from the toolbar.
   You can stop recording by selecting **Stop Recording** from the **Capture** menu or from the toolbar.
   When you stop recording, the Status bar shows the name and location of the saved video file, the amount of time that the video file was recording, and the number of frames (or images) recorded. For example: **Wrote c:\temp\example.avi (85 sec, 464 frames)**.

Menus

This section describes the commands available from the following Windows VGA2Ethernet user interface menus:

File Menu

Use the File menu commands to save and print the current image displayed by the VGA2Ethernet user interface and to exit the VGA2Ethernet user interface.

Save	Save a snapshot of the current image to a file on the video capture workstation. Select a location for the file and select a file format. You can save the snapshot as a bitmap (*.bmp), portable network graphics (*.png), or JPEG (*.jpg) file. The first time you select **Save** after starting the VGA2Ethernet user interface you are prompted for a file name and you can change the file location and format. After saving the first file, every time you select **Save**, the video capture software saves a snapshot using the same file name in the same location replacing the previously saved file. When you select **Save**, the status bar shows the location and name of the saved file.
Save As	Save a snapshot of the current image to a file on the video capture workstation. Using **Save As** you can enter a file name and select a file location and format. **Save As** resets the file name, location, and file format used by the **Save** command and the **Save snapshot** toolbar button. When you select **Save As** the status bar shows the location and name of the saved file.
Print Setup	Configure printer settings used when you select the **Print** command or the **Print snapshot** toolbar button. You can also configure the VGA2Ethernet user interface to invert colors for printing. By

	reversing or inverting the colors of an image, the colors are made complementary of the original value. After performing picture color inversion, black becomes white, yellow becomes blue, red becomes aqua. From the **Tools** menu select **Options**, then select the **Display** tab and select **Invert colors for printing**.
Print	Print a snapshot of the current image using the configured printer.
Exit	Close the VGA2Ethernet user interface.

Edit Menu

From the Edit menu you can copy a snapshot of the current image. You can also use the key combination **CTRL+C.**

Copy	Copy a snapshot of the current image to the video capture workstation clipboard. You can paste this image into a document or other application as a bitmap image.

View Menu

Use the commands on the View menu to control the parts of the VGA2Ethernet user interface window that are displayed.

Toolbar	Change the size of the toolbar icons or hide the toolbar. You can select small, large, or huge icons. If the toolbar is hidden, select an icon size to display the toolbar.
Status Bar	Enable or disable displaying the status bar.
Full Screen	Enable full screen mode (**Ctrl+F**).
Image Only	Change the VGA2Ethernet user interface to operate in the **Image only** mode. In the **Image only** mode the VGA2Ethernet user interface displays the captured image only. The window borders, toolbar, status bar and menu bar are not displayed. Scroll bars are displayed if required. The **Image only** mode can be useful for applications such as

integrating the VGA2Ethernet user interface into a custom system. You can still use all of the shortcut keys to save and print images, start and stop recordings, and to exit from the image-only mode. You can always press Alt+F4 to exit from the VGA2Ethernet user interface.

You can also use the --borderless command line option to start the VGA2Ethernet user interface in image only mode. See Windows Command Line Options for information about this and other command line options.

Capture Menu

Use the commands on the capture menu to start, stop or pause capturing and recording images. From the capture menu you can also select the device that the VGA2Ethernet user interface receives captured images from if you have more than one Epiphan VGA2Ethernet or device connected to the network. You can also view image adjustment settings and VGA mode settings for the selected device.

The record functions on the capture menu record the current image as a video or as a series of consecutive image files. Select **Options** from the **Tools** menu and use the settings on the **Recording** tab to configure what the VGA2Ethernet user interface records.

Start recording	Start recording the current image to a video file or a series of image files.
Pause capture	Pause or resume image capturing. If you select pause, the VGA2Ethernet user interface stops displaying new captured images and the image captured when you selected Pause is displayed. Pause also pauses recording a video, saving image files, and web broadcasting. Select pause again to

	resume displaying captured images and resume recording or web broadcasting.
Select device	If you have more than one VGA2Ethernet device connected to the network, you can use **Select Device** or the key combination **Ctrl+D** to choose the device that the VGA2Ethernet user interface receives captured images from. The command finds and lists all of the VGA2Ethernet devices on your network. The list displays the serial number, device type, captured image resolution and frequency (status) and location of each device. You can also use this command to select the device to configure with the **Configure Device** command. If a viewer's password has been added to the device, the device's status is listed as protected in the select device list and you must enter the viewer's password to connect to the device. See Adding or Changing the Viewer's Password.
Connect network device	Enter or select the IP address of a VGA2Ethernet device on the network. Use this option or the key combination **Ctrl+N** instead of **Select Device** to connect to a device if you know its IP address. You can also use this option to attempt to connect to a device that does not appear in the select device list.
Disconnect…	Disconnect current device.
Recent network devices	Displays a list of recently viewed devices.
Enable audio capture	Allows capturing audio. You can also use the key combination **Ctrl+A.**
Audio input device	Select device where an audio signal is captured

	from.
Play captured audio	Play audio that has been recorded.
Configure device	You can view image adjustments for the selected device. You configure image adjustments from the Web admin interface or from the Network Discovery Utility. See Configuring Image Adjustments for more information. You can also select and configure VGA modes for the selected device. See Configuring VGA Modes for more information.

Tools Menu

Use the Tools menu to customize basic VGA2Ethernet user interface operating settings. The Tools menu also contains commands for special functions such as broadcasting captured images over the Internet.

Web Broadcasting	Broadcast the images being captured by the VGA2Ethernet user interface over the Internet. See Chapter 9. "Web Broadcasting".
Upload EDID to device	Use this command to upload an extended display identification data (EDID) file to your device. See About EDID.
Read EDID from device	Use this command to read an extended display identification data (EDID) file from the device.
Measure VGA Mode	When requested by Epiphan technical support, you can use this command to display low-level information about the VGA mode that you are capturing with your Frame Grabber. You can copy this information into an email to send it to Epiphan technical support.

| Options | Configure video and audio recording, display, and sharing (Internet broadcasting) settings. See Recording, Display, and Sharing Options. |

Help Menu

Use the Help menu to check for updates and to display information about the version of the VGA2Ethernet user interface that you are running.

Note: Check for Updates function will only recommend an update if Epiphan recommends that you install a new version. This will happen if the latest version contains significant bug fixes or enhancements. If a new VGA2Ethernet user interface version only contains minor changes or if you are running the current version, Check for Updates may not recommend that you install a new version and will not display any information.

Toolbar

Use the toolbar to save, print, or copy the current captured image; to start, pause, and stop recording the current captured image; and to start and stop web broadcasting. You can use the **Toolbar** command on the **View** menu to change the size of the toolbar icons or to hide the toolbar. You can select small, large, or huge icons. If the toolbar is hidden, you can select an icon size to display the toolbar.

| | Save a snapshot of the current image captured by the VGA2Ethernet user interface to a file on the video capture workstation. Select a location for the file and select a file format. You can save the snapshot as a Windows bitmap |

	(*.bmp), portable network graphics (*.png), or JPEG (*.jpg) file.
	Print a snapshot of the current image to the configured printer.
	Copy a snapshot of the current image to the video capture workstation clipboard. You can paste this image into a document or other application as a bitmap image.
	Start or stop recording the images being captured by the VGA2Ethernet user interface. When you start recording, the status bar displays RECORDING and also displays information about the image or video file being recorded. When you stop recording, the status bar displays information about the saved image files or video file.
	Pause or resume image capturing. If you select pause, the VGA2Ethernet user interface stops displaying captured images. Pause also pauses recording a video, saving image files, and web broadcasting. Select pause again to resume displaying captured images and resume recording or web broadcasting.
	Enable audio capture.
	Start or stop broadcasting or sharing captured images over the Internet.

Status Bar

- The status bar displays information about the VGA2Ethernet user interface:
- The IP address of the device from which the VGA2Ethernet user interface is receiving captured images.
- The location and file name of image or video files saved while recording.
- The web broadcasting status.
  - o SHARING OFF means web broadcasting is turned off. SHARING ON indicates that web broadcasting is turned on.
- Recording status.

- o RECORDING means that the VGA2Ethernet user interface is recording captured images.
- The data rate is the rate (in MB/s, KB/s, Mbps, and Kbps) that the VGA2Ethernet user interface is receiving data from the device capturing images.
- The frame rate that the VGA2Ethernet user interface is operating at in frames per second (fps).
- The number of frames or images that the VGA2Ethernet user interface has displayed since the VGA2Ethernet user interface was last started. The number of frames is only visible if you select **Number of captured frames** on the status bar from the **Display** tab of the **Options** dialog. The number of frames stops incrementing and starts flashing if you have paused image capture. Use the **Reset counter button** to reset the number of frames from the **Display** tab of the **Options** dialog.
- The VGA mode and refresh rate of the video source.

Capture, Recording, and Display Options

This section introduces the options available from the **Tools** menu when you select the **Options** command. These options control how the VGA2Ethernet user interface records images and audio, displays images, and shares or broadcasts images over the Internet. Note that this application is common to a number of different products. The **KVM** tab functionalities are not applied to the VGA2Ethernet product.

Configuring Recording Options

To control how the VGA2Ethernet user interface records captured images, select **Options** from the **Tools** menu and then select the **Recording** tab. You can record captured images as a series of consecutively saved graphic files or as a video file.

How the VGA2Ethernet user interface records images when you start recording from the Toolbar or the capture menu depends on how you set the recording options.

Figure 11.   The Recording tab of the Options window
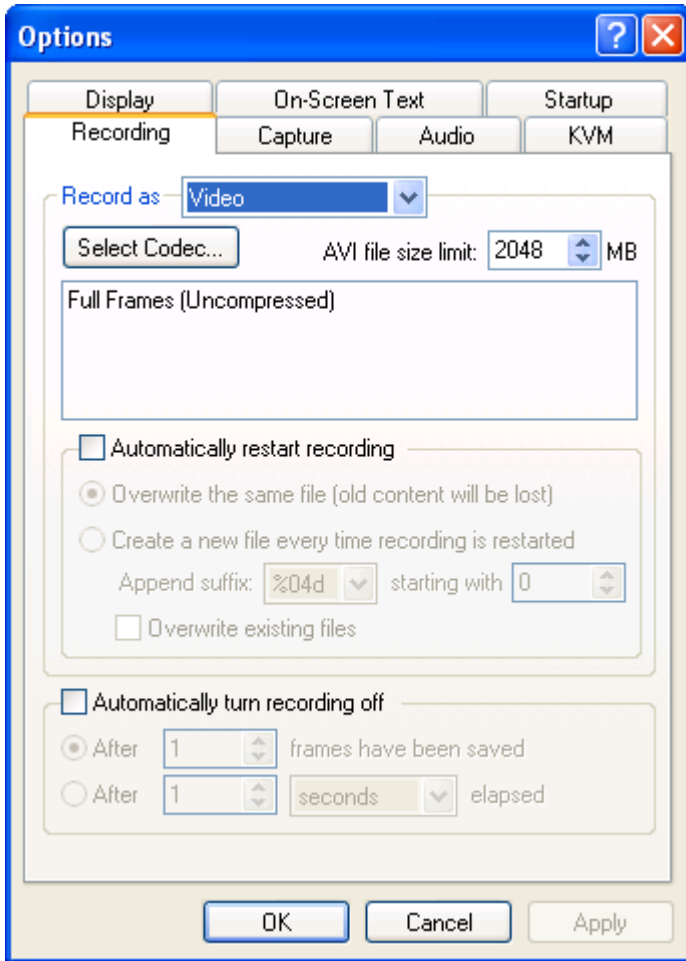
You can select the following options:

Record as	Specify whether video or images are

	recorded
Select Codec	Select codec that is applied for compressing the signal
AVI file size limit	Specify the size limit of the .AVI file where the data is recorded to
Automatically restart recording	Select the checkbox to restart recording automatically. This checkbox enables the five fields below.
Overwrite the same file (old content will be lost)	After the video file size limit is reached, delete the original file and start recording a new video file with the same name. If you select this option the original saved video data is lost.
Create a new file every time recording is restarted	After the video file size limit is reached, start a new video file. You can use the append suffix setting to create a unique name for the new file or files.
Append suffix…	When you start a video recording session you are prompted to enter a file name. If the file exceeds the AVI file size limit, the VGA2Ethernet user interface starts another file named with the original file name appended with a sequential numeric suffix. Use the append suffix options to specify the format of this suffix. Each suffix starts with a % and can include the following characters: 02, 04, 06, or 08 indicates the number of digits to use in numbering the suffix. You can specify 2, 4, 6, or 8 digits. d means use decimal numbers in the suffix.

