



EchoSystem 5.5 Documentation
Device Monitor User Guide

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Echo360 is continually updating the documentation. This manual is a snapshot as of the date above. Check the Echo360 documentation wiki for the most current version: <http://confluence.echo360.com/display/55/EchoSystem+Welcome+and+FAQs>

Classroom Installation Guide

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EchoSystem Capture in the Classroom

In this section:

- [Overview](#)
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Overview

EchoSystem is designed to accommodate lecture and instructional capture in a diverse set of venues and use models. This section focuses on the primary capture workflows within the traditional classroom capture model using capture appliances or EchoSystem software, such as Personal Capture or Classroom Capture.

For details on the Personal Capture workflow, see [Personal Capture Guides](#).

For a complete listing of EchoSystem capture options and requirements, see [Capture Options and Requirements](#).

For details on configuring USB sources (such as microphones and USB cameras) for use with the Classroom Capture podium PC, see [Manage Classroom Capture Sources](#).

For details on using the Classroom Capture System Tray functionality available to instructors, see [Classroom Capture for Academic Staff](#).

Primary Workflows

Capture and processing automation is a fundamental feature of EchoSystem. *Scheduled capture* and *automated Ad Hoc capture* are the two primary capture workflows supporting automation. Both scheduled and Ad Hoc capture are based on a room to capture in and a section to capture for. These concepts are covered in the concepts table below and referenced throughout this section.

Scheduling captures is typically performed by an administrator within the EchoSystem Server (ESS) UI. Automated Ad Hoc capture relies on some up-front configuration in the ESS UI and is then driven through the Ad Hoc UI provided by the capture device. Both workflows are also supported through EchoSystem APIs.

Capture Workflow Concepts

Term	Description
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Terms	<p>Terms define a date range associated with an academic term, semester, trimester, etc.</p> <p><i>Applies to: Sections</i></p>
Course	<p>The EchoSystem defines a course as an academic subject being taught and captured over a period of time, such as a term, and then taught and captured again during a different period of time (or term).</p> <p><i>Applies to: Sections</i></p>
Section	<p>Sections define the offering of a course and are associated with a term.</p> <p><i>Applies to: Schedules and Ad Hoc Captures</i></p>
Products	<p>The set of digital content produced for student review after capture. Product creation is part of the EchoSystem automated workflow and is also known as "packaging". EchoSystem currently supports five product types, each with two quality options:</p> <ul style="list-style-type: none"> • Podcast - MP3 audio • Vodcast - M4V audio and motion display • Audio Rich Media - Flash-based audio and display (browser) • EchoPlayer - Flash-based audio, video and display (browser) <p><i>Applies to: Schedules and Ad Hoc Captures</i></p>
Publishers	<p>Publishers are system objects configured to publish content links or content files into another system. These other systems are typically CMS/LMS/VLE systems (such as Blackboard or Moodle) or iTunes U.</p> <p><i>Applies to: Schedules and Ad Hoc Captures</i></p>
Capture Schedule	<p>Capture schedules define the dates, times and rooms (and some other data) for automated capture.</p> <p><i>Applies to: Sections</i></p>
Ad Hoc Capture	<p>Ad Hoc captures are initiated manually through the Ad Hoc user interface on the capture device.</p> <p><i>Applies to: Sections and Presenters</i></p>

Installing and Using the Device Monitor

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Overview

The EchoSystem Device Monitor is a Windows-only application designed to work with the Delcom USB HID Visual Signal Indicator (a USB-attached light). Together, these products provide a visual confidence monitor to instructors and students on the state of a capture device while recording. They also allow you to quickly set up an ad-hoc recording without needing to access the ad-hoc recording interface.

The Delcom USB Visual Signal Indicator is a small light, that attaches via USB port to a classroom PC that controls ad hoc captures from an EchoSystem SafeCapture HD device (SCHD) or that has Classroom Capture installed.

The Device Monitor light is available from Delcom Products, product number 904007-SB: <http://www.delcomproducts.com/productdetails.asp?productnum=904007-SB>.

The EchoSystem Device Monitor 1.9.4 is available through the Echo360 Customer Portal at: <http://echo360.com/customer-portal-login>.

Since the Device Monitor is simply a way to interact with the existing ad hoc web interface, you should be able to use the Device Monitor with any version of EchoSystem that supports ad hoc capture. However it has only been tested with EchoSystem versions 5.0 and up.

i Device Monitor is an Update to Echo Status Client

The Device Monitor Software is a redesign of the Echo Status Client and contains significant added functionality. If you are an Echo Status Client user, we recommend you remove the Echo Status Client and install the Device Monitor.

Installing the Device Monitor Software

The zip file containing the device monitor software can be obtained from the [Echo360 Customer Portal](#).

To install the device monitor software:

1. Unzip the downloaded file.
2. Double-click the *setup.exe* file.
3. Follow the wizard prompts to install the software.
4. Click **Finish** to complete installation.

Once installed, you can plug the Device Monitor light into the PC.

Launch the Device Monitor

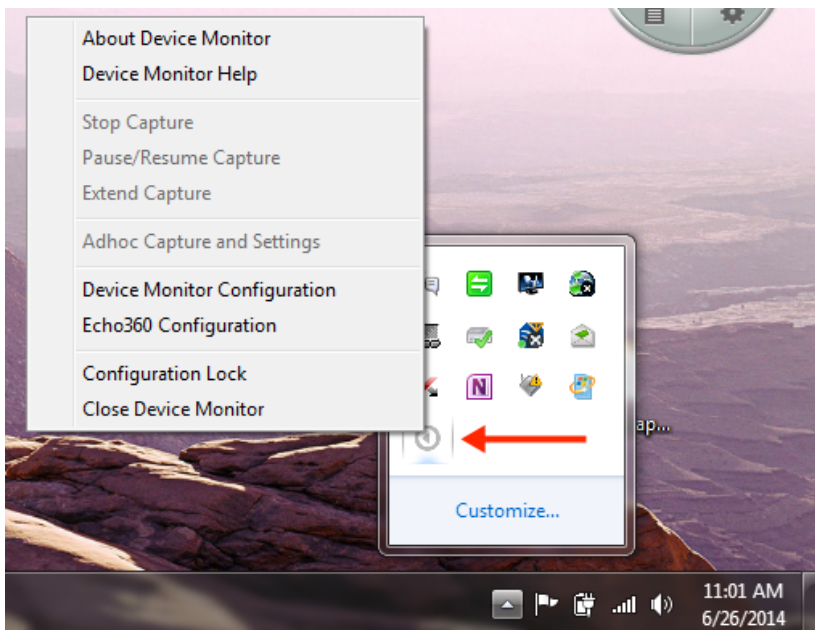
The Device Monitor is configured to start when Windows starts. Even if the Device Monitor icon does not appear in the System Tray, the Device Monitor is active and the light should show current capture status and allow you to press it to start or control a capture.

To manually launch the Device Monitor:

- Double-click the Device Monitor icon on the desktop, OR
- Click **Start > Echo360 Device Monitor**

On first launch, you will be prompted to complete the Device Configuration defaults Ad Hoc Capture default settings. These can be done with generic information (applicable to all users) or with instructor-specific information. The information entered is retained on a per-user basis, so that each logged in user can have their own configurations.

Once launched, the Device Monitor can be controlled through the Windows System Tray icon, which looks like the Echo360 logo. Click this icon to open the Device Monitor menu options, as shown in the below figure.



i Hover Over Icon if Using Classroom Capture 5.3 or Earlier

If the PC is using Classroom Capture version 5.3 or earlier, you may have trouble distinguishing between the Device Monitor icon and the Classroom Capture icon. Hover your mouse over the icon to view the tooltip identifying the corresponding application.

Device Configuration Defaults

Device configuration is performed through the **Echo360 Configuration** menu option. These settings identify the device that will be doing the capturing (either Classroom Capture or an SCHD), and an instructor login. Instructors can enter their specific login credentials or you can use the generic instructor login.

✓ Have Instructors Configure Their Specific Defaults

Best Practice is to let each instructor log into the PC and then configure the Device Configuration Defaults using their EchoSystem logins.

Instructors can set their own Credentials and Adhoc Capture defaults. This information is retained on a per-user basis and will be used each time that user logs into the PC and initiates an Ad Hoc Capture using the Device Monitor light. Instructors can re-configure these settings if necessary (for a different section or capture different inputs).

To set Device Configuration defaults:

1. Open the System Tray menu, shown above, and select **Echo360 Configuration**. This opens the Device Configuration dialog box, shown below.

2. Configure the following information to log in and connect to the capture device ad hoc interface:
 - a. **Device URL:** Enter the fully qualified URL to the device. This will typically be the IP address shown for the device in the ESS (**Configuration > Devices > Click the MAC address of the device**). For example: <https://10.3.10.245:8443>
 - b. **Credentials:** Enter a username and password.
 - If an *instructor* login is used, the instructor can select a section for the ad hoc capture.
 - If a *generic* login is used, any ad hoc captures will need to be manually processed and published to a section.

Ad Hoc Capture Defaults

The Ad Hoc Capture configuration allows you to set default information to be used for any Ad Hoc Capture initiated through the device monitor.

If an instructor provides their personal credentials in the Device Configuration dialog box (above), the Ad hoc Capture defaults (configured below) will be used for all captures initiated via the Device Monitor Light after the instructor logs into the PC. If for some reason the user cannot be authenticated or is not associated with a particular course or section, the capture can proceed, but will use generic capture settings and will need to be assigned to a Section later through the ESS.

i Perform Device Configuration First

You *must* complete the Device Configuration (shown above) before you can configure the Ad Hoc Capture Settings defaults. The Product Group selections for Ad Hoc Capture defaults require the system to know what type of device is being used for capture.

To set Ad Hoc Capture defaults:

1. Open the System Tray menu, shown above, and select **Ad Hoc Capture Settings**. Depending on the credentials entered, one of the following Ad Hoc Capture dialog boxes appears.

The two Ad Hoc Capture dialog boxes are identical except for the ability to select a Section to which to publish the capture. Section selection appears if the Credentials entered are for an instructor who is associated with an active course or section.

2. Enter information to apply to all Ad Hoc Captures initiated through the Device Monitor. These will be used unless manually overridden by the user:
 - **Default Capture Description:** Provide a generic description for the capture that identifies it clearly. You may want to use Room or Device information, so that you can contact possible instructors and direct the ad hoc capture to the proper section.
OR
 - **Default Capture Title:** If instructor credentials are entered, a Section can be identified and a more specific Title can be entered, identifying the basic subject matter for the capture. The Instructor can edit to be more specific this before initiating a capture, or in the EchoCenter after the capture is published if necessary.
 - **Duration:** Indicate how long you generally want ad hoc captures to be. Instructors can stop the capture early, or extend the capture if necessary. Keep in mind if there is a scheduled capture for the room, the Ad hoc Capture cannot extend into the scheduled capture time.
 - **What do you want to capture?:** This identifies a Product Group for the Ad hoc Capture, indicating what inputs you want to include, like Video/Display or Audio/Video. The Product Group selected here will be retained for all captures unless changed by the user.
3. When finished, you can:
 - Click **Save** to retain the settings,

- Click **Capture** to retain these settings and immediately initiate a capture.

Additional Device Monitor Configuration

Device Monitor Light Defaults

The Device Monitor light indicates the current status of the capture using both steady-state and blinking LED lights of different colors. The default setting are shown below but can be changed.

By default, the light indicator settings are as follows:

- **Light Off** - The recording device is idle OR the device monitor software is not running or is not communicating with the recording device.
- **Steady Red Light** - The device is currently recording. The Inputs being recorded (audio, display, video) are determined by the Product Group selected for the capture in the ad hoc Capture settings (configured in the section above).
- **Steady Yellow Light** - The device is currently preparing to start a capture (called "Waiting" mode).
- **Flashing Yellow Light** - The capture is currently paused. No inputs are being captured.
- **Flashing Green Light** - The capture has been stopped and capture processing is being completed. The light will turn off when finished.
- **Flashing Red Light** - There has been an error capturing or communicating with the recording device. You may need to stop and then start a new capture.
- **Steady Green Light** - Not used by default but can be configured for any of the LED states.

To view or change Device Monitor Light settings:

1. Open the System Tray menu, shown above, and select **Device Monitor Configuration**. The Device Monitor Configuration dialog box appears, shown below.
2. Use the **Checkboxes** described above to enable or disable features of the monitor and light.
3. Use the **drop-down lists** to set a different light color or state for each LED State. A full drop-down list with all possible selections is shown below.
4. Use the **Power** levels to set how bright you want each light-state to appear via the Delcom light. A higher Power level indicates a brighter light.
5. When finished, click **Apply** to apply the changes, or **OK** to apply the changes and close the dialog box.

The below figure shows the drop-down list containing all of the selectable light-flash options.

Device Monitor Gestures

In addition to selecting different light indications for different states, the Device Monitor Configuration dialog box allows you to enable or disable the following indicators:

- **Disable Delcom Button Gestures:** Unchecked by default, this allows you to disable the use of the light itself as a button to control (start, stop, pause) captures. The light will still show capture status via color/flash combination, but cannot be pressed to control the capture as it is occurring. If this is checked, all of the following individual gesture settings are ignored.
 - **Disable Start:** Unchecked by default, this allows you to disable the use of the light itself as a button to control starting a capture.

- **Disable Stop:** Unchecked by default, this allows you to disable the use of the light itself as a button to control stopping a capture.
- **Disable Pause:** Unchecked by default, this allows you to disable the use of the light itself as a button to control pausing a capture.
- **Disable Resume:** Unchecked by default, this allows you to disable the use of the light itself as a button to control resuming a capture.

Capture Notification Options

- **Set Audio Level Warning:** Unchecked by default, this allows you to let the light indicate whether the audio level of the capture is too low. In addition, you can set the Audio Level Threshold (in minutes) that will trigger the warning. For example, if this warning is enabled and the Threshold is set to 2, you will see the warning indicator when the audio signal has not been detected for two minutes.
- **End of Capture Warning:** Unchecked by default, this allows you to let the light indicate when the end of the scheduled capture is approaching. In addition, you can set the End of Capture Threshold (in minutes) that triggers the warning. For example, if this warning is enabled and the Threshold is set to 5, you will receive the warning indicator when the capture is 5 minutes from completing.

Using the Light to Control the Capture

Plan to Adjust the Tension of the Light

There is a screw in the bottom of the light that may need to be loosened in order to "feel" the light as a button. The light is typically shipped with the screw tightened to avoid unnecessary movement or loosening during shipment. The button feature does not have to feel like a button in order to work, but some users may be bothered by the lack of obvious movement when they press the light.

The Device Monitor light functions not only as a capture status indicator, but also as an "Easy Button" to start, pause, and stop Adhoc Captures. Note that this feature can be disabled in the Device Monitor Configuration. It is enabled by default.

Whenever the light is used to initiate a capture, the [settings configured in the above sections](#) of this page are used to define the title, duration, and inputs for the capture, as well as the section to which it will be published (if configured).

The light will control captures as follows:

- **To Start an Ad Hoc Capture:** Press and hold the light for two seconds or until it turns yellow. The device will turn Red when recording begins.
- **To Pause a Capture:** Press the light for one second or until it begins to flash yellow.
- **To Resume a paused Capture:** Press the light for one second or until it turns red again.
- **To Stop a Capture:** Press and hold the light for two seconds or until it begins to flash green. When the capture processing is complete, the light will turn off.

PLEASE NOTE THE FOLLOWING:

- The "light indicators" listed above are based on the default Device Monitor Configuration settings. If you changed these settings, apply those changes to the above instructions.
- If you changed the default LED configurations, communicate those specifics to the instructors.
- You can use the device monitor light to Pause, Resume, and Stop any capture (scheduled or ad hoc), as well as initiate a new ad hoc capture.
- You *cannot* Extend a Capture using the light. You must use the System Tray menu. See the instructions that follow.

If you want to Extend a capture already in progress (either ad hoc or scheduled) with the device monitor, you must use the System Tray menu. Be advised, however, that if there is a subsequent capture scheduled for the room, you cannot extend the current capture beyond the starting time of the next scheduled capture for that room.

To Extend a Capture:

1. Open the System Tray menu and select **Extend Capture**.
2. Enter the amount of time you want to *extend* the current capture. This duration is *added to* the existing capture. For example, if the original duration was set to 45 minutes, enter 15 into this dialog box to make the capture 1 hour.
3. When finished, click **OK**.

The capture will continue for the configured extension or until you manually stop the capture.

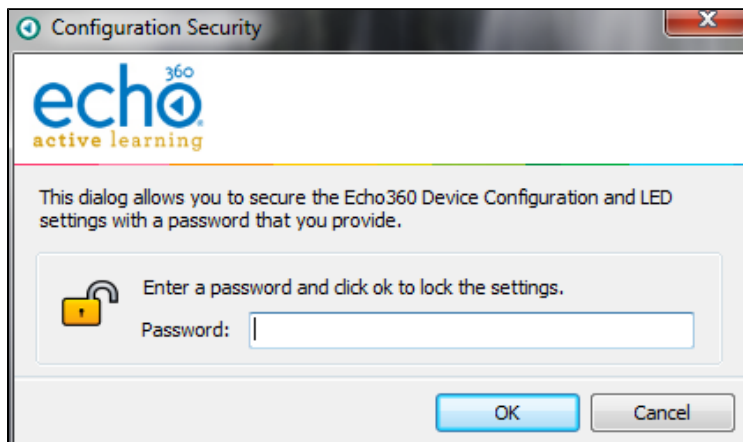
i System Tray Menu Capture Control Can Be Used In Lieu of Light

The above instructions for Extending a capture can also be used to Start, Pause, Resume, and Stop a capture if you prefer to use the System Tray menu or if pressing the Device Monitor light does not work.

Locking the Configuration

Use the **Configuration Lock** option to set a password on the Device Monitor configuration. Locking the configuration is optional.

Select **Configuration Lock** from the System Tray menu, shown above, to bring up the Configuration Security dialog box as shown.



If you do lock the configuration, making any changes to the device monitor configuration will require entering the appropriate password to do so.

Admin Override

Device Monitor 1.9.4 includes an admin override feature that supersedes any local settings and uses configuration values from a supplied XML file. This allows for mass deployment of the application without the need to configure each individual instance.

When an admin override XML is used, Device Monitor will parse it, use the supplied settings and prevent any configuration changes through the user interface. This includes graying-out the Device URL field in the **Echo360**

Configuration window and preventing access to the **Device Monitor Configuration** window.

In order to use this feature, a file labeled *adminOverride.xml* must be created and placed in the following directory:

C:\Program Files (x86)\Echo360\Echo360 Device Monitor\

An example *adminOverride.xml* which outlines the required structure is as follows:

```
<AdminOverride
xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
><AdminOverride
xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
>

    <!-- these can be set or not regardless of
the OverrideDelcomSettings flag -->

<EchoServerURI>https://10.3.6.164:8443</Echo
ServerURI>
    <EchoUsername>instructor</EchoUsername>

<EchoEncryptedPassword>166125033209225163193
094161087240006163200008085</EchoEncryptedPa
ssword>

    <!-- set to true to enable all of the
settings below -->

<OverrideDelcomSettings>true</OverrideDelcom
```

Settings>

```
<!--disable all delcom light gestures -->

<DisableDelcomGestures>>false</DisableDelcomG
estures>

<!-- disable individual gestures, if
DisableDelcomGestures is true all will be
disabled regardless of these settings -->

<DisableDelcomGestureStart>>false</DisableDel
comGestureStart>

<DisableDelcomGestureStop>>false</DisableDelc
omGestureStop>

<DisableDelcomGesturePause>>false</DisableDel
comGesturePause>

<DisableDelcomGestureResume>>false</DisableDe
lcomGestureResume>

<!-- set led sequence and level for each
device state -->
<LEDStateIdle>2</LEDStateIdle>

<LEDStateIdlePowerLevel>50</LEDStateIdlePowe
rLevel>
<LEDStateWaiting>6</LEDStateWaiting>
```

```
<LEDStateWaitingPowerLevel>50</LEDStateWaitingPowerLevel>
  <LEDStateCapturing>4</LEDStateCapturing>

<LEDStateCapturingPowerLevel>50</LEDStateCapturingPowerLevel>
  <LEDStatePaused>7</LEDStatePaused>

<LEDStatePausedPowerLevel>50</LEDStatePausedPowerLevel>
  <LEDStateCompleting>3</LEDStateCompleting>

<LEDStateCompletingPowerLevel>50</LEDStateCompletingPowerLevel>
  <LEDStateError>5</LEDStateError>

<LEDStateErrorPowerLevel>50</LEDStateErrorPowerLevel>

  <!-- allow warning signal when audio is
not detected for the delay time -->

<AudioWarningEnabled>>false</AudioWarningEnabled>
  <AudioWarningDelay>2</AudioWarningDelay>

<AudioWarningLEDState>13</AudioWarningLEDState>

<AudioWarningPowerLevel>50</AudioWarningPowerLevel>
```

```
<!-- allow warning signal when capture is  
about to end within delay time -->
```

```
<CaptureWarningEnabled>>false</CaptureWarning  
Enabled>
```

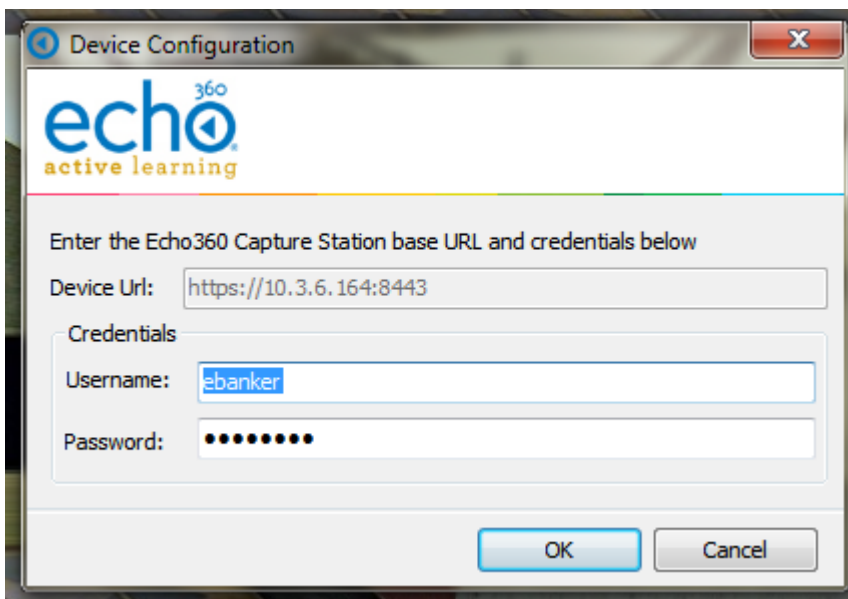
```
<CaptureWarningDelay>5</CaptureWarningDelay>
```

```
<CaptureWarningLEDState>8</CaptureWarningLED  
State>
```

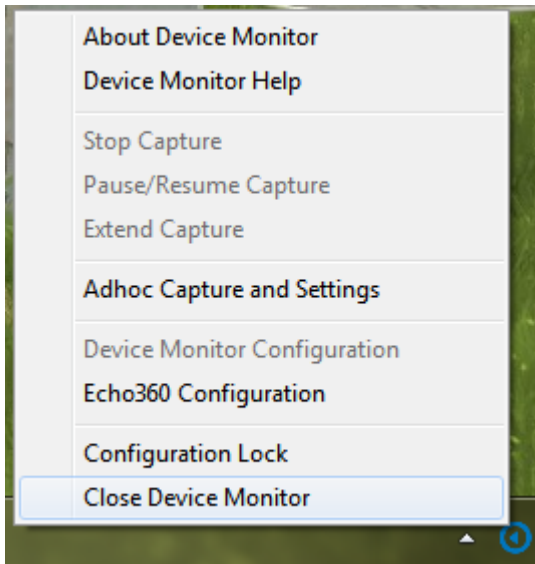
```
<CaptureWarningPowerLevel>50</CaptureWarning
PowerLevel>
</AdminOverride>
```

The two primary tags that dictate the level of override are the `EchoServerURI` and `OverrideDelcomSettings` tags:

- The `EchoServerURI` tag is populated with the the URL of the SafeCapture HD appliance you wish the Device Monitor application to connect to.
 - With this tag present and populated with the URL, the **Device URL** field in the **Echo360 Configuration** window will not be editable. However, the **Username** and **Password** fields will still function as expected.



- The `OverrideDelcomSettings` tag is set to true when you wish to force the application pull the Delcom light configuration values directly from the XML file.
 - With this tag present and set to true, the **Device Monitor Configuration** option in the system tray menu will not be accessible.



Both of these tags can be defined, but at least one needs to be present for the application to correctly parse the XML file. Additionally, the Delcom light settings in the override XML directly reflect the settings available in the user interface and use an integer to map the light configuration. This mapping is below:

Integer	Light Configuration
1	Lights Off
2	Green Light
3	Green Light Flashing
4	Red Light
5	Red Light Flashing
6	Yellow Light
7	Yellow Light Flashing
8	Green Solid/Yellow Light Flashing
9	Green Solid/Red Light Flashing
10	Yellow Solid/Green Light Flashing
11	Yellow Solid/Red Light Flashing
12	Red Solid/Green Light Flashing
13	Red Solid/Yellow Light Flashing
14	Green Solid/Yellow Solid
15	Green Solid/Red Solid
16	Yellow Solid/Red Solid
17	Green Solid/Yellow Solid/Red Solid

If you choose to set the EchoUsername and password, the password must be encrypted.

To encrypt the password:

1. Open the bundled encryption utility called **EchoCryptHelper** within the following directory: **C:\Program Files (x86)\Echo360\Echo360 Device Monitor**
2. Enter the password you wish to encrypt and click **Encrypt**.
3. You can then take the results from the Encrypted Output field and Copy and Paste into the Admin override .xml file.
4. When finished, click **Close**.

Once the *adminOverride.xml* has been created and placed in the installation directory as noted above, restart the Device Monitor application for the change to take effect.

Plan the Capture Infrastructure

In this section:

- [Installation Options](#)
- [Installation Checklists](#)
- [Classroom Installation](#)
- [Laptop and Lab Installation](#)

Installation Options

The EchoSystem offers both schedule-driven and faculty-driven (on-demand) automated workflows. Once recording is initiated, lecture and instructional capture is a function of EchoSystem capture devices. EchoSystem capture devices are uniquely suited to meet the diverse capture needs found in higher education with three distinct capture device offerings.

EchoSystem capture appliances (EchoSystem Capture Appliance and EchoSystem SafeCapture HD) are dedicated, all-in-one hardware devices for balanced or unbalanced audio, standard definition or high definition video, and external VGA, DVI, or HDMI capture. The capture appliances provide the richest lecture capture offering. The capture appliances provide both schedule-driven and faculty-driven workflows. The appliances are typically installed in an AV rack or podium inside the classroom.

Software Capture for the Classroom (Classroom Capture) is another classroom-based lecture capture offering. Providing audio, webcam video, and local screen capture, this application is entirely software-based. It is typically deployed on a podium or lectern Windows PCs. It supports both schedule-driven and faculty-driven workflows.

Personal Capture is a software application best suited for instructional content capture outside the classroom. It is typically installed on faculty laptops and provides a faculty-driven workflow. It captures audio, local screen and webcam video. See the [Personal Capture Guides](#) for more information.

Installation Checklists

- ✓ **Best Practice**
Refer to the [Prerequisite Installation Checklist](#) and [Post-Installation Checklist](#) documents during installation.

Classroom Installation

The capture appliances and Classroom Capture options are best suited to capture inside the classroom. They both provide scheduled-driven capture essential for automated workflows and minimal faculty interaction. Each is unique in supported capture sources and suitable deployment models. These details are discussed below as they pertain to installation. Other details are discussed in the [Deployment Guide](#).


Capture appliance or Classroom Capture software installation is performed separately for each classroom (capture venue). The steps in this section must be repeated for each location where lecture capture will take place. Whether you choose to use a capture appliance or install Classroom Capture on a podium PC will depend on your classroom audio visual setup and requirements. Each installation is considered a separate venue, and all venues (rooms) are managed separately by the EchoSystem Server (ESS).

Capture Appliances


Echo 360 supports two different capture appliances:

- EchoSystem Capture Appliance
- EchoSystem SafeCapture HD

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

The generic term "capture appliance" refers to either or both appliances.

Specifications

The table below presents specifications for both appliances.

Specification	EchoSystem Capture Appliance (1G capture appliance)	EchoSystem SafeCapture HD (2G capture appliance)
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Capture Source Options	<ul style="list-style-type: none"> • Audio - Unbalanced 1/4" or RCA • Video - S-Video or Composite - NTSC or PAL • External VGA - See Supported VGA Resolutions. 	<ul style="list-style-type: none"> • Audio - RCA or bare wire termination block for balanced/unbalanced audio • Video - Digital (HDMI or DVI) or Analog (composite) video input • Display - HDMI, VGA or DVI - See Supported Resolutions • Secondary Display instead of Primary Video • Secondary Video instead of Primary Display
Package Options	<ul style="list-style-type: none"> • Podcast - MP3 audio • Vodcast - M4V audio and motion display • EchoPlayer - Flash-based audio, video and display (browser) 	<ul style="list-style-type: none"> • Podcast - MP3 audio • Vodcast - M4V audio and motion display • EchoPlayer - Flash-based audio, video and display (browser)

Installation

Capture appliance installation is best suited for fixed venues but can also be installed in central control rooms or on a mobile cart.

See [Install the EchoSystem Capture Appliance](#) or [Install the EchoSystem SafeCapture HD](#) for specific instructions.

Classroom Capture Venues

Classroom Capture installation is best suited for fixed venues utilizing an existing podium or lectern PC. Classroom Capture provides rich media capture with support for audio and local screen capture.

Capture Options

Software Capture for the Classroom has these capture options:

- Audio - internal 1/8" input, USB, capture card (balanced and unbalanced)
- Local screen
- Video - USB video camera, internal webcam

See [Supported USB Devices](#) for use with Classroom Capture.

Package Options

Classroom Capture has these packaging options:

- Podcast - MP3 audio
- Vodcast - M4V audio and motion screen
- EchoPlayer - audio, video, and display

See [Install Classroom Capture Software](#) for installation instructions.

Laptop and Lab Installation

The Personal Capture application is best suited for installation on faculty or staff laptops or shared lab computers (Windows and Mac). It is primarily used by faculty and staff members to record, edit and publish instruction occurring outside the classroom. It provides a user-driven capture model inherent to a personal application. It cannot be scheduled like the other capture options and is therefore not recommended for installation within the classroom. Capture support is discussed below as it pertains to installation. Other details are discussed in the [Deployment Guide](#).

Personal Capture installation is performed separately for each faculty laptop.

Personal Capture

Personal Capture now has two installation options:

- [Personal Capture For Windows](#)
- [Personal Capture For Mac](#)

Capture Options

[Personal Capture](#) has these capture options:

- Audio - internal, 1/8" input or USB microphone
- Local screen
- Video - internal webcam or USB video camera

See the guides listed above for Personal Capture supported technologies for each operating system.

