



***Epiphan VGA Printer User Guide***



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### **Specifications**

You can go to the [VGA Printer](#) page of the Epiphan website to get information about the VGA Printer.

### **Warranty**

All Epiphan Systems products are provided with a 100% replacement warranty for one year from the date of purchase. We welcome your feedback and suggestions for product improvements. You can email your comments to [info@epiphan.com](mailto:info@epiphan.com).

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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, you continue to have outstanding issues, email a problem report to [support@epiphan.com](mailto:support@epiphan.com). To help us solve the problem efficiently, include the following info:

- Your VGA Printer serial number.
- The behavior of your VGA Printer LED indicators.
- Technical description of the VGA or DVI-A signal source including resolution, refresh rate, synchronization, type of hardware.
- Complete description of the problem you're experiencing.

### **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.

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## 1. Introduction

You can use the VGA Printer device to print any VGA or DVI-A display to any compatible printer with the push of a button or the click of a link on a web interface. The VGA Printer device can easily and cost-effectively capture images displayed on computer screens, or generated by medical equipment, microscopes and other specialized imaging products that have VGA or DVI-A output. While these devices may support printing, none is easier to set up or more effective than the VGA Printer device.

No special hardware is required just the VGA (or DVI-A) source and a printer that supports USB 1.1 or 2.0. You can also print to most network printers. Capturing and printing VGA or DVI-A images requires the following components:

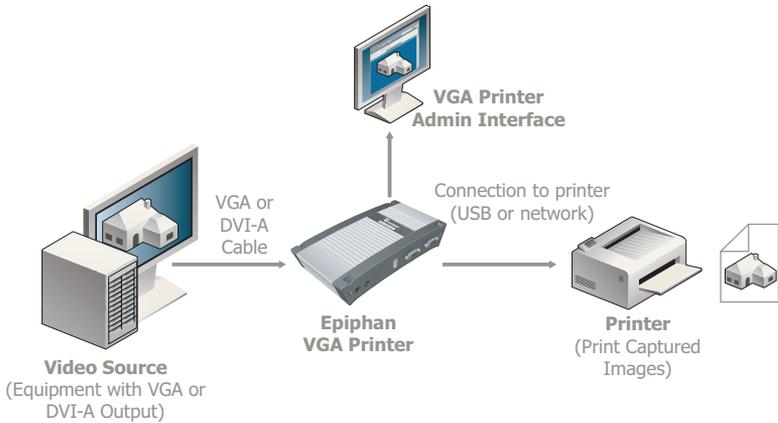
- A VGA or DVI-A video source to capture images from.
- An Epiphan VGA Printer device that captures images from the video source and sends them to a printer.
- One or more printers to print captured images.

The VGA Printer device combines an Epiphan Frame Grabber and a computer in a small appliance. The Frame Grabber captures images. The computer records images captured by the Frame Grabber and can send captured images to one or more configured printers. The printers can be connected directly to the VGA Printer device with a USB cable or they can be network printers connected to the same network as the VGA printer.

**Note:** The VGA Printer Frame Grabber is equivalent to a VGA2USB or VGA2USB Pro that has been optimized for the VGA Printer device.

The computer also provides the VGA Printer network setup and printer configuration settings, and the VGA Printer .Web admin interface. You use the VGA Printer Web admin interface to configure the VGA Printer device and to view and print captured images.

**Figure 1: VGA Printer components**



Configuring and operating the VGA Printer device from the Web admin interface is simple. You can connect to the Web admin interface with any web browser and configure settings such as the VGA Printer network configuration, printer settings, and image capture optimization.

The VGA Printer device can also get network settings from a DHCP server if there is a DHCP server on the network.

## Adding Printers

In most cases, adding a printer to the VGA Printer device is quick and easy, especially if the VGA Printer device can automatically find your printer.

A wide range of printer options, print job settings, and other functions are available if you require them. But in most cases once you have used the VGA Printer device to automatically find and configure a printer you do not have to spend much time working with the printer configuration.

While there are a lot of settings and options, in most cases you do not need to use them. However, they are available for advanced users or if you have special requirements.

The VGA Printer device is compatible with most printers. If you connect a printer to a VGA Printer USB port or if a network printer is connected to the same network, the VGA Printer device can usually find the printer and after a few simple steps you can be printing captured images to it.

**Figure 2: Finding available printers**



You can easily add more than one printer to the VGA Printer device and then select one of them to use. The VGA Printer device remembers all of the printers that you have configured. This makes it easy to move the VGA Printer device to different locations and either add a new printer or print to a previously added printer.

As well, if you have special printer needs or want to print to a printer that the VGA Printer device cannot find or does not automatically support, the VGA Printer device supports uploading PPD files or creating custom printer configurations.

## Printing Captured Images

You can print captured images by pressing the Print button on the VGA Printer device. You can also print from the Web admin interface. Finally you can automate print requests using an RS-232 interface or by using a custom VGA Printer URL.

The VGA Printer device displays the current captured image on the Web admin interface so that you can preview the image before you print it. You can also use the VGA Printer Web admin interface to add annotations to printed images and to adjust image capture settings and printer settings to optimize the printed image quality.

The VGA Printer device queues print jobs which means you can continue to print captured images without having to wait for the previous print job to finish.

## About This Document

This *Epiphan VGA Printer User Guide* describes how to install the VGA Printer device and how to use the VGA Printer device to print captured images. This document also describes VGA Printer Web admin interface settings, and basic and advanced printer options.

This *Epiphan VGA Printer User Guide* describes Firmware Version 3.5.11 of the Epiphan VGA Printer firmware.

This document contains the following chapters:

- [Chapter 2. “Installation and Getting Started” on page 9](#), describes how to connect the VGA Printer device to a printer, to a video source, and to a network. It also describes how to log into the VGA Printer Web admin interface.
- [Chapter 3. “Printing Basics” on page 27](#) describes how to add a printer, and print a captured image. For many users the information in chapters 2 and 3 should be all the information needed.
- [Chapter 4. “VGA Printer Web admin interface” on page 35](#), describes the Web admin interface options.
- [Chapter 5. “Advanced Printer Configuration” on page 57](#), describes advanced printing functions such as manually adding printers, selecting the default printer and working with print job queues.
- This document concludes with an alphabetical [Index](#).

## 2. Installation and Getting Started

This chapter describes how to connect and install the VGA Printer device, add a printer, and print captured images. This chapter contains the following sections:

- [VGA Printer Hardware Features](#)
- [VGA Printer Software Features](#)
- [Connect and Power on the VGA Printer Device](#)
- [VGA Printer Basics](#)
- [Connecting the VGA Printer Device](#)
- [Using the Network Discovery Utility to Find the IP Address of the VGA Printer Device](#)
- [Logging Into the VGA Printer Web admin interface](#)
- [Troubleshooting](#)
- [If the Network Doesn't Have a DHCP Server](#)
- [RS-232 Integration](#)

# VGA Printer Hardware Features

The VGA Printer device includes the following hardware features.

**Figure 3: VGA Printer connectors, buttons, and LEDs**



<b>Power</b>	Connect the AC adapter to the VGA Printer power connector and to a power outlet.
<b>ETH 1</b>	Primary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port to connect the device to an Ethernet network.
<b>ETH 2</b>	Secondary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port. This port is useful for some configurations. See <a href="#">“Configuring the Ethernet Bridge For Use if You Have Only One Ethernet Connection”</a> on page 40 for more information.

<b>VGA IN</b>	To connect a VESA-compatible VGA source to the VGA Printer device. See the <a href="#">VGA Printer technical specifications</a> on the Epiphan web site for information about the video input supported by the VGA Printer
<b>VGA OUT</b>	Not used.
<b>USB ports</b>	All VGA Printer devices have multiple USB 2.0 connectors (that also support USB 1.1).  You can send commands to VGA Printer device by connecting a USB port to an RS-232 control system (using a USB to RS-232 connector). See <a href="#">“RS-232 Integration” on page 25</a> for more information.
<b>Reset Button</b>	Reset the VGA Printer device to factory default settings. To use this button, disconnect power to the device, press and hold the Reset button as you reconnect the power. The blue LED lights up. Keep pressing the Reset button until the blue LED turns off and the Green LED lights up. Release the Reset button. The device starts normally but with all settings returned to factory defaults.  <b>Note:</b> You may have to re-configure the device’s network settings to reconnect the device to the network. See <a href="#">“Changing the VGA Printer IP Address” on page 22</a> for more information.

### VGA Printer LEDs

LED	Activity	Description
Power (PWR)	Red	Normal operation, the Frame Grabber is receiving power.
	Off	Power is disconnected from the Frame Grabber.
Capture (CAP)	Flashing Amber	The video capture application is running and has found the Frame Grabber. The Frame Grabber is capturing images.
	On	The Frame Grabber is not receiving a VGA/DVI-A signal, or cannot adjust video capture parameters.
Status (STAT)	Off	The Frame Grabber is not recognized by the operating system.
	Flashing Green	Normal operation, the Frame Grabber is initialized and ready to capture.

## VGA Printer Basics

To get started, a quick reference of VGA Printer system requirements and some useful information:

<b>Video source</b>	Any VESA-compatible VGA or DVI-A source.
<b>Printer Interface</b>	USB connection and network printers that use the http, ipp, lpd, or socket protocol. The VGA Printer device does not support printing to Windows shared network printers.