	X means use hexadecimal numbers in the suffix. The suffix %02d means the saved file names would end with two-digit decimal numbers, for example: 01, 02, 03, ... 10, 11 and so on. The suffix %04X means the saved file names would end with 4-digit hexadecimal numbers, for example: 0001, 0002, 0003, ... 000A, 000B and so on.
…starting with	Enter the starting number used in the file name suffixes in decimal format. If the suffixes include hexadecimal numbering this decimal number is automatically converted to hexadecimal. For example, if you named the video file VID, set the suffix to %02d and set starting with to 1, the video file names would be VID.avi, VID01.avi, VID02.avi and so on.
Overwrite existing files	If you select overwrite existing files, files are saved according to the video file recording options. Existing files are replaced with the new files. If you do not select overwrite existing files, the file number in the suffix of the file name is incremented until a file can be saved without overwriting an already saved file.
Automatically turn recording off	Specify under what conditions recording turns off automatically
After … frames have been saved	Enter a number of frames
After … elapsed	Enter a number of time units elapsed

Configuring Display Options

To change display options from the **Tools** menu, select **Options** and then select the **Display** tab.

Figure 12.   The Display tab of the Options window
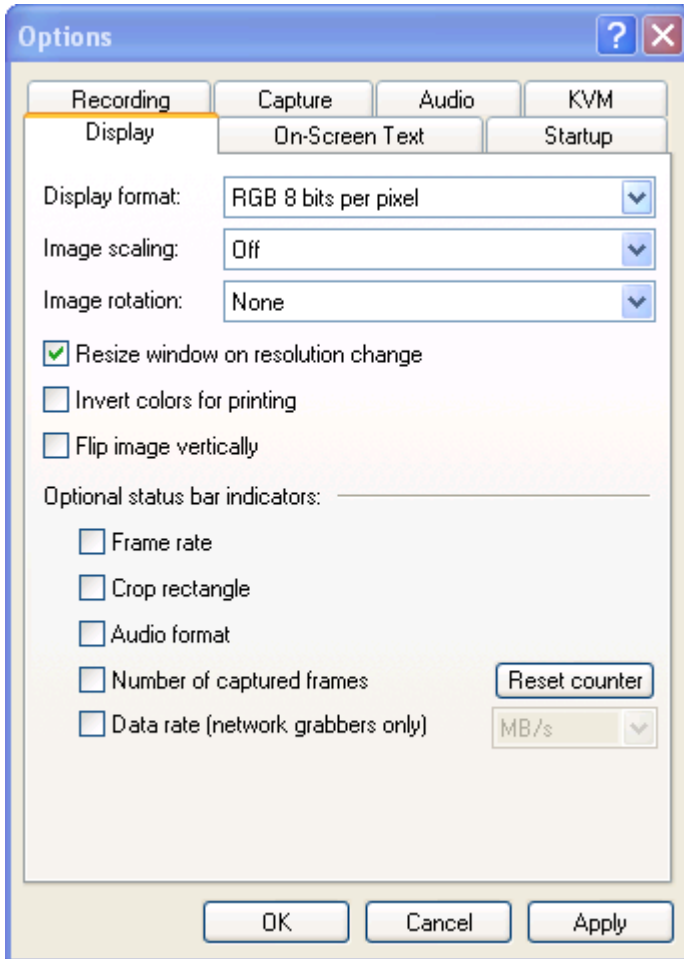
The following display options are available:

Display format	Specify the format video or image are displayed in
Image scaling	Specify whether the image should be scaled and how
Image rotation	Specify whether the image should be rotated and how
Resize window on resolution change	Select the checkbox to resize window when the image resolution is changed
Invert colors for printing	Select the checkbox to change dark colors to light colors and light colors to dark colors
Flip image vertically	Flip the image at its vertical axis
Select the check boxes below to add optional indicators to the status bar…	
Frame rate	Displays frame rate
Crop rectangle	Displays crop status
Audio format	Displays audio format
Number of captured frames	Displays number of captured frames
Data rate (network grabbers only)	Displays data rate

Configuring Capture Options

Use this tab to configure multiple capture options.

Figure 13.   The Capture tab of the Options window
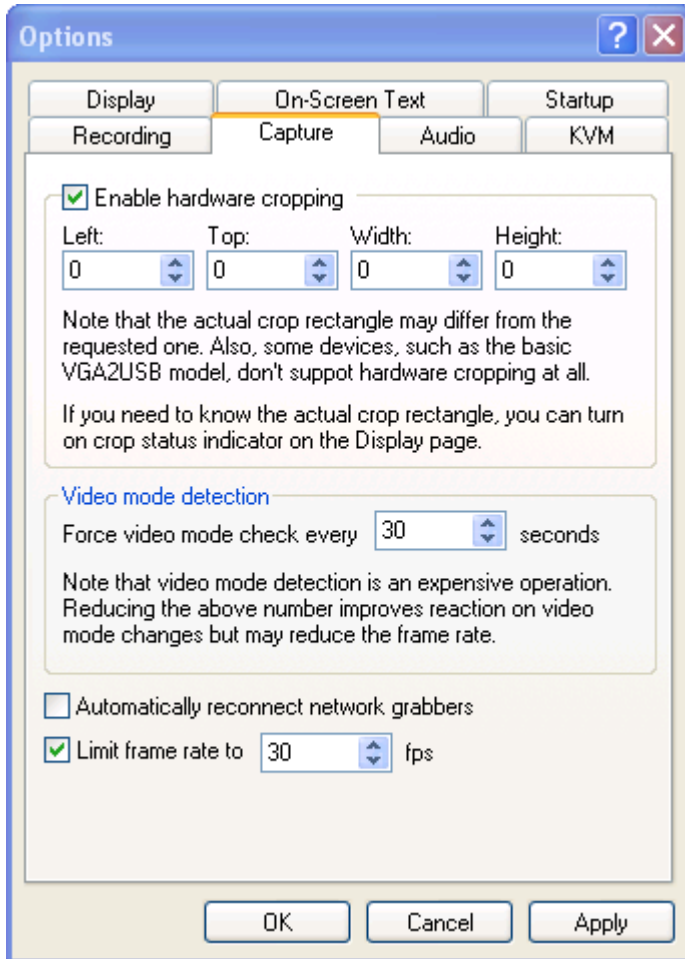
Enable hardware cropping	Select the checkbox to enable cropping

	functionality
Left, Top, Width, Height	Enter the values for the crop rectangle
Force video mode detection	Specify how often the application indicates the type of the video signal being received. Note that although frequent video mode detection decreases reaction time when changing video mode, it may reduce the frame rate.
Automatically reconnect network grabbers	Select the checkbox to restore connection with the remote frame grabbers in case the connection has been lost. Otherwise the system connects to the local frame grabber (if any) or displays a warning "No frame grabbers found". In this case you need to restore connection manually.
Limit frame rate to	Setup maximum frame rate for the video signal

Setting On-Screen Text Parameters

Using this tab you can timestamp the captured video and add some static text.

Figure 14.   *The On-Screen Text tab of the Options window*
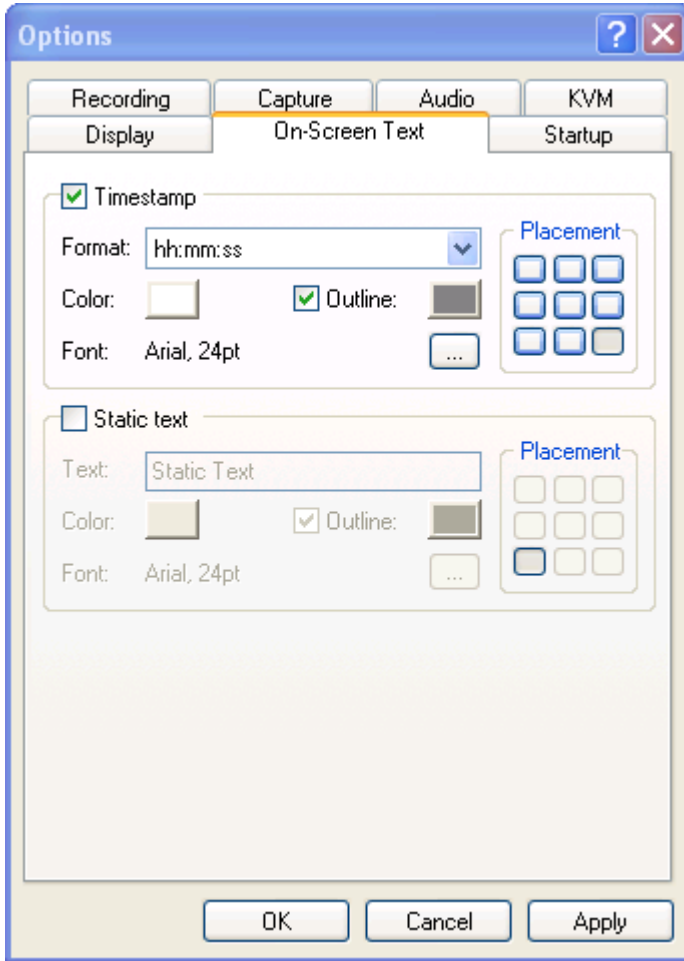
Timestamp	Select this checkbox to enable setting timestamp parameters
Static text	Select this checkbox to enable setting static text parameters
Format	Specify the timestamp format
Color	Set the color
Font	Set the font and the font size
Position	Set the position for the timestamp or text
Outline	Add an outline to the timestamp or text

Configure Audio Settings

Use this tab to configure audio signal that is being captured.

Figure 15.   The Audio tab of the Options window
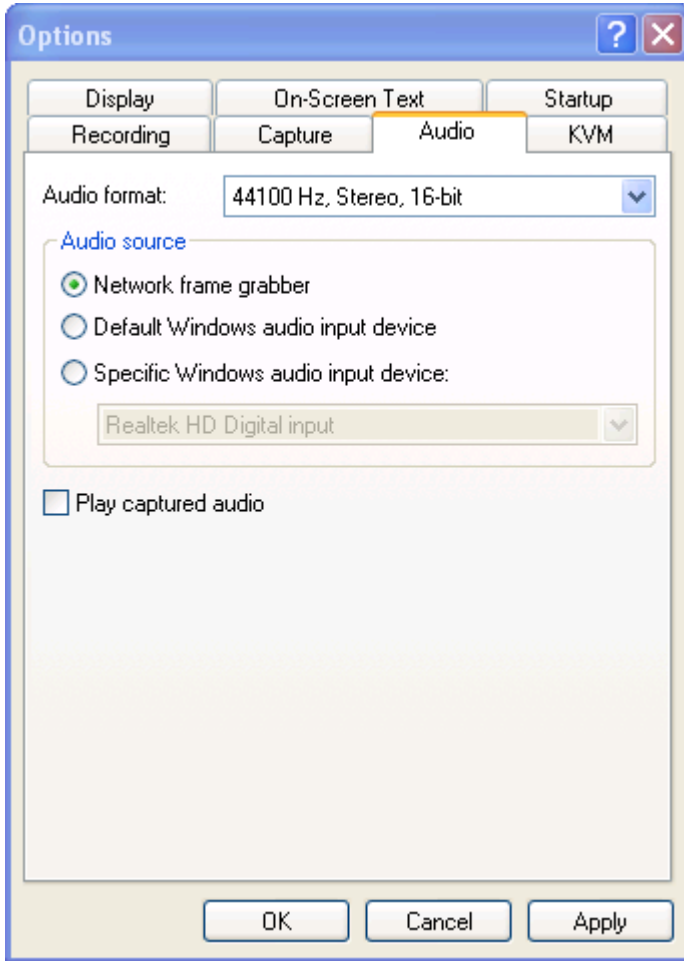
Audio format	Select the output audio format
Audio source	Select the audio source
Play captured audio	Select this checkbox to enable capturing and broadcasting

	audio

Configure Startup

Use this tab to specify what actions the application should perform during startup.

