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Specifications
You can go to the Recording page of the Epiphan website to get information about the Lecture Recorder.

Warranty
All Epiphan Systems products are provided with a 100% return to depot warranty for one year from the date of purchase.

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

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

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1. Introduction

The Epiphan Lecture Recorder™ device can record lectures, presentations and trainings from any DVI/VGA, and audio sources. It is designed for educational and training institutions.

This solution features an integrated frame grabber on-board. It is able to capture signals from both VGA and DVI sources at resolutions up to 1920x1080 and can achieve capture rates of up to 30 frames per second. An analog audio input lets you capture a high-quality audio stream and synchronize it with DVI/VGA signal.

The Epiphan Lecture Recorder appliance has 32GB internal solid-state memory allocated to its buffer so even if the network is experiencing slow transfer rates, no captured data is lost.

The Lecture Recorder supports multiple streaming types and configurations. Lecture Recorder supports stream over HTTP, RSTP, unicast RTP, multicast RTP and content distribution network (CDN) broadcast network streaming architectures. Which architecture you choose to build will depend on your application, the number of clients, and the network capabilities at your disposal. Please refer to Different Stream Distribution Architecture Methods section for additional information.

- **Streaming over HTTP.** The Lecture Recorder transfers data to the viewer via HTTP protocol. You can play such stream directly in the browser using appropriate plug-ins. Streaming over HTTP sends duplicates of all data to each connected client. Due to this duplication, the number of supported clients is typically limited to three viewers. If you would like to support more than three, Epiphan provides larger systems that can scale to more users, or you can consider using RTSP, Multicast or CDN network architectures for your applications.

- **RTSP streaming.** RTSP is similar to Streaming over HTTP (see above). However, the viewer can choose between TCP (which is very similar to HTTP) and UDP protocols using its software. UDP protocol can reduce the latency (the delay between the moment an image appears on the VGA/DVI
input and the moment remote clients see it) in streaming. However, UDP requires better router/firewall cooperation at the location where Lecture Recorder is installed.

- **RTP streaming.** RTP streaming is performed using the UDP protocol. However, unlike previous streaming methods, it does not require a request from the viewer to start sending data. The multimedia stream is always sent to the specified destination IP address. If the destination IP address is a workstation’s address, then only specified workstation receives the stream and this is **Unicast RTP.** If the specified address is a multicast/broadcast address, an unlimited number of workstations on a LAN can access and view the stream as a **Multicast RTP** stream. The advantage is that only one copy of the data is sent from Lecture Recorder. Generally, due to the nature of the Internet, a Multicast RTP stream is not usually propagated outside the LAN (though it may be propagated through VPNs connecting several LANs).

- **Content Delivery Networks.** Lecture Recorder can be set up to send a stream (using any method mentioned above except Multicast RTP) to a special destination type of client, called Content Delivery Network (CDN). CDN is a network service that redistributes the stream for multiple viewers. An architecture that serves viewers through the CDN significantly increases the maximum number of concurrent clients, while reducing the load on the uplink internet connection. This architecture would typically be used between a Lecture Recorder inside the LAN and multiple clients outside of the LAN.

The Lecture Recorder is part of Epiphan’s complete line of video signal capture, broadcasting and recording products. For more information about these Epiphan’s products, please see the Broadcasting Products Overview or Recording Products Overview on the Epiphan website.
Connecting Lecture Recorder Device to a Video Source

Epiphan’s Lecture Recorder is a compact, portable solution combining both Ethernet-based broadcasting and recording functionalities. It transfers up to 30 frames per second of visual and audio information.

Lecture Recorder can record data in 2 different modes:

- **Flash storage.** In this mode, the recorded files are archived to Lecture Recorder’s internal solid state memory.
- **External network storage.** The recorded files are archived to a network storage device such as an FTP server.

Using Motion JPEG, MPEG4 and H.264 video compression, the Lecture Recorder lets you broadcast to remote client displays one of the following supported video sources:

- VGA
- DVI

Simply connect the input source of DVI or VGA signal (for VGA – connect with a VGA to DVI cable provided). Once Lecture Recorder is correctly configured and connected to a local Ethernet network, you’re ready to start sharing the educational broadcast with participants on the local Ethernet network and/or the Internet and recording it either to the internal memory or external source.
Browser/Media Player/Format Compatibility Tables

The Lecture Recorder may broadcast audio and video at resolutions of up to 1920 x 1080 without any loss in quality or sharpness. Viewers can access the broadcasted video stream 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 format being transmitted. The video stream format is selected by the Lecture Recorder administrator. Audio is available for all formats except from Motion JPEG.

For your convenience, below is a list of browsers, operating systems and video format support, 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.
In order to play ASF, RTSP, and Flash Video formats in browsers you should install the appropriate plug-ins.

Browser/viewer capabilities and compatibilities are subject to change.

For your convenience, below is a list of media players, operating systems and video format support, 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>
<thead>
<tr>
<th>Media Player</th>
<th>Motion JPEG</th>
<th>ASF</th>
<th>RTSP</th>
<th>Flash Video (H.264)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Media Player (v.12)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>MPlayer (Windows, Mac OS, Linux)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>QuickTime (Mac OS)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>VLC (Windows, Mac OS, Linux)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Media Player capabilities and compatibilities are subject to change.
2. Installation

This chapter describes the basics of how to connect a Lecture Recorder device to a VGA or DVI source and to an Ethernet network.

The Lecture Recorder device uses Ethernet network connection to present visual information to viewers and to record broadcasts to external network storage. Participants can connect to the URL or IP address of the Lecture Recorder to view the broadcast. Using administrator’s credentials one can manage recordings made by Lecture Recorder.

Lecture Recorder Hardware Features

The Lecture Recorder device is a 202mm x 105mm x 35mm (7.95”x4.13”x.1.38”) unit. The front panel includes power and capture activity LEDs, DVI In and Out, audio In and Out ports. The back panel includes 10/100/1000 Ethernet port, and a power connector.
Figure 3. Lecture Recorder connectors (rear view)

Figure 4. VGA to DVI Cable (included)
Figure 5. DVI to DVI Single Link Cable (included)

Table 3: Connector, Interface and LED Descriptions

<table>
<thead>
<tr>
<th>Number</th>
<th>Interface</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td>Not Used</td>
<td></td>
</tr>
</tbody>
</table>
| 3      | LEDs      | **Red LED:** during operation the red LED blinks each time the Lecture Recorder captures an image. You can use the red LED as an indicator that the Lecture Recorder is capturing images.  
**Green and blue LEDs:** when the Lecture Recorder 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 Lecture Recorder has started up and can start capturing images. During operation the blue LED blinks during video signal test operation and when |
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Audio OUT</td>
<td>Connect audio equipment (e.g. headphones or speakers) to control whether audio stream is currently being captured by Lecture Recorder. In case the device accurately captures audio, it will be transmitted via this port.</td>
</tr>
<tr>
<td>5</td>
<td>DVI OUT</td>
<td>This port allows you to check the presence of the signal. Connect a DVI monitor or projector using a DVI to DVI cable (included) or a VGA monitor using DVI to VGA cable (included).</td>
</tr>
<tr>
<td>6</td>
<td>Audio IN</td>
<td>Connect a microphone if you need to broadcast audio stream.</td>
</tr>
<tr>
<td>7</td>
<td>DVI In</td>
<td>Connect a DVI source to the Lecture Recorder device using a DVI cable. You can also connect a VGA source using a VGA to DVI adapter (included).</td>
</tr>
<tr>
<td>8</td>
<td>Power</td>
<td>Connect the AC adapter to the Lecture Recorder power connector and to a power outlet.</td>
</tr>
<tr>
<td>9</td>
<td>RJ45 Gigabit Ethernet</td>
<td>Primary 10/100/1000 Base-T RJ-45 auto-sensing Ethernet network port to connect the Lecture Recorder device to an Ethernet network. The Lecture Recorder device Ethernet port is auto-sensing.</td>
</tr>
<tr>
<td>10,11</td>
<td>Not used</td>
<td></td>
</tr>
</tbody>
</table>

**Lecture Recorder Software Features**

Use the following software features to install and configure the Lecture Recorder device.
### Installation

<table>
<thead>
<tr>
<th>Default IP address and network mask</th>
<th>IP: 192.168.255.250</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Netmask:</strong> 255.255.255.252</td>
</tr>
<tr>
<td></td>
<td><strong>User Name:</strong> admin (no password)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IP address from a DHCP server</th>
<th>The Lecture Recorder device can get an IP address on the network from a DHCP server if the network has one. If the network does not have a DHCP server, see the “If the Network Does Not Have a DHCP Server” section.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Web admin interface</th>
<th>Use the Lecture Recorder Web admin interface for changing the Lecture Recorder IP address, making Frame Grabber Adjustments, and installing new firmware. You can log into the Web admin interface by selecting <strong>Web config</strong> from the Network Discovery Utility or by opening a web browser and browsing to: http://&lt; Lecture Recorder_IP_Address&gt;/ admin/ <strong>User Name:</strong> admin (no password) The Web admin interface is described in Chapter 3 of this User Guide.</th>
</tr>
</thead>
</table>

---

### Connect and Power on a Lecture Recorder Device

To connect a Lecture Recorder device you need:

- A DVI or VGA source.
- An Ethernet connection between the Lecture Recorder device and a network.
To Connect and Turn on the Lecture Recorder Device

1. Use a DVI cable to connect the DVI source to the Lecture Recorder DVI IN port on the front panel of the device. If connecting a VGA source, you will also need a VGA to DVI cable to connect the VGA source and the DVI IN port.

2. Use an RJ-45 Ethernet cable to connect the Lecture Recorder Ethernet port to the 10/100/1000 Base-T Ethernet network. For best performance, connect the Lecture Recorder device to a 1000 Base-T Ethernet link to your network. The network must be running the TCP/IP protocol.

3. Connect the power cable to the Lecture Recorder device.

4. Start up the DVI/VGA source.

To confirm that the Lecture Recorder is receiving images from the DVI/VGA source:

- Check to see if the Lecture Recorder’s red LED is blinking indicating that Lecture Recorder is capturing images.
- Connect a monitor to the DVI Out port of the Lecture Recorder – you should
see the stream that is being captured on the monitor.

- Log into the Web admin interface and select **Info** to find the **Direct stream URL**.
- Insert the URL displayed in the **Direct stream URL** field in your media player or browser to confirm that a captured image appears.
- Type in the URL for Lecture Recorder broadcast as displayed into the **Direct stream URL** field in your media player or your internet browser to confirm that a captured image appears. You will need to ensure your media player or browser supports the video format being displayed.

If the red LED does not start flashing, check the source to make sure it is transmitting an image. Also check the cable(s) between the Lecture Recorder device and the source to make sure it is connected correctly.

**Network Discovery Utility to Find IP Address of Lecture Recorder**

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

The Lecture Recorder device must be assigned an IP address on the network to be able to transmit visual information, and so that participants can view that information. It can get an IP address from a DHCP server if there is one on the network. If the network does not have a DHCP server, see the “If the Network Does Not Have a DHCP Server” section. This section assumes that the network has a DHCP server and that the DHCP server gives the Lecture Recorder device an IP address on the network.

**To install the Network Discovery Utility**

2. Select **Download Network Discovery Utility**.  
   Make sure you note the download destination folder.

3. Run NetworkDiscovery.exe from the destination folder above.

4. Select Search to find the Epiphan devices connected to the network.

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

If the Lecture Recorder device is operating, has received an IP address from a DHCP server, and is connected to the network, the Network Discovery Utility should find it and it should appear on the Network Discovery Utility display.
3. Web admin Interface

This chapter describes configuring the Web admin interface options. From the Web admin interface, it is possible to configure the device settings, view the files recorded by the Lecture Recorder device, download files to view, view the system status and hard disk status.

Logging into the Web admin Interface

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

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

To log into the Web admin interface you need the Lecture Recorder IP address. You can obtain the IP address by using the Network Discovery Utility (see “Network Discovery Utility to Find IP Address of Lecture Recorder”) or by contacting your network administrator in order to determine the address assigned to your Lecture Recorder by your network and/or DHCP server.

Note: You can also log into the Web admin interface by browsing to the default Lecture Recorder IP address, which is http://192.168.255.250 (assuming DHCP is off or the network has not assigned a new IP). To log into the Lecture Recorder using this IP address, you should record the network settings for the workstation so that you can restore them later, then set the workstation you are using to use the static IP address 192.168.255.249 and netmask 255.255.255.252. Once your network settings are configured, open a Web browser and browse to:

http://192.168.255.250/admin

Disconnect any other Epiphan devices from the network before attempting to connect
Web admin Interface

to the Lecture Recorder device. Restore the original network settings for your workstation.

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

1. Start the Epiphan Network Discovery Utility and select Search to find the Epiphan devices on the network.
2. Select the Lecture Recorder device and select Web config. You can log into any device with a status of Device OK. A web browser starts and you are prompted for a user name and password.
3. Enter the following (assuming the admin password has not yet been configured):
   
   User Name: admin
   Password: (no password required)

4. To add a Web admin interface password, see “Adding or Changing the Web admin interface Password”.
5. Press Enter. The Web admin interface opens.

To log into the Web admin interface using a web browser

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

1. Start a web browser on any workstation connected to the same network as the Lecture Recorder device.
2. Browse to:

   http://<Lecture Recorder_IP_address>/admin

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

   http://192.30.23.45/admin

   Remember to include “/admin” at the end of the address or you will access the broadcast rather than the Web admin interface.
3. Enter the following:

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

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

Figure 7. Lecture Recorder Web admin interface

- Configuration
  - Admin Access
  - Viewer Access
  - Frame Grabber
  - Network
  - Stream Setup
  - Audio

- Archive
  - Date and Time
  - Web content
  - Firmware Upgrade
  - Maintenance
  - Info
  - FTP Access
  - Automatic File Upload
  - Disk check

- Disk status
  - Total: 0.92 GB
  - Used: 0.57 GB
  - Free: 0.36 GB
  - 39%
Use the Web admin interface configuration options to administer and operate the Lecture Recorder device. Once you have successfully configured your device, you can select **Live View** to view the broadcast.

<table>
<thead>
<tr>
<th>Admin Access</th>
<th>Change the admin account password.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viewer Access</td>
<td>Change the viewer account password.</td>
</tr>
<tr>
<td>Frame Grabber</td>
<td>Make Frame Grabber image adjustments.</td>
</tr>
<tr>
<td>Network</td>
<td>Change the Lecture Recorder network configuration.</td>
</tr>
<tr>
<td>Stream Setup</td>
<td>Change the stream settings</td>
</tr>
<tr>
<td>Audio</td>
<td>Change and adjust the audio input and headphone output.</td>
</tr>
<tr>
<td>Archive</td>
<td>Record the broadcast on the internal memory card.</td>
</tr>
<tr>
<td>Date and Time</td>
<td>Change Lecture Recorder date and time settings.</td>
</tr>
<tr>
<td>Web Content</td>
<td>Customize design of the browser where the broadcast is viewed.</td>
</tr>
<tr>
<td>Firmware Upgrade</td>
<td>Upgrade the Lecture Recorder firmware.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Reboot or shutdown the Lecture Recorder device. Restore factory configuration.</td>
</tr>
<tr>
<td></td>
<td>Display information about the Lecture Recorder Firmware, CPU, Frame Grabber and VGA Mode.</td>
</tr>
<tr>
<td>Info</td>
<td>Display information about the Lecture Recorder Firmware, CPU, Frame Grabber and VGA Mode.</td>
</tr>
<tr>
<td>FTP Access</td>
<td>Configure FTP access settings to connect to the Lecture Recorder internal solid state memory using an FTP client and the administrator or viewer account.</td>
</tr>
<tr>
<td>Automatic File Upload</td>
<td>Automatically copy files from the Lecture Recorder device to a network storage device.</td>
</tr>
<tr>
<td>Disk Check</td>
<td>Set a Maintenance Schedule for checking the Lecture Recorder solid-state memory for errors.</td>
</tr>
<tr>
<td>Disk Status</td>
<td>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.</td>
</tr>
<tr>
<td>Live View</td>
<td>View the broadcast</td>
</tr>
</tbody>
</table>
If the network does not have a DHCP Server

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

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

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

To log into the Web admin interface

1. Record the network settings for the workstation so that you can restore them later.
2. Change the IP address of the workstation to static IP assignment with the following Address: 192.168.255.249 Subnet Mask: 255.255.255.252
3. Follow the instructions for your operating system. If the operating system supports adding more than one IP address, then you can add this IP address as a second IP address instead of changing the current address.
4. Start a web browser on the workstation and browse to: http://192.168.255.250/admin/
5. Enter the following:
   
   User Name: admin
   
   Password: (no password required)
6. Press Enter. The Web admin interface opens. To change the Lecture Recorder IP address, see “Changing the Network Configuration”.

Web admin Interface

22 Lecture Recorder User Guide
7. Don’t forget to restore the previous network system on your workstation once you have completed your administration of Lecture Recorder.

Adding or Changing the Web admin Interface Password

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

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

To add a password to the Web admin interface

1. Log into the Web admin interface.
2. Select Admin Access.
3. Enter and repeat the new password. The password is case sensitive and can include up to 255 ASCII characters.
4. Select Apply. The password changes and after a pause you are prompted to log into the Web admin interface.
5. Log into the Web admin interface with the admin user name and the new password.

Figure 8. Change Administrator’s Password

![Password Input Field](image)
To delete the Web admin interface password

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

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

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

**Adding or Changing the Viewer Password**

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

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

To add or change the viewer password

1. Log into the Web admin interface.
2. Select **Viewer Access**.
3. Enter and repeat the new password. The password is case sensitive and can include up to 255 ASCII characters.
4. Select **Apply**. The password changes and you must log into the Web admin interface.
5. Log into the Web admin interface with the admin user name and password.
6. Distribute or communicate the viewer access password to authorized viewers of the broadcast.

Notes:

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

- It is good practice to change the password each time there is a change in the users that should be authorized to access the broadcast.
- Please contact your network security administrator with respect to password management required for your applications.

**Figure 9. Change Viewer's Password**

![Viewer Access](image)

**To delete a viewer password**

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

1. Log into the Web admin interface.
2. Select **Viewer Access**. The password fields should be blank.
3. Select **Apply** without adding characters to the password fields. The password is deleted.

**Testing How Participants Log In With a Viewer Password**

After you add a Viewer password, participants must obtain the current viewer user name and password in order to log in. User name is always the same: **viewer**. It cannot be changed.
To log in to view the broadcast

Start any web browser.

Using a browser or media player, open the Open URL dialog box and enter the IP, DNS or URL address of the Lecture Recorder device. For example, if the IP address of the device is 192.168.23.45 then browse to: http://192.168.23.45

Enter the following:

User Name: viewer
Password: (enter the viewer password)

Press Enter. If the Lecture Recorder device is capturing images and is broadcasting images over the network, the viewer can see the visual information as it is transmitted.

If the administrator changes user password during the broadcast, the broadcast will be interrupted. Users that are already logged in will need to click their Refresh button in the browser or click the Play button in media player. After successfully entering a new password the broadcast will resume.

Configuring Frame Grabber Adjustments

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

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

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

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

- To make an adjustment, add a value to one or more fields and select **Apply**.
- To clear any adjustments, delete the value from one or more fields and select **Apply**. To have changes take effect, you must reboot the Lecture Recorder device (see “Rebooting or Restarting Lecture Recorder”). You can make more than one change before selecting **Apply** and rebooting.
Frame Grabber Adjustments

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

**Interval between VGA signal autoadjustments, sec:** 60

Frame Grabber analyzes incoming VGA signal with specified time interval. Valid values are from 0-9999 seconds.

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

**Horizontal shift**
From -995 to 995. Positive value shifts image left, negative value shifts image right.

**Phase**
From 0 to 31.

**PLL adjustment**
From -995 to 995. 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** 4:3

**Noise filter**
Automatic

**HSync threshold**
From 0 to 255. Adjusts horizontal sync detection.

**VSync threshold**
From 0 to 255. Adjusts vertical sync detection.

**EDID upload**

Select EDID file

**Apply**

Note: Because Frame Grabber adjustments are made automatically there are no default Frame Grabber adjustment settings.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval between VGA signal autoadjustments, sec</td>
<td>Change the interval between automatic adjustments if you want them to occur more or less often. To suspend automatic adjustments, enter 0.</td>
</tr>
<tr>
<td>Vertical shift</td>
<td>Configure vertical shift to offset the captured image position. For example, a captured image shifted slightly downward (vertically) can be corrected with minor adjustments to the vertical shift settings. Increasing or decreasing the value entered in the Vertical Shift field shifts the image up or down.</td>
</tr>
<tr>
<td>Horizontal shift</td>
<td>Configure horizontal shift to offset the captured image position. For example, a captured image shifted slightly to the right (horizontally) can be corrected with minor adjustments to the horizontal shift settings. Increasing or decreasing the value entered in the Horizontal Shift field shifts the image to the right or left.</td>
</tr>
<tr>
<td>Phase</td>
<td>Configure phase (also called sampling phase) to adjust the horizontal resolution of the image. Improperly adjusted phase will result in a fuzzy image. You can adjust the sampling phase in small steps until a sharper image is displayed.</td>
</tr>
<tr>
<td>PLL adjustment</td>
<td>Configure PLL to adjust the vertical synchronization properties of the image. The PLL adjustment may need to be changed when there is a repetitive distortion or blurriness on the horizontal axis of the image. You can adjust the PLL setting in small steps until a sharper image is displayed.</td>
</tr>
<tr>
<td>Offset</td>
<td>Use the offset and gain controls together to optimize image quality. Increasing offset reduces background noise but also reduces the overall signal. Balance offset and gain to achieve the best quality image. You should adjust these settings by the smallest values possible to</td>
</tr>
</tbody>
</table>
Gain

Use the offset and gain controls together to optimize image quality. Increasing gain amplifies weak signals but also increases noise. Balance offset and gain to achieve the best quality image. You should adjust these settings by the smallest values possible to achieve the best results. You can compensate for a large change to one by making a large change to the other, but setting both offset and gain to high values can result in poorer video quality.

Aspect ratio

Set the aspect ratio of the captured image. The default aspect ratio is 4:3. You can change the aspect ratio to wide mode so that the Lecture Recorder device can accurately capture wide aspect ratio modes.

It's not always possible for the Epiphan device driver to distinguish between video modes when they have the same number of rows, for example, 1024x768 and 1280x768. You can change the aspect ratio to Wide Mode if you want the driver to choose wide video mode in these situations.

Noise filter

This setting allows you to adjust noise filter performance.

HSync threshold

Adjusts horizontal sync detection.

VSync threshold

Adjusts vertical sync detection.

Select EDID file

Browse to the Extended display identification data (EDID) file to upload it. It describes the capabilities of the digital display to a video source.
Changing the Network Configuration

You may want to change the Lecture Recorder network configuration:

- If the network does not have a DHCP server.
- If the network does have a DHCP server but you want the Lecture Recorder device to have a static IP address.
- If the Lecture Recorder device is using the DHCP server-assigned IP address, but you want to change the IP address. If for some reason the DHCP server goes down you can log into the Lecture Recorder Web admin interface and change the IP address.
- If you have previously configured the Lecture Recorder device to use a static IP address and want to change some network settings or revert back to using DHCP.

For network changes to take effect you must reboot the Lecture Recorder device after making the changes. See “Rebooting or Restarting Lecture Recorder”.

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

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

To set the Lecture Recorder to use a static IP address

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

Figure 11. Change the Lecture Recorder IP address

For example:

IP: 192.168.1.20

Mask: 255.255.255.0

Gateway: 192.168.1.2

DNS server: 192.168.1.99

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

6. Select **Maintenance**.

7. Select **Reboot Now**.

8. It takes a few minutes for the Lecture Recorder device to reboot.

9. After a few minutes log into the Web admin interface by browsing to its new IP address. For the example above, browse to: [http://192.168.1.20/admin/](http://192.168.1.20/admin/)
10. Enter the Web admin interface user name and password to login.

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

1. Log into the Web admin interface.
2. Select **Network**.
3. Select **Use DHCP**.
4. Select **Apply** to save these changes.
5. Select **Maintenance**.
6. Select **Reboot Now**. It takes a few minutes for the Lecture Recorder device to reboot.
7. After a few minutes log into the Web admin interface by browsing to its new IP address. For example, browse to: [http://192.168.23.107/admin/](http://192.168.23.107/admin/)
8. Enter the Web admin interface user name and password to login.
Configuring Remote Support

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

Note: The Lecture Recorder 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 Lecture Recorder device must be able to find a DNS server to resolve the default address and then must be able to connect to this address on the Internet using TCP port 30. If the Lecture Recorder network settings are set to use DHCP, it gets the address of the DNS server from the DHCP server. If network settings are set to use a static IP address, you must enter the IP address of the DNS server. You can get this IP address from your network administrator.

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

Use the Maintenance section in the Web admin interface to access the Remote support settings:
You can change the following remote support settings. Remote support is enabled by default.

<table>
<thead>
<tr>
<th>Enable Remote Support</th>
<th>Allow Epiphan Support to log into the Lecture Recorder device with special access privileges to troubleshoot problems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable connection to maintenance server</td>
<td>The Lecture Recorder device establishes an outgoing TCP connection to the Epiphan maintenance server using TCP port 30. Using this connection, the device sends information to the Epiphan maintenance server and Epiphan Support can use this connection to remotely log into the device.</td>
</tr>
<tr>
<td>Server Address</td>
<td>The address of the Epiphan maintenance server. This address is usually epiphany.epiphan.com. However, you can change this address if required, (but usually only as recommended by Epiphan Support). For example, you may have to change this address to a numeric IP address if your Lecture Recorder device cannot connect to a DNS server.</td>
</tr>
</tbody>
</table>
Web admin Interface

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

Please contact your network security administrator to review your security settings for Lecture Recorder.

**Changing Broadcasting Setup**

Lecture Recorder supports broadcasting of various standards and formats. Your choice will depend on the application and performance requirements. Browser/viewer capabilities and compatibilities are subject to change. The video stream format is
selected by an administrator and users view the broadcast in this format. It is possible to use multiple Lecture Recorder devices with different settings for different browsers/media player capabilities.

You can set the Lecture Recorder device to stream video using Flash (H.264), ASF (MPEG4 or H.264 codecs), Motion JPEG or RTSP (MPEG4 or H.264 codecs).

- 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 H.264 standard.

- 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. You may need to install a codec to view ASF files. This file type supports H.264 and MPEG4 standards.

- The Motion JPEG file type records each frame in the video in JPEG format and can be viewed using most web browsers.

- The RTSP type supports many media players including QuickTime and MPlayer. This file type supports H.264 and MPEG4 standards.

---

<table>
<thead>
<tr>
<th>Show time label</th>
<th>Define how whether video should be time labeled and how (only date, only time, date and time, time and ms, date, time and ms.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream type</td>
<td>You can select Flash (H.264), ASF (MPEG4 or H.264 codecs), Motion JPEG or RTSP (MPEG4 or H.264 codecs).</td>
</tr>
</tbody>
</table>

---

Media Player, Browser, Viewer capabilities and compatibilities are subject to change.
Flash video (H.264) and Motion JPEG can be viewed on 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.

For streaming over HTTP you can select any stream type except for RTSP.

For RTP streaming use the Specific Stream Settings section described below.

<table>
<thead>
<tr>
<th>Video encoding preset</th>
<th>Define whether video stream should be encoded at a high quality, high speed or according to the default system settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video encoding profile</td>
<td>You can select encoding profiles targeting specific classes of applications:</td>
</tr>
<tr>
<td></td>
<td>1. Baseline: for applications requiring additional data loss robustness, e.g. videoconferencing</td>
</tr>
<tr>
<td></td>
<td>2. Main: for standard-definition broadcasts</td>
</tr>
<tr>
<td></td>
<td>3. High: for broadcast and disc storage applications</td>
</tr>
<tr>
<td>Frame size</td>
<td>You can 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 they will be scaled to the resolution limit. Limiting the file resolution can help to reduce bandwidth usage.</td>
</tr>
<tr>
<td>Key frame interval</td>
<td>Controls the number of seconds between key frames. Key frame defines the starting and ending points of any smooth transition.</td>
</tr>
<tr>
<td>Limit frame rate</td>
<td>Enter a value (frames per second) in the Limit frame rate field to set a frame rate that is lower than the maximum frame rate at which the Lecture Recorder device can capture images. You can reduce the frame rate to reduce</td>
</tr>
<tr>
<td>Web admin Interface</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>the number of images captured by the device. You may want to reduce the frame rate to reduce network usage.</td>
<td></td>
</tr>
<tr>
<td>Bitrate</td>
<td></td>
</tr>
<tr>
<td>You can enter a Video bitrate. A lower bitrate produces lower quality videos and smaller file sizes. A higher bitrate produces better quality videos and larger file sizes.</td>
<td></td>
</tr>
<tr>
<td>Rate control mode</td>
<td></td>
</tr>
<tr>
<td>Select a setting from the drop down list to set how important it is for the Lecture Recorder device to maintain the Bitrate setting. You can select Relaxed to allow the bitrate to increase temporarily to maintain image quality. Select Balanced to balance the bitrate restriction and the image quality. Select Strong to maintain the bitrate restriction and temporarily reduce the image quality.</td>
<td></td>
</tr>
<tr>
<td>Stream port</td>
<td></td>
</tr>
<tr>
<td>You can enter a port number for the internal streaming server. The default streaming port is 1881. You might want to change the stream port if port 1881 is used by other services on your network or if you do not want to add a port forwarding configuration for a port other than port 1881 to your router or firewall. You can change the stream port to any port between 1000 and 65535 except 5557 or any port used by another Internet service. For example, you can’t change the stream port to 80 because 80 is the port used by HTTP. If you change the stream port, you must configure port forwarding on your router or firewall for the changed port. See Enabling Access to the Broadcast from the Internet.</td>
<td></td>
</tr>
<tr>
<td>Enable audio</td>
<td></td>
</tr>
<tr>
<td>Select this checkbox to enable audio settings for the broadcast.</td>
<td></td>
</tr>
<tr>
<td>Audio format</td>
<td></td>
</tr>
<tr>
<td>You can select ether MP3 or Raw PCM (Pulse Code Modulation) formats.</td>
<td></td>
</tr>
<tr>
<td>Audio sample rate (Hz)</td>
<td></td>
</tr>
<tr>
<td>Number of samples per second that are used to digitalize a particular sound</td>
<td></td>
</tr>
<tr>
<td>Audio channels</td>
<td></td>
</tr>
<tr>
<td>You can select either mono (1 channel) or stereo (2 channels).</td>
<td></td>
</tr>
</tbody>
</table>
### Specific Stream Settings

Parameters that are available in this section are displayed depending on the selected video stream and, in some cases, codec.

Particularly you need to configure these settings in order to send a unicast or multicast stream to the IP address of the server on specific ports. Sending a stream to Content Delivery Network (CDN) also requires configuring these parameters. Once the video and audio encoding parameters above are configured, the parameters specific to the selected video stream type should be setup if necessary.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page refresh time (available if Motion JPEG stream type is selected)</td>
<td>Specify how often the browser updates the visual information coming from the Recorder, i.e. how often the page is refreshed.</td>
</tr>
<tr>
<td>Quality parameter (available if Motion JPEG stream type is selected)</td>
<td>This parameter is similar to bitrate. Use bigger values to provide better quality of the broadcast.</td>
</tr>
<tr>
<td>Title (available if ASF or Flash video stream type is selected)</td>
<td>Specify the stream's title to be displayed on the media player interface.</td>
</tr>
<tr>
<td>Author (available if ASF or Flash video stream type is selected)</td>
<td>Specify the author’s name to be displayed on the media player interface.</td>
</tr>
<tr>
<td>Copyright (available if ASF or Flash video stream type is selected)</td>
<td>Specify the copyright details to be displayed on the media player interface.</td>
</tr>
<tr>
<td>Comments (available if ASF or Flash video stream type is selected)</td>
<td>Specify comments if necessary to be displayed on the media player interface.</td>
</tr>
<tr>
<td>Enable RTP/UDP stream (available if RTSP video stream type is selected)</td>
<td>Select this checkbox to enable RTP/UDP settings.</td>
</tr>
<tr>
<td>Enhanced compatibility mode (available if RTSP (MPEG-4 codec) video stream</td>
<td>This parameter provides operating stability, if transmitted video/audio stream</td>
</tr>
<tr>
<td>Web admin Interface</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>type is selected)</td>
<td>is not quite supported by the viewer’s equipment (only for H.264).</td>
</tr>
<tr>
<td>Destination IP (available if RTSP video stream type is selected)</td>
<td>The IP address that receives the stream.</td>
</tr>
<tr>
<td>Audio port (available if RTSP video stream type is selected)</td>
<td>Configure video port for the stream</td>
</tr>
<tr>
<td>Video port (available if RTSP video stream type is selected)</td>
<td>Configure audio port for the stream</td>
</tr>
</tbody>
</table>

**Different Stream Distribution Architecture Methods**

Lecture Recorder can support stream over HTTP, RSTP, unicast RTP, multicast RTP and content distribution network (CDN) broadcast network streaming architectures.

A **unicast** stream is used for a one-to-one node 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. Unicast transmission is available during RTP streaming.
To configure unicast transmission:

1. Select the **Enable RTP/UDP** stream checkbox.
2. Use the **Destination IP** field to enter the IP address of the target host.
3. Fill in other fields as required.

A **multicast** stream provides one-to-many communication over an IP infrastructure in a network. In a Multicast configuration the Lecture Recorder sends a packet only once to a router that supports multicasting, and this router distributes the packets to client nodes using a multi-cast protocol. Sending multicast stream requires equipment that supports multi-casting, configuring your network and special Recorder settings. Multicast architectures are used predominantly within a high bandwidth corporate LAN and not on Internet based architectures. Multicast RTP stream is not usually propagated outside the LAN (though it may be propagated through VPNs connecting several LANs). Multicast transmission is available during RTP streaming.
To configure multicast connection:

1. Select the **Enable RTP/UDP** stream checkbox.
2. Use the **Destination IP** field to enter the IP multicast group address.
3. Fill in other fields as required.

**Content Delivery Networks.** During streaming over HTTP or RTSP streaming all data is duplicated to each connected client. Therefore, only up to 3 clients can access the broadcast. All they need to know is a URL of the broadcast. For this purpose you can use Lecture Recorder out of the box, without any additional settings. If you would like to send a stream to multiple users, it is necessary to configure Lecture Recorder to the special type of client, called Content Distribution Network (CDN). It is recommended to use CDN provider StreamZilla (www.streamzillacdn.com). CDN then redistributes the stream for multiple viewers. Serving viewer through the CDN significantly increases the maximum number of concurrent clients, while reducing the load on the uplink internet connection. Effectively, this type of data transmission is very similar to unicast - you should specify IP address of CDN provider as a stream receiver.
To configure connection to a CDN provider:

1. Select the **Enable RTP/UDP** stream checkbox.
2. Use the **Destination IP** field to enter the IP address provided by CDN provider.
3. Fill in other fields as required.
To set the Video Stream type

1. Log into the Web admin interface.
2. Select Flash (H.264), ASF (MPEG4 or H.264 codecs), Motion JPEG or RTSP (MPEG4 or H.264 codecs).
3. If you have set Stream type to Flash Video (H.264) or Motion JPEG, you can enter a value for Page refresh time.
4. If you have set Stream type to Flash Video (H.264), RTSP or ASF stream, you can Enable audio.
5. If you have set Stream type to ASF, you can enter information in the Title, Author, Copyright and Comments fields under ASF stream info.

Note: Lecture Recorder can broadcast only one format at a time. For broadcasting multiple formats you need to install one Lecture Recorder for each format you want to support.
Configuring Audio

Configure audio settings to control audio inputs. All available formats support audio except Motion JPEG.

**Figure 13. Lecture Recorder audio configuration**

Audio Configuration

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Amplifier Volume</td>
<td>Reduce the input volume if the line in signal volume is too high for the Lecture Recorder 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.</td>
</tr>
<tr>
<td>Microphone 20dB boost</td>
<td>Increase the Lecture Recorder microphone’s power. Select this option to increase the recording volume if the volume is very low. Disable microphone boost if loud sounds cause problems such as distortion or clipping while recording.</td>
</tr>
<tr>
<td>Input Source</td>
<td>Select the audio input source. For microphone input select <strong>Mic</strong> and connect a microphone to the device’s microphone port. For line in input select <strong>Line</strong> and connect a line in audio input to the Line in port on the back of the device.</td>
</tr>
</tbody>
</table>
**Recording the Broadcast**

You can record the broadcast using the internal solid state memory in the Archive section of the Web admin interface. The system will perform recording to one or more files according to the time and file size limit parameters. It will automatically create and start recording to a new file whenever the earlier of a limit is reached.

### Channel → Recorder

<table>
<thead>
<tr>
<th>Recorder enabled</th>
<th>Select this checkbox to start recording.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time limit</td>
<td>Specify the record duration.</td>
</tr>
<tr>
<td>Size limit</td>
<td>Specify the size of the recorded file. When either of the limits (time or size) is exceeded, the system starts recording data in another file.</td>
</tr>
</tbody>
</table>

The archive lists all video files recorded by Lecture Recorder and saved on the device. For each file, the list includes the name of the file, its status, start and end times, duration, and size in MB. Each video file entry on the list also includes icons that you can use to download, delete or rename the file.

### Setting the Date and Time

You can set date and time manually or you can enable Time synchronization. Enable Time Synchronization to update the date and time by using a time server. You can select NTP, to get date and time updates from a public network time protocol (NTP) server by connecting to the server over the Internet. NTP uses UDP port 123.
default NTP server is time.nrc.ca. You should change this to an NTP server recommended for your location (available from your network administrator).

![Figure 14. Date and Time Configuration](image)

**Date and Time**

<table>
<thead>
<tr>
<th>Time Zone</th>
<th>Canada/Eastern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable time synchronization</td>
<td></td>
</tr>
<tr>
<td>Protocol</td>
<td>RDATE</td>
</tr>
<tr>
<td>Server IP Address</td>
<td>time.nrc.ca</td>
</tr>
<tr>
<td>Update interval</td>
<td>every hour</td>
</tr>
</tbody>
</table>

**Set time manually**

<table>
<thead>
<tr>
<th>Date (yyyy-mm-dd)</th>
<th>2010-11-30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (hh:mm:ss)</td>
<td>08:25:05</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Time Zone</th>
<th>Select the appropriate time zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable time synchronization</td>
<td>This parameter enables time synchronization with the defined server</td>
</tr>
<tr>
<td>Protocol</td>
<td>Select the time protocol</td>
</tr>
<tr>
<td>Server IP Address</td>
<td>Enter the IP address of the time server</td>
</tr>
<tr>
<td>Update interval</td>
<td>Specify frequency of time synchronization</td>
</tr>
<tr>
<td>Set time manually</td>
<td>This parameter enables manual time setting</td>
</tr>
<tr>
<td>Date (yyyy-mm-dd)</td>
<td>Specify the date</td>
</tr>
</tbody>
</table>

48 Lecture Recorder User Guide
**Web admin Interface**

<table>
<thead>
<tr>
<th>dd)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (hh:mm:ss)</td>
<td>Specify the time</td>
</tr>
<tr>
<td>RTC calibration: (-31..+31).</td>
<td>This field allows RTC calibration – slowing or speeding the clock up to 10 sec/day.</td>
</tr>
</tbody>
</table>

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

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

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

**Customizing Presentation and Web Content**

This option allows you to customize design of the Web browser where the broadcast is viewed. For example, you can add the event’s name, company logos etc.

To customize the design you need to create an .xsl file using XML document formatting.

| 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. |
Upgrading the Lecture Recorder Firmware

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

Firmware Upgrade

Current firmware version: 3.7.7

Select firmware upgrade file  

DO NOT interrupt or power down the VGA Broadcaster Std until after the update is completed.
To install new firmware

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

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

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

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

Using Maintenance Controls

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

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

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

Note: You can also press the reset button on the Lecture Recorder device to return the device to its original Factory defaults including resetting the passwords and IP Address. See “Lecture Recorder Hardware Features” for information on the location of the reset button.

**Rebooting or Restarting Lecture Recorder**

Many Lecture Recorder configuration changes require you to reboot the Lecture Recorder device. For an example, see “Changing the Network Configuration”.

To reboot or restart the Lecture Recorder

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

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

Shutting down Lecture Recorder will take the device off the network without disconnecting the power.

**To shut down the Lecture Recorder device**

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

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

**Displaying Lecture Recorder Information**

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

- The current firmware version including the version number and details of the firmware build.
- The Lecture Recorder system CPU details.
- The Frame Grabber VGA mode information.

This information is also displayed when you first log into the Web admin interface.
Figure 18. Lecture Recorder system information

Lecture Recorder info

Firmware

FIRMWARE_VERSION="2.1.21"
FIRMWARE_BUILD_HOST="tochilka 2.6.31-17-server"
FIRMWARE_BUILD_DATE="2011-01-29"
FIRMWARE_PLATFORM=VGA2CPU_DM368
FIRMWARE_ARCH=arm

Services status

Encoder: up 57627 seconds
Broadcast: up 57628 seconds
Recorder: up 57625 seconds

Stream info

Actual encoder frame rate: 24.0
Live broadcast: http://172.30.209.46/preview.cgi
Direct stream URL: http://172.30.209.46:1881/vgabroadcaster.flv

Connections

No active connections

VGA mode

2C 03 19 01 00 50
00 04 00 03 15 25 01 00
02 10 80 F9 DF 8E 1F 1B 00 00 00 00 00 00 00 00 00 00 00 00 00

CPU

Processor: ARM926EJ-S rev S (v5l)
BogoMIPS : 214.63
Features : swp half thumb fastmult edsp java
CPU implemener : 0x41
CPU architecture: 5TEJ
CPU variant : 0x0
CPU part : 0x92E
CPU revision : 5

Hardware : DaVinci Epiphan Board
Revision : 0000
Serial : 00000000000000000000000000000000
FTP Access

Configure FTP access settings if you want to be able to connect to the Lecture Recorder internal solid state memory using an FTP client and the administrator or viewer account. You can use an FTP client to manually download video files from the Lecture Recorder. You can also configure FTP access so that administrators or viewers can delete video files from the Lecture Recorder.

FTP Access Configuration Interface

<table>
<thead>
<tr>
<th>Enable FTP Access</th>
<th>This option allows administrators or viewers to use an FTP client to access the Lecture Recorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTP user name</td>
<td>Select admin to use the admin account and password for FTP access:</td>
</tr>
<tr>
<td></td>
<td>User name: admin</td>
</tr>
<tr>
<td></td>
<td>Password: &lt;administrator_password&gt;</td>
</tr>
<tr>
<td></td>
<td>Select viewer to use the viewer account and password for FTP access:</td>
</tr>
<tr>
<td></td>
<td>User name: viewer</td>
</tr>
<tr>
<td></td>
<td>Password: &lt;viewer_password&gt;</td>
</tr>
<tr>
<td>Enable FTP DELETE command</td>
<td>Select this option if you want the FTP user to be able to delete videos from the Lecture Recorder internal memory.</td>
</tr>
</tbody>
</table>
**Automatic File Upload**

You can use automatic file upload to automatically copy video files from the Lecture Recorder device to another device on your network. You could do this if you want to make the video files available to be viewed from a location other than the Lecture Recorder device or to automatically prepare video files to be archived after they are recorded.

Note: If you have configured automatic file upload you can temporarily disable it by clearing the Enable Automatic File Upload checkbox and selecting Apply.

![Automatic File Upload interface](image)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable Automatic File Upload</td>
<td>Select this checkbox to enable automatic file upload functionality</td>
</tr>
<tr>
<td>Protocol</td>
<td>Select a client for upload</td>
</tr>
<tr>
<td>How often</td>
<td>Select how often video files are uploaded. If you select On file rotation, the Lecture Recorder device uploads each video file after it stops recording the current video file and starts recording the next one. You can also configure the Lecture Recorder device to upload all video files every 1, 6,</td>
</tr>
</tbody>
</table>
Web admin Interface

<table>
<thead>
<tr>
<th></th>
<th>12, or 24 hours.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote path</td>
<td>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 you don’t enter a path the files are uploaded to the root location.</td>
</tr>
<tr>
<td>Remove after upload</td>
<td>Select the checkbox to delete all video files on Lecture Recorder after uploading them.</td>
</tr>
<tr>
<td>Mark file as downloaded</td>
<td>Select the checkbox to keep the files on Lecture Recorder after uploading copies to the server.</td>
</tr>
</tbody>
</table>

To configure automatic video file uploads

You can configure automatic uploading of video files to a CIFS server (a Windows share), an rsync server, or an FTP server. Before configuring automatic file upload you need to select the server that you are going to use.

1. Log into the Web admin interface as an administrator.
2. Select the Automatic File Upload section.
3. Configure the Lecture Recorder device to communicate with the upload server:
   - If the upload server is a CIFS server (for example, a Windows shared folder), select and configure CIFS Client. See Configuring the CIFS Client.
   - If the upload server is an rsync server, select and configure RSync. See Configuring the RSync Client.
   - If the upload server is an FTP server, select and configure FTP Client. See “Configuring the FTP Client”.
5. Set Protocol to FTP Client, RSync Client, or CIFS client depending on what you configured.
6. If you select **How often** video files are uploaded using the **On file rotation** value from the drop-down menu, the Lecture Recorder device will upload each video file after it stops recording the current video file and starts recording the next one. You can force a file rotation by clicking **Reboot Now** button in the **Maintenance** section. You can also configure the Lecture Recorder device to upload all video files every 1, 6, 12, or 24 hours.

7. 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 you don’t enter a path the files are uploaded to the root location.

8. Select the **Remove after upload** checkbox to delete all video files on the Lecture Recorder after uploading them.

9. Select **Mark file as downloaded** to keep the files on the Lecture Recorder device after uploading copies to the server. On the Web admin interface the download icons for the uploaded files change to 📣.

10. Select **Apply**.

The automatic file upload configuration changes. The Lecture Recorder device starts copying video files to a configured server. The first copy is made after the time period set in **how often**. For example, if the Lecture Recorder is set to upload files every hour, the first set of files is uploaded after one hour. If 5 video files are saved in the first hour, those 5 video files are uploaded. One hour later, all of the video files saved since the start of that hour are uploaded.

Note: Video files saved before you selected **Apply** are not uploaded.

Note: You can manually upload the files saved before you configure Automatic File upload.

### Testing Automatic File Upload

You can test automatic file upload to make sure your automatic file upload and CIFS, rsync, or FTP client settings are correct.
To test automatic file upload

1. Confirm that the upload server is operating.
2. Start recording a video file.
3. Set the How Often setting in the Automatic File Upload section to On file rotation.
4. Click the Reboot Now button in the Maintenance section. The currently recording video file should be saved and then uploaded using the configured client. For example, if Protocol under Automatic File Upload is set to FTP, the video file should be uploaded to the FTP server added to the FTP Client configuration.
5. Check the server to confirm that the most recently saved video file has been uploaded to it.

If the file is not uploaded, verify that the client configuration and Automatic File Upload configuration settings are correct. For example, you may have added the wrong path, user name, password or other setting to the client configuration. It is also possible that the server is not functioning or has a configuration error.

You can also check the Archive section in the Web admin interface:

If the Remove after upload checkbox is selected, the most recently saved video file should have been deleted from the Archive section. If the Mark file as downloaded checkbox is selected, the most recently saved video file download icon should be.

Configuring the CIFS Client

Use the CIFS client configuration if you want the Lecture Recorder device to behave as a CIFS client connecting to a CIFS server (such as a Windows shared folder) to upload video files. To configure the Lecture Recorder to upload video files, see Configuring Automatic Video File Upload.
Web admin Interface

Note: Different networks may have different CIFS server configurations. If required, contact your network administrator for assistance with getting Lecture Recorder to connect to the server. Depending on your CIFS server configuration you may not have to enter information in every field.

To configure the CIFS client

1. Log into the Web admin interface as an administrator.
2. Select the **Automatic File Upload** section.
3. Select **CIFS Client** in the **Protocol** field.
4. Select **Enable Automatic File Upload** to enable connecting to a CIFS server.
5. 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.
6. Enter the **Server address**. This can be the numeric IP address or fully qualified domain name of the CIFS server.
7. Enter **Server share**. It is the CIFS share name or the name of the Windows shared folder on the CIFS server.
8. If required, enter the name of the CIFS **Domain**. The Domain can be a Windows Domain or Work Group name.
9. Enter the **Login** and **Password** required to authenticate with the CIFS server to connect to the server share.

10. Select **Apply**.

The Lecture Recorder device attempts to connect to the CIFS server. The Web admin interface displays messages about whether the Lecture Recorder device was able to connect to the CIFS server and the status of the connection.

**Configuring the RSync Client**

Use the RSync client configuration if you want the Lecture Recorder device to behave as an rsync client connecting to an rsync server to upload video files. To configure the Lecture Recorder to upload video files, see Configuring Automatic Video File Upload.

Note: Different networks may have different rsync server configurations. If required, contact your network administrator for assistance with getting the Lecture Recorder to connect to the server.

**RSync**

<table>
<thead>
<tr>
<th>Server address:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server module:</td>
</tr>
<tr>
<td>Login:</td>
</tr>
<tr>
<td>Password:</td>
</tr>
<tr>
<td>Checksum</td>
</tr>
</tbody>
</table>

To configure the RSync client

1. Log into the Web admin interface as an administrator.
2. Select the **Automatic File Upload** section.
3. Select **RSync Client** in the **Protocol** field.
4. Select **Enable Automatic File Upload** to enable connecting to a CIFS server.

5. Enter the **Server address**.

6. Enter **Server module** which is a directory on the Rsync server.

7. Enter the **Login** and **Password** required to authenticate with the RSync server to connect to the server share.

8. Select the **Checksum** checkbox to enable computing checksums algorithm applied during file synchronization between sender and recipient servers.

9. Select **Apply**.

**Configuring the FTP Client**

Use the FTP client configuration if you want the Lecture Recorder device to behave as an FTP client connecting to an FTP server to upload video files. To configure the Lecture Recorder to upload video files, see Configuring Automatic Video File Upload.

Note: Different networks may have different FTP server configurations. If required, contact your network administrator for assistance with getting the Lecture Recorder to connect to the server.

To configure the FTP client

1. Log into the Web admin interface as an administrator.
2. Select the **Automatic File Upload** section.
3. Select **FTP Client**.
4. Select **Enable Automatic File Upload** to enable connecting to an FTP server.

5. Enter the **Server port** if the FTP server uses a non-standard port. The standard FTP port is TCP 21.

6. Enter the **Server address**.

7. Enter the **Login** and **Password** required to authenticate with the FTP server to connect to the server share.

8. Select **Apply**.

---

**Disk Check**

You can setup disk maintenance schedule for checking Lecture Recorder hard disk for errors. The hard disk maintenance schedule includes running a disk check after a configured number of device restarts and after a configured number of months of operation. At any time you can also select **Check disk now** to check the hard disk. Enter the number of the Recorder restarts and the number of months. The system will perform disk check depending on these parameters, whichever is earlier.

The actual disk check will be run the next time Lecture Recorder restarts. The disk check occurs during system startup and can cause a lengthy delay in starting up the device.

Selecting **Check disk now** causes the device to stop recording and to check the disk immediately. The disk check can take a few minutes. The device automatically resumes recording after the disk check is complete. Results of the disk check are not displayed unless an error is found that cannot be corrected.
Disk maintenance

Disk maintenance schedule

Number of YGA
Broadcastcer Davinci
restarts before disk check
is forced.
0 means do not force disk
check.

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

Save

Check disk now

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

Check now

Disk Status

In the Disk status section (under Disk check), you can view the total amount of space available on the Lecture Recorder solid state memory in GB, the used and available space in GB, and also the amount used as a percentage of the total amount of space on the disk.

If the Lecture Recorder device is running low on disk space the administrator can delete files. The administrator can also configure automatic file upload to keep the Lecture Recorder device from running out of disk space. The Lecture Recorder device stops recording if there is less disk space available than the amount required to save a video file.
4. Viewing and Working with Recordings

From the Web admin interface, administrators and viewers can view the video files recorded by the Lecture Recorder device, download files to view, and download a codec to install on a Windows PC to view the downloaded files. Administrators and viewers can also view the system status and hard disk status.

Administrators can start and stop recording, delete and rename files, and shutdown or restart the Lecture Recorder device. Administrators can also select the Network section in the Web admin interface to change the Lecture Recorder network configuration.

Video Archive

The Video Archive lists all of the video files recorded by the Lecture Recorder device and saved on the device. For each file, the list includes the name of the file, its status, start and end times, duration, and size in MB. Each video file entry on the list also includes icons that you can use to download, delete, or rename the file.

Downloading Files for Viewing

Viewers and administrators can download files to either save or view them. You can download a single file or multiple files as a single .zip file.

To download files for viewing

1. Select the Archive section.

2. Select the download new icon or the download icon beside the file you want to download, or to download multiple files, select the checkbox beside the
file or files you want to download and select the Download Selected button at the bottom of the file list.

3. Follow the instructions to download the file.

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 Archive.

Deleting Files

The administrator can delete files from the Lecture Recorder device to free up space on the hard disk. You can delete one file at a time, select multiple files to delete, delete all files that have already been downloaded, or delete all files.

To delete files from the Lecture Recorder device

Select the Delete File icon beside the file you want to delete, or to delete multiple files, select the checkbox beside the file or files you want to delete and select Delete Selected.

- To delete all of the video files that have been downloaded from the Lecture Recorder device, select Delete Downloaded.

- To delete all of the video files select the Delete All icon.

- Follow the prompts to delete the file or files. The files are deleted from the hard disk.
**Renaming Files**

The administrator can rename one file at a time.

**To rename a file**

- Select the rename file icon.
- Enter the new name for the file.
- Select Submit.

**Previewing the Current Recording**

Viewers and administrators can preview captured images as they are being recorded.

**To preview the current recording**

- To preview the video being recorded, select Live View in the Web Admin Interface. A preview of the currently recording video appears in your web browser. The preview is exactly the same as what is being recorded.

**Stopping and Starting Recording**

You can stop or start recording files without disconnecting or stopping the VGA source.

To stop a recording when you cannot or do not want to disconnect the VGA source from the Lecture Recorder device, clear the Recorder Enabled check box in the Archive section and click Apply.

To restart recording on an already connected Lecture Recorder device, select again the Recorder Enabled check box in the Archive section and click Apply.
To close the currently recording file and start a new one, select **Reboot now** in the **Maintenance** section. The currently recording file is saved and a new file starts recording.

**How to View Broadcast on Media Players**

1. Launch a media player.
2. Use the Menu bar to open the **Open URL** dialog box and enter the IP, DNS or URL address of the Lecture Recorder device. For example, if the IP address of the device 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**.

**How Participants Log In With a Viewer Password**

If the administrator has configured a Viewer password, participants must obtain the current viewer user name and password in order to log in. User name is always the same: **viewer**. It cannot be changed.

To log in to view the broadcast
1. Start any web browser.
2. Browse to the IP, DNS or URL address of the Lecture Recorder device. For example, if the IP address of the device 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**.
Changing the Configuration from a Third-Party Application

If the Lecture Recorder device is capturing images and is broadcasting images over the network, the viewer can see the visual information as it is transmitted.

If the administrator changes user password during the broadcast, the broadcast will be interrupted. Users that are already logged in will need to click their Refresh button in the browser or click the Play button in media player. After successfully entering a new password the broadcast will resume.

Figure 20. A Browser with URL in an Address Bar

5. Changing the Configuration from a Third-Party Application

You can integrate a Lecture Recorder device with a third-party application, a tool such as Wget, or a script that sends commands to the Lecture Recorder device as URLs. You can send commands to get (and view) configuration settings and to change configuration settings.
Changing the Configuration from a Third-Party Application

Note: Contact Epiphan for the most recent updates to the API.

This chapter describes:

- RS-232 commands
- Syntax for HTTP API Commands
- Keys for HTTP API Commands
- Examples

**RS-232 Commands**

In addition to the On-Screen and Web interfaces, Lecture Recorder implements an RS-232 interface, allowing easy integration with existing control room and board room equipment.

Table 4: Serial interface commands and status reports command description

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>START.VGA.HIGH</td>
<td>Starts high-bandwidth VGA and audio recording</td>
</tr>
<tr>
<td>START.VGA.MID</td>
<td>Starts mid-bandwidth VGA and audio recording</td>
</tr>
<tr>
<td>START.VGA.LOW</td>
<td>Starts low-bandwidth VGA and audio recording</td>
</tr>
<tr>
<td>STOPES</td>
<td>Stops recording</td>
</tr>
<tr>
<td>STATUS</td>
<td>Starts reporting status changes</td>
</tr>
<tr>
<td>AUDIOSRC</td>
<td>Select audio source</td>
</tr>
<tr>
<td>MICUP</td>
<td>Increases line-in volume amplification</td>
</tr>
<tr>
<td>MICDOWN</td>
<td>Decreases line-in volume amplification</td>
</tr>
<tr>
<td>PCMUP</td>
<td>Increases line-out volume amplification</td>
</tr>
</tbody>
</table>
Changing the Configuration from a Third-Party Application

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCMDOWN</td>
<td>Decreases line-out volume amplification</td>
</tr>
<tr>
<td>SNAPSHOT</td>
<td>Takes a snapshot</td>
</tr>
<tr>
<td>AVIPREFIX</td>
<td>Sets prefix for recording files</td>
</tr>
<tr>
<td>SHUTDOWN</td>
<td>Shuts down Lecture Recorder</td>
</tr>
</tbody>
</table>

If any of the START commands is given while a recording is already in progress, the current recording will be stopped and a recording with the new settings will be started. Lecture Recorder 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.

**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

- address is the IP address or name you use to connect to the
Changing the Configuration from a Third-Party Application

Lecture Recorder admin interface.

For example, if you log into the Lecture Recorder device using http://192.30.23.45/admin then <address> would be 192.30.23.45.

- key is the name of the part of the Lecture Recorder configuration to view or change. See “Keys for HTTP API Commands” for more information.

- value is the value to change the configuration setting to. 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

Including the Admin Username and Password

You must always include the admin username and password to change the Lecture Recorder configuration from a third-party application. The syntax for using wget to enter URLs is:

`wget -u user:password@<address> http://<address>/admin/get_params.cgi?key1&key2&key3...
wget -u user:password@<address> http://<address>/admin/set_params.cgi?key1=value1&key2=value2&key3=value3...
`

**Keys for HTTP API Commands**

This section lists and describes all of the keys that you can use in HTTP API commands to view or change the Lecture Recorder configuration. You can use the following types of keys:

- Device Info Keys
Changing the Configuration from a Third-Party Application

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

Device Info Keys

Table 5 lists the keys available for getting information about the device.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>vendor</td>
<td>Name of a vendor. The value is always &quot;Epiphan Systems Inc.&quot;</td>
</tr>
<tr>
<td>product name</td>
<td>Name of a product.</td>
</tr>
<tr>
<td>firmware_version</td>
<td>Firmware version.</td>
</tr>
<tr>
<td>mac_address</td>
<td>MAC address.</td>
</tr>
</tbody>
</table>

Broadcasting Setup Keys

Table 6 lists the keys available for getting or changing the broadcasting setup. See “Changing Broadcasting Setup” for more information about each key.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>framesize</td>
<td>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.</td>
</tr>
<tr>
<td>htmlrefresh</td>
<td>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.</td>
</tr>
</tbody>
</table>
### Changing the Configuration from a Third-Party Application

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>streamport</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>streamtype</strong></td>
<td>Get or change the stream type:</td>
</tr>
<tr>
<td></td>
<td>- 0 - Flash</td>
</tr>
<tr>
<td></td>
<td>- 1 - Flash+H.264</td>
</tr>
<tr>
<td></td>
<td>- 2 - ASF</td>
</tr>
<tr>
<td></td>
<td>- 3 - ASF+H.264</td>
</tr>
<tr>
<td></td>
<td>- 4 - MJPEG</td>
</tr>
<tr>
<td></td>
<td>- 5 - RTSP</td>
</tr>
<tr>
<td><strong>vbitrate</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>bcast_disabled</strong></td>
<td>Possible values are 'on' or empty. Broadcasting will be disabled if the value is 'on'.</td>
</tr>
<tr>
<td><strong>audio</strong></td>
<td>Possible values are 'on' or empty. Enables broadcasting of audio signal.</td>
</tr>
<tr>
<td><strong>usenosignal</strong></td>
<td>Possible values are 'on' or empty. Displays &quot;No signal&quot; image if the signal is off.</td>
</tr>
<tr>
<td><strong>vbufmode</strong></td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>- Relaxed</td>
</tr>
<tr>
<td></td>
<td>- Balanced</td>
</tr>
<tr>
<td></td>
<td>- Strong</td>
</tr>
<tr>
<td><strong>fastvideo</strong></td>
<td>Enables fast video. Possible values are 'on' or empty</td>
</tr>
</tbody>
</table>
Changing the Configuration from a Third-Party Application

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>title</td>
<td>Add a title for the video being broadcast. Use %20 for spaces.</td>
</tr>
<tr>
<td>author</td>
<td>Add the name of the author of the video being broadcast. Use %20 for spaces.</td>
</tr>
<tr>
<td>copyright</td>
<td>Add copyright information for the video being broadcast. Use %20 for spaces.</td>
</tr>
<tr>
<td>comment</td>
<td>Add a title for the video being broadcast. Use %20 for spaces.</td>
</tr>
</tbody>
</table>

ASF Encoder Keys

Table 7 lists the keys available for getting or changing ASF encoder settings. You can change ASF encoder settings when stream type is set to ASF stream. See “Changing Broadcasting Setup” for more information about setting the stream type to ASF.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>title</td>
<td>Add a title for the video being broadcast. Use %20 for spaces.</td>
</tr>
<tr>
<td>author</td>
<td>Add the name of the author of the video being broadcast. Use %20 for spaces.</td>
</tr>
<tr>
<td>copyright</td>
<td>Add copyright information for the video being broadcast. Use %20 for spaces.</td>
</tr>
<tr>
<td>comment</td>
<td>Add a title for the video being broadcast. Use %20 for spaces.</td>
</tr>
</tbody>
</table>

RTP Unicast Keys

Table 8 lists the keys available for getting or changing RTP unicast settings. You can change these settings when stream type is set to RTP. See “Changing Broadcasting Setup” for more information about setting the stream type to RTP video.
Changing the Configuration from a Third-Party Application

Table 8: RTP setting keys

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>unicast_enabled</td>
<td>Enable RTP unicast. Possible values are 'on' or empty.</td>
</tr>
<tr>
<td>unicast_address</td>
<td>Get or change the unicast address.</td>
</tr>
<tr>
<td>unicast_aport</td>
<td>Get or change the unicast a port.</td>
</tr>
<tr>
<td>unicast_vport</td>
<td>Get or change the unicast v port.</td>
</tr>
</tbody>
</table>

Recorder Keys

Table 9 lists the keys available for enabling or disabling recording. See “Recording the Broadcast” for more information.

Table 9: Recording keys

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rec_enabled</td>
<td>Enables recording functionality. Possible values are 'on' or empty.</td>
</tr>
</tbody>
</table>

Examples

For a Lecture Recorder device with IP address 192.30.23.45, and admin password of pass123, you 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 "Lecture Recorder Stream", and enable recording audio.

  ```
  wget --http-user=admin --http-passwd=pass123
  "http://192.30.23.45/admin/set_params.cgi?streamtype=2
  &title= Lecture Recorder %20Stream&audio=on"
  ```
6. Cables, Connectors and Adapters

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

**3.5 mm Mini-jack**

A 3.5mm mini jack connector is used to carry audio signals. It can be connected to Lecture Recorder via Audio IN and OUT ports.

**DVI**

A DVI cable can be connected to Lecture Recorder via DVI IN and OUT ports.
**VGA**

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

---

**DVI to VGA cable**

Connects VGA sources to a Lecture Recorder’s DVI port.
DVI to DVI Single Link Cable

Connects DVI sources to a Lecture Recorder’s DVI port.
**RJ-45 Male**

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

![Image of RJ-45 Male connector](image-url)
7. Sample Applications

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

Teaching Dyslexic Learners

Due to specific learning disabilities, dyslexic students need to have individual additional studies tailored to their own learning needs. Technology provides the students and their educational supporters with educational material - it can be played back and repeated at the student’s learning speed without the peer pressure of other students. Lecture Recorder captures and records video and audio streaming from any device being used in learning process and featuring DVI or VGA outputs. Lectures and presentations from VGA and DVI sources are saved on a computer for later review and study.

Web-based lecture technologies

Web-based lecture technologies (WBLT) are designed to digitally record lectures for delivery over the web and contribute to the changing context of higher education. These materials are delivered to the students in streaming media formats available for access 24x7 offering them more flexibility. Lecture Recorder records education content and sends it over the web.

Creation of Distance Education Materials

Lecture Recorder records computer presentations, voice and video (trainings, seminars or conferences). Recorded content is combined into a graphic package. This package is uploaded to a server and distant learners can view it on an Internet browser.
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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 $\text{FCC}$ indicates compliance of this device with EMC directive of the European Community and meets or exceeds the following technical standard.

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# 9. Configuration Worksheet

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

<table>
<thead>
<tr>
<th>Parameter (IP address, DNS server, SSID...)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<tr>
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Notes:

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