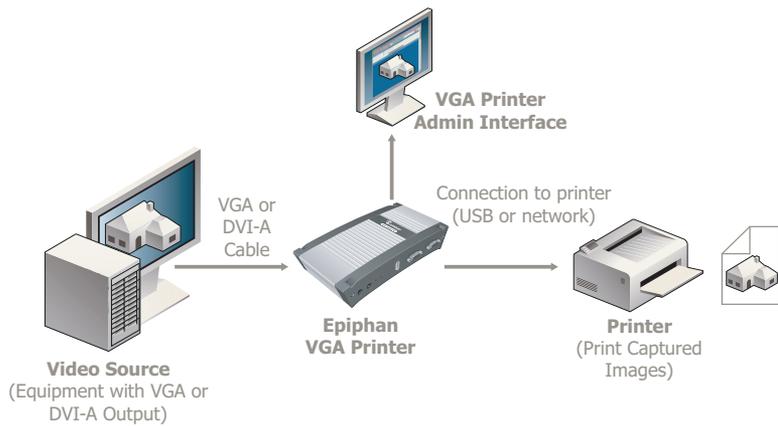
<b>Recommended and Supported Printers</b>	<p>See the <a href="#">VGA Printer compatible printers</a> page of the Epiphan Web Site for the up-to-date list of recommended and supported printers. PostScript printers are recommended for fastest printing. You can use the VGA Printer Web admin interface to easily find and quickly configure printers.</p> <p><b>Note:</b> You can automatically find printers connected to the VGA Printer device or on the same network. You must add a printer before you can print captured images. See <a href="#">3. “Printing Basics” on page 27.</a></p>
<b>Web admin interface</b>	<p>Use the Web admin interface to add printers, configure the VGA Printer device and print captured images. To log in, open a web browser to and browse to:</p> <p>http://&lt;VGA_Printer_IP_Address&gt;</p> <p><b>User Name:</b> admin (no password)</p>
<b>Default Web admin interface IP address and network mask</b>	<p><b>IP:</b> 192.168.255.250</p> <p><b>Netmask:</b> 255.255.255.252</p> <p>The VGA Printer device can get an IP address from a DHCP server on your network if available. After you connect the VGA Printer device to your network, check your DHCP server logs to find the IP address assigned to the VGA Printer device. If your network does not have a DHCP server, see <a href="#">“If the Network Doesn’t Have a DHCP Server” on page 20.</a></p>

## Connecting the VGA Printer Device

This section describes how to connect the VGA Printer device to a VGA or DVI-A video source, a printer, and to your network. Use the network connection to connect to the VGA Printer Web admin interface. The VGA Printer device also uses the network connection to communicate with network printers.

Figure 4 shows VGA Printer connectors, buttons, and LEDs.

**Figure 4: Connecting the VGA Printer device**



To connect the VGA Printer device you need:

- A VGA or DVI-A video source.
- An IP-based Ethernet network.
- One or more printers the can connect to the network or to a VGA Printer USB port.

### To connect and turn on the VGA Printer device

- 1 Use a VGA cable to connect the VGA signal output source to the VGA IN port.

You can connect the VGA Printer device to any VGA source.

If you are connecting to a DVI-A video signal, use a VGA to DVI-A adapter.

**Figure 5: Connecting a the VGA Printer device to a VGA source**

You can use an active VGA splitter to split the VGA signal between a monitor and the VGA Printer device. Splitting the VGA signal may reduce the image quality.

- 2 Use a USB cable to connect a printer directly to any VGA Printer USB port.

Follow the connection instructions supplied by your printer manufacturer for connecting your printer (except that you do not have to install printer drivers on the VGA Printer device.)

- 3 Use a standard 10/100 Base-T RJ-45 Ethernet cable to connect the network to the VGA Printer ETH 1 port.

The network must be running the TCP/IP protocol. Ideally you should be able to connect to the Internet from the VGA Printer device.

- 4 Connect the power adapter to the VGA Printer power connector.

The VGA Printer device powers on and starts up.

- 5 Power on any printers connected to the VGA Printer device.
- 6 Start up the VGA source.

- 7 Confirm that the VGA Printer device is receiving images from the VGA source by logging into the VGA Printer Web admin interface (see “[Logging Into the VGA Printer Web admin interface](#)” on page 18) and confirming that a captured image appears.

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

## Using the Network Discovery Utility to Find the IP Address of the VGA Printer Device

You can use the Network Discovery Utility on a Windows PC to find the VGA Printer device and its IP address on the network. You can also use the Network Discovery Utility to connect to the Web admin interface.

The VGA Printer device must be assigned an IP address on the network to be able to find and print to network printers. It can get an IP address from a DHCP server if there is one on the network. If the network does not have a DHCP server, see “[If the Network Doesn’t Have a DHCP Server](#)” on page 20.

This section assumes that the network has a DHCP server and that the DHCP server gives the VGA Printer device an IP address on the network.

### To install the Network Discovery Utility

- 1 Find the latest Network Discovery Utility on an Epiphan download page. For example:

<http://www.epiphan.com/products/broadcasting/vga-broadcaster-lite/download/>

- 2 Select **Download Network Discovery Utility**.

Make sure you note the download destination folder.

- 3 Run NetworkDiscovery.exe.
- 4 Select Search to find the Epiphan devices connected to the network.

**Note:** The Network Discovery Utility can only find the Epiphan devices on the same network as the Windows PC.

If the VGA Printer 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 it should appear on the Network Discovery Utility display. The Network Discovery Utility also displays the VGA Printer IP address.

You can use this IP address to connect to the Web admin interface. You can also select Web config to connect to the Web admin interface.

If the VGA Printer device is capturing images, its status should be Device OK shown with a green indicator.

**Note:** When you restart the Network Discovery Utility and if it has already found an Epiphan device, it will show the status as Detecting and the indicator will be amber. The DHCP server may have assigned a new IP address; therefore, always select Search after starting the Network Discovery Utility.

If the Network Discovery Utility cannot find the VGA Printer device, make sure the device is turned on and check the network connections. If you find and correct the problem, select Search to refresh the list of devices.

If you still cannot see the VGA Printer device, it may not have gotten an IP address from the DHCP server. Use the information in [“Changing the VGA Printer IP Address”](#) on page 22 to log into the Web admin interface and manually change the VGA Printer IP address.

## Logging Into the VGA Printer Web admin interface

You use the VGA Printer Web admin interface to configure the VGA Printer device. Log into the VGA Printer Web admin interface from any web browser. Before you log into the Web admin interface you need to determine the IP address of the VGA Printer device.

**Note:** You can always log into the VGA Printer Web admin interface by browsing to the default VGA Printer IP address, which is <http://192.168.255.250>. To log into the VGA Printer device using this IP address you must change your PC to use 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>.

### If the Network has a DHCP Server

The VGA Printer device can get network settings automatically if the network has a DHCP server. After connecting the VGA Printer device to the ethernet network, you can use the Network Discovery Utility or check the DHCP server logs to determine the IP address given to the VGA Printer device.

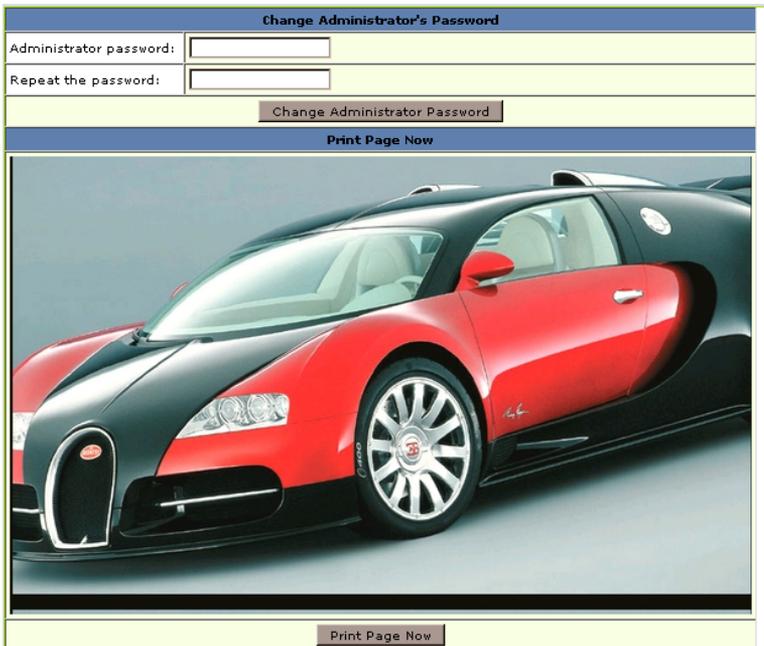
### To log into the VGA Printer Web admin interface

- 1 Start a web browser on a PC connected to the same network as the VGA Printer device.
- 2 Browse to:  
`http://<VGA_Printer_IP_address>`
- 3 Enter the following:  
**User Name:** admin  
**Password:** (no password required)

#### 4 Press Enter.

The VGA Printer Web admin interface appears. [Figure 6](#) shows a sample VGA Printer Web admin interface with an example captured image. If the VGA Printer device is connected to an active VGA source, the Web admin interface shows the current captured image.

**Figure 6: VGA Printer Web admin interface (example image)**



## Troubleshooting

If the VGA Printer device can't print but the printer is connected and functioning properly you may need to select a default printer or add a new printer. Log into the VGA Printer Web admin interface and if Configure VGA Printer displays the message **Error: printer is not configured!** the VGA Printer device cannot find a printer.

- To add a new printer, see [“Adding Printers” on page 27](#).
- To set a printer to be the default printer, see [“Selecting the Default Printer” on page 68](#).

If a printer is turned off or disconnected, VGA Printer may store print jobs in that printer's print queue. When the printer is connected or turned on again, the stored print jobs will be printed. After the printer is restarted you may have to go to the print queue and restart print jobs for them to print. See [“Controlling Print Jobs” on page 70](#) for information about viewing and starting print jobs.

## **If the Network Doesn't Have a DHCP Server**

If the network doesn't have a DHCP server, to log into the VGA Printer Web admin interface you need to temporarily change the network configuration of your PC.