Figure 16.   The Startup tab of the Options window
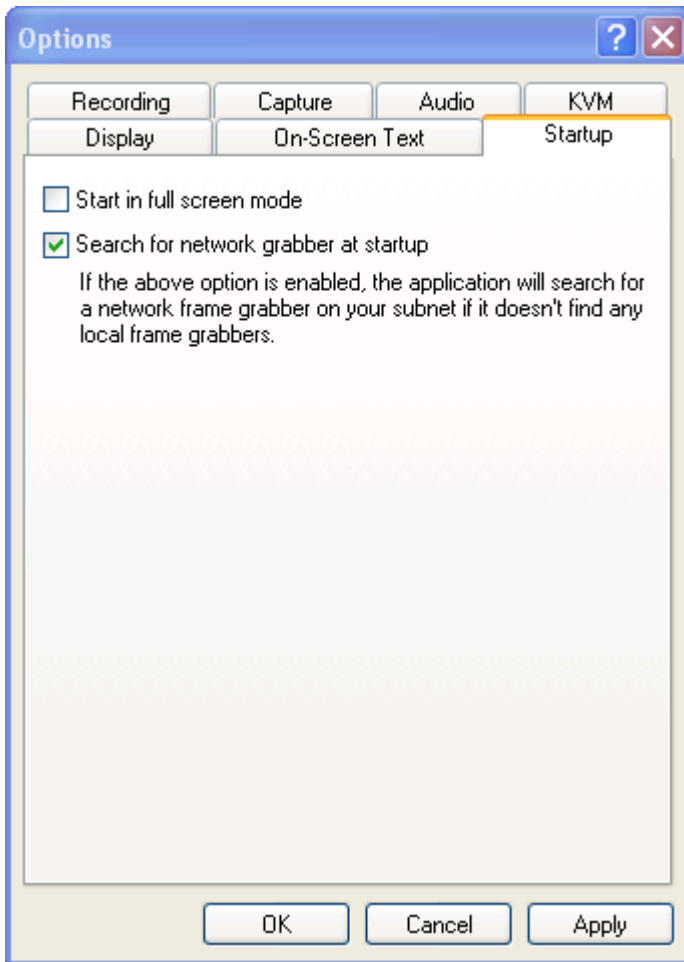
Start in full screen mode	When the application starts, it resizes to the current resolution of the screen
Search for network grabber at startup	The application searches for a network grabber on your subnet if it does not find any local frame grabbers

4. Mac OS X VGA2Ethernet user interface

This chapter describes common functions and features of the Epiphan VGA2Ethernet user interface for Mac OS X. You can use the Mac OS X version of the Epiphan VGA2Ethernet user interface to configure a VGA2Ethernet attached to the network and to record video captured by the VGA2Ethernet.

This chapter assumes that VGA2Ethernet has been properly installed. To start using this chapter you should have:

- Selected a video capture workstation running Mac OS X.
- Successfully installed the Epiphan device drivers and application on the video capture workstation.
- Connected the VGA2Ethernet device.

Upgrading to the Latest Mac OS X Software Version

From time to time Epiphan makes new versions of all Epiphan frame grabber software available from the Epiphan web site. In most cases you can upgrade the Epiphan software on your Mac OS X video capture workstation by using normal procedures to download the latest version and install it without uninstalling the previous version.

Note: Some versions of the VGA2Ethernet user interface do not install a shortcut on the Mac OS X desktop. You can drag the Epiphan icon from the **Applications** folder to your desktop or add it to the Dock after installing a new version of the VGA2Ethernet user interface. You may also need to delete older versions of the Epiphan icon.

Finding Software Updates

To find the latest versions of all Epiphan software for Mac OS X, go to http://www.epiphan.com/downloads. You can also browse to the download page for the Epiphan product you are using. For example, if you own an Epiphan VGA2Ethernet device, you can browse to http://www.epiphan.com and select **Products > VGA2USB Frame Grabbers > VGA2Ethernet > Download**.

On these download pages you will find the most recent version of this VGA2Ethernet User Guide and the most recent release of the Epiphan device driver, QuickTime component and VGA2Ethernet application compatible with MacOS X.

Starting the Mac OS X VGA2Ethernet user interface

Before starting the VGA2Ethernet user interface the device must be connected to the same network as the video capture workstation. The device should also be connected to power.

Start the VGA2Ethernet user interface as you would any other application installed on the video capture workstation.

As the application starts the message **Capture Device not Found** appears on the VGA2Ethernet user interface window.

1. Select **Open Network Grabber** from the **File** menu.
2. Select the arrow beside the **Network Address** box to open the list of networked devices.
3. Select a device and select connect.

The following messages may appear in the capture window.

- **Detecting Video Mode** as the VGA2Ethernet user interface starts up and attempts to connect with the frame grabber.
- **Tuning Capture Parameters** if the VGA2Ethernet user interface finds the frame grabber and begins synchronizing and tuning capture settings and image adjustments
- **No Signal Detected** if the VGA2Ethernet user interface cannot connect with the frame grabber or if the frame grabber is not connected to an active video source.

If you have added a viewer password, you will be prompted to enter the password before the image being captured by the device appears in the capture window.

If the VGA2Ethernet user interface successfully connects to and synchronizes with the frame grabber, the VGA2Ethernet user interface window begins displaying captured images.

Title Bar	Displays the Epiphan product name, screen resolution and refresh rate of the video source.
Toolbar	Switch to full screen mode, override image adjustments, and display information about the frame grabber.
Captured Image	The image currently being captured by the device.

Menus

This section describes the commands available from the VGA2Ethernet user interface menus for Mac OS X.

File Menu

Use the File menu commands to save and print the current image displayed by the VGA2Ethernet user interface.

New Capture Window	Open another capture window. The window opens displaying the same image as the original window. You can open a different device in each capture window. Having a large number of Capture Windows open simultaneously can eventually slow performance on the video capture workstation.
Open Network Grabber	Connect to a VGA2Ethernet device connected to the network. You can enter the IP address for the device if you have it, or you can click on the triangle and select from the list of devices found on the network.
Recent Network Grabbers	Select from the list of recently opened VGA2Ethernet devices. The devices will be listed by IP Address and device serial number. Select Clear Menu to remove all entries on the list of devices.
Disconnect Network Grabber	Disconnect the VGA2Ethernet user interface from a VGA2Ethernet device. The device serial number will be shown next to the Disconnect menu item. If you have multiple capture windows open, make sure you select the capture window containing the device you want to disconnect.

Record Movie	Record captured video in a file
Save Image	Save a snapshot of the current image to a file on the video capture workstation. Select a name and a location for the file and select a file format. You can save the snapshot as a bitmap (*.bmp), portable network graphics (*.png), JPEG (*.jpg) file, or tiff (*.tiff) file.
Page Setup	Configure the printer settings used when you select the Print command or the Print toolbar button.
Print	Print a snapshot of the current image to the configured printer.

Edit Menu

From the edit menu you can copy a snapshot of the current image.

Copy	Copy a snapshot of the current image to the video capture workstation clipboard. You can paste this image into a document or other application as a bitmap image.

View Menu

Use the commands on the view menu to control the parts of the VGA2Ethernet user interface window that are displayed.

Show/Hide Device List	Open or close a drawer on the side of the capture window showing a list of the Frame Grabbers connected to the video capture workstation. Each list entry includes a thumbnail of the image in the capture window, the name, and serial number of the device, and the screen resolution and refresh rate of the video source. You can use the list to switch between devices displaying captured images in the capture window.

Show/Hide Device Information	Enable or disable displaying information about the current Frame Grabber at the top of the VGA2Ethernet user interface window. The display shows the hardware type, location (IP Address), serial number, video mode, frame rate and data rate of the device.
Show/Hide adjustment Controls	Override image adjustments. When the VGA2Ethernet user interface first starts, the application and the Frame Grabber adjust the captured image for optimal appearance. However, you may need to override these image adjustment settings to improve the image quality.
Enter Full Screen	Scale the VGA2Ethernet user interface window to fill the screen. Press Command-F to exit full screen mode.
Hide/Show Toolbar	Enable or disable displaying the toolbar at the top of the VGA2Ethernet user interface.

Tools Menu

Use the commands on the Tools menu to show VGA Mode Information and to upload or save an EDID file.

Show VGA Mode Information	Display low level information about the Frame Grabber VGA mode. When requested, you can use this command and copy this information into an email to send to Epiphan Support.
Upload EDID To Device	Upload an extended display identification file to the device.
Read EDID From Device	Save a copy of the device extended display identification file to the video capture workstation.
	Other commands are not applicable to VGA2Ethernet

Toolbar

Use the toolbar to save, copy or print the current captured image, to override image adjustments, and to show information about the device.

Save
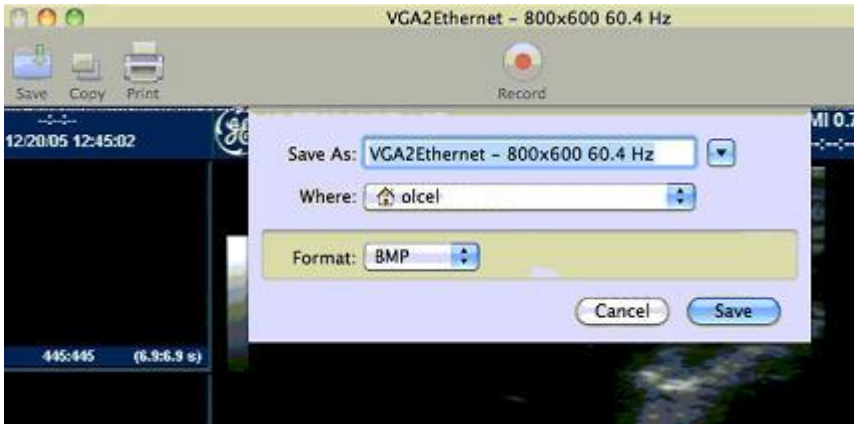
Save As	Enter the file name for saving data
Where	Enter the path where the file is saved
Format	Select the format for the recorded file

Copy

Use this command to copy the snapshot of the image to buffer.

