

VGADVI Broadcaster™ User Guide



Epiphan Technical
Documentation

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- The behavior of your VGADVI Broadcaster LED indicators.
- Technical description of the signal source including resolution, refresh rate, synchronization, type of hardware.
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2 Overview

2.1 Introduction

Epiphan’s VGADVI Broadcaster™ is a compact, portable solution combining both Ethernet-based audio-video broadcast streaming and recording functionalities. The VGADVI Broadcaster is ideal for educational and training institutions, creating sales and marketing videos and technical support, how to demonstrations that require the ability to stream/record/synchronize a computer display along with live video. It transfers up to 30 frames per second of visual and audio information with resolution up to 1920x1200.

Input sources can be:

- a DVI/VGA/HDMI display or camera source,
- an analog camera (S-Video or composite) source, and
- an analog audio source.

This flexibility of input sources gives the VGADVI Broadcaster the capability of synchronizing a high quality audio stream with a corresponding video stream. Streams can be encoded with Motion JPEG, MPEG4 or H.264 video compression.

When video from the two input sources is being used for either broadcasting or broadcasting and recording simultaneously the following format choices are available:

1. **Independent Channel Stream**, streams the video from the two input sources using two separate URLs. Recordings consist of two video tracks and one audio track.
2. **Single Channel Stream**, streams the input from the two video input sources using one URL and various picture in picture layouts. Recordings consist of one video track and one audio track.

The VGADVI Broadcaster is connected to a network with an Ethernet connection. The VGADVI Broadcaster's Ethernet port is auto-sensing, meaning that it will be automatically assigned an appropriate IP address and connect to a network in the case where the network uses DHCP addressing. Once connected to the network, it can be configured and operated through an easy to use web interface.

Viewers are simply provided with the required URL in order for them to watch the desired broadcast stream. Additionally, the VGADVI Broadcaster allows content producers to also record the broadcast to .AVI or .MOV formatted files.

In the case of a dual stream configuration where the VGADVI Broadcaster is being used for the simultaneous broadcasting from both a DVI/VGA/HDMI input source and either a composite or S-Video analog input source, in addition to a single URL showing both streams, viewers may obtain two different URLs one for each of the input sources making up the broadcast. However, when the VGADVI Broadcaster is also recording a broadcast consisting of video input from its two video sources, it always records both video input sources into a single multi track AVI file. Whether this multi track file consists of one or two video tracks depends upon whether the recording is being done using the Single Channel Stream configuration or the Independent Channel Stream configuration.

The Epiphan VGADVI Broadcaster comes with an 8GB internal solid-state memory for recording broadcasts which provides buffering such that in the event the network is experiencing slow transfer rates, no captured data will be lost. In addition to this built in flash storage, recorded video files can be archived to a network storage device such as an FTP server or copied to an inserted USB flash drive.

3 Physical Attributes

3.1 System Hardware Features

The VGADVI Broadcaster device is a 202mm x105mm x35mm (7.95”x4.13”x.1.38”) unit.

Figure 1 Front View of the VGADVI Broadcaster



Below is a table summarizing the connectors and indicators found on the front panel of the VGADVI Broadcaster.

Table 1 Summary of the Front Panel's connectors and Indicators

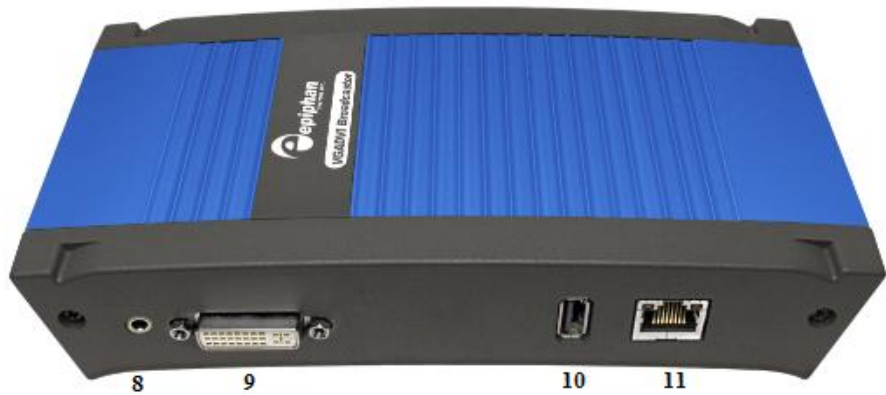
Number	Name	Description
1	Factory Reset Button	Resets the VGADVI Broadcaster back to its factory configuration defaults. In order to avoid accidentally

		<p>resetting the device, a special sequence is required:</p> <ul style="list-style-type: none"> • 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. <p>Refer to the Restoring the VGADVI Broadcaster Default Factory Configuration section.</p>
2	Record Stop/Start Toggle	Record on/off: toggles the recording on/off status.
3	Power and Capture LEDs	<p>Red LED: During operation the red LED blinks each time the VGADVI Broadcaster captures an image. The red LED can be used as an indicator that the VGADVI Broadcaster is capturing images. When the input signal(s) stop(s) sending images, the red LED stops blinking.</p> <p>Green and blue LEDs: When the VGADVI Broadcaster 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 VGADVI Broadcaster 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).</p> <p>Blue LED: The blue LED blinks to indicate that the VGADVI Broadcaster is recording received images. If the files are not being recorded, the blue LED remains off.</p>
4	USB port	<p>This expansion port allows the connecting of any of the following to the VGADVI Broadcaster: an external HDD, a USB flash drive, a remote mouse control for the starting/stopping of a recording, or an RS-232 serial port for remote controls, WiFi network connection. It is important to note that due to resource constraints,</p>

		simultaneous usage of multiple USB devices can seriously affect the performance of the VGADVI Broadcaster.
5	Analog input	Use this port to connect an S-Video source. To connect a composite video source, use a Composite to S-Video adapter which is included in the standard VGADVI Broadcaster package.
6	DVI In	Connects a DVI source to the VGADVI Broadcaster using the included DVI cable. To connect a VGA source, use the included VGA to DVI adapter. To connect an HDMI source (non-copy protected content) use the included HDMI to DVI adapter.
7	Audio In	Connects a microphone or audio source. The input can be mic or line.

The back panel is illustrated below.

Figure 2 The VGADVI Broadcaster's rear panel



Below is a chart detailing the connectors found on the rear panel.

Table 2 Summary of Connectors on the Rear Panel

Number	Connector	Description
8	Audio Out	Connects audio equipment, such as headphones or speakers, to confirm whether the audio stream is currently being captured by the VGADVI Broadcaster.
9	DVI Out	Used to verify and confirm that the connected video source from DVI In port is being received. A DVI monitor or projector can be used with this port using the included DVI to DVI cable. Alternatively, if the device to be used to confirm the receiving DVI input signal is a VGA monitor, use the included DVI to VGA cable. This output can also act as a converter. For example if a VGA signal is on the input, the output can be provided as DVI or VGA. Note: To confirm that the connected video source from S-Video port is being received, please refer to the Troubleshooting chapter.
10	USB port	This is an additional USB expansion port as described above.
11	RJ45 Ethernet	Primary 10/100 Base-T RJ-45 Ethernet network port to connect the VGADVI Broadcaster to an Ethernet network. The VGADVI Broadcaster's Ethernet port is auto-sensing. Power over Ethernet is used to power the VGADVI Broadcaster. If the intended network connection does not provide power over Ethernet, use the Power over Ethernet Injector and this port in order to power the device.

3.2 Cables, Connectors and Adapters

The VGADVI Broadcaster can be connected to a number of different types of equipment using a variety of cables, and adapters. This section describes a subset of connectors, cables and adapters that are known to be compatible with the VGADVI Broadcaster.

3.2.1 3.5 mm Mini-jack

A 3.5mm mini jack connector is used to carry audio signals. It can be connected to VGADVI Broadcaster to either its Audio In port or its Audio Out port.

Figure 3 3.5mm Mini-jack



3.2.2 *VGA to DVI Cable*

Connects a VGA source to either of the VGADVI Broadcaster's DVI ports. This cable is included with the VGADVI Broadcaster.

Figure 4 VGA to DVI cable



3.2.3 DVI to DVI Single Link Cable

Connects a DVI source to either of the VGADVI Broadcaster's DVI ports. This cable is included with the VGADVI Broadcaster.

Figure 5 DVI to DVI Single Link Cable



3.2.4 *S-Video Cable*

Connects an S-Video output analog source to the VGADVI Broadcaster's analog port.

Figure 6 S-Video Cable



3.2.5 *Composite to S-video Cable*

Connects a composite output analog video source to the VGADVI Broadcaster's analog port. This cable is included with the VGADVI Broadcaster.

Figure 7 Composite to S-Video Cable



3.2.6 *HDMI to DVI Adapter*

Connects an HDMI source to either of the VGADVI Broadcaster's DVI ports. This cable is included with the VGADVI Broadcaster.

Figure 8 HDMI to DVI Cable



3.2.7 *RJ-45 Male*

Connects the VGADVI Broadcaster to an Ethernet network.

Figure 9 RJ-45 Male Cable

3.2.8 *Power over Ethernet (PoE) Injector*

The VGADVI Broadcaster incorporates a Power over Ethernet (PoE) technology. PoE delivers both data and electrical power to an Ethernet enabled device using a single Ethernet cable. This eliminates the need for the VGADVI Broadcaster to be situated close to a power outlet. This allows more freedom in its placement.

PoE injectors supply or inject direct current (DC) power through network cables to power network devices.

3.3 **Connecting Input Sources**

It is recommended that prior to powering up the VGADVI Broadcaster, the input sources are connected first. This input source can be a DVI, VGA or HDMI source. Any one of these sources would be connected to the VGADVI Broadcaster using its DVI input port. Alternatively or additionally, it can be an analog video source using the VGADVI Broadcaster's analog port. Audio input will be connected to the VGADVI Broadcaster's Audio in port.

3.3.1 *Connecting DVI, VGA or HDMI Input Sources*

All DVI, VGA or HDMI input sources are connected to the VGADVI Broadcaster using the DVI input port. How this connection is made and using which cable is dependent on the input source.

DVI input sources are connected using the DVI to DVI single link cable, Figure 5 DVI to DVI Single Link Cable.

VGA input sources are connected using the VGA to DVI cable, Figure 4 VGA to DVI cable.

HDMI input sources are connected using the HDMI to DVI cable, Figure 8 HDMI to DVI Cable. These sources should only be non-copy protected content.

3.3.2 *Connecting Analog Video Input Sources*

When using an S-Video analog input source with the VGADVI Broadcaster, the connection between this input source and the VGADVI Broadcaster is done using the S-Video Cable, Figure 6 S-Video Cable and the VGADVI Broadcaster's analog input port.

For all composite video input sources, the connection is made using the Composite to S-Video cable, Figure 7 Composite to S-Video Cable.

3.3.3 *Connecting Audio Input Sources*

All audio sources are connected to the VGADVI Broadcaster using the audio input port.

4 Getting Started

4.1 Supplying Power to the VGADVI Broadcaster

To provide power to the VGADVI Broadcaster, plug the provided PoE adapter into a 10/100Base-T Ethernet network using an Ethernet cable. This network must be running the TCP/IP protocol.

If your network does not provide Power over Ethernet, connect the VGADVI Broadcaster to a DC power outlet with the PoE adapter/injector connected to an Ethernet cable and plugged into the VGADVI Broadcaster's RJ45 Ethernet port.

Regardless of the DC power source once connected, the VGADVI Broadcaster now powers up. Its power and activity LEDs will now light up following their start up sequence.

4.2 Confirm Input Signals are Received

Confirming that the input signals are being received by the VGADVI Broadcaster can be done once the VGADVI Broadcaster has been powered on and the input sources have been started.

First, check that the VGADVI Broadcaster's red LED is blinking. A blinking LED indicates that the VGADVI Broadcaster is capturing images. If the red LED does not start flashing, check the input sources to ensure that they are transmitting a signal. Additionally, check that all cables from the input sources to the VGADVI Broadcaster are connected correctly.

Depending on the input source, the VGADVI Broadcaster's output signal ports can be used to confirm that data from specific input sources are being captured

4.2.1 *Checking the Signal from a DVI/VGA or HDMI Input source*

The VGADVI Broadcaster has a DVI output port that is used to confirm that the signal from any of the above sources is being captured. In order to perform this verification ensure that there is an input source streaming to the VGADVI Broadcaster using its DVI input port. If yes, then connect a monitor to the VGADVI Broadcaster using the DVI output port and the appropriate DVI cable. The monitor will then display any data being captured by the VGADVI Broadcaster via its DVI input port.

4.2.2 *Checking the Signal from an Analog Video Source*

The VGADVI Broadcaster does not come equipped with a mechanism to confirm the quality of the video input being received via its analog input video source. However, you can trouble shoot by this source by connecting an s-video or composite receiver such as a TV or monitor to confirm that a high quality signal is being generated by the video source prior to connecting the analog video source to the VGADVI Broadcaster.

4.2.3 *Checking the Analog Audio Signal*

As with any input source plugged into the VGADVI Broadcaster's DVI input port, any audio input being sent to the VGADVI Broadcaster via its Analog Audio input port can be verified. To listen to the audio being captured by the VGADVI Broadcaster, plug in a stereo speaker or headsets into the Analog Audio out port.

4.3 Network Connections

Please refer to the Networking chapter for the instructions on direct System's connection to the Ethernet, discovering the System on the network, IP address settings and other details.

4.4 Logging into the Web Admin Interface

The Web admin Interface is accessible by logging into it using one of the following methods.

4.4.1 *Epiphan's Network Discovery Utility.*

As discussed in the previous chapter, the Epiphan Network Discovery Utility can be installed and executed from a workstation running Windows XP, Vista or Windows 7. Follow the following steps to access the Web admin Interface through this utility:

1. Start the Epiphan Network Discovery Utility tool.
2. Click **Search** to find all of the Epiphan devices on the network and select the desired VGADVI Broadcaster.
3. Click **Web config**.
4. A web browser starts and you are prompted for the VGADVI Broadcaster's administrator user name and password.
5. Enter the following information:
User Name: **admin**
Password: *configured password*<return>, there is no default password so unless a password has been configured, just hit <return>

The Web admin interface opens.

Alternatively the Network Discovery Utility can be used to retrieve the VGADVI Broadcaster's IP address and access to the Web admin Interface will be done using a browser.

4.4.2 *Logging into the Web Admin Interface Using a Web Browser and the IP Address of the VGADVI Broadcaster*

The web browser can be running on Windows, Mac OS X, Linux or any other operating system.

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

the VGADVI Broadcaster.

2. Browse to the VGADVI Broadcaster.

http://<ip address of the VGADVI Broadcaster>/admin

The IP address of the VGADVI Broadcaster can be obtained using any of the following methods:

- a. The Epiphan Network Utility
 - b. The EpiphanTouch app
 - c. From the network administrator
 - d. Using the Factory Default static IP address. Only if the steps in section, Connecting Directly to the VGADVI Broadcaster, are followed
3. Log in as the VGADVI Broadcaster's administrator user
User Name: **admin**
Password: *configured password*<return>, there is no factory default password so unless a password has been configured, just hit <return>

The Web admin Interface opens.

4.5 Users Logging

The System comes with two pre-configured users which are used to log in the control interface. The first is the administrator user, its user name is **admin** and the second is the viewer user, its user name is **viewer**. Each can be assigned a password but their user names cannot be altered. It is not possible to create new log in users.

4.5.1 The Administrator User

The administrator user is used to log into the VGADVI Broadcaster and perform any of the following functions:

1. Perform configuration changes to the VGADVI Broadcaster.
2. Manage the current broadcast. This can include the starting or stopping of the recording of the broadcast.
3. Manage previously saved broadcasts. Including the archiving of recordings.
4. System monitoring. This would involve retrieving any system statuses and retrieving the hard disk status.
5. **Upgrading the System Firmware** from Epiphan Support. New firmware is released to fix known problems or to add new features.

As a default factory setting, the administrator user does not come with a password but it is recommended that a password is configured as early as possible for security reasons.

4.5.2 *The Viewer User*

The viewer password is used to log in to view broadcasts and does not have any administrative ability.

As a default, the viewer user does not come with a factory configured password. Configuring a viewer password is optional.

4.6 Web Admin Interface

In this section you can see a diagram showing the Web admin Interface's main menu. It is located on the left side of the screen.

Figure 10 Web Admin Interface's Main Menu



The following table briefly describes each of the options on the Web admin Interface's main menu.