You must also establish an ethernet connection between the VGA Printer device and your PC. You can do this one of the following ways:

- Connect the VGA Printer ETH 1 port to the same Ethernet network as your PC.
- Connect the VGA Printer ETH 1 port to an Ethernet network switch and connect your PC's Ethernet port to the same switch.
- Connect the VGA Printer ETH 1 port directly to your PC's Ethernet port using a cross-over cable.

## To log into the VGA Printer Web admin interface

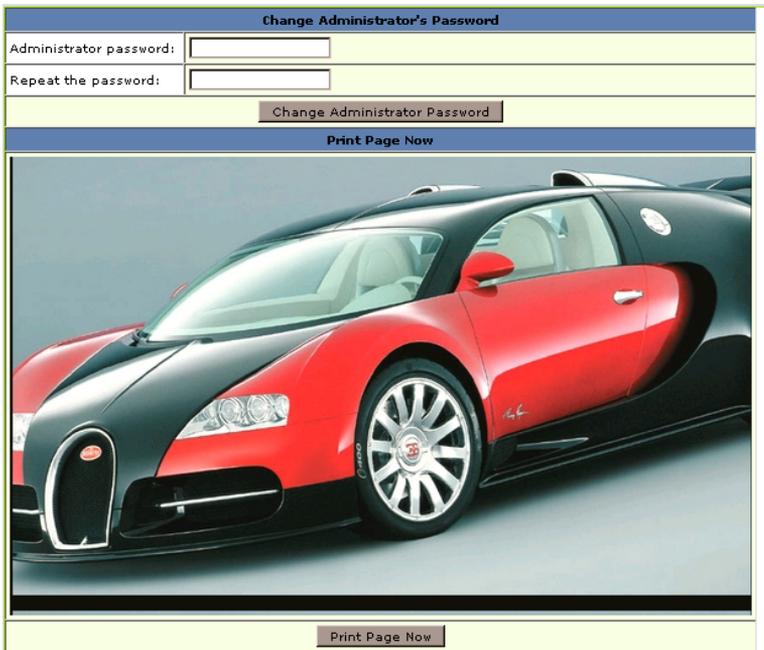
- 1 Change the IP address of a PC connected to the same network as the VGA Printer device to:

**IP Address:** 192.168.255.249

**Subnet Mask:** 255.255.255.252

Follow the instructions for your operating system. If your 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.

**Figure 7: VGA Printer Web admin interface (with an example captured image)**



- 2 Start a web browser on the PC and browse to:  
<http://192.168.255.250>

- 3 Enter the following:

**User Name:** admin

**Password:** (no password required)

- 4 Press Enter.

The VGA Printer Web admin interface appears. [Figure 7](#) shows a sample VGA Printer Web admin interface. If the VGA source is active, the display shows a captured image. Otherwise it will be blank.

## Changing the VGA Printer IP Address

You can change the VGA Printer IP address at any time. You may need to change the IP address so that PCs on the network can connect to the VGA Printer Web admin interface and so that the VGA Printer device can connect to network printers.

- If the network does not have a DHCP server you will most likely need to change the VGA Printer IP address.
- If the network does have a DHCP server you might also want to change the VGA Printer IP address if you would rather the VGA Printer device have a static IP address instead of a dynamic address assigned by the DHCP server.
- You can also change the VGA Printer IP address even if the DHCP server has assigned an IP address. If for some reason the DHCP server goes down, you can switch the VGA Printer to connect using the static IP address.

### To change the VGA Printer IP address

This procedure describes how to disable DHCP and give the VGA Printer device a static IP address.

- 1 Log into the VGA Printer Web admin interface.
- 2 Scroll down to **Change IP Address**.

You can also use your web browser find feature to find Change IP Address.

**Figure 8: Change the VGA Printer IP address**

Change IP Address	
Current settings:	MAC Address: 00:0a:9d:f4:04:ea IP Address: 192.168.1.176
How to obtain IP address:	<input checked="" type="radio"/> Use DHCP <input type="radio"/> Use static address
For static address:	IP: <input type="text" value="192.168.10.1"/> Mask: <input type="text" value="255.255.255.0"/> Gateway: <input type="text"/> DNS Server: <input type="text"/>
<input type="button" value="Change IP Address Configuration"/>	

**3 Set How to obtain IP address to Use static address.**

You must disable DHCP for the VGA Printer device to use a static IP address.

**4 Enter an IP address, Mask, Gateway, and DNS server that are valid for the network.**

Contact your network administrator if you are not sure what information to use. The IP address, netmask, gateway, and DNS server that you assign to the VGA Printer device must be compatible with the IP addresses and netmask of the other devices on the network. For example:

<b>IP:</b>	192.168.1.20
<b>Mask:</b>	255.255.255.0
<b>Gateway:</b>	192.168.1.2
<b>DNS server:</b>	192.168.1.99

**5 Select Change IP Address Configuration to save these changes.**

The VGA Printer device displays the changed IP address configuration.

**Figure 9: Example VGA Printer IP address configuration change**

- 6 Confirm that the settings are correct and select **Continue**.
- 7 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 VGA Printer device to reboot.
- 8 After a few minutes try logging into the VGA Printer Web admin interface by browsing to the new IP address. For example, browse to:  
`http://192.168.1.20`
- 9 Enter the Web admin interface user name and password to login.

### To reset network settings to use DHCP

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

- 1 Log into the VGA Printer Web admin interface.
- 2 Scroll down to **Change IP Address**.  
You can also use your web browser find feature to find Change IP Address.
- 3 Change **How to obtain IP address** to **Use DHCP**.
- 4 Select **Continue**.
- 5 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 VGA Printer device to reboot.

- 6 After a few minutes check the Network Discovery Utility or your DHCP server logs to determine the VGA Printer IP address.
- 7 Try logging into the VGA Printer Web admin interface by browsing to the new IP address. For example, if the VGA Printer IP address has changed to 192.168.1.200, browse to:  
`http://192.168.1.200`

## RS-232 Integration

You can integrate the VGA Printer device with control equipment that uses an RS-232 interface. You can use this RS-232 interface to trigger the VGA Printer device to print the current captured image by sending a PRINT command over the RS-232 connection. The PRINT command must be terminated with an LF (ASCII code 10).

Connect your control equipment to the VGA Printer using a standard RS-232 null-modem cable. (such as Belkin Serial File Transfer cable part number F3X171-10). You must use an RS-232 serial adapter to connect the RS-232 null-modem cable to one of the VGA Printer USB ports.

The VGA Printer package does not include an RS-232 serial adapter but you can purchase one from Epiphan as an optional accessory.

Use the following serial port configuration for the RS-232 connection:

Speed	19200 bps
Data bits	8
Parity	None
Stop bits	1
Flow control	Hardware



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## 3. Printing Basics

This chapter describes how to add a printer, and print captured images. This chapter contains the following sections:

- [Adding Printers](#)
- [Printing a Captured Image](#)

### Adding Printers

You can add a printer to the VGA Printer device if the printer is connected directly to a VGA Printer USB port or if the printer is connected to the same network as the VGA Printer device.

You can add almost any printer, but Epiphany recommends that you add a compatible printer listed on the [VGA Printer compatible printers](#) page of the Epiphany Web Site. This page contains the up-to-date list of recommended and supported printers. PostScript printers are recommended for fastest printing.

**Note:** To add a printer that is not supported by the VGA Printer device, see the information provided in Chapter 5. “[Advanced Printer Configuration](#)” on page 57.

The VGA Printer device uses the Common UNIX Printing System (CUPS) to communicate with locally connected and network connected printers. This section describes some basic procedures for using the VGA Printer CUPS implementation. For detailed information about CUPS, see <http://www.cups.org>.

**Note:** Chapter 5. “[Advanced Printer Configuration](#)” on page 57 contains additional detailed CUPS-related procedures for the VGA Printer device.

The procedures for adding a local or a network printer are similar. This procedure describes how to add either type of printer. Before starting this procedure:

- If you want to print to a printer connected directly to the VGA Printer device, connect the printer to a VGA Printer USB port and turn on the printer.
- If you want to print to a network printer, make sure the network printer is on the same network and subnet as the VGA Printer device and make sure the printer is turned on. Also make sure the VGA Printer device can connect to the network.

### To add a printer (local or network)

- 1 Log into the Web admin interface.
- 2 Scroll down to **Configure VGA Printer**.

**Figure 10:Configure VGA Printer**

Configure VGA Printer	
Configured printer:	<b>Error: printer is not configured!</b> <b>Printers configuration and jobs control</b>
Color Transformation:	<input type="radio"/> Do not invert image <input checked="" type="radio"/> Invert all colors <input type="radio"/> Invert black only <input type="text"/> % Invert threshold (0-99)
Page Fit:	<input checked="" type="radio"/> Fit image keeping original aspect ration <input type="radio"/> Fit image to fill the whole page
Annotation:	<input checked="" type="checkbox"/> Add annotation to the printed image <input checked="" type="checkbox"/> Include timestamp to the annotation Annotation text: <input type="text"/>
<a href="#">Change Printer Settings</a>	

- 3 Select **Printers configuration and jobs control**.

You may have to enter the admin username and password again before the Printers page appears.

**Figure 11: Printers page****4 Select Find New Printers.**

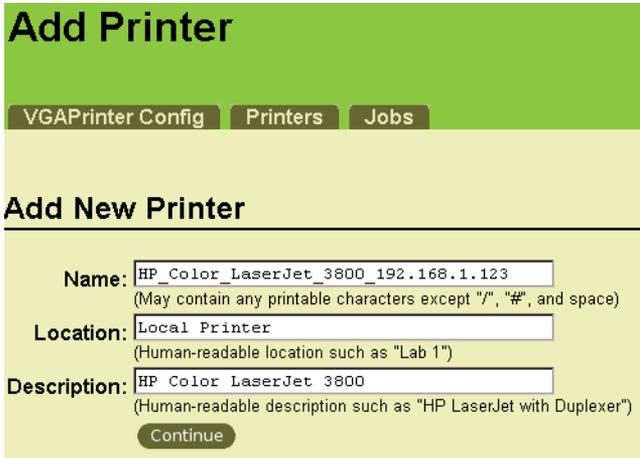
The VGA Printer device searches for locally connected printers and network printers. All printers that the VGA Printer device finds appear on the Available Printers list.

**Figure 12: Example Available Printers list**

If this list doesn't find the printer that you want to add, you can add the printer manually. See [“Adding a Printer That the VGA Printer Device Cannot Find Automatically”](#) on page 57.

**5 Select Add This Printer** beside the printer that you would like to add to the VGA Printer device.

Figure 13: Adding a printer



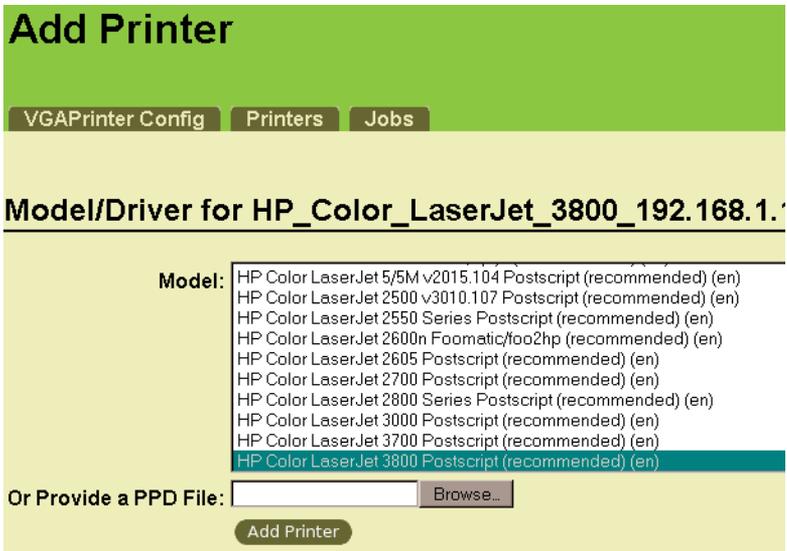
The screenshot shows a web-based configuration interface for adding a printer. At the top, there is a green header with the text "Add Printer" and three navigation tabs: "VGAPrinter Config", "Printers", and "Jobs". Below the header, the main content area is titled "Add New Printer". It contains three input fields with labels and instructions:

- Name:** The input field contains "HP\_Color\_LaserJet\_3800\_192.168.1.123". Below it, a note says "(May contain any printable characters except '/', '#', and space)".
- Location:** The input field contains "Local Printer". Below it, a note says "(Human-readable location such as 'Lab 1')".
- Description:** The input field contains "HP Color LaserJet 3800". Below it, a note says "(Human-readable description such as 'HP LaserJet with Duplexer')".

At the bottom of the form, there is a "Continue" button.

- 6 Optionally change any information about the Name, Location, and Description of the printer.  
The printer Name cannot include spaces.
- 7 Select **Continue**.  
The list of printer drivers appears.

Figure 14: List of printer drivers



- 8 Select the best printer driver for the printer that you are adding.

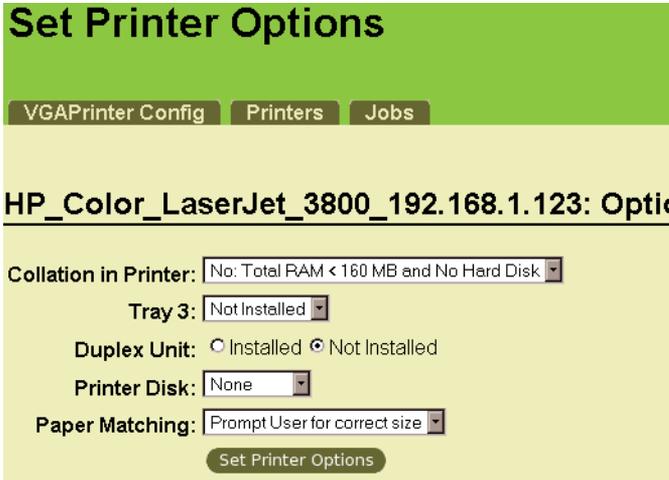
The VGA Printer device usually selects the correct printer driver but if not, find the printer in the list.

If the printer does not appear in the list, see [“Adding a Printer That the VGA Printer Device Cannot Find Automatically”](#) on page 57.

- 9 Select **Add Printer**.

The VGA Printer device adds the selected printer. This may take a short while. After the printer is added, a message is displayed letting you know that the printer was added successfully. Then, Set Printer Options appears.

Figure 15: Set Printer Options



You can now select options for the printer. In most cases you don't have to change the default options. You can also go back and change them later.

If you do change printer options, make sure to make all required changes before selecting **Set Printer Options**.

**Note:** The VGA Printer device only prints in landscape mode. You can't change to portrait mode.

**10 Select Set Printer Options.**

The VGA Printer device saves the printer configuration. This may take a short while. Information about the printer that you added appears.

**Figure 16: Printer Added**

You can now start printing captured images on this printer.

You can also add additional printers by selecting **Find New Printers** and repeating this procedure.

**Note:** See Chapter 5. “[Advanced Printer Configuration](#)” on [page 57](#) for more printer-related procedures.

## Printing a Captured Image

There are 3 ways to print a captured image:

- Press the Print Image button on the right side of the VGA Printer device.
- Log into the VGA Printer Web admin interface and select the **Print Page Now** button located below the captured image.
- Using an RS-232 port connection. See “[RS-232 Integration](#)” on [page 25](#).

If you have added only one printer, the captured image is printed on this printer. If you have added more than one printer, the captured image is sent to the printer at the top of the list.

If you have made one of the printers the default printer the captured image is printed on the default printer. To set or change the default printer, see “[Selecting the Default Printer](#)” on [page 68](#).

**Figure 17: Print Page Now button on the Web admin interface**



### Triggering Printing From a Third-Party Application

You can integrate the VGA Printer device with a third-party application or a script that “touches” the Print Page Now URL to trigger the VGA Printer device to print the currently captured image. If the VGA Printer IP address is 1.1.1.1 a print URL could be: `http://1.1.1.1/admin/submit.cgi?cmd=prnow`.

You must also include the admin user name and password. To do this, you can combine the URL with authentication using a tool such as `Wget`. For example, if you use `Wget` and the VGA Printer Web admin interface password is `vga_print` the syntax could be:

```
wget --http-user=admin --http-passwd="vga_print"  
"http://1.1.1.1/admin/submit.cgi?cmd=prnow"
```

See <http://en.wikipedia.org/wiki/Wget> for information about `Wget`.

## 4. VGA Printer Web admin interface

This chapter describes configuring the VGA Printer Web admin interface options. The following parts of the Web admin interface are described in [Chapter 2. “Installation and Getting Started”](#) on page 9.

- [Printing the captured image.](#) See [“Printing a Captured Image”](#) on page 33.
- [Changing the VGA Printer IP address.](#) See [“Changing the VGA Printer IP Address”](#) on page 22.

This chapter describes:

- [Adding or Changing the Administrator’s Password](#)
- [Configuring the VGA Printer device](#)
- [Configuring the Ethernet Bridge For Use if You Have Only One Ethernet Connection](#)
- [Using the VGA Printer device as a DHCP Server](#)
- [Changing VGA Printer Sound Volume](#)
- [Configuring VGA2USB Adjustments](#)
- [Rebooting or Restarting the VGA Printer device](#)
- [Maintenance Configuration](#)
- [Web Page Configuration](#)
- [Date and Time Configuration](#)
- [Firmware Upgrade](#)
- [System Information](#)

# Adding or Changing the Administrator's Password

Add a password for the Web admin interface to control access to the interface. You can add a password or change the password at any time.

**Note:** If you lose or forget the admin password you can contact Epiphan Technical Support for help to reset it.

## To add a password to the Web admin interface

- 1 Log into the Web admin interface.

The Change Administrator's Password section appears at the top of the Web admin interface.

**Figure 18:Change Administrator's Password**

Change Administrator's Password	
Administrator password:	••••
Repeat the password:	••••
<input type="button" value="Change Administrator Password"/>	

- 2 Enter and repeat the new password.  
The password is case sensitive and can include up to 255 ASCII characters.
- 3 Select **Change Administrator Password** and select **Continue**.  
The password changes and you must log into the Web admin interface again.
- 4 Log into the Web admin interface with the admin user name and the new password.

## To delete the Web admin interface password

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 VGA Printer configuration.

**1** Log into the Web admin interface.

The Change Administrator's Password section appears at the top of the page.

**2** Delete the characters from the Administrator's password and the Repeat the password fields.

**3** Select **Change Administrator's Password**.

The password is deleted and you must log into the Web admin interface again.

**4** Log into the Web admin interface with the admin user name and no password.

## Configuring the VGA Printer device

You can use the Configure VGA Printer section of the Web admin interface to configure color transformations, page fit, and to add annotations and the date and time to the pages printed by the VGA Printer device.

When you are done configuring the printer, select Change Printer Settings to apply the changes.

**Figure 19:**Configuring the VGA Printer device

Configure VGA Printer	
Configured printer:	HP_DESKJET_840C_USB_1 (default printer) <a href="#">Printers configuration and jobs control</a>
Color Transformation:	<input checked="" type="radio"/> Do not invert image <input type="radio"/> Invert all colors <input type="radio"/> Invert black only <input type="text" value="10"/> % Invert threshold (0-99)
Page Fit:	<input checked="" type="radio"/> Fit image keeping original aspect ration <input type="radio"/> Fit image to fill the whole page
Annotation:	<input checked="" type="checkbox"/> Add annotation to the printed image <input checked="" type="checkbox"/> Include timestamp to the annotation Annotation text: <input type="text" value="Annotation"/>
<input type="button" value="Change Printer Settings"/>	

<b>Configured Printer</b>	Shows the current default printer. This is the printer you are configuring the VGA Printer device for.
<b>Color Transformation</b>	<p>In some cases, you may want to transform some of the colors in the print of the captured image. For example, if you are capturing images with a dark background and white text you might want to select <b>Invert all colors</b> so that in the printed image the background is light and the text is dark.</p> <p>You can also select <b>Invert black only</b>, if you want to keep the colors the same in the printed image but convert black in the captured image to white in the printed image. You might want to select this option if the captured image has a lot of black in it.</p> <p>If you select <b>Invert all colors</b> or <b>Invert black only</b> you can also enter a % <b>invert threshold</b> value to control the brightness of the printed inverted image. The higher the %invert threshold the brighter the image.</p> <p><b>Note:</b> Color transformations affect the printed image only and not the captured image displayed on the VGA Printer Web admin interface.</p>

<p><b>Page Fit</b></p>	<p>The VGA Printer device prints one image per page and scales captured images up or down to fit on the page size configured for the printer. <b>Fit image keeping original aspect ratio</b> is the default setting. This setting scales the image to fit on the printed page without distorting the image. This setting may result in white space on the printed page if the image doesn't match the shape of the page. You would usually select this page fit option to avoid distortion of the image if the shape of the captured image is very different from the shape of the printer page.</p> <p>Select <b>Fit image to fill the whole page</b> to scale the image to fill as much of the printed page as possible. Usually you would only select this option if the captured image closely matched the shape of the printed page. If the captured image was a much different shape than the page this page fit option could distort the image an unacceptable amount.</p>
<p><b>Annotation</b></p>	<p>You can select <b>Add annotation to the printed page</b> to add text to each captured image printed by the VGA Printer device. The text appears at the bottom of the page. Add the text for the annotation to the <b>Annotation text</b> field.</p> <p>You can also select <b>Include timestamp to the annotation</b> to add the current date and time to the right of the annotation in the printed image. The date and time format is yyyy-mm-dd hh:mm:ss.</p>

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

You can use the ethernet bridge setting to connect devices or networks to the VGA Printer ETH 1 and ETH 2 ports. This section describes:

- [Connecting a PC and an Ethernet Network to the VGA Printer Device](#)
- [Connecting a Network Printer Directly to the VGA Printer ETH 2 Port](#)

### Connecting a PC and an Ethernet Network to the VGA Printer Device

In some cases you may only have one network connection available for a PC and for the VGA Printer device. To connect both the PC and the VGA Printer device to the network you can do the following.

#### **To connect a PC and an Ethernet network to the VGA Printer device**

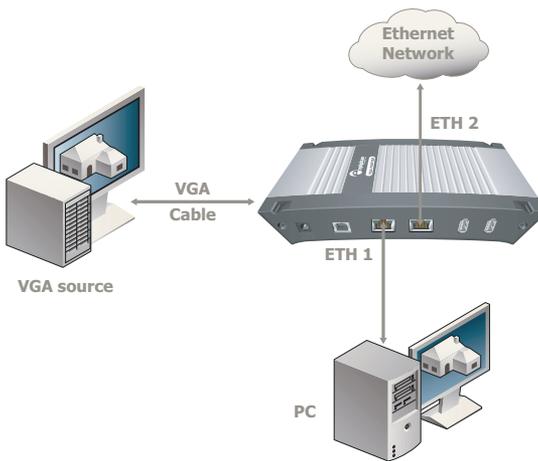
In this configuration the VGA Printer ETH 1 and ETH 2 interfaces act like a 2-port hub allowing the PC to connect to the network.

For best performance you should connect the PC 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 performance of the device. You can temporarily improve performance by disconnecting ETH 2 from the network.

- 1 Log into the Web admin interface.
- 2 In the **Ethernet Bridge** section, select **Enable**.
- 3 Select **Change Ethernet Bridge Configuration**.
- 4 Select **Continue**.

- 5 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.
- 6 Connect ETH 1 directly to the PC using a cross-over or regular Ethernet cable.
- 7 Connect ETH 2 to the network.

**Figure 20: Connecting a network and a PC to the VGA Printer device**



## **Connecting a Network Printer Directly to the VGA Printer ETH 2 Port**

You can use the following procedure to connect a supported network printer directly to a VGA Printer Ethernet port. Usually you would connect the printer to the ETH 2 port and keep the ETH 1 port available for connecting a PC or for connecting the VGA Printer device to a network.

This procedure is useful if you do not have access to a local Ethernet network and you want to connect a network printer. This procedure can also be useful if you have only one Ethernet connection and you want to connect both the VGA Printer and a network printer to the network.

### **To connect a network printer directly to the VGA Printer ETH 2 port**

In this configuration the ETH 1 and ETH 2 interfaces act like a 2-port hub allowing both the network printer and the PC to connect to the VGA Printer device.

For best performance you should connect the PC to ETH 1 and the printer 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. To improve performance do not print from the PC and the VGA Printer device at the same time.

**Note:** This procedure uses example IP addresses for the network printer, the PC, and the VGA Printer device. You can use any three addresses as long as they are on the same subnet.

- 1 Manually configure the network printer with an IP address netmask, and gateway. For example:

**IP address:** 192.168.10.102

**Netmask:** 255.255.255.0

**Gateway:** 192.168.10.200

- 2 Connect the VGA Printer ETH 1 port directly to the PC's Ethernet port using a cross-over cable.

3 Log into the Web admin interface.

If you have been able to assign the VGA Printer an IP address log in using that IP address. Otherwise, use the following steps:

- Change the IP address of the PC connected to ETH 1 to:

**IP Address:** 192.168.255.249

**Subnet Mask:** 255.255.255.252

Follow the instructions for your operating system. If your 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.

- Start a web browser on the PC and browse to:

http://192.168.255.250

- Enter the following:

**User Name:** admin

**Password:** (no password required)

- Press Enter to log into the Web admin interface.

4 In the **Ethernet Bridge** section, select **Enable**.

5 Select **Change Ethernet Bridge Configuration**.

6 Select **Continue**.

7 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.

8 Scroll down to **Change IP Address**.

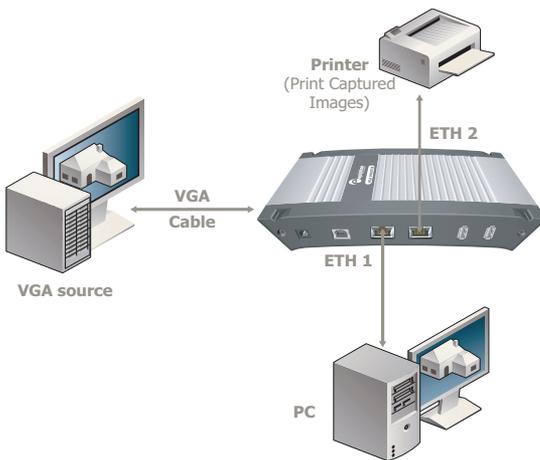
9 Set **How to obtain IP address** to **Use static address**.

10 Enter the following network settings:

<b>IP:</b>	192.168.10.101
<b>Mask:</b>	255.255.255.0
<b>Gateway:</b>	192.168.10.200
<b>DNS server:</b>	(leave blank)

- 11 Change the IP address of the PC connected ETH 1 to:  
**IP Address:** 192.168.10.103  
**Subnet Mask:** 255.255.255.252
- 12 Connect ETH 2 directly to the printer Ethernet port using a cross-over or regular Ethernet cable.
- 13 Log into the Web admin interface by browsing to the following IP address:  
`http://192.168.10.101`
- 14 Follow the instructions in “[Adding Printers](#)” on page 27 to add the network printer to the VGA Printer configuration.

**Figure 21: Connecting a network printer directly to the VGA Printer ETH 2 port**



## Using the VGA Printer device as a DHCP Server

You can configure the VGA Printer device to act as a DHCP server on the network. To configure the VGA Printer device to act as a DHCP server, enable the DHCP server on the device and enter the range of IP addresses that the DHCP server can provide.

You might want to configure the VGA Printer DHCP server if the network you are connecting your the VGA Printer device to does not have a DHCP server and you want to automatically set the IP addresses of the some of the devices on your network using DHCP.

### To enable the VGA Printer DHCP server

- 1 Log into the Web admin interface.
- 2 Scroll down to the **DHCP Server** section.

**Figure 22:DHCP server**

DHCP Server	
Run dhcpd server on the box:	<input checked="" type="radio"/> Do not run DHCP server <input type="radio"/> Run DHCP server
Address range:	Start Address: <input type="text" value="192.168.10.100"/> End Address: <input type="text" value="192.168.10.200"/>
<input type="button" value="Change DHCP Server Configuration"/>	

- 3 Select **Run DHCP Server**.
- 4 Enter the Start and End addresses of the IP address range that the DHCP server can assign to devices on the network.
- 5 Select **Change DHCP Server Configuration**.
- 6 Scroll down to **Reboot the system**.
- 7 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 and resume operation with the new DHCP server configuration.

## Changing VGA Printer Sound Volume

You can configure the VGA Printer device to produce a sound each time a print request is received. You can also set the sound volume level. Set sound volume to 0 to turn sound off.

You can set the sound volume to 10, 25, 50, 75, or 100. Try different sound levels until you find the one that works for you.

## Configuring VGA2USB Adjustments

The VGA Printer device automatically adjusts image capture settings every time it starts up. This automatic 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.

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 can only be fixed by making manual adjustments.

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

Because image adjustments are made automatically there are no default image adjustment settings. Also, changing image adjustments means making relative adjustments from the settings auto configured by the system.

### **To configure image adjustments from the Web admin interface**

- 1 Log into the Web admin interface.
- 2 Scroll down to the **VGA2USB Adjustments** section.

Figure 23:Image adjustment options

VGA2USB Adjustments	
You could leave any field empty to enable autoconfiguration algorithm for the appropriate parameter	
Interval between VGA signal autoadjustments:	<input type="text" value="60"/> seconds VGA Recorder analyzes incoming VGA signal with specified time interval. Valud values are from 0-9999 seconds (0 - disables periodic signal analysys).
Vertical shift:	<input type="text"/> From -20 to 20. Positive value shifts image up, negative value shifts image down.
Horizontal shift:	<input type="text"/> From -20 to 20. Positive value shifts image left, negative value shifts image right.
Phase:	<input type="text"/> From 0 to 31.
PLL adjustment:	<input type="text"/> From -20 to 20. Changes number of the pixels in the line.
Offset:	<input type="text"/> From 0 to 31. 0 - brighter, 63 - darker.
Gain:	<input type="text"/> From 0 to 255. 0 - brighter, 255 - darker.
Aspect ratio:	<input type="text" value="4:3"/>
<input type="button" value="Save and Apply VGA2USB Adjustments"/>	

- 3 Enter values for the image capture settings that you want to adjust.

For information about each setting, see “Image Adjustment Settings” on page 48.

- 4 Select **Save and Apply VGA2USB Adjustments**.
- 5 Select **Continue**.

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 the VGA Printer device” on page 50.

### To reset image adjustments from the Web admin interface

- 1 Log into the Web admin interface.

- 2 Scroll down to the **VGA2USB Adjustments** section.
- 3 Delete the values from the fields for each image adjustment that you want to reset.
- 4 Select **Save and Apply VGA2USB Adjustments**.
- 5 Select **Continue**.

## Image Adjustment Settings

<b>Interval</b>	Change the interval between automatic adjustments if you want them to occur more or less often.
<b>Vertical shift</b>	<p>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.</p> <p>Increasing or decreasing the value entered in the Vertical Shift field shifts the image up or down.</p>
<b>Horizontal Shift</b>	<p>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.</p> <p>Increasing or decreasing the value entered in the Horizontal Shift field shifts the image to the left or right.</p>
<b>Phase</b>	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.

<b>PLL adjustment</b>	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.
<b>Offset and Gain</b>	<p>Use the offset and gain controls together to optimize image quality. Increasing gain amplifies weak signals but also increases noise. Increasing offset reduces background noise but also reduces the overall signal.</p> <p>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.</p>
<b>Aspect Ratio</b>	<p>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 device can accurately capture wide aspect ratio VGA modes.</p> <p>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.</p>

## Rebooting or Restarting the VGA Printer device

Some configuration changes, require you to reboot the VGA Printer device. For an example, see “[Changing the VGA Printer IP Address](#)” on page 22. You may also want to reboot the VGA Printer device for other reasons.

### To reboot or restart the device

- 1 Log into the Web admin interface.
- 2 Scroll down to **Reboot the system**.
- 3 Select **Reboot**.

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

## Maintenance Configuration

The VGA Printer device uses the maintenance configuration settings that you set on the Web admin interface to communicate with the Epiphan maintenance server. This allows Epiphan to review the VGA Printer configuration, firmware version, and other basic operating parameters. If you are having problems with the VGA Printer device and you contact Epiphan Support, the support team can use this maintenance information to help remotely troubleshoot the problems.

**Note:** The VGA Printer 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. The traffic should not affect network or Internet connection throughput.

By default, the maintenance configuration uses TCP port 30 to communicate with the Epiphan maintenance server. The default address of the Epiphan maintenance server is **epiphany.epiphan.com**. The VGA Printer device must be able to find a DNS server to resolve the epiphany.epiphan.com address and then must be able to connect to this address on the Internet using TCP port 30.

If there is a firewall or other device protecting the network, the configuration of this device may have to be changed for the VGA Printer device to connect to the Epiphan maintenance server. Contact your network administrator for assistance.

**Figure 24: Maintenance Configuration**

Maintenance Configuration	
Maintenance Mode	<input checked="" type="checkbox"/> Enable Remote Support <input checked="" type="checkbox"/> Enable Connection to Maintenance server
Maintenance Server	epiphany.epiphan.c
Maintenance Port	30
<input type="button" value="Save and Apply Settings"/>	

You can change the following maintenance configuration settings.

<b>Enable Remote Support</b>	Allow Epiphan Support to log into the VGA Printer device with special access privileges to troubleshoot problems.
<b>Enable Connection to Maintenance server</b>	The VGA Printer 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 maintenance connection to remotely log into your VGA Printer device.

<b>Maintenance Server</b>	The address of the Epiphan maintenance server. This address is usually <code>epiphany.epiphan.com</code> . 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 the VGA Printer device cannot connect to a DNS server.
<b>Maintenance Port</b>	The TCP port that the VGA Printer device uses to connect to the Epiphan maintenance server. This is usually port 30. However, you can change this address if required or as recommended by Epiphan Support.

You can enable and disable remote support and the connection to the maintenance server independently. The following table describes the results of different configurations.

<b>Enable Remote Support</b>	<b>Enable Connection to Maintenance Server</b>	<b>Result</b>
Yes	Yes	The VGA Printer device connects to the Epiphan maintenance server. If required, Epiphan Support can remotely connect to the device with special access privileges.
No	Yes	The VGA Printer 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.

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

### To change maintenance configuration settings

- 1 Log into the Web admin interface.
- 2 Scroll down to **Maintenance Configuration**.
- 3 Change settings as required and select **Save and Apply Settings**.

The changes take effect right away.

## Web Page Configuration

You can use the Web admin interface web page configuration setting to change how often the captured image is refreshed. Change the Autorefresh time as required and select **Save and Apply Settings**.

## Date and Time Configuration

You can set date and time manually or you can Enable Time synchronization. It is important that the VGA Printer device has the correct time if you include the date and time annotation on printed pages.

Enable time synchronization, to update the date and time 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.

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 the VGA Printer device.

If the device cannot connect to the Internet and if you have an RDATE server on your 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. You can also set Time Update to check for the correct date and time just before printing an image.

## Firmware Upgrade

You can obtain new firmware versions from Epiphan Support. New firmware is released to fix known problems or to add new features.

### To install new firmware

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

- 1 Get the new firmware file from Epiphan Support.
- 2 Place a copy of the firmware file on the PC you use to connect to the Web admin interface.
- 3 Log into the Web admin interface.
- 4 Scroll down to **Firmware Upgrade**.
- 5 Select **Browse** and then select the firmware file.
- 6 Select **Save and Upgrade Firmware**.

The firmware uploads. The VGA Printer device unpacks the firmware update file, verifies the contents and then upgrades the firmware.

Messages similar to the following appear on the Web admin interface.

```
Local update detected: /tmp/rfc1867_NHWck7
Unpacking update...
linux
initrd.img
rootfs.img
syslinux.cfg
default.cf.default
boot.img
md5sum
Verifying update...
linux: OK
initrd.img: OK
rootfs.img: OK
syslinux.cfg: OK
default.cf.default: OK
boot.img: OK
Substituting files. Do NOT interrupt...
Update completed successfully. You can reboot the
system.
```

- 7 Select **Continue**.  
To complete the firmware upgrade you must reboot the VGA Printer device.
- 8 Scroll to the **Reboot the system** section of the Web admin interface, select **Reboot** and select **Continue**.  
The device reboots and starts up running the new firmware. This may take a few minutes.
- 9 Log into the Web admin interface.
- 10 Scroll down to **System Information** and select **View System Information**.
- 11 Confirm that the VGA Printer device is running the new firmware version.

## System Information

Scroll down to **System Information** and select **View System Information** to display the following:

- The current firmware version including details of the firmware build
- Information about the Frame Grabber installed in your VGA Printer
- Information about the VGA Printer device CPU
- VGA mode information.

**Figure 25: System Information**

System Information	
Firmware Version	FIRMWARE_VERSION=3.5.11 FIRMWARE_BUILD_HOST="saturn.epiphan.com 2.6.24.5-85.fc8" FIRMWARE_BUILD_DATE="Thu Jun 5 10:18:16 EDT 2008"
VGA Grabber	P: Vendor=5555 ProdID=1110 Rev= 0.00 S: Manufacturer=Epiphan S: Product=VGA to USB S: SerialNumber=02015972
CPU	model name : Intel(R) Celeron(R) M CPU 430 @ 1.73GHz
VGA2USB	18 03 10 06 10 11 00 00 00 00 00 00 00 00 00 00 00 00 00 00 E8 0E 02 00

## 5. Advanced Printer Configuration

This chapter describes some advanced printer configuration procedures for the VGA Printer device. In most cases, you would only need the information in this chapter if the VGA Printer device cannot find and configure a printer automatically.

The VGA Printer device uses the Common UNIX Printing System (CUPS) to communicate with locally connected and network printers. This chapter describes some basic procedures for using the VGA Printer CUPS implementation. For more information about CUPS, see <http://www.cups.org>.

This chapter contains the following sections:

- [Adding a Printer That the VGA Printer Device Cannot Find Automatically](#)
- [Deleting a Printer](#)
- [Selecting the Default Printer](#)
- [Controlling Print Jobs](#)
- [Network Protocols Supported by the VGA Printer device](#)

### Adding a Printer That the VGA Printer Device Cannot Find Automatically

The VGA Printer device can usually automatically find any printer that is turned on and either directly connected to the VGA Printer device or connected to the same network as the VGA Printer device. However, if the VGA Printer device can't find a printer that you want to add, you can use the procedures in this section to add and configure the printer manually.

You can also use these procedures if you want to add a printer that is not currently connected to the to the VGA Printer device or the network. For example, if you are moving the VGA Printer device to a new location or network, you can add a printer that is at the new location before you move the device.

This section contains two procedures. You can use the first one, “Adding a Printer Manually” on page 58, if the VGA Printer device can’t find a printer that you want to add. You can use the second procedure, “Adding a Printer Using a PPD File” on page 64, if the VGA Printer device can’t find a printer that you want to add and you have a PPD file for that printer or if you would like to attempt to get a PPD file for that printer.

## Adding a Printer Manually

Use the following procedure to manually add a printer. Before you start this procedure you should know the following:

- The name and manufacturer of the printer.
- If the printer is connected to a network, the network protocol used by the printer (see “Network Protocols Supported By the VGA Printer device” on page 75).

### To add a printer manually

- 1 Log into the Web admin interface.
- 2 Scroll down to the **Configure VGA Printer** section.
- 3 Select **Printers configuration and jobs control**.

You may have to enter the admin username and password. The Printers page appears.

**Figure 26: Printers page (no printers added)**



4 Select **Add Printer**.

The Add New Printer page appears.

**Figure 27: Adding a new printer**

**Add Printer**

VGAPrinter Config Printers Jobs

**Add New Printer**

**Name:**   
(May contain any printable characters except "/", "#", and space)

**Location:**   
(Human-readable location such as "Lab 1")

**Description:**   
(Human-readable description such as "HP LaserJet with Duplexer")

5 Enter descriptive information about the printer.

You must enter a name and the name cannot include spaces or the / and # characters. If you add more than one printer, the VGA Printer device lists the printers in alphabetical order by name. You cannot change the Name after you add the printer.

Entering the location and description is optional, but it can be useful to enter this information to make it easier to identify the printer. You can add or change the location and description information later.

6 Select **Continue**.

The Device page appears.

**Figure 28: Select the printer device**



- 7 Select how the VGA Printer device communicates with the printer.
  - If the printer is a network printer select the correct network protocol (See [“Network Protocols Supported By the VGA Printer device”](#) on page 75).
  - If the printer is, or will be connected directly to a VGA Printer USB port, select **USB Serial Port #1**.
- 8 Select **Continue**.

The page that is displayed next depends on whether you are adding a network printer or a printer that is connected to a USB port.
- 9 Configure how the VGA Printer device connects to the printer:
  - If the printer is a network printer, enter the Device URI for the printer. (See [“Network Protocols Supported By the VGA Printer device”](#) on page 75)

Figure 29: Device URI for a network printer

The screenshot shows a web interface for adding a printer. At the top, there is a green header with the text "Add Printer". Below the header, there are three tabs: "VGAPrinter Config", "Printers", and "Jobs". The "Printers" tab is selected. The main content area is titled "Device URI for New\_Printer". Below this title, there is a text input field containing the URI "http://net\_print:631/ipp/". Below the input field, there is a label "Examples:" followed by two example URIs: "http://hostname:631/ipp/" and "http://hostname:631/ipp/port1".

- If the printer is connected directly to the VGA Printer device select **Continue**. You do not have to change serial port settings.

Figure 30: Serial port settings for a USB-connected printer

The screenshot shows a web interface for adding a printer. At the top, there is a green header with the text "Add Printer". Below the header, there are three tabs: "VGAPrinter Config", "Printers", and "Jobs". The "Printers" tab is selected. The main content area is titled "Serial Port Settings for New\_Printer". Below this title, there are four dropdown menus: "Baud Rate" set to "1200", "Parity" set to "None", "Data Bits" set to "8", and "Flow Control" set to "None". Below these settings is a "Continue" button.

The Make/Manufacturer page appears.

**Figure 31: Select the printer Make/Manufacturer**



- 10 At this point you can optionally upload a PPD file for the printer. If you have a PPD file, see the procedure [“To use a PPD file to add a printer”](#) on page 64.
- 11 Select the name of the manufacturer of the printer.
- 12 Select **Continue**.
- 13 Select the printer model name.
- 14 Select **Add Printer**.

The printer is added and you can optionally change printer controls such as page size, and print resolution. The printer controls that are available depend on the printer.

15 You can either change printer controls or select **Set Printer Options** to add the printer and complete this procedure.

If the VGA Printer device can add the printer, a message appears indicating that the printer has been successfully added.

**Figure 32:Printer added**



16 Select the **Printers** tab to display all added printers. The printers are displayed in alphabetical order by name.

17 Select **VGA Printer Config** to return to the Web admin interface.

18 Scroll down to the **Configure VGA Printer** section and make sure that the VGA Printer device will print to the correct printer. If the VGA Printer device will not print to the correct printer you can set the correct printer to be the default printer. See [“Selecting the Default Printer”](#) on page 68.

**Figure 33:**The printer that the VGA Printer device will print to is displayed in the Configure VGA Printer section of the Web admin interface

Configure VGA Printer	
Configured printer:	New_Printer (default printer) <a href="#">Printers configuration and jobs control</a>
Color Transformation:	<input checked="" type="radio"/> Do not invert image <input type="radio"/> Invert all colors <input type="radio"/> Invert black only <input type="text" value="10"/> % Invert threshold (0-99)
Page Fit:	<input checked="" type="radio"/> Fit image keeping original aspect ration <input type="radio"/> Fit image to fill the whole page
Annotation:	<input checked="" type="checkbox"/> Add annotation to the printed image <input checked="" type="checkbox"/> Include timestamp to the annotation Annotation text: <input type="text" value="Annotation"/>
<input type="button" value="Change Printer Settings"/>	

### Adding a Printer Using a PPD File

A PPD file is a text file that describes a printer. You can add a PPD file to the VGA Printer device to add the configuration settings for a printer.

Usually, you can get a PPD file from the printer manufacturer. PPD files are also available for many printers from this CUPS web page: <http://www.cups.org/ppd.php>. You can also test PPD files, to confirm that they are compatible with CUPS and may work with the VGA Printer device, at <http://www.cups.org/testppd.php>.

#### To use a PPD file to add a printer

- 1 Follow steps 1 to 9 of the procedure “To add a printer manually” on page 58.

**Figure 34: Uploading a PPD file**



- 2 Select **Browse**, select the PPD file and then select open.
- 3 Select **Add Printer** to upload the PPD file to the VGA Printer device.

The printer is added to the VGA Printer device and you can optionally change printer controls such as page size, and print resolution. The printer controls that are available depend on the PPD file.

- 4 You can either change printer controls or select **Set Printer Options** to add the printer and complete this procedure.

A message appears indicating that the printer has been successfully added.

Figure 35:Printer added



- 5 Select the **Printers** tab to display all added printers. The printers are displayed in alphabetical order by name.
- 6 Select **VGA Printer Config** to return to the Web admin interface.
- 7 Scroll down to the **Configure VGA Printer** section and make sure that the VGA Printer device will print to the correct printer. If the VGA Printer device will not print to the correct printer you can set the correct printer to be the default printer. See “[Selecting the Default Printer](#)” on page 68.

**Figure 36:**The printer that the VGA Printer device will print to is displayed in the Configure VGA Printer section of the Web admin interface

Configure VGA Printer	
Configured printer:	New_Printer (default printer) Printers configuration and jobs control
Color Transformation:	<input checked="" type="radio"/> Do not invert image <input type="radio"/> Invert all colors <input type="radio"/> Invert black only <input type="text" value="10"/> % Invert threshold (0-99)
Page Fit:	<input checked="" type="radio"/> Fit image keeping original aspect ration <input type="radio"/> Fit image to fill the whole page
Annotation:	<input checked="" type="checkbox"/> Add annotation to the printed image <input checked="" type="checkbox"/> Include timestamp to the annotation Annotation text: <input type="text" value="Annotation"/>
<input type="button" value="Change Printer Settings"/>	

## Deleting a Printer

You can delete any printer added to the VGA Printer device. Deleting a printer removes the printer's configuration settings.

If you delete the default printer or the printer that the VGA Printer device was printing to, you may have to select another printer to be the default printer. See [“Selecting the Default Printer”](#) on page 68.

### To delete a printer

- 1 Log into the Web admin interface.
- 2 Scroll down to the **Configure VGA Printer** section.
- 3 Select **Printers configuration and jobs control**.  
You may have to enter the admin username and password. The Printers page appears.
- 4 Scroll down the list of printers to find the printer to delete.
- 5 Select **Delete Printer**, for the printer to delete.
- 6 Confirm that you want to delete the printer.

A message appears indicating that the printer has been successfully deleted.

- 7 Select **VGA Printer Config** to display the Web admin interface.
- 8 Check the **Configure VGA Printer** section. If the message **Error: printer is not configured!** appears, you must add a new printer or set one of the already added printers to be the default printer.
  - To add a new printer, see [“Adding Printers” on page 27](#) or [“Adding a Printer That the VGA Printer Device Cannot Find Automatically” on page 57](#).
  - To set a printer to be the default printer, see [“Selecting the Default Printer”](#).

## Selecting the Default Printer

If you have added more than one printer, you may need to change the printer that the VGA Printer device prints to. You change the printer by making the printer that you want the VGA Printer device to print to the default printer.

Also, if you delete the printer that the VGA Printer device was printing to, you may need to select a default printer.

**Note:** You don't always have to select a default printer. Setting the default printer is available if you want to change the printer that the VGA Printer device prints to, or if **Configure VGA Printer** displays the message **Error: printer is not configured!**

Only one printer can be the default printer. If the default printer is turned off or disconnected, print jobs are stored in that printer's print queue. You can either move those print jobs to another printer, or the stored print jobs will be printed when the printer is connected or turned on again. You may have to start the print jobs manually, see [“Controlling Print Jobs” on page 70](#)).

### To change the default printer

- 1 Log into the Web admin interface.
- 2 Scroll down to the **Configure VGA Printer** section.