Print

Use this command to specify printing settings and print the image.
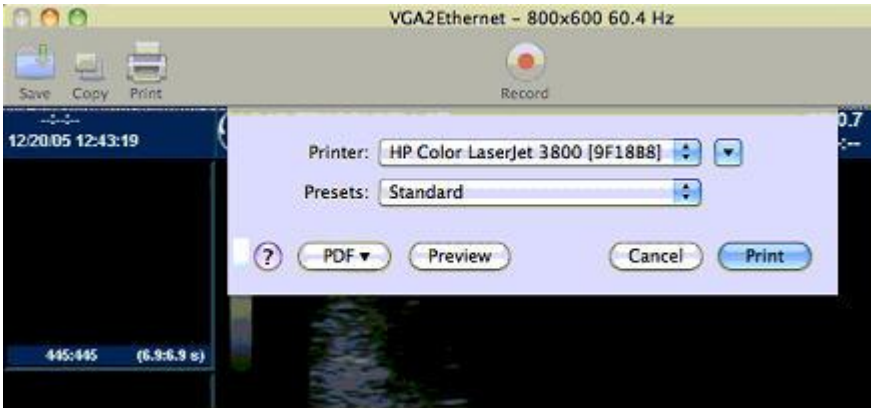
Record
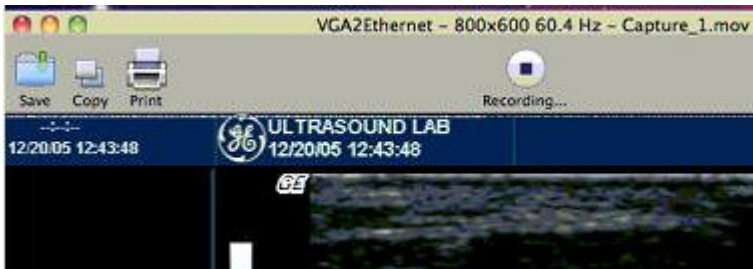
Click this button to start recording of the captured video.

Adjust
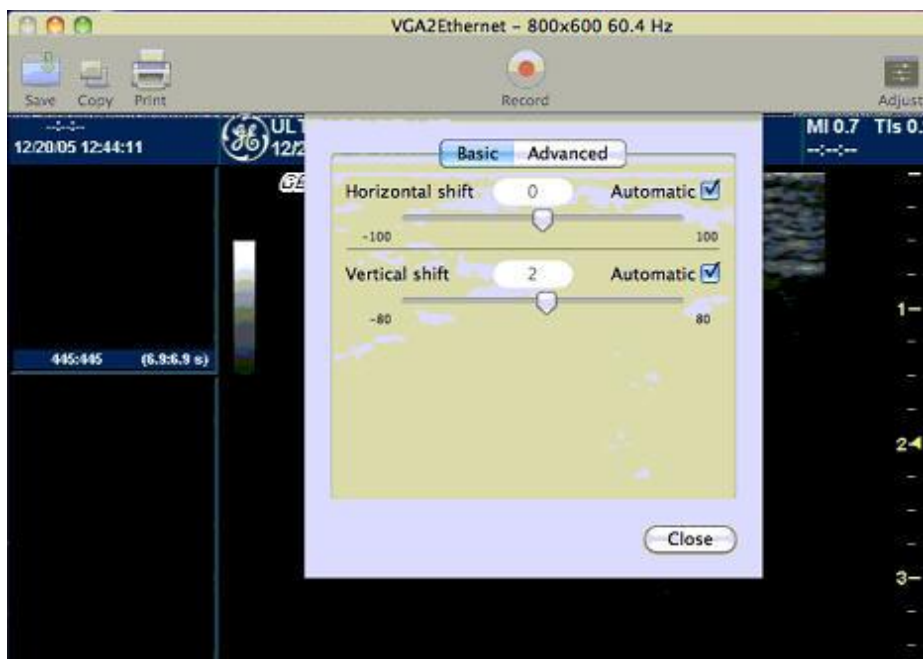
Configure horizontal/vertical shift to offset the captured image position. Select the checkboxes to adjust shifting automatically.

Info
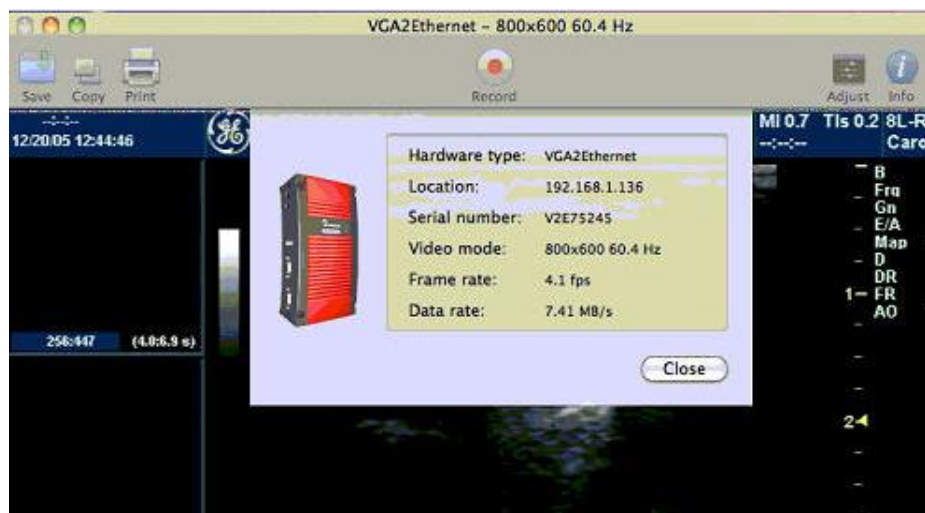
Click this button to display information about the frame grabber, its location, serial number and image characteristics.

Devices

Click this button to display all frame grabber devices that are currently available in network.

Changing System Preferences

Before starting to record videos or to save or print images, you should configure Epiphan QuickTime integration options by opening **System Preferences**, selecting VGA2USB under **Other**, and configuring QuickTime settings.

You can also select **About** to view information about the current software and driver versions.

5. Web admin interface

This chapter describes configuring the Web admin interface options.

Logging into the Web admin interface

Use the Web admin interface to configure the VGA2Ethernet device. You can log into the Web admin interface by:

- Selecting Web Config from the Epiphan Network Discovery Utility (Windows XP, Vista and 7 only).
- Browsing to the VGA2Ethernet admin interface using any web browser. The web browser can be running on Windows or Mac OS X.

Note: You can always log into the Web admin interface by browsing to the default VGA2Ethernet IP address, which is http://192.168.255.250. To log into a device using this IP address you must change the IP Address of the video capture workstation to the static IP address 192.168.255.249 and netmask 255.255.255.252. Then open a Web browser and browse to:

```
http://192.168.255.250/admin
```

Disconnect any other Epiphan devices from the network before attempting to connect to the VGA2Ethernet device.   Restore the original network settings for your workstation.

To log into the Web admin interface from the Network Discovery Utility

1. Start the Epiphan Network Discovery Utility and select **Search** to find the Epiphan devices on the network.
2. Select the VGA2Ethernet device and select **Web config**. You can log into any device with a status of Device OK. A web browser starts and you are prompted for a user name and password.
3. Enter the following (assuming the admin password has not yet been

configured):

```
User Name: admin
Password: (no password required)
```

4. To add a Web admin interface password, see "Adding or Changing the Web admin interface Password".

5. Press **Enter**. The Web admin interface opens.

To log into the Web admin interface using a web browser

Note: The web browser can be running on Windows or Mac OS X.

1. Start a web browser on any workstation connected to the same network as the VGA2Ethernet device.

2. Browse to:

    ```
    http://<VGA2Ethernet_IP_address>/admin
    ```

    For example, if the VGA2Ethernet IP address is 192.30.23.45 browse to:

    http://192.30.23.45/admin

    Remember to include "/admin" at the end of the address or you will access the broadcast rather than the Web admin interface.

3. Enter the following:

    ```
    User Name: admin
    Password: (no password required, if it is the initial
    factory default setting)
    ```

    To add a Web admin interface password, see "Adding or Changing the Web admin interface Password".

4. Press **Enter**. The Web admin interface opens.

Figure 18.   VGA2Ethernet Web admin interface

Use the Web admin interface configuration options to administer and operate the VGA2Ethernet device.

Admin Access	Change the admin account password. See *Adding or Changing the Web admin interface Password*.
Viewer Access	Change the viewer account password. See *Adding or Changing the Viewer Password*.
Network	Change the VGA2Ethernet network configuration. See *Changing the Network Configuration*.
Frame Grabber	Make Frame Grabber image adjustments. See *Configuring Frame Grabber Adjustments*.
Remote Support	Enable and configure remote support. See *Configuring Remote Support*.
Date and Time	Change VGA2Ethernet date and time settings. See *Setting the Date*

	and Time.
Firmware Upgrade	Upgrade the VGA2Ethernet firmware. See *Upgrading the VGA2Ethernet Firmware*.
Maintenance	Reboot or shutdown the VGA2Ethernet device. Restore factory configuration. See *Using Maintenance Controls*. Start and stop frame grabber.
System Description	Specify the VGA2Ethernet device's name. It is displayed in a list of available devices in Network Discovery Utility under this name.
Info	Display information about the VGA2Ethernet Firmware, CPU, Frame Grabber and VGA Mode. See *Displaying VGA2Ethernet Information*.

Configuring the Ethernet Bridge For Use if You Have Only One Ethernet Connection

In some cases you may only have one network connection available for both the video capture workstation and the VGA2Ethernet device. To record captured images and still connect both the video capture workstation and the VGA2Ethernet device to the network you can do the following:

1. Log into the Web admin interface.
2. In the **Network** section, select the **Enable Ethernet Bridge** checkbox.
3. Scroll down the Web admin interface to the **Reboot the system** section and select **Reboot**. Then select **Continue**.

It takes a few minutes for the device to reboot.

4. Connect Eth 1 directly to the video capture workstation using a cross-over or regular Ethernet cable.
5. Connect Eth 2 to the network.

Figure 19.   Connecting network and a PC to VGA2Ethernet
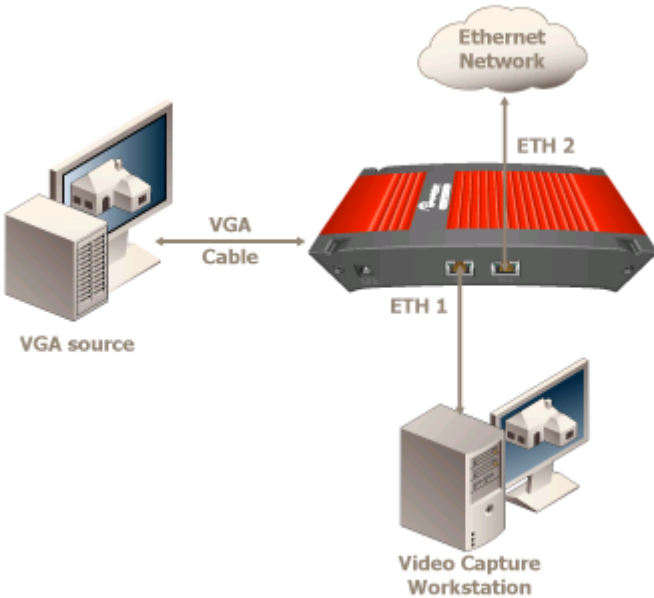
In this configuration the Eth 1 and Eth 2 interfaces act like a 2-port hub allowing the video capture workstation to connect to the network.

For best performance you should connect the video capture workstation to Eth 1 and the Ethernet network to Eth 2. Also, the overhead required to forward packets between Eth 1 and Eth 2 can affect the video capture performance of the device. You can temporarily improve performance by disconnecting Eth 2 from the network.

If the Network Does Not Have a DHCP Server

If the network does not have a DHCP server, you need to log into the Web admin interface to change the VGA2Ethernet IP address. To do this, you need to temporarily

change the network configuration of the workstation.