Package Options

Personal Capture has the following packaging options producing viewable media for students:

- Podcast - MP3 audio
- Vodcast - M4V audio and motion display
- EchoPlayer - audio, video, and/or display

See [Administer Personal Capture](#) for further details.

About Devices

In this section:

- [Overview](#)
- [High-Level Procedure](#)
- [Device Concepts](#)

Overview

Devices installed in classrooms capture audio, video, and various other inputs. You may have installed any of these devices in a classroom:

- EchoSystem Capture Appliance
- EchoSystem SafeCapture HD
- Classroom Capture Software

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

The generic term "capture appliance" refers to either or both appliances.

You may also have media processors, which are not assigned to a classroom.

This page describes how to configure the system-wide device defaults and the device-specific device configurations, which control the capture capabilities of devices. The decisions you make on these topics will affect the products you can produce and, therefore, the [product groups](#) you select.

High-Level Procedure

⚠ Computers running Personal Capture are managed differently from all other devices. See [Personal Capture Guides](#) for details.

Devices used to capture input for Classroom Capture are referred to as "sources" to differentiate them from the "Classroom Capture device" which is the installation registered to the ESS. See [Classroom Capture Software](#) for details.

Follow this procedure to manage devices:

1. Review and edit the [system-wide device defaults](#). Defaults are inherited by every device of that type.
2. Review [device configurations](#). Add or edit device configurations as necessary.
3. Add [individual devices](#) as necessary. You will need to add a device manually **only** if your network does not use DHCP.

✓ Best Practice: Use DHCP

Dynamic Host Configuration Protocol (DHCP) is a network protocol that allows a server to automatically assign an IP address to a device. The alternative is to manually assign a static IP address. This process is slower and more error prone. Echo360 strongly recommends using DHCP.

4. [Edit individual device configurations](#). You may need to tweak the configurations for the venue.

Device Concepts

The following table lists concepts that apply to devices.

Concept	Applies to these device types	Description
Generic Device File	Media Processors Capture Appliances Classroom Capture	The configuration file containing the minimal information for a device to make contact with the EchoSystem Server (ESS). Installed by Media Processor or Classroom Capture installers. Applied via <i>Device Initialization</i> for capture appliances
Unregistered Devices	Media Processors Capture Appliances Classroom Capture	An EchoSystem device in contact with ESS but not yet registered via the user interface. A listing of these devices is provided in the UI.
Device Initialization	Capture Appliances	The process of applying the <i>Generic Device File</i> to a capture appliance using a USB drive, resulting in the appliance contacting the ESS and appearing in the <i>Unregistered Device</i> listing.
Device Registration	Media Processors Capture Appliances Classroom Capture	A process initiated in the user interface to configure a device to be managed by the ESS, and the related processes on the device to make itself manageable.
Registered Devices	Media Processors Capture Appliances Classroom Capture	An EchoSystem device actively managed by the ESS.
Device Settings	Media Processors Capture Appliances Classroom Capture	The settings for a device.

Manage Device Defaults

In this section:

- [Before You Begin](#)
- [Review the Device Default Settings](#)
- [Edit Device Default Settings](#)

Before You Begin

This procedure assumes you have already installed and registered all of your devices:

- The EchoSystem Capture Appliance. See [Install the EchoSystem Capture Appliance](#) and [Register the Capture Appliances](#).
- The SafeCapture HD. See [Install the EchoSystem SafeCapture HD](#) and [Register the Capture Appliances](#).
- The Classroom Capture Software. See [Install Classroom Capture Software](#).
- The Media Processor. See [Manage the Media Processor](#).

Review the Device Default Settings

1. Navigate to **System > Device Defaults**.
2. Notice that the settings are organized by device and that the device name is in brackets. There are settings for:
 - EchoSystem Capture Appliance
 - Classroom Capture Software
 - EchoSystem SafeCapture HD
 - Media Processor
3. Review and edit the device default settings for your devices using the instructions that follow.

Edit Device Default Settings

Devices are automatically created with particular default settings. You can change those settings. The devices you add will inherit the new default settings.

The individual settings are:

- [Device Network Settings](#)
- [Device Web User Interface](#)
- [General Timer](#)
- [Local Storage](#)
- [Static Network Settings](#)
- [Media Processing Settings \[Processor\]](#)

Device Network Settings

The figure below shows the Device Network settings. The settings are described in the table below the figure.

Device Network Settings apply to:

- EchoSystem Capture Appliance
- EchoSystem SafeCapture HD

Device Network Settings [Capture Appliance]

These settings control the default time servers for capture appliances. Change these settings on a device's page to override the global defaults.

Time Server : 0.echo360.pool.ntp.org	Time Server : 1.echo360.pool.ntp.org
Time Server : 2.echo360.pool.ntp.org	Time Server : 3.echo360.pool.ntp.org

Setting	Definition
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<p>Time Server(s)</p>	<p>Enter the NTP server addresses that the EchoSystem Server (ESS) should use to synchronize its time with the time signatures of connected devices. The EchoSystem requires at least two distinct time sources. No two Time Server fields should reference the same NTP server.</p>
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Device Web User Interface

The figure below shows the default Web User Interface settings for all devices. The settings are described in the table below the figure.

Device Web User Interface settings apply to:

- EchoSystem Capture Appliance
- EchoSystem SafeCapture HD
- Classroom Capture

Device Web User Interface	
<i>These settings control the capture device's Local Web UI parameters, and also the authentication into the capture device's REST API. Change these settings on a room's page to override the global defaults.</i>	
Allowed Access Addresses :	*.*.* Port : 8443
Access Protocol :	HTTPS Admin User Name / Password : admin / *****
Generic User Name / Password :	instructor / *****

Setting	Definition
Allowed Access Addresses	Enter the IP address that should be allowed to access the local web server on the device. Use an asterisk (*) as a wild card.
Port	Enter the port number where the local web server should listen.
Access Protocol	Enter the access protocol (HTTP or HTTPS) that the local web server should use.
Admin User Name / Password	Defines the default user name and password that will be used to access the administrative tabs on the local web server. The administrative tabs provide diagnostic information and allow the Administrator to perform various actions, such as rebooting the device, pinging hosts from the device, accessing the device's logs, and reuploading content stored on the device.
Generic User Name / Password	Enter the default user name and password to access the capture device.

General Timer

The figure below shows the General Timer section of the Device Defaults page, which allows you to configure the length of the Preroll Timer Countdown. This preroll timer determines the time during which a scheduled capture can be started early. By default, this is set to 300 seconds (5 minutes).

Users can start captures early through the device interface or the CCAP interface (depending on which is scheduled to capture in that room).

Enter **Preroll Timer Countdown** figure in seconds. The default setting is 300 seconds, or 5 minutes.

General Timer

These settings control the times related to scheduling and initiating a scheduled recording.

Preroll Timer Countdown (in seconds) :

Local Storage

The figure below shows the Local Storage settings. The settings are described in the table below the figure.

Local Storage settings apply to:

- EchoSystem Capture Appliance (20 GB maximum local storage)
- EchoSystem SafeCapture HD (120 GB maximum local storage)
- Classroom Capture (20 GB maximum local storage)
- Media Processor (5,000 MB maximum local storage)

Local Storage [Capture Appliance]

These settings control the default local storage settings. Change these settings on a device's page to override the global defaults.

Maximum Saved Content Size (MB) : **20,000**

Setting	Definition
Maximum Saved Content Size (MB)	<p>Defines the default size on disk for saving uploaded recordings. When recordings grow larger than the specified size, the device deletes the oldest recordings.</p> <p>The default setting of 20,000 MB (20 GB) for the EchoSystem Capture Appliance and Classroom Capture is the maximum you can specify. It is typically enough storage to keep the most recent 25 hours of capture locally.</p> <p>For the EchoSystem SafeCapture HD, you can specify a default size of up to 120,000 MB (120 GB). This allows you to store about 40 hours of content recorded on Extreme HD settings.</p>

Static Network Settings

The figure below shows the Static Network Settings settings. The settings are described in the table below the figure.

Static Network Settings apply to:

- EchoSystem Capture Appliance
- EchoSystem SafeCapture HD

Static Network Settings [SafeCapture HD]

Static Network Config? :

Static IP Address : Subnet Mask :

Default Gateway : Primary DNS Server :

Secondary DNS Server :

Setting	Definition
Static Network Config?	Check this box if you did not use DHCP to discover and assign an IP address. When you check this box, additional fields appear.
Static IP Address	Enter the IP address from your Network Administrator. This field is required.
Subnet Mask	Enter the subnet mask from your Network Administrator. This field is required.
Default Gateway	Enter the default gateway from your Network Administrator. This field is required.
Primary DNS Server (DHCP Override)	Enter the IP address of the primary DNS server, which the device should use for name resolution. This setting will override the primary DNS server provided by the DHCP server. This field is required.
Secondary DNS Server (DHCP Override)	Enter the IP address of the secondary DNS server, which the device should use for name resolution. This setting will override the secondary DNS server provided by the DHCP server.

Media Processing Settings [Processor]

The figure below shows the Processing Settings settings. The settings are described in the table below the figure.

Processing Settings [Processor]

These settings control the default media file path (FTP path from System Settings page) and parallel processing task parameters. Change these settings on a processor's page to override the global defaults.

Processor Path to FTP Directory :

Maximum Concurrent Jobs : 2

Setting	Definition
Processor Path to FTP Directory	Defines the default network path (UNC, Samba, NFS) to the FTP Server directory defined in the <i>Intake Settings</i> on the System Settings page. This setting allows the Media Processor to access files over a network share instead of using SFTP or FTP. This is generally faster than using SFTP.
Maximum Concurrent Jobs	Defines the default number of concurrent captures the Media Processor will run. We recommend that you enter the number of CPU cores available on the Media Processor.

Manage Device Configurations

In this section:

- [Overview](#)
- [Add a Device Configuration](#)
- [Edit the Input Configuration](#)
- [When Adjusting Gain on the Audio Input](#)
- [When Using the Widescreen Aspect Ratio on the Display Input](#)
- [Delete a Device Configuration](#)

Overview

Device configurations allow you to fine-tune the input combinations (audio/video/display) a device accepts and the quality of the input the device captures. After you establish your preferred device configurations, specify them when you add or edit the individual device.

You could create a few different configurations and apply them to different devices. You might, for example, create a device configuration that captures audio, video, and VGA at the highest qualities possible, then apply it to the EchoSystem SafeCapture HD in the premier lecture hall. Another device configuration could apply to the Classroom Capture device in a classroom primarily used for seminars and discussions.

✓ Best Practice: Edit Rarely

After you establish a device configuration, edit it only when absolutely necessary. If you are not satisfied with the capture quality, optimize the equipment in the venue first. Adjust the camera, the audio device, or the lighting first, review some Echoes, then adjust again. The environment in the venue affects the capture quality. If one Instructor turns on every light, the Echo may look washed out. If another Instructor turns off every light, the Echo may look dark. Adjusting the device configuration would not solve issues caused by a changing venue environment.

Add a Device Configuration

1. Navigate to **Configuration > Device Configurations**.
2. Click **Add**. The Add Device Configuration page appears.

3. Enter a name for the device configuration.
4. Select the organization that will own the device configuration.
5. Select a device type from the list.
6. Click **Save**. Input configurations specific to the device appear.
7. Configure the input combinations. See [Edit the Input Configuration](#).

Edit the Input Configuration

1. Display the device details page. If you just added the device, the input configuration fields appear automatically at the bottom of the Add Device Configuration page (shown below). If you are editing an existing device, follow these steps:
 - a. Navigate to **Configuration > Device Configurations**.
 - b. Hover over the device name and click **edit**. The Edit Device Configuration page appears.

Device Configurations > Edit Device Configuration

Edit Device Configuration – schd a/d/v only

Device Configuration Details

Name :

Organization : [echo360](#)

Device Type : SafeCapture HD

Input Configuration

<input checked="" type="checkbox"/> Audio	Audio Analog Gain (-12dB to +60dB) :	<input type="text" value="-6"/>
	Input Connector :	<input type="text" value="Balanced"/>
<input checked="" type="checkbox"/> Primary Display	Brightness (1-100) :	<input type="text" value="50"/>
	Contrast (1-100) :	<input type="text" value="50"/>
	Saturation (1-100) :	<input type="text" value="50"/>
	Aspect Ratio :	<input type="text" value="Standard"/> <input type="checkbox"/> Locked?
	Input Connector :	<input type="text" value="DVI"/>
<input checked="" type="checkbox"/> Secondary Video	Brightness (1-100) :	<input type="text" value="50"/>
	Contrast (1-100) :	<input type="text" value="50"/>
	Saturation (1-100) :	<input type="text" value="50"/>
	Aspect Ratio :	<input type="text" value="Standard"/> <input type="checkbox"/> Locked?
	Input Connector :	<input type="text" value="Composite"/>
	Video Standard :	<input type="text" value="NTSC"/>
<input checked="" type="checkbox"/> Primary Video	Brightness (1-100) :	<input type="text" value="50"/>
	Contrast (1-100) :	<input type="text" value="50"/>
	Saturation (1-100) :	<input type="text" value="50"/>
	Aspect Ratio :	<input type="text" value="Standard"/> <input type="checkbox"/> Locked?
	Input Connector :	<input type="text" value="Composite"/>
	Video Standard :	<input type="text" value="NTSC"/>
<input checked="" type="checkbox"/> Secondary Display	Brightness (1-100) :	<input type="text" value="50"/>
	Contrast (1-100) :	<input type="text" value="50"/>
	Saturation (1-100) :	<input type="text" value="50"/>
	Aspect Ratio :	<input type="text" value="Standard"/> <input type="checkbox"/> Locked?
	Input Connector :	<input type="text" value="DVI"/>

- Review the input configurations, which vary by device. This example shows the EchoSystem SafeCapture HD device, so you can configure Audio, Primary Display, Secondary Display, Primary Video, and Secondary Video.
 - To specify only the input combinations you need for a particular device, select or deselect the input check boxes.
 - Different inputs have different parameters.
 - When adjusting gain, see [the considerations on adjusting gain](#) below.
 - If you adjust the display configuration, see [the considerations on using widescreen aspect ratio](#) before specifying the widescreen aspect ratio.
- Click **Save**.

When Adjusting Gain on the Audio Input

✓ Best Practice: Adjust Gain on the Other Equipment First

Before you adjust gain on a capture appliance, adjust gain on all of the other sound equipment in the venue. When the sound quality of other equipment is stable, adjust the gain on the capture appliance. This way, the sound quality you hear when you adjust the capture appliance is sure to be the sound quality you hear on recordings.

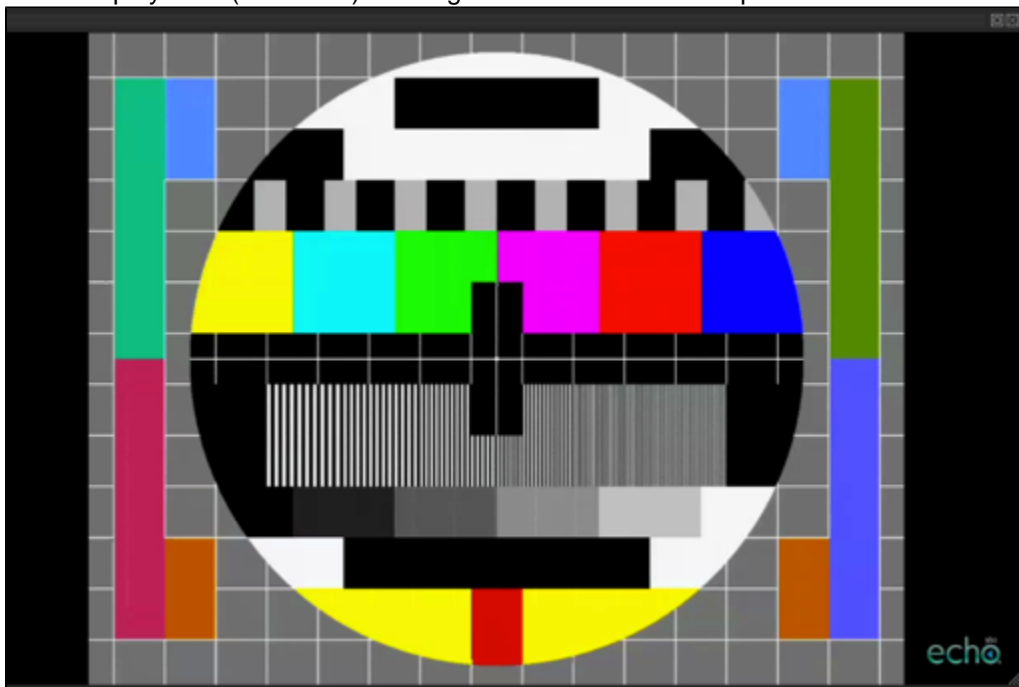
1. Play a pink noise source.
2. Adjust the gain until all of the LEDs on the front panel are green. You should not see any yellow or red LEDs.

Pink noise, which sounds like static between FM channels, has a very low crest ratio and low dynamic range. The sound has a fairly constant power level, so the overall power level is higher than normal speech. This should get you a good **starting point** for further fine-tuning of audio.

Connector Type	Level	Range
RCA Audio Connector	Consumer	(-10dBv / 0.316Vrms / 0.447Vpk)
Bare Wire Audio Connector	Professional	(+4dBu / 1.228Vrms / 1.737Vpk)

When Using the Widescreen Aspect Ratio on the Display Input

If you are configuring the SafeCapture HD, you can specify that the device capture in widescreen. If you do this, all devices with the configuration will capture in widescreen. This may result in Echoes with black bands on either side of the display area ("curtains"). This figure below shows a test pattern with curtains:



The curtaining effect occurs in this situation:

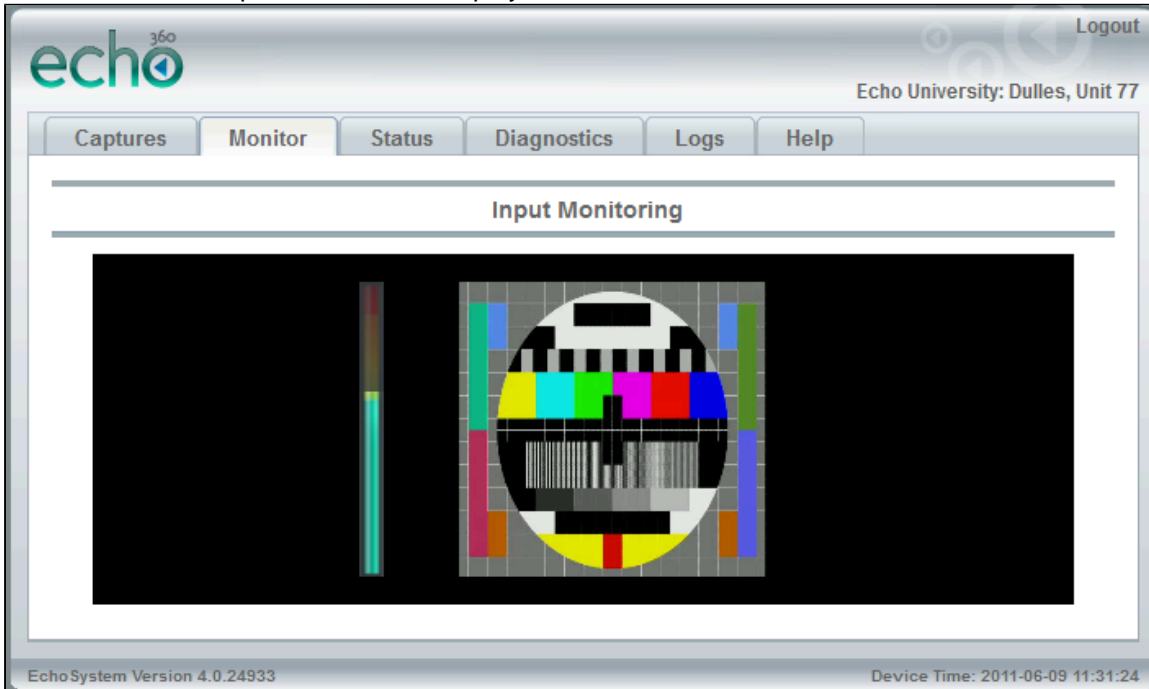
- An Instructor uses Ad Hoc capture
- The Instructor displays a presentation from his own laptop

- The laptop is set to a standard aspect ratio

Once the lecture is captured, the "curtains" cannot be removed, even if the Echo is reprocessed.

Echo360 recommends that you:

- Avoid specifying the widescreen aspect ratio in a device configuration.
- Specify the widescreen aspect ratio on an individual device, in a specific venue (like a classroom), as appropriate.
- Make sure that Instructors using their own laptops in the venue reset the aspect ratio on their laptops. You may want to post instructions in the room.
- Monitor Ad Hoc captures in venues with the widescreen aspect ratio. If you see a "curtained" display, you will need to reset the aspect ratio on the display device.



Delete a Device Configuration

You cannot delete a device configuration that is assigned to a device.

1. Navigate to **Configuration > Device Configurations**.
2. Hover over the device configuration you want to delete and click **delete**. A confirmation message appears.
3. Click **Yes**. The Product Groups page appears with a delete confirmation message at the top.

Manage Individual Devices

In this section:

- [Overview](#)

Overview

See [Manage Classroom Capture Sources](#) to configure devices for use with a podium PC running Classroom Capture software.

See the following pages for further details:

- [Add a Device With a Static IP Address](#)
- [Edit a Device](#)
- [Upgrading Devices](#)
- [Retire a Device](#)
- [Delete a Device](#)

Add a Device With a Static IP Address

In this section:

- [Overview](#)
- [Procedure](#)

Overview

This procedure assumes you do not have a DHCP server and must add a device manually with a static IP address. Follow these instructions only if you use static networking. Do not use these instructions if your network has DHCP.

All appliances, in the absence of a static configuration, will attempt to use DHCP to discover their IP addresses. On networks without DHCP, or where DHCP would yield an address on a V/LAN or subnet that is isolated from the ESS, this configuration method will fail.

These instructions assume that you have already installed the device. If the device is a capture appliance:

- It should be connected to the power and the Ethernet network. The green and amber LEDs on the appliance should be illuminated and stay solid (not blink).
- It should be connected to the physical network that you are about to configure logically. If the subnet of the attached segment does not match the given parameters, configuration will fail.

When you configure the [Static Network Settings](#), you may need to contact your Network Administrator for the static IP address, subnet mask, and default gateway.

Procedure

1. Navigate to **Configuration > Devices**.
2. Click **Add**. The Add Devices page appears.
3. Select the device type from the Device Type drop-down list, shown in the figure below.

Add Device

General Information

Device Type : SafeCapture HD ▼

MAC Address :

Organization : Choose... ▼

Choose...
 SafeCapture HD
 Capture Appliance
 Classroom Capture
 Processor

You must assign this device to a room before you can capture

Room : Choose... ▼ Choose... ▼ Choose... ▼

This room must first be licensed to capture. Please selected a license :

License : All

Available : 18

4. Notice that additional fields appear after you select the device type. You will configure these soon.
5. Enter the MAC address for the device, including hyphens. If you are using a capture appliance, the MAC address is on the back of the capture appliance. If you are using another type of device, use the MAC address noted during installation.
6. Select the organization that will own the device.
 - If you expect the device to be assigned to a venue that is used by many child organizations, have the parent organization own the device.
 - Objects owned by the parent organization are automatically shared by all child organizations. If a child organization owns the device, other child organizations will not be able to use the device or use the venue.
7. Select the room and license. If another device is already assigned to the desired room, first remove that assignment from the other device's page before proceeding.
8. Configure the other settings. These are inherited from the device defaults (**System > Device Defaults**) and vary depending on the device type. See [Manage Device Defaults](#).
9. Click **Save**.
10. If you are adding a capture appliance, you must also initialize it. Initializing a capture appliance in a static network environment is similar to the same process in a DHCP network, but differs in some critical respects. See this KB (Knowledge Base) article: [Appliance initialization with static networking](#).



Accessing the Knowledge Base

You will need a customer portal login to access the Knowledge Base. Contact [Technical Support](#) if you need a login.

Edit a Device

In this section:

- [Edit a Device](#)

Edit a Device

1. Navigate to **Configuration > Devices**.
2. Hover over the device name and click **edit**. The Edit Device page appears.
3. Edit the settings as required.
 - You cannot edit the device type, MAC address, Organization, or Service Version
 - See [Manage Device Defaults](#)
4. To edit the input configuration:
 - a. If a standard device configuration is selected, select **custom** or click **Use as Custom**. **Use as Custom** is not an option with Classroom Capture because only the custom device configuration (but not the shared device configuration) is supported for Classroom Capture.
 - b. [Edit the input configuration](#).
5. Click **Save**.

Upgrading Devices

In this section:

- [Overview](#)
- [Upgrade a Single Device](#)
- [Upgrade Multiple Devices](#)

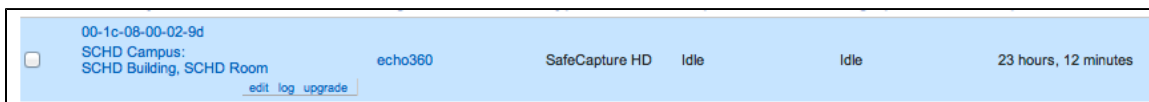
Overview

Although devices are upgraded as part of an ESS upgrade, you may also need to upgrade one or more of your devices manually, perhaps when instructed by Echo360 technical support.

Device updates are .jar files that reside in the Echo360 plugins directory. Upgrading a device typically takes 3-5 minutes. The ESS stays up during this process, though the device itself cannot capture input while it is being upgraded.

Upgrade a Single Device

There are two ways to upgrade individual devices. The easiest is to hover over the device in the Devices list (**Configuration > Devices**) and click **upgrade**, as shown in the below figure.



You can also upgrade the device from the Edit Device page. This method allows you to see the current Service Versions installed on a device before upgrading.

1. Navigate to **Configuration > Devices**.
2. Hover over the device name and click **edit**.
3. Notice the service versions for the components. You may want to write down the service versions or print the page.

General Information	
Device Type :	Capture Appliance
MAC Address :	00-50-c2-8e-a9-c0
Organization :	echo360
Service Versions :	Ad Hoc Control Service v.5.3.36670; Capture Worker v.5.3.36670; System Status Service v.5.3.36670; Task Manager Service v.5.3.36670; Upload Content Service v.5.3.36670; Upload Log Service v.5.3.36670
	Upgrade

4. Click **Upgrade**.
5. Notice that at least one service version has changed.

Upgrade Multiple Devices

To upgrade multiple devices at once:

1. Navigate to **Configuration > Devices**.
2. If necessary, you may want to filter the list to show only the rooms or device types you want to upgrade.
3. Select the devices you want to upgrade, either individually or using the Select links at the bottom of the page, highlighted in the below figure.
4. Scroll to the bottom of the page. Select **Upgrade selected** from the Actions drop-down list, also shown in the below figure.

Active: 3		Unregistered: 0	Retired: 0	1 - 3 of 3		
Summary	Organization	Type	Capture Status	Log Upload Status	Up Time	
<input checked="" type="checkbox"/> 00-50-c2-7b-1c-02 aptus campus: aptus building, aptus room	echo360 / Aptus	Capture Appliance	New	New	n/a	
<input checked="" type="checkbox"/> 00-50-c2-7b-1f-d5 Cap2 Campus: Cap2 Building, Cap2 Room	echo360	Capture Appliance	Idle	Idle	23 hours, 26 minutes	
<input checked="" type="checkbox"/> 00-50-c2-8e-a9-c0 Cap1 Campus: Cap1 Building, Cap1 Room	echo360	Capture Appliance	Idle	Idle	3 days, 6 hours	

Select: All 3 (of 3) Displayed Above, All 3 in Filter, None

Action: Choose...
 Upgrade selected

View: 20 Devices per Page

5. The selected devices are upgrade.

Alternately, you can upgrade all the devices in your system using the **Upgrade All** button located at the bottom of the Device list.

Retire a Device

In this section:

- [Overview](#)

Overview

Retiring a device removes the device from the Active devices list. Retiring a device does not delete the device permanently. You can reinstate a retired device.

You can only [delete a device](#) that has been retired.

When you retire a **processing** device, the following occurs:

- Any assigned processing tasks are unassigned, and any unfinished tasks are reset as "new" so that an alternate processing device can process them. Be advised that the new device must be assigned to the same sub-organization or to the root organization to pick up the unfinished task(s).
- Device logs are deleted.
- Device properties and events are deleted.

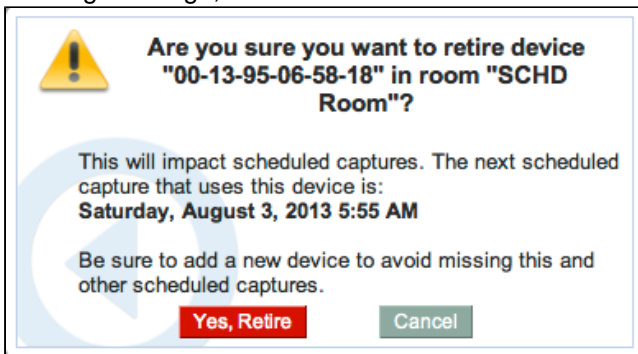
When you retire a **capture** device, the following occurs:

- Device is unassigned from the room (if there is a current assignment); any schedules for that room will not be captured until a different device is assigned to the room.
- Device logs are deleted.
- Device alerts, properties, events, and source status history (for Classroom Capture) are deleted.
- Device binary version history is deleted.
- If the device is capturing content at the time of retirement, the capture is ended at that point and an echo will be processed from the partial capture.
- Any existing captures, including Ad Hoc Captures, retain their association with a retired device.

If you are planning to retire a capture device, you are encouraged to first unassign the device from the room, and assign a different capture device to the room, so that existing schedules will still be captured as configured.

To retire a device:

1. Navigate to **Configuration > Devices**.
2. Click the MAC address of the device to open the Device Details page.
3. Click the Retire button, located at the bottom of the page.
4. The system checks to see if there are future captures slated for this device. If there are, you will receive a warning message, as shown below.



5. Click **Yes, Retire** to retire the device.

The device now appears on the Retired tab of the Devices list.

Delete a Device

In this section:

- [Deleting Devices](#)

Deleting Devices

Deleting a device removes the device and all of its associated logs and history permanently from the system. You can only delete devices that [have been retired](#) or that are unregistered. Active devices cannot be deleted.

Be advised that deleting a **capture** device (SafeCapture HD, Capture Appliance, or Classroom Capture) is possible, but requires that **all existing captures associated with the device be deleted first**. As long as you retire the device, and then delete all captures associated with the device, you should be able to delete it permanently from the system.


The below procedure assumes the device you are deleting appears in either the Unregistered or Retired tab of the Devices list.

To delete a device:

1. Navigate to **Configuration > Devices**.
2. Select the Retired tab or Unregistered tab.
3. Delete the device or devices.
 - To permanently delete only one device, hover your mouse over that device and click **delete**.
 - To permanently delete multiple devices, select the box to the left of each device and select **Delete permanently** from the Actions box at the bottom of the page.
 - In either case, a confirmation message appears.
4. Review the confirmation message. Be sure you understand the effect of deleting a device.
5. Click **Yes** to confirm the deletion of the device(s).

EchoSystem Capture Appliance

- [Install the EchoSystem Capture Appliance](#)
- [Configure the EchoSystem Capture Appliance](#)
- [EchoSystem Capture Appliance Product Specifications](#)
- [EchoSystem Capture Appliance Safety and Regulations](#)

 **Best Practice: Purchase and Manage Spare Capture Appliances**

Having one or more spare appliances ensures that you can fully support operations while a non-functioning appliance is being repaired. See [Manage Spare Capture Appliances](#).

Install the EchoSystem Capture Appliance

In this section:

- [Receive the Capture Appliance](#)
- [Place the Capture Appliance](#)
- [Cable the Capture Appliance](#)

 **Best Practice**

Refer to the [Prerequisite Installation Checklist](#) and [Post-Installation Checklist](#) documents during installation.

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

The generic term "capture appliance" refers to either or both appliances.

Receive the Capture Appliance

Echo360 ships the Capture Appliance with all of the necessary software pre-installed. Visually inspect the Capture Appliance for damage when you receive it.

Place the Capture Appliance

You must physically secure the Capture Appliance in a location within the classroom. You can mount it into a podium using the feet on the bottom of the appliance. You can also mount it into a standard 19" rack using the supplied rack mount kit. Choose a location to physically install the appliance before running your cables. See [Dimensions](#).

Cable the Capture Appliance

Install each Capture Appliance in a secure location inside the classroom or lecture hall where it is to be deployed. The length of cable runs and connectivity should also be considered when choosing a location within the classroom.



The Capture Appliance has plugs for VGA, video, audio, network, and power connections, as shown in the above figure. They are described in the sections below.

VGA Connection

The Capture Appliance provides a VGA (Video Graphics Array) distribution amplifier for simple integration into every

classroom. On the back of the Capture Appliance are two VGA connectors:

- The bottom connector (VGA In) is the input port. Connect this port to the source computer or switcher.
- The top connector (VGA Out) is the output port. Connect this port to the classroom projector or the in-room equipment for providing signal to the projector. Use a VGA D-sub 15 Cable (VGA Cable).

For both ports:

- Use the screws to ensure a tight connection.
- Keep the cable runs as short as possible, no longer than 50 feet.

The Capture Appliance is designed to pass through the VGA signal in the event of a power failure.

Video Connection

The Capture Appliance provides two different video input sources, each with its own input connectors. Both S-Video and Composite (RCA) are supported.

- Select S-Video or Composite (RCA) and securely plug the input cable into the connector (Video Input 1).
- The other connector (Video Input 2) is disabled.

Keep the cable run as short as possible. It should not be longer than 50 feet.

Use the Video Port for Cameras

Do not connect cameras to the USB port. Use the USB port to initialize the appliance with software downloaded from a USB drive.

Audio Connection

The Capture Appliance provides two different audio input sources, each with its own input connectors. The appliance supports either unbalanced stereo RCA or 1/4" stereo audio input.

Unless you are using external signal conditioning/amplification, we recommend that you keep the cable run as short as possible, and no longer than 25 feet. The audio input signal should be capable of 1.0v to 1.2v peak levels to provide optimal volume in the captured recordings.

Network Connection

The Capture Appliance provides an integrated 10/100 Ethernet switch for network connectivity and expansion in the classroom.

You can use any of the ports for connectivity to the network inside the classroom. Once connected, you can connect up to three other network devices to the switch.

Echo360 ships the Capture Appliance already configured to use DHCP for IP addressing. The MAC address of the Capture Appliance is printed on a label affixed to the base of the unit. (This is useful if your network is configured to restrict DHCP addressing based on MAC address.) The EchoSystem Server (ESS) uses the MAC address to identify the Capture Appliance.

Power Connection

The Capture Appliance uses a specific power adapter. Use the power adapter that shipped with the Capture Appliance.

When you are ready to power on the Capture Appliance, plug the circular connector into the power supply (DC), located on the far right side.

Congratulations! You have successfully physically installed the Capture Appliance. The next stage involves [configuring the device](#).

Configure the EchoSystem Capture Appliance

In this section:

- [Overview](#)
- [Initialize the EchoSystem Capture Appliance](#)
- [Register the EchoSystem Capture Appliance](#)
- [Prepare to Check the Installation](#)
- [Check the Installation](#)
- [Next Steps](#)

Overview

This process assumes you have already installed the EchoSystem Capture Appliance.

Configuring the EchoSystem Capture Appliance consists of these phases:

- [Initialize the EchoSystem Capture Appliance](#)
- [Register the EchoSystem Capture Appliance](#)
- [Prepare to Check the Installation](#)
- [Check the Installation](#)

After configuring the EchoSystem Capture Appliance, you may want to further configure the EchoSystem Server (ESS), as described in [Next Steps](#) below.

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

The generic term "capture appliance" refers to either or both appliances.

Initialize the EchoSystem Capture Appliance

Initialize the EchoSystem Capture Appliance by applying a configuration file. Download the configuration file from the ESS web interface and apply it to the device using a USB drive. The same configuration file can be used to configure all capture appliance devices.

Download the Device Configuration File

1. Log in to the ESS.
2. Place the supplied USB drive in a USB port on the ESS.
3. Navigate to **Configuration > Devices**.
4. Scroll to the bottom of the page.
5. Click on **Download Generic Configuration**.

Devices (Active)

Search

Campus : Building : Room : Type :

Active: 3 Unregistered: 0 Retired: 0 1 - 3 of 3

Summary	Organization	Type	Capture Status	Log Upload Status	Up Time
<input type="checkbox"/> 00-18-8b-65-73-04	Institution	Processor	n/a	Idle	23 hours, 58 minutes
<input type="checkbox"/> 00-50-c2-7b-1a-30 Echo360 Dulles, Cubicle&X	Institution	Capture Appliance	Idle	Idle	23 hours, 16 minutes
<input type="checkbox"/> 00-50-c2-7b-1c-6a Echo360 Dulles, Poland-1	Institution	Capture Appliance	Idle	Idle	23 hours, 36 minutes

Select: All, None View: Devices per Page 1 - 3 of 3

[Download Generic Configuration >>](#)

Click on Download Generic Configuration

6. Save the generic configuration file (**device.xml**) to the USB drive at the root level.
7. Remove the USB drive from the ESS.

Do Not Modify the Downloaded File

The configuration file you downloaded from ESS is a digitally signed file. The EchoSystem Capture Appliance will not accept files that do not bear the digital signature of the ESS. Do not modify this file.

Apply the Configuration File

Do this for each capture appliance.

Wait!

Do not insert the USB drive until instructed.

1. On the back of the EchoSystem Capture Appliance, find the label with the device's MAC address. Make a note of it. You will need the MAC address to log in to the EchoSystem Capture Appliance.
 - A typical MAC address is 00-50-c2-7b-1b-98.
 - The MAC label is also on the bottom of the EchoSystem Capture Appliance.
2. Turn on the EchoSystem Capture Appliance.
3. Make sure the EchoSystem Capture Appliance has been on for at least 30 seconds.
4. Insert the USB drive into the EchoSystem Capture Appliance. Two operations occur:

- The **device.xml** file initializes the EchoSystem Capture Appliance.
 - The device writes some network information (such as IP address and subnet mask) to the USB drive. If there is a problem with the network connection, you will need this information.
5. Remove the USB drive.

Register the EchoSystem Capture Appliance

The EchoSystem Capture Appliance begins communication with the ESS immediately after installation.

The EchoSystem Capture Appliance is a managed device in the ESS. Managed devices must be registered to be configured for use with the ESS.

1. Using the URL and credentials supplied by the System Administrator, log in to the ESS.
2. [Register the EchoSystem Capture Appliance.](#)

Prepare to Check the Installation

The steps in this section are not part of device configuration. However, you will have to add a room, assign the EchoSystem Capture Appliance to the room, and license the room in order to check the operation of the EchoSystem Capture Appliance.

You may already have added the room in the ESS and licensed it. You still need to assign the EchoSystem Capture Appliance to a room.

1. [Add a room.](#)
2. [Assign the EchoSystem Capture Appliance to the room.](#)
3. [License the room.](#)

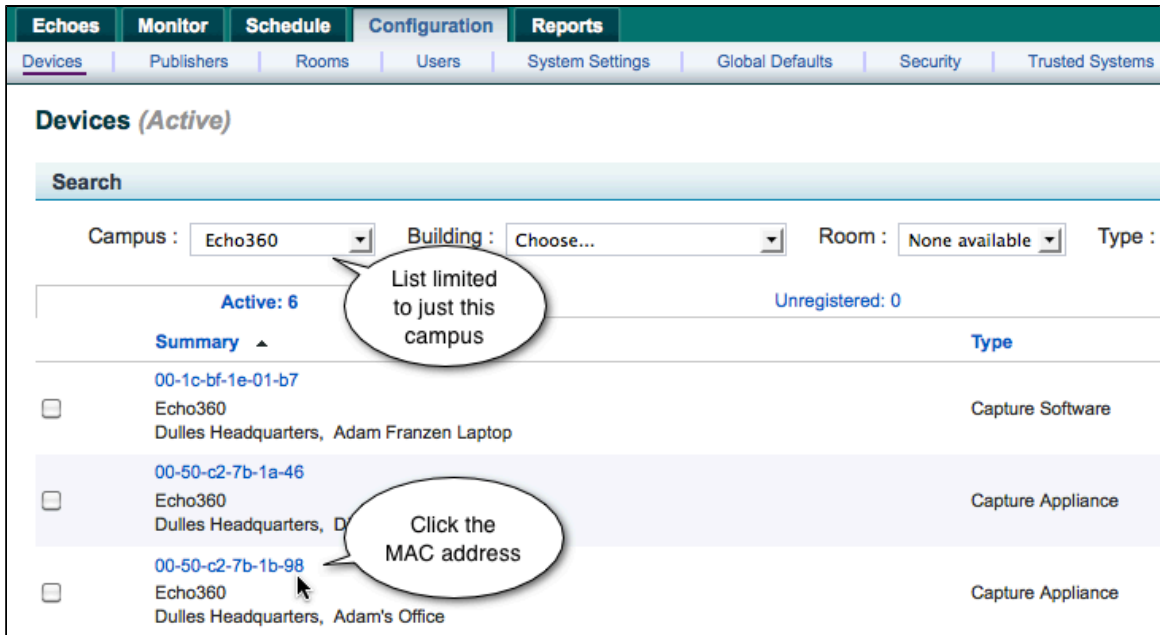
After the device is assigned and licensed, you can check the installation to be sure the device is functioning properly.

Check the Installation

To ensure that the audio-visual devices are connected properly and feeding into the EchoSystem Capture Appliance, log in to the device and look at the monitoring screen.

Log in to the EchoSystem Capture Appliance

1. Find the IP address of the appliance.
 - a. Navigate to **Configuration > Devices**.
 - b. Look for the MAC address. You can also use the Search drop-down lists to shorten the list to just those devices associated with a particular campus or room.
 - c. Hover the mouse over the device.
 - d. Click the MAC address. The Device Details screen opens.

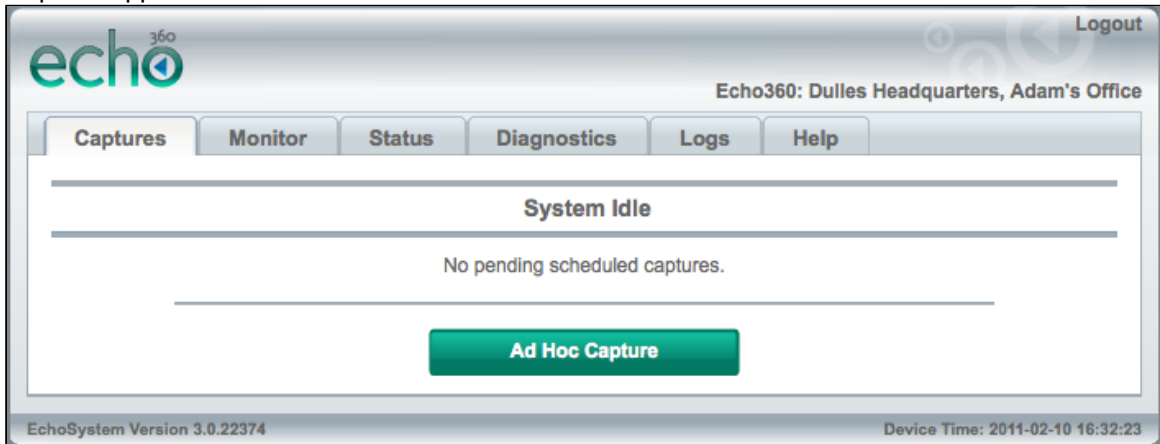


e. In the Device Details screen, copy the Local IP Address.



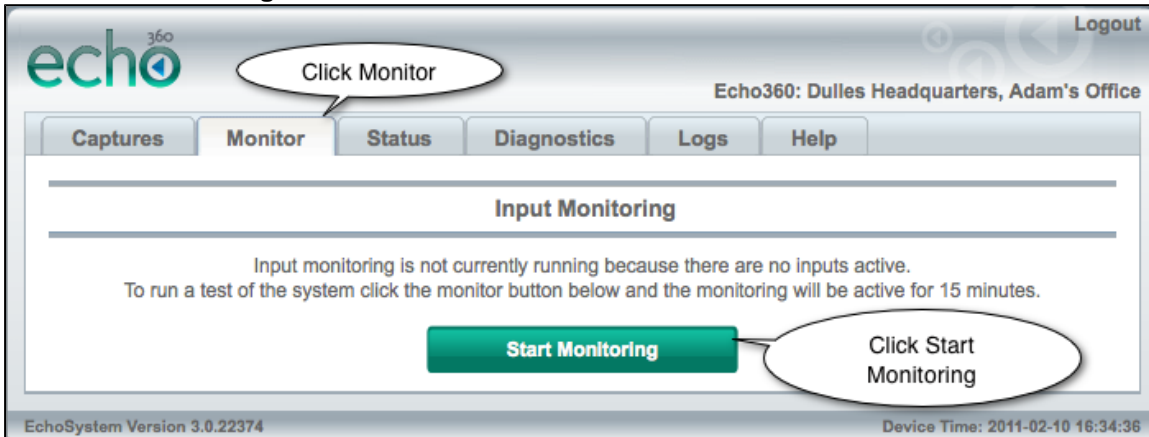
2. Log in to the appliance.

- a. Open a new browser or tab.
- b. Type **https://<IP address>:8443**. For example, you might type: **https://10.3.10.18:8443**.
- c. Enter your user name and password when prompted. The screenshots below show the interface for a System Administrator. Other users see different interfaces.
- d. You should see the Ad Hoc capture start screen. This shows you have logged in to the EchoSystem Capture Appliance.

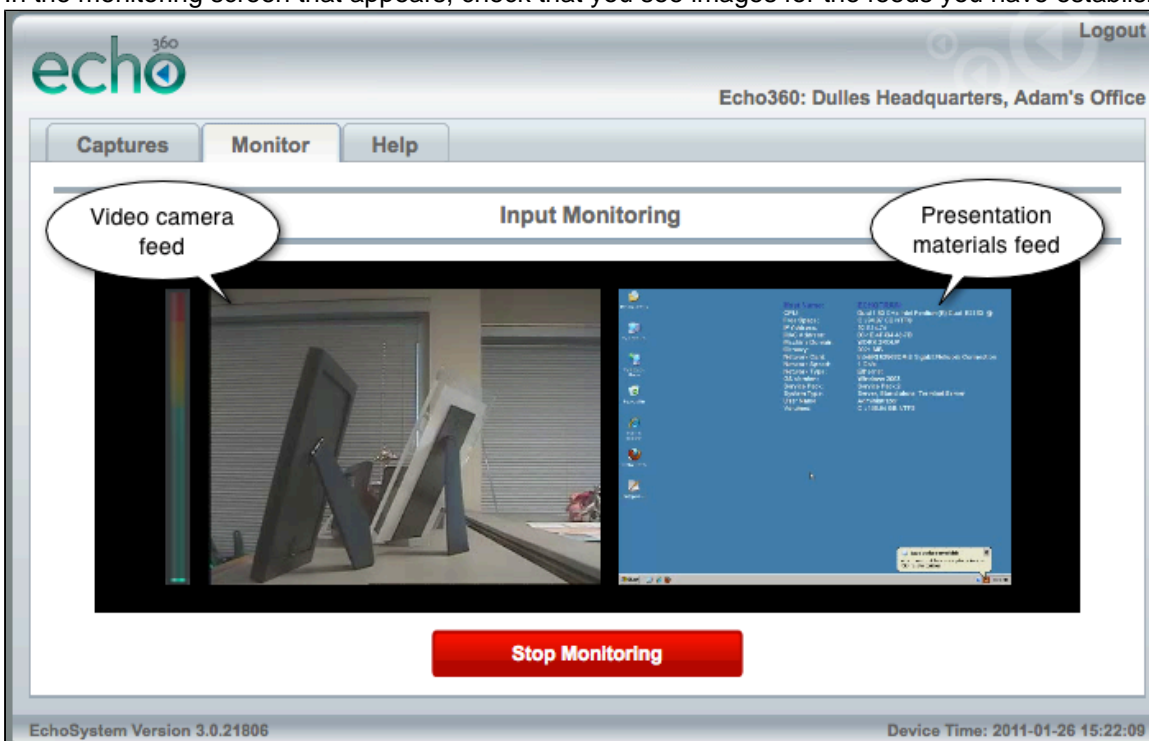


Monitor the Capture Appliance

1. In the Ad Hoc capture start screen, click **Monitor**.
2. Click **Start Monitoring**.



3. In the monitoring screen that appears, check that you see images for the feeds you have established.



Next Steps

The EchoSystem Capture Appliance is ready to capture presentations.

If this is a new installation, you will probably want to configure your EchoSystem further. Follow these steps:

1. [Add users.](#)
2. [Add and license rooms.](#)
3. [Assign the capture appliance to the room.](#)
4. [Add terms, courses, and sections.](#)
5. [Add schedules](#) and [activate them](#) so classes will be captured automatically.
6. [Add publishers](#) so Echoes are available to students.

EchoSystem Capture Appliance Product Specifications

In this section:

- [Dimensions](#)
- [Terminations](#)
- [Mounting in Cabinet](#)
- [Capture Source Options](#)
- [Package Options](#)
- [Requirements](#)
- [Deployment Considerations](#)
- [Supported VGA Resolutions](#)

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

The generic term "capture appliance" refers to either or both appliances.

This page is about the first generation EchoSystem Capture Appliance. This capture appliance is no longer in production.

Dimensions

- Width: 11"
- Depth: 8". When installing, add a little room for cables on the back of unit.
- Height: 1"

Terminations

VGA Termination

15 pin HD Male

Audio Termination:

- 1/4" Unbalanced
- RCA Unbalanced

- Requires Line Level (+4dBu) Signal

Video Termination

- SVideo – Port 1 Active / Port 2 Reserved
- Composite (RCA) – Port 1 Active / Port 2 Reserved

Mounting in Cabinet

Requires 1 RU Rack Space

Capture Source Options

The capture appliances can capture the following sources:

- **Audio.** Unbalanced 1/4" or RCA
- **Video.** S-Video or Composite (NTSC or PAL)
- **External VGA.** RGBHV signals are supported. RGSB signals are not supported. See [Supported VGA Resolutions](#) for further details.

Package Options

These packaging options produce viewable media for students:

- **Podcast.** MP3 audio
- **Vodcast.** M4V audio and motion display
- **Audio Rich Media.** Flash-based audio and display (browser)
- **EchoPlayer.** Flash-based audio, video and display (browser)

Requirements

The capture appliances contain all of the components necessary to record rich media lectures. The appliance runs embedded Linux. The only external requirement is the appropriate cabling for the network, video, audio and VGA sources. There are no additional requirements.

Audio is captured from a professional line-level (1.28Vrms, +0dBu) source using unbalanced RCA pair or 1/4" stereo input. Most consumer-grade and semi-pro grade audio equipment provides a much lower line-level output (max. 0.316Vrms, -7.8dBu) and will require external amplification to properly drive the necessary audio levels.

Video is captured from NTSC or PAL sources via a composite signal with RCA termination or an S-Video signal with S-Video termination.

Analog VGA is captured from an RGB signal terminated as a 15-pin VGA cable (DE-15).

Deployment Considerations

Networking

The capture appliance must first be configured by obtaining a DHCP address. It can then be assigned a static IP address. Most institutions also require MAC address registration to obtain a DHCP address. It must also be able to resolve the host name of the EchoSystem Server via DNS.

The network connection is 10/100 Ethernet Connect.

Physical Installation

The capture appliance has a small form factor. It can be installed in a classroom podium or lectern using the feet provided. It can also be installed in a standard 19" rack with the rack-mount kit provided.

The capture appliance is passively cooled, so is sensitive to heat. Ensure sufficient clearance and ventilation, especially within an enclosed podium. See [EchoSystem Capture Appliance Safety and Regulations](#).

Cabling

Cabling must be provided from the signal source to the appliance for capture. Cabling best practices should be applied when making cable runs.

VGA Pass-Through




The capture appliance provides the ability to pass the VGA signal through the system to other devices in the path, such as projectors or computer monitors.









Audio Monitoring

























































































































The capture appliance provides RCA audio pass-through for in-line audio monitoring.

Supported VGA Resolutions

The table below lists supported, unsupported, and untested VGA resolutions.

-  Supported resolution.
-  Unsupported resolution or has not been implemented.
-  Unverified resolution. Implemented but not tested.

Resolution	Aspect Ratio	60Hz	70Hz	72Hz	75Hz	85Hz
640 x 480	4:3					
720 x 480	3:2					
768 x 480	16:10					
800 x 500	16:10					
800 x 600	4:3					
960 x 600	16:10					
1024 x 640	16:10					
1024 x 768	4:3					

1152 x 720	16:10					
1152 x 768	3:2					
1152 x 864	4:3					
1224 x 768	16:10					
1280 x 700	1.83					
1280 x 720	16:9					
1280 x 768	5:3					
1280 x 800	16:10					
1280 x 960	4:3					
1280 x 1024	5:4					
1360 x 768	16:9					
1360 x 800	16:9					
1366 x 768	16:9					
1366 x 800	16:9					
1400 x 1050	4:3					
1440 x 900	16:10					
1440 x 1050	4:3					
1536 x 960	16:10					
1600 x 1000	16:10					
1600 x 1200	4:3					
1680 x 1050	8:5					
1704 x 960	16:9					
1864 x 1050	16:9					
1920 x 1080	16:9					

1920 x 1200	16:10	✓	✗	✗	✗	✗
Resolution	Aspect Ratio	60Hz	70Hz	72Hz	75Hz	85Hz

EchoSystem Capture Appliance Safety and Regulations

In this section:

- [Safety Precautions](#)
- [Important Safety Instructions](#)
- [Regulatory Compliance Information](#)

i Capture Appliances



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The generic term "capture appliance" refers to either or both appliances.

Safety Precautions


⊖ WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DO NOT OPEN THE ENCLOSURE. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

⚠ CAUTION: PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS GIVEN IN THIS MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS MANUAL FOR FUTURE REFERENCE.

Important Safety Instructions

This unit has been designed and manufactured to assure personal safety. Improper use can result in electric shock

or fire hazard. The safeguards incorporated in this unit will protect you if you observe the following procedures for installation, use and servicing. This unit is fully transistorized and does not contain any parts that can be repaired by the user.

 **DO NOT REMOVE THE ENCLOSURE COVER. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL ONLY.**

1. Read the instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the car/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Do not overload wall outlets; extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
16. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.
17. Do not place a heavy object on or step on the apparatus. The object may fall, causing serious personal injury and serious damage to the apparatus.
18. Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and apparatus malfunction.
19. If the apparatus should smoke or smell, immediately disconnect the power cord from the wall outlet. Wait until the smoke or smell stops, then ask your dealer for a check and repair. Neglecting to do so may cause fire.
20. While it is thundering, do not touch the connecting cables or the apparatus.

Regulatory Compliance Information

FCC NOTICE

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, and (2) this device must accept any interference received, including interference that may cause undesired operation. See instructions if interference to radio or television reception is suspected.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage

et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage est susceptible de compromettre le fonctionnement du dispositif.

Changes or modifications made to this equipment, not expressly approved by Echo360, or parties authorized by Echo360, could void the user's authority to operate the equipment.

Radio and Television Interference

This equipment generates, uses, and can radiate radio-frequency energy. If it is not installed and used in accordance with instructions provided by Echo360, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class A digital device in accordance with the specification in Part 156 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in an installation.

However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether this appliance is causing interference by unplugging the device. If the interference stops, it was probably caused by the equipment.


If this equipment does cause interference to radio or television receptions, try to correct the interference by using one or more of the following techniques:

- Turn the radio or television antenna until the interference stops.
- Change the orientation of the appliance relative to the radio or television.
- Move the appliance farther away from the radio or television.
- Plug the appliance into an electrical outlet that is on a different circuit from the radio or television.

If necessary, consult an experienced radio/television technician for additional suggestions.

Important: Changes or modifications to this product that are not authorized by Echo360, Inc. could void the EMC compliance and negate your authority to operate the product.

This product has demonstrated EMC compliance when using shielded cables (including Ethernet cables) between system components to reduce the possibility of causing interference to other electronic devices.

 PLEASE READ AND OBSERVE ALL WARNINGS AND INSTRUCTIONS GIVEN IN THIS MANUAL AND THOSE MARKED ON THE UNIT. RETAIN THIS MANUAL FOR FUTURE REFERENCE.

Disposal and Recycling

This equipment uses a long-life battery to maintain memory settings, and it is very possible that the battery will never need to be replaced during the life of the product. If the battery does need to be replaced, please refer servicing to an Echo360 authorized service technician.

Do not dispose of this product with normal household or light commercial waste. Contact your local waste disposal agency for the address of the nearest electronics and battery disposal site.

EchoSystem SafeCapture HD

- [Install the EchoSystem SafeCapture HD](#)
- [Configure the EchoSystem SafeCapture HD](#)
- [Install Mounting Brackets on the EchoSystem SafeCapture HD](#)
- [About the LEDs on the EchoSystem SafeCapture HD](#)

- [Audio Bare Wire Block Diagram for the EchoSystem SafeCapture HD](#)
- [Troubleshoot the SafeCapture HD Power Supply](#)
- [EchoSystem SafeCapture HD Safety and Regulations](#)
- [EchoSystem SafeCapture HD Product Specifications](#)
- [SafeCapture HD Push Button Factory Reset](#)

✓ **Best Practice: Purchase and Manage Spare Capture Appliances**

Having one or more spare appliances ensures that you can fully support operations while a non-functioning appliance is being repaired. See [Manage Spare Capture Appliances](#).

Install the EchoSystem SafeCapture HD

In this section:

- [Overview](#)
- [Installation](#)

✓ **Best Practice**

Refer to the [Prerequisite Installation Checklist](#) and [Post-Installation Checklist](#) documents during installation.

i Capture Appliances



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The generic term "capture appliance" refers to either or both appliances.

Overview

This page describes how to install the EchoSystem SafeCapture HD (SafeCapture HD).

After you complete this procedure, continue with [configuration of the SafeCapture HD](#).

- ⊖ The maximum allowable operating temperature of the SafeCapture HD device is 50°C/122°F. Be sure to install the device in a location where the temperature around the unit does not exceed this limit. If operated in an environment where temperatures exceed this limit, the unit may overheat and malfunction permanently.

Installation

1. Unpack the box and confirm you have all of the items listed below. There should be five separate pieces, including two mounting brackets.

- a. SafeCapture HD



Click for larger image.

- b. Power cord



Click for larger image.

- c. Two mounting brackets



Click for larger image.

- d. USB drive



Click for larger image.

2. Place the SafeCapture HD where you want it.
 - Observe the [safety standards](#) that apply to installation location.
 - Choose a room that does not include devices protected by HDCP (High-bandwidth Digital Content Protection)-protected devices. The SafeCapture HD does not record high definition content that is protected by HDCP.
 - If required, follow the [mounting brackets installation procedures](#) to install mounting brackets.
 - Be sure to ground the appliance properly. See [Ground the Capture Appliance](#).
3. On the back of the SafeCapture HD, find the label with the device's MAC address. Write down the MAC address. You will need this information when you [register the device](#).
4. Connect the power cord to the EchoSystem SafeCapture HD and a wall outlet.



Click for larger image.

5. Connect the SafeCapture HD to the network.



Click for larger image.

6. Connect the display devices (laptop, PC, document camera, etc.) to the channel labeled **Primary Display/Secondary Video**.
 - a. Use DVI-I (Dual Link) Digital-Analog cable.
 - b. If you do not have this type of cable, use a VGA to DVI-I adapter that has both a 4-pin analog link and

a dual digital link. The adapter illustrated below is the correct adapter.



7. If you are using RCA connectors, insert them. If you are using the audio bare wire block, see the [Audio Bare Wire Block Diagram for the EchoSystem SafeCapture HD](#).
8. Connect the video device to the channel labeled **Primary Video/Secondary Display**.



Click for larger image.

9. Turn on the SafeCapture HD.
10. Continue with [configuration of the SafeCapture HD](#).

Configure the EchoSystem SafeCapture HD

In this section:

- [Overview](#)
- [Initialize the EchoSystem SafeCapture HD](#)
- [Register the EchoSystem SafeCapture HD](#)
- [Prepare to Check the Installation](#)
- [Check the Installation](#)
- [Next Steps](#)

Overview

This process assumes you have already installed the EchoSystem SafeCapture HD (SafeCapture HD).

Configuring the SafeCapture HD consists of these phases:

1. [Initialize the EchoSystem SafeCapture HD](#)
2. [Register the EchoSystem SafeCapture HD](#)
3. [Prepare to Check the Installation](#)
4. [Check the Installation](#)

After configuring the SafeCapture HD, you may want to further configure the EchoSystem Server (ESS), as described in [Next Steps](#) below.

i Capture Appliances



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The generic term "capture appliance" refers to either or both appliances.

Initialize the EchoSystem SafeCapture HD

Initialize the SafeCapture HD by applying a configuration file. Download the configuration file from the ESS web interface and apply it to the device using a USB drive. The same configuration file can be used to configure all capture appliances.

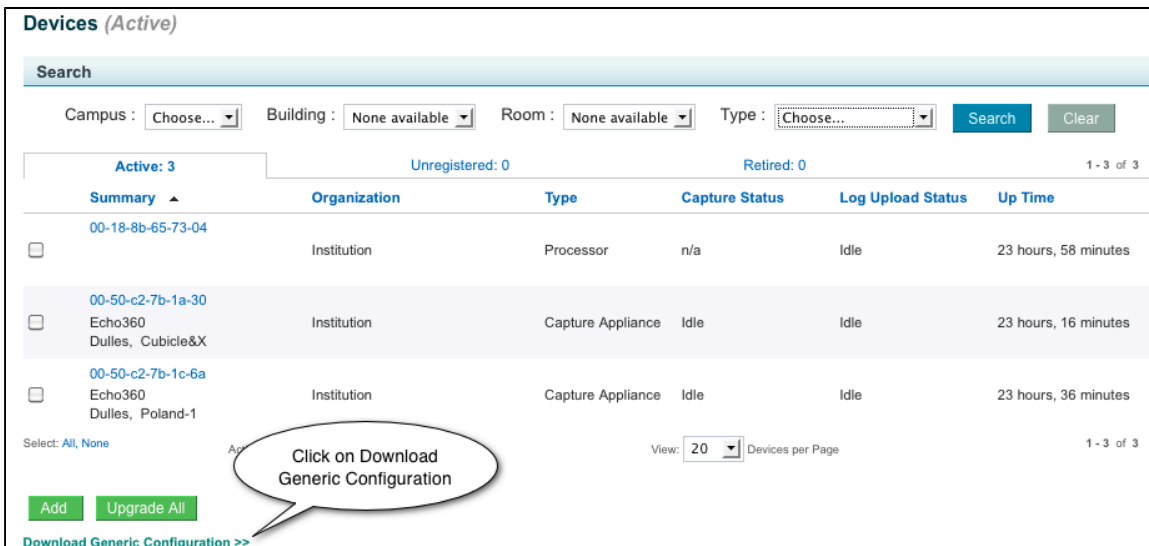
Download the Device Configuration File

1. Log in to the ESS.
2. Place the supplied USB drive in a USB port on your computer.

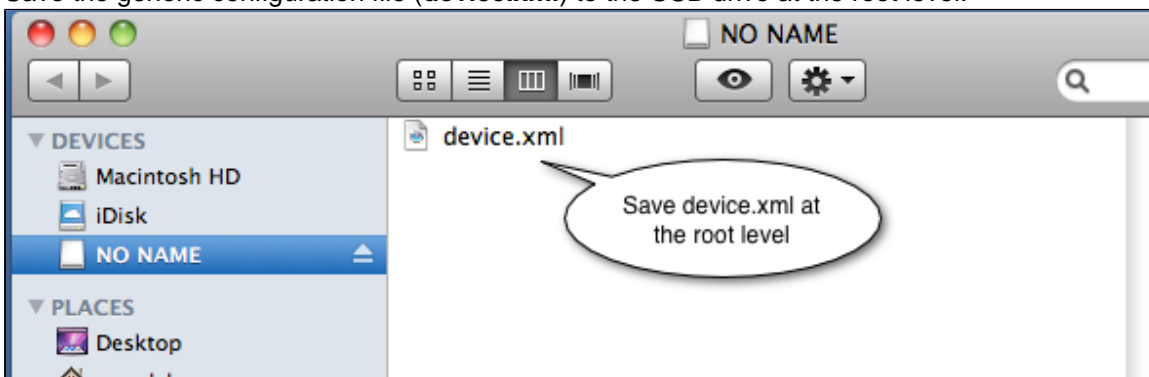


Click for larger image.

3. Navigate to **Configuration > Devices**.
4. Scroll to the bottom of the page.
5. Click on **Download Generic Configuration**.



6. Save the generic configuration file (**device.xml**) to the USB drive at the root level.



7. Remove the USB drive from your computer.

⚠ Do Not Modify the Downloaded File

The configuration file you downloaded from the ESS is a digitally signed file. The SafeCapture HD does not accept files that do not bear the digital signature of the ESS. Do not modify this file.

Apply the Configuration File

Do this for each capture appliance.

⊖ Wait!

Do not insert the USB drive until instructed.

- On the back of the SafeCapture HD, find the label with the device's MAC address. Make a note of it. You will need the MAC address to log in to the SafeCapture HD.
 - A typical MAC address is 00-50-c2-7b-1b-98.
 - The MAC label is also on the bottom of the EchoSystem SafeCapture HD.
- Turn on the SafeCapture HD.
- Make sure the EchoSystem SafeCapture HD has been on for at least five minutes.
- Insert the USB drive into the EchoSystem SafeCapture HD. Two operations occur:
 - The **device.xml** file initializes the EchoSystem SafeCapture HD.

- The device writes some network information (such as IP address and subnet mask) to the USB drive. If there is a problem with the network connection, you will need this information.



Click for larger image.

5. Remove the USB drive after 10-20 seconds.

Register the EchoSystem SafeCapture HD

The EchoSystem SafeCapture HD begins communicating with the ESS immediately after installation.

The EchoSystem SafeCapture HD is a managed device in ESS. Managed devices must be registered to be configured for use with the ESS.

1. Using the URL and credentials supplied by the System Administrator, log in to the ESS.
2. [Register the device.](#)

Prepare to Check the Installation

The steps in this section are not part of EchoSystem SafeCapture HD configuration. However, in order to check the operation of the EchoSystem SafeCapture HD, you will have to:

- [Add a room](#)
- [License the room](#)
- [Assign the EchoSystem SafeCapture HD to the room](#)

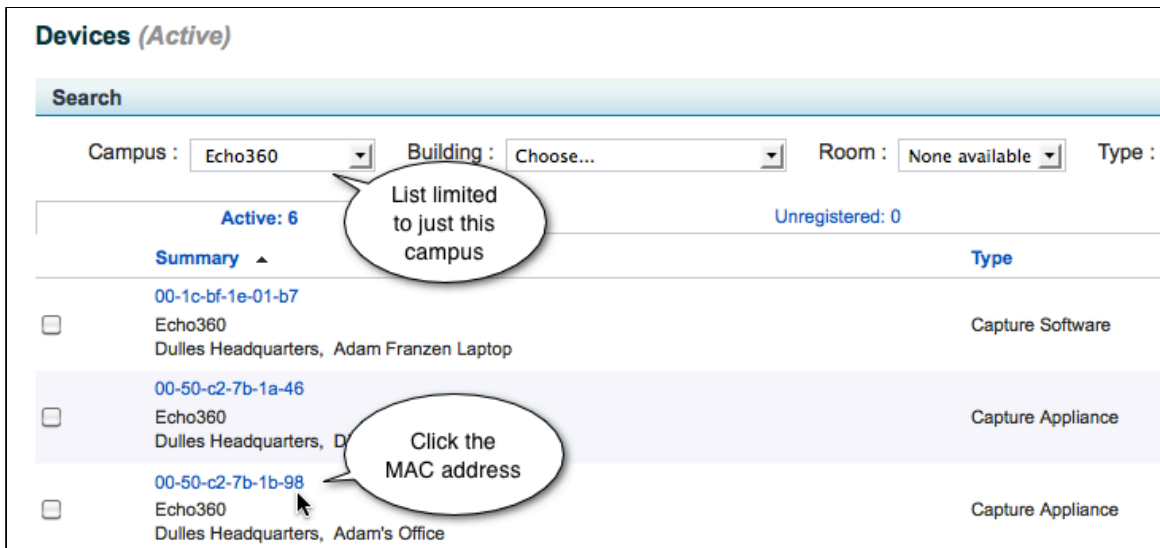
If you have already have added the room in the ESS and licensed it, you can skip to the last step, assigning the EchoSystem SafeCapture HD to the room.

Check the Installation

To ensure that the audio-visual devices are connected properly and feeding into the EchoSystem SafeCapture HD, log in to it and look at the monitoring screen.

Log in to the EchoSystem SafeCapture HD

1. Find the IP address of the appliance.
 - a. Navigate to **Configuration > Devices**.
 - b. Look for the MAC address. You can also use the Search drop-down lists to shorten the list to just those devices associated with a particular campus, building, or room.
 - c. Hover the mouse over the device.
 - d. Click the MAC address. The Device Details screen opens.

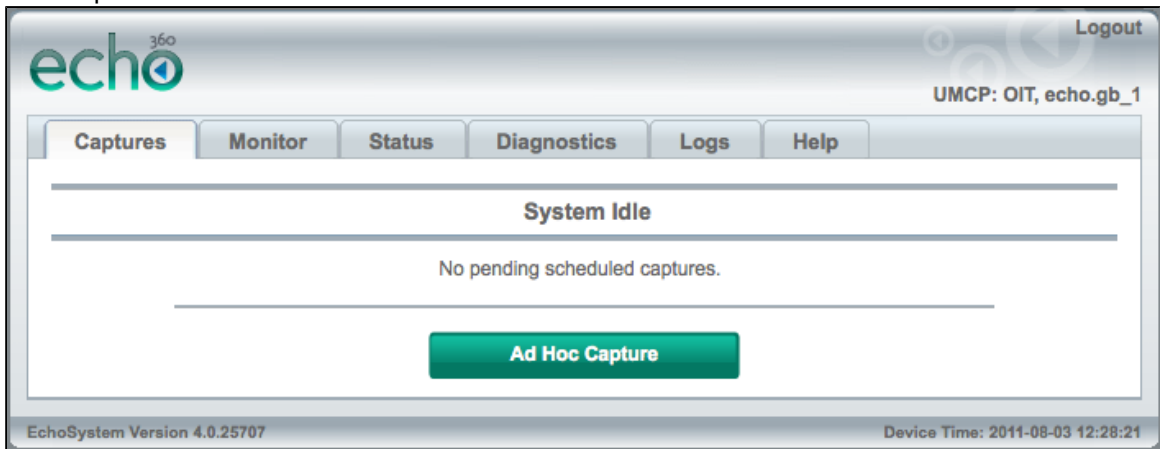


e. In the Device Details screen, copy the Local IP Address.



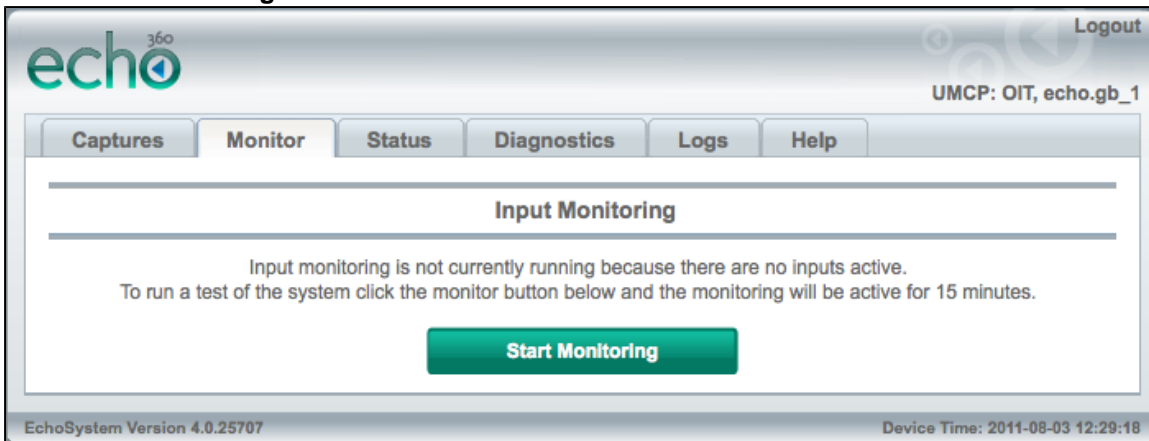
2. Log in to the appliance.

- a. Open a new browser or tab.
- b. Type **https://<IP address>:8443**. For example, you might type **https://10.3.10.18:8443**.
- c. Enter your user name and password when prompted. These screen shots show the interface for a System Administrator. Other users see different interfaces.
- d. You should see the Ad Hoc capture start screen. This shows you have logged in to the EchoSystem SafeCapture HD.

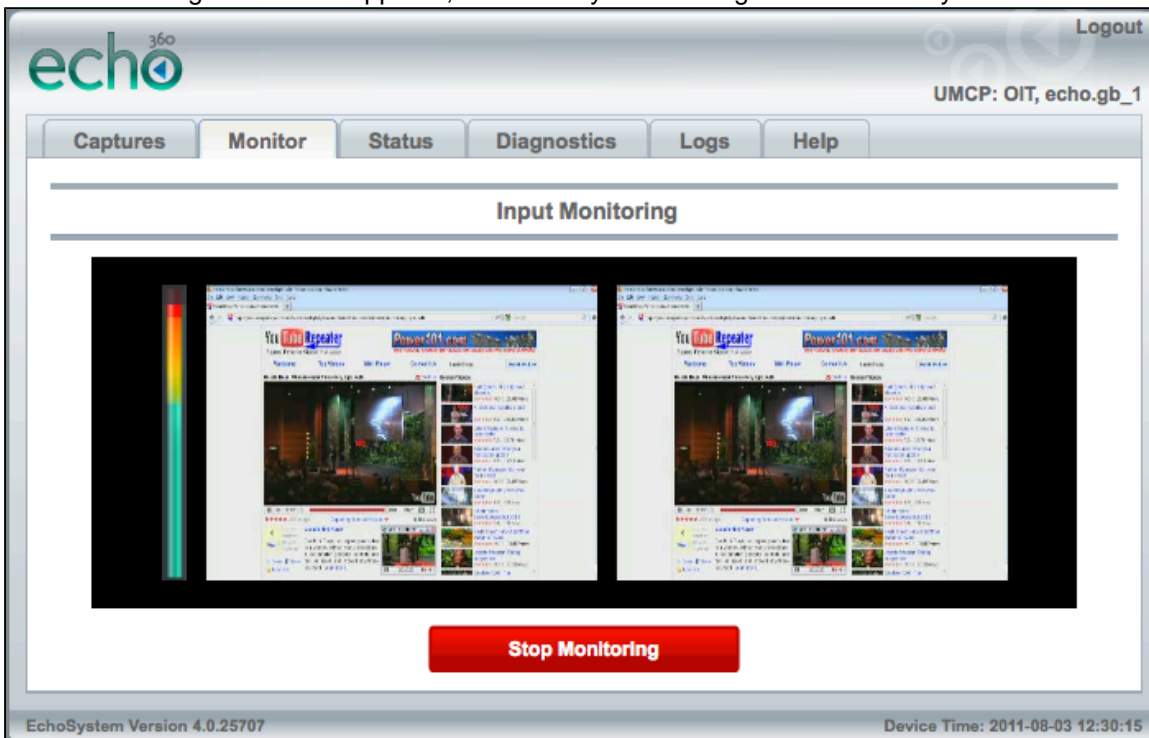


Monitor the EchoSystem SafeCapture HD

1. In the Ad Hoc capture screen, click **Monitor**.

2. Click **Start Monitoring**.

3. In the monitoring screen that appears, check that you see images for the feeds you have established.



Next Steps

The EchoSystem SafeCapture HD is ready to capture presentations.

If this is a new installation, you will probably want to configure your EchoSystem further. Follow these steps:

1. [Add users](#).
2. [Add and license rooms](#).
3. [Assign the capture appliance to the room](#).
4. [Add terms, courses, and sections](#).
5. [Add schedules](#) and [activate them](#) so classes will be captured automatically.
6. [Add publishers](#) so Echoes are available to students.

Install Mounting Brackets on the EchoSystem SafeCapture HD

In this section:

- [Overview](#)
- [Rack Mount Configuration](#)
- [Suspended Mounting](#)

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

The generic term "capture appliance" refers to either or both appliances.

Overview

The mounting brackets may be used to mount the Echo360 SafeCapture HD (the capture appliance) in several configurations. This document describes how to install the mounting brackets that let you:

- Mount the capture appliance in a rack
- Suspend it from a tabletop or shelf

⊖ The maximum allowable operating temperature of the SafeCapture HD device is 50°C/122°F. Be sure to install the device in a location where the temperature around the unit does not exceed this limit. If operated in an environment where temperatures exceed this limit, the unit may overheat and malfunction permanently.

Rack Mount Configuration

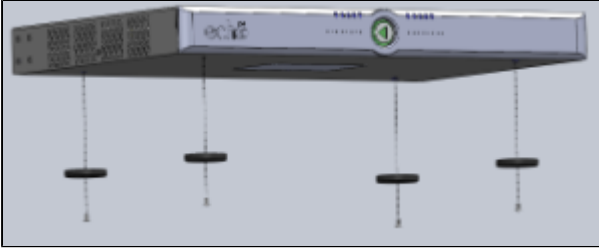
To mount the capture appliance in an A/V rack, you must first install the mounting brackets. Follow these steps.

Tools

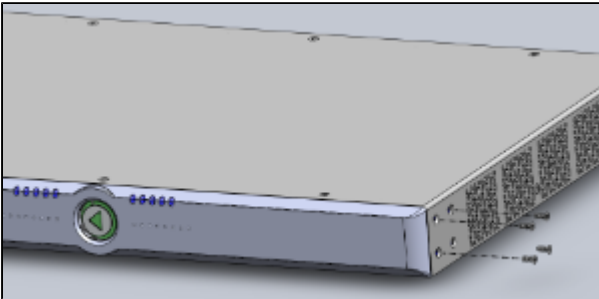
- A #2 Phillips screwdriver
- Proper rack clips and screws for your A/V rack. Please contact your A/V rack supplier. Echo360 does not supply these items.
- The rack mount kit that came in the packing box with the capture appliance. It contains two mounting brackets and eight screws.

Installation

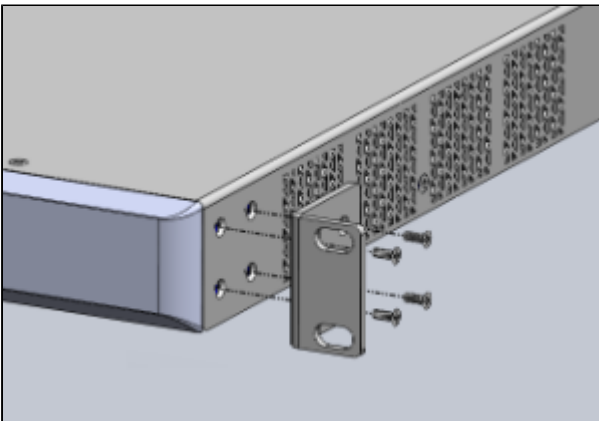
1. Remove the four plastic "stacking" feet from the bottom of the unit. Each foot is secured with one screw. You will not need the screws and feet for this mounting configuration but may wish to save them.



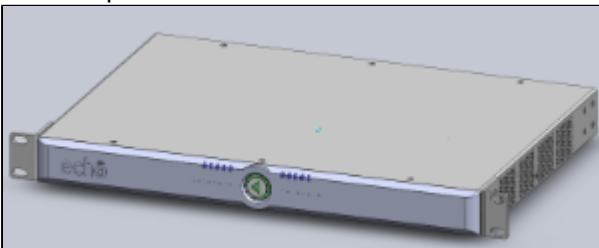
2. Place the capture appliance on a flat surface, facing front.
3. Remove the four screws on each side of the enclosure (eight screws total). You will not need the screws for this mounting configuration but may wish to save them.



4. Find the eight long screws provided in the rack mount kit. Use these screws to attach one mounting bracket to each side.



5. Compare the finished capture appliance with the picture. Notice that the mounting brackets are parallel with the front panel.



6. Install the capture appliance in the A/V rack.

Suspended Mounting

You might want to attach the capture appliance to the bottom of a table or lectern. For these types of installations, where the device will be suspended, Echo360 recommends that you:

- Install a second set of mounting brackets to the rear mounting location in addition to the front mounting location. This suspends the capture appliance on four secure and supportive mounting points. Purchase the Secondary Mounting Bracket Kit (part number **ES-HW-BRACKET**) from Echo360 or your dealer.
- **Do not** use the keyhole slots in the bottom of the plastic "stackable" feet. The stackable feet are not strong enough to properly support the appliance.
- Mount the appliance to a substrate with adequate strength to support 15 lbs (6.8 kgs) of weight. Drywall is not an adequate mounting surface. Acceptable substrates include:
 - Plywood, 1/2" minimum thickness. Pre-drill mounting holes.
 - Particle board or MDF, 3/4" minimum thickness. Pre-drill mounting holes.
 - 12 gauge steel. Use machine screws with proper nuts.

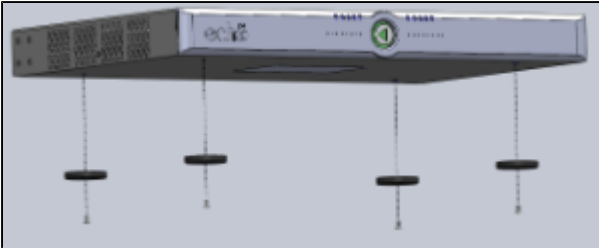
This mounting method allows you to place the capture appliance in non-standard locations. It is especially important that you adhere to the [safety instructions](#). Be sure the capture appliance is not exposed to spilled or dripping liquids.

Tools

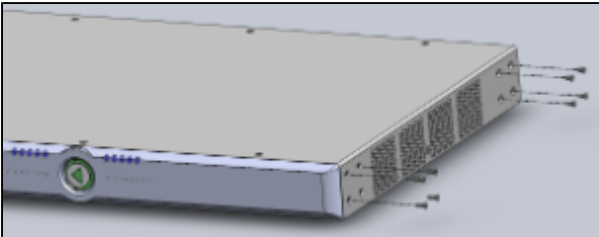
- A #2 Phillips screwdriver
- The rack mount kit that came in the packing box with the capture appliance. It contains two mounting brackets and eight screws.
- The Secondary Mounting Bracket Kit (part number **ES-HW-BRACKET**) from Echo360 or your dealer. This kit contains two mounting brackets and eight screws.
- Eight pan-head screws with a 1/2" (12.5mm) or 5/8" (7.9mm) diameter body, at least 3/4" (19mm) long. You must use a screw with a pan-head that is at least 1/2" (12.5mm) in diameter, or a smaller screw head with a suitable panel washer. You will need two screws for each bracket.

Installation

1. Remove the four plastic "stacking" feet from the bottom of the unit. Each foot is secured with one screw. You will not need the screws and feet for this mounting configuration but may wish to save them.



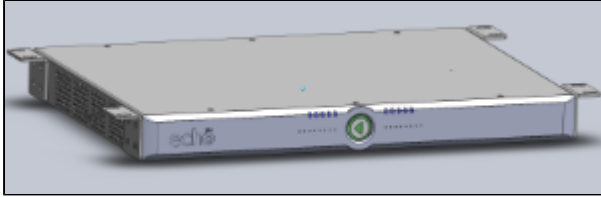
2. Place the capture appliance on a flat surface, facing front.
3. Remove eight screws from each side of the appliance: four from the front and four from the rear. You will not need the screws for this mounting configuration but may wish to save them.



4. Find the eight long screws in the rack mount kit and the eight long screws in the Secondary Rack Mounting Bracket Kit. Use these long screws to attach one mounting bracket to each corner.



- Compare the finished capture appliance with the picture. In this example, the mounting brackets are parallel with the top panel of the appliance. The mounting brackets can also be parallel with the bottom panel.



- Mount the capture appliance. Use both screw holes in each of the brackets to ensure that the appliance is securely mounted. Use the eight 5/16" screws (and optional washers).

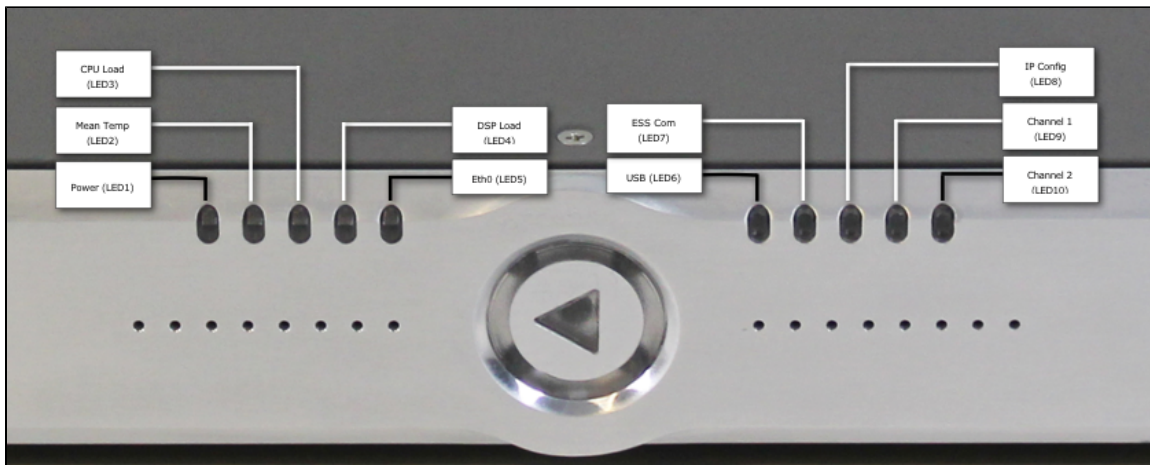
About the LEDs on the EchoSystem SafeCapture HD

In this section:

- [Overview](#)
- [Descriptions of the LEDs](#)

Overview

The front of the EchoSystem SafeCapture HD has 10 LEDs, as shown in the figure below. Each of the LEDs is described in more detail in the following section.



Each LED can display different colors (blue, green, yellow, orange, red). Some also blink. The colors and blinking indicate different states, as shown below.

Power (LED1)	Mean Temp (LED2)	CPU Load (LED3)	DSP Load (LED4)	eth0 (LED5)	(◀)	USB (LED6)	ESS Com (LED7)	IP Config (LED8)	Channel 1 (LED9)	Channel 2 (LED10)
ON	< 5°C	< 40%	< 40%	IFUP +GbE	Idle	No device	Positive	IP with DHCP	DVI-D	DVI-D
	5-39°C	41-60 %	41-60 %	IFUP +10/100	Recording	Storage device	Negative	IP with Static	DVI-A	DVI-A
	40-49°C	61-74%	61-74%	*IFUP-LINK*	*Restarting Binaries*	Non-storage device		IP not assigned	Composite-V	Composite-V
	50-59°C	75-84%	75-84%	IFDOWN		*Serial Emulation*			No signal	No signal
	>60°C	89-95%	89-95%							
		> 95%	*> 95%*							

Asterisks Indicates a Blinking LED

In the table, some text is demarcated by asterisks (example: *>95%*). The asterisks mean that the LED blinks.

The color of the text matches the LED blink color. For example, the CPU Load light blinks white when the CPU load is above 95 percent. This is shown in the table by the white ">95%*" text.

Descriptions of the LEDs

Each of the LEDs on the front of the SafeCapture HD device is described below. The LEDs are numbered 1 through 10, from left to right as you are looking at the front of the device.

Power (LED1). Indicates the power state of the appliance. Depending on the model of SafeCapture HD, this light can indicate the following:

- In SafeCapture HD models with serial numbers containing PHB or later, this light is connected to the power supply and indicates that there is power to the device and the power switch is turned on. If the light is off, the device is not receiving power and may have a blown fuse. See [Troubleshoot the SafeCapture HD Power Supply](#) for more information on checking and replacing fuses.
- In SafeCapture HD models with serial numbers PHA and earlier (for example, PGH), the light is active only when the unit starts (boots up).

Mean Temp (LED2). Indicates the mean internal temperature of the appliance, based on measurements from seven on-board sensors.

Action Required

The Mean Temp indicator blinks rapid-white if any internal sensor detects a component over its rated temperature. Cool the appliance immediately:

- Ensure that all the exhaust fans and intakes on either side of the appliance have ample clearance.
- Provide sufficient ventilation to enclosed spaces containing an appliance, such as podia and equipment closets. Heat accumulates in enclosed spaces.
- Use the provided rack-mounting hardware to mount the appliance in an enclosure designed for professional-grade electronics.
- Relocate the appliance to an open air environment if the enclosed space cannot provide appropriate ventilation.

CPU Load (LED3). Indicates the total percentage load of the central processing unit (CPU).

DSP Load (LED4). Indicates the combined total percentage load of the channel-1 and channel-2 digital signal processors (DSPs). This light is not active. It will almost always be blue.

Eth0 (LED5). Indicates the interface and link state of the appliance's Ethernet port.

Echo360 logo. The round Echo360 logo between the two LED sets shows capture worker status.

USB (LED6). Indicates the state, if any, of devices connected to the appliance's USB port.

ESS Com (LED7). Indicates the state of the appliance's communications connectivity with the ESS.

IP Config (LED8). Indicates the state of the appliance's IP configuration.

Channel 1 (LED9). Indicates the status and type of signal(s) present on input channel 1.

Channel 2 (LED10). Indicates the status and type of signal(s) present on input channel 2.

When more than one signal is present on Channel 1 or Channel 2, the indicators will alternate between the colors representing those signals while the device is idle. While the device is recording, only the recorded signal's color is lit.

Audio Bare Wire Block Diagram for the EchoSystem SafeCapture HD

In this section:

- [Wire Block Connections](#)

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

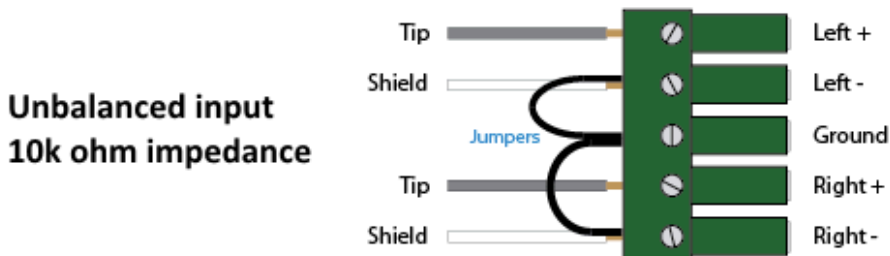
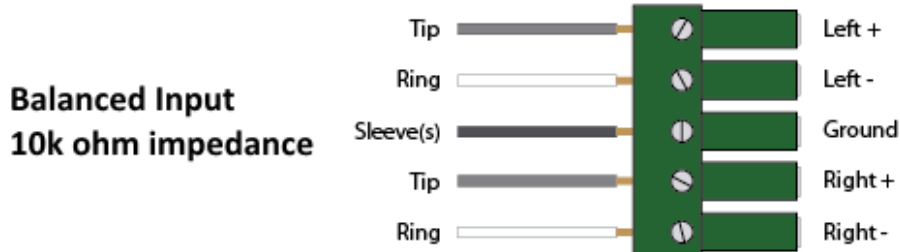
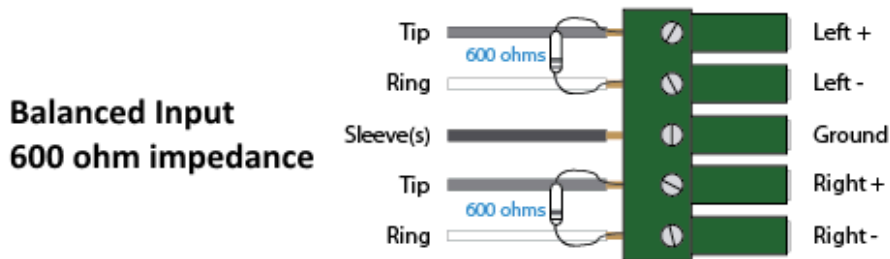
The generic term "capture appliance" refers to either or both appliances.

Wire Block Connections

The diagram below shows the proper cabling for:

- Balanced input - with 600 ohm input impedance
- Balanced input - with high input impedance
- Unbalanced input - with high input impedance

Connecting the Phoenix Audio Connector



Troubleshoot the SafeCapture HD Power Supply

In this section:

- [Overview](#)
- [Remove and Inspect the Fuse Block](#)
- [Check for Improper Assembly](#)

Overview

In some cases, the SafeCapture HD does not work after installation or stops working after maintenance.

If none of the LED lights are illuminated (not even the green LED), the problem usually relates to the power source or power supply. In most cases, the problem is a loose or improperly installed fuse.

If you are having a power source problem, verify that the fuse is properly installed.

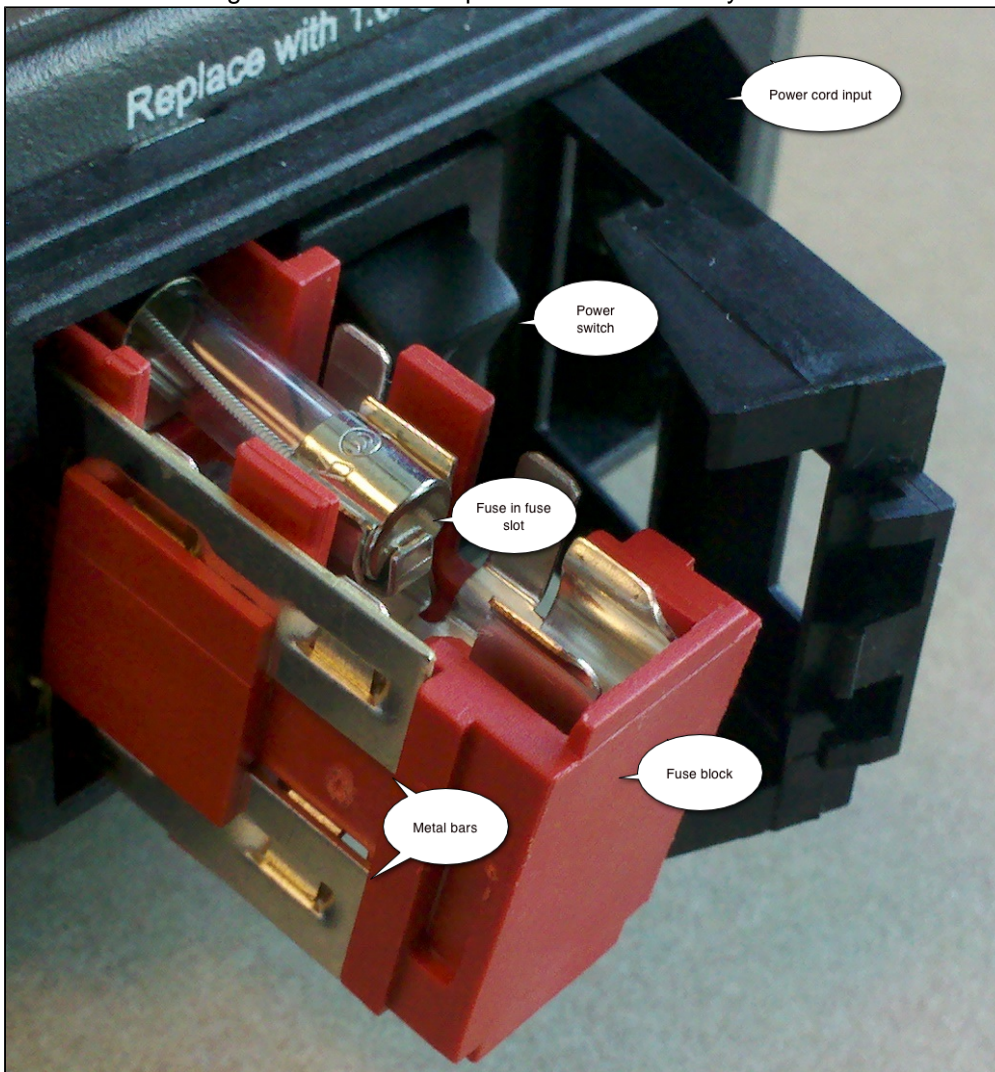
⊖ Disconnect the Power to the SCHD

Before beginning any work on the SafeCapture HD, turn the power switch off and unplug the device.

Remove and Inspect the Fuse Block

The fuse block for the SafeCapture HD is a red plastic block that resides next to the power switch in the power switch assembly on the back of the device. Follow these steps to remove the fuse block and verify the fuse is installed correctly.

1. Open the cover to the fuse block using either your fingers or a flat-head screwdriver. The picture below shows the fuse block being removed from the power switch assembly.



2. As you remove the fuse block, note of the positions of the following items:
 - The fuse resides in the top of the fuse block
 - The horizontal metal bars, shown on the left side of the fuse block in the picture above, are on the side away from the power switch and power cord connection.
3. Once the fuse block has been removed from the SafeCapture HD, check for [improper assembly of the fuse](#)

[block](#). The picture below shows a fuse block with the fuse installed correctly. Notice that:

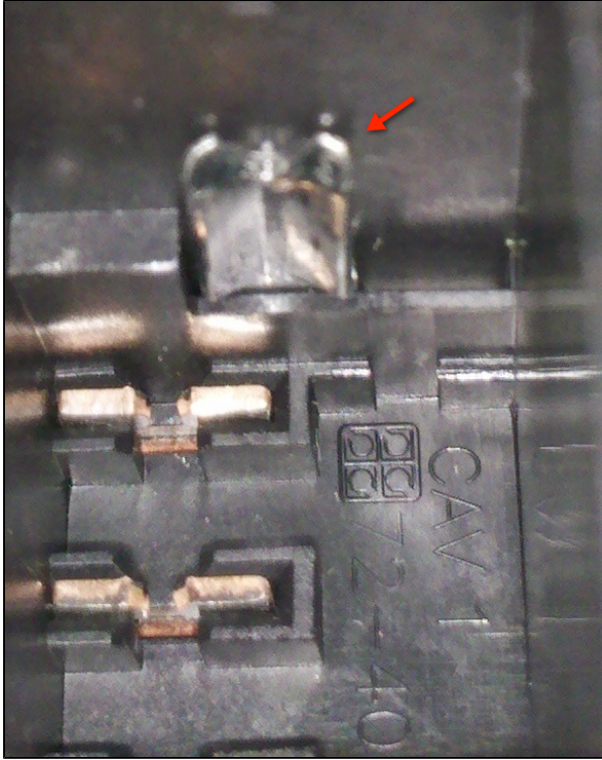
- The "inside" end of the fuse block (the end positioned closest to the front of the SafeCapture HD), has flat metal prongs, similar to those on a power cord. These prongs plug into the key for the fuse block inside the power switch assembly.
- The slot for the fuse may be longer than the fuse you are using. The fuse block is designed to work with two different types of fuses, of different lengths. The picture below shows the shorter fuse.



- The fuse is placed in the slot so that one end of the fuse is located at the pronged end of the fuse slot. This is the end of the fuse block inserted into the SafeCapture HD first.
- Underneath the "inside" or pronged end of the fuse slot is a metal contact. This is not an electrical contact. It is a spring that provides tension against the fuse from underneath.



4. Notice the electrically-active contact on the inside of the switch assembly. When the fuse block is placed inside the power switch assembly of the SafeCapture HD, this spring presses the fuse against it. This helps ensure constant contact with the fuse. The picture below shows the electrical contact inside the power switch assembly within the device. The power switch (not shown) is to the right.



5. Once you have finished inspecting, and if necessary, fixing the fuse block, re-insert the fuse block into the power switch assembly, using the position points noted above.

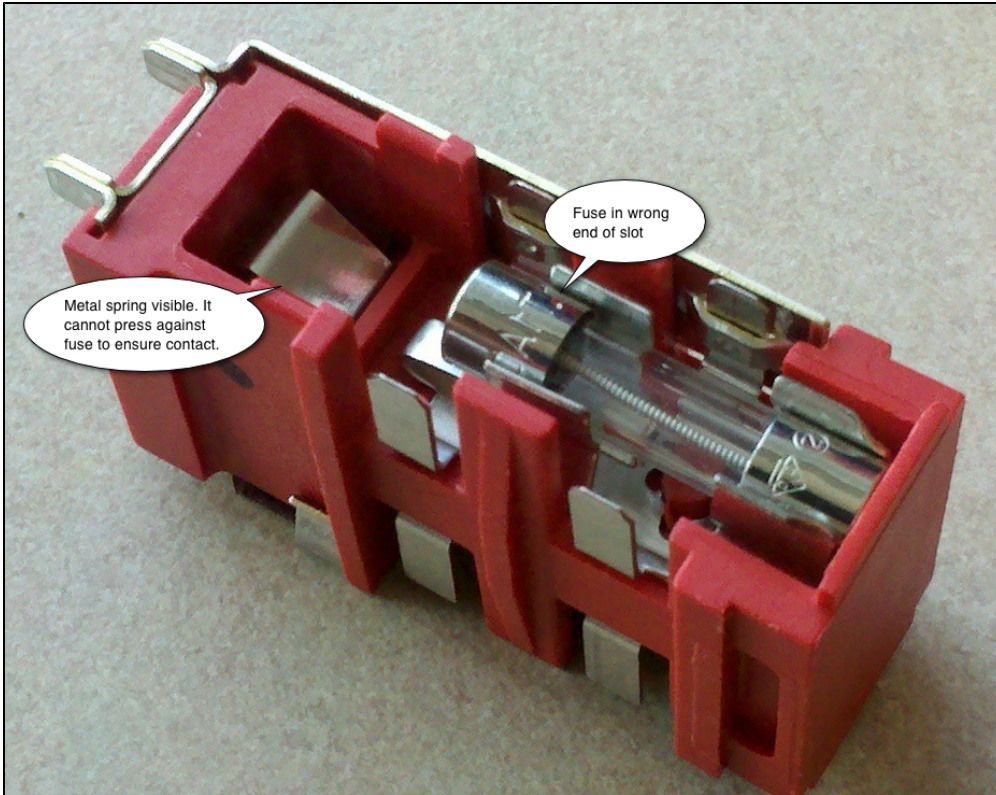
i If You Still Don't Have Power

If you still don't have power, you have probably inserted the fuse block incorrectly. This will not cause permanent damage to the SafeCapture HD, but you will not receive power until the fuse and fuse block are installed properly.

Check for Improper Assembly

Fuse Not Properly Placed in Fuse Slot

The fuse slot is designed to accommodate two different size fuses. One is longer than the other. If you have the shorter fuse, it may be installed at the wrong end of the fuse slot. The fuse will snap in as you expect, but because the inside end of the fuse is not in contact with the metal spring, it is not being pressed against the electrical contact inside the power switch assembly. The picture below shows a fuse improperly installed into the fuse slot.



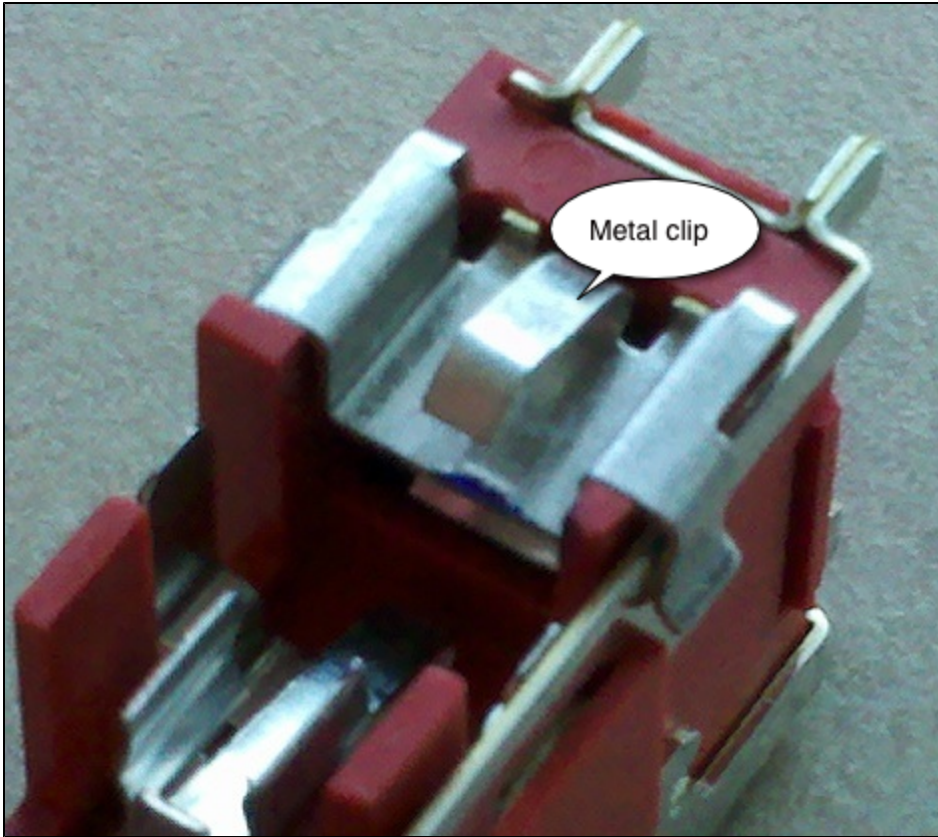
Notice that:

- The left end of the fuse is not located at the pronged end of the fuse block.
- The metal spring is visible. If it is visible, it will not press the fuse against the electrical contact inside the power switch assembly.

If this is the problem, remove the fuse and re-insert it into the fuse block, placing one end of the fuse at the pronged end of the fuse block.

Missing Metal Clip

If you flip over the fuse block to view the underside (the side opposite the fuse slot), you should see a metal clip, as shown in the picture below.



The clip is required to complete the electrical circuit. While the clip is typically well-secured to the fuse block, it is possible to accidentally knock it loose while handling the fuse block. If this clip is missing, you will not get any power to the device, although the device is not harmed.

Re-attach the clip to the fuse block. Place the clip at the pronged end of the underside of the fuse block, with the open end facing away from the prongs, as shown in the picture above. It should snap into place. This clip resides on the bottom of the fuse block and cannot be clipped onto the top (fuse side) of the fuse block.

EchoSystem SafeCapture HD Safety and Regulations

In this section:

- [Safety Symbols](#)
- [Important Safety Instructions](#)
- [Regulatory Compliance Information](#)

i Capture Appliances





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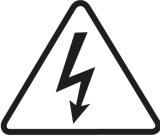


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The generic term "capture appliance" refers to either or both appliances.

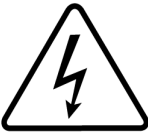

Safety Symbols

Symbol	Description
	The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

Important Safety Instructions


Notification Symbol	Description of Hazard
  	<p>This appliance has been designed and manufactured to assure personal safety. Improper use can result in electric shock or fire hazard. The safeguards incorporated in this appliance will protect you if you observe the following procedures for installation, use, and servicing. This unit does not contain any parts that can be repaired by the user.</p>

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. If you see smoke coming from the appliance or if the appliance gives off an unusual odor, immediately disconnect the power cord from the wall outlet. Failing to disconnect the power risks fire. Make sure the smoke or odor dissipates. Then contact Echo360 or your dealer for evaluation and repair.
16. If you are concerned about the safety or integrity of the appliance:
 - a. Disconnect the power cord from the wall outlet
 - b. Contact Echo360 or your dealer for evaluation and repair

Notification Symbol	Description of Hazard
	<p>If any electrical issue is suspected or found, disconnect the appliance from AC mains power by unplugging the power cord from the wall socket and the appliance. Turning off the power switch does not completely isolate the device from AC mains power.</p> 

Rack Mount Installation

- **Elevated Operating Ambient Temperatures.** If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the room ambient. Make sure the rack environment is no warmer than the maximum ambient temperature specified by Echo360.
- **Reduced Air Flow.** Make sure the rack environment has sufficient air flow.
- **Mechanical Loading.** Mount the appliance evenly and securely.
- **Circuit Overloading.** Do not overload the supply circuit. Overloading can compromise overcurrent protection and supply wiring. Adhere to the ratings on the equipment nameplates.
- **Reliable Earthing.** Reliable earthing should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

 The maximum allowable operating temperature of the SafeCapture HD device is 50°C/122°F. Be sure to install the device in a location where the temperature around the unit does not exceed this limit. If operated in an environment where temperatures exceed this limit, the unit may overheat and malfunction permanently.

Regulatory Compliance Information

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a non-residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the appliance and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult Echo360, your dealer, or an experienced radio/TV technician for help.

To assure continued compliance, follow the provided installation instructions and use only shielded interface cables when connecting to peripheral devices.

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, and (2) this device must accept any interference received, including interference that may cause undesired operation. See instructions if interference to radio or television reception is suspected.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes: (1) il ne doit pas produire de brouillage et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage est susceptible de compromettre le fonctionnement du dispositif.

Changes or modifications made to this equipment, not expressly approved by Echo360 or parties authorized by Echo360, could void the user's authority to operate the equipment.

Radio and Television Interference

This equipment generates, uses, and can radiate radio-frequency energy. If it is not installed and used in accordance with instructions provided by Echo360, it may cause interference with radio and television reception.


This equipment has been tested and found to comply with the limits for a Class A digital device in accordance with the specification in Part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in an installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether this appliance is causing interference by unplugging the device. If the interference stops, it was probably caused by the equipment.

If this equipment does cause interference to radio or television receptions, try one or more of the following techniques:

- Turn the radio or television antenna until the interference stops.
- Change the orientation of the appliance relative to the radio or television.
- Move the appliance farther away from the radio or television.
- Plug the appliance into an electrical outlet that is on a different circuit from the radio or television.

If necessary, consult an experienced radio/television technician for additional suggestions.

 Changes or modifications to this appliance that are not authorized by Echo360, Inc. could void the EMC compliance and negate your authority to operate the appliance.

This appliance has demonstrated EMC compliance when using shielded cables (including Ethernet cables) between system components to reduce the possibility of causing interference to other electronic devices.

Disposal and Recycling

This equipment uses a long-life battery to maintain memory settings. The battery may not need to be replaced during the life of the appliance.

If the battery does need to be replaced, please refer servicing to Echo360 or your dealer.

Do not dispose of this appliance with normal household or light commercial waste. Contact your local waste disposal agency for advice.

EchoSystem SafeCapture HD Product Specifications


In this section:

- [Deployment Options](#)
- [Software Required](#)
- [Display](#)
- [Video](#)
- [Audio](#)
- [Package Options](#)
- [Signal Processing and Encoding](#)
- [General](#)
- [Agency Certifications](#)
- [Appliance Display Resolutions](#)

Deployment Options

- Mount in a standard 19" A/V rack

- Set on a tabletop or shelf
- Mount directly to a surface within a podium

 The maximum allowable operating temperature of the SafeCapture HD device is 50°C/122°F. Be sure to install the device in a location where the temperature around the unit does not exceed this limit. If operated in an environment where temperatures exceed this limit, the unit may overheat and malfunction permanently.

Software Required

- EchoSystem (ESS) 4.0 or higher

Display

- Capture full-motion output from any VGA, DVI or HDMI-enabled device, including document cameras, electronic whiteboards, and computers.
- Full-motion encoding records applications, annotations, embedded video, and animations.
- Capture input resolutions from 640x480 to 1920x1080. See [Appliance Display Resolutions](#).
- High performance encoding engine provides H.264-encoded output at 30fps at any resolution and bitrates from 240 kbps to 3.2 Mbps.
- All input aspect ratios supported, encoded to either Normal (4:3) or Wide (16:9/16:10) output.
- Digital or analog input via DVI-I connector, passively adaptable to VGA or HDMI input.
- Primary display input can alternatively be used as a secondary video input and will thus support the same video characteristics shown below.

Video

- Digital (HDMI, DVI) or Analog (composite) video input
- NTSC or PAL support
- Capture input resolutions from QCIF to Full D1 and to HD-1080p
- Provides H.264-encoded output with configurable frame rates from 1fps to 30fps, and bit rates from 120kbps to 3.2Mbps
- Primary video input can alternatively be used as a secondary display input and will thus support the same display characteristics shown above.



Recommendation for Composite Sources

It is recommended to configure your composite source to provide 4:3 input.

Audio

- Audio encoding in stereo, mixed-mono, or mono
- Audio capture in AAC, sampled at 22kHz or 44kHz, encoded at bit rates from 32kbps to 128kbps CBR
- Options for Pro-level (+4dBu/1.228Vrms/1.737Vpk) or Consumer-level (-10dBv/0.316Vrms/0.447Vpk) signals
- Pro Line-level audio input with bare wire termination for direct wiring of stereo Balanced (non-powered) or UnBalanced audio
- Consumer Line-level audio input with stereo RCA connector
- Digital audio via in-band HDMI or DVI sources supported

Package Options

These packaging options produce viewable media for students:

- **Podcast.** MP3 audio

- **Vodcast.** M4V audio and motion display
- **Audio Rich Media.** Flash-based audio and display (browser)
- **EchoPlayer.** Flash-based audio, video and display (browser)

Signal Processing and Encoding

Signal pre-processing includes decimation, automatic de-interlacing, and noise reduction.

General

- Dimensions: 431mm wide x 317mm deep x 44mm/1RU tall (without mounting options).
- Meets global standards for ROHS 6/6 compliance.
- Multiple internal temperature sensors with temperature-dependent variable speed forced-air cooling.
- Removable, cleanable air filtration.
- World-compatible direct AC connection. Input voltage: 90-240vAC 50/60Hz, using an IEC320-C13 cable.
- Power and heat: 62 watts (212 BTU/hr) max, 50 watts (171 BTU/hr) during capture.

Agency Certifications

- UL 60065, 7th Edition, 2006-11-20
- FCC CFR47 Parts 15:107/15:109

Appliance Display Resolutions

The table below lists all of the available appliance display resolutions.

- **DMT:** Display Monitor Timing lists standard display timings for various resolutions and screen sizes
- **GTF:** Generalized Timing Formula is a video timings standard
- **CVT:** Coordinated Video Timings (CVT) is a replacement for GTF
- **CVTRB:** Video Timings-Reduced Blanking is a VESA standard which offers reduced horizontal and vertical blanking for non-CRT based displays

You can download the table below as a [spreadsheet](#) (86 KB).

Horizontal	Vertical	FPS	Standard
640	350	85	DMT
640	400	85	DMT
720	400	85	DMT
640	480	60	none
640	480	72	DMT
640	480	75	DMT
640	480	85	DMT
800	600	56	DMT

800	600	60	DMT
800	600	72	DMT
800	600	75	DMT
800	600	85	DMT
848	480	60	DMT
1024	768	60	DMT
1024	768	70	DMT
1024	768	75	DMT
1024	768	85	DMT
1152	864	75	DMT
1280	960	60	DMT
1280	960	85	DMT
1280	1024	60	DMT
1280	1024	75	DMT
1280	1024	85	DMT
1360	768	60	DMT
1600	1200	60	DMT
640	400	60	GTF
640	400	70	GTF
640	400	72	GTF
640	400	75	GTF
640	400	85	GTF
640	480	60	GTF
640	480	70	GTF

640	480	72	GTF
640	480	75	GTF
640	480	85	GTF
800	500	60	GTF
800	500	70	GTF
800	500	72	GTF
800	500	75	GTF
800	500	85	GTF
640	512	60	GTF
640	512	60	GTF
640	512	70	GTF
640	512	72	GTF
640	512	75	GTF
640	512	85	GTF
720	540	60	GTF
720	540	70	GTF
720	540	72	GTF
720	540	75	GTF
720	540	85	GTF
720	576	60	GTF
720	576	70	GTF
720	576	72	GTF
720	576	75	GTF
720	576	85	GTF

800	600	60	GTF
800	600	60	GTF
800	600	70	GTF
800	600	72	GTF
800	600	75	GTF
800	600	85	GTF
800	640	60	GTF
800	640	70	GTF
800	640	72	GTF
800	640	75	GTF
800	640	85	GTF
1280	720	60	GTF
1280	720	70	GTF
1280	720	72	GTF
1280	720	75	GTF
1280	720	85	GTF
1280	800	60	GTF
1280	800	70	GTF
1280	800	72	GTF
1280	800	75	GTF
1280	800	85	GTF
1600	900	60	GTF
1600	900	70	GTF
1600	900	72	GTF

1600	900	75	GTF
1280	960	60	GTF
1280	960	70	GTF
1280	960	72	GTF
1280	960	75	GTF
1280	960	85	GTF
1600	1000	60	GTF
1600	1000	70	GTF
1600	1000	72	GTF
1360	1020	60	GTF
1280	1024	60	GTF
1360	1020	70	GTF
1360	1020	72	GTF
1360	1020	75	GTF
1280	1024	70	GTF
1280	1024	72	GTF
1280	1024	75	GTF
1280	1024	85	GTF
1360	1088	60	GTF
1360	1088	70	GTF
1360	1088	72	GTF
1360	1088	75	GTF
1400	1120	60	GTF
1400	1120	70	GTF

1400	1120	72	GTF
1440	1152	60	GTF
1440	1152	70	GTF
1600	1200	60	GTF
512	384	60	CVT
640	384	60	CVT
608	380	75	CVT
512	384	70	CVT
640	384	70	CVT
608	380	85	CVT
512	384	70	CVT
640	384	70	CVT
512	384	75	CVT
640	384	75	CVT
696	392	50	CVT
512	384	85	CVT
640	384	85	CVT
696	392	60	CVT
528	396	50	CVT
704	396	50	CVT
696	392	70	CVT
696	392	75	CVT
528	396	60	CVT
704	396	60	CVT

640	400	50	CVT
696	392	85	CVT
528	396	70	CVT
704	396	70	CVT
528	396	75	CVT
704	396	75	CVT
640	400	60	CVT
640	400	70	CVT
528	396	85	CVT
704	396	85	CVT
640	400	75	CVT
544	408	50	CVT
680	408	50	CVT
640	400	85	CVT
544	408	60	CVT
680	408	60	CVT
544	408	70	CVT
680	408	70	CVT
544	408	75	CVT
680	408	75	CVT
520	416	50	CVT
544	408	85	CVT
680	408	85	CVT
520	416	60	CVT

560	420	50	CVT
672	420	50	CVT
520	416	70	CVT
560	420	60	CVT
672	420	60	CVT
520	416	75	CVT
560	420	70	CVT
672	420	70	CVT
520	416	85	CVT
560	420	75	CVT
672	420	75	CVT
760	428	50	CVT
560	420	85	CVT
672	420	85	CVT
760	428	60	CVT
576	432	50	CVT
768	432	50	CVT
720	432	50	CVT
760	428	70	CVT
576	432	60	CVT
768	432	60	CVT
720	432	60	CVT
760	428	75	CVT
576	432	70	CVT

768	432	70	CVT
720	432	70	CVT
760	428	85	CVT
576	432	75	CVT
768	432	75	CVT
720	432	75	CVT
704	440	50	CVT
576	432	85	CVT
768	432	85	CVT
720	432	85	CVT
704	440	60	CVT
592	444	50	CVT
704	440	70	CVT
592	444	60	CVT
704	440	75	CVT
560	448	50	CVT
592	444	70	CVT
704	440	85	CVT
560	448	60	CVT
592	444	75	CVT
560	448	70	CVT
592	444	85	CVT
560	448	75	CVT
608	456	50	CVT

760	456	50	CVT
560	448	85	CVT
608	456	60	CVT
760	456	60	CVT
736	460	50	CVT
608	456	70	CVT
760	456	70	CVT
736	460	60	CVT
608	456	75	CVT
760	456	75	CVT
824	464	50	CVT
608	456	85	CVT
760	456	85	CVT
736	460	70	CVT
608	456	85	CVT
760	456	85	CVT
824	464	60	CVT
736	460	75	CVT
624	468	50	CVT
832	468	50	CVT
824	464	70	CVT
736	460	85	CVT
624	468	60	CVT
832	468	60	CVT

824	464	75	CVT
624	468	70	CVT
832	468	70	CVT
824	464	85	CVT
624	468	75	CVT
832	468	75	CVT
624	468	85	CVT
832	468	85	CVT
640	480	50	CVT
768	480	50	CVT
800	480	50	CVT
640	480	60	CVT
768	480	60	CVT
800	480	60	CVT
640	480	60	CVT
768	480	60	CVT
800	480	60	CVT
640	480	70	CVT
768	480	70	CVT
800	480	70	CVT
640	480	75	CVT
768	480	75	CVT
800	480	75	CVT
640	480	85	CVT

768	480	85	CVT
800	480	85	CVT
656	492	50	CVT
656	492	60	CVT
656	492	70	CVT
656	492	75	CVT
888	500	50	CVT
800	500	50	CVT
656	492	85	CVT
888	500	60	CVT
800	500	60	CVT
672	504	50	CVT
896	504	50	CVT
840	504	50	CVT
888	500	70	CVT
800	500	70	CVT
672	504	60	CVT
896	504	60	CVT
840	504	60	CVT
888	500	75	CVT
800	500	75	CVT
672	504	70	CVT
896	504	70	CVT
840	504	70	CVT

888	500	85	CVT
800	500	85	CVT
672	504	75	CVT
896	504	75	CVT
840	504	75	CVT
640	512	50	CVT
672	504	85	CVT
896	504	85	CVT
840	504	85	CVT
640	512	60	CVT
688	516	50	CVT
640	512	70	CVT
688	516	60	CVT
640	512	75	CVT
832	520	50	CVT
688	516	70	CVT
640	512	85	CVT
832	520	60	CVT
688	516	75	CVT
832	520	70	CVT
688	516	85	CVT
832	520	75	CVT
704	528	50	CVT
880	528	50	CVT

832	520	75	CVT
704	528	60	CVT
880	528	60	CVT
832	520	85	CVT
704	528	70	CVT
880	528	70	CVT
952	536	50	CVT
704	528	75	CVT
880	528	75	CVT
952	536	60	CVT
704	528	85	CVT
880	528	85	CVT
720	540	50	CVT
960	540	50	CVT
864	540	50	CVT
952	536	70	CVT
680	544	50	CVT
720	540	60	CVT
960	540	60	CVT
864	540	60	CVT
952	536	75	CVT
720	540	70	CVT
960	540	70	CVT
864	540	70	CVT

952	536	85	CVT
680	544	60	CVT
720	540	75	CVT
960	540	75	CVT
864	540	75	CVT
680	544	70	CVT
720	540	85	CVT
960	540	85	CVT
864	540	85	CVT
736	552	50	CVT
920	552	50	CVT
680	544	75	CVT
736	552	60	CVT
920	552	60	CVT
680	544	85	CVT
736	552	70	CVT
920	552	70	CVT
896	560	50	CVT
736	552	75	CVT
920	552	75	CVT
896	560	60	CVT
736	552	85	CVT
920	552	85	CVT
752	564	50	CVT

752	564	60	CVT
896	560	70	CVT
896	560	75	CVT
752	564	70	CVT
1016	572	50	CVT
752	564	75	CVT
896	560	85	CVT
768	576	50	CVT
1024	576	50	CVT
960	576	50	CVT
1016	572	60	CVT
752	564	85	CVT
1016	572	70	CVT
928	580	50	CVT
768	576	60	CVT
1024	576	60	CVT
960	576	60	CVT
928	580	50	CVT
1016	572	75	CVT
768	576	70	CVT
1024	576	70	CVT
960	576	70	CVT
928	580	60	CVT
1016	572	85	CVT

768	576	75	CVT
1024	576	75	CVT
960	576	75	CVT
928	580	70	CVT
768	576	85	CVT
1024	576	85	CVT
960	576	85	CVT
784	588	50	CVT
928	580	75	CVT
784	588	60	CVT
928	580	85	CVT
784	588	70	CVT
784	588	75	CVT
800	600	50	CVT
960	600	50	CVT
1000	600	50	CVT
784	588	85	CVT
800	600	60	CVT
960	600	60	CVT
1000	600	60	CVT
800	600	70	CVT
960	600	70	CVT
1000	600	70	CVT
1080	608	50	CVT

760	608	50	CVT
800	600	75	CVT
960	600	75	CVT
1000	600	75	CVT
816	612	50	CVT
1088	612	50	CVT
1080	608	60	CVT
760	608	60	CVT
800	600	85	CVT
960	600	85	CVT
1000	600	85	CVT
1080	608	70	CVT
760	608	70	CVT
816	612	60	CVT
1088	612	60	CVT
1080	608	75	CVT
760	608	75	CVT
816	612	70	CVT
1088	612	70	CVT
992	620	50	CVT
816	612	75	CVT
1088	612	75	CVT
1080	608	85	CVT
760	608	85	CVT

992	620	60	CVT
832	624	50	CVT
1040	624	50	CVT
816	612	85	CVT
1088	612	85	CVT
832	624	60	CVT
1040	624	60	CVT
992	620	70	CVT
992	620	75	CVT
832	624	70	CVT
1040	624	70	CVT
832	624	75	CVT
1040	624	75	CVT
992	620	85	CVT
848	636	50	CVT
832	624	85	CVT
1040	624	85	CVT
1024	640	50	CVT
800	640	50	CVT
848	636	60	CVT
1144	644	50	CVT
1024	640	60	CVT
800	640	60	CVT
848	636	70	CVT

848	636	75	CVT
848	636	75	CVT
864	648	50	CVT
1152	648	50	CVT
1080	648	50	CVT
1144	644	60	CVT
1024	640	70	CVT
800	640	70	CVT
848	636	85	CVT
1024	640	75	CVT
800	640	75	CVT
864	648	60	CVT
1152	648	60	CVT
1080	648	60	CVT
1144	644	70	CVT
1144	644	75	CVT
1024	640	85	CVT
800	640	85	CVT
864	648	70	CVT
1152	648	70	CVT
1080	648	70	CVT
864	648	75	CVT
1152	648	75	CVT
1080	648	75	CVT

1144	644	85	CVT
880	660	50	CVT
1056	660	50	CVT
864	648	85	CVT
1152	648	85	CVT
1080	648	85	CVT
880	660	60	CVT
1056	660	60	CVT
880	660	70	CVT
1056	660	70	CVT
880	660	75	CVT
1056	660	75	CVT
896	672	50	CVT
1120	672	50	CVT
880	660	85	CVT
1056	660	85	CVT
880	660	85	CVT
1056	660	85	CVT
896	672	60	CVT
1120	672	60	CVT
1208	680	50	CVT
1088	680	50	CVT
896	672	70	CVT
1120	672	70	CVT

896	672	75	CVT
1120	672	75	CVT
912	684	50	CVT
1216	684	50	CVT
1208	680	60	CVT
1088	680	60	CVT
896	672	85	CVT
1120	672	85	CVT
912	684	60	CVT
1216	684	60	CVT
1208	680	70	CVT
1088	680	70	CVT
1208	680	75	CVT
1088	680	75	CVT
912	684	70	CVT
1216	684	70	CVT
912	684	70	CVT
1216	684	70	CVT
1208	680	85	CVT
1088	680	85	CVT
912	684	75	CVT
1216	684	75	CVT
1208	680	85	CVT
1088	680	85	CVT

928	696	50	CVT
1160	696	50	CVT
912	684	85	CVT
1216	684	85	CVT
1120	700	50	CVT
928	696	60	CVT
1160	696	60	CVT
880	704	50	CVT
1120	700	60	CVT
928	696	70	CVT
1160	696	70	CVT
928	696	75	CVT
1160	696	75	CVT
944	708	50	CVT
880	704	60	CVT
1120	700	70	CVT
1120	700	75	CVT
928	696	85	CVT
1160	696	85	CVT
944	708	60	CVT
880	704	70	CVT
880	704	75	CVT
1120	700	85	CVT
1120	700	85	CVT

1272	716	50	CVT
944	708	70	CVT
944	708	75	CVT
880	704	85	CVT
960	720	50	CVT
1280	720	50	CVT
1152	720	50	CVT
1200	720	50	CVT
1272	716	60	CVT
944	708	85	CVT
960	720	60	CVT
1280	720	60	CVT
1152	720	60	CVT
1200	720	60	CVT
1272	716	70	CVT
1272	716	75	CVT
960	720	70	CVT
1280	720	70	CVT
1152	720	70	CVT
1200	720	70	CVT
960	720	75	CVT
1280	720	75	CVT
1152	720	75	CVT
1200	720	75	CVT

1272	716	85	CVT
976	732	50	CVT
960	720	85	CVT
1280	720	85	CVT
1152	720	85	CVT
1200	720	85	CVT
920	736	50	CVT
976	732	60	CVT
1184	740	50	CVT
920	736	60	CVT
976	732	70	CVT
976	732	75	CVT
992	744	50	CVT
1240	744	50	CVT
1184	740	60	CVT
920	736	70	CVT
920	736	75	CVT
976	732	85	CVT
992	744	60	CVT
1240	744	60	CVT
992	744	60	CVT
1240	744	60	CVT
1184	740	70	CVT
1184	740	75	CVT

920	736	85	CVT
1336	752	50	CVT
992	744	70	CVT
1240	744	70	CVT
992	744	75	CVT
1240	744	75	CVT
1184	740	85	CVT
1008	756	50	CVT
1344	756	50	CVT
1336	752	60	CVT
992	744	85	CVT
1240	744	85	CVT
1216	760	50	CVT
1008	756	60	CVT
1344	756	60	CVT
1336	752	70	CVT
1336	752	75	CVT
1336	752	75	CVT
1216	760	60	CVT
1008	756	70	CVT
1344	756	70	CVT
1008	756	75	CVT
1344	756	75	CVT
1336	752	85	CVT

1024	768	50	CVT
1280	768	50	CVT
1216	760	70	CVT
1216	760	75	CVT
1008	756	85	CVT
1344	756	85	CVT
1024	768	60	CVT
1280	768	60	CVT
1216	760	85	CVT
1024	768	70	CVT
1280	768	70	CVT
1024	768	75	CVT
1280	768	75	CVT
1040	780	50	CVT
1248	780	50	CVT
1024	768	85	CVT
1280	768	85	CVT
1040	780	60	CVT
1248	780	60	CVT
1400	788	50	CVT
1040	780	70	CVT
1248	780	70	CVT
1056	792	50	CVT
1408	792	50	CVT

1320	792	50	CVT
1040	780	75	CVT
1248	780	75	CVT
1400	788	60	CVT
1040	780	85	CVT
1248	780	85	CVT
1056	792	60	CVT
1408	792	60	CVT
1320	792	60	CVT
1400	788	70	CVT
1400	788	75	CVT
1280	800	50	CVT
1000	800	50	CVT
1056	792	70	CVT
1408	792	70	CVT
1320	792	70	CVT
1056	792	75	CVT
1408	792	75	CVT
1320	792	75	CVT
1072	804	50	CVT
1280	800	60	CVT
1000	800	60	CVT
1400	788	85	CVT
1056	792	85	CVT

1408	792	85	CVT
1320	792	85	CVT
1072	804	60	CVT
1280	800	70	CVT
1000	800	70	CVT
1280	800	75	CVT
1000	800	75	CVT
1072	804	70	CVT
1088	816	50	CVT
1360	816	50	CVT
1072	804	75	CVT
1280	800	85	CVT
1000	800	85	CVT
1312	820	50	CVT
1088	816	60	CVT
1360	816	60	CVT
1072	804	85	CVT
1464	824	50	CVT
1312	820	60	CVT
1088	816	70	CVT
1360	816	70	CVT
1104	828	50	CVT
1472	828	50	CVT
1088	816	75	CVT

1360	816	75	CVT
1104	828	50	CVT
1472	828	50	CVT
1464	824	60	CVT
1312	820	70	CVT
1312	820	75	CVT
1040	832	50	CVT
1104	828	60	CVT
1472	828	60	CVT
1088	816	85	CVT
1360	816	85	CVT
1464	824	70	CVT
1040	832	60	CVT
1464	824	75	CVT
1312	820	85	CVT
1040	832	60	CVT
1104	828	70	CVT
1472	828	70	CVT
1120	840	50	CVT
1344	840	50	CVT
1400	840	50	CVT
1104	828	75	CVT
1472	828	75	CVT
1040	832	70	CVT

1464	824	85	CVT
1040	832	75	CVT
1120	840	60	CVT
1344	840	60	CVT
1400	840	60	CVT
1104	828	85	CVT
1472	828	85	CVT
1040	832	85	CVT
1120	840	70	CVT
1344	840	70	CVT
1400	840	70	CVT
1136	852	50	CVT
1120	840	75	CVT
1344	840	75	CVT
1400	840	75	CVT
1136	852	60	CVT
1120	840	85	CVT
1344	840	85	CVT
1400	840	85	CVT
1528	860	50	CVT
1376	860	50	CVT
1136	852	70	CVT
1152	864	50	CVT
1536	864	50	CVT

1440	864	50	CVT
1528	860	60	CVT
1376	860	60	CVT
1136	852	75	CVT
1152	864	60	CVT
1536	864	60	CVT
1440	864	60	CVT
1136	852	85	CVT
1528	860	70	CVT
1376	860	70	CVT
1528	860	75	CVT
1376	860	75	CVT
1152	864	70	CVT
1536	864	70	CVT
1440	864	70	CVT
1168	876	50	CVT
1152	864	75	CVT
1536	864	75	CVT
1440	864	75	CVT
1528	860	85	CVT
1376	860	85	CVT
1408	880	50	CVT
1168	876	60	CVT
1152	864	85	CVT

1536	864	85	CVT
1440	864	85	CVT
1152	864	85	CVT
1536	864	85	CVT
1440	864	85	CVT
1408	880	60	CVT
1168	876	70	CVT
1184	888	50	CVT
1480	888	50	CVT
1168	876	75	CVT
1408	880	70	CVT
1184	888	60	CVT
1480	888	60	CVT
1408	880	75	CVT
1168	876	85	CVT
1592	896	50	CVT
1120	896	50	CVT
1408	880	85	CVT
1184	888	70	CVT
1480	888	70	CVT
1200	900	50	CVT
1600	900	50	CVT
1440	900	50	CVT
1184	888	75	CVT

1480	888	75	CVT
1592	896	60	CVT
1120	896	60	CVT
1200	900	60	CVT
1600	900	60	CVT
1440	900	60	CVT
1592	896	70	CVT
1120	896	70	CVT
1184	888	85	CVT
1480	888	85	CVT
1592	896	75	CVT
1120	896	75	CVT
1200	900	70	CVT
1600	900	70	CVT
1440	900	70	CVT
1216	912	50	CVT
1520	912	50	CVT
1200	900	75	CVT
1600	900	75	CVT
1440	900	75	CVT
1120	896	85	CVT
1216	912	60	CVT
1520	912	60	CVT
1200	900	85	CVT

1440	900	85	CVT
1472	920	50	CVT
1216	912	70	CVT
1520	912	70	CVT
1232	924	50	CVT
1472	920	60	CVT
1216	912	75	CVT
1520	912	75	CVT
1472	920	60	CVT
1160	928	50	CVT
1232	924	60	CVT
1472	920	70	CVT
1216	912	85	CVT
1656	932	50	CVT
1160	928	60	CVT
1472	920	75	CVT
1232	924	70	CVT
1248	936	50	CVT
1664	936	50	CVT
1560	936	50	CVT
1656	932	60	CVT
1232	924	75	CVT
1160	928	70	CVT
1472	920	85	CVT

1504	940	50	CVT
1248	936	60	CVT
1664	936	60	CVT
1560	936	60	CVT
1160	928	75	CVT
1656	932	70	CVT
1232	924	85	CVT
1504	940	60	CVT
1656	932	75	CVT
1248	936	70	CVT
1664	936	70	CVT
1560	936	70	CVT
1160	928	85	CVT
1264	948	50	CVT
1248	936	75	CVT
1664	936	75	CVT
1560	936	75	CVT
1504	940	70	CVT
1264	948	60	CVT
1504	940	75	CVT
1248	936	85	CVT
1264	948	70	CVT
1280	960	50	CVT
1536	960	50	CVT

1600	960	50	CVT
1264	948	75	CVT
1280	960	60	CVT
1536	960	60	CVT
1600	960	60	CVT
1720	968	50	CVT
1264	948	85	CVT
1280	960	70	CVT
1536	960	70	CVT
1600	960	70	CVT
1296	972	50	CVT
1728	972	50	CVT
1720	968	60	CVT
1280	960	75	CVT
1536	960	75	CVT
1600	960	75	CVT
1296	972	60	CVT
1728	972	60	CVT
1720	968	70	CVT
1280	960	85	CVT
1568	980	50	CVT
1296	972	70	CVT
1728	972	70	CVT
1312	984	50	CVT

1640	984	50	CVT
1568	980	60	CVT
1296	972	75	CVT
1312	984	60	CVT
1640	984	60	CVT
1568	980	70	CVT
1240	992	50	CVT
1296	972	85	CVT
1568	980	75	CVT
1328	996	50	CVT
1312	984	70	CVT
1640	984	70	CVT
1240	992	60	CVT
1312	984	75	CVT
1600	1000	50	CVT
1328	996	60	CVT
1784	1004	50	CVT
1240	992	70	CVT
1312	984	85	CVT
1600	1000	60	CVT
1240	992	75	CVT
1328	996	70	CVT
1344	1008	50	CVT
1792	1008	50	CVT

1680	1008	50	CVT
1784	1004	60	CVT
1328	996	75	CVT
1600	1000	70	CVT
1240	992	85	CVT
1344	1008	60	CVT
1792	1008	60	CVT
1680	1008	60	CVT
1344	1008	60	CVT
1792	1008	60	CVT
1680	1008	60	CVT
1328	996	85	CVT
1344	1008	70	CVT
1360	1020	50	CVT
1632	1020	50	CVT
1344	1008	70	CVT
1344	1008	75	CVT
1344	1008	75	CVT
1280	1024	50	CVT
1360	1020	60	CVT
1632	1020	60	CVT
1344	1008	85	CVT
1280	1024	60	CVT
1376	1032	50	CVT

1720	1032	50	CVT
1360	1020	70	CVT
1632	1020	70	CVT
1360	1020	75	CVT
1280	1024	70	CVT
1376	1032	60	CVT
1720	1032	60	CVT
1280	1024	75	CVT
1848	1040	50	CVT
1664	1040	50	CVT
1848	1040	50	CVT
1664	1040	50	CVT
1376	1032	70	CVT
1392	1044	50	CVT
1856	1044	50	CVT
1280	1024	85	CVT
1848	1040	60	CVT
1664	1040	60	CVT
1376	1032	75	CVT
1392	1044	60	CVT
1856	1044	60	CVT
1408	1056	50	CVT
1760	1056	50	CVT
1392	1044	70	CVT

1392	1044	75	CVT
1696	1060	50	CVT
1408	1056	60	CVT
1760	1056	60	CVT
1696	1060	60	CVT
1424	1068	50	CVT
1408	1056	70	CVT
1408	1056	75	CVT
1424	1068	60	CVT
1912	1076	50	CVT
1912	1076	50	CVT
1440	1080	50	CVT
1920	1080	50	CVT
1728	1080	50	CVT
1800	1080	50	CVT
1424	1068	70	CVT
1424	1068	75	CVT
1440	1080	60	CVT
1728	1080	60	CVT
1800	1080	60	CVT
1360	1088	50	CVT
1456	1092	50	CVT
1440	1080	70	CVT
1360	1088	60	CVT

1456	1092	60	CVT
1760	1100	50	CVT
1360	1088	70	CVT
1472	1104	50	CVT
1840	1104	50	CVT
1360	1088	75	CVT
1456	1092	70	CVT
1760	1100	60	CVT
1472	1104	60	CVT
1976	1112	50	CVT
1488	1116	50	CVT
1984	1116	50	CVT
1472	1104	70	CVT
1792	1120	50	CVT
1400	1120	50	CVT
1488	1116	60	CVT
1400	1120	60	CVT
1504	1128	50	CVT
1880	1128	50	CVT
1488	1116	70	CVT
1400	1120	70	CVT
1504	1128	60	CVT
1520	1140	50	CVT
1824	1140	50	CVT

1520	1140	60	CVT
2040	1148	50	CVT
1536	1152	50	CVT
2048	1152	50	CVT
1920	1152	50	CVT
1536	1152	60	CVT
1856	1160	50	CVT
1552	1164	50	CVT
1552	1164	60	CVT
1568	1176	50	CVT
1960	1176	50	CVT
1888	1180	50	CVT
1568	1176	60	CVT
1480	1184	50	CVT
1584	1188	50	CVT
1480	1184	60	CVT
1480	1184	60	CVT
1584	1188	60	CVT
1600	1200	50	CVT
1920	1200	50	CVT
2000	1200	50	CVT
1600	1200	60	CVT
1616	1212	50	CVT
512	384	85	CVTRB

640	384	85	CVTRB
696	392	50	CVTRB
696	392	60	CVTRB
528	396	50	CVTRB
704	396	50	CVTRB
696	392	70	CVTRB
696	392	75	CVTRB
528	396	60	CVTRB
704	396	60	CVTRB
696	392	85	CVTRB
640	400	50	CVTRB
528	396	70	CVTRB
704	396	70	CVTRB
528	396	75	CVTRB
704	396	75	CVTRB
640	400	60	CVTRB
528	396	85	CVTRB
704	396	85	CVTRB
640	400	70	CVTRB
640	400	75	CVTRB
640	400	85	CVTRB
544	408	50	CVTRB
680	408	50	CVTRB
544	408	60	CVTRB

680	408	60	CVTRB
544	408	70	CVTRB
680	408	70	CVTRB
544	408	75	CVTRB
680	408	75	CVTRB
544	408	85	CVTRB
680	408	85	CVTRB
520	416	50	CVTRB
520	416	60	CVTRB
560	420	50	CVTRB
672	420	50	CVTRB
520	416	70	CVTRB
520	416	75	CVTRB
560	420	60	CVTRB
672	420	60	CVTRB
520	416	85	CVTRB
560	420	70	CVTRB
672	420	70	CVTRB
560	420	75	CVTRB
672	420	75	CVTRB
560	420	85	CVTRB
672	420	85	CVTRB
760	428	50	CVTRB
760	428	60	CVTRB

576	432	50	CVTRB
768	432	50	CVTRB
720	432	50	CVTRB
760	428	70	CVTRB
760	428	75	CVTRB
576	432	60	CVTRB
768	432	60	CVTRB
720	432	60	CVTRB
760	428	85	CVTRB
576	432	70	CVTRB
768	432	70	CVTRB
720	432	70	CVTRB
576	432	75	CVTRB
768	432	75	CVTRB
720	432	75	CVTRB
704	440	50	CVTRB
576	432	85	CVTRB
768	432	85	CVTRB
720	432	85	CVTRB
704	440	60	CVTRB
704	440	60	CVTRB
592	444	50	CVTRB
704	440	70	CVTRB
704	440	75	CVTRB

592	444	60	CVTRB
704	440	85	CVTRB
560	448	50	CVTRB
592	444	70	CVTRB
592	444	75	CVTRB
560	448	60	CVTRB
592	444	85	CVTRB
560	448	70	CVTRB
560	448	75	CVTRB
560	448	85	CVTRB
608	456	50	CVTRB
760	456	50	CVTRB
608	456	60	CVTRB
760	456	60	CVTRB
736	460	50	CVTRB
608	456	70	CVTRB
760	456	70	CVTRB
608	456	75	CVTRB
760	456	75	CVTRB
736	460	60	CVTRB
824	464	50	CVTRB
736	460	70	CVTRB
608	456	85	CVTRB
760	456	85	CVTRB

736	460	75	CVTRB
824	464	60	CVTRB
624	468	50	CVTRB
832	468	50	CVTRB
824	464	70	CVTRB
736	460	85	CVTRB
624	468	60	CVTRB
832	468	60	CVTRB
824	464	75	CVTRB
824	464	85	CVTRB
624	468	70	CVTRB
832	468	70	CVTRB
624	468	75	CVTRB
832	468	75	CVTRB
624	468	85	CVTRB
832	468	85	CVTRB
640	480	50	CVTRB
768	480	50	CVTRB
800	480	50	CVTRB
640	480	60	CVTRB
768	480	60	CVTRB
800	480	60	CVTRB
640	480	70	CVTRB
768	480	70	CVTRB

800	480	70	CVTRB
640	480	75	CVTRB
768	480	75	CVTRB
800	480	75	CVTRB
640	480	85	CVTRB
768	480	85	CVTRB
800	480	85	CVTRB
656	492	50	CVTRB
656	492	60	CVTRB
656	492	70	CVTRB
656	492	75	CVTRB
888	500	50	CVTRB
800	500	50	CVTRB
656	492	85	CVTRB
888	500	60	CVTRB
800	500	60	CVTRB
672	504	50	CVTRB
896	504	50	CVTRB
840	504	50	CVTRB
888	500	70	CVTRB
800	500	70	CVTRB
672	504	60	CVTRB
896	504	60	CVTRB
840	504	60	CVTRB

888	500	75	CVTRB
800	500	75	CVTRB
888	500	85	CVTRB
800	500	85	CVTRB
672	504	70	CVTRB
896	504	70	CVTRB
840	504	70	CVTRB
672	504	75	CVTRB
896	504	75	CVTRB
840	504	75	CVTRB
640	512	50	CVTRB
672	504	85	CVTRB
896	504	85	CVTRB
840	504	85	CVTRB
672	504	85	CVTRB
896	504	85	CVTRB
840	504	85	CVTRB
640	512	60	CVTRB
688	516	50	CVTRB
640	512	70	CVTRB
640	512	75	CVTRB
688	516	60	CVTRB
832	520	50	CVTRB
688	516	70	CVTRB

640	512	85	CVTRB
688	516	75	CVTRB
832	520	60	CVTRB
832	520	70	CVTRB
688	516	85	CVTRB
832	520	75	CVTRB
704	528	50	CVTRB
880	528	50	CVTRB
832	520	85	CVTRB
704	528	60	CVTRB
880	528	60	CVTRB
704	528	70	CVTRB
880	528	70	CVTRB
704	528	75	CVTRB
880	528	75	CVTRB
952	536	50	CVTRB
704	528	85	CVTRB
880	528	85	CVTRB
704	528	85	CVTRB
880	528	85	CVTRB
952	536	60	CVTRB
720	540	50	CVTRB
960	540	50	CVTRB
864	540	50	CVTRB

952	536	70	CVTRB
720	540	60	CVTRB
960	540	60	CVTRB
864	540	60	CVTRB
952	536	75	CVTRB
680	544	50	CVTRB
720	540	70	CVTRB
960	540	70	CVTRB
864	540	70	CVTRB
952	536	85	CVTRB
680	544	60	CVTRB
720	540	75	CVTRB
960	540	75	CVTRB
864	540	75	CVTRB
680	544	70	CVTRB
720	540	85	CVTRB
960	540	85	CVTRB
864	540	85	CVTRB
680	544	75	CVTRB
736	552	50	CVTRB
920	552	50	CVTRB
680	544	85	CVTRB
736	552	60	CVTRB
920	552	60	CVTRB

736	552	70	CVTRB
920	552	70	CVTRB
736	552	75	CVTRB
920	552	75	CVTRB
896	560	50	CVTRB
736	552	85	CVTRB
920	552	85	CVTRB
896	560	60	CVTRB
752	564	50	CVTRB
896	560	70	CVTRB
752	564	60	CVTRB
896	560	75	CVTRB
752	564	70	CVTRB
896	560	85	CVTRB
752	564	75	CVTRB
1016	572	50	CVTRB
752	564	85	CVTRB
1016	572	60	CVTRB
768	576	50	CVTRB
1024	576	50	CVTRB
960	576	50	CVTRB
1016	572	70	CVTRB
768	576	60	CVTRB
1024	576	60	CVTRB

960	576	60	CVTRB
1016	572	75	CVTRB
928	580	50	CVTRB
768	576	70	CVTRB
1024	576	70	CVTRB
960	576	70	CVTRB
1016	572	85	CVTRB
928	580	60	CVTRB
768	576	75	CVTRB
1024	576	75	CVTRB
960	576	75	CVTRB
928	580	70	CVTRB
768	576	85	CVTRB
1024	576	85	CVTRB
960	576	85	CVTRB
928	580	75	CVTRB
784	588	50	CVTRB
928	580	85	CVTRB
784	588	60	CVTRB
784	588	70	CVTRB
784	588	75	CVTRB
784	588	85	CVTRB
800	600	50	CVTRB
960	600	50	CVTRB

1000	600	50	CVTRB
800	600	60	CVTRB
960	600	60	CVTRB
1000	600	60	CVTRB
800	600	70	CVTRB
960	600	70	CVTRB
1000	600	70	CVTRB
800	600	75	CVTRB
960	600	75	CVTRB
1000	600	75	CVTRB
1080	608	50	CVTRB
760	608	50	CVTRB
800	600	85	CVTRB
960	600	85	CVTRB
1000	600	85	CVTRB
1080	608	60	CVTRB
760	608	60	CVTRB
816	612	50	CVTRB
1088	612	50	CVTRB
1080	608	70	CVTRB
760	608	70	CVTRB
816	612	60	CVTRB
1088	612	60	CVTRB
1080	608	75	CVTRB

760	608	75	CVTRB
816	612	70	CVTRB
1088	612	70	CVTRB
1080	608	85	CVTRB
760	608	85	CVTRB
816	612	75	CVTRB
1088	612	75	CVTRB
992	620	50	CVTRB
816	612	85	CVTRB
1088	612	85	CVTRB
992	620	60	CVTRB
832	624	50	CVTRB
1040	624	50	CVTRB
992	620	70	CVTRB
832	624	60	CVTRB
1040	624	60	CVTRB
992	620	75	CVTRB
832	624	70	CVTRB
1040	624	70	CVTRB
992	620	85	CVTRB
832	624	75	CVTRB
1040	624	75	CVTRB
832	624	85	CVTRB
1040	624	85	CVTRB

848	636	50	CVTRB
848	636	60	CVTRB
1024	640	50	CVTRB
800	640	50	CVTRB
848	636	70	CVTRB
1024	640	60	CVTRB
800	640	60	CVTRB
1144	644	50	CVTRB
848	636	75	CVTRB
1024	640	70	CVTRB
800	640	70	CVTRB
1144	644	60	CVTRB
848	636	85	CVTRB
864	648	50	CVTRB
1152	648	50	CVTRB
1080	648	50	CVTRB
1024	640	75	CVTRB
800	640	75	CVTRB
1144	644	70	CVTRB
864	648	60	CVTRB
1152	648	60	CVTRB
1080	648	60	CVTRB
1024	640	85	CVTRB
800	640	85	CVTRB

1144	644	75	CVTRB
864	648	70	CVTRB
1152	648	70	CVTRB
1080	648	70	CVTRB
1144	644	85	CVTRB
864	648	75	CVTRB
1152	648	75	CVTRB
1080	648	75	CVTRB
864	648	85	CVTRB
1152	648	85	CVTRB
1080	648	85	CVTRB
880	660	50	CVTRB
1056	660	50	CVTRB
880	660	60	CVTRB
1056	660	60	CVTRB
880	660	70	CVTRB
1056	660	70	CVTRB
880	660	75	CVTRB
1056	660	75	CVTRB
880	660	85	CVTRB
1056	660	85	CVTRB
896	672	50	CVTRB
1120	672	50	CVTRB
896	672	60	CVTRB

1120	672	60	CVTRB
896	672	70	CVTRB
1120	672	70	CVTRB
1208	680	50	CVTRB
1088	680	50	CVTRB
896	672	75	CVTRB
1120	672	75	CVTRB
1208	680	60	CVTRB
1088	680	60	CVTRB
896	672	85	CVTRB
1120	672	85	CVTRB
912	684	50	CVTRB
1216	684	50	CVTRB
912	684	60	CVTRB
1216	684	60	CVTRB
1208	680	70	CVTRB
1088	680	70	CVTRB
1208	680	75	CVTRB
1088	680	75	CVTRB
912	684	70	CVTRB
1216	684	70	CVTRB
912	684	75	CVTRB
1216	684	75	CVTRB
1208	680	85	CVTRB

1088	680	85	CVTRB
928	696	50	CVTRB
1160	696	50	CVTRB
912	684	85	CVTRB
1216	684	85	CVTRB
1120	700	50	CVTRB
928	696	60	CVTRB
1160	696	60	CVTRB
928	696	70	CVTRB
1160	696	70	CVTRB
1120	700	60	CVTRB
880	704	50	CVTRB
928	696	75	CVTRB
1160	696	75	CVTRB
1120	700	70	CVTRB
880	704	60	CVTRB
928	696	85	CVTRB
1160	696	85	CVTRB
944	708	50	CVTRB
1120	700	75	CVTRB
880	704	70	CVTRB
944	708	60	CVTRB
1120	700	85	CVTRB
880	704	75	CVTRB

1120	700	85	CVTRB
944	708	70	CVTRB
1272	716	50	CVTRB
944	708	75	CVTRB
880	704	85	CVTRB
1272	716	60	CVTRB
960	720	50	CVTRB
1280	720	50	CVTRB
1152	720	50	CVTRB
1200	720	50	CVTRB
944	708	85	CVTRB
960	720	60	CVTRB
1280	720	60	CVTRB
1152	720	60	CVTRB
1200	720	60	CVTRB
1272	716	70	CVTRB
1272	716	75	CVTRB
960	720	70	CVTRB
1280	720	70	CVTRB
1152	720	70	CVTRB
1200	720	70	CVTRB
1272	716	85	CVTRB
960	720	75	CVTRB
1280	720	75	CVTRB

1152	720	75	CVTRB
1200	720	75	CVTRB
976	732	50	CVTRB
960	720	85	CVTRB
1280	720	85	CVTRB
1152	720	85	CVTRB
1200	720	85	CVTRB
920	736	50	CVTRB
976	732	60	CVTRB
976	732	70	CVTRB
1184	740	50	CVTRB
920	736	60	CVTRB
976	732	75	CVTRB
920	736	70	CVTRB
1184	740	60	CVTRB
920	736	70	CVTRB
992	744	50	CVTRB
1240	744	50	CVTRB
920	736	75	CVTRB
976	732	85	CVTRB
992	744	60	CVTRB
1240	744	60	CVTRB
1184	740	70	CVTRB
1184	740	75	CVTRB

920	736	85	CVTRB
992	744	70	CVTRB
1240	744	70	CVTRB
1336	752	50	CVTRB
1184	740	85	CVTRB
992	744	75	CVTRB
1240	744	75	CVTRB
1336	752	60	CVTRB
1008	756	50	CVTRB
1344	756	50	CVTRB
992	744	85	CVTRB
1240	744	85	CVTRB
1008	756	60	CVTRB
1344	756	60	CVTRB
1336	752	70	CVTRB
1216	760	50	CVTRB
1336	752	75	CVTRB
1008	756	70	CVTRB
1344	756	70	CVTRB
1216	760	60	CVTRB
1008	756	75	CVTRB
1344	756	75	CVTRB
1336	752	85	CVTRB
1216	760	70	CVTRB

1024	768	50	CVTRB
1280	768	50	CVTRB
1216	760	75	CVTRB
1008	756	85	CVTRB
1344	756	85	CVTRB
1024	768	60	CVTRB
1280	768	60	CVTRB
1216	760	85	CVTRB
1024	768	70	CVTRB
1280	768	70	CVTRB
1024	768	75	CVTRB
1280	768	75	CVTRB
1040	780	50	CVTRB
1248	780	50	CVTRB
1024	768	85	CVTRB
1280	768	85	CVTRB
1040	780	60	CVTRB
1248	780	60	CVTRB
1040	780	70	CVTRB
1248	780	70	CVTRB
1400	788	50	CVTRB
1040	780	75	CVTRB
1248	780	75	CVTRB
1400	788	60	CVTRB

1056	792	50	CVTRB
1408	792	50	CVTRB
1320	792	50	CVTRB
1040	780	85	CVTRB
1248	780	85	CVTRB
1056	792	60	CVTRB
1408	792	60	CVTRB
1320	792	60	CVTRB
1400	788	70	CVTRB
1400	788	75	CVTRB
1056	792	70	CVTRB
1408	792	70	CVTRB
1320	792	70	CVTRB
1280	800	50	CVTRB
1000	800	50	CVTRB
1056	792	75	CVTRB
1408	792	75	CVTRB
1320	792	75	CVTRB
1400	788	85	CVTRB
1072	804	50	CVTRB
1280	800	60	CVTRB
1000	800	60	CVTRB
1056	792	85	CVTRB
1408	792	85	CVTRB

1320	792	85	CVTRB
1072	804	60	CVTRB
1280	800	70	CVTRB
1000	800	70	CVTRB
1280	800	75	CVTRB
1000	800	75	CVTRB
1072	804	70	CVTRB
1072	804	75	CVTRB
1280	800	85	CVTRB
1000	800	85	CVTRB
1088	816	50	CVTRB
1360	816	50	CVTRB
1072	804	85	CVTRB
1312	820	50	CVTRB
1088	816	60	CVTRB
1360	816	60	CVTRB
1464	824	50	CVTRB
1312	820	60	CVTRB
1088	816	70	CVTRB
1360	816	70	CVTRB
1088	816	75	CVTRB
1360	816	75	CVTRB
1104	828	50	CVTRB
1472	828	50	CVTRB

1464	824	60	CVTRB
1312	820	70	CVTRB
1104	828	50	CVTRB
1472	828	50	CVTRB
1312	820	75	CVTRB
1088	816	85	CVTRB
1360	816	85	CVTRB
1104	828	60	CVTRB
1472	828	60	CVTRB
1464	824	70	CVTRB
1040	832	50	CVTRB
1104	828	60	CVTRB
1472	828	60	CVTRB
1464	824	75	CVTRB
1312	820	85	CVTRB
1040	832	60	CVTRB
1104	828	70	CVTRB
1472	828	70	CVTRB
1104	828	75	CVTRB
1472	828	75	CVTRB
1464	824	85	CVTRB
1120	840	50	CVTRB
1344	840	50	CVTRB
1400	840	50	CVTRB

1040	832	70	CVTRB
1040	832	75	CVTRB
1104	828	85	CVTRB
1472	828	85	CVTRB
1120	840	60	CVTRB
1344	840	60	CVTRB
1400	840	60	CVTRB
1040	832	85	CVTRB
1120	840	70	CVTRB
1344	840	70	CVTRB
1400	840	70	CVTRB
1120	840	75	CVTRB
1344	840	75	CVTRB
1400	840	75	CVTRB
1136	852	50	CVTRB
1120	840	85	CVTRB
1344	840	85	CVTRB
1400	840	85	CVTRB
1136	852	60	CVTRB
1528	860	50	CVTRB
1376	860	50	CVTRB
1136	852	70	CVTRB
1136	852	75	CVTRB
1152	864	50	CVTRB

1536	864	50	CVTRB
1440	864	50	CVTRB
1528	860	60	CVTRB
1376	860	60	CVTRB
1136	852	85	CVTRB
1152	864	60	CVTRB
1536	864	60	CVTRB
1440	864	60	CVTRB
1528	860	70	CVTRB
1376	860	70	CVTRB
1528	860	75	CVTRB
1376	860	75	CVTRB
1152	864	70	CVTRB
1536	864	70	CVTRB
1440	864	70	CVTRB
1152	864	75	CVTRB
1536	864	75	CVTRB
1440	864	75	CVTRB
1528	860	85	CVTRB
1376	860	85	CVTRB
1168	876	50	CVTRB
1152	864	85	CVTRB
1536	864	85	CVTRB
1440	864	85	CVTRB

1408	880	50	CVTRB
1168	876	60	CVTRB
1408	880	60	CVTRB
1168	876	70	CVTRB
1168	876	75	CVTRB
1184	888	50	CVTRB
1480	888	50	CVTRB
1408	880	70	CVTRB
1408	880	75	CVTRB
1168	876	85	CVTRB
1184	888	60	CVTRB
1480	888	60	CVTRB
1408	880	85	CVTRB
1592	896	50	CVTRB
1120	896	50	CVTRB
1184	888	70	CVTRB
1480	888	70	CVTRB
1184	888	75	CVTRB
1480	888	75	CVTRB
1200	900	50	CVTRB
1600	900	50	CVTRB
1440	900	50	CVTRB
1592	896	60	CVTRB
1120	896	60	CVTRB

1184	888	85	CVTRB
1480	888	85	CVTRB
1200	900	60	CVTRB
1600	900	60	CVTRB
1440	900	60	CVTRB
1592	896	70	CVTRB
1120	896	70	CVTRB
1592	896	75	CVTRB
1120	896	75	CVTRB
1200	900	70	CVTRB
1600	900	70	CVTRB
1440	900	70	CVTRB
1200	900	75	CVTRB
1600	900	75	CVTRB
1440	900	75	CVTRB
1592	896	85	CVTRB
1120	896	85	CVTRB
1216	912	50	CVTRB
1520	912	50	CVTRB
1200	900	85	CVTRB
1600	900	85	CVTRB
1440	900	85	CVTRB
1216	912	60	CVTRB
1520	912	60	CVTRB

1472	920	50	CVTRB
1216	912	70	CVTRB
1520	912	70	CVTRB
1216	912	75	CVTRB
1520	912	75	CVTRB
1232	924	50	CVTRB
1472	920	60	CVTRB
1216	912	85	CVTRB
1520	912	85	CVTRB
1160	928	50	CVTRB
1232	924	60	CVTRB
1472	920	70	CVTRB
1472	920	75	CVTRB
1656	932	50	CVTRB
1160	928	60	CVTRB
1232	924	70	CVTRB
1232	924	75	CVTRB
1472	920	85	CVTRB
1248	936	50	CVTRB
1664	936	50	CVTRB
1560	936	50	CVTRB
1656	932	60	CVTRB
1160	928	70	CVTRB
1160	928	75	CVTRB

1504	940	50	CVTRB
1232	924	85	CVTRB
1248	936	60	CVTRB
1664	936	60	CVTRB
1560	936	60	CVTRB
1656	932	70	CVTRB
1656	932	75	CVTRB
1160	928	85	CVTRB
1504	940	60	CVTRB
1248	936	70	CVTRB
1664	936	70	CVTRB
1560	936	70	CVTRB
1248	936	75	CVTRB
1664	936	75	CVTRB
1560	936	75	CVTRB
1264	948	50	CVTRB
1656	932	85	CVTRB
1504	940	70	CVTRB
1504	940	75	CVTRB
1248	936	85	CVTRB
1664	936	85	CVTRB
1560	936	85	CVTRB
1264	948	60	CVTRB
1504	940	85	CVTRB

1264	948	70	CVTRB
1264	948	75	CVTRB
1280	960	50	CVTRB
1536	960	50	CVTRB
1600	960	50	CVTRB
1280	960	60	CVTRB
1536	960	60	CVTRB
1600	960	60	CVTRB
1264	948	85	CVTRB
1720	968	50	CVTRB
1280	960	70	CVTRB
1536	960	70	CVTRB
1600	960	70	CVTRB
1280	960	75	CVTRB
1536	960	75	CVTRB
1600	960	75	CVTRB
1296	972	50	CVTRB
1728	972	50	CVTRB
1720	968	60	CVTRB
1280	960	85	CVTRB
1536	960	85	CVTRB
1600	960	85	CVTRB
1296	972	60	CVTRB
1728	972	60	CVTRB

1720	968	70	CVTRB
1568	980	50	CVTRB
1720	968	75	CVTRB
1296	972	70	CVTRB
1728	972	70	CVTRB
1312	984	50	CVTRB
1640	984	50	CVTRB
1296	972	75	CVTRB
1728	972	75	CVTRB
1720	968	85	CVTRB
1568	980	60	CVTRB
1312	984	60	CVTRB
1640	984	60	CVTRB
1296	972	85	CVTRB
1728	972	85	CVTRB
1568	980	70	CVTRB
1240	992	50	CVTRB
1568	980	75	CVTRB
1312	984	70	CVTRB
1640	984	70	CVTRB
1328	996	50	CVTRB
1312	984	75	CVTRB
1640	984	75	CVTRB
1240	992	60	CVTRB

1568	980	85	CVTRB
1600	1000	50	CVTRB
1328	996	60	CVTRB
1312	984	85	CVTRB
1640	984	85	CVTRB
1240	992	70	CVTRB
1240	992	75	CVTRB
1784	1004	50	CVTRB
1600	1000	60	CVTRB
1328	996	70	CVTRB
1344	1008	50	CVTRB
1792	1008	50	CVTRB
1680	1008	50	CVTRB
1784	1004	60	CVTRB
1328	996	75	CVTRB
1240	992	85	CVTRB
1784	1004	60	CVTRB
1600	1000	70	CVTRB
1600	1000	75	CVTRB
1344	1008	60	CVTRB
1792	1008	60	CVTRB
1680	1008	60	CVTRB
1784	1004	70	CVTRB
1328	996	85	CVTRB

1784	1004	75	CVTRB
1600	1000	85	CVTRB
1344	1008	70	CVTRB
1792	1008	70	CVTRB
1680	1008	70	CVTRB
1360	1020	50	CVTRB
1632	1020	50	CVTRB
1344	1008	75	CVTRB
1792	1008	75	CVTRB
1680	1008	75	CVTRB
1280	1024	50	CVTRB
1360	1020	60	CVTRB
1632	1020	60	CVTRB
1344	1008	85	CVTRB
1680	1008	85	CVTRB
1280	1024	60	CVTRB
1360	1020	70	CVTRB
1632	1020	70	CVTRB
1376	1032	50	CVTRB
1720	1032	50	CVTRB
1360	1020	75	CVTRB
1632	1020	75	CVTRB
1280	1024	70	CVTRB
1376	1032	60	CVTRB

1720	1032	60	CVTRB
1280	1024	75	CVTRB
1360	1020	85	CVTRB
1632	1020	85	CVTRB
1360	1020	85	CVTRB
1632	1020	85	CVTRB
1848	1040	50	CVTRB
1664	1040	50	CVTRB
1376	1032	70	CVTRB
1720	1032	70	CVTRB
1280	1024	85	CVTRB
1392	1044	50	CVTRB
1856	1044	50	CVTRB
1376	1032	75	CVTRB
1720	1032	75	CVTRB
1848	1040	60	CVTRB
1664	1040	60	CVTRB
1392	1044	60	CVTRB
1856	1044	60	CVTRB
1376	1032	85	CVTRB
1848	1040	70	CVTRB
1664	1040	70	CVTRB
1848	1040	75	CVTRB
1664	1040	75	CVTRB

1392	1044	70	CVTRB
1856	1044	70	CVTRB
1408	1056	50	CVTRB
1760	1056	50	CVTRB
1392	1044	75	CVTRB
1856	1044	75	CVTRB
1696	1060	50	CVTRB
1408	1056	60	CVTRB
1760	1056	60	CVTRB
1392	1044	85	CVTRB
1392	1044	85	CVTRB
1696	1060	60	CVTRB
1408	1056	70	CVTRB
1760	1056	70	CVTRB
1424	1068	50	CVTRB
1408	1056	75	CVTRB
1760	1056	75	CVTRB
1696	1060	70	CVTRB
1424	1068	60	CVTRB
1696	1060	75	CVTRB
1408	1056	85	CVTRB
1912	1076	50	CVTRB
1424	1068	70	CVTRB
1440	1080	50	CVTRB

1920	1080	50	CVTRB
1728	1080	50	CVTRB
1800	1080	50	CVTRB
1424	1068	75	CVTRB
1912	1076	60	CVTRB
1440	1080	60	CVTRB
1920	1080	60	CVTRB
1728	1080	60	CVTRB
1800	1080	60	CVTRB
1424	1068	85	CVTRB
1912	1076	70	CVTRB
1360	1088	50	CVTRB
1440	1080	70	CVTRB
1920	1080	70	CVTRB
1728	1080	70	CVTRB
1800	1080	70	CVTRB
1456	1092	50	CVTRB
1360	1088	60	CVTRB
1440	1080	75	CVTRB
1728	1080	75	CVTRB
1800	1080	75	CVTRB
1456	1092	60	CVTRB
1360	1088	70	CVTRB
1440	1080	85	CVTRB

1760	1100	50	CVTRB
1360	1088	75	CVTRB
1456	1092	70	CVTRB
1472	1104	50	CVTRB
1840	1104	50	CVTRB
1760	1100	60	CVTRB
1456	1092	75	CVTRB
1360	1088	85	CVTRB
1472	1104	60	CVTRB
1840	1104	60	CVTRB
1456	1092	85	CVTRB
1760	1100	70	CVTRB
1976	1112	50	CVTRB
1760	1100	75	CVTRB
1472	1104	70	CVTRB
1840	1104	70	CVTRB
1488	1116	50	CVTRB
1984	1116	50	CVTRB
1472	1104	75	CVTRB
1976	1112	60	CVTRB
1792	1120	50	CVTRB
1400	1120	50	CVTRB
1488	1116	60	CVTRB
1984	1116	60	CVTRB

1472	1104	85	CVTRB
1792	1120	60	CVTRB
1400	1120	60	CVTRB
1488	1116	70	CVTRB
1504	1128	50	CVTRB
1880	1128	50	CVTRB
1488	1116	75	CVTRB
1792	1120	70	CVTRB
1400	1120	70	CVTRB
1504	1128	60	CVTRB
1880	1128	60	CVTRB
1400	1120	75	CVTRB
1488	1116	85	CVTRB
1504	1128	70	CVTRB
1400	1120	85	CVTRB
1520	1140	50	CVTRB
1824	1140	50	CVTRB
1504	1128	75	CVTRB
1520	1140	60	CVTRB
1824	1140	60	CVTRB
2040	1148	50	CVTRB
1520	1140	70	CVTRB
1824	1140	70	CVTRB
1536	1152	50	CVTRB

2048	1152	50	CVTRB
1920	1152	50	CVTRB
2040	1148	60	CVTRB
1520	1140	75	CVTRB
1536	1152	60	CVTRB
2048	1152	60	CVTRB
1920	1152	60	CVTRB
1856	1160	50	CVTRB
1536	1152	70	CVTRB
1552	1164	50	CVTRB
1856	1160	60	CVTRB
1536	1152	75	CVTRB
1552	1164	60	CVTRB
1552	1164	70	CVTRB
1568	1176	50	CVTRB
1960	1176	50	CVTRB
1552	1164	75	CVTRB
1888	1180	50	CVTRB
1568	1176	60	CVTRB
1960	1176	60	CVTRB
2104	1184	50	CVTRB
1480	1184	50	CVTRB
1888	1180	60	CVTRB
1888	1180	60	CVTRB

1568	1176	70	CVTRB
1584	1188	50	CVTRB
2112	1188	50	CVTRB
1480	1184	60	CVTRB
1568	1176	75	CVTRB
1584	1188	60	CVTRB
1480	1184	70	CVTRB
1480	1184	75	CVTRB
1600	1200	50	CVTRB
1920	1200	50	CVTRB
2000	1200	50	CVTRB
1584	1188	70	CVTRB
1584	1188	75	CVTRB
1600	1200	60	CVTRB
1920	1200	60	CVTRB
2000	1200	60	CVTRB
1600	1200	70	CVTRB
1616	1212	50	CVTRB
1600	1200	75	CVTRB
1520	1216	50	CVTRB
1616	1212	60	CVTRB
2168	1220	50	CVTRB
1952	1220	50	CVTRB

SafeCapture HD Push Button Factory Reset

Overview

It is possible to perform a factory reset on SafeCapture HD devices via the reset button on the back of the device. Note that the reset process can take up to 10 minutes. Ensure that the unit does not lose power or is restarted during this window. As with all factory resets, any existing captures on the unit will be lost as a part of the process.



Activating the Push Button Factory Reset

To activate the reset, the reset button must be pressed while powering on the device. A reset by itself is not sufficient.

The process:

1. While the SafeCapture HD is powered off, press and hold the reset button
2. While still holding the button, power on the SafeCapture HD
3. Release the button after 10 seconds

Register the Capture Appliances

In this section:

- [Overview](#)
- [Procedure](#)

Overview

Follow this procedure for both the EchoSystem Capture Appliance and the EchoSystem SafeCapture HD.

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

The generic term "capture appliance" refers to either or both appliances.

Before registering a capture appliance, you must initialize it. See:

- [Initialize the EchoSystem Capture Appliance](#)
- [Initialize the SafeCapture HD](#)

Procedure

Capture appliances begin communication with the EchoSystem Server (ESS) immediately after initialization.

1. In the ESS application, navigate to **Configuration > Devices**.
2. Select the **Unregistered** tab. The Unregistered Devices screen opens, showing all of the unregistered devices.

Active: 11		Unregistered: 3			Retired: 1	
Summary ▲		Organization	Type	Capture Status	Log Upload Status	Up Time
<input type="checkbox"/>	00-0c-29-7f-77-99 10.3.10.226		Capture Software	New	New	n/a
<input type="checkbox"/>	00-50-c2-7b-1f-d5 10.3.14.129 (reinitialize)		Capture Appliance	New	New	n/a
<input type="checkbox"/>	00-50-c2-b2-73-20 10.3.14.114 (reinitialize)		Capture Appliance	New	New	n/a

3. Highlight the capture appliance device. Check the MAC address shown on the screen against the MAC address you noted.

⊖ If you do not see the device listed, there is probably a networking issue, often related to DHCP or DNS. If you know the IP address of the device, you can log in to the advanced Ad Hoc interface and run ping diagnostics to troubleshoot.

4. Click **register**. The Devices screen appears.
5. Notice that the MAC address is shown in the Summary table and the new device is listed on the Devices

screen.

- Wait for the capture and log status to change to **Idle**. This shows that the capture appliance has been successfully registered. It can be configured and assigned to a room.

Manage Spare Capture Appliances

In this section:

- [Overview](#)
- [How Many Spare Appliances Do I Need?](#)
- [Prepare the Spare Appliance](#)
- [Replacing a Device with a Spare Device](#)

Overview

The capture appliance, like any piece of equipment, will, on rare occasions, fail to operate. When this happens, you can return the non-functioning appliance to Echo360. Contact [Technical Support](#) for instructions.

You might want to keep at least one capture appliance as a spare so you can continue to fully support operations while the non-functioning appliance is being repaired.

i Spare Devices Are Always the SafeCapture HD

When you purchase a spare capture appliance, you must purchase the EchoSystem SafeCapture HD ("the 2G appliance"). Echo360 is no longer selling the EchoSystem Capture Appliance ("the 1G appliance").

i Capture Appliances



The EchoSystem Capture Appliance (also called the first generation capture appliance or 1G capture appliance) was placed into service in May 2008. It is no longer in production.



The EchoSystem SafeCapture HD (also called the SafeCapture HD, second generation capture appliance, or 2G capture appliance) was placed into service in June 2011. It is in active production.

The generic term "capture appliance" refers to either or both appliances.

How Many Spare Appliances Do I Need?

We recommend that you have up to four capture appliances as spares, based on the number of appliances you

have now.

If you have this number of capture appliances...	You should have this number of spares...
Five or fewer	None
5-20	1
21-50	2
51-80	3
More than 80	4

You might want to increase the number of spares if you answer "yes" to some or all of these questions.

- **Business questions: What happens if the device fails?**
 - Is lecture capture generating revenue?
 - Is lecture capture critical to your school's identity?
 - Is it a serious problem if a lecture is not captured?
 - Will many lectures be uncaptured if a device fails?
- **Physical use questions: How likely is it that the device will fail?**
 - Is the physical environment static?
 - Do many different people connect and disconnect devices or change settings?
 - Are devices installed in many different locations? (You might need to have additional spares if you support multiple campuses.)
 - Is the device moved often?
 - Are there network or building issues that can damage the appliance?
 - Are there frequent power spikes?
 - Is the device in constant use?
 - Is the device un-monitored when not in use?

Prepare the Spare Appliance

When you receive the spare appliance you should:

1. [Register the appliance](#).
2. [Check the installation](#) to make sure the appliance detects the display, video, and audio signals.
3. Reset it to the factory defaults using the `device_reset.tgz` tool. Contact [technical support](#) for this tool.

Replacing a Device with a Spare Device

If you need to replace an existing capture device with a spare device, there are some essential steps you need to follow. The below steps provide basic instructions, however you will want to refer to [Retire a Device](#) for detailed information on the process. Be sure you have already prepared the spare device for use.

Unassign the existing device from the room to which it is assigned.

1. Navigate to **Configuration > Devices**.
2. Hover over the device name and click **edit**.
3. In the Current Room Assignment section, select "Choose" from the Campus, Building, and Room drop-down lists.
4. Check the other settings if necessary, to be sure the replacement device is configured similarly if appropriate.
5. Click **Save**.

Assign the spare device to the room from which the old device was removed.

1. Navigate to **Configuration > Devices**.
2. Hover over the device name and click **edit**.
3. In the Current Room Assignment section, select the Campus, Building, and Room to which to assign the replacement device.
4. Click **Save**.

At this point, the system must make background updates to the schedule captures slated for the room, to allow them to use the newly assigned device.

You may also want to review all schedules assigned to the room, and manually update any that require it.

While you can retire the device while it is assigned to the room (the unassigning happens automatically), it is best if you manually unassign and reassign, to be sure no captures are missed.

Classroom Capture Software

In this section:

- [Overview](#)
- [High-Level Procedure](#)

Overview

Classroom Capture is a Windows-only application suited for audio, video, and local screen capture from a dedicated podium or lectern PC inside the classroom.

Follow the [high-level procedure](#) below to install and configure Classroom Capture.

Once Classroom Capture is installed and configured, you can use it as a device to schedule and record classroom lectures. Academic Staff can use it to manipulate scheduled recordings and capture ad hoc lectures as needed. [Classroom Capture for Academic Staff](#) gives more details about how to use the interface to manipulate both scheduled and ad hoc captures. You may wish to review this page yourself or publicize it. Those same instructions are included in PDF form with the installation, and are shown when clicking the Help icon in the top right corner.

If you are using CAS or Shibboleth for user authentication, please see [CAS and Shibboleth Authentication](#) for information regarding single-sign-on limitations and workarounds for Classroom Capture.

High-Level Procedure

Setting up Classroom Capture requires the following steps:

1. Review the [Classroom Capture Specifications](#).
2. [Download the Software Capture installer](#).
3. [Install Classroom Capture Software](#).
4. [Register the Classroom Capture device](#) on the ESS (may not be required if upgrading).
5. [Attach and configure the input devices](#) (cameras and microphones).
6. [Assign the device to a room](#) and configure auto-detected input sources.
7. [License the room with a Classroom Capture license](#).

When finished, the Classroom Capture PC can be scheduled on the ESS and can accept scheduled classroom and ad hoc recordings.

Podium PC Must Be On and User Must Be Logged In

In order for Classroom Capture to record a scheduled lecture:

- The podium PC **must** be on
- A user **must be logged in**

This allows scheduled captures to begin at the predetermined time. Furthermore, if the user logs out during the capture, **the capture will stop at that point.**

The **best practice** is to have the podium PC continuously logged in to a shared account. An **alternate practice** is to have Presenters (the Instructors or Teaching Assistants) log in to the PC as soon as they enter the classroom and **before** the capture is scheduled to begin. This allows the PC to complete the login process and begin recording the lecture. In this case, be sure each Presenter logs out **before** the scheduled start of the next capture, particularly where back-to-back captures are scheduled.

Classroom Capture Specifications

In this section:

- [Capture Options](#)
- [Capture Products](#)
- [Hardware and Software Requirements](#)
- [Deployment Considerations](#)

Alternate name for Classroom Capture Software

As of EchoSystem 5.4, Classroom Capture has been incorporated as part of the Software Capture product for Windows, which also includes Personal Software Capture. In the documentation, it may be referred to as either *Software Capture for the Classroom* or *Classroom Capture*. In previous versions of EchoSystem, it is sometimes called EchoCapture Software, Software Capture, or Podium Capture.

Capture Options

Software Capture for the Classroom supports:

- Audio (**A**)
- Audio/Video (**A/V**)
- Audio/Display (**A/D**)
- Audio/Display/Video (**A/D/V**)
- Audio/Video/Video (**A/V/V**)

Capture Products

Classroom Capture Software can generate these products:

- Podcast - MP3 audio
- Vodcast - M4V audio and display
- Audio Rich Media - audio and display
- EchoPlayer - audio, display, and video

Hardware and Software Requirements

- Windows 7 or Windows 8
- Intel i5-2400 Quad Core Processor
- 2 GB RAM
- 10/100 network interface
- 20 GB free hard drive space
- Internal audio device or USB port for audio capture

Capturing Memory-Intensive Applications

Capturing CPU or memory-intensive applications such as CAD or 3D modeling software may require a more capable computer


Audio is captured using the built-in sound card input on the computer running the capture software. A 1/8" line-in/mic-in connection, USB based audio or capture card can be used for capturing audio. Audio levels should be configured on the input to be as high as possible without reaching maximum levels during peaks or causing audible distortion during the recording.

The display is captured from the local VGA screen buffer, and requires no external connection or configuration.

Deployment Considerations

Networking

Classroom Capture runs on Windows PCs and depends on Windows networking components. It must be able to resolve the host name of the EchoSystem Server (ESS). Additionally, the Ad Hoc Web Interface interface is provided by a highly secure local HTTP server. To access the Ad Hoc Web Interface interface, the Windows firewall must allow incoming connections to the Ad Hoc Web Interface interface port, which is configured in the ESS.

 The Ad Hoc Web Interface interface can be disabled in the ESS if necessary.

Cabling

Cabling must be provided from the audio or video source to the podium PC for audio or video capture.

Using Configuration Management Suites

EchoSystem is designed to allow the ESS to remotely manage and upgrade capture software installations, and creates a number of files during the capture and upload process. If you intend to use configuration management tools, such as Faronics Deep Freeze, you must configure the configuration management tool so that the capture software is allowed access to key directories and files, and must have capture storage directories that are not automatically purged/cleared by other applications. Classroom Capture software directories and executables are discussed in the [Server Installation Guide](#).

Install Classroom Capture Software

In this section:

- [Upgrading from Previous Versions](#)
- [Download the Installer](#)
- [Run the Installer](#)
- [Register the Classroom Capture Installation](#)



Best Practice

Refer to the [Prerequisite Installation Checklist](#) and [Post-Installation Checklist](#) documents during installation.

Upgrading from Previous Versions

Notification of this and future upgrades will appear as a notice in the bottom bar of the Classroom Capture window. Clicking on this notice launches the upgrade.

Download the Installer

Download the Classroom Capture (Windows) installer from the EchoSystem Server (ESS). A wizard guides you through installation.

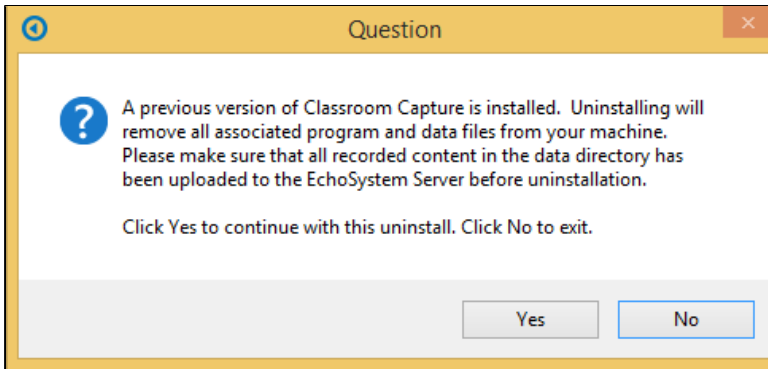
1. Log in to the ESS.
2. Navigate to the **Downloads** tab, shown in the below figure.

Software Installer Downloads		1 - 7 of 7
Description	File	
Installer for EchoSystem Personal Capture (Windows)	EchoSystemPersonalCaptureForWindows_5.4.41370.exe	
Installer for EchoSystem Classroom Capture (Windows)	EchoSystemClassroomCaptureForWindows_5.4.41370.exe	
Installer for EchoSystem Personal Capture (Mac OS X)	EchoSystemPersonalCaptureForMac_5.4.41370.zip	
Installer for EchoSystem Processor (Windows)	EchoSystemProcessorForWindows_5.4.41370.exe	
Installer for EchoSystem Processor (Linux 64) [launch from console with sudo]	EchoSystemProcessorForLinux64_5.4.41370.bin	
Installer for EchoSystem Processor (Linux 32) [launch from console with sudo]	EchoSystemProcessorForLinux32_5.4.41370.bin	
Installer for EchoSystem Streaming Configuration Bundle	StreamingBundle_5.4.41161.zip	

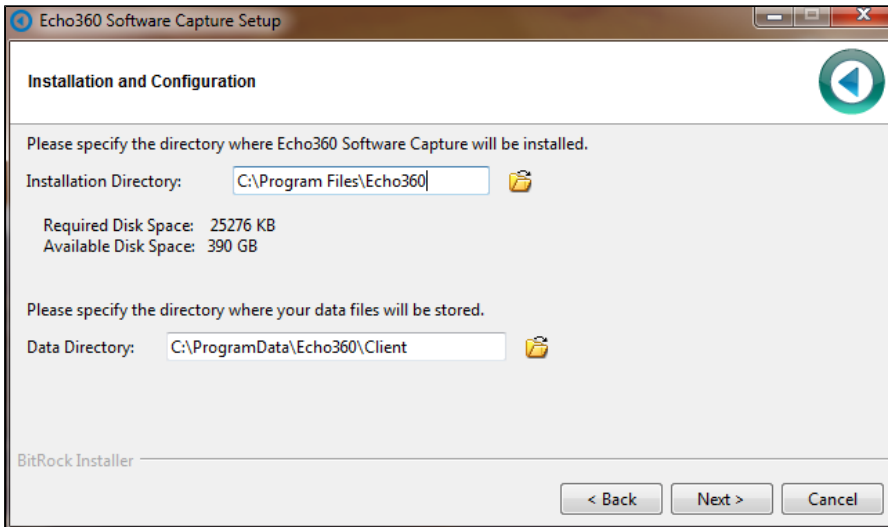
3. Download the installer by selecting the appropriate link, identified in the above figure. The installer must be run locally, so save the file to your computer.

Run the Installer

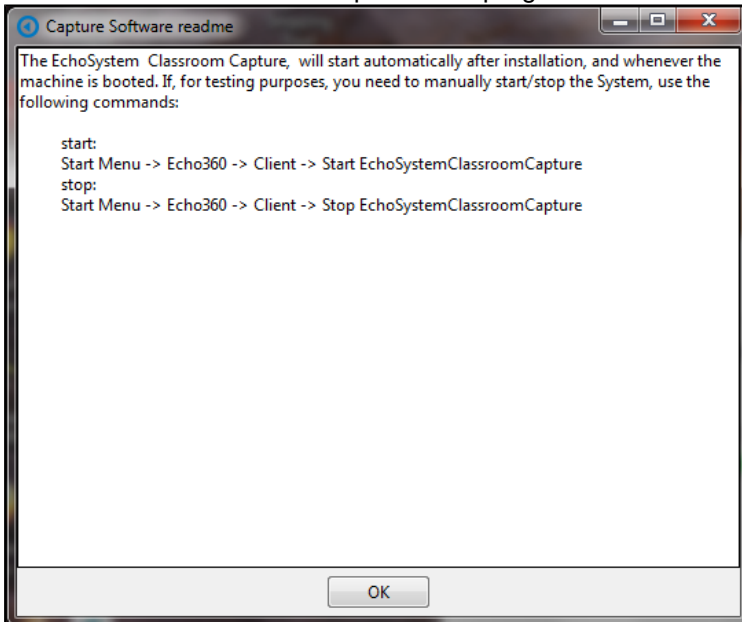
1. Log into the PC as an Administrator.
2. Locate the installer executable and double-click it. This starts the installation process.
3. If you are upgrading from a previous version of Classroom Capture, you will receive a confirmation dialog box, shown below, requesting to uninstall the old version. Click yes to allow the wizard to uninstall the old version and continue with the current installation.



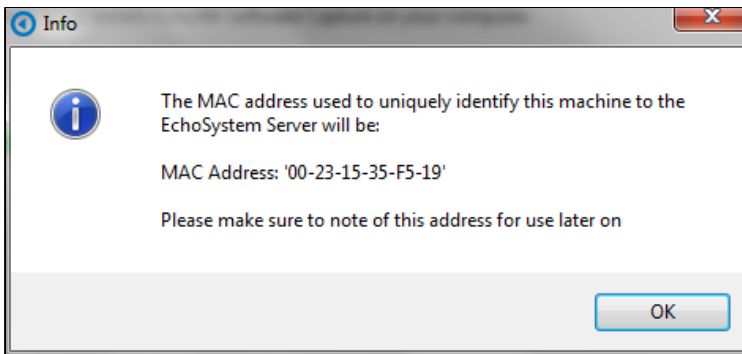
4. Follow the installation wizard.
5. Confirm or change the locations for installation and for capture files, as shown in the below figure, then click **Next**.



6. Continue through the installation wizard. You will receive a dialog box, shown below, providing start/stop instructions for Classroom Capture. The program is automatically configured to start when Windows starts.



7. Click **OK**. You then receive a dialog box, shown below, providing the MAC address of the computer. **You will need to know the MAC address in order to register the device on the ESS.**



8. Continue through the installation wizard. When complete, click **Finish** to close the installer.

i Troubleshooting Access Rights Issues During Installation

If you have access rights issues during installation, your System Administrator may need to change the permissions on the local Users group on the podium PC for the **C:\Windows\temp** directory. Typically the local Users group only has Read & Execute rights. The local Users group must have the following permissions for this directory:

- Modify
- Read & Execute
- List Folder Contents
- Read
- Write

Register the Classroom Capture Installation

Classroom Capture functions as a recording device, just like the capture appliances do. In order to use Classroom Capture as a recording device, you need to register the installation on the ESS. You will need to know the MAC address of each PC on which Classroom Capture is installed in order to register them with the ESS.

To register the Classroom Capture Device/Installation:

1. In the ESS application, navigate to **Configuration > Devices**.
2. Select the **Unregistered** tab. The Unregistered Devices screen opens, showing all of the unregistered devices.

Active: 5		Unregistered: 4		Retired: 0	
Summary	Organization	Type	Capture Status	Log Upload Status	Up Time
<input type="checkbox"/> 64-27-37-75-5e-1d 10.90.14.148 (reinitialize)	echo360	Classroom Capture	New	New	n/a

3. Highlight the Classroom Capture installation that matches the MAC address provided during installation.
4. Click **register**. A pop-up dialog box appears.
5. Select the **Organization** for the device from the drop-down list.
6. Click **Register**.
7. Select the **Active** tab to check that the device is now Active.
8. Notice that the MAC address of the Classroom Capture installation is listed in the Summary column.
9. Wait for the capture status and log upload status to change to **Idle**. This shows that the Classroom Capture device has been successfully registered.

Once registered, the Classroom Capture installation can be assigned to a room and used for either a scheduled or ad hoc capture.

Install USB Cameras for Classroom Capture

In this section:

- [Overview](#)
- [Installation Procedure](#)

Overview

When you install a USB camera, you typically install a camera application and camera driver software on the podium PC that is also running Classroom Capture. The camera application (not the driver) can sometimes interfere with Classroom Capture. This occurs because both the camera application and Classroom Capture need to communicate with the camera driver and will sometimes "talk" to the driver at the same time. If the camera application is talking to the driver, Classroom Capture cannot and captures fail.

To prevent this possibility, follow the [Installation Procedure](#) below, which shows you how to:

1. **Exit** the camera application. Do this after it is configured. You will not need to use the camera application because Classroom Capture controls the camera for you.
2. **Prevent** the camera application from starting automatically upon login. Many camera applications do this by running as a Windows system tray application.
3. **Remove** the camera application icon from the Windows system tray. You may be tempted to exit the camera application but allow the icon to remain in the system tray. We recommend removing the icon entirely. If the application is launched accidentally (or automatically upon subsequent login), it could interfere with Classroom Capture.

Be sure also to refer to our list of [Recommended Cameras and Input Devices](#), specifically [recommended devices for CCAP and PCAP Windows](#) or [recommended devices for PCAP Mac](#) as applies to the feature and platform you are using.

Installation Procedure

1. Be sure you are installing a supported camera. See [supported USB devices](#).
2. Place the camera in position.
3. Following the camera manufacturer's directions, install the camera application on the podium PC.
4. Make sure the camera is connected to the podium PC's USB port.
5. If you want the camera to capture using particular settings (such as frame rate or resolution quality), configure it using the camera application. Classroom Capture will respect these settings.
6. Exit the camera application.
7. Prevent the camera application from starting automatically upon login. Follow the instructions provided by Microsoft, located at: <http://windows.microsoft.com/en-US/windows-vista/Stop-a-program-from-running-automatically-when-Windows-starts>.
8. If an icon for the camera application still appears in the Windows system tray, remove it. Follow the instructions provided by Microsoft, located at: <http://windows.microsoft.com/en-US/windows-vista/Remove-icons-from-the-notification-area-system-tray>.

Manage Classroom Capture Sources

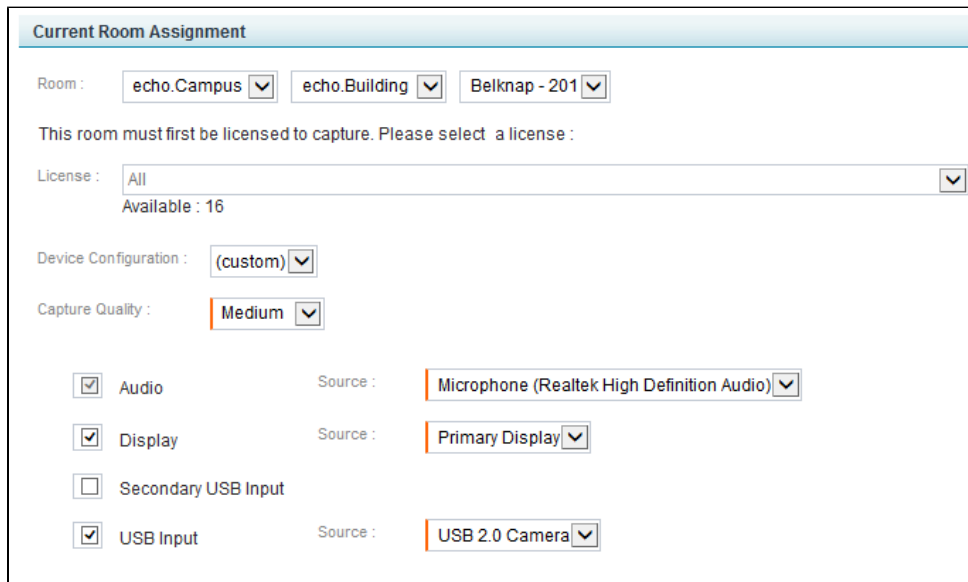
In this section:

- [Overview](#)
- [Configure Device Input for Captures - Current Room Assignment](#)
- [After Replacing, Removing, or Installing a New Input Device](#)

Overview

Classroom Capture allows you to capture video input along with display and audio input. This capability is made possible by support for USB-connected input devices, including USB cameras and USB microphones. Integrated web cameras (if available on the podium PC) are also supported. Integrated webcams can be used because they are typically connected via USB, although internally. References in this documentation to "USB cameras" or "USB video sources" includes integrated webcams unless stated otherwise.

Classroom Capture automatically detects any connected sources and lists them in the Current Room Assignment section of the Edit Device page, shown in the figure below.



Current Room Assignment

Room :

This room must first be licensed to capture. Please select a license :

License :

Device Configuration :

Capture Quality :

Audio Source :

Display Source :

Secondary USB Input

USB Input Source :

The Current Room Assignment section allows you to do the following:

- Assign the device to a room
- License the room for Classroom Capture
- Select the Capture Quality for the captures.
- Select or Deselect the input types you want to capture, then select the Source device for that input.

When you attach a USB camera to the podium PC, the system automatically detects the camera and selects it as the source for USB Input for video capture. The same is not true for USB microphones however. You must manually select the external microphone as the Audio source, unless it is configured as the Windows default audio device. You can also select the USB camera for Audio input, if one is attached and it has a built-in microphone.

While the auto-detect feature will recognize and select an attached USB camera for video input, you are **strongly** encouraged to [review the Current Room Assignment settings](#), shown in the next section, to ensure they are correct.

Classroom Capture supports the use of multiple USB devices, capturing:

- Audio (**A**)
- Audio/Video (**A/V**)
- Audio/Display (**A/D**)
- Audio/Display/Video (**A/D/V**)
- Audio/Video/Video (**A/V/V**)

Be sure also to refer to our list of [Recommended Cameras and Input Devices](#), specifically [recommended devices for CCAP](#).

Configure Device Input for Captures - Current Room Assignment

Use the steps below to attach input devices, then review and edit the Current Room Assignment settings for each registered Classroom Capture device (installation).

1. Where applicable, connect the USB source(s) to the Classroom Capture podium PC. To be sure you are using supported source devices, see [supported USB-input devices](#).
2. Review the camera settings in the camera's vendor-supplied software and adjust if necessary.
3. The camera application and Classroom Capture both need to communicate with the camera driver and will sometimes "talk" to the driver at the same time. If the camera application is talking to the driver, Classroom Capture cannot and captures fail. See [Install USB Cameras for Classroom Capture](#) for details on how to avoid this contention issue.
4. In the ESS, navigate to **Configuration > Devices**.
5. You should see your Classroom Capture devices in the Active devices list, as shown in the figure below. If you do not, be sure you have [registered the Classroom Capture software](#).

Active: 11		Unregistered: 0	
Summary ▲	Organization	Type	
<input type="checkbox"/> 00-13-02-48-77-31 SoftwareCaptureTest Campus SoftwareCaptureTest Building, SystrayRoom	Institution	Classroom Capture	
<input type="checkbox"/> 00-13-95-05-9f-20 SoftwareCaptureTest Campus SoftwareCaptureTest Building, TitusApplianceRoom	Institution	SafeCapture HD	
<input type="checkbox"/> 00-13-95-06-ee-01 SoftwareCaptureTest Campus SoftwareCaptureTest Building, SteveTitusCubeRoom	Institution	SafeCapture HD	
<input type="checkbox"/> 00-13-95-08-55-f8 GregM East Martin Hall, Swf Chunker Room	Institution	SafeCapture HD	
<input type="checkbox"/> 00-13-95-08-56-1e SoftwareCaptureTest Campus SoftwareCaptureTest Building, SerialTrainingRoom	Institution	SafeCapture HD	
<input type="checkbox"/> 12-31-38-04-d6-51 Linux x32 Processor	Institution	Processor	
<input type="checkbox"/> b8-ac-6f-19-d3-50 SoftwareCaptureTest Campus SoftwareCaptureTest Building, SoftwareCaptureTest Room	Institution	Classroom Capture	
<input type="checkbox"/> b8-ac-6f-1e-e6-18 SoftwareCaptureTest Campus SoftwareCaptureTest Building, Silpa's Capture Software Room	Institution	Classroom Capture	
<input type="checkbox"/> bc-30-5b-e6-73-df Dulles Lerner HQ, Landing Pad #1	Institution / American College	Classroom Capture	
<input type="checkbox"/> c4-17-fe-ae-70-04 SoftwareCaptureTest Campus SoftwareCaptureTest Building, Steve Homeroom	Institution	Classroom Capture	

6. In the Active devices list, hover over the device name and click **edit**. The Edit Devices page appears, including the Current Room Assignment section shown in the figure at the top of the page.

Current Room Assignment

Room : echo.Campus echo.Building Belknap - 201

This room must first be licensed to capture. Please select a license :

License : All
Available : 16

Device Configuration : (custom)

Capture Quality : Medium

Audio Source : Microphone (Realtek High Definition Audio)

Display Source : Primary Display

Secondary USB Input

USB Input Source : USB 2.0 Camera

7. In the **Current Room Assignment** settings, review and edit the selections as follows:
- Identify the **Room** (Campus, Building and Room) where this Classroom Capture installation is located
 - Use the **License** drop-down list to assign a Classroom Capture license to the room, if necessary.
 - If necessary, select a Device Configuration from the drop-down list. You can probably leave this as the default (custom) setting.
 - Select **Capture Quality** for the captures:
 - Low** - This creates a capture with low resolution video and display. The lower resolution keeps the final file size to a minimum. This is a good choice if there are bandwidth issues that may cause larger file uploads or capture playback to fail.
 - Medium** - This is the default setting. It generates a capture with medium resolution video and display. This setting creates medium sized files for the recording. This setting is probably sufficient for playback on most devices.
 - High** - This setting creates high-definition resolution for video and display. Consequently this setting also creates very large files for these captures. Use this setting if you have visual details in the display or video of the capture that requires students to see the recording in very high resolution. Otherwise this setting should be used sparingly, due to the time required to upload and process the completed capture. In addition, this setting uses significant computer resources; if the podium PC cannot process a high quality capture properly, your capture may be blank. If you DO need to use the High Quality setting, [run a test capture first](#), to be sure it will work.
- You may also want to refer to [Configuring Quality Selection Settings - Advanced Users Only](#) below.
8. Select up to **three** inputs for the device to capture. As noted above, you can capture A/D, A/V, A/D/V or A/V/V inputs at any given time.
- Audio** is selected by default. All captures will include audio. Select the appropriate **Source** for the audio input.
 - Display** is selected by default but can be unchecked if appropriate. If Display is to be captured, select the appropriate **Source** for the display input.
 - Secondary USB Input** allows you to select an additional device for input, such as a second video camera for A/V/V recordings. If Secondary USB Input is selected, also select the appropriate **Source** for input.
 - USB Input** is selected by default if there is a camera attached to the device (either external or internal webcam). If using the USB Input for capture, select the **Source** for this input.

- When finished with the Edit Device page, click **Save**.

Configuring Quality Selection Settings - Advanced Users Only

The resolution defaults for Classroom Capture outputs are maintained in a set of XML files installed with the program. If the resolution and other output details for the pre-configured selections are not appropriate for your situation and needs, you can manually configure these files. Changes in the XML files will change the output generated for captures made with the corresponding selection.

If you are not familiar with working in XML files, you are **strongly encouraged** to work with a local expert or contact [Echo360 Customer Support](#) for assistance. **You must have Windows Administrator rights on the computer to alter these files.**

The output quality XML files are located in the `/config/` sub-folder of the Data directory identified during installation. By default this is: `C:/ProgramData/Echo360/PersonalCapture/config`

The directory contains the following files:

- **HighRes.xml** - This file controls the output resolution of the High Quality/Larger Files selection.
- **MedRes.xml** - This file controls the output resolution of the Medium Quality/Medium Files selection.
- **LowRes.xml** - This file controls the output resolution of the Low Quality/Smaller Files selection.

Each XML file contains property values that determine the capture output quality for Audio, Display, and Video inputs. If needed, you may change these files to generate different output settings for each of the selection options.

You must restart the Classroom Capture application for your changes to these files to take effect.

Create Copies of the Original XML Files Before Editing

We **strongly recommend** that you save a copy of the original XML files, as installed, PRIOR to making changes. In the event something happens where the altered files do not work or are not generating the desired output, you will want to have the original files for the program to use. You can simply create a copy in the same directory with "`_ORIG`" appended to the file name. For example, `MedRes_ORIG.xml`.

After Replacing, Removing, or Installing a New Input Device

Best Practice: Static Configurations

The USB device support is designed specifically for static (scheduled) venue configurations. Although an Academic Staff member can plug a source device into the USB port and it will be detected, you, the Administrator, should review any new source configurations before the start of the capture session.

Follow these steps if you:

- Replaced an existing source device
- Installed a new or additional USB source device to the podium PC
- Removed an existing USB source in favor of using another already-connected USB source or an existing integrated input source, such as the integrated webcam for video or internal microphone for audio

After installing, replacing, or removing an input device:

1. Connect the new input source device to the USB port of the podium PC. If you are removing a source device,

- skip to step 3.
2. Review the camera settings in the camera vendor-supplied software, and adjust as appropriate. Also refer to [Install USB Cameras for Classroom Capture](#) for configuration instructions to avoid contention for the camera driver between Classroom Capture and the camera application.
 3. In the ESS, navigate to **Configuration > Devices**.
 4. In the Active devices list, hover over the Classroom Capture installation that has the new or removed USB source and click **edit**.
 5. In the Current Room Assignment section of the page, review and change the input options and **Source** selections as needed.
 6. Click **Save**.

Accidental Device Removal

If an external USB source device becomes disconnected from the podium PC, the Current Room Assignment settings will automatically change to use the remaining available devices. The ESS cannot distinguish between an accidental device removal and an intentional one, and will auto-detect any change and reconfigure the Source selections accordingly.

For example, if you have configured a USB video camera to capture video, and the source device becomes disconnected, the ESS automatically detects the change and reconfigures the Source selection to use the integrated webcam for video input (if available), or unchecks the USB Input option and does not capture video.

If, however, a scheduled capture is configured to record video, and the USB video camera becomes disconnected and there is no other video source available, the ESS will send a "capture input missing" alert.

Command Line Installation of Classroom Capture and Personal Capture

In this section:

- [Overview](#)
- [Removing Previous Versions Before Installing v5.5](#)
- [Installation Procedure](#)
- [Create the Configuration File](#)
- [Run the Unattended Install](#)
- [Troubleshooting the Installation](#)
- [Next Steps](#)

Overview

Classroom Capture and Personal Capture for Windows allows for command line installation (or unattended) of the software via command line execution on the target Windows PC. This option is not currently available for Personal Capture for Mac.

The command line install process is nearly identical to the [standard installation process](#) except for these differences.

- You use a configuration file to convey the installation parameters, rather than entering them through a wizard. The same configuration file can be used for all installations of the same product (either Classroom Capture or Personal Capture).
- You invoke the installer from the command line.
- You can start the installation process and walk away, leaving the installation unattended.
- For Classroom Capture installations, you will NOT be provided with the MAC address of the PC (required to register the device). You must note this manually; it is typically printed on a label on the PC.

Classroom Capture and Personal Capture Windows are supported on Windows 7 or Windows 8/8.1, and require Microsoft .NET 3.5.

Command Line Install of Classroom Capture Across Multiple Organizations

If your Classroom Capture installations will be registered to multiple organizations, divide the podium PCs into groups by organization. Then perform the unattended installation and registration process for each group separately. Complete one group (say, all of the Podium PCs owned by the College of Engineering), then repeat the entire procedure for the next group (say, all of the podium PCs owned by the medical school).

When you register the installation on the EchoSystem Server (ESS), **you must select an organization**. The unattended installation does not provide you with the MAC address of the podium PC. This means that you cannot distinguish one installation from another on the ESS. If you perform each organization's installations separately, you can register all of the podium PCs owned by that organization at once, without having to know the MAC address of each podium PC.

For Re-Installation or Upgrades

Both this and future upgrades can be executed from the Classroom Capture or Personal Capture installation by clicking on the upgrade message provided in the bottom bar of the application window.

If Classroom Capture is not performing correctly and Customer Support has suggested you perform a fresh installation, uninstall the existing instance and restart the podium PC before re-installing.

Removing Previous Versions Before Installing v5.5

If you are upgrading current Classroom Capture or Personal Capture for Windows installations, you **MUST FIRST** remove the existing installations. Note that on removal of the program, all content and log files are also removed. Be **SURE** to create a backup of any unpublished recorded content or log file you want to save.

You have the following options:

- Add the line `UninstallPreviousVersions=true` to the Configuration file. This removes the existing version before proceeding with the new version installation.
- Add the option `-UninstallPreviousVersions true` to the command line you execute to launch installation.
- Perform separate command line uninstallation by running the following command: `<installation directory>\Uninstall_EchoSystemClassroomCapture.exe --mode unattended`. This option can be performed for any version of Classroom Capture.

Regardless of which method you use, **DO THESE STEPS FIRST**:

1. Be sure all captures have been published to the ESS, or back up any captures currently resident on the PC. ***All content is removed on uninstallation*** .
2. If necessary, back up any Classroom Capture log files resident on the classroom PC. ***All log files are removed on uninstallation***

If removing the program separately from the installation, it is recommended that you reboot the PC. You can then use the instructions on this page to perform unattended installations of Classroom Capture.

Installation Procedure

Command line installation of Classroom Capture involves the following steps:

1. Create a configuration file to use for all of the classroom installations.
2. Identify the Podium PCs where you want to install Classroom Capture.
 - **If the PCs are associated with different ESSs**, perform the installations for each ESS group separately. The installation executable you download *MUST be from the ESS to which the installation will communicate* and be registered. The ESS information is located in the *device.xml* file contained with the installation package.
 - **If the PCs are owned by different organizations**, organize the PCs into groups by organization, and plan to *install and register all of the PCs for each organizational group separately*. You must identify the organization when you register the installation on the ESS. Child organizations are considered separate organizations because you select the child organization for registration. See [Register the Classroom Capture Software](#) for more details on registering the installation.
3. **Verify** that the podium PCs are running either Windows 7 or Windows 8 and have Microsoft .NET 3.5 installed.
4. [Download the installer](#) from the ESS. If you have multiple ESSs, be sure the installer you use is from the same ESS to which the Classroom Capture mode installation will be registered.
5. [Run the unattended installation](#) command. See the section immediately above if you need to remove a previous version of Classroom Capture first.
6. [Register the installation](#) (for Classroom Capture mode installations only).

Unattended Install Also Available for Personal Software Capture

The above instructions can also be used for unattended or remote installations of Personal Capture for Windows. The only differences are:

- The command line must identify the Personal Capture for Windows executable.
- For Personal Capture silent installation, you may need to identify different installation and data directory names than you would for Classroom Capture.
- Personal Capture installations are not registered on the ESS. This means you don't have to group the target PCs by organization, but you should use the installation executable from the same ESS to which the Personal Capture user will publish their recordings.

Create the Configuration File

Previous Versions **MUST** be Removed First

If you are using a previous version of Classroom Capture, you must remove the old version before installing the new version. See [Removing Previous Versions Before Installing v5.5](#) for information.

The configuration file contains the same information you would normally enter via the installation wizard, and includes the following parameters:

- **prefix** - This is the directory to which the program is installed. The directory shown in each example below is the default directory used by the installation wizard. As with the wizard, you can identify any location you want.
- **pre** - This is the directory to which the software data files are written. It should be a volume with at least 20 GB of space. The directory shown in each example below is the default directory used by the installation wizard. As with the wizard, you can identify any location you want.

Create the configuration file and save it. You can name the file anything you want. The examples shown in the

instructions on this page assume the name of the file is *config.txt*.

An example configuration file for **Classroom Capture mode installation**:

```
prefix=c:\Program Files\Echo360
pre=c:\ProgramData\Echo360\Client
```

An example configuration file for **Personal Capture mode installation**:

```
prefix=c:\Program Files\Echo360\Personal Capture
pre=c:\ProgramData\Echo360\Personal Capture
```

If you are installing Classroom Capture to many different Podium PCs, note the following:

- You can use the same configuration file for all of them.
- Be sure the installation executable you are using was downloaded from the ESS to which the Classroom Capture installation will be registered.
- Be sure to group the target PCs by organization, to make [registering the installations](#) easier without knowing the MAC address of each PC.

If you are installing Personal Capture for Windows to multiple Academic Staff PCs, note the following:

- You can use the same configuration file for all of them.
- Be sure the installation executable you are using was downloaded from the ESS to which the Personal Capture recordings will be published.
- If you are *upgrading* Personal Capture installations via command line installation, be sure both you and Academic Staff users understand the possible ramifications for any existing recordings they may have, noting that:
 - Existing recordings **will** appear in the new version.
 - Staff will NOT be able to use the new Personal Capture to edit previous recordings that have two visual inputs (A/D/V or A/V/V).
 - Instead, they can publish their previous version's A/D/V or A/V/V personal captures and [edit them through the ESS](#).

Run the Unattended Install

Previous Versions **MUST** be Removed First

If you are using a previous version of Classroom Capture, you must remove the old version before installing the new version. See [Removing Previous Versions Before Installing v5.4](#) for information.

The installation procedure provided below assumes the following:

- The [installation file has been downloaded](#) and you know the directory to which the executable was saved.
- The directories identified in the [configuration file](#) can be created on the target PC.
- You know and can include the fully qualified path to the configuration file.

If you are not familiar with the standard installation process, see [Install Classroom Capture Software](#) or [Install Personal Capture for Windows](#).

To perform an unattended install:

1. [Create and save a configuration file](#) as described above.
2. Download the installation executable (*EchoSystemSoftwareCaptureForWindows.exe*) from the ESS Downloads page.

Note the following:

- If you have multiple ESSs, be sure the installer you use is from the same ESS to which the Classroom Capture mode installation will be registered.
 - **Be sure** to note the location of the executable. You will need to run the installation command from this location.
3. Open a DOS command window.
 4. Navigate to the directory where the installation executable was saved.
 5. Enter the following command to run the installation executable using the configuration file parameters. Be sure to use the fully qualified path to the configuration file. The example command shown below assumes the configuration file is saved at the root of a USB drive recognized as the *F:* drive by the target PC. Replace *F:* with the appropriate directory/path.

```
EchoSystemClassroomCaptureForWindows.exe --mode unattended --optionfile
F:\config.txt
```

6. Press **Enter** to execute the command.
7. When the installer is finished, close the DOS window.

Note that if you are using these instructions to install Personal Capture for Windows, the executable file called by the command line is: `EchoSystemPersonalCaptureForWindows.exe`

Troubleshooting the Installation

If you have problems with the installation, you can turn on a higher level of error messaging by adding the "--debuglevel 4" option in the installation command. This is the most "verbose" debug level and should provide you with sufficient information. Enter the command as follows:

```
EchoSystemClassroomCaptureForWindows.exe --debuglevel 4 --mode unattended
--optionfile F:\config.txt
```

You may also need to have your System Administrator change the permissions on the local Users group on the podium PC for the **C:\Windows\temp** directory. Typically the local Users group only has Read & Execute rights. The local Users group must have the following permissions for this directory:

- Modify
- Read & Execute
- List Folder Contents
- Read
- Write

Next Steps

For Classroom Capture mode installations, the next steps are as follows:

1. If you are using the [Post-Installation Checklist](#) to guide your process, check off the appropriate items in the [Install and Register Classroom Capture Software](#) section.
2. [Register the installation.](#)

For Classroom Capture mode installations, inform the Academic Staff members of the new or upgraded program. You can point users to [Classroom Capture for Academic Staff](#) online documentation, or instruct them to click the Help link in the interface for a PDF containing instructions for use.

If you upgraded Personal Capture installations for Windows users, you may want to inform staff of the new interface, and of the following:

- Existing recordings **will** appear in the new version. If users do not see them, have them navigate to the Settings page and check or edit the path to their recordings folder.
- Staff will NOT be able to use the new Personal Capture to edit previous recordings that have two visual inputs (A/D/V or A/V/V).
- Instead, staff users can publish their previous version's A/D/V or A/V/V personal captures, then [edit them through the ESS](#).

You can point Personal Capture mode users to [Personal Capture For Windows](#) online documentation, or instruct them to click the Help link in the interface for a PDF containing instructions for use.