Table 3 Web admin Interface's Main Menu Options

Stream Setup	Change the stream settings.
Publish Stream	Sends the stream to a remote streaming server such as a Content Distribution Network service provider (CDN) or Epiphan.tv portal
Frame Grabber	Make frame grabber image adjustments.
Audio	Change and adjust the audio input and headphone output.
Automatic File Upload	Automatically copy files from the VGADVI Broadcaster device to a network storage device.
FTP Server	Configure FTP access settings to connect to the VGADVI Broadcaster internal solid state memory using an FTP client and the administrator or viewer account.
Network	Change the VGADVI Broadcaster network configuration.
Date and Time	Change VGADVI Broadcaster date and time settings.
Admin Access	Change the admin account password.
Viewer Access	Change the viewer account password.
Serial Port	Integrate the VGADVI Broadcaster with other equipment featuring an RS-232 port and control your device over the RS-232 connection.
Branding	Customize design of the browser where the broadcast is viewed.
Maintenance	Reboot or shut down the VGADVI Broadcaster device. Restore factory configuration.
Disk Check	Set a Maintenance Schedule for checking the VGADVI Broadcaster solid-state memory for errors.
Firmware Upgrade	Upgrade the VGADVI Broadcaster firmware.
Info	Display information about the VGADVI Broadcaster Firmware, CPU, Frame Grabber and VGA Mode.
Disk Status	View the total hard disk space in GB, the used and available hard disk space in GB, and also the amount used as a percentage of the total space.
Live View	View the broadcast.

5 Signal Flow Diagrams

A series of diagrams below depicts how signal capture, encoding, streaming and recording is performed.

Figure 11 Data Capture Flow in case of Single Stream Mode

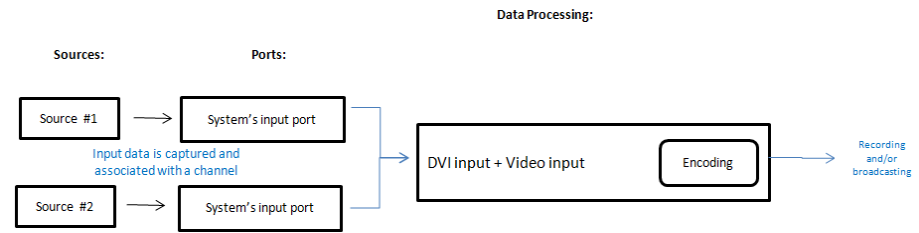


Figure 12 Data Capture Flow in case of Independent Stream Mode

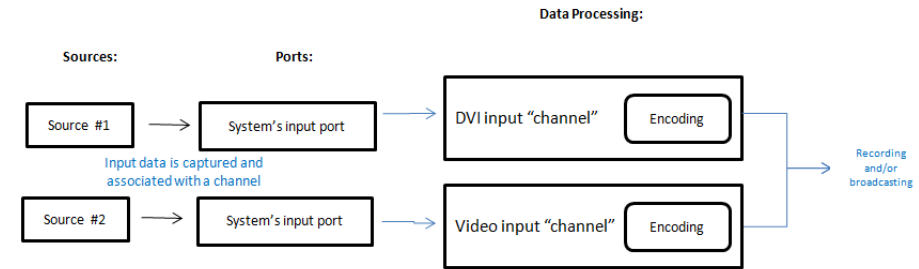
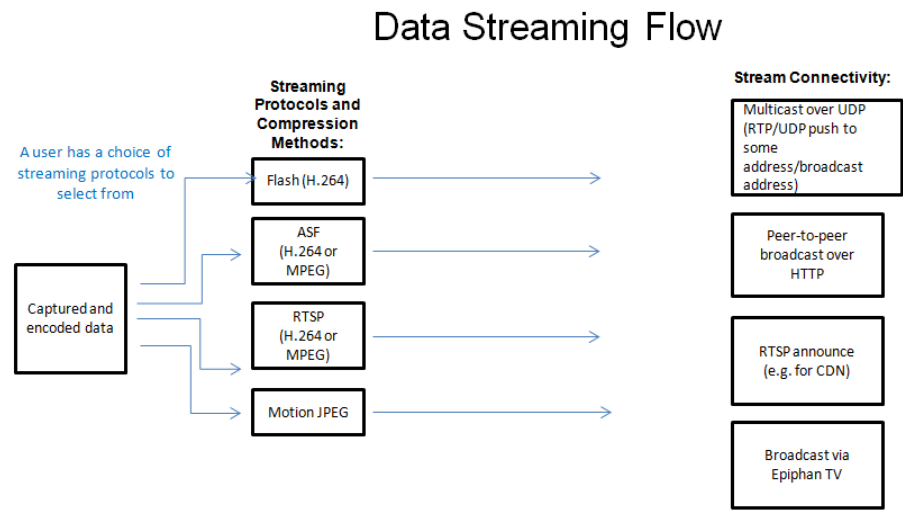


Figure 13 Data Streaming Flow



6 Signal Capture

6.1 Connecting Sources

It is recommended that prior to powering up the System, the input sources where the data is captured from are connected first. These input sources can be DVI, VGA, HDMI, composite or s-video sources. Any one of DVI, VGA, or HDMI sources would be connected to the VGADVI Broadcaster using its DVI input port. An analog video source is connected to the VGADVI Broadcaster’s analog port. Audio input will be connected to the VGADVI Broadcaster’s Audio In port.

6.1.1 Connecting DVI, VGA or HDMI Input Sources

All DVI, VGA or HDMI input sources are connected to the VGADVI Broadcaster using the DVI input port. How this connection is made and using which cable is dependent on the input source.

DVI input sources are connected using the DVI to DVI cable.

VGA input sources are connected to a DVI port using the VGA to DVI cable.

HDMI input sources are connected using the HDMI to DVI adapter. These sources should only be non-copy protected content.

6.1.2 *Connecting Analog Video Input Sources*

When using an S-Video analog input source with the VGADVI Broadcaster, the connection between this input source and the VGADVI Broadcaster is done using the S-Video Cable, and the VGADVI Broadcaster's analog input port.

For all composite video input sources, the connection is made using the Composite to S-Video cable.

6.1.3 *Connecting Audio Input Sources*

All audio sources are connected to the System using the audio input port.

6.1.4 *Connecting Audio Output Sources*

Headphones are connected to the Audio Out port of the device.

6.2 **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 a subsystem component in the VGADVI Broadcaster and can be configured separately. From the Web admin interface, select **Frame Grabber** from the main menu to configure Frame Grabber adjustments.

The VGADVI Broadcaster automatically adjusts image capture settings every time it starts up. The automatic image adjustment is repeated every 60 seconds during operation. The interval between automatic adjustments can be changed to have them occur more or less often. The capture settings attempt to produce the best quality captured image for the equipment being used.

Normally, making manual image adjustments should not be necessary. This means that there are no default Frame Grabber adjustment settings. However, special requirements may exist that produce image quality problems that can only be fixed by making image adjustments.

The Frame Grabber adjustments page within the Web admin interface contains most of the information needed to make image adjustments. This includes a brief

description of the effect created as a result 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 VGADVI Broadcaster; refer to the section **Rebooting or Restarting VGADVI Broadcaster**Rebooting or Restarting VGADVI Broadcaster. You can make more than one change before selecting **Apply** and rebooting.

Figure 14 Frame Grabber Adjustments

Frame Grabber Adjustments

You could leave any field empty to enable autoconfiguration algorithm for the appropriate parameter

Interval between VGA signal autoadjustments, sec

Frame Grabber analyzes incoming VGA signal with specified time interval. Valid values are from 0-9999 seconds (0 - disables periodic signal analysis).

Vertical shift

From -20 to 20. Positive value shifts image up, negative value shifts image down.

Horizontal shift

From -999 to 999. Positive value shifts image left, negative value shifts image right.

Phase

From 0 to 31.

PLL adjustment

From -999 to 999. Changes number of the pixels in the line.

Offset

From 0 to 63. 0 - brighter, 63 - darker.

Gain

From 0 to 255. 0 - brighter, 255 - darker.

Aspect ratio

EDID upload

Select EDID file

The table below discusses all options found on the Frame Grabber Adjustment page.

Table 4 Frame Grabber Adjustment Options

Interval between VGA signal autoadjustments, 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	<p>Configure the vertical shift to offset the captured image's position. For example, a captured image that is shifted slightly downward or 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>
Horizontal shift	<p>Configure the horizontal shift to offset the captured image's position. For example, a captured image that is shifted slightly to the right or 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 right or left.</p>
Phase	Configuring the phase, or sampling phase as it is also known, adjusts the horizontal resolution of the image. An improperly adjusted phase will result in a fuzzy image. Adjust the sampling phase in small steps until a sharper image is displayed.
PLL adjustment	Configuring the PLL adjusts 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. Adjust the PLL setting in small steps until a sharper image is displayed.
Offset	<p>Use the offset and gain controls together to optimize image quality. Increasing the offset reduces background noise but also reduces the overall signal.</p> <p>Balance offset and gain values to achieve the best quality image. Adjust these settings by the smallest values possible to achieve the best results. Compensate for a large change to one by making a large change to the other, but setting both</p>

	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 the gain amplifies weak signals but also increases noise. Balance offset and gain values to achieve the best quality image. Adjust these settings by the smallest values possible to achieve the best results. 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	<p>Sets the aspect ratio of the captured image. The default aspect ratio is 4:3. The aspect ratio can be set to wide mode in order that the VGADVI Broadcaster can accurately capture wide aspect ratio 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. In these situations change the aspect ratio to Wide Mode.</p>
Select EDID file	<p>Browse to the Extended display identification data (EDID) file to be uploaded.</p> <p>EDID is the information about display's supported resolutions, timings, formats, chromacity, and other media parameters. This information can be used by a signal source for adaptation to the characteristics of a device accepting the signal.</p> <p>Use this URL to upload EDID files: http://www.epiphan.com/downloads/edid/ </p>

7 Channel Setup

When you log in the control interface, under the Stream Setup section you will find two panes with the channels settings available for VGADVI Broadcaster – DVI channel settings and Video channel settings. Now you can configure the selected channel.

VGADVI Broadcaster can capture analog and digital signals. This section explains how to configure both channels.

7.1.1 Analog channel setup

The following settings can be made for the analog channel on the Stream Setup page from the Web admin interface's main page.

Figure 15 Analog Channel Video Settings

Video channel

☒ Enable video channel

Video signal type: S-Video

Show time label: none

Format substitutions (hide):
 — Date: year, month (01/Jan/January), day of month, weekday (Thu/Thursday)
 — time: hour, minute, second, ms

Frame size: 352 x 288


Key frame interval: 60

Limit frame rate: 30


Bitrate: 600 kbits

Quality parameter: — for MJPEG only


Picture-in-picture layout:



Independent streams



Video inside DVI/VGA



Video outside DVI/VGA

The table below outlines the analog channel video configurable options.

Table 5 Analog Channel Settings

Enable video channel	Select this checkbox to enable the recording of the video signal from the analog video source.
Video signal type	Select the video signal type coming from the analog video source: <ul style="list-style-type: none"> - S-video - Composite
Show time label	If the analog video needs to be time labeled, use this parameter to specify how the date and time will be displayed. Use the Format substitutions commands to select the necessary date and time format. The commands were previously described in table 6.
Frame size	Select a Frame size from the drop down list to limit the width and height of the video image. If the analog video source is sending resolutions larger than the resolution limit they will be scaled to the resolution limit. Limiting the file resolution can help to reduce bandwidth usage.
Key frame interval	Controls the number of seconds between key frames. Key frames define the starting and ending points of any smooth transition.
Limit frame rate	Enter a value in terms of frames per second. This field is used to set a frame rate that is lower than the maximum frame rate at which the VGADVI Broadcaster can capture images. Reducing the frame rate reduces the number of images being captured by the device. Reducing the frame rate may reduce network usage.
Bitrate	Enter the signal bitrate. A lower bitrate produces lower quality videos and smaller file sizes. A higher bitrate produces better quality videos and larger file sizes.
Quality parameter (for MJPEG only)	This parameter is similar to Bitrate. Use bigger values to improve the quality of the broadcast.
Picture-in-picture layout	Use these radio buttons to specify how the DVI/VGA and analog video sources are streamed when both are being used. These

settings are explained in the **Picture In Picture Layouts** section.

7.1.2 Digital channel setup

The following settings can be made for the digital channel:

Figure 16 DVI Channel Video Settings

DVI channel

Show time label:

Show substitutions

Frame size:

1024 x 768

Key frame interval:

60

Limit frame rate:

30

Bitrate:

2000

kbits

Quality parameter:

50

— for MJPEG only

Below is a table showing the DVI source settings that are configurable.

Table 6 DVI Channel settings

Show time label	If the video needs to be time labeled or timestamped, this parameter allows how the date and time will be displayed. Click on Show substitutions and use the Format substitutions commands to select the desired date and time format. The commands are described in table 6 below. If time labeling is not required, leave this field blank.
Frame size	Select a frame size from the drop down list to limit the width and height of the video image. If the video source is sending resolutions larger than the resolution limit configured, the video image will be scaled to the resolution limit. Limiting the file resolution can help to reduce bandwidth usage.

Key frame interval	Controls the number of frames. Key frames define the starting and ending points of any smooth transition.
Limit frame rate	Enter a value in terms frames per second. This field is used to set a frame rate that is lower than the maximum frame rate at which the VGADVI Broadcaster can capture images. Reducing the frame rate reduces the number of images being captured by the device. Reducing the frame rate may reduce network usage.
Bitrate	Enter a DVI signal bitrate. A lower bitrate produces lower quality videos and smaller file sizes. A higher bitrate produces better quality videos and larger file sizes.
Quality parameter (for MJPEG only)	This parameter is similar to Bitrate. Use bigger values to improve the quality of the broadcast.

Table 7 Format Substitutions Commands

Command	Value	Example (27/09/2012 10:50:45.378)
date	%F	2012-09-27
year	%G	2012
month (as 01)	%m	09
month (as Jan)	%b	Sep
month (as January)	%B	September
day of month	%d	27
weekday (as Thu)	%a	Thu
weekday (as Thursday)	%A	Thursday
time	%T	10:50:45
hour	%k	10
minute	%M	50
second	%S	45
ms	%#m	378

7.2 Audio Configuration

Use the Audio section of the Web admin interface to configure the audio settings that control the audio input. All available video formats support audio except Motion JPEG.

Figure 17 Audio Configurable Options

Audio Configuration

Input Source

Line ▼

Input Amplifier Volume

20% ▼

Headphones Amplifier Volume

0% (Off) ▼

Apply

Table 8 Audio Configurable Options

Input Source	Select the input source <ul style="list-style-type: none"> • Line • Mic
Input Amplifier Volume	Reduce the input volume if the line in signal volume is too high for the System's line in amplifier. The default input amplifier volume setting is 100%. If the input volume is too high, change the setting to between 5% and 90% to reduce the input volume.
Headphones Amplifier Volume	Set up the audio out amplifier volume

7.3 Picture In Picture Layouts

If you are capturing video from two video sources, you can create a layout for the recording/broadcast, i.e. specify how two videos are positioned on a screen relative to each other.

To create a layout for the videos from two sources:

1. Connect two video sources to the device
2. Select **Stream Setup** section in the Web admin interface.
3. Select the **Enable video channel** check box.
4. Select the Picture-in-picture layout radio button, either **Video inside DVI/VGA** or **Video outside DVI/VGA**.
 - **Video inside DVI/VGA** – the DVI/VGA stream is displayed on the full screen at the same time as the analog stream is displayed in the left or right inset window. The streams are superimposed.
 - **Video outside DVI/VGA** - the DVI/VGA stream is displayed in the bigger screen at the same time as the analog stream is displayed in the smaller screen. The streams are not superimposed.

7.4 Select Video Codec

Before starting the video recording process, you have to specify the video codec for your recording. It can be selected on the Stream Setup section of the channel's page.

To select the video codec:

1. Select the required channel.
2. Click the Stream Setup option.
3. Click an arrow in the **Stream Type** field.
4. Select the required codec from the drop-down list. The following values are available for selection:
 - Flash using H.264,
 - ASF with either MPEG4 or H.264 codecs,
 - Motion JPEG r
 - RTSP with either MPEG4 or H.264 codecs.

Flash video and Motion JPEG can be viewed using many operating systems and web browsers.

ASF can be viewed with the Windows Media Player on Windows systems, and the VLC Media Player on Windows and other operating systems.

RTSP supports many media players including QuickTime and MPlayer.