You must also establish an Ethernet connection between the VGA2Ethernet device and your workstation. You can do this using one of the following methods:

- Connect the VGA2Ethernet Eth port to the same Ethernet network as the workstation.
- Connect the VGA2Ethernet Eth port to an Ethernet network switch and connect the workstation's Eth port to the same switch.
- Connect the VGA2Ethernet Eth port directly to the workstation's Eth port. (You can use a regular or crossover Ethernet cable for this connection.)

To log into the Web admin interface

1. Record the network settings for the workstation so that you can restore them later.
2. Change the IP address of the workstation to static IP assignment with the following

   Address: 192.168.255.249

   Subnet Mask: 255.255.255.252

3. Follow the instructions for your operating system. If the operating system supports adding more than one IP address, then you can add this IP address as a second IP address instead of changing the current address.
4. Start a web browser on the workstation and browse to:

   http://192.168.255.250/admin/

5. Enter the following:

   ```
   User Name: admin
   Password: (no password required)
   ```

6. Press **Enter**. The Web admin interface opens. To change the VGA2Ethernet IP address, see *"Changing the Network Configuration"*.

7. Don't forget to restore the previous network system on your workstation once you have completed your administration of VGA2Ethernet.

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Adding or Changing the Web admin Interface Password

Initial factory settings are such that no password is set in the Web admin interface. For security reasons, you should add a password to control access to the administration interface functions. You can add a password or change the password at any time.

Note: If you lose or forget the admin password you should contact your reseller or Epiphan Technical Support for help to reset the device to factory defaults.

To add a password to the Web admin interface

1. Log into the Web admin interface.
2. Select **Admin Access**.

3. Enter and repeat the new password. The password is case sensitive and can include up to 255 ASCII characters.

4. Select **Apply**. The password changes and after a pause you are prompted to log into the Web admin interface.

5. Log into the Web admin interface with the admin user name and the new password.

Figure 20.   Change Administrator's Password

To delete the Web admin interface password

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You can delete the Web admin interface password if you don't want to require administrators to enter a password to log into the Web admin interface.

Note: Removing the Web admin interface password makes it easier for unauthorized users to change the VGA2Ethernet configuration.

1. Log into the Web admin interface.
2. Select Admin Access. The password fields should be blank.
3. Select Apply without adding characters to the password fields. The password is deleted and after a pause you can log into the Web admin interface with the user name **admin** and no password.

Adding or Changing the Viewer Password

Add a password to control viewer access to the broadcast. You can add a viewer password or change the viewer password at any time.

Note: If you lose or forget the viewer password you replace it with a new password at any time.

To add or change the viewer password

1. Log into the Web admin interface.

2. Select **Viewer Access**.

3. Enter and repeat the new password. The password is case sensitive and can include up to 255 ASCII characters.

4. Select **Apply**. The password changes and you must log into the Web admin interface.

5. Log into the Web admin interface with the admin user name and password.

6. Distribute or communicate the viewer access password to authorized viewers of the broadcast.

Notes:

- The viewer access password is the same for all viewers until it is changed. Any viewer that knows the password will continue to have access until the

password is changed.

- It is good practice to change the password each time there is a change in the users that should be authorized to access the broadcast.

- Please contact your network security administrator with respect to password management required for your applications.

Figure 21.   *Change Viewer's Password*

Viewer Access

New viewer password   ••••••

Retype new viewer
password   ••••••

Apply

To delete a viewer password

You can delete the viewer password if you do not want to require viewers to enter a password to access the broadcast.

1. Log into the Web admin interface.

2. Select **Viewer Access**. The password fields should be blank.

3. Select **Apply** without adding characters to the password fields. The password is deleted.

Configuring Frame Grabber Adjustments

A frame grabber is an electronic device that captures individual still frames from an analog video signal or a digital video stream and transmits them in a digital form. An Epiphan frame grabber is used as a component in the VGA2Ethernet device and can be configured separately.

On the Web admin interface, select **Frame Grabber** to configure frame grabber adjustments. The VGA2Ethernet device automatically adjusts image capture settings every time it starts up. The automatic image adjustment is repeated every 60 seconds during operation. You can change the interval between automatic adjustments if you want them to occur more or less often. The capture settings attempt to produce the best quality captured image for the equipment used in your applications.

Normally you would not have to make manual image adjustments. However, you may have special requirements or for other reasons have image quality problems that may only be fixed by making image adjustments.

The Web admin interface contains most of the information that you need to make image adjustments including a brief description of the effect of each adjustment and the adjustment range.

- To make an adjustment, add a value to one or more fields and select **Apply**.

- To clear any adjustments, delete the value from one or more fields and select **Apply**. To have changes take effect, you must reboot the VGA2Ethernet device (see *"Rebooting or Restarting VGA2Ethernet"*). You can make more than one change before selecting **Apply** and rebooting.

Figure 22.   VGA2Ethernet Frame Grabber Adjustments

Note: Because frame grabber adjustments are made automatically there are no default frame grabber adjustment settings.

Interval between VGA signal auto adjustments, sec	Change the interval between automatic adjustments if you want them to occur more or less often. To suspend automatic adjustments, enter 0.
Vertical shift	Configure vertical shift to offset the captured image position. For example, a captured image shifted slightly downward (vertically) can be corrected with minor adjustments to the vertical shift settings. Increasing or decreasing the value entered in the Vertical Shift field shifts the image up or down.
Horizontal shift	Configure horizontal shift to offset the captured image position. For example, a captured image shifted slightly to the right (horizontally) can be corrected with minor adjustments to the horizontal shift settings. Increasing or decreasing the value entered in the Horizontal Shift field shifts the image to the right or left.
Phase	Configure phase (also called sampling phase) to adjust the horizontal resolution of the image. Improperly adjusted phase will result in a fuzzy image. You can adjust the sampling phase in small steps until a sharper image is displayed.
PLL adjustment	Configure PLL to adjust the vertical synchronization properties of the image. The PLL adjustment may need to be changed when there is a repetitive distortion or blurriness on the horizontal axis of the image. You can adjust the PLL setting in small steps until a sharper image is displayed.
Offset	Use the offset and gain controls together to optimize image quality. Increasing offset reduces background noise but also reduces the overall signal. Balance offset and gain to achieve the best quality image. You should adjust these settings by the smallest values possible to

	achieve the best results. You can compensate for a large change to one by making a large change to the other, but setting both offset and gain to high values can result in poorer video quality.
Gain	Use the offset and gain controls together to optimize image quality. Increasing gain amplifies weak signals but also increases noise. Balance offset and gain to achieve the best quality image. You should adjust these settings by the smallest values possible to achieve the best results. You can compensate for a large change to one by making a large change to the other, but setting both offset and gain to high values can result in poorer video quality.
Aspect ratio	Set the aspect ratio of the captured image. The default aspect ratio is 4:3. You can change the aspect ratio to wide mode so that the VGA2Ethernet device can accurately capture wide aspect ratio modes. It's not always possible for the Epiphan device driver to distinguish between video modes when they have the same number of rows, for example, 1024x768 and 1280x768. You can change the aspect ratio to Wide Mode if you want the driver to choose wide video mode in these situations.
Noise filter	This setting allows you to get good noise performance
Select EDID file	Browse to the Extended display identification data (EDID) file to upload it. It describes the capabilities of the digital display to a video source.

Changing the Network Configuration

You may want to change the VGA2Ethernet network configuration:

- If the network does not have a DHCP server.
- If the network does have a DHCP server but you want the VGA2Ethernet device to have a static IP address.

- If the VGA2Ethernet device is using the DHCP server-assigned IP address, but you want to change the IP address. If for some reason the DHCP server goes down you can log into the VGA2Ethernet Web admin interface and change the IP address.

- If you have previously configured the VGA2Ethernet device to use a static IP address and want to change some network settings or revert back to using DHCP.

For network changes to take effect you must reboot the VGA2Ethernet device after making the changes. See *"Rebooting or Restarting VGA2Ethernet".*

Note: If you change the IP address you will need to remove the VGA2Ethernet device from the Network Discovery Utility and then select Search to find it again.

Note: You can also see the VGA2Ethernet MAC address on the Network page. Providing the MAC address to your network administrator may be helpful for managing your network.

To set the VGA2Ethernet to use a static IP address

1. Log into the Web admin interface.
2. Select **Network**.
3. Select **Use static address**.
4. Enter an IP Address, Network Mask, Default Gateway, and DNS Server that are valid for your network. Note: Clarify that this gateway setting is the gateway of your local LAN (i.e. local router). Contact your network administrator if you are not sure what information to use. The IP address, Network Mask, Default Gateway, and DNS Server that you assign must be compatible with your network.

Figure 23.   Change the VGA2Ethernet IP address

For example:

        IP: 192.168.1.20

        Mask: 255.255.255.0

        Gateway: 192.168.1.2

        DNS server: 192.168.1.99

1.   Select **Apply** to save these changes.
2.   Select **Maintenance**.

3. Select **Reboot Now**.

4. It takes a few minutes for the VGA2Ethernet device to reboot.

5. After a few minutes log into the Web admin interface by browsing to its new IP address. For the example above, browse to: http://192.168.1.20/admin/

6. Enter the Web admin interface user name and password to login.

To reset network settings to use DHCP

By default, if you connect the VGA2Ethernet device to a network with a DHCP server, the DHCP server will automatically configure the network settings. If required you can disable DHCP settings and use a static IP address. This procedure describes how to re-enable DHCP settings that have been disabled.

1. Log into the Web admin interface.

2. Select **Network**.

3. Select **Use DHCP**.

4. Select **Apply** to save these changes.

5. Select **Maintenance**.

6. Select **Reboot Now**. It takes a few minutes for the VGA2Ethernet device to reboot.

7. After a few minutes log into the Web admin interface by browsing to its new IP address. For example, browse to: http://192.168.23.107/admin/

8. Enter the Web admin interface user name and password to login.

Configuring Remote Support

The VGA2Ethernet device uses remote support settings to communicate with the Epiphan maintenance server. When enabled, communicating with the maintenance server allows Epiphan to review the device configuration, firmware version, and other basic operating parameters. If the VGA2Ethernet device is having problems and you contact Epiphan Support, the support team can use this maintenance information to help remotely troubleshoot the problems.

Note: The VGA2Ethernet device does not send private information to the Epiphan maintenance server, just basic operation and configuration information. The amount of traffic sent to the Epiphan maintenance server is small and should not affect the network or Internet throughput.

By default, communication with the Epiphan maintenance server uses TCP port 30. The default address of the Epiphan maintenance server is epiphany.epiphan.com. The VGA2Ethernet device must be able to find a DNS server to resolve the default address and then must be able to connect to this address on the Internet using TCP port 30. If the VGA2Ethernet network settings are set to use DHCP, it gets the address of the DNS server from the DHCP server. If network settings are set to use a static IP address, you must enter the IP address of the DNS server. You can get this IP address from your network administrator.

If you have a firewall or some other device protecting the network from the Internet and you would like to enable remote support, the configuration of this device may have to be changed for the VGA2Ethernet device to connect to the Epiphan maintenance server. Contact your network administrator for assistance.

Use the Remote Support section in the Web admin interface to access the settings:

Figure 24.   Remote Support Configuration

Remote Support Configuration

Enable remote support ☑

Enable connection to maintenance server ☑

   Server Address   epiphany.epiphan.co

   Server Port   30

Apply

You can change the following remote support settings. Remote support is enabled by default.

Enable remote support	Allow Epiphan Support to log into the VGA2Ethernet device with special access privileges to troubleshoot problems.
Enable connection to maintenance server	The VGA2Ethernet device establishes an outgoing TCP connection to the Epiphan maintenance server using TCP port 30. Using this connection, the device sends information to the Epiphan maintenance server and Epiphan Support can use this connection to remotely log into the device.
Server Address	The address of the Epiphan maintenance server. This address is usually epiphany.epiphan.com. However, you can change this address if required, (but usually only as recommended by Epiphan Support). For example, you may have to change this address to a numeric IP address if your VGA2Ethernet device cannot connect to a DNS server.
Server Port	The Epiphan maintenance server's port.