### 3 Select **Printers configuration and jobs control**.

The Printers page appears.

**Figure 37: Printers page**

The screenshot shows the 'Printers' configuration page. At the top, there are three tabs: 'VGAPrinter Config', 'Printers' (which is selected), and 'Jobs'. Below the tabs is a search bar labeled 'Search in Printers:'. To the right of the search bar, it says 'Showing 3 of 3 printers.' Below the search bar is a 'Sort Descending' dropdown menu. There are two buttons: 'Find New Printers' and 'Add Printer'. The first printer entry is titled 'HP\_DESKJET\_840C\_USB\_1' and includes a printer icon, a description 'HP DESKJET 840C', location 'Local Printer', driver 'HP DeskJet 840C Foomatic/hpijs (recommended)', state 'idle, accepting jobs, published', and device URI 'usb://HP/DESKJET%20840C?serial=CN0AD1M37KLB'. Below this entry are five buttons: 'Print Test Page', 'Stop Printer', 'Reject Jobs', 'Move All Jobs', and 'Cancel All Jobs'. The second printer entry is titled 'New\_Printer' and includes a printer icon, a description 'New\_Printer', location, driver 'HP LaserJet 5000 Series PS', state 'idle, accepting jobs, published', and device URI 'serial:/dev/ttyUSB0?baud=1200+bits=8+parity=none+flow=none'.

### 4 Find the printer to set as the default printer and select the **Set As Default** button.

The VGA Printer device sets the printer as the default printer and displays the status of the printer.

Figure 38: The default printer

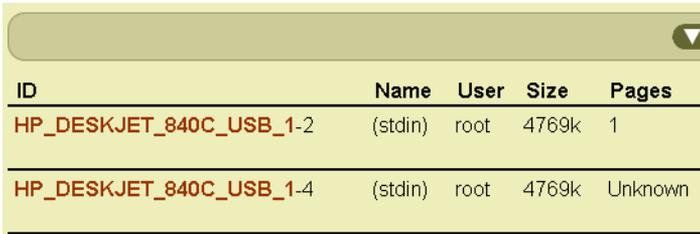


## Controlling Print Jobs

When you select to print a captured image, the VGA Printer device creates a print job. The print job is added to the current or default printer’s job queue and then sent to the printer.

If you send captured images faster than the printer can print them, multiple print jobs are added to the printer’s job queue. The VGA Printer device then sends the print jobs to the printer one at a time in the order in which you selected to print them.

All print jobs in the print queue have a unique ID which consists of the printer name followed by a consecutive number. For a given printer, the VGA Printer device prints jobs in ID order. If a print job with a lower ID is stopped, print jobs with higher IDs will not print. You must restart, cancel, or move a stopped print job to print the jobs below it in the print queue.

**Figure 39: Example print queue**


ID	Name	User	Size	Pages
HP_DESKJET_840C_USB_1-2	(stdin)	root	4769k	1
HP_DESKJET_840C_USB_1-4	(stdin)	root	4769k	Unknown

You do not normally have to work with VGA Printer print jobs or print job queues, but working with print jobs can be useful for checking the status of print jobs and for solving some printing problems. Also, if a printer is turned off or disconnected and you send print jobs to it, the print jobs are stored in that printer's print queue. You can either move those print jobs to another printer or when the printer is connected or turned on again, the VGA Printer device sends the stored print jobs to the printer. After the printer is restarted, you may have to go to the print queue and restart print jobs for them to print.

### To view an individual printer's print jobs

- 1 Log into the Web admin interface.
- 2 Scroll down to the **Configure VGA Printer** section.
- 3 Select **Printers configuration and jobs control**.  
The Printers page appears.
- 4 To see the print job queue, select the printer icon for the printer.

The print jobs for the selected printer are displayed.

A number of options are available from the print jobs queue including:

- **Reject Jobs** to prevent the VGA Printer device from queuing jobs for this printer.
- **Move All Jobs** to move all print jobs to another printer's print queue.
- **Cancel All Jobs** to cancel all jobs in this printer's queue.

**Figure 40: Example print job queue for a printer showing two print jobs**

**HP\_DESKJET\_840C\_USB\_1**



**Description:** HP DESKJET 840C  
**Location:** Local Printer  
**Printer Driver:** HP DeskJet 840C Foomatic/hpijs (recommended)  
**Printer State:** processing, accepting jobs, published.  
**Device URI:** usb://HP/DESKJET%20840C?serial=CN0AD1M37

[Print Test Page](#) [Stop Printer](#) [Reject Jobs](#) [Move All Jobs](#)

**Jobs**

Search in HP\_DESKJET\_840C\_USB\_1:

[Show Completed Jobs](#) [Show All Jobs](#)

Show

ID	Name	User	Size	Pages
HP_DESKJET_840C_USB_1-2	(stdin)	root	4769k	1
HP_DESKJET_840C_USB_1-4	(stdin)	root	4769k	Unknown

You can use the Search function to only display some jobs. You can display all jobs completed by this printer since the VGA Printer device was powered on.

For each print job you can:

- **Reprint job** to start a print job that has been stopped.
- **Hold job** to temporarily stop the VGA Printer device from printing this job. The VGA Printer device will print the next job in the queue.
- **Release job** to release a held job for printing.
- **Cancel job** to cancel a print job and remove it from the queue.
- **Move job** to move a print job to another printer.

### To view all print jobs

- 1 Log into the Web admin interface.
- 2 Scroll down to the **Configure VGA Printer** section.
- 3 Select **Printers configuration and jobs control**.

The Printers page appears.

- 4 Select the **Jobs** tab to view all print jobs for all printers.

Similar to viewing the print jobs for an individual printer you can reject, move, cancel, reprint, and hold jobs.

### To restart stopped print jobs

Use the following procedure to restart print jobs that have been stopped. The print jobs could have been stopped because they were added to the queue of a printer that was not connected or turned on, moved to a printer's print queue from another print queue, or for other reasons. In most cases, the following steps will restart a stopped print job.

- 1 Log into the Web admin interface.
- 2 Scroll down to the **Configure VGA Printer** section.
- 3 Select **Printers configuration and jobs control**.

The Printers page appears.

- 4 To restart print jobs, select the printer icon for the printer.  
The print jobs for the selected printer are displayed.
- 5 To print all of the **stopped** print jobs, select **Reprint job** for each stopped print job.

### To move jobs from one printer to another

You can easily move jobs from one printer's queue to another printer's queue even if the printers are completely different. After you move a print job, you can start it printing on the printer that you moved it to.

- 1 Log into the Web admin interface.
- 2 Scroll down to the Configure VGA Printer section.
- 3 Select **Printers configuration and jobs control**.  
The Printers page appears.
- 4 To display the print jobs to move, select the **Jobs** tab to display all print jobs or select a printer to view the jobs for that printer.
- 5 Select **Move Job**.
- 6 Select the name of the printer to move the job to.  
The print job is added to the selected printer's print queue. Usually the job state is set to stopped.
- 7 Select the printer that you moved the print job to.
- 8 For the job that you moved, select **Reprint Job** to print the moved job.

## Network Protocols Supported By the VGA Printer device

The VGA Printer device supports most network printers that use the following protocols:

- AppSocket/HP JetDirect
- Internet printing protocol (ipp or http)
- line printer daemon (LPD or LPR)

Printer discovery is currently accomplished using the SNMP protocol; however, future versions of CUPS will also include support for multicast DNS service discovery as well.

See the CUPS document [Using Network Printers](#) for more information about network printing including a table of common device URIs.

**Note:** The VGA Printer device does not support printing to Windows network shared printers.

### AppSocket/HP JetDirect

The AppSocket protocol (sometimes also called the JetDirect protocol, because of its origins with the HP JetDirect network interfaces) is the simplest, fastest, and generally the most reliable network protocol used for printers. AppSocket printing normally happens over port 9100 and uses socket URIs:

```
socket://ip-address-or-hostname
socket://ip-address-or-hostname?waiteof=false
socket://ip-address-or-hostname:port-number
socket://ip-address-or-hostname:port-number?waiteof=false
```

Examples:

```
socket://192.168.20.34
socket://MyPrinter?waiteof=false
socket://192.168.34.56:9100
socket://10.10.10.23:9100?waiteof=false
```

The “waiteof” option controls whether the socket backend waits for the printer to complete the printing of the job. The default is to wait.

## Internet Printing Protocol (ipp or http)

IPP is supported by some network printers and print servers. IPP support may be inconsistent so you should only use IPP when the vendor actually documents official support for it. IPP printing normally happens over port 631 and uses the http or ipp URIs:

`http://ip-address-or-hostname:port-number/resource`

`http://ip-address-or-hostname:port-number/resource?option=value`

`http://ip-address-or-hostname:port-number/resource?option=value&option=value`

`ipp://ip-address-or-hostname/resource`

`ipp://ip-address-or-hostname/resource?option=value`

`ipp://ip-address-or-hostname/resource?option=value&option=value`

`ipp://ip-address-or-hostname:port-number/resource`

`ipp://ip-address-or-hostname:port-number/resource?option=value`

`ipp://ip-address-or-hostname:port-number/resource?option=value&option=value`

Examples:

`http://192.168.20.1:631/ipp/`

`http://MyPrinter/ipp/port1`

`http://10.10.10.23:631/ipp?compression=gzip`

`ipp://192.168.22.34/ipp`

`ipp://OurPrinter/ipp/port3`

## Line Printer Daemon (LPD or LPR) Protocol

LPD is supported by many network printers. LPD printing normally uses port 515 and lpd URIs:

lpd://ip-address-or-hostname/queue

lpd://ip-address-or-hostname/queue?option=value

lpd://ip-address-or-hostname  
/queue?option=value&option=value

Examples:

lpd://192.168.45.123/queue

lpd://MyPrinter/queue?banner=on



---

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