Figure 18 Stream Settings

Stream setup

Stream type:

Flash video (H.264 codec) ▾

Video encoding preset:

High Speed ▾

Video encoding profile:

Main ▾

☐ Enhanced compatibility mode (h.264 slicing for RTP)

Table 9 Stream Setup settings

Video encoding preset	Defines how a video stream should be encoded: <ul style="list-style-type: none">- at a high quality- at a high speed- according to the default system settings.
Video encoding profile	Select one of the following encoding profiles that target specific classes of applications: <ol style="list-style-type: none">1. Baseline: for applications requiring additional data loss robustness, e.g. videoconferencing2. Main: for standard-definition broadcasts3. High: for broadcast and disc storage applications

Enhanced compatibility mode (h.264 slicing for RTP)	<p>This parameter provides operating stability if the transmitted video/audio stream is not quite supported by the viewer's equipment.</p> <p>When this parameter is activated, each picture is subdivided into one or more slices. The slice is given increased importance in H.264 as the basic spatial segment that is independent from its neighbours. Thus, errors or missing data from one slice cannot propagate to any other slice within the picture.</p>
---	--

7.5 Set Video Encoding Constraints/Parameters

The following common parameters can be additionally specified:

Table 10 *Common settings*

Rate control mode	<p>Used for H.264 and MPEG4 codecs. It specifies the bitrate encoding for the signal. Select one of the following:</p> <ul style="list-style-type: none"> - Low Delay Means Constant bitrate encoding (CBR) will be used. CBR is useful for streaming multimedia content on limited capacity channels since it is the maximum bit rate that matters, not the average. Therefore, CBR would be used to take advantage of all of the channel capacity. - Storage Means Variable Bitrate Encoding (VBR) will be used. This produces a better quality-to-space ratio compared to a CBR file of the same data. VBR files vary the amount of output data per time segment and the FPS value may be lower.
-------------------	---

Stream port	The number of the port being used to stream the broadcast. This value would be used along with the URL to access the broadcast. In the case where there are two streams because Independent streaming is being used, this value remains the same for both of the URLs being used.
-------------	---

Figure 19 Common Settings

Common settings

Rate control mode:

Storage



Stream port:

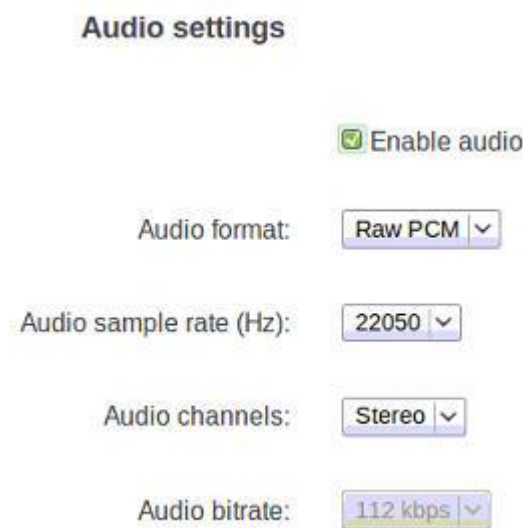
1881

7.6 Select Audio Format

The Audio settings pane in the control interface can be accessed by clicking the Stream Setup option from the menu. Select the **Enable audio** checkbox and specify the audio signal parameters.

Table 11 Audio settings

Enable audio	Select this checkbox to enable audio for the broadcast.
Audio format	Select either MP3 or Raw PCM (Pulse Code Modulation) formats.
Audio sample rate (Hz)	Number of samples per second that are used to digitalize a particular sound.
Audio channels	Select either mono (1 channel) or stereo (2 channels) sound.
Audio bitrate	Select the audio bitrate value for the broadcast.

Figure 20 Audio Settings

The screenshot displays the 'Audio settings' window. At the top, there is a checkbox labeled 'Enable audio' which is checked. Below this, there are five settings, each with a label and a dropdown menu:

- Audio format:** The dropdown menu is set to 'Raw PCM'.
- Audio sample rate (Hz):** The dropdown menu is set to '22050'.
- Audio channels:** The dropdown menu is set to 'Stereo'.
- Audio bitrate:** The dropdown menu is set to '112 kbps'.

8 Streaming

There are several decisions that need to be made when planning the creation of a broadcast, besides its exact content of the broadcast. Will the broadcast include an audio component coming from an analog audio source? What video format to use, what video standard to use, how to stream the broadcast are all questions that have to be answered when creating a broadcast. Most of the answers depend on the intended audience of the broadcast, how are the viewers going to view the broadcast, and how many simultaneous viewers are expected to view the broadcast? Where are the viewers located in relation to the where the broadcast is being streamed? What are the performance expectations? These are the types of questions that will determine the overall design of the broadcast.

This chapter outlines how a suitable design of a broadcast can be architected based on these types of questions and their resulting answers and how the System can be used in this design.

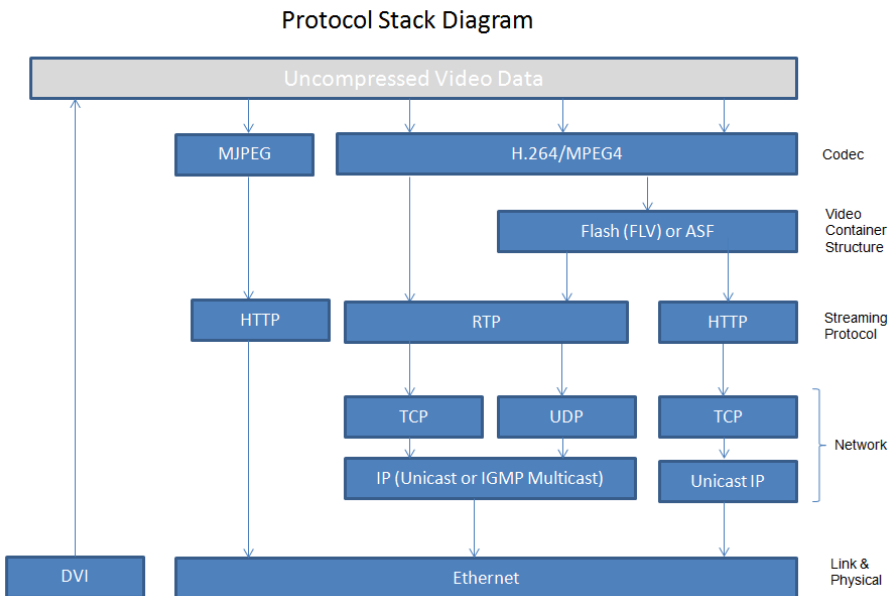
The VGADVI Broadcaster supports streaming of various standards and formats. The choice of video format will depend on the broadcast content and performance requirements. For example, Motion JPEG does not support audio from an external source. It also depends on how the intended viewers are planning to receive and

play the broadcast. Keep in mind that browser viewer capabilities and compatibilities are subject to change.

With the VGADVI Broadcaster, the video stream format is selected by an administrator. All users must view the broadcast in this format. In the case where an experienced user wants to view the same broadcast but requires different stream formats, it is possible to configure channels for streaming different video formats of the same broadcast to meet this requirement.

The figure below is representation of the protocol stack diagram showing how the video data is processed.

Figure 21 Protocol Stack Diagram



How the broadcast will be delivered to its viewers depends on the number of intended viewers and where the viewers are in relation to where the broadcast is originating. Are they on the same LAN or will they be accessing the broadcast from an external network? The answers to the above questions will help decide the delivery method of the broadcast.

The VGADVI Broadcaster can support streaming over HTTP, RTSP, peer-to-peer RTP connection, multicast RTP and a Content Distribution Network (CDN) broadcast network. Each broadcast delivery method will be now discussed in more detail.

8.1 HTTP or RTSP Streaming

For HTTP or RTSP streaming the only information required to view the broadcast is the URL of the broadcast. The VGADVI Broadcaster is ready to go straight out of the box, without any additional settings. If your broadcast needs to be accessed by many clients, use a Content Distribution Network as explained in the Using a Content Distribution Network section.

8.2 Using an IP Multicast Network

A multicast RTP stream provides a one-to-many broadcasting framework. In a multicast RTP configuration, the VGADVI Broadcaster sends a packet only once to a router that supports multicasting. This router then distributes the packets to all intended viewer nodes using a multi-cast protocol.

Sending multicast streams requires equipment that supports multi-casting, configuring your network and enabling specific multicasting features on the VGADVI Broadcaster. Multicast architectures are used predominantly within a high bandwidth corporate LAN and not on Internet based architectures. Multicast RTP streaming is not usually propagated outside the LAN though it may be propagated through VPNs connecting several LANs. Multicast transmission is available during RTP streaming.

A special case of multicasting is a peer-to-peer connection. In this scenario, a logical connection is established with a single client node. It does not require a request from the viewer to start sending data. Only one copy of the data is sent. The multimedia stream is always sent to the specified IP address configured in the RTP/UDP Push settings. A peer-to-peer connection is only available during RTP or Flash streaming.

Figure 22 Peer-to-peer Connection

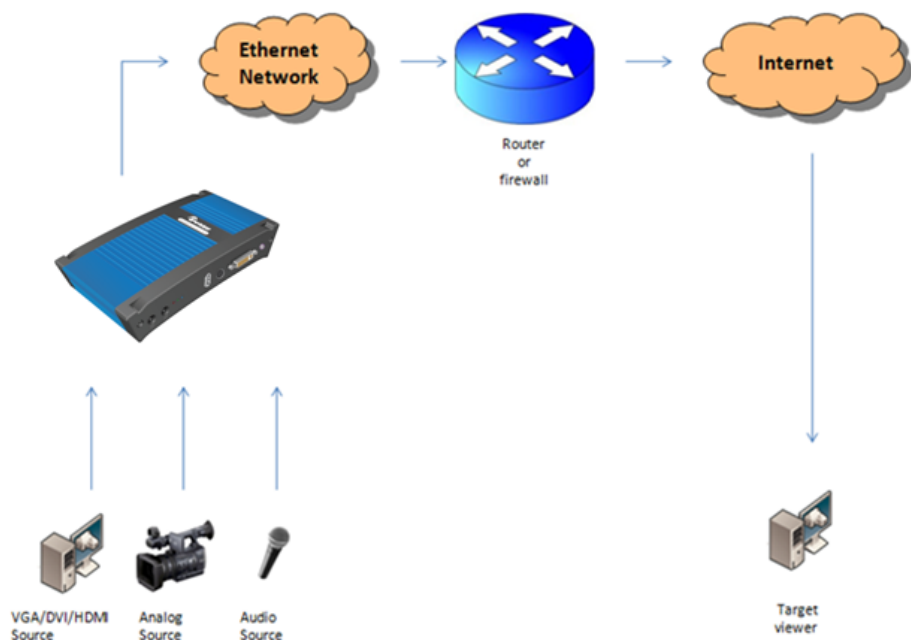


Figure 23 Multicast RTP Broadcasting to More than One Viewer

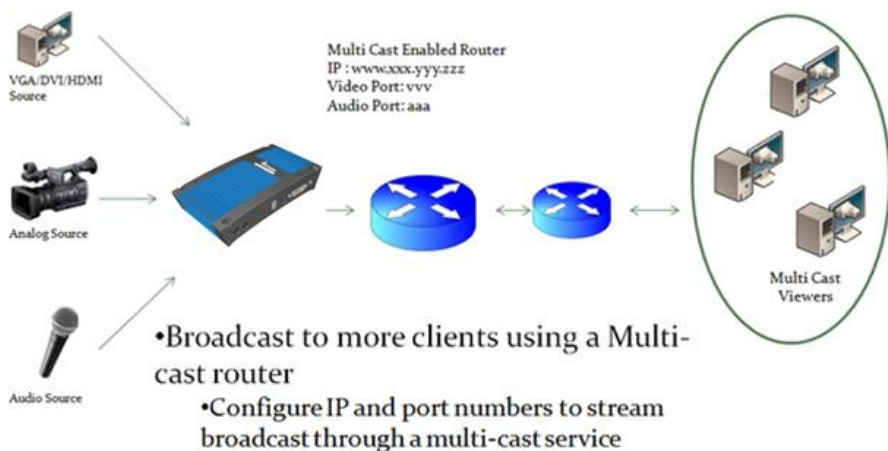


Figure 24 RTP/UDP settings in Stream Setup

RTP/UDP stream

☐ Enable RTP/UDP stream

Destination IP:

Audio port:

Video port:

8.2.1 Setting up an RTP Multicast from Stream Setup

To set up an RTP Multicast, enter the following settings in the Stream Setup menu item:

1. Select the **RTSP/H.264** stream type in the **Stream Type** field and click Apply.
2. In the RTP/UDP stream section specify the following additional fields (refer to the Figure 24 RTP/UDP settings in Stream Setup).

Table 12 RTP Multicast Specific Configurations

Enable RTP/UDP stream	Select this checkbox to enable RTP/UDP streaming.
Destination IP	Enter the IP address of the target host.
Audio Port	Configure the audio port for the stream.
Video Port	Configure the video port for the stream.

3. An SDP file is now generated. It is available in the **Info** section of the Web Admin interface. Select a name and location for the SDP file and save it. Then pass the SDP file to your audience.

8.2.2 Setting up Multicast from Publish Stream

RTP/UDP Push streaming allows you to direct video to a server or client and

generates an SDP file containing the stream description. SDP files can be stored on a streaming server, or opened by video players. Please refer to the Using an IP Multicast Network section for details.

To use this option:

1. Select Publish Stream from the main menu.
2. Select **RTP/UDP Push** from the drop-down list.
3. Select the **Enable RTP/UDP stream** check box.
4. Enter a destination IP address. At this target point the broadcast will be viewed.
5. Specify the numbers of the video and audio ports where the broadcast will be received.
6. Click **Apply**.
7. An SDP file is now generated. It is available in the **Info** section of the Web Admin interface. Select a name and location for the SDP file and save it. Then pass the SDP file to your audience.

Figure 25 RTP/UDP Push Functionality

Publish Stream

Publish: ▼

☒ Enable RTP/UDP stream

Destination IP:

Audio port:

Video port:

8.3 Using a Content Distribution Network

A content delivery network (CDN) is a system of computers or servers that ingest an incoming stream source and rapidly provides this content to numerous users by duplicating the content on multiple servers and directing the content to users.

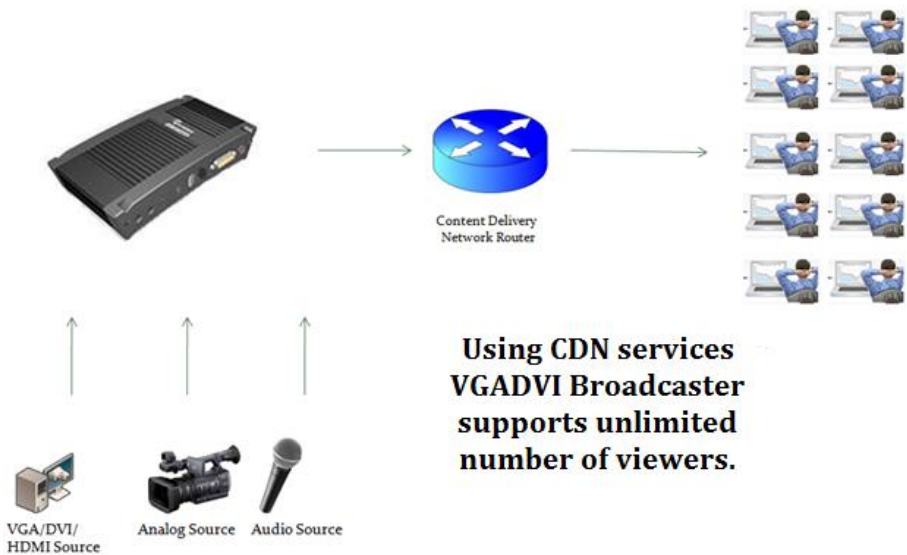
CDN distributes a heavy load of traffic to multiple locations in order to avoid congestion on a network that could impact a user's Internet experience. A CDN is highly scalable and can make financial sense to website owners as you will not need to pay for additional server hardware or routing should your website traffic start to increase or even decrease. The use of CDN technology has obvious advantages to those users whose broadcasts have large audiences from locations all over the world. If dozens or hundreds of viewers happen to select the same Web page or content simultaneously, the CDN sends the content to each of them without delay or time-out.

To stream to multiple users, the System can be configured as a client to CDN. Please click <http://epiphan.net/cdn-partners.php> to view the list of CDN providers preferred by Epiphan. By connecting to a CDN server, the broadcast from the System can be streamed to multiple viewers. By using a CDN, the maximum number of concurrent clients is increased, while at the same time reducing the load on the uplink internet connection.

CDN streaming is a very effective approach when you are broadcasting streams from the Epiphan solutions and want to add scalability to your broadcast. The System features the Publish Stream functionality that enables you to stream the broadcast either via Epiphan's portal or CDN providers to multiple viewers. You can use the following protocols for CDN streaming: RTSP (H.264), Flash (H.264), ASF (H.264).

Using CDN it is possible to set a user name and a password for the broadcast. Each viewer will have to request it from you before viewing the broadcast. This function allows you to manage access to your content ensuring visibility only to the appropriate and authorized viewers.

Figure 26 Using a CDN Service Increases Scalability of Concurrent Viewers



The Publish Stream functionality allows for directing captured video and audio to servers or clients using one of the available stream modes. The following options are available:

- **Disabled.** If this option is enabled, you cannot send multicast RTP stream, perform CDN broadcasting or stream video to Epiphan's portal.
- **to xxxxx.epiphan.net.** This option allows for streaming video to the Epiphan's portal.
- **using RTSP announce.** This option allows for connecting to CDN server.
- **using RTP/UDP push.** This option allows for multicast broadcasting.

These options and settings to be performed are discussed further.

Streaming in the **Independent Channel Stream** mode cannot be performed. Streaming in H.264 video compression is available only on the epiphan.net portal.

8.3.1 *Using Epiphan TV Portal for Streaming*

To set up and perform streaming via Epiphan TV portal:

1. Click the Publish Stream option in the main menu of the control interface.
2. Select **to xxxxx.epiphan.net** from the **Publish** drop-down list where xxxxx is the unique serial number of the System.
3. Select **Enable publishing** and click Apply. The system informs you that stream will be available on the Epiphan's portal and provides a link.

Figure 27 URL to Epiphan Server

Publish Stream

Publish:

☒ Enable publishing

Stream from this device will be available on: 92033.epiphan.net

4. Click this link and access the portal where the stream is being broadcast in a new window.
5. In case the bitrate of your broadcast exceeds 500 kbit/s, the system will give you a warning (see Figure 28 System Message in Case of Excessive Bitrate Speed). Click on **fix by reducing bitrate to 500**. The bitrate will be set to 500 kbit/s automatically.

Note: Epiphan.net is a demonstration service to help customers experiment with publishing streams to content distribution networks. Therefore certain bandwidth and performance limits are applied. To upgrade to a full service please select one of Epiphan's CDN partners.

Figure 28 System Message in Case of Excessive Bitrate Speed

Publish Stream

Publish:

☐ Enable publishing

 Current video bitrate **1000 kbit** is too high for publishing on epiphan.net (500 kbit/s max) [fix by reducing bitrate to 500 kbit/s](#)

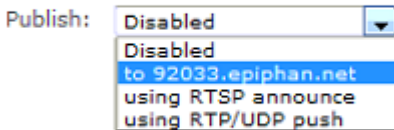


Now connection through the media tunnel is established. The System starts streaming to the Epiphan's portal – **epiphan.net**.

It is required to set up audio format as **MP3** when streaming through the epiphan.net. This setting is performed in the control interface's Stream Setup section (see Select Audio Format).

Figure 29 Selecting Options for Streaming through Epiphan.net

Publish Stream



There are several buttons available at the bottom of the epiphan.net portal page (see Figure 30 Epiphan's Portal):

Switch to	<p>Click this button to select a plugin which will be used for viewing the stream. Refer to Figure 31 Plugins Available for Selection on the Portal.</p> <ul style="list-style-type: none"> - Flash RTMP - Flash HTTP - QuickTime - VLC Player
Embed	<p>Displays a code that allows you to embed video stream into your web page. Refer to Figure 32 Code for Stream Embedding.</p>
Direct URL	<p>Displays a list of URLs for different types of broadcasting. Refer to Figure 33 Listing of Direct URLs.</p>

6. Click Switch to button and select a plugin for viewing the stream.
7. If you need to embed the stream into your web page, click Embed to obtain the code.

- Click Direct URL to obtain the list of URLs for different types of broadcasting.

Figure 30 Epiphan's Portal



Figure 31 Plugins Available for Selection on the Portal



Figure 32 Code for Stream Embedding



Direct URLs to various types of streams.

RTMP - Flash: rtmp://epiphan.net:1935/live/92033.sdp

HTTP - OSMF Flash: <http://epiphan.net:8080/live/92033.sdp/manifest.f4m>

RTSP - QuickTime/VLC: rtsp://epiphan.net:554/live/92033.sdp

IOS - Apple iPad, iPod, iPhone: <http://epiphan.net:8080/live/92033.sdp/playlist.m3u8>

Figure 33 Listing of Direct URLs

Switch To
Embed - Hide
Direct URLs

To embed this video into your website, copy and paste the code below.

```

<iframe>
<object width="1152" height="600">
  <param name="movie" value="strobe/StrobeMediaPlayback.swf"></param>
  <param name="flashvars"
    value="src=rtmp://epiphan.net:1935/live/92033.sdp&streamType=live&autoPlay=true">
  </param>
  <param name="allowFullScreen" value="true"></param>
  <param name="allowscriptaccess" value="always"></param>
<embed src="strobe/StrobeMediaPlayback.swf"
  type="application/x-shockwave-flash"
  allowscriptaccess="always"
  allowfullscreen="true"
  width="1152" height="600"
  flashvars="src=rtmp://epiphan.net:1935/live/92033.sdp&streamType=live&autoPlay=true">
</embed>
</object>
</iframe>

```

Alternatively you can configure VGADVI Broadcaster to stream their content through epiphan.net directly on the portal.

To view the stream directly on the portal:

1. Type <http://epiphan.net> in the address bar of your browser.
2. Enter serial number of VGADVI Broadcaster. It is displayed in the Info section of the Web admin interface.
3. Click the **Go!** button.

8.3.2 *Using Epiphan's Partners as CDN Providers For Streaming*

Use this option if you need to perform streaming on a remote streaming server other than **epiphan.net**. It is required to set up audio format as **MP3**. This setting is performed in the control interface's Stream Setup section (see Select Audio Format).

To use this option:

1. Select **RTSP Announce** from the drop-down list.
2. Enter the host/server name. For example, **172.30.209.150**.
3. Enter the number of port which is used for streaming to server. Usually for RTSP streaming it is port 554.

4. In the **Mount point** field enter the full path to locate an SDP file on server. This path is got from the CDN provider.
5. If necessary, enter the user and password information.
6. Click **Apply**.

Figure 34 RTSP Announce Functionality

Publish Stream

Publish:

☒ Enable RTSP announce

Host:

Port:

Mount point:

Username:

Password:

The last value of the **Publish** field (**using RTP/UDP push**) is described in the Setting up Multicast from Publish Stream section.

8.3.3 *CDN Streaming Setup in the Stream Setup Menu*

Alternatively you can set up the CDN Streaming, in the Stream Setup menu. Enter the following settings:

1. Select the RTSP stream type in the **Stream Type** field and click **Apply**.
2. In the RTP/UDP stream section specify the following additional fields:

Table 13 CDN Streaming Specific Configuration

Enable RTP/UDP stream	Select this checkbox to enable RTP/UDP streaming.
Destination IP	Enter the IP address provided by the CDN provider.

Audio Port	Configure the audio port for the stream.
Video Port	Configure the video port for the stream.

8.4 Viewing Streaming Video

The VGADVI Broadcaster may broadcast audio and video at resolutions of up to 1920 x 1200. Viewers can access the broadcasted video streams with a web browser that supports Motion JPEG, MPEG4 or Flash Video/H.264 compression or with a media player that is compatible with the stream format being transmitted. The video stream format is selected by the System administrator. Audio is available for all formats except from Motion JPEG.

8.4.1 *Retrieving the Stream's URL for Publishing*

In order for viewers to log in and view a stream, the administrator must release the URL(s) of the stream. The administrator is able to provide separate URLs for the stream coming in from the VGADVI Broadcaster's input ports and audio input ports. Alternatively, one URL can be provided that includes all the streams from all input sources. The administrator can retrieve the appropriate stream URL or URLs as explained below.

8.4.2 *Using the Web Admin Interface's Info Page*

The following indicates where each URL for the broadcast can be found on that page:

Live broadcast is the URL for the simultaneous broadcast from both video sources and the one audio port. If the **Single Channel Stream** mode is enabled (see User Viewing Experience: Single Channel Stream vs. Independent Streams), this URL is used to view video from both DVI and S-Video inputs.

Direct stream URL is the URL for the broadcast coming from the DVI port and the audio port.

Direct stream URL (s-video or composite) is the URL for the broadcast coming from the analog video port. The incoming analog signal's type, s-video or composite, is determined automatically and displayed. This URL is displayed only if the **Independent streams** mode is enabled.

Figure 35 URLs of the Broadcast Displayed in the Stream Info Section

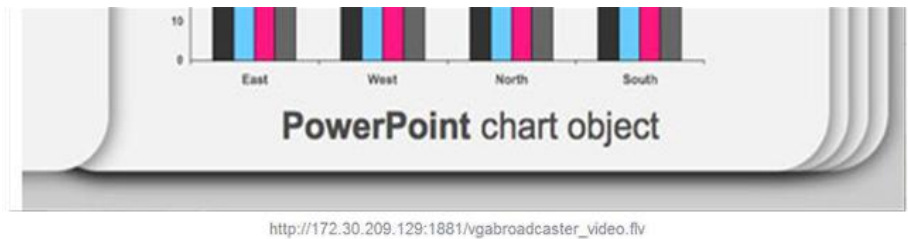
Stream info

```
Actual encoder frame rate: 30.0
Actual video channel encoder frame rate: 30.0
Live broadcast: http://172.30.209.112/preview.cgi
Direct stream URL: http://172.30.209.112:1881/vgabroadcaster.flv
Direct stream URL (svideo): http://172.30.209.112:1881/vgabroadcaster\_video.flv
```

8.4.3 Using the Web Admin Interface's Live View Feature

The second method for retrieving the desired broadcast URLs is to use the Web Admin interface's Live View Feature. This feature not only shows the current broadcast to the administrator but also provides the broadcast URLs. By clicking on the **Live View** button from the main menu, a preview of the current broadcast's videos appear in the web browser. Under each of the broadcast screens the system displays the URL of that broadcast. For an example refer to the following figure:

Figure 36 A Broadcast with its URL Displayed Under the Broadcast Image



8.4.4 Testing How Participants Log In With a Viewer Password

1. Start any web browser.
2. Using a browser or media player, open the **Open URL** dialog box and enter the IP, DNS or URL address of the VGADVI Broadcaster device. For example, if the URL IP address of the device's stream is **192.168.23.45:552/vga.sdp**, then browse to: **<http://192.168.23.45:552/vga.sdp>**

3. Enter the following when prompted:

User Name: viewer

Password: enter the viewer password

4. Press **Enter**. If the VGADVI Broadcaster is capturing images and is streaming images over the network, the viewer can see the visual information as it is transmitted.

8.5 Viewing a Broadcast with a Browser

If the administrator has configured a viewer password, participants must obtain the password in order to log in. The administrator will also provide the IP Address or the URL to be used by the viewer's browser.

To log in to view the broadcast using a browser:

1. Start any web browser.
2. Browse to the IP, DNS or URL address of the VGADVI Broadcaster's broadcast stream. For example, if the IP address of the VGADVI Broadcaster's broadcast is 192.168.23.45, then browse to:
`http://192.168.23.45`
3. Enter the following:
User Name: **viewer**
Password: (enter the viewer password).
4. Press Enter.
5. The broadcast begins to play within the viewer's browser.

8.5.1 Viewing a Broadcast with a Media Player

If the administrator has configured a Viewer password, participants must obtain the password in order to log in. The administrator will also provide the IP Address or the URL to use within the media player.

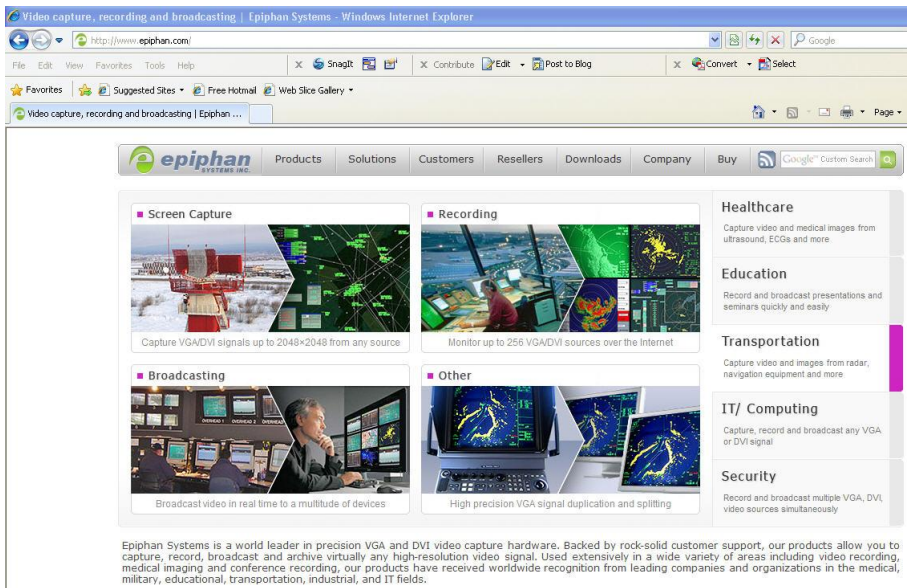
To log in to view a stream using a media player:

1. Launch the media player.
2. Use the Menu bar to open the URL dialog box and enter the IP, DNS or URL address of the stream.
3. When prompted, enter the following:
 - a. User name: **viewer**
 - b. Password: enter the viewer password.

c. Press Enter.

4. The stream begins to play within the viewer's browser.

Figure 37 Viewing a Broadcast Using a Web Browser



8.6 Viewing a Broadcast on iPhone, iTouch, or iPad

You can view a broadcast on iDevices using EpiphanyTouch™. This discovery and remote control application is available as a free download from iTunes and the App store. It allows you to log into the device as the administrator user. Refer to Epiphany's EpiphanyTouch App for iPad, iPhone, iTouch section for details.

8.7 Compatibility Information

This section provides information on compatibility of video streaming formats, browsers and viewers which is necessary for streaming video.

8.7.1 Streaming format/Player Compatibility

The System can stream video using Flash (H.264), ASF (MPEG4 or H.264 codecs), Motion JPEG or RTSP (MPEG4 or H.264 codecs). A quick definition of these video

streaming methods and the type of application that a viewer would use to watch that particular video stream is now provided.

The **Adobe Flash Video file type** is proprietary but is supported on most web browsers and on many media players including the VLC Media Player. This file type supports the H.264 standard. This video supports analog audio from an external source.

The **Advanced System Format (ASF) file type** also called Advanced Streaming format, can be viewed with the Windows Media Player or the VLC Media Player. Additional codecs may need to be installed to view ASF files. This file type supports H.264 and MPEG4 standards. This video supports analog audio from an external source.

The **Motion JPEG file type** records each frame in the video in JPEG format and can be viewed using most web browsers. This video format does not support analog audio from an external source.

The **RTSP type** supports many media players including QuickTime and MPlayer. This file type supports H.264 and MPEG4 standards. This video supports analog audio from an external source.

8.7.2 *Browser Compatibility*

Below is a list of browsers, operating systems and their supported video formats, which is believed to be accurate at time of writing. For additional media browser platform support, compatibilities and capabilities, please visit our website and/or the relevant browser or plug in documentation.

Table 14 Browsers and Video Formats

Browser	Motion JPEG	ASF	RTSP	Flash Video (H.264)
Internet Explorer 8		●	●	●
Mozilla	●	●	●	●
Safari	●	●	●	●

Chrome



In order to play ASF, RTSP, and Flash Video formats in browsers ensure that all appropriate plug-ins are installed.

Browser/viewer capabilities and compatibilities are
subject to change.

8.7.3 *Media Player Compatibility*

Here below you can find a list of media players, operating systems and their supported video formats, which is believed to be accurate at time of writing. For additional media player support, compatibilities and capabilities, please visit our website and/or the media player documentation.

Table 15 Media Players and Supported Video Formats

Media Player	Motion JPEG	ASF	RTSP	Flash Video (H.264)
Windows Media Player (v.12)		●	●	●
MPlayer (Windows, Mac OS, Linux)	●	●	●	●
QuickTime (Mac OS)	●	●	●	●
VLC (Windows, Mac OS, Linux)	●	●	●	●

The following media players support working with independent streams:

- **VLC**
- **SMPlayer**

9 Recording

The VGADVI Broadcaster captures video and audio data which can be encapsulated in a file or files and recorded.

The Web admin interface provides the administrator user with the ability to start, stop and configure the recording. Additionally, recorded video files might need to be downloaded or copied to another device for archiving purposes; also they might need to be deleted in order to manage disk space on the VGADVI Broadcaster. For organizing, recorded video files may need to be renamed. All of these management tasks are available via the VGADVI Broadcaster's Web admin Interface.

9.1 User Viewing Experience: Single Channel Stream vs. Independent Streams

Streaming and recording of all synchronized input sources can be performed in either of the following modes:

Single Channel Stream

Both video sources are combined into one and streamed to a common URL. Both video tracks and the audio track are combined and recorded to one video track and one audio track. The viewer is enabled to watch two different video sources at the same time and specify whether both streams are superimposed or not.

To enable Single Channel Stream Mode:

1. Select the Stream Setup menu option.
2. Select the **Enable video channel** check box.
3. In the Video channel pane select either Video inside DVI/VGA or Video outside DVI/VGA radio buttons (**Picture-in-picture layout** field).

Independent Channel Stream

In this mode each video source is streamed to a distinct URL. Both video tracks and the audio track are recorded to a multi-track file. Independent streams can be viewed in the separate windows of a browser or a media player.

To decide which mode to select you need to know how you will use the VGADVI Broadcaster. For example, the **Single Channel Stream** mode is ideal to deliver presentation material while the narrator is giving his comments. It is an effective way to create movies in sign language. As for the **Independent Channel Stream** mode, it is appropriate when a viewer does not need to watch both video streams simultaneously.