You can enable and disable remote support and the connection to the maintenance server independently.

The following table describes the results of different configurations:

Enable Remote Support	Enable Connection to Maintenance Server	Result
Yes	Yes	The VGA2Ethernet device connects to the Epiphan maintenance server. If required, Epiphan Support can remotely connect to the device with special access privileges.
No	Yes	The VGA2Ethernet device connects to the Epiphan maintenance server. Epiphan Support can remotely connect to the Web admin interface with the same access privileges as an administrator.
Yes	No	The VGA2Ethernet device does not connect to the Epiphan maintenance server. If required, Epiphan Support can remotely connect to the device with special access privileges. If you provide remote access to your network in some other way (for example, using port forwarding). Contact Epiphan Support for assistance.

Please contact your network security administrator to review your security settings for VGA2Ethernet.

Setting the Date and Time

You can set date and time manually or you can enable Time synchronization. Enable Time Synchronization to update the date and time by using a time server. You can

select NTP, to get date and time updates from a public network time protocol (NTP) server by connecting to the server over the Internet. NTP uses UDP port 123. The default NTP server is time.nrc.ca. You should change this to an NTP server recommended for your location (available from your network administrator).

Figure 25.   Date and Time Configuration

Time Zone	Select the appropriate time zone
Enable time synchronization	This parameter enables time synchronization with the defined server

Protocol	Select the time protocol
Server IP Address	Enter the IP address of the time server
Update interval	Specify frequency of time synchronization
Set time manually	This parameter enables manual time setting
Date (yyyy-mm-dd)	Specify the date
Time (hh:mm:ss)	Specify the time
RTC calibration: (-31..+31).	This field allows RTC calibration – slowing or speeding the clock up to 10 sec/day.

For complete information about NTP including a list of recommended NTP servers, see The NTP Public Services Project. To make sure you get the correct time from an NTP server you should select the correct Time Zone for the location of your VGA2Ethernet device.

If the VGA2Ethernet device cannot connect to the Internet and if there is an RDATE server on the network, you can set time synchronization to use RDATE (defined by RFC 868). Contact your network administrator for the address of the RDATE server and enter the RDATE server IP address into the Server IP Address field.

In both cases, you can control how often the date and time are updated. The Time Update interval can be every 1, 6, 12, or 24 hours.

Upgrading the VGA2Ethernet Firmware

You can obtain new firmware versions from Epiphan Support. New firmware is

released to fix known problems or to add new features.

Firmware Upgrade

Current firmware version: 2.0.6

Select firmware upgrade file   [   ] [Обзор...]

DO NOT interrupt or power down the VGA2Ethernet until after the update is completed.

[Apply]

Installing new firmware can take several minutes. Once you start a firmware upgrade, the VGA2Ethernet device cannot display captured images until the firmware upgrade is complete.

Note: Do not interrupt or power down the VGA2Ethernet device during the firmware update.

To install new firmware:

1. Get the new firmware file from Epiphan Support.
2. Place a copy of the firmware file on the workstation you use to connect to the Web admin interface.
3. Log into the Web admin interface.
4. Select **Firmware Upgrade**.
5. Select **Browse** and then select the firmware file.
6. Select **Apply**. The firmware uploads to the VGA2Ethernet device. The device unpacks the firmware update file, verifies the contents and then upgrades the firmware.
7. To complete the firmware upgrade you must reboot the VGA2Ethernet device. See Rebooting or Restarting VGA2Ethernet.
8. Log into the Web admin interface and confirm that the VGA2Ethernet device is running the new firmware version by selecting Info and viewing the firmware version.

Note: In case firmware update fails you can restore the factory configuration as it is explained in the following section ("Using Maintenance Controls").

Using Maintenance Controls

On the Web admin interface, select **Maintenance** to perform operations such as restoring the factory configuration, and rebooting or shutting down the device.

Figure 27.   Maintenance Options

Restoring the VGA2Ethernet Default Factory Configuration

Select **Restore** beside Restore Factory Configuration to reset the Broadcasting and Frame Grabber settings. The factory default configuration is the configuration that the VGA2Ethernet device had when you received it from Epiphan. It can be useful to return the VGA2Ethernet device to this configuration if you have made a number of configuration changes that you want to reverse.

Restoring the factory configuration can also help with troubleshooting. If after making a number of configuration changes you notice problems and you are not sure which change is causing the problems, you can restore the Factory Configuration and start over.

Rebooting or Restarting VGA2Ethernet

Many VGA2Ethernet configuration changes require you to reboot the VGA2Ethernet device. For an example, see *"Changing the Network Configuration"*.

To reboot or restart the VGA2Ethernet

1. Log into the Web admin interface.
2. Select **Maintenance**.
3. Beside Reboot select **Reboot now**.

The VGA2Ethernet device takes a short time to reboot and resume operation.

Shutting Down the VGA2Ethernet Device

Shut down VGA2Ethernet to take the device off the network without disconnecting the power.

To shut down the VGA2Ethernet device

1. Log into the Web admin interface.
2. Select **Maintenance**.
3. Beside **Shut down** select **Shutdown now**.

The VGA2Ethernet device shuts down. Now you cannot log into the Web admin interface or view captured images. At the same time the Network Discovery Utility will not find the VGA2Ethernet device on the network. To restart the VGA2Ethernet device you must disconnect and reconnect the power.

Displaying VGA2Ethernet Information

Select **Info** on the Web admin interface to display the following VGA2Ethernet system information:

- The current firmware version including the version number and details of the firmware build.
- The VGA2Ethernet system CPU details.
- The number of the Frame Grabber installed in the VGA2Ethernet device.
- The Frame Grabber VGA mode information.

This information is also displayed when you first log into the Web admin interface.

Figure 28. *VGA2Ethernet system information*

VGA2Ethernet info

Firmware

```
FIRMWARE_VERSION=2.0.6
FIRMWARE_BUILD_HOST="2.6.27.5-117.fc10.i686"
FIRMWARE_BUILD_DATE="2011-02-14"
FIRMWARE_PLATFORM=VGA2CPU
```

CPU

```
processor       : 0
cpu             : 440EPX
clock           : 499.999995MHz
revision        : 24.208 (pvr 2162 18d0)
bogomips        : 999.42
timebase        : 499999995
platform        : PowerPC 44x Platform
model           : amcc,sequoia
Memory          : 511 MB
```

Framegrabber

```
V2E75451
```

VGA Mode

```
2C 03 18 02 40 80
04 00 03 00 00 01 25 15
02 10 80 F9 8E E0 1B 1F 00 00 00 00 00 00 00 00 00 00 00 00
```

Services

```
/service/vgabridgegrabber: up (pid 1016) 93044 seconds
```

VGA Bridge Connections

```
Active clients: 172.30.209.231
```

6. Web Broadcasting

You can use the information in this chapter for internet sharing or broadcasting of the images captured by your VGA2Ethernet device. Captured images are sent to the Epiphan web broadcasting portal through the VGA2Ethernet user interface. Each web broadcast session is labeled with the serial number of the VGA2Ethernet device that is sending images. The device serial number appears on the VGA2Ethernet user interface title bar.

Note: Web Broadcasting is intended as a demonstration only and has a 10-hour time limit.

Before you can begin web broadcasting you must:

- Follow the steps in Installing the Drivers and Application for Windows to download and install the VGA2Ethernet device driver
- Connect your VGA2Ethernet device as described in Connect and Power on a VGA2Ethernet Device.

Setting the Display Format for Web Broadcasting

Before starting web broadcasting you must set the display format to RGB 24 bits per pixel.

To set the Display format for web broadcasting

1. Open the VGA2Ethernet user interface.
2. From the **Tools** menu select **Options**.
3. Select the **Display** tab.
4. Set **Display Format** to **RGB 24 bits per pixel**.
5. Optionally limit the frame rate to reduce the number of images sent over the Internet. This value will affect the amount of bandwidth used.

6. Depending on your requirements you may not have to change any other display settings. See Configuring Display Options.

7. Select **OK** to save your changes.

Starting a Web Broadcasting Session

No special setup is required for web broadcasting except that the video capture workstation must be able to connect to the Internet. The video capture workstation can be connected directly to the Internet or to a LAN that is connected to the Internet.

The following procedure is the same whether or not Epiphan has permanently enabled web broadcasting for your Frame Grabber.

To start a web broadcasting session

1. Start the VGA2Ethernet user interface.

2. Select **Web Broadcasting** from the **Tools** menu. The **Start web broadcasting** dialog appears.

Note the Internet address from which users can view the web broadcast.
The Internet address is always http://www.vga2Ethernet.com/ followed by the serial number of the VGA2Ethernet device. The serial number is visible in the VGA2Ethernet user interface title bar. The web broadcast internet address is not displayed on the VGA2Ethernet user interface during the broadcast.

3. Select **Start Web Broadcasting**.

As images are captured by the VGA2Ethernet device they are broadcast over the Internet. The Status bar displays SHARING ON.
Users can use a compatible web browser to connect to the Internet address to view the broadcast. See Viewing a Web Broadcasting Session for more information about the system requirements for viewing web broadcasts.

You can pause web broadcasting by selecting Pause from the Capture menu. You can stop web broadcasting by selecting **Stop Web Broadcasting** from the **Tools** menu. When you stop web broadcasting the status bar displays SHARING OFF.

Viewing a Web Broadcasting Session

You can view a web broadcasting session from any web browser on any computer (Windows PC, Mac OS X) that can connect to the Internet. The PC and web browser should be running the most recent version of Java. You can download the latest version of Java from http://www.java.com.

To view a web broadcast, open a web browser and browse to the required Internet address, for example: http://www.vga2usb.com/V2U15100. The broadcast is not encrypted.

A second web browser window appears displaying the message **Applet is loading. Please wait…** The broadcasted image should appear within 10 to 20 seconds.

The first web browser window (in which the web broadcast address was entered) displays a message indicating that the web presentation has been opened in a new window. You can also use the first window to refresh the broadcast or re-open the broadcast window if it is accidentally closed.

Troubleshooting Web Broadcasting Performance

Three typical reasons for adjusting web broadcasting compression are:
If the video capture workstation CPU usage is too high during web broadcasts or if receivers of the web broadcasts notice delays that you determine are caused by high CPU usage on the video capture workstation, you can decrease lossless compression. High CPU usage on the video capture workstation can result in the video capture workstation not being able to process all image data.

Note: You cannot change web broadcasting compression during a web broadcast.
You must stop the broadcast, adjust the settings and then start the broadcast again.

Changes made to default web broadcast compression settings are only visible to
viewers of the web broadcast. Changing these settings does not change how the
VGA2Ethernet device or the VGA2Ethernet user interface displays, records, or prints
captured images.

You can also improve the performance of web broadcasting by lowering the frame
rate. Lowering the frame rate reduces the amount of Internet bandwidth used by
reducing the number of frames broadcast. Lowering the frame rate also reduces the
demand on the video capture workstation CPU resources because fewer frames
means the video capture workstation uses fewer CPU resources to capture and
compress the frames.

To lower the frame rate, from the **Tools** menu select **Options** and then select **Capture**.
Select **Limit frame rate to** and set the frame rate to a lower value.

7. Windows Network Discovery Utility

This chapter describes the functions and features of the Epiphan Windows Network
Discovery Utility. The Windows Network Discovery Utility is installed on a Windows
2000, XP, Vista or 7 video capture workstation during installing the VGA2Ethernet
drivers and application. You can use the Network Discovery Utility to find and connect
to the VGA2Ethernet devices, connected to the same network as the video capture
workstation. You can also connect to a device's Web admin interface by selecting
Web config from the Network Discovery Utility.

Once you connect to a VGA2Ethernet device with the Network Discovery Utility you can use video capture software installed on the video capture workstation to record images captured by the VGA2Ethernet device.

You can view captured images from within the Network Discovery Utility. However, you must install a third-party DirectShow compatible application on the same PC to record captured images.

Note: The VGA2Ethernet drivers and application must be installed on the video capture workstation and you must have run the Network Discovery Utility and successfully found a VGA2Ethernet device to be able to view and record images using DirectShow-compatible software installed on the video capture workstation.

Finding and Installing Drivers and Application Updates

Find the latest VGA2Ethernet drivers and application on the VGA2Ethernet download page:

http://www.epiphan.com/products/frame-grabbers/vga2ethernet/download/

On these pages you will find the most recent versions of VGA2Ethernet documentation, VGA2Ethernet firmware that you can install on the VGA2Ethernet device), VGA2Ethernet drivers and application software which includes the Network Discovery Utility.

Starting the Network Discovery Utility

Start the Network Discovery Utility from the Windows Start menu by selecting **Start > Epiphan VGA2Ethernet > VGA2Ethernet DirectShow Configuration Utiltity**.

The Network Discovery Utility starts up and looks for Epiphan devices on the network. If an Epiphan device is operating, has an IP address on the network, and is connected to the network, the Network Discovery Utility will find it and display information for it.

For each Epiphan device, the Network Discovery Utility displays a name, serial number, IP address and status (such as **device OK**, or **Not Found**).

If a device is selected and is capturing images, the current captured image should appear on the Network Discovery Utility interface and the status of the device should be **Device OK**, shown with a green indicator. If the device is not capturing images the Device OK indicator can still appear but the display will not show a captured image.

Note: When you restart the Network Discovery Utility if it has already found an Epiphan device it will show the status of the device as Detecting and the indicator will be amber. If the Network Discovery Utility cannot find a previously found Epiphan device, the status will change to **Not Found** or **Failed** and the indicator will be red.

Menus

This section describes the commands available from the Network Discovery Utility menus:

File menu	Use the File menu to exit from the Network Discovery Utility.
Device menu	From the device menu, you can select an Epiphan device in the list and: Select Refresh to refresh the selected device's information and stream preview. Refresh re-draws the captured image thumbnail and updates the name, IP address, serial number and status of the

	device. Select Remove to delete the selected device from the device list.
View menu	Use the commands on the view menu to display or hide the Status bar and adjust the relative width of the Network Discovery Utility left and right panes.
Help menu	On the help menu, select About to display the Network Discovery Utility version

List of Devices

The left pane of the Network Discovery Utility shows the Epiphan devices that have been found on the network and are available to DirectShow applications installed on the video capture workstation.

For each device, the list displays a thumbnail of the current captured image (if appropriate), the name, serial number, IP address and device status of the Epiphan device.

The names of the VGA2Ethernet devices found on your network appear in the DirectShow compatible applications that you can use to record captured images. You can change these names using the Network Discovery Utility.

You can use the buttons at the bottom of the list to add or remove Epiphan devices from the list and to search the network for new Epiphan devices.

You can use the buttons at the bottom of the list:

Add	Add a new Epiphan device to the list by adding a Name for the device

	and an IP address and selecting Add. As you enter the IP address the Network Discovery Utility searches for an Epiphan device that matches the IP address. If a device is found the status indicator changes to green. If a device is not found the status icon remains red. You can add different IP addresses until you add one that matches a device.
Remove	Select an Epiphan device from the list and select Remove to delete the device from the list.
Search	Select Search to search your network for new Epiphan devices. If an Epiphan device is found that is not on the list it is added.

Captured Image Display

The right pane of the Network Discovery Utility shows the image captured by the device selected in the Epiphan devices list. This pane also displays the resolution and refresh rate at which the device is capturing the image.

You can use the following buttons and fields on the right pane:

Refresh	Refresh
Name	Displays the name of the selected Epiphan device. The default name is, for example, VGA2Ethernet # followed by the device's serial number. This name appears in DirectShow applications used to record the images captured by this device. You can change the name in the Name field. This changes the name associated with the device in the Network Discovery Utility and in DirectShow applications.

Address	The Address field displays the IP address of the Epiphan device. You can change the IP address if the IP address of the selected Epiphan device changes. Otherwise if you change the address you will lose the connection to the Epiphan device. If you change the Address and lose the connection to the Epiphan device, you can restore the connection by changing back to the correct IP address. Or you can remove the Epiphan device from the list and then select **Search** to find it again.
Advanced	Configure image adjustments for the selected device. You can also configure image adjustments from the Web admin interface and you can view image adjustment settings from the VGA2Ethernet user interface. Configure DirectShow settings for the selected device.
Web Config	Open the Web admin interface for the selected Epiphan device in a web browser.

Configuring Image Adjustments

The VGA2Ethernet device automatically adjusts image capture settings every time it starts up. The automatic adjustment is repeated every 60 seconds during operation. You can change the interval between automatic adjustments from the Web admin interface.

You can make manual image adjustments from the Network Discovery Utility or from the Web admin interface. The following procedures describe how to make manual adjustments from the Network Discovery Utility. For information about making image adjustments from the Web admin interface and for details about image adjustment settings, see Configuring Image Adjustments.

Note: You can also view image adjustment settings from the VGA2Ethernet user interface by selecting Configure Device from the **Capture** menu and selecting **Adjustments**.

If image adjustments are required, you may need to make them in small increments to avoid loss of image synchronization. If image synchronization is lost, the device will stop responding and stop capturing images. You may have to wait a few minutes before the device will start responding again. You can disconnect the video cable for 10 seconds to reset image synchronization. You can also reset image synchronization by restarting the device. See Rebooting or Restarting VGA2Ethernet.

To configure image adjustments from the Network Discovery Utility

1. Start the Network Discovery Utility, select a VGA2Ethernet device and select **Advanced**.

2. Select the image adjustment checkbox setting to change and adjust the slider as required. For information about each setting, see Image Adjustment Settings.

3. Select **Apply** or **OK**. The changes are saved to the device.

To reset image adjustments from the Network Discovery Utility

The quickest way to reset image adjustments from the Network Discovery Utility is to clear all image adjustment checkboxes.

1. Open the Network Discovery Utility.
2. Select a device.
3. Select Advanced.
4. As required, clear the checkboxes for each image adjustment that you want to reset.
6. Select **Apply** or **OK**.

Configuring DirectShow Options

From the Network Discovery Utility, you can select **Advanced** and then select the DirectShow tab to configure DirectShow options.

Fix Resolution	Control the image resolution reported to DirectShow and so used by DirectShow-compatible applications. You can use this option to cause DirectShow to expand or shrink the image recorded by DirectShow-compatible video capture applications.
Default Image	Select an image to be sent to DirectShow if the device is not sending images to the video capture workstation. This option replaces what would otherwise be a blank screen with a static image that would be captured by DirectShow-compatible image capture applications.
Scaling	If Fix Resolution is set to a resolution that does not match the actual resolution of the video signal you can select Pixel Resize to have the VGA2Ethernet device driver resize the image (either shrink or expand it) to match the fixed resolution. Pixel Resize is a simple resizing method that adds or removes pixels as required to

	resize an image.
	If you set scaling to No Resizing the device driver does not resize the image sent to DirectShow. If the actual resolution of the video signal is smaller than the fixed resolution, the image appears in DirectShow compatible video capture applications with a border around it. If the actual resolution is larger than the fixed resolution, the image appears cropped in DirectShow compatible video capture applications.
Flip image vertically	Select this option to turn the captured image displayed on the VGA2Ethernet user interface upside down. If you select this option, the image in recorded videos, the image that is copied when you select Copy from the Edit menu, printed images, and broadcasted images are also upside down. Images saved by selecting Save from the File menu and recorded image files are not affected by this option.
Limit frame rate to	Select Limit frame rate to set a frame rate that is lower than the frame rate at which the device can capture images. You can reduce the frame rate to reduce the number of images captured by the device. You may want to reduce the frame rate to reduce the load on the video capture workstation, to reduce network usage, to reduce the size of recorded video files, or to reduce the number of saved image files.
	For example, the VGA2Ethernet device can capture up to 120 frames per second (fps). This frame rate may approach 100% CPU usage even on a dual CPU video capture workstation. To reduce load on the video capture workstation, you can reduce the frame rate to 30 fps without losing too much data.
	The valid frame rate range is from 0.01 to 60 fps. The default frame rate is 30 fps.

Fix frame rate	Select fix frame rate to force the frame rate to always be the same as the limited frame rate.

8. Recording Image Files

You can use the information in this chapter if you are planning to record frames captured by a VGA2Ethernet device as a series of individual image files.

Configuring Image File Recording Options

You should review and modify image file recording options before recording captured images as image files. Using image file recording options, you can control the format of the image files, control the file naming system used for saving the image files, and determine whether to save all captured images or only some.

To configure image file recording options

1. Start the VGA2Ethernet user interface.
2. If required, select a VGA2Ethernet device using the **Select Device** command from the **Capture** menu.
3. On the **Tools** menu select **Options**.
4. On the **Recording** tab set **Record as** to *Images*.

Configure the capturing options and select **OK** to save your changes.

Recording Image Files

Before recording captured images as a series of image files, you should configure image recording options and optionally configure display format settings.

To record image files

1. Connect the VGA2Ethernet device to the video source that you want to record from and to the video capture workstation.

2. On the video capture workstation, start the VGA2Ethernet user interface. If required, select the VGA2Ethernet device.

3. Make sure the VGA2Ethernet user interface is displaying the captured images that you want to record.

4. Select **Start Recording** from the **Capture** menu or from the toolbar select

   .

5. Enter the file name, select the location for saving the video file, and select **Save**. As the VGA2Ethernet device captures images, they are recorded as a series of image files according to the image file settings on the **Recording** tab of the **Options** dialog. The Status bar shows the names and location of the image files as the VGA2Ethernet user interface saves them. You can pause recording by selecting **Pause** from the **Capture** menu or from the toolbar.

6. You can stop recording by selecting **Stop Recording** from the Capture menu or from the toolbar. When you stop recording, the status bar displays the number of image files saved. For example, the message **Wrote 31 files** indicates the VGA2Ethernet user interface saved 31 image files.

9. Recording Videos

You can use the information in this chapter if you are planning on recording the frames captured by your VGA2Ethernet device as video files.

Recording Videos Using the Epiphan VGA2Ethernet user interface

This section describes how to use the Epiphan VGA2Ethernet user interface to record video files on a video capture workstation running Windows 2000, XP, Vista or 7.

Videos are recorded in Windows *.avi file format. The *.avi files are created and saved by an external codec that must be installed on the video capture workstation. To record video, you first install an external third-party video codec and then add that codec to the VGA2Ethernet user interface configuration. The Epiphan VGA2Ethernet user interface passes captured images to the video codec for recording.

Selecting a Windows Video Codec

The VGA2Ethernet user interface automatically finds all of the video codecs installed on the video capture workstation. Unless you have already installed a high-speed codec, most of the codecs that the VGA2Ethernet user interface finds may be too slow or have poor compression. If a codec is too slow, the video recording frame rate may be too low to produce a good quality video without compromising the performance of the video capture workstation. If a video codec has poor compression, the recorded *.avi files could become very large.

To view the codecs installed on the video capture workstation

1. Start the Epiphan VGA2Ethernet user interface.
2. Select **Options** from the **Tools** menu.
3. Select the **Recording** tab.
4. Set **Record as** to Video.
5. Select the **Select Codec** button.
7. Select the Compressor list to view the list of video codecs available on the video capture workstation.