To enable Independent Channel Stream Mode:

1. Select the Stream Setup menu option.
2. Select the **Enable video channel** check box.
3. In the Video channel pane select either Video inside DVI/VGA or Video outside DVI/VGA radio buttons (**Picture-in-picture layout** field).

9.2 Video Formats and Standards

The VGADVI Broadcaster supports broadcasting of various standards and formats. The choice of video format will depend on the broadcast content and performance requirements. For example, Motion JPEG does not support audio from an external source. It also depends on how the intended viewers are planning to receive and play the broadcast. Keep in mind that browser viewer capabilities and compatibilities are subject to change.

With the VGADVI Broadcaster, the video stream format is selected by an administrator. All users must view the broadcast in this format. In the case where an experienced user wants to view the same broadcast but requires different stream formats, it is possible to use multiple VGADVI Broadcasters each streaming different video formats of the same broadcast to meet this requirement.

The VGADVI Broadcaster can stream video using Flash (H.264), ASF (MPEG4 or H.264 codecs), Motion JPEG or RTSP (MPEG4 or H.264 codecs). A quick definition of these video streaming methods and the type of application that a viewer would use to watch that particular video stream is now provided.

The **Adobe Flash Video file type** is proprietary but is supported on most web browsers and on many media players including the VLC Media Player. This file type supports the H.264 standard. This video supports analog audio from an external source.

The **Advanced System Format (ASF) file type** also called Advanced Streaming format, can be viewed with the Windows Media Player or the VLC Media Player. Additional codecs may need to be installed to view ASF files. This file type supports H.264 and MPEG4 standards. This video supports analog audio from an external source.

The **Motion JPEG file type** records each frame in the video in JPEG format and can be viewed using most web browsers. This video format does not support analog audio from an external source.

The **RTSP type** supports many media players including QuickTime and MPlayer. This file type supports H.264 and MPEG4 standards. This video supports analog audio from an external source.

Media Player, Browser, Viewer capabilities and compatibilities are subject to change.




9.3 Selecting Recording File Format

The format of the record is specified using the **Recorded Files** button of the Web admin interface.

Figure 38 Select Recording Format

Recorded Files

Time limit: 10 minutes ▼
 Size limit: 100 MB ▼
 File type: AVI ▼
☐ Stop recording in the absence of VGA/DVI and video signals

	File Name	Start	End	Duration	File Size	
Jul 5	 VGA_Jul105_09-21-18.avi 	09:21:18	09:28:53	7m 35s	32.91 MB	
<input type="button" value="Download Selected"/> <input type="button" value="Delete Selected"/> <input type="button" value="Delete All"/>						

1. Use the **File Type** drop-down list to select the recording format (**MOV** or **AVI**).
2. Click **Apply**.

9.4 Changing File Limits (Time and Size)

The VGADVI Broadcaster can record the channel to one or more files according to time and file size limit parameters. It will automatically create and start recording to a new file whenever either limit is reached.

To specify the time and file size limit parameters:

1. Click the **change** command.
2. Select the parameters values from the drop-down list (see Figure 39 Changing Time Limit and Size Limit).

Figure 39 Changing Time Limit and Size Limit

Recorded Files

Time limit: 5 minutes ▼
 Size limit: 5 MB ▼
 File type: AVI ▼

3. Click **Apply**.

Table 16 Time and file size limit parameters

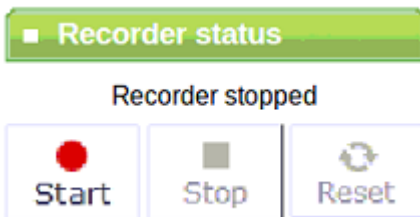
Time limit	Specify the maximum amount of time to record to a file. When either the time limit or the size limit is exceeded, the system starts recording data to a new file.
Size limit	Specify the maximum size of the recorded file. When either the time limit or the size limit is exceeded, the system starts recording data to a new file.

9.5 Starting and Stopping Recording

The recorder status is shown in the Web Admin interface. It is located on the left hand side of the screen above the Web Admin interface's main menu. The ability to manage a recording with the Web Admin interface is done using these buttons.

Note that the format of the recorded file is specified clicking the **Recorded Files** button and selecting the required **File Type** value.

Figure 40 Recorder Status



To start a recording, click the **Start** button in the Recorder status section of the main menu.

To stop a recording, click the **Stop** button in the Recorder status section of the main menu.

To restart recording to the same file, click the **Reset** button. The device will append data to the existing file

To close the file being recorded and start recording to a new file, click **Stop**. Then click the **Start** button again.

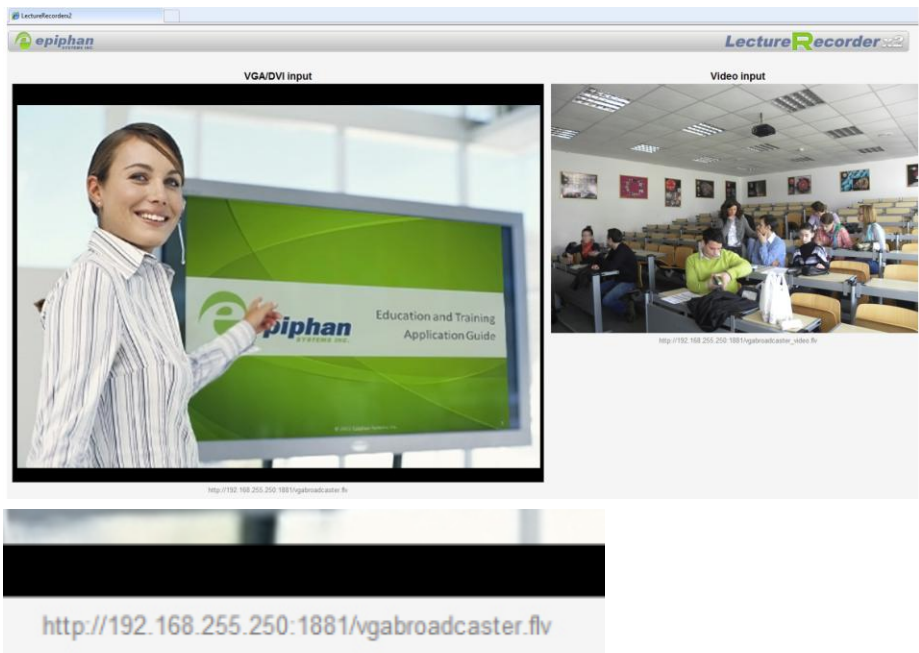
9.6 Viewing the Current Recording

Viewing the broadcast as it is being recorded is performed by doing the following:

Select **Live View** from the Web Admin Interface's main menu. A preview of the broadcast that is currently being recorded appears in the web browser. The preview is exactly the same as what is being recorded.

If the broadcast is coming from two sources through the DVI and S-Video connectors, both will be seen. Under the broadcast screen the system displays the broadcasts' URLs.

Figure 41 Broadcasts Coming from Two Input Sources



9.7 Recording a Stream on iPad, iPhone and iTouch

You can record a stream on iDevices using EpiphanyTouch™. This discovery and remote control application is available as a free download from iTunes and the App store. It allows you to log into the device as the administrator user. Refer to Epiphany's EpiphanyTouch App for iPad, iPhone, iTouch section for details.

9.8 Recording Data in Motion JPEG Format

To configure the channel before recording data in Motion JPEG format:

1. Select **Motion JPEG** in the **Stream Type** field (Stream setup section of the channel page).
2. Use the **Page refresh time** parameter in the MJPEG webpage section on this page to specify how often the browser updates the visual information coming from the System. In other words, how often the page is refreshed.
3. Click Apply.

9.9 Files Archive

The Video Archive lists all of the video files recorded by the VGADVI Broadcaster and that are saved on it. It is accessed by clicking the **Recorded Files** button from the Web admin interface's main menu.

If the broadcast is coming from two input sources, both streams are overlaid during recording. Therefore both input sources will be recorded to one file.

For each file, the list includes the name of the file, start and end times, duration, and size in MB. Each recording file listing also includes icons that can be used to download, delete, or rename the file.

Figure 42 Video Archive

Recorded Files

Time limit: 10 minutes ▼
 Size limit: 100 MB ▼
 File type: AVI ▼

☐ Stop recording in the absence of VGA/DVI and video signals

	File Name	Start	End	Duration	File Size	
Jul 5	<input type="checkbox"/> VGA_Jul105_09-21-18.avi	09:21:18	09:28:53	7m 35s	32.91 MB	<input type="checkbox"/>

9.9.1 Downloading Recordings

Download recordings to either save or view them. You can download a single file or multiple files as a single .zip file.


1. Click **Recorded Files** in the Web admin interface main menu.
2. Select the checkbox beside the file you want to download, or to download multiple files, select the checkboxes beside all of them. Then select the **Download Selected** button at the bottom of the file list.
3. Follow the instructions to download the file or files.

If you select the **Download Selected** button, all of the files that you have selected are downloaded in a single zip file. You must unzip this file to view the individual video files.

If you have downloaded multiple files, select **Continue** to return to the **Recorded Files** page.

9.9.2 Deleting Files


The administrator user can delete files from the System to free up space on the hard disk. Files can be selected one at a time, or multiple files can be selected to be deleted. Alternatively there is an option to delete all files that have been previously downloaded.

1. Click **Recorded Files**.
2. To delete individual recordings, select the **Delete File** icon  beside the file you want to delete. To delete multiple files, select the checkbox beside the files you want to delete and then select **Delete Selected**.
3. Follow the instructions to delete the file or files. The files are deleted from the hard disk.

9.9.3 *Renaming Files*

The administrator can rename one file at a time.

To rename a file:

1. Click **Recorded Files** from the Web admin interface main menu.
2. Select the rename file icon .
3. Enter the new name for the file.
4. Select **Submit**.

9.9.4 *Viewing Closed Recording Files*

As broadcasts are recorded into the file, they can be viewed directly from the Web Admin Interface. Closed recordings can also be viewed using the Web Admin interface and a compatible media player.

The instructions below explain how to view a closed recording file using the default media player installed on a computer. These instructions will only work when using the default player. To view a closed recording file using another player the closed file will need to be downloaded or copied to a location that is accessible by the player. The recorded file will then be opened from within the player itself.

1. Once the recording is completed, log into the Web Admin interface.
2. Select **Recorded Files** from the main menu and click the file that is to be viewed.

one way. After inserting, the VGADVI Broadcaster will recognize the stick, however, this occurs without any user notification whatsoever.

Figure 44 Insert a USB Flash Disk



The VGADVI Broadcaster copies to the inserted USB flash drive, all previously recorded files starting from the oldest record to the newest. The flash drive's LED (if any) will be blinking indicating data transfer. The VGADVI Broadcaster copies data to the flash drive until there is not enough storage space for additional files or all recorded files have been copied.

Due to speed limitations flash drives are not capable of recording data on the fly. This means that while the previously recorded data captured by the VGADVI Broadcaster on its internal solid state memory will be copied to the flash drive, the currently opened recording file cannot be copied until the file is closed. Once closed, it is then available for copying.











Once the data has been copied, safely remove the flash drive. To check its free storage, files that have been copied and their size, insert the drive into a computer and see its properties.

The image below is a screenshot from the Web admin interface. Recording is enabled. One file is open and not available for copying, the remaining files are closed and can be copied.

Figure 45 One file is Unavailable for Copying as It Is Currently Opened

Recorded Files

Recording file limits: 30 minutes and 500 MB ([change](#))

	File Name	Start	End	Duration	File Size	
Sep 26	VGA_Sep26_04-44-58.tmp	04:44:58	04:45:31	33 seconds	3.91 MB	
		* * *				
	<input type="checkbox"/> VGA_Sep26_04-38-30.avi		04:38:30	04:40:03	1m 33s	11.10 MB 
		* * *				
	<input type="checkbox"/> VGA_Sep26_03-51-04.avi		03:51:04	03:51:16	12 seconds	1.22 MB 
		* * *				
Sep 23	<input type="checkbox"/> VGA_Sep23_07-43-03.avi		07:43:03	07:43:24	21 seconds	9.71 MB 
		* * *				
	<input type="checkbox"/> VGA_Sep23_07-01-54.avi		07:01:54	07:02:08	14 seconds	6.22 MB 
		* * *				
	<input type="checkbox"/> VGA_Sep23_03-01-00.avi		03:01:00	03:01:02	2 seconds	0.35 MB 
		<input type="button" value="Delete Selected"/>		<input type="button" value="Download Selected"/>		

The file currently being recorded is not available for copying.

9.11 Automatic File Upload

The automatic file upload feature will automatically copy recorded video files from the VGADVI Broadcaster to another device on your network. This feature's page is reached from the Web admin interface's main menu by clicking on **Automatic File Upload**.

By uploading recorded broadcast files to another network device, these broadcasts become available to be viewed from other device besides the VGADVI Broadcaster. This feature also provides a method of automatically archiving recorded broadcast files after they are closed.

Table 17 Automatic File Upload Configurable Options

Enable Automatic File Upload	Check this box to enable this feature, uncheck this box to disable this feature.
Protocol	Select the upload client.
How often	Select how often video files are to be uploaded. By selecting On file rotation , the VGADVI Broadcaster uploads each video file after it stops recording the current video file and starts recording the next one. You can also configure the VGADVI Broadcaster to upload all video files every 1, 6, 12, or 24 hours.
Remote path	The path on the upload server to upload the video files to. This path must match an actual path on the server. If a path is not entered, the files are uploaded to the root location.
Remove after upload	If you select this checkbox, the video files will be deleted on VGADVI Broadcaster after uploading. In case the check box is not selected, the system check if there is enough place for a new file based on the size limit value (please refer to Changing File Limits (Time and Size)). If there is not enough place, the system deletes the oldest files.
Mark file as downloaded	Select the checkbox to keep the files on VGADVI Broadcaster after uploading copies to the server. The filenames before uploading are displayed in blue. The filenames after uploading are displayed in purple.
Show log of automatic file upload	Use this command to display the log of file uploads

Figure 46 Configuring the Automatic File Upload Feature

Automatic File Upload

☐ Enable Automatic File Upload

Protocol:

How often:

Remote path:


☐ Remove after upload

☐ Mark file as downloaded

[Show log of automatic file upload](#)

9.11.1 Configuring Automatic File uploads

Recorded files can be uploaded to a CIFS server (a Windows share), an RSync server, or an FTP server.

1. Select **Enable Automatic File Upload**.
2. Set **Protocol** to *FTP Client*, *RSync Client*, or *CIFS client* depending on what upload server is being used.
3. If the **How often** option is set to *On file rotation*, the VGADVI Broadcaster will upload each video file after it stops recording to it. A file rotation can be forced by clicking **Reboot Now** button in the **Maintenance** section. Alternatively, the VGADVI Broadcaster can be set to upload all video files every 1, 6, 12, or 24 hours.
4. Set **Remote Path** to the path on the upload server to upload the video files to. This path must match an actual path on the server. If a path is not provided, the files are uploaded to the root location.
5. Select the **Remove after upload** checkbox to delete all video files on the VGADVI Broadcaster after uploading them.
6. Select **Mark file as downloaded** to keep the files on the VGADVI Broadcaster device after uploading copies to the server. On the Web admin interface the download icons for the uploaded files change to .

Note: In case you select both checkboxes (**Remove after upload** and **Mark file as downloaded**) the files uploaded to server will be removed from the device.

7. Configure the appropriate client for the designated upload server:

- If the upload server is a CIFS server (for example, a Windows shared folder), select and configure the CIFS Client. See *Configuring the CIFS Client*.
- If the upload server is an RSync server, select and configure the RSync client. See *Configuring the RSync Client*.
- If the upload server is an FTP server, select and configure the FTP Client. See *Configuring the FTP Client*.

8. Click **Apply**.

The first copy is made after the time period set in **how often** expires. For example, if the VGADVI Broadcaster is set to upload files every hour, the first set of files is uploaded after one hour. If five video files are saved in the first hour, those five video files are uploaded. One hour later, all of the video files saved since the start of that hour are uploaded.

Video files saved before you selected **Apply** are not uploaded. For Files saved before Automatic File upload is configured, a manual upload process will have to be done.

9.11.2 *Configuring the CIFS Client*

Use the CIFS client configuration to have the VGADVI Broadcaster device behave as a CIFS client connecting to a CIFS server (such as a Windows shared folder) when uploading broadcast files. Different networks may have different CIFS server configurations. If required, contact your network administrator for assistance with getting the VGADVI Broadcaster to connect to the server. Depending on your CIFS server configuration you may not have to enter information in every field shown in the following diagram.

Figure 47 Configuring a CIFS Client

CIFS Upload

Server port:

Server address:

Server share:

Domain:

Login:

Password:

9.11.2.1 To configure the CIFS client

1. Select *CIFS Client* in the **Protocol** field.
2. Enter the **Server port** if the CIFS server uses a non-standard port. If your CIFS server uses standard ports you should not have to add any information to this field. If your server uses non-standard ports or looks for a non-standard port first, enter the port number in this field.
3. Enter the **Server address**. This can be the numeric IP address or fully qualified domain name of the CIFS server.
4. Enter **Server share**. This is the CIFS share name or the name of the Windows shared folder on the CIFS server.
5. If required, enter the name of the CIFS **Domain**. The Domain can be a Windows Domain or Work Group name.
6. Enter the **Login** and **Password** required to authenticate with the CIFS server to connect to the server share.
7. Select **Apply**.

The VGADVI Broadcaster will then attempt to connect to the CIFS server. The Web admin interface displays messages about whether the VGADVI Broadcaster is able to connect to the CIFS server and the status of the connection.

9.11.3 *Configuring the RSync Client*

Use the RSync client configuration to have the VGADVI Broadcaster act as an RSync client connecting to an RSync server. Different networks may have different Rsync

server configurations. If required, contact your network administrator for assistance with getting the VGADVI Broadcaster to connect to the server.

Figure 48 Configuring a RSync Client



The image shows a web-based configuration form titled "RSync". It contains four text input fields labeled "Server address:", "Server module:", "Login:", and "Password:". Below these fields is a checkbox labeled "Checksum". At the bottom of the form is a button labeled "Apply".

9.11.3.1 To configure the RSync client

1. Select *RSync Client* in the **Protocol** field.
2. Enter the **Server address**.
3. Enter **Server module** which is a directory on the RSync server.
4. Enter the **Login** and **Password** required to authenticate with the RSync server to connect to the server share.
5. Select the **Checksum** checkbox to enable computing checksums algorithm applied during file synchronization between sender and recipient servers.
6. Select **Apply**.

The VGADVI Broadcaster will then attempt to connect to the RSync server. The Web admin interface displays messages about whether the VGADVI Broadcaster is able to connect to the RSync server and the status of the connection.

9.11.4 *Configuring the FTP Client*

Use the FTP client configuration to have the VGADVI Broadcaster act as an FTP client to an FTP server to upload broadcast files. Different networks may have different FTP server configurations. If required, contact your network administrator for assistance with getting the VGADVI Broadcaster to connect to the server.

Figure 49 Configure a FTP Client

The screenshot shows a web form titled "FTP Upload". It contains four input fields: "Server address:", "Server port:", "Login:", and "Password:". Each field is represented by a rectangular text box. Below the "Password:" field is a blue button with the word "Apply" in white text.

9.11.4.1 To configure the FTP client

1. Select *FTP Client* in the **Protocol** field.
2. Enter the **Server port** if the FTP server uses a non-standard port. The standard FTP port is TCP 21.
3. Enter the **Server IP address**.
4. Enter the **Login** and **Password** required to authenticate with the FTP server to connect to the server.
5. Select **Apply**.

The VGADVI Broadcaster will then attempt to connect to the FTP server. The Web admin interface displays messages about whether the VGADVI Broadcaster is able to connect to the FTP server and the status of the connection.

9.11.5 *Testing the Automatic File Upload*

Test the automatic file upload to ensure all settings are correct.

9.11.5.1 To test automatic file upload


1. Confirm that the upload server is operating.
2. Start recording a broadcast.
3. Log into the Web admin interface.
4. Select **Automatic File Upload**, from the main menu.
5. Set the **How Often** setting to *On file rotation*.

6. Click the **Reboot Now** button in the **Maintenance** section from the main menu. The currently recording broadcast file will be closed and saved.
7. The broadcast will then be uploaded to the configured remote path using the configured client.
8. Check the server to confirm that the most recently saved video file has been uploaded to it and it is in the proper path location on that server.

If the file is not uploaded, verify that the client configuration and Automatic File Upload configuration settings are correct. Check the remote device's root path, if the remote path is incorrectly configured, the broadcast file will be uploaded to that location.

Check the **Archive** page from the Web admin interface:

If the **Remove after upload** checkbox is selected, the uploaded broadcast file should have been deleted from the Archive section. If the **Mark file as downloaded**

checkbox is selected, the uploaded broadcast file download icon should be  .

10 Networking

10.1 Connecting Directly to the System

This section discusses how to directly connect to the VGADVI Broadcaster using the factory default network settings. This method must be used if the network where the VGADVI Broadcaster resides does not have a DHCP server, or it is desired to simply connect a capture work station and the VGADVI Broadcaster without a router, by simply using a direct connect Ethernet cable.

The next section discusses tools that can be used to discover the VGADVI Broadcaster that has been plugged into the local network and been assigned an appropriate IP address for the given network by a DHCP server. This network discovery also applies if the device was assigned a static IP.

Either method, connecting directly or connecting using network discovery, is required to access the VGADVI Broadcaster to allow for further configuring of the device.

10.1.1 *Default Network Settings*

The VGADVI Broadcaster comes with the following factory defaults:

IP: 192.168.255.250

Netmask: 255.255.255.252

User Name: admin (no password)

For more information on the admin user, see the section Users and Passwords.

10.1.2 *Connecting Directly to the VGADVI Broadcaster*

Using the default network settings, perform the following steps:

1. Record the network settings of the workstation being used to connect to the VGADVI Broadcaster so that they can be restored later if needed.
2. Temporarily change the network configuration on the workstation to the following:
 - a. Static IP assignment
 - b. IP address: 192.168.255.249
 - c. Subnet mask: 255.255.255.252
3. Establish an Ethernet connection between the VGADVI Broadcaster and the workstation by one of the following methods:
 - a. Connect the VGADVI Broadcaster's Ethernet port to the same Ethernet network as the workstation
 - b. Connect the VGADVI Broadcaster's Ethernet port to an Ethernet network switch and connect the workstation's Ethernet to that same switch.
 - c. Connect the VGADVI Broadcaster's Ethernet port directly to the workstation's Ethernet port using either a regular or a crossover Ethernet cable.
4. Start a web browser on the workstation and browse to:
<http://192.168.255.250/admin/>
5. Log in as the administrator user:
User Name: **admin**
Password: <return>
6. The VGADVI Broadcaster's Web interface Admin opens.
7. Restore the previously save network configurations on the workstation.

10.2 Network Discovery of the VGADVI Broadcaster

Instead of connecting directly as described in the previous section, to the VGADVI Broadcaster, the VGADVI Broadcaster can be discovered on the network and its IP address can be obtained.

When the VGADVI Broadcaster device is configured for DHCP and has been plugged into a network with a DHCP server, the DHCP server automatically assigns an IP address to the VGADVI Broadcaster relevant to the network. Determining the IP address assigned to the VGADVI Broadcaster is required to access the VGADVI Broadcaster to allow for further configuring of the device.

There are tools that will return the VGADVI Broadcaster's IP address. Epiphan provides two such tools and they are described in the following section.

Alternatively, contact the relevant network administrator to retrieve the VGADVI Broadcaster's IP address.

Regardless of the method used to obtain the VGADVI Broadcaster's IP address, its assigned IP address is required to allow for any further configuring.

10.2.1 *Epiphan's Network Discovery Utility*

Epiphan's Network Discovery Utility runs on a Windows based PC. It finds the VGADVI Broadcaster device on the network and displays its assigned IP address. The Network Discovery Utility can also be used to connect to the VGADVI Broadcaster Web admin interface tool.

10.2.1.1 *To install Epiphan's Network Discovery Utility Tool*

1. Find the latest Network Discovery Utility on the website's download page (<http://www.epiphan.com/downloads/>).
2. Select **Download Network Discovery Utility**. Ensure to note the download destination folder.
3. Run NetworkDiscovery.exe from the above noted download destination folder.
4. Select Search to find the Epiphan devices connected to the network.

The Network Discovery Utility can only find the Epiphan devices on the same network as the Windows PC that is running this utility.

10.2.2 *Epiphan's EpiphanTouch App for iPad, iPhone, iPod*

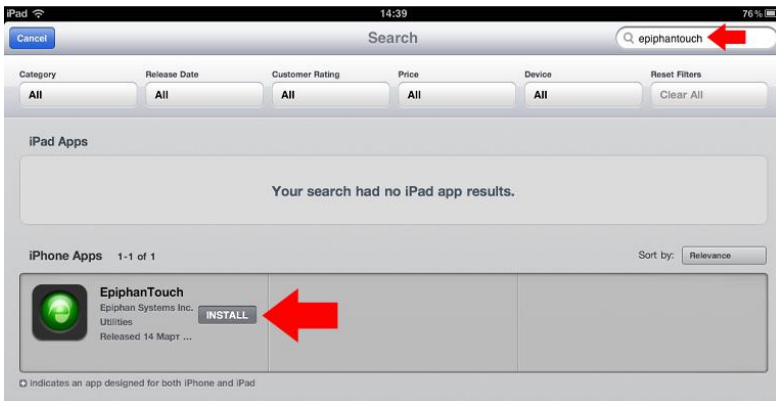
EpiphanTouch™ is a discovery and remote control application available as a free download from iTunes and the App store.

EpiphanTouch finds, provides the IP address, and can be used as a remote control to start and stop broadcastings and recordings on the VGADVI Broadcaster. It will list all Epiphan devices including the VGADVI Broadcaster operating on the same network as the iPhone, iPod, or iPad that is running the EpiphanTouch application.

10.2.2.1 *To install and use EpiphanTouch from iTunes:*

1. Either follow the URL to go directly to the EpiphanTouch page in the App store: <http://itunes.apple.com/pk/app/epiphantouch/id424405619?mt=8#> or search for the EpiphanTouch application in the App Store using the **Search** field.

Figure 50 Search for EpiphanTouch in the App Store



2. Install the EpiphanTouch App on your iDevice.
3. The EpiphanTouch will discover all Epiphan devices. The IP addresses of all devices will be displayed. Record the IP address corresponding to the VGADVI Broadcaster you want to configure. If there is more than one Epiphan device on the network, you can identify your VGADVI Broadcaster by the serial number displayed.

4. To use EpiphanTouch's remote control feature, select the desired VGADVI Broadcaster and log into the device as the administrator user. Figure 51 Log into the VGADVI Broadcaster as the Administrator



5. Start or stop video capturing and recording.

10.3 Setting IP Address

Changing the network configuration involves setting how the VGADVI Broadcaster receives an IP address. IP Addresses can be assigned statically or dynamically with the use of a DHCP server. For network configuration changes to take effect, the VGADVI Broadcaster device must be rebooted after making the changes, refer to the section Rebooting or Restarting VGADVI Broadcaster.

If the IP address is changed, the VGADVI Broadcaster must be removed from the Network Discovery Utility and then re-discovered by selecting **Search**.

Additionally, the VGADVI Broadcaster's MAC address is displayed on the Network Configuration page. Providing the MAC address to your network administrator may be helpful for managing your network.

10.3.1 *Set the VGADVI Broadcaster to use a static IP address*

1. Log into the Web admin interface.
2. Select **Network** from the main menu.
3. Select **Use static address**.

Enter an IP Address, Network Mask, Default Gateway, and DNS Server that are valid for your network. Ensure that this gateway setting is the gateway of your local LAN, i.e. the 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 assigned must be compatible with your network.

4. Select **Apply** to save these changes.
5. Select **Maintenance**.
6. Select **Reboot Now**.
7. It takes a few minutes for the VGADVI Broadcaster device to reboot.
8. After a few minutes log into the Web admin interface. Logging into the Web admin interface can be done by:
 - a. Using a browser and browsing to the new IP address assigned to the VGADVI Broadcaster.
 - b. Using the Network Discovery Utility.
9. Re-log into the Web admin interface using the administrator username and password.

10.3.2 *Set the VGADVI Broadcaster to use a DHCP server*

By default, the VGADVI Broadcaster is configured to connect to a network using a DHCP server, the DHCP server will automatically configure the network settings and assign a relevant IP address to the VGADVI Broadcaster. This section describes how to re-enable DHCP settings if they have been disabled.

1. Log into the Web admin interface.
2. Select **Network** from the main menu.
3. Select **Use DHCP**. The other fields can be left as is.

4. Select **Apply** to save these changes.
5. Select **Maintenance**.
6. Select **Reboot Now**. It takes a few minutes for the VGADVI Broadcaster device to reboot.
7. After a few minutes log into the Web admin interface. Logging into the Web admin interface can be done by:
 - a. See the section Network Discovery of VGADVI Broadcaster on how to obtain the IP address for VGADVI Broadcaster.
 - b. Using a browser and browsing to the new IP address assigned to the VGADVI Broadcaster.
 - c. Using the Network Discovery Utility, see section Logging into the Web Admin Interface for more details.
8. Re-log into the Web admin interface using the administrator username and password.

The following diagram shows the network page from the Web admin interface and enabling DHCP.

Figure 52 Enabling DHCP

IP Configuration for eth0

MAC address is 00:55:56:b6:88:9d

Current IP address is 172.30.209.237

Use DHCP ☒

Use static address ☐

IP Address

Network Mask

Default Gateway

DNS Server

Network Diagnostics

Address:

10.3.3 Performing Network Diagnostics

A tool in the Network section of the web interface combines the functionality of the **tracert** and **ping** programs in a single network diagnostic tool.

Tracert is a computer network diagnostic tool for displaying the route or path and measuring transit delays of packets across an Internet Protocol (IP) network.

Ping is a computer network administration utility used to test the reachability of a host on an IP network and to measure the round-trip time for messages sent from the originating host to a destination computer.

This tool investigates the network connection between the host that the VGADVI Broadcaster runs on and a user-specified destination host. After entering the URL or

IP address, click either **ping** or **traceroute**. If ping is clicked, the tool determines the reachability of the user-specified host. If **traceroute** is clicked, the route and measures transit delays of packets is displayed. As it does this, the tool displays statistics about each machine.

Figure 53 Statistics displayed by the diagnostics tool after using the Ping utility

Address:

```
# ping -w 10 -c 4 'www.google.com'
PING www.google.com (74.125.232.83): 56 data bytes
64 bytes from 74.125.232.83: seq=0 ttl=59 time=8.297 ms
64 bytes from 74.125.232.83: seq=1 ttl=59 time=5.422 ms
64 bytes from 74.125.232.83: seq=2 ttl=59 time=4.242 ms
64 bytes from 74.125.232.83: seq=3 ttl=59 time=3.332 ms

--- www.google.com ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 3.332/5.323/8.297 ms
```

11 System Administration

11.1 Setting the Date and Time

The date and time can be set manually or Time synchronization can be enabled on the VGADVI Broadcaster. Configuring how the date and time is managed on the VGADVI Broadcaster is done by selecting **Date and Time** from the Web admin interface's main menu.

Clicking **Enable Time Synchronization** on the Date and Time page, results in the date and time being received from a public network time protocol (NTP) server. This is done by having the VGADVI Broadcaster connect to the server over the Internet. NTP uses UDP and port 123. The default NTP server is time.nrc.ca. This should be changed to a NTP server that is recommended for your location. This information should be available from your network administrator.

For more information about NTP, including a list of recommended NTP servers, refer to the following webpage: [The NTP Public Services Project](#).

To get the correct time from the NTP server, ensure that the correct Time Zone for the location of the VGADVI Broadcaster is selected.

If the VGADVI Broadcaster device cannot connect to the Internet and there is an RDATE server on the network, you can set time synchronization to use RDATE (as 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, how often the date and time is updated can be configured. The Time Update interval can be every 1, 6, 12, or 24 hours.

Figure 54 Setting the Date and Time

Date and Time

Time Zone	Canada/Eastern
Enable time synchronization	<input checked="" type="checkbox"/>
Protocol	NTP
Server IP Address	time.nrc.ca
Update interval	every hour
Set time manually	<input type="checkbox"/>
Date (yyyy-mm-dd)	2011-09-23
Time (hh:mm:ss)	07:14:26
RTC calibration: (-31..+31).	

Negative numbers slow the clock up to 5 sec/day, positive numbers speed up the clock up to 10 sec/day.

Apply

The following table summarizes the configurable options for setting the date and time.

Table 18 Date and Time Configurable Options

Time Zone	Select the appropriate time zone
Enable time synchronization	This parameter enables time synchronization with a NTP or RDATE server
Protocol	Select the time protocol
Server IP Address	Enter the IP address of the NTP or RDATE server
Update interval	Specify the 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, the slowing or speeding the clock up to 10 sec/day. Negative numbers slow the clock down up to 5 seconds a day and positive numbers speed up the clock up to 5 seconds a day.

11.2 Users and Passwords

Initial factory settings provide no password for the administrator user. For security reasons, a password to control access to the administration functions should be added. The administrator user's password can be added or changed at any time in the **Admin Access** section.

If you lose or forget the admin password you can reset the device to its factory default setting. See Restoring the VGADVI Broadcaster Default Factory Configuration in order to reset the device to factory defaults.

11.2.1 *To add or change the Administrator password*

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 Web admin interface will log off the current administrator user.
5. When prompted, re-log into the Web admin interface with the admin user name and the new password.

Figure 55 Adding or Changing the Administrator's Password

Administrator access

New administrator password

Retype new administrator password

Apply

11.2.2 Deleting the Administrator password

The administrator password can be deleted if it is not required. However, by removing the administrator password, it makes it easier for unauthorized users to change the VGADVI Broadcaster's configuration.

1. Log into the Web admin interface
2. Select **Admin Access**. The password fields will be blank.
3. Select **Apply**. Leaving the password fields blank.
4. When prompted, re-log in leaving the password field blank.

11.3 Configuring Viewer Access

Controlling viewer access to a broadcast can be done in two different ways. The first is to assign a password to the VGADVI Broadcaster's viewer password and the second is to enable IP Address based authentication. By default the viewer user does not have a password to control access and no IP Address based authentication is enabled.

Figure 56 Changing the Viewer Password or IP Based Authentication

Viewer Access

New viewer password

Retype new viewer password

IP-based authentication:

Deny IP's:

Allow IP's:

Apply

11.3.1 To add or change the viewer password

Used to add or change the password associated with the viewer user.

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.

Once a viewer password is configured, participants must obtain the current viewer password in order to log in. The user name is always the same: **viewer**. It cannot be changed. If the viewer password is changed during a broadcast, the broadcast is interrupted and all viewers will be required to re-log in using the new viewer password in order to continue receiving the broadcast. Depending on how the viewer is receiving the broadcast, this will involve clicking the refresh button in the viewer's browser or clicking on the play button in the viewer's media player.

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**.

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

11.3.2 *Configuring IP-based Authentication for Viewers*

This function allows the option of providing access to the broadcast to a large number of users without having each individual user log in with the viewer username and password. This is done by configuring individual IP addresses or a range of IP addresses that are either granted access or denied access to the broadcast. Once set up, users can access the broadcast just by clicking on a supplied link. The administrator for the broadcast would continue to access the Web admin interface using the administrator user credentials to access all features.

The list of allowed IP addresses has a higher priority over the list of denied IP addresses. An example of how this is implemented would be the following:

1. In the **Deny IP's** field enter **192.168.1.1-100**.
2. In the **Allow IP's** field enter **192.168.1.22, 192.168.1.33**.

Access to the broadcast will be forbidden for the entire subset of addresses except for **192.168.1.22, 192.168.1.33**.

The set of users must have a fixed IP address or a range of IP addresses through which they connect to the internet. Individual computers may have dynamic server-assigned addresses but as long as they use a gateway with a static address to access the internet, this feature can be configured

IP authentication is primarily about convenience, rather than extra security. The level of security is comparable with that of a password-based authentication. Bear in mind that anyone who has access to a computer within the specified range will be able to access the broadcast without having to provide log in credentials. Also it is probably not possible to restrict access to a single computer since in most networks a number of computers share a single gateway to the internet.

The table below shows the fields used in configuring IP-based Authentication for Viewers.

Deny IP's	Enter individual IP addresses separated by a comma or a range of IP addresses that are denied access to the broadcast. To specify a range of addresses, use a hyphen (-).
-----------	---

	Example 1: 192.168.1.17, 192.168.1.32
	Example 2: 192.168.1.1-100
Allow IP's	Enter individual IP addresses separated by a comma or a subset of IP addresses that are granted access to the broadcast. To specify a range of addresses, use a hyphen (-).

11.3.3 *Delete the Viewer Password*

The viewer password can be deleted if viewers are not required 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.

11.4 Upgrading the System Firmware

New firmware is released to fix known problems or to add new features. When available, new firmware versions can be obtained from Epiphan Support.

Installing new firmware can take several minutes. Once a firmware upgrade is started, the VGADVI Broadcaster cannot broadcast or record streams until the firmware upgrade is complete.

11.4.1 *Installing new firmware*

Do not interrupt or power down the VGADVI Broadcaster device during the firmware update.

1. Log into the Web admin interface.
2. Select **Firmware Upgrade** from the main menu.
3. Click the **Check for updates** command. The system will indicate whether any updates are available. If updates are available, select **Browse** and then select the downloaded firmware file.
4. Select **Apply**. The firmware file is uploaded to the VGADVI Broadcaster. It then

unpacks the firmware file, verifies the contents and then upgrades the firmware.

5. To complete the firmware upgrade you must reboot the VGADVI Broadcaster. Refer to the section, **Rebooting or Restarting VGADVI Broadcaster**.
6. Log into the Web admin interface and confirm that the VGADVI Broadcaster is now running the new firmware version by selecting **Info** from the main menu and by viewing the firmware version.

Should the firmware update fail, restore to the default factory configuration. Refer to the section Restoring the VGADVI Broadcaster Default Factory Configuration.

Figure 57 Firmware Upgrade

Firmware Upgrade

Current firmware version: "2.4.0b" ([check for updates](#))

Select firmware upgrade
file

Browse...

DO NOT interrupt or power down the VGA Broadcaster Davinci until after the update is completed.

Apply

11.5 Maintenance Controls

From the Web admin interface's main menu, select **Maintenance** to perform operations such as restoring the factory configuration, and rebooting the VGADVI Broadcaster.

Figure 58 Maintenance Options

Restore Factory Configuration

Restore

Reboot

Reboot Now

11.5.1 *Restoring the VGADVI Broadcaster Default Factory Configuration*

Select **Restore** beside Restore Factory Configuration to reset the Broadcasting and Frame Grabber settings back to the default factory configuration. The default factory configuration is the configuration that the VGADVI Broadcaster had when it was received from Epiphan. It can be useful to return the VGADVI Broadcaster to this configuration if a number of configuration changes have been made that need to be reversed.

Pressing the reset button on the VGADVI Broadcaster will also perform a reset to the default factory configuration. See the section, System Hardware Features , for information on the location of the reset button and the proper steps that need to be followed to perform a hardware based factory reset.

11.5.2 *Rebooting or Restarting VGADVI Broadcaster*

Many VGADVI Broadcaster configuration changes require you to reboot the VGADVI Broadcaster in order to have these changes come into effect, the following outlines the steps to reboot the VGADVI Broadcaster.

11.5.2.1 *To reboot or restart the VGADVI Broadcaster*

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

The reboot process is not lengthy and once completed, the VGADVI will resume normal operation.

11.5.3 *Shutting down the VGADVI Broadcaster*

To shut down VGADVI Broadcaster you need to disconnect power. It is not possible to shut down the device from the Web Interface.

11.6 VGADVI Broadcaster System Information

To display the following system information, select **Info** from the Web admin interface's main menu:

1. The current firmware version including the version number and details of the firmware build.

2. The services status.
3. The encoder's frame rate and the IP address of the broadcast.
4. The URLs of the broadcasts. Refer to Using the Web Admin Interface's Info Page.
5. The number of active connections.
6. The Frame Grabber VGA mode information.
7. The VGADVI Broadcaster system CPU details.

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


```
FIRMWARE_VERSION="2.2.2"
FIRMWARE_BUILD_HOST="tochilka 2.6.38-5-server"
FIRMWARE_BUILD_DATE="2011-11-11"
FIRMWARE_PLATFORM="VGA2CPU_DM365"
FIRMWARE_ARCH="arm"
FIRMWARE_SVNPATH="/branches/VGABROADCASTER_DAVINCI/2 2 2/epiphany/vga2web/subsys/base"
```

Encoder: up 86964 seconds
Broadcaster: up 86969 seconds
Recorder: up 6959 seconds

```
Actual encoder frame rate: 30.0
Actual video channel encoder frame rate: 30.0
Live broadcast: http://172.30.209.112/preview.cgi
Direct stream URL: http://172.30.209.112:1881/vgabroadcaster.flv
Direct stream URL (svideo): http://172.30.209.112:1881/vgabroadcaster.svideo.flv
```

No active connections

```

26 03 1A 02 00 51
00 05 D0 02 D0 E8 00 00
EA 02 E6 02 3C 00 3C 00 31 45 00 00 00 00 00 00 9B 9A 22 EA BB 74 8E FF

```

```
Processor       : ARM926EJ-S rev 5 (v5l)
BogoMIPS       : 213.81
Features        : swp half thumb fastmult edsp java
CPU implementer : 0x41
CPU architecture: STEJ
CPU variant     : 0x0
CPU part        : 0x926
CPU revision    : 5

Hardware       : DaVinci Epiphan Board
Revision       : 0000
Serial         : 0000000000000000
```

12 Serial Port Configuring

The VGADVI Broadcaster can be integrated with control equipment that uses an RS-232 interface. This RS-232 interface is used to trigger the device to perform various actions by sending a command over the RS-232 connection, refer to the RS-232 Commands chapter for more information about these commands.

To connect your control equipment to the VGADVI Broadcaster, use a standard RS-232 null-modem cable. Then an RS-232 serial adapter is connected to the RS-232 null-modem cable before inserting it into one of the two USB ports on the VGADVI Broadcaster.

The standard VGADVI Broadcaster package does not include an RS-232 serial adapter but one can be purchased from Epiphan as an optional accessory.

Flow control is the only configurable item for this feature. This is done by navigating to the Serial Port section of the Web admin interface.

Table 19 *Configuring the Serial Port Feature*

Flow control	<p>Flow control means the ability to slow down the flow of bytes in a wire. For serial ports this means the ability to stop and then restart the flow without any loss of bytes.</p> <p>Specify by what means this control will be performed:</p> <p>Hardware</p> <p>Software</p> <p>None</p>
--------------	--

Figure 60 Configuring the Serial Port Feature

Serial port setup

Fixed configuration

- Speed: 19200
- Parity: none
- Stop bit: 1

Flow control

Hardware ▾

Apply

13 Customizing Presentation and Web Content

This feature allows the customizing of the viewer's Web browser's display of the broadcast. For example, the event's name, company logos and other pertinent data can be displayed to the viewer. To use this option, select **Branding** from the Web admin interface's main menu.

To customize the design you need to create an .xsl file using XML document formatting. The creation of this file is beyond the scope of this document.

Figure 61 Customizing Web Content

Templates

☒ [default.xsl](#)
☐ [default_pro.xsl](#) [Remove](#)

Other files

Upload files/templates

File/template to upload:

The table below outlines how to select and upload the necessary files to customize the viewing browser.

Table 20 Web Content Configurable Options

Templates	Available template files are displayed. To select a template, click a radio button near its name. Then click Apply .
Other files	Files that were uploaded and used during template creation are displayed.
Upload files/templates	Browse to the template or file you need to upload and click Upload.

14 Configuring Remote Support

The VGADVI Broadcaster 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 you contact Epiphan Support for help with the VGADVI Broadcaster, the support team can use this maintenance information to help remotely troubleshoot the problem.

The VGADVI Broadcaster 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 VGADVI Broadcaster 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 VGADVI Broadcaster's 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, the IP address of the DNS server must be entered. This IP address can be retrieved 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 VGADVI Broadcaster to connect to the Epiphan maintenance server. Contact your network administrator for assistance.

Remote support is enabled by default. Use the **Maintenance** section in the Web admin interface to access the Remote support settings and refer to the following diagram and table for more details on how to configure this feature.

Figure 62 Remote Support Configuration

Maintenance

Enable remote support



Enable connection to maintenance server



Maintenance server

Server Address

epiphany.epiphan.com

Server Port

30

Apply

Table 21 Remote Configuration Options

Enable Remote Support	Allow Epiphan Support to log into the VGADVI Broadcaster with special access privileges to troubleshoot problems.
-----------------------	---

Enable connection to maintenance server	The VGADVI Broadcaster 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 . Only change this address if required, and only if recommended by Epiphan Support. For example, this might be changed to a numeric IP address if the VGADVI Broadcaster cannot connect to a DNS server.
Server Port	The Epiphan maintenance server's port number.

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

The following table describes the results of different configurations:

Table 22 *Different Results by enabling/disabling Remote Support and Connection to the Maintenance Server*

Enable Remote Support	Enable Connection to Maintenance Server	Result
Yes	Yes	The VGADVI Broadcaster connects to the Epiphan maintenance server. If required, Epiphan Support can remotely connect to the device with special access privileges.
No	Yes	The VGADVI Broadcaster 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 VGADVI Broadcaster 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 the VGADVI Broadcaster.

15 System Information

To display the following system information, select **Info** from the Web admin interface's main menu:

1. The current firmware version including the version number and details of the firmware build.
2. The services status.
3. The encoder's frame rate and the IP address of the broadcast.
4. The URLs of the broadcasts. Refer to Using the Web Admin Interface's Info Page.
5. The number of active connections.
6. The Frame Grabber VGA mode information.
7. The VGADVI Broadcaster system CPU details.

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

Figure 63 VGADVI Broadcaster Information

Firmware

```
FIRMWARE_VERSION="2.2.2"
FIRMWARE_BUILD_HOST="tochilka 2.6.38-5-server"
FIRMWARE_BUILD_DATE="2011-11-11"
FIRMWARE_PLATFORM="VGA2CPU_DM365"
FIRMWARE_ARCH="arm"
FIRMWARE_SVNPATH="/branches/VGABROADCASTER_DAVINCI/2 2 2/epiphany/vga2web/subsys/base"
```

Services status

Encoder: up 86964 seconds
Broadcaster: up 86969 seconds
Recorder: up 6959 seconds

Stream info

```
Actual encoder frame rate: 30.0
Actual video channel encoder frame rate: 30.0
Live broadcast: http://172.30.209.112/preview.cgi
Direct stream URL: http://172.30.209.112:1881/vgabroadcaster.flv
Direct stream URL (svideo): http://172.30.209.112:1881/vgabroadcaster.svideo.flv
```

Connections

No active connections

VGA mode

```
26 03 1A 02 00 51
00 05 D0 02 D0 E8 00 00
EA 02 E6 02 3C 00 3C 00 31 45 00 00 00 00 00 00 9B 9A 22 EA BB 74 8E FF
```

CPU

```
Processor       : ARM926EJ-S rev 5 (v5l)
BogoMIPS       : 213.81
Features        : swp half thumb fastmult edsp java
CPU implementer : 0x41
CPU architecture: STEJ
CPU variant     : 0x0
CPU part        : 0x926
CPU revision    : 5

Hardware       : DaVinci Epiphan Board
Revision       : 0000
Serial         : 0000000000000000
```

16 Disk Check

A disk maintenance schedule can be set up for checking the VGADVI Broadcaster's hard disk for errors. The hard disk maintenance schedule includes running a disk check after either a configured number of device restarts or after a configured number of months of operation. This is configured on the Disk Check page which is opened by selecting **Disk Check** from the Web admin interface's main menu.

This page allows the number of the Recorder restarts before a disk check is to be performed and the number of months to lapse prior to a disk check to be configured. The system will trigger a disk check based on these values and based on whichever event occurs first. The actual disk check process will be run the next time the VGADVI Broadcaster restarts. The disk check occurs during system startup and can cause a lengthy delay in starting up the device.

Alternatively on the same page, select **Check disk now** to immediately perform the disk check. Clicking this button causes the device to stop recording and to check the disk immediately. The disk check process can take a few minutes. The VGADVI Broadcaster automatically resumes recording after the disk check is complete. Results of the disk check are not displayed unless errors that cannot be corrected are found.

Figure 64 Configuring the Disk Maintenance Schedule

Disk maintenance

Disk maintenance schedule

Number of LectureRecorder restarts before disk check is forced.
0 means do not force disk check.

Number of months before disk check is forced on the next LectureRecorder restart.
0 means do not force disk check.

Check disk now

You can start disk check immediately. Recording will be stopped and resumed after the check is completed.

17 Disk Status Information

In the **Disk status** section of the Web admin interface's main menu, the total amount of space available on the VGADVI Broadcaster's solid state memory in GB is listed. Additionally, the used and available space in GB, and the amount used as a percentage of the total amount of space on the disk is displayed for quick reference.

If the VGADVI Broadcaster is running low on disk space the administrator can delete files. The administrator can also configure automatic file uploads to keep the VGADVI Broadcaster from running out of disk space. The VGADVI Broadcaster stops recording if there is less disk space available than the amount required saving a broadcast file.

18 Configuring using a Third-Party Application

The VGADVI Broadcaster can be configured and managed with the third-party applications or with a script that sends commands to the VGADVI Broadcaster as URLs. Please contact [Epiphan](#) for the most recent updates to the API.

This chapter describes:

- Serial port configuration;
- RS-232 commands;
- Syntax for HTTP API Commands;
- Keys for HTTP API Commands;
- and finally provides some examples.

18.1 Serial Port Configuration

The System's serial port configuration has the following settings:

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

18.2 RS-232 Commands

The VGADVI Broadcaster implements an RS-232 interface allowing for the easy integration with existing control room and board room equipment.

Some of the commands require channel name as an argument. Channel name should be separated from the command name by a period – “.”. Either a channel name or a channel index can be specified. An empty channel name can be provided for some commands. In this case this setting is interpreted as all channels. If more than one channel has the same name the command will apply only to one channel, so the channel index should be used instead.

Table 23 Serial Interface commands and Status Report commands and description

STOP.<channel>	Stop recording for the channel by setting rec_enabled to "". This has the same effect as <i>SET.<channel>.rec_enabled="" SAVECFG.</i>
STOP	Stop recording for all channels
START.<channel>	Start recording for the channel by setting rec_enabled to "on". This has the same effect as <i>SET.<channel>.rec_enabled=on SAVECFG.</i>
START	Start recording on all channels
SNAPSHOT.<channel>	Take snapshot on the specified channel (must be MJPEG)
SNAPSHOT	Take snapshot on all channels (must be MJPEG)
GET.<channel>.<key>	Get value of a broadcasting parameter <key>. Please refer to section Broadcasting Setup Keys for details.
SET.<channel>.<key>=<value>	Set value of a broadcasting parameter. Parameter values containing spaces must be enclosed in quotation marks (either single or double). New values might not take effect immediately and will be lost after the reboot unless SAVECFG command is issued later.
SAVECFG	Save parameters values modified by SET command.
STATUS.<channel>	Report status of recording service for the channel. Status values are: "Running", "Stopped", "Uninitialized".
STATUS	Report status of recording service for all channels.
FREESPACE	Report free space on the data partition, in bytes.
RECTIME.<channel>	Report elapsed time for the current file being recorded.
RECTIME	Report elapsed time for the current recording file for all channels.

If any of the START commands are given while a recording is already in progress, the current recording will be stopped and a recording with the new settings will be started. The VGADVI Broadcaster periodically reports its status back using the following messages:

Status Line Value

```
RECTL STATUS {UP <time>|DOWN  
<time>|UNKNOWN}
```

Status of the recording

```
RECTL MICVOLUME <0-100> Level of line-in amplification (percents)  
RECTL PCMVOLUME <0-100> Level of line-out amplification (percents)
```

Each status line is terminated with an LF (ASCII code 10) character.

18.3 Syntax for HTTP API Commands

Use the following syntax to get configuration settings:

```
http://<address>/admin/get_params.cgi?key
```

Use the following syntax to set or change the configuration:

```
http://<address>/admin/set\_params.cgi?key=value
```

In this example **<address>** is the IP address or name you use to connect to the System admin interface.

E.g., if you log into the VGADVI Broadcaster's Web admin interface using `http://192.30.23.45/admin`, then **<address>** would be 192.30.23.45.

Key is the name of the object of the VGADVI Broadcaster to be viewed or changed. See the next section for more information on the valid values for **key**.

Value is the value to be set. Some values include spaces, for example, the frame size can be 1024 x 768. Use %20 for spaces, for example:
`framesize=1024%20x%201068`

You can include multiple **<key>** or **<key>=<value>** statements in one URL. Separate the statements with **&**.

For example:

- To get the product name and firmware version:

`http://<address>/admin/get_params.cgi?product_name&firmware_version`

- To set the stream type to ASF and bit rate to 256000:

`http://<address>/admin/set_params.cgi?streamtype=2&vbitrate=256K`

For third party applications like wget, you should always include the admin username and password to change the VGADVI Broadcaster configuration. The syntax for using wget to enter URLs is:

```
wget --http-user=admin --http-passwd="<passwd>" http://<address>/admin/get_params.cgi?<key>[&<key>]..."
```

```
wget --http-user=admin --http-passwd="<passwd>" http://<address>/admin/set_params.cgi?<key>=<value>[&<key>=<value>]...
```

18.4 Keys for HTTP API Commands

This section lists and describes all of the keys that can be used in HTTP API commands to view or change the VGADVI Broadcaster configuration. These keys are broken into the following types:

- Device Info Keys
- Broadcasting Setup Keys
- ASF Encoder Keys
- RTP Unicast Keys

18.5 Device Info Keys

These keys are used for getting information about the device.

Table 24 Device Information Keys

Key	Description
vendor	Name of a vendor. The value is always "Epiphan Systems Inc."
product name	Name of a product.
firmware_version	Firmware version.
mac_address	MAC address.

18.6 Broadcasting Setup Keys

These keys are used for getting or setting the broadcasting setup.

Table 25 Broadcasting Setup Keys

Key	Description
framesize	Get or change the frame size in pixels, for example 1024 x 768. Use %20 for spaces. The supported resolutions are 640 x 480, 720 x 400, 720 x 480, 720 x 576, 768 x 576, 1024 x 768, 1152 x 864, 1280 x 720, 1280 x 768, 1280 x 960, 1280 x 1024, 1360 x 768, 1360 x 1024, 1600 x 1200, and 1920x 1200
htmlrefresh	Get or change the Flash/Mjpeg webpage page refresh time in seconds. The range is 0 to inf (infinite). 0 means that page will not refresh.
streamport	Get or change the stream port number. The range is 1000 to 65535. You cannot use port 5557 because this port is used for network discovery.
streamtype	Get or change the stream type: <ul style="list-style-type: none"> • 0 - Flash • 1 - Flash+H.264 • 2 - ASF • 3 - ASF+H.264 • 4 - MJPEG • 5 – RTSP
vbitrate	Get or change the video bit rate in kbit/s, for example vbitrate=65536. You can use short forms such as vbitrate=64K and vbitrate=1M.
bcast_disabled	Possible values are 'on' or empty. Broadcasting will be disabled if the value is 'on'.
audio	Possible values are 'on' or empty. Enables broadcasting of audio signal.
usenosignal	Possible values are 'on' or empty. Displays “No signal” image if the signal is off.
vbufmode	Use this key to define compression level of the broadcast. E.g., in the Strong mode the broadcast parameter strictly correspond to the specified bitrate. Select the level: <ul style="list-style-type: none"> • Relaxed • Balanced

	<ul style="list-style-type: none"> • Strong
fastvideo	Enables fast video. Possible values are 'on' or empty
timelabel	Enables time labeling functionality. Possible values: <ul style="list-style-type: none"> • 'none' • 'date' • 'hms' • 'date_hms' • 'hms_ms' • 'date_hms_ms'
vgopsize	Minimum interval between key frames.
fpslimit	Video frame rate limit.

18.7 ASF Encoder Keys

These keys are used for getting or setting ASF encoder settings. You can change ASF encoder settings when stream type is set to ASF stream.

Table 26 ASF Encoder Keys

Key	Description
title	Add a title for the video being broadcast. Use %20 for spaces.
author	Add the name of the author of the video being broadcast. Use %20 for spaces.
copyright	Add copyright information for the video being broadcast. Use %20 for spaces.
comment	Add a title for the video being broadcast. Use %20 for spaces.

18.8 RTP Unicast Keys

These keys are used for getting or setting RTP unicast settings. You can change these settings when stream type is set to RTP.

Table 27 RTP Unicast Keys

Key	Description
unicast_enabled	Enable RTP unicast. Possible values are 'on' or empty.
unicast_address	Get or change the unicast address.
unicast_apt	Get or change the unicast a port.

unicast_vport	Get or change the unicast v port.
---------------	-----------------------------------

18.9 Recorder Keys

These keys are used to enable or disable the recording of a broadcast.

Table 28 Recorder Keys

Key	Description
rec_enabled	Enables recording functionality. Possible values are 'on' or empty.

18.10 Examples

For a VGADVI Broadcaster device with an IP address of 192.30.23.45, and admin password of pass123, one can use wget to do the following:

- Enter the following command to view the broadcasting stream type and frame size:

```
wget --http-user=admin --http-passwd=pass123
"http://192.30.23.45/admin/get_params.cgi?streamtype&framesize"
```
- Enter the following command to set the broadcasting stream type to ASF, add the title "VGADVI Broadcaster Stream", and enable recording audio.

```
wget --http-user=admin --http-passwd=pass123
"http://192.30.23.45/admin/set_params.cgi?streamtype=2
&title= VGADVI Broadcaster %20Stream&audio=on"
```

19 Sample Configurations

This chapter describes video and audio parameters recommended for performing slides and video recording from PC, Mac and iPad.

PC with video

Stream type	RTSP (H.264 codec). However Flash (H.264 codec) or ASF (H.264) stream types are also acceptable.
Video encoding preset	High Speed
Video encoding profile	Main
Enhanced compatibility mode (h.264 slicing for RTP)	OFF
Key frame interval	60
Limit frame rate	30
Bitrate	2000 kbits for ~ HD; 3000 kbits for ~ Full HD
Rate control mode	Low delay
Audio format	Raw PCM
Audio sample rate (Hz)	22050

Mac with video

Stream type	RTSP (H.264 codec).
Video encoding preset	High Speed
Video encoding profile	Main
Enhanced compatibility mode (h.264 slicing for RTP)	ON
Key frame interval	60
Limit frame rate	30
Bitrate	3000 kbits for ~ HD; 4000 kbits for ~ Full HD
Rate control mode	Low delay
Audio format	Raw PCM
Audio sample rate (Hz)	22050

PC with slides

Stream type	RTSP (H.264 codec). However Flash
-------------	-----------------------------------

Sample Configurations

	(H.264 codec) or ASF (H.264) stream types are also acceptable.
Video encoding preset	High Quality
Video encoding profile	High
Enhanced compatibility mode (h.264 slicing for RTP)	OFF
Key frame interval	60
Limit frame rate	15
Bitrate	3000 kbits for ~ HD; 4000 kbits for ~ Full HD
Rate control mode	Low delay
Audio format	Raw PCM
Audio sample rate (Hz)	22050

Mac with slides

Stream type	RTSP (H.264 codec).
Video encoding preset	High Quality
Video encoding profile	High
Enhanced compatibility mode (h.264 slicing for RTP)	ON
Key frame interval	60
Limit frame rate	15
Bitrate	3000 kbits for ~ HD; 4000 kbits for ~ Full HD
Rate control mode	Low delay
Audio format	Raw PCM
Audio sample rate (Hz)	22050

iPad with slides

Stream type	Motion JPEG
Video encoding preset	High Quality
Limit frame rate	30
Quality parameter	40 — for MJPEG only

iPad with video

Stream type	Motion JPEG
Video encoding preset	High Speed
Limit frame rate	30

Quality parameter	40 — for MJPEG only
-------------------	---------------------

The diagrams below illustrate how the FPS and bitrate parameters correlate at different resolutions during the broadcast. These diagrams may be useful if you need to select optimal FPS and bitrate values and avoid possible broadcast issues.

Figure 65 Correlation Between FPS and Bitrate Values at Resolution 1280x720



Figure 66 Correlation Between FPS and Bitrate Values at Resolution 1920x1080

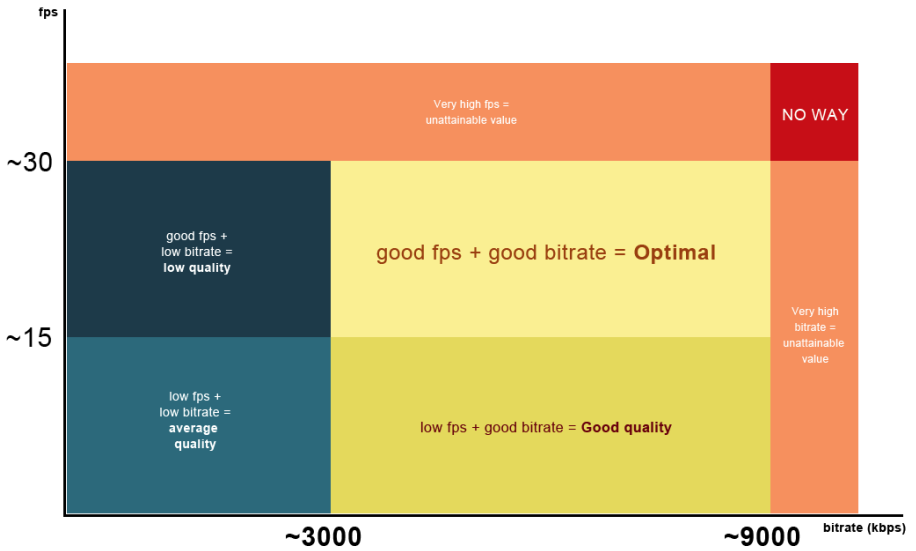
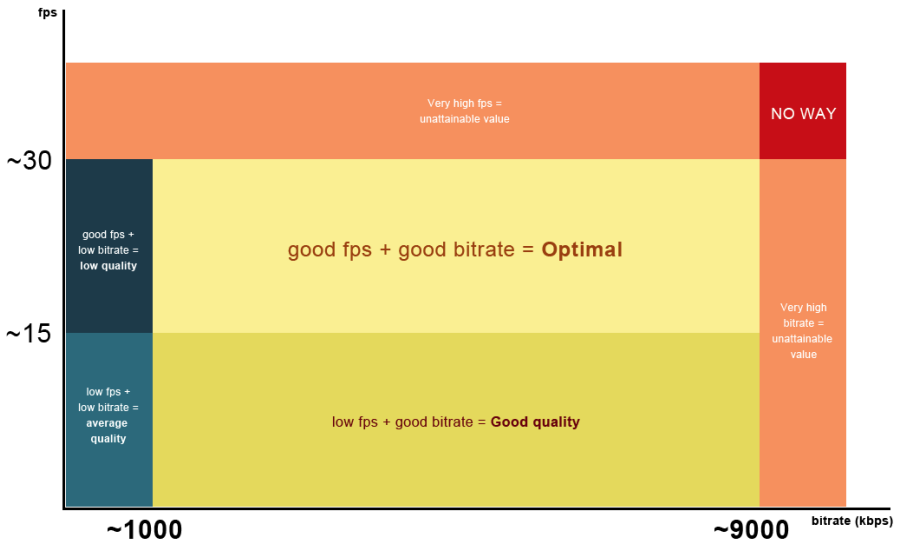


Figure 67 Correlation Between FPS and Bitrate Values at Resolution 640x480



20 Troubleshooting

In this chapter you will find some solutions to some of the more common situations and issues you may come across.

Observation	Corrective action
I have connected a video source to the VGADVI Broadcaster' DVI In or S-Video ports but I am not sure whether the connected source is being received from the incoming ports	<p>For the DVI In port:</p> <ol style="list-style-type: none"> 1. Connect a DVI or VGA monitor to a VGADVI Broadcaster's DVI Out port (use DVI-VGA adapter if necessary) and view the stream on the monitor. <p>For the S-Video port:</p> <ol style="list-style-type: none"> 1. Unplug a cable from a DVI In port (if any). 2. Look at the red LED. If it is blinking, the signal is being received from the S-Video port.
No sound is coming from an audio source	Verify the Input Source parameter value in the Audio menu item of the web interface. It should correspond to the selected source type (Line or Microphone).
Too much noise on audio	Verify the Input Amplifier Volume parameter value in the Audio menu item of the web interface. It is recommended to select 40% in this field.
Insufficient image quality	<p>To provide better productivity and higher image quality:</p> <ol style="list-style-type: none"> 1. Make sure that the source resolution matches the resolution of the recorded image. Ensure that the Frame size parameter value in the Stream Setup menu item of the web interface equals the frame size of the source image. Example: If the source video resolution is 720p, set the Frame size to 1280x720 2. Increase the Bitrate value and/or decrease the Limit frame rate value in

	the Stream Setup menu item.
Low fps	Increase the Limit frame rate value and/or decrease the Bitrate value in the Stream Setup menu item. Alternatively, enter low negative value (-5) in the Frame Grabber's Vertical Shift field.
I cannot play the broadcast in my media player/browser	First, check the LEDs activity on the VGADVI Broadcaster. Normally during the broadcast the green LED lights up while the Red LED is blinking. If the broadcast is being recorded, the blue LED is blinking too. Further, verify whether the Stream Type parameter in the Stream Setup corresponds to the media player being used.. If the issue is not solved, disable all firewalls (Windows). If the suggested steps do not solve your issue, please contact Epiphan Support.
The broadcast interrupts or the image breaks up	Verify the Stream Setup settings as described above in "Insufficient image quality". If the issue is not solved, verify your network connections as well as network filters, routers and applications settings. Packet loss may result in broadcast failure.
Record issues	If the record does not start up, view the Disk Status Information and check whether there is enough disk space for a new file of desired size. If the issue is not solved, perform a Disk Check and start the record again.
Firmware upgrade	If you are unable to upgrade firmware manually, i.e. upload firmware to the device from your working station, reboot the device and retry.

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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  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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All disputes arising out of or relating to these Terms and Conditions shall be finally resolved by arbitration conducted in the English language in Ottawa, Ontario, Canada under the commercial arbitration rules of the Canada. The parties shall appoint as sole arbitrator a retired judge who presided in the province of Ontario. The parties shall bear equally the cost of the arbitration (except that the prevailing party shall be entitled to an award of reasonable attorneys' fees incurred in connection with the arbitration in such an amount as may be determined by the arbitrator). All decisions of the arbitrator shall be final and binding on both parties and enforceable in any court of competent jurisdiction. Notwithstanding this, application may be made to any court for a judicial acceptance of the award or order of enforcement. Notwithstanding the foregoing, Epiphan shall be entitled to seek injunctive relief, security, or other equitable remedies from any court of competent jurisdiction.

If any part of these terms is unlawful, void, or unenforceable, that part will be deemed severable and will not affect the validity and enforceability of the remaining provisions. Epiphan may, at its sole discretion and without notice, revise these terms at any time by updating this posting.

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22 Configuration Worksheet

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

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

Notes:

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