Although a number of codecs may be available, Epiphan recommends that you select a third-party codec to purchase or download that will meet your requirements. Select a

video codec that can record videos at a high frame rate and that also supports high quality compression.

Epiphan recommends the MS MPEG 4 V2 video codec for most applications. You can use this codec to produce *.avi files that are compatible with most *.avi players. This codec operates at high refresh rates without reducing the performance of the video capture workstation and also includes high quality compression.

Installing the ffvfw Video Codec Pack

The MS MPEG 4 V2 video codec is available in the free ffvfw codecs pack. You can download the ffvfw codecs pack from http://www.free-codecs.com/download/ffvfw.htm.

To download and install the ffvfw video codec pack

1. Make sure the Display Format is set to RGB 24 bits per pixel.
2. Check by selecting **Options** from the **Tools** menu and selecting **Display**.
3. Select the following link to download the ffvfw codec pack:

http://www.free-codecs.com/download_soft.php?d=313&s=205

This link starts a download of the file ffvfw-20031028.exe, which is the installer for the ffvfw codec pack.

4. Download this file and then run the executable to install the ffvfw codec pack.
5. From the VGA2Ethernet user interface, select **Options** from the Tools menu.
6. Select the **Recording** tab.
7. Select **Record** as Video.
8. Select the **Select Codec** button.
9. In the **Compressor list** select ffvfw MPEG-4 Codec.
10. Select **Configure**.
11. Select the following settings for the ffvfw codec pack:

Encoder	MS MPEG4 v2
FOURCC	MP42
Mode	one pass - quality
Quality	Between 1 and 100

Selecting a higher quality may reduce the frame rate and increase the size of the video files produced by the codec. You may want to experiment with the quality setting to achieve optimum results.

You may not need to change other settings unless you have special requirements. Select **OK** three times to save your changes.

Recording a Video

Before recording captured images as a video you should:

- Set the display format to RGB 24 bits per pixel
- Install and configure a video codec
- Configure video file recording options
- Review video recording options

To record video files

1. Connect the VGA2Ethernet device to the video source that you want to record from and to the video capture workstation.
2. On the video capture workstation, start the VGA2Ethernet user interface.
3. Make sure the VGA2Ethernet user interface is displaying the captured images that you want to record.
4. Select **Start Recording** from the **Capture** menu or from the toolbar select

    .

5. Enter the file name, select the location for saving the video file, and select **Save**.

As the VGA2Ethernet captures images, they are recorded to a video file. The Status bar shows the name and location of the video file. The status bar also displays the amount of time that the video has been recording and the number of frames (or images) recorded. When the size of the video file reaches the AVI file

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size limit, (see AVI file size limit) the VGA2Ethernet user interface does one of the following:

- stops recording.
- starts a new video file and continues recording. (Configuring Video File Recording Options describes how to specify the file name.)
- overwrites the original video file and continues recording.

You can pause recording by selecting **Pause** from the **Capture** menu, the key combination **Ctrl+U** or ⏸ from the toolbar.

You can stop recording by selecting **Stop Recording** from the **Capture** menu or ⏺ from the toolbar. When you stop recording, the Status bar displays the name and location of the saved video file, for how long the video file was recording, and the number of frames (or images) recorded. For example: Wrote c:\temp\example.avi (85 sec, 464 frames).

Playing Back a Video File

Depending on the video codec that you used, you should be able to play back most recorded videos using Windows Media Player. If you are playing back the video file on a computer other than the video capture workstation, you may need to install a video codec on that computer. See "Installing the ffvfw Video Codec Pack". You cannot use the Epiphan VGA2Ethernet user interface to play back video files.

Recording Videos for Mac OS X

This section describes how to record video files on a video capture workstation running Mac OS X. You must first install the Epiphan device driver and Epiphan QuickTime component on the video capture workstation and then make records using a QuickTime-compatible video recording application.

Apple QuickTime is the standard Mac OS X QuickTime multimedia API. The Epiphan capture API sends captured images to the Epiphan QuickTime component. The Epiphan QuickTime component sends the captured images to QuickTime where they can be recorded or otherwise processed by any QuickTime-compatible video recording application such as HackTV Carbon or QuickTime Pro.

Setting QuickTime Options for Recording Videos

Before starting to record videos you should configure Epiphan QuickTime integration options by opening **System Preferences**, selecting VGA2USB under **Other**, and configuring QuickTime settings for the devices that you will be recording video from. QuickTime options set some optional default settings used by some QuickTime applications.

To add or remove a network device

1. To add a device, select the plus sign at the bottom left of the window.
2. Enter the IP Address of the device you want to add or click on the triangle beside the Network Address box and select the device from the list of networked devices.
3. Select Connect.
4. To remove a device select the device and select the minus sign.

Recording Video Files (Mac OS X)

In addition to setting QuickTime Options you need to install a QuickTime-compatible video recording application such as QuickTime Pro, HackTV Carbon or WhackedTV. QuickTime Player is included in Mac OS X distributions. You can buy a QuickTime Pro licence from Apple to enable recording for your QuickTime Player. HackTV Carbon is a free application that works on older Mac systems. WhackedTV is also a free

application for use with newer Mac systems. Both HackTV Carbon and Whacked TV are non-commercial software with useful functionality but a limited user interface and no end user documentation or Help.

Playing Back a Video File (Mac OS X)

You can play a QuickTime video using QuickTime or any QuickTime-compatible video player.

10.   Cables, Connectors and Adapters

VGA2Ethernet can connect to a number of different interfaces cables, and adapters. This chapter describes a subset of connectors, cables and adapters that can be used with the VGA2Ethernet device.

3.5 mm Mini-jack

A 3.5mm mini jack connector is used to carry audio signals. It can be connected to VGA2Ethernet via Audio IN port.

DVI

A DVI cable can be connected to VGA2Ethernet via DVI IN and OUT ports.

VGA

A VGA Cable can be connected to VGA2Ethernet via DVI IN and OUT ports with the help of the DVI to VGA adapter (shown below).

DVI to VGA cable.

Connects VGA sources to a VGA2Ethernet's DVI port.

RJ-45 Male

Ethernet RJ-45 connector: Used to connect VGA2Ethernet to the Ethernet network.

Composite Video to DVI Converter

Used to connect VGA2Ethernet to composite video sources.

8. Sample Applications

The following section describes a number of applications and scenarios for using VGA2Ethernet.

Sharing Data without Using Guest-access Networks

If the company has strict security requirements in a computing environment, VGA2Ethernet can offer Internet access to the companies'. The VGA2Ethernet solution provides to visitors a possibility to share safely their presentations and other information within the company without accessing company servers or sensitive networks. There's no need to plug visitor PCs into the corporate network or allow guests to use USB inputs for sharing information. VGA2Ethernet connects to the visitors' devices outputs and captures information transferring it through the Ethernet without connection to the corporate LAN.
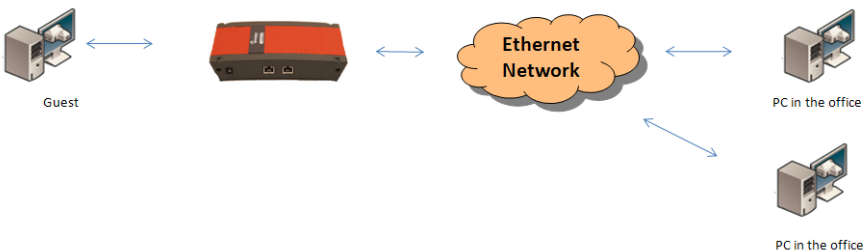
Performing Presentations over Ethernet

Organizations perform business presentations for different purposes. Remote participants watch the presentations in an Internet browser. The presentations content is sent over Ethernet using VGA2Ethernet. VGA2Ethernet grabs either DVI or VGA
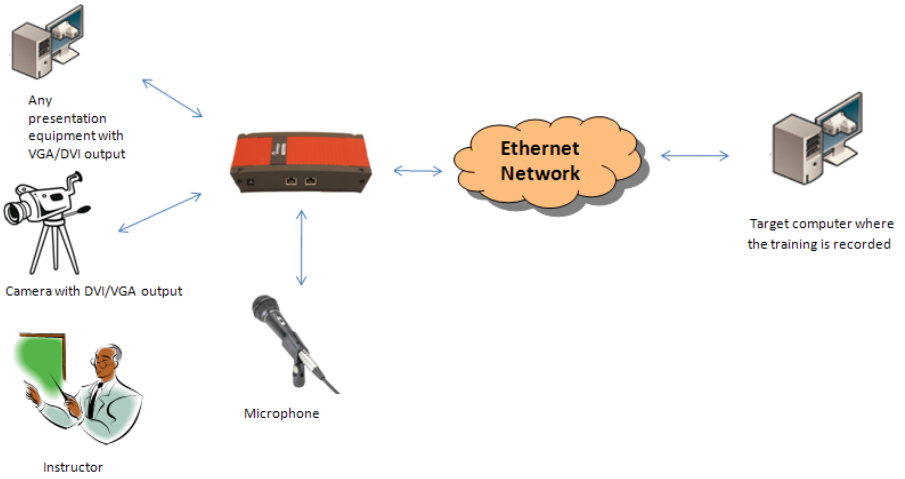
signal from any device being used as a presentation source and transfers it to the remote users through the Ethernet connection.
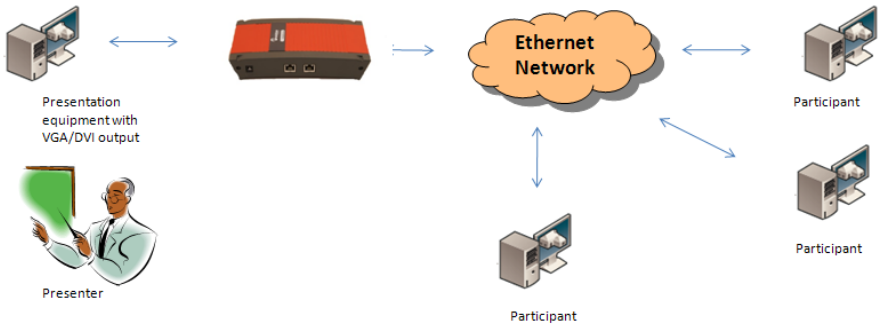
Recording Training Sessions and Lecture Capture

VGA2Ethernet can be used to record training, usability testing or simulations. Recorded trainings can be used in coaching and feedback both by facilitators and participants. VGA2Ethernet captures training sessions from DVI and analog cameras, sends video over Ethernet and records on a target computer. Besides, it makes the recorded sessions accessible to others, edited and post-produced by video editing software.

Any presentation equipment with VGA/DVI output

Camera with DVI/VGA output

Instructor

Microphone

Ethernet Network

Target computer where the training is recorded

9. List of Figures

Environmental Information

The equipment that you bought has required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

In order to avoid the dissemination of those substances in our environment and to diminish the pressure on the natural resources, we encourage you to use the appropriate take-back systems. Those systems will reuse or recycle most of the materials of your end life equipment in a sound way.

The crossed-out wheeled bin symbol invites you to use those systems. If you need more information about collection, reuse and recycling systems, please contact your local or regional waste administration. You can also contact us for more information on the environmental performance of our products.

FCC & CE Compliance Statement

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

(1) This device may not cause harmful interference

(2) This device must accept any interference received, including interference that may cause undesired operation.

Marking by the symbol $C\hspace{-2pt}\epsilon$ indicates compliance of this device with EMC directive of the European Community and meets or exceeds the following technical standard.

EN 55022 - Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment.

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Configuration Worksheet

Use this worksheet to keep necessary information about VGA2Ethernet installation, settings etc.

Parameter (IP address, DNS server, SSID…)	Value

Notes: