livestream
Studio™
Live Production Switcher

User Manual

For Livestream Studio™ Version 1.3.0 with Version 1.4.0 Addendum

livestream

New in Version 1.4

Clean & ISO Recording

- Record up to 4 sources simultaneously - choose from "clean" (without graphics) and "dirty" (with graphics) program as well any live camera inputs.
- Support for time of day timecode in recorder and media player.

For More Information on ISO Recording:
http://help.livestream.com/customer/portal/articles/1348317-iso-recording-best-practice-recommendation

Media Playback while Recording
- You can now open your recordings in the media player without the need to stop the recording - allowing you to perform some basic replay workflow.

Remote Camera

- **Desktop** - Broadcast a remote computer desktop video and audio as a Livestream Studio input via your local Wifi or Ethernet network. Supports full motion and audio. Requires installing Livestream Studio Remote Camera on the transmitting computer (Available for Windows only, Apple OSX coming soon).

- **Cloud -** Downlink live feeds from your Livestream accounts and use it as a remote live source in your program mix.

For More Information on Remote Camera:
http://help.livestream.com/customer/portal/articles/1263047-livestream-studio-remote-camera

Minor User Interface Updates
- New Tab design which make it easier to see which tab is selected and shown.

Audio Pre-Mixer Upgrade
- Now you can map multiple audio channels to left and right in the pre-mixer, allowing you to perform a pre-mix in stereo mode.

Various Bug Fixes

`

livestream

Table of Contents

`

`

1. Getting started

1.1 Welcome to Livestream Studio™

Congratulations and welcome to Livestream Studio™. All hardware products come with Livestream Studio™ preinstalled. It just takes a few steps to combine Live HD sources, two media players, two graphic overlays and two color generators into a broadcast quality production, whether for large-format screens or streamed to an audience online using the built-in encoder.

This manual applies to the Livestream Studio™ Software as well as the Livestream Studio™ HD50, HD500, HD900 and HD1700.

Livestream Studio™ can:

- Mix multiple video inputs with two channels of internal Media Player, two channels of GFX overlays and two color generators.

- Stream HD video to the Livestream platform via Livestream Studio™'s built in encoder.

- Output a broadcast quality PGM line cut on a variety of digital and analog connectors.

`

livestream

1.2 Installing Livestream Studio™

Note: *Blackmagic Desktop Video drivers must be updated to version 9.6 or higher for use with Livestream Studio™ v1.2 or higher. Go to blackmagicdesign.com/support to update drivers.*

A USB dongle comes pre-installed on Livestream Studio™ Hardware. For Studio Software™ only users, make sure to start by inserting the dongle and opening the drive. Double click the Livestream Studio™ Launcher.
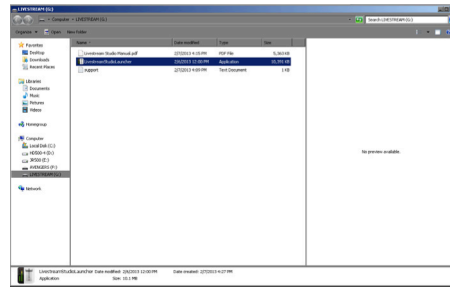
Agree to the Terms of Service and click "Next."
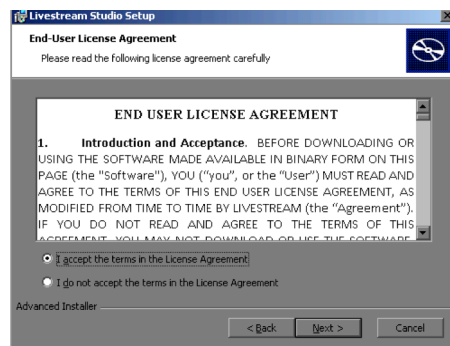
Follow the steps to complete installation and click finish.

`
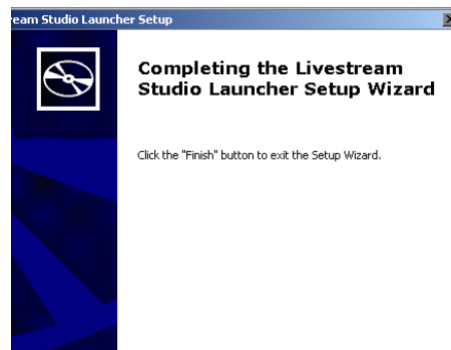
![Livestream logo]

After clicking finish, a second installer will launch.
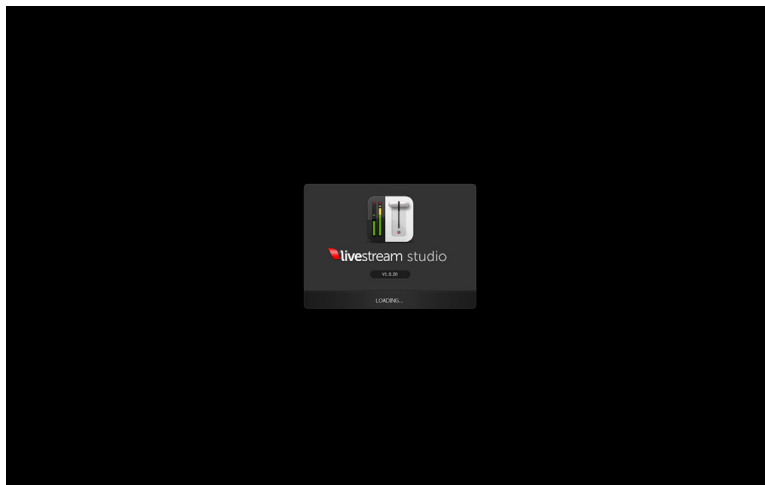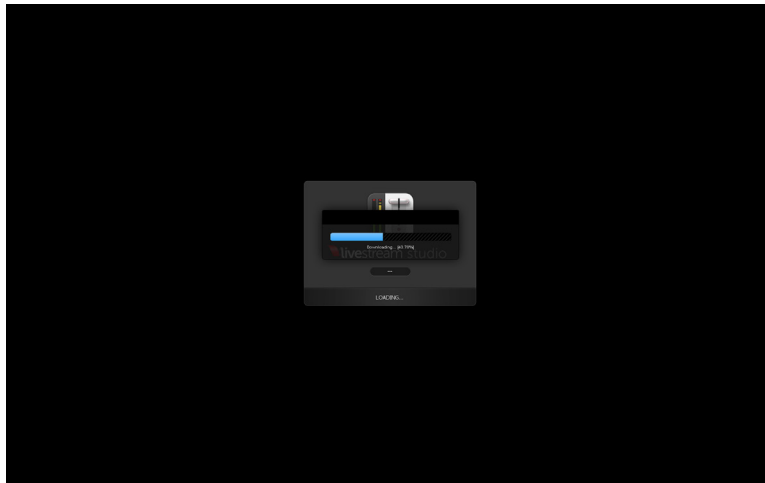
Click 'Install,' accept the terms, and follow the steps to completion. This second process will look exactly like the first. Once complete, Livestream Studio™ will launch.

`

2. User Interface Overview

The Livestream Studio software will launch to the main operating UI.

1	Stream Button
2	Streaming Info Pane
3	Record Button
4	CPU Usage Monitor
5	Preview Window
6	Program Window
7	Main Mix Window / Insert Advertising
8	GFX Overlay Window
9	Multiview
10	Audio Mixer
11	Modules (Input Settings, Streaming, Media Editor, Graphics, and Wipes)

`

Note: Audio mixer, Input Settings, GFX, Media, and Streaming modules can be moved freely between left and right side windows by dragging and dropping tabs to the desired window.

3. Physical Connections

3.1 Blackmagic Video Card Input/Output

Livestream Studio™ only works with Blackmagic Design® products.

This ensures that our product is extremely reliable and robust since we do not need to test and integrate multiple cards from various vendors. Blackmagic also offers a variety of high quality products at very affordable prices.

For a list of supported devices please see Appendix A.

Each Livestream Studio™ hardware product comes with a connection diagram in the box.

3.2 Graphics Card Input/Output (Multi-Screen)

Starting with Studio™ V1.3, the software can support anywhere from 1 to 4 displays, allowing for various viewing configurations across all of the available screens. *(More on this in section 4.5: Multi-Screen)*

Note: In order to utilize 4 screens, we recommend purchasing a Quad GPU graphics card such as the NVidia Quadro series cards.
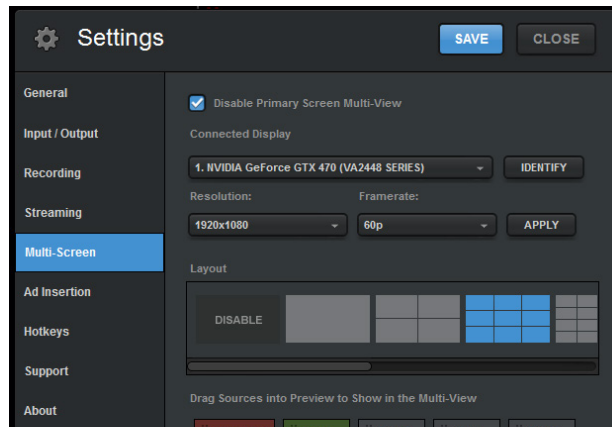
4. Preferences

Before using Livestream Studio™, it is necessary to configure the project settings. To begin configuration, click the "Gear Wheel" icon in the top right-hand corner of the UI.

Note: *Preferences are locked when streaming is in progress. Be sure to set all preferences before taking a stream live.*
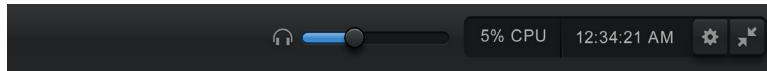
4.1 General Preferences
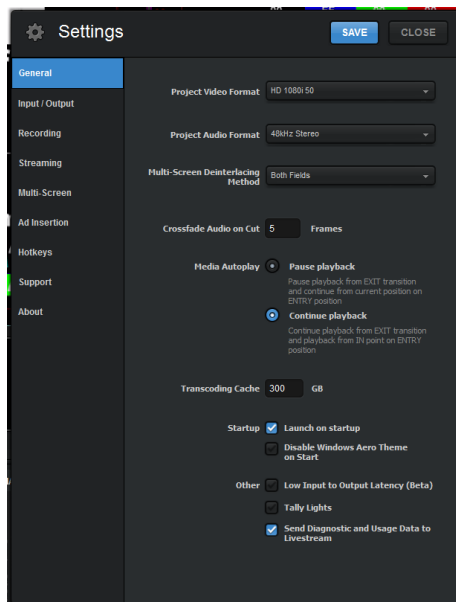
Video Format: Defines the primary project format for Livestream Studio™ operation. Although we recommend setting all cameras to the same format, starting with Livestream Studio™ 1.3 there is an option to convert the video format of the input. *More on this within the Input Settings section of the manual (5.1)*. The output format will also match this selection unless down-conversion is necessary.

Audio Format: Allows selection of mono or stereo audio operation.
Preview Method (Interlaced Operation): Allows selection of multi-view

`

interlaced field viewing. This reduces CPU usage when needed.

Preview Method (Progressive Operation): Allows operation in 'Half Speed Low CPU' mode which removes every other frame from multi-view display in order to minimize CPU usage.

Audio Cross Fade Duration: Sets the speed (in frames) for audio cross fades following CUT functionality only. Audio cross fades associated with video cross fades (follow) will follow the 'Speed' setting in the 'Main Mix' window (see 'Preview/Program Switching' section below).

Media Autoplay Mode Behavior: Defines the method for Media Player playback as 'Pause Playback' or 'Continue Playback.'

Auto Start with Windows: When selected, Livestream Studio™ Software will launch with Windows.

Different GFX Templates: Allows for different settings and templates between GFX 1 and 2.

Low Input-output Latency Output: This is an experimental beta feature we have added to reduce latency through the SDI output.

4.2 Input/Output Preferences

Livestream Studio™ launches with default settings for (4) HD–SDI inputs (via DeckLink Quad card) and (1) HD–SDI output (via DeckLink Studio card). This configuration can be changed to allow for (5) simultaneous inputs with no live output (streaming or internal recording assumed in this configuration).
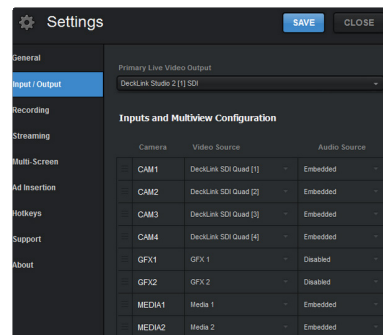
Output Selection: Select the output source first, as this will lock/unlock the fifth video input accordingly.

HDMI Output Through Video Card: To reduce latency on the program out, output directly through the graphics card. Outputting through the Blackmagic card has varied latency depending on the project format

`

by as much as 11 frames. Output through the graphics card does not have sound. It is only video. This function is ideal for IMAG, like a conference or in venue event, where the line cut should display on some screens in the venue.

To output through the graphics card go to the Multi-Screen section of the preferences and configure the external display. *More on this in section 4.5.*

Note: *This function does not work in SD formats (PAL and NTSC).*

Input Selection: Once the output source is set, make sure the proper input sources are selected.

Select the desired source from the 'Video Input' dropdown for each associated input channel. Then select the desired audio input method from the 'Audio Input' dropdown for each associated input channel (DeckLink Quad inputs will only support SDI embedded audio). DeckLink Studio inputs will support embedded, analog or AES/EBU Audio via the Blackmagic breakout cable.

Note: *Blackmagic analog audio input MUST be accompanied by a video input source to be active. When using analog audio input, be sure to use the DeckLink Studio card as one of the video inputs.*

Configure the inputs so that the multi-view shows only the inputs use to avoid clutter. To add an input, click the '+' icon at the bottom of the settings window. From there select the type of input source needed: either video sources, graphics, media, or color bars.
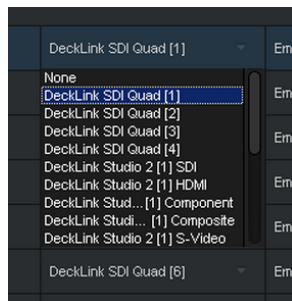

Rename each input channel as it will appear in the multi-view by changing the associated name under the 'Camera' column of the input selection menu. To delete a source, select it and click the '-' icon.
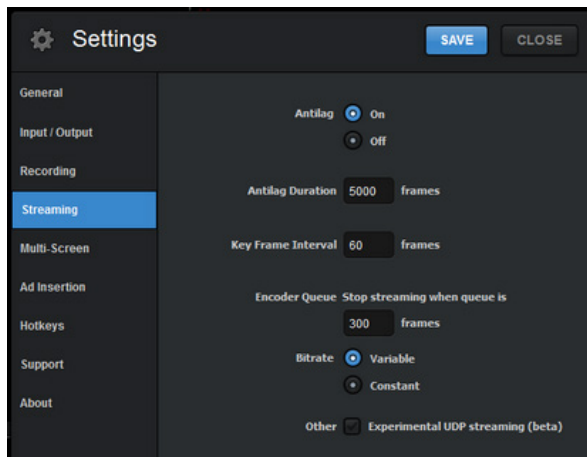
`

4.3 Recording Preferences

Record Location: Selects the location where Livestream Studio™ recordings will be saved. Click the 'Browse' button to select the recording location.

Record to Media Bin: When a recording is terminated, it will immediately be added to the selected media bin. Both bins can be selected or deselected simultaneously.
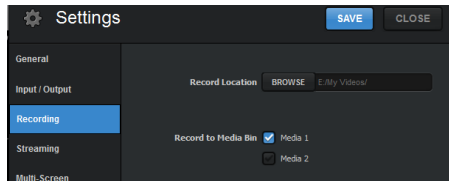
4.4 Streaming Preferences

Antilag: When enabled, the antilag feature works to reduce latency on the viewing end of the stream; if a delay on the encoding side builds up past the user selected 'Antilag Duration', the frame buffer will be cleared. Generally this option should remain off unless low latency is a critical component of the broadcast. It should only be used when a solid internet connection is available for streaming.

Antilag Duration: Defines the antilag duration (in frames) for use with the antilag streaming feature (see above).

Key Frame Interval: Set the keyframe interval.

Stop Streaming When Encoder Queue Size is reached: Livestream Studio™ will terminate streaming if the queue limit (set in frames) is reached.
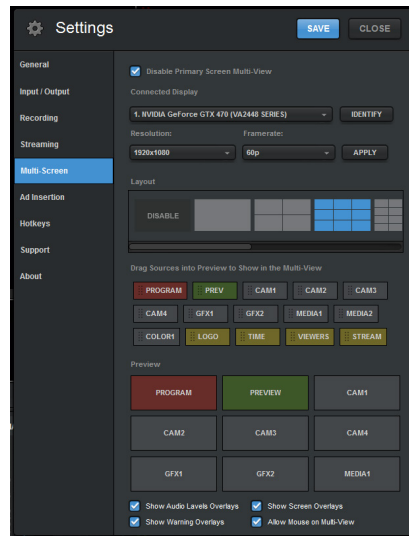
`

Bitrate (Variable vs. Constant): Variable bitrate selection will optimize the encoder's bitrate when possible. Selecting 'Constant bitrate' will maintain the outgoing bitrate, regardless of incoming video bitrate.

Experimental UDP Streaming (Beta): This is an experimental feature for streaming to New Livestream through ZiXi.
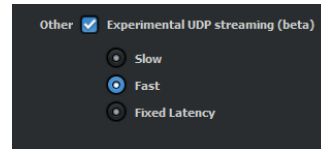
4.5 Multi-Screen

Disable Primary Multi-view: will disable the multi-view shown on the Primary display.

Connected Displays: When using multiple external displays for the output, choose the preferred display to configure from this drop-down menu.

Resolution: Choose from the available resolution settings for the selected display.

Frame-rate: Adjusts the frame-rate of the selected display.

Layout: Choose the desired multi-view layout for the selected display or disable the software output to that display.

Preview: Drag and drop the available input sources from the above section to the desired spot on the Multi-View layout.

Show Audio Levels Overlays: Displays the audio level overlays on the inputs displayed on the selected screen.

Show Screen Overlays: Displays on-screen status information on the Multi-Screen.

Show Warning Overlays: Displays status messages on the external display.

Allow Mouse on Multi-View: Disable this option to prevent the mouse from entering the selected display area.
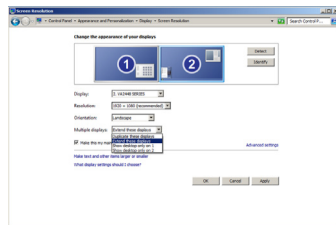
For best results, configure the 'Multiple Displays' option within the Screen Resolution section of the Windows Control Panel to "Extend these displays."

4.6 Ad Insertion

This feature allows the producer to insert a Google Advertisement by clicking a button. Adjust the duration, background and transition type within the "Ad Insertion" section of the Preferences Menu.
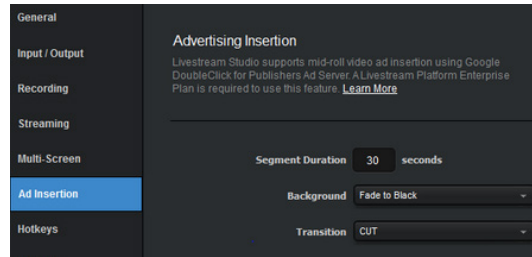

Note: *Requires a Google DFP account (http://www.google.com/dfp) and the purchase of Livestream Platform™ Enterprise Plan.*

After configuring the settings, click the 'Insert Advert' button below the 'Main Mix' section of the Livestream Studio™ UI to display a Mid-roll Ad.

4.7 Hotkey Preferences

Set user defined hotkeys for easier Livestream Studio™ operation from the keyboard.
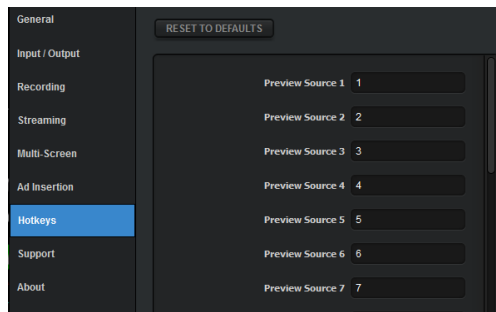
5. Input Settings & The Audio Mixer

Livestream Studio™ accepts up to 8 channels of embedded audio on all digital (SDI and HDMI) inputs. When a DeckLink Studio card is configured as an input, Livestream Studio™ can also ingest up to 4 channels of analog audio via 1/4" or 6 channels AES/EBU audio (analog inputs 3-6 can be used as additional AES inputs when

`

analog audio is not in use) via the Blackmagic breakout cable.

Audio mixer control is broken down into three modules: 'Input Settings', 'Converter' and 'Audio Mixer.'

5.1 Input Settings

In Livestream Studio™ 1.3 there are three different tabs within the input settings. The first one is labeled audio:

Audio Input Settings Module: Two audio channels per input source in stereo mode, or up to eight audio channels per input in mono mode, for use with the respective source fader. By default, channels 1 & 2 are selected for all input sources in stereo mode. Channel 1 is selected for all input sources in mono mode.
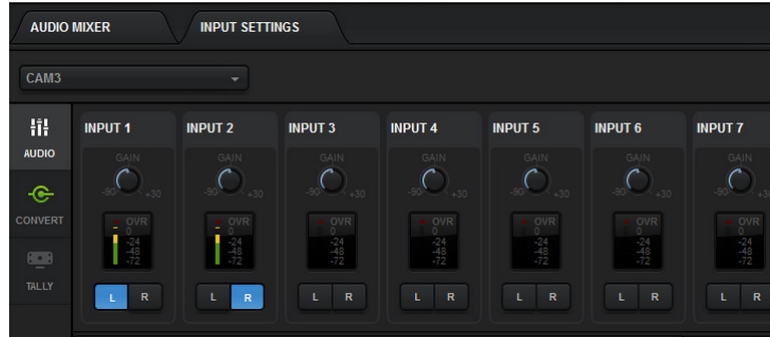
To open the input settings module for a given source, click the "Gear Wheel" icon next to the source's display name in the multi-view or audio mixer or select the desired source from the 'Input Settings' dropdown menu.

Available audio channels are displayed for the selected source. In stereo mode, use the 'L' and 'R' buttons along the bottom of the module to assign left and right audio channels to the input source fader. In mono mode, click the 'On' to assign input channels to the source fader. Each input channel has an individual level meter with gain control.

`

Converter: Allows for any form of video input to be converted to any type of video format in real-time. This allows producers to use different types of camera sources and formats. The video converter also has an auto detect function that will recognize different formats instantly.
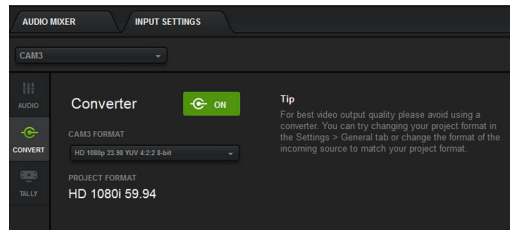
If the converter does not automatically detect the source format of the camera, select the 'Converter' tab to pick the format from a full range of 1080, 720, NTSC and PAL options and convert it into the format that the current project is set to.

Also available within the 'Converter' tab is the option to 'Invert Field Order.'
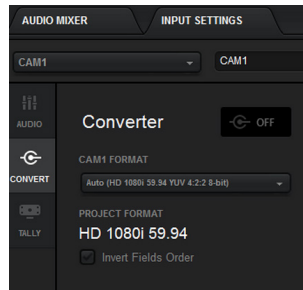
Tally: Activate and control a Tally Light system through the Livestream Studio™.
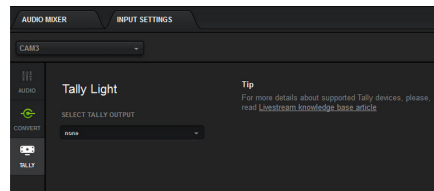
After connecting the tally system via USB, designate a specific Tally Light to a camera by selecting the light from the drop-down menu.

5.2 Audio Mixer

Level Meters and Faders: Each input source has a level meter with fader and gain stage control.

`

Peak Hold: To enable peak hold for a particular level meter, click the "Lock" icon associated with the desired input or master output source.

Air: Pushes the selected input source audio to the master fader.

Follow: Audio transitions will follow video transitions. When selected, Livestream Studio™ will fade between sources based on the 'Audio cross fade duration' setting in 'General Preferences.'

Link (Input Source Fader): Works in conjunction with the 'Follow' setting to group multiple video inputs to a single audio input. Click the "Link" icon to select the audio source preferred for each video source.

Link (Stream Out/Record Out Fader): When selected, streaming and recording audio will follow the same fader. Deselecting this option gives the producer control over stream out and record out audio faders individually.

Mute: Source faders, as well as master stream and record out faders, can be muted individually via the mute button.

Audio Monitoring: Audio monitoring is supported through Livestream Studio™'s 1/8" headphone jack. Individual sources can be solo'd or master audio can be monitored. To add a source to the audio monitor, click the "Headphone" icon below the desired audio level meter. Master audio monitor levels can be adjusted via the volume control in the top right-hand corner of the UI.

6. Preview/Program Switching

Livestream Studio™ is designed for traditional preview/program switching, with control available via mouse or user defined keyboard shortcuts. When a source is selected for preview, it is highlighted in green. When a source is selected for program, it is highlighted in red.

`

6.1 Mouse Control

Left-click on a source to preview it. Right click on a source to take it to program. The mouse can also control switching via the 'Main Mix' window. Click the 'Cut' button to cut between preview and program sources. Double clicking the preview window will also cut it to program. Click the 'Auto' button to fade or wipe between preview and program sources; fade time is defined by the 'Speed' (in frames) setting in the Main Mix window. The T-bar can also be used to manually fade between preview and program sources. FTB fades the program to black and also fades audio out.

To select a wipe, go to the wipes module below which will display an array of wipe transitions. Adjust the wipe on the right side of the module. Depending on the complexity of the wipe, the producer can reverse direction, flip (invert), or feather each transition. Wipes that work in a horizontal or vertical manner can be adjusted according to the X and Y axis.

"Advertising Insertion" can be found within the 'Main Mix' section of the UI. This feature will only be available to producers with Enterprise Plans on Livestream.

Note: This feature will only work while streaming to a Livestream Platform™ Enterprise Plan.
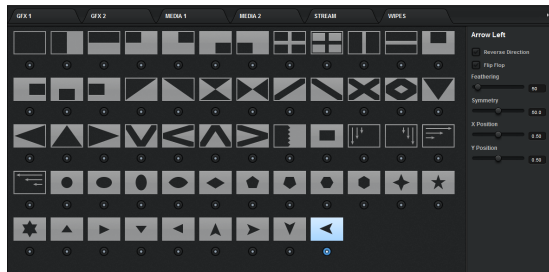
6.2 Keyboard Control

By default, Livestream Studio™ is set to match the keys on the Studio™ Keyboard. Reassign the keyboard controls by visiting the "Hotkeys" section of the Preferences menu.

`

7. Streaming

Livestream Studio™ comes with Livestream's proprietary encoder built in, allowing for multi-bitrate streaming to the New Livestream platform with the click of a mouse.

The can also stream to either of the following CDNs:

- Ustream.tv
- Akamai
- YouTube Live
- Zixi
- Wowza Media Server (RTMP)

7.1. Stream to Livestream

7.1.1 Livestream Account Creation

The easiest way to stream to the web = is via Livestream Platform™. In order to stream through Livestream the user must first make an account. Go to www.livestream.com. Click 'Log In' located in the top right corner, and choose 'Create an Account'.

Either join via a Facebook account or with an email address. Once the account is established, the user is free to create events and broadcast live.
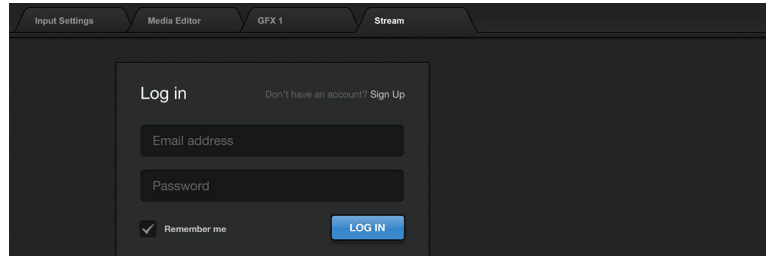
7.1.2 Creating and Managing Events

To create an event, click on the account name in the top right corner of the plan and select 'Create an Event' from the drop down menu. The user will be prompted to set the event title (by default the current date), as well as a start and end time for the event.

`

Draft Events – By default, new events will be in draft mode until the user chooses to Publish & Announce them. Draft events are not displayed publicly on the account page, but can be broadcasted and viewed while logged into the New Livestream Producer Account. This is helpful when testing privately.
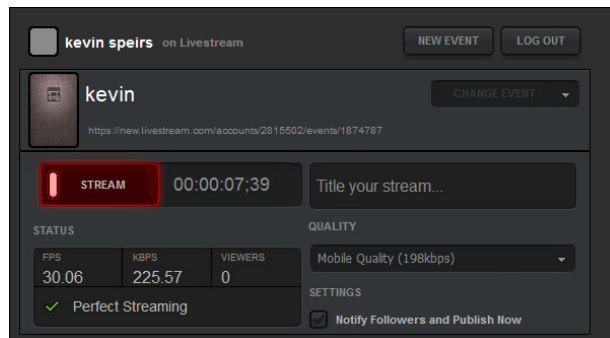
7.1.3 Log into Livestream

Click on the 'Stream' tab to launch the streaming control module. Enter the username (email) and password to login.

Create an event within the streaming module or via a web browser. Once the event has been created, select it from the event dropdown menu. Give the stream a title and select the streaming quality from the 'Quality' dropdown menu.

7.1.4 Quality Selection

Each quality setting has a locked audio and video bitrate associated with it. Quality selection should be based on available upload bandwidth for streaming. To check the speed of the connection, go to speedtest.net and run a speed test. Choose the appropriate streaming profile based on upload bandwidth results.

Mobile Quality:
- Video Bitrate = 130-170Kbps, Audio Bitrate=46-48Kbps
- Total A/V Bitrate = 190-200Kbps
- Recommended Upload Bandwidth = 0.5Mbps

Normal Quality:
- Video Bitrate = 300-420Kbps, Audio Bitrate=94-96Kbps
- Total A/V Bitrate = 435-455Kbps
- Recommended Upload Bandwidth = 1.0Mbps

Medium Quality:
- Video Bitrate = 470-620Kbps, Audio Bitrate=127-128Kbps
- Total A/V Bitrate = 650-678Kbps
- Recommended Upload Bandwidth = 1.2Mbps

High Quality:
- Video Bitrate = 1400-1600Kbps, Audio Bitrate=256Kbps
- Total A/V Bitrate = 1750Kbps
- Recommended Upload Bandwidth = 2.2Mbps

Medium + Mobile Quality:
- Video Bitrate = 600-800, Audio Bitrate=176Kbps
- Total A/V Bitrate = 850-880Kbps
- Recommended Upload Bandwidth = 1.3Mbps

High + Medium + Mobile Quality:
- Video Bitrate = 1900-2400Kbps, Audio Bitrate=432Kbps
- Total A/V Bitrate = 2570-2610Kbps
- Recommended Upload Bandwidth = 3.0Mbps

HD + Medium + Mobile Quality:
- Video Bitrate = 2500-2900Kbps, Audio Bitrate=430-448Kbps
- Total A/V Bitrate = 3050-3100Kbps
- Recommended Upload Bandwidth = 3.5Mbps

HD + High + Medium + Mobile Quality:
- Video Bitrate = 3900-4500Kbps, Audio Bitrate=686-704Kbps
- Total A/V Bitrate = 4586-5204Kbps
- Recommended Upload Bandwidth = 6Mbps

Bitrates for Audio in Mono:
- Mobile = 24Kbps
- Normal = 48Kbps
- Medium = 64Kbps
- High = 128Kbps
- HD = 256Kbps

`

Once quality selection is complete, click the 'Stream' button to begin the stream.

Note: *Support for multi-bitrate streaming to any CDN (V 1.3 and above) is also available.*

7.1.5 Active Stream

When streaming is active, the Stream Info Window and Streaming Log provide live updates on streaming status.

Streaming Info Window: Displays live streaming status info.

| ● STREAM | 00:00:01:01 | 29.97 FPS | 700 Kbps | 👤 123 | ✓ Perfect Streaming | 3 |
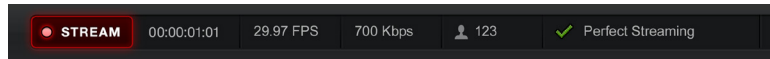
Duration: Displays the current streaming duration.

FPS: Displays the current outgoing FPS.

KBPS: Displays the current outgoing kbps.

Viewers: Displays the number of concurrent viewers connected to the stream.

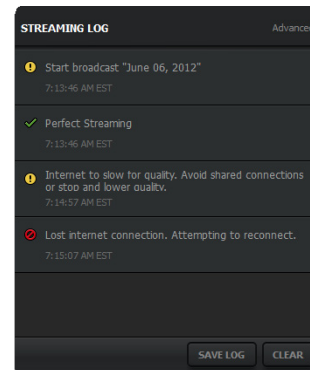**Stream Status**: Displays the current status of the stream.

Perfect Streaming: The stream is going out with no issues.

Internet Too Slow for Quality: Upload bandwidth does not support selected quality. This is generally an on site IT issue and should be escalated to the IT department. Changing quality requires the stream to be stopped and restarted.

Lost Internet Connection: Internet connection has been lost. Again, check with onsite IT if this happens.

CPU Warning: CPU is above 95%.

Streaming Log: Displays live streaming updates.

STREAMING LOG — Advanced

⚠ Start broadcast "June 06, 2012"
7:13:46 AM EST

✓ Perfect Streaming
7:13:46 AM EST

⚠ Internet to slow for quality. Avoid shared connections or stoo and lower quality.
7:14:57 AM EST

⊘ Lost internet connection. Attempting to reconnect.
7:15:07 AM EST

SAVE LOG   CLEAR

Antilag Feature Triggered: Antilag has been triggered based on the selected queue limit (see 'Streaming Preferences' above).

Audio Peak Warning: Audio levels are peaking above normal levels.

Press the 'Stream' button again to end the stream. When a stream is terminated, the user will be prompted to post the clip live to the event feed, save the clip as a draft on the event page or delete the server recording.

Experimental Streaming Over UDP (Beta): This is a new way to stream to New Livestream with multiple bit-rates:

`

livestream

1. Better channel utilization. Use it fully with 2mb upload connection.
2. The stream goes directly to our data center and does not need a local publishing point. Streaming over UDP, however, requires a 30% more uplink bandwidth.
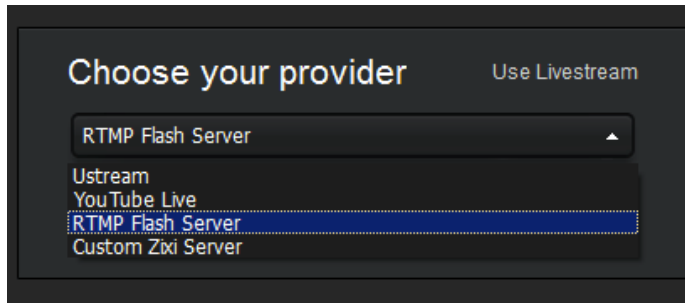

7.2 Stream to Other Services

Livestream Studio™ also is built to stream directly to other services and platforms. Services include Original Livestream, Youtube™ Live, Ustream, Wowza, and Akamai. To stream to another service just select the desired platform and log in.

7.3 Stream To RTMP

Streaming in Livestream Studio™ is supported through the FME3.0 plugin. With RTMP streaming, generate an RTMP URL in order for the encoder to know where to publish the stream. This URL varies from platform to platform. Before starting, confirm how to generate the right RTMP URL for the particular use case.

Once the correct URL is generated, enter it in Livestream Studio™.
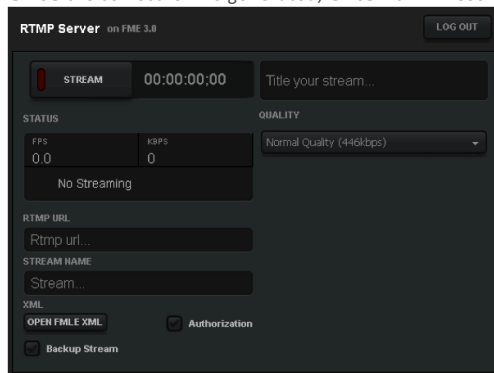
`

Give the stream a name and select a quality before going live.

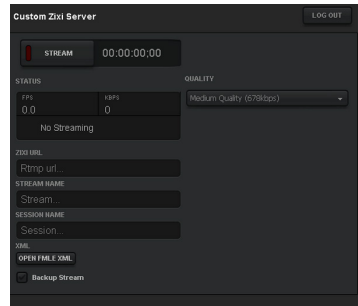Select an option to authenticate the stream with a Username/ Password by selecting the authentication box.

Custom RTMP Quality:
Maximum Bitrate: 9999 kbps
Maximum resolution: 1920x1080

7.4 Stream to Custom ZiXi Server

Livestream Studio™ also allows for streaming to a custom ZiXi server. Like RTMP streaming, a custom ZiXi URL must be generated in order for this feature to work.

Enter the correct URL into Livestream Studio™.

Give the stream a name and select a quality before going live.

Select an option to authenticate the stream with a UN/PW by selecting the authentication box.
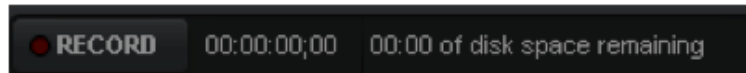
8. Recording

Livestream Studio™ records local files as Motion JPEG .avi at the selected project format spec. Recordings are saved in a user selected destination folder (see 'Recording Preferences' above). Recorded clips can be imported into the selected media player automatically once recording has stopped, for instant DVR capability. Click the 'Record' button to begin recording. Click again to end the recording.

Clips recorded locally on Livestream Studio™ are available for immediate use in Media Players once recording is terminated. Additionally, clips recorded locally on Livestream Studio™ are available for immediate use with Blackmagic Media Express, as well as editing software (Adobe Premiere, FCP, etc.) with the Blackmagic codec pack installed.

`

Recording Media: Available recording time is dictated by available internal disk space. If necessary, an optional SSD expansion bay is available. Visit Store. Livestream.com for more info.

Additionally, external devices with transfer speeds of at least 50MB/sec may be used for recording, though performance may vary with external devices—just make sure the external device is connected and save to that location. Livestream Studio™ also displays the amount of space remaining on the system hard drive.

Note: *Best practices recommendation: when multiple read/write processes are in play (Media, GFX, recording), it is recommended that multiple media sources/ destinations be used. This will improve overall performance of the system.*

9. GFX Channels

Livestream Studio™ has two built- in GFX overlay channels. When both GFX channels are active, GFX 2 is overlaid on top of GFX1. Click the 'GFX 1' or 'GFX 2' tab to access the corresponding GFX module.

9.1 GFX Templates

Our graphics generator is built on a template layering system. This allows for flexibility and makes creating dynamic and beautiful graphics as simple as possible. To add a template, click the '+' button at the bottom left of the GFX module. Templates will always be added to both GFX modules. To rename a template, double click on the display name.
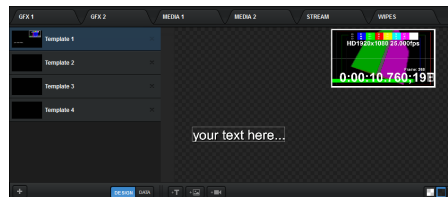
Template Design: Launches template design layout preview window.

Template Data: Launches a view of added data like text or images.

`

Template Background Selection: While working on a template design, choose the background to work against. Alpha transparency will be maintained regardless of background selection.

Adding Graphic Components: Once a template has been created, add components to it such as static and dynamic text, images, and picture in picture.

**Text**: Text can be added from the graphics template and Livestream Studio™ supports fonts currently available on the Windows system. Once text has been added, click the arrow at the top right-hand corner of the asset within the template to adjust font style, size, color, and background color. The ability to adjust the opacity of the text, background color, Multiline and Auto-Size features are also available.
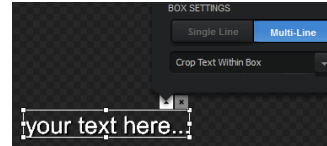
Multiline: Add text on multiple lines regardless of characters or spacing.

Auto Adjustments:

- **Area**: automatically adjusts the size of the text box as text is added or removed.
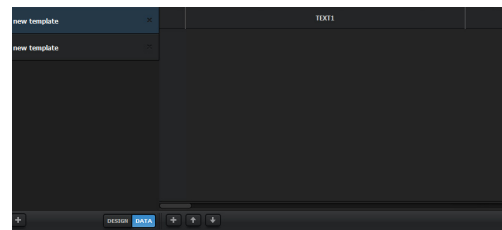- **Font**: automatically resizes font to reflect the size of the text box.
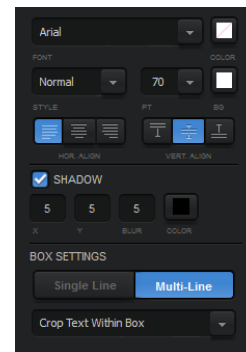
Shadow: Adds a drop shadow to the text.

**Static Text:** Single line of text that never changes.

Dynamic Text: Single line of text that can be altered live without changing templates. To edit a dynamic text asset once it has been added:

1. Switch to template 'data' view.

2. Click the '+' button at the bottom of the template to add a dynamic text line. Rename each line by double clicking on the existing name.

3. To preview a template with dynamic text, click the 'Eye' icon associated with the desired text line. Click the 'Air' button to take the template to Program. Taking a different text line to air will cross fade between the two lines of text.

`
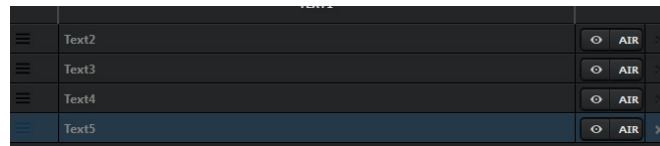
Countdown: Livestream Studio™ has a built-in countdown with a number of customizable features. To add a countdown, create a GFX template, click the text icon and choose "Add Countdown Text." A countdown clock will appear; resize and move the clock like any other GFX layer. To customize the clock, click the "Gear Wheel" underneath the frame of the clock. A module will open with the following options:
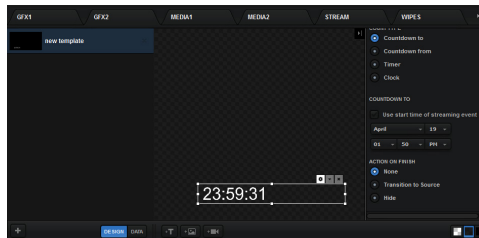
Countdown to: Counts down to a set time.
Countdown from: Counts down from a set time.
Timer: Counts upward.
Clock: Functions as a clock.

Set the Countdown to either transition to a source once completed, disappear, or do nothing when the countdown has completed.

To format the Countdown, double-click the text box to see an abbreviation of each available time field that can be removed or added as needed. The abbreviations are:

    [DD]: Days
    [HH]/[H]: Hours
    [MM]: Minutes
    [SS]: Seconds
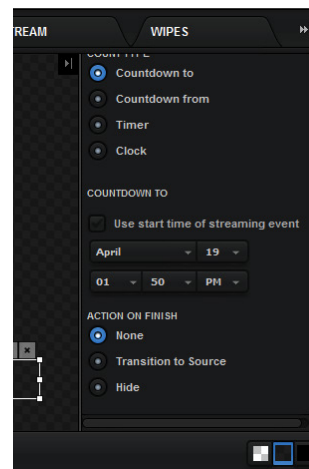   [MS]: Milliseconds
    [FF]: Frames

`

Image Assets: Locally hosted PNG (with alpha support) or JPEG image Assets can be added to a template via the "Asset Addition" button below the template preview. Once added, images can be scaled and positioned with the mouse. Image opacity can also be adjusted by clicking on the arrow in the top right hand corner of the asset within the template.

Note: *Best practices recommendation: when multiple read/write processes are in play (Media, GFX, recording), it is recommended that multiple media sources/destinations be used. This will improve overall performance of the system.*

Picture in Picture (PiP): To add a PiP, create a new template by clicking the '+' sign and clicking the camera icon to the right. Clicking the arrow on the corner of the PiP will display a series of options which include Source, Opacity, Volume, Shadow, Border and Resize (Scale / Crop).

Add as many GFX layers as needed, however we recommend keeping the number of PIPs at five or lower.

Dynamic Image: To add a dynamic image click the "Image" icon and select 'dynamic image.' Functionality with dynamic images looks the same as a static image. Dynamic images, however, stick to their file location and continually look for updated files. When a file is updated the image is immediately updated in the GFX slate. This is particularly useful for graphics that have minor changes throughout a program.

GFX Template Layering: A single GFX template can support an infinite number of text or image layers. As assets are imported, they are added to the top layer of the template. Right-click on the desired image to move it to another layering position.
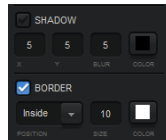
Borders and Drop Shadows: In Livestream Studio™ v1.3, drop shadows can be added to internal graphics elements. Borders and drop shadows may also be added to Picture in Picture.
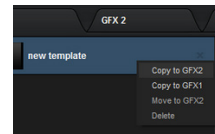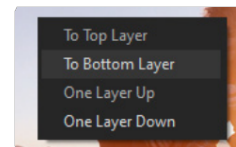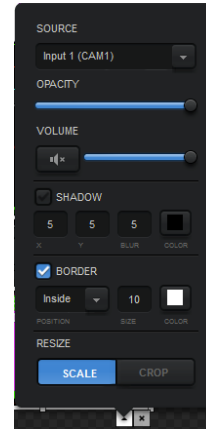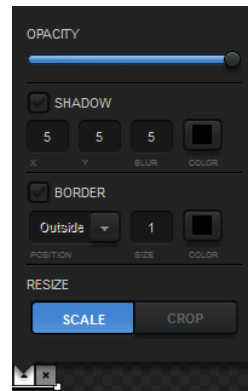
Copying GFX Templates: Starting with v1.3, move and copy GFX templates by right-clicking on the template.

`

9.2 GFX Mixing and Overlays

GFX Mixing: Controlled by the 'GFX Overlay' window.

GFX Preview: To preview a GFX channel, click the 'Eye' icon for the associated channel.

GFX Air: To air a GFX channel, click the 'Air' button for the associated channel.

Link GFX Channels: When selected, both GFX channels will preview or air together.

Cut/Fade Selection: Assigns cut or fade insert method to GFX channels. Fade time is defined by the 'Speed' (in frames) setting in the 'Main Mix' window.

10. Media Player Channels

Livestream Studio™ has two built-in Media Player channels. Click the 'Media 1' or 'Media 2' tab to access the corresponding Media Player module.
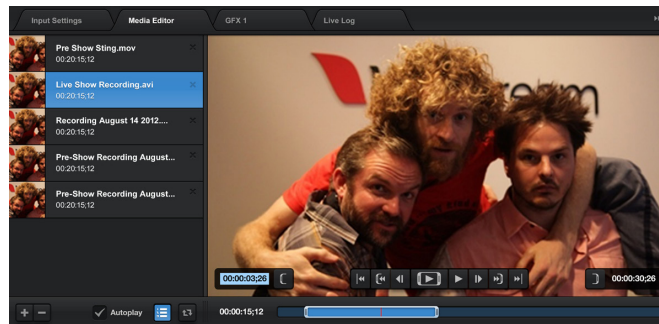
Importing Clips: To add a clip to the selected Media Player channel, click the '+' button at the bottom left of the Media Player module and select the locally hosted file. Add as many clips to a Media Player playlist as desired. Once added, rename clips by double-clicking on their displayed name within the playlist.

Livestream Studio™ also offers a built-in transcoder. To avoid any further transcoding of videos, the software requires AVI files with MJPEG Video Codec and uncompressed PCM audio (48Khz). Livestream Studio™ also supports audio only clips in the form of MP3, WAV, and AAC files.

For best practice, the video clip resolution and frame rate must match Livestream Studio™'s user selected Video Format (Preferences > General Preferences > Video Format).

`

Transcoder: Livestream Studio™ encodes other video files to the required file type and specification of the project. When importing a clip that does not match the project settings, Livestream Studio™ automatically transcodes the file.
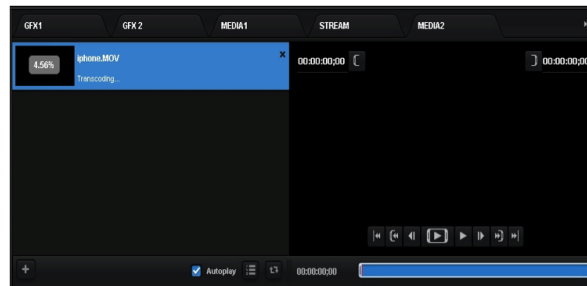
Transcoding time depends on the length of the clip. *Please See Appendix B for all supported formats*. All transcoded files will be stored in the " My Videos" folder. (Computer>Local Disk (C:) > Users >"User" >My Videos > Transcoding).

Note: *Best practices recommendation: when multiple read/write processes are in play (Media, GFX, recording), it is recommended that multiple media sources/ destinations be used. This will improve overall performance of the system.*

Removing Clips: To remove a clip from the Media Player playlist, click the 'x' next to the clip name.

Clip Playback Control: To control playback on a clip, use the playback tools at the bottom of the clip preview window.

Setting Clip In and Out Points: To set an in or out point on an imported clip, navigate to the desired timecode and click the 'In' or 'Out' point set button.

Autoplay: When selected, clips will automatically play when a transition to the associated Media Player channel is triggered. Autoplay behavior is

defined by the 'Media Autoplay Mode Behavior' setting in general preferences. (See 'General Preferences' above). When a clip is 20 seconds or less from its endpoint, the Media Player preview window will highlight yellow. When a clip is 10 seconds
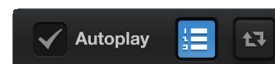
or less from its endpoint, the Media Player preview window will highlight red.

Playlist Mode: When selected, the associated media bin will act as a playlist.

Loop Play: When selected, clips or playlists will loop play until the option is deselected.

Clips recorded locally on Livestream Studio™ are available for immediate use in Media Players once recording is terminated.

11. Color Source

Livestream Studio™ comes with two Color Sources that can be used as backgrounds or as a color test for programs. There is also a tone generator to test sounds.
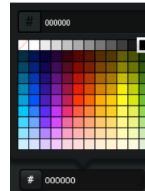
11.1 Choosing a color

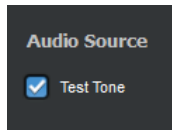To choose a solid color, select the "Solid Color" option.

Click on '**#**' symbol to choose the color.

For color bars select the color bars option.

11.2 Test Audio

When using the source color as a test, test audio by selecting the "Test Tone" option.

12. Importing video clips into Media Player

To transcode other file types that are incompatible with the built-in transcoder, like ProRes, convert the media using Adobe Premiere Pro. This process is a good backup, and also works to transcode on another computer.

12.1 Installing Adobe Premiere Pro

Install Adobe Premiere Pro on either the Livestream Studio™ HD500 or another computer. Depending on the project, either use the Premiere Pro 30-day trial (functions without restrictions or watermarks), buy a license for $799, or get a subscription license via Adobe Creative Cloud for $75/month or $49/month annually. http://www.adobe.com/products/ creativecloud/buying-guide.html

- Downloading and installing Adobe Premiere Pro CS6:
    1. Download Installer http://www.adobe.com/cfusion/tdrc/index. cfm?product=premiere_pro
    2. Sign in with an Adobe ID or register for free on the website.

- Once the download is complete, the installer should automatically launch. Follow the steps to complete installation.

- Once Adobe Premiere Pro is installed, install the latest version of the Blackmagic Design Driver.

Note: *if the most updated version of Blackmagic design driver is already installed, remove it and reinstall the driver.*

12.2 Downloading and Installing the Blackmagic Design Driver

Note: *Please ensure that Adobe Premiere is installed before performing this step.*

- Go to: http://www.blackmagicdesign.com/support

- Download Desktop Video

- If Desktop Video is already installed, remove it, then reinstall the driver. If Desktop Video is not installed skip to Step 3.

`

livestream

- Open the Desktop Video file download
    1. Once open, select remove all files
    2. Select remove, then follow the steps to complete the uninstall
    3. Restart the computer

- Installing Desktop Video
    1. Open the saved Desktop Video file
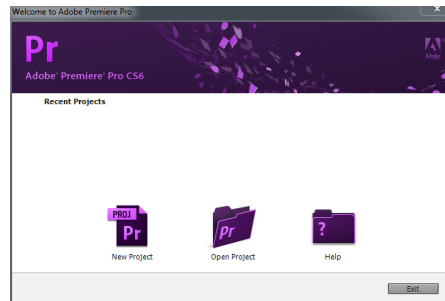   2. Follow the steps to complete installation

        Note: *Windows Security might prompt to verify the publisher:*
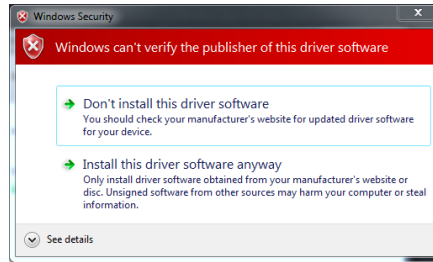
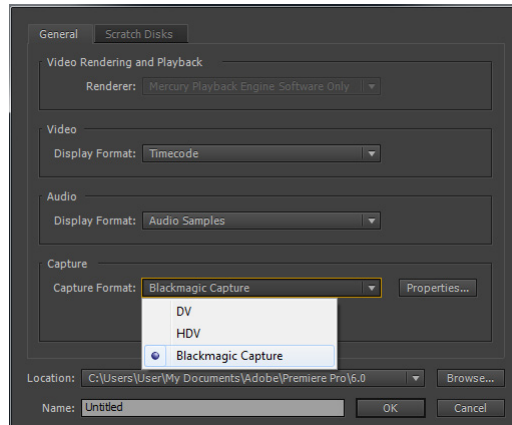   3. Select "Install this driver software anyway."
    4. When the driver completes installation, restart the computer.

12.3 Converting Video Files Using Adobe Premiere Pro

- Open Adobe Premiere Pro and choose a new project:

- Select the capture format:

- Select the sequence settings.

Important: *These should match the Video Format setting of the Livestream Studio™ Project.*

Here are two examples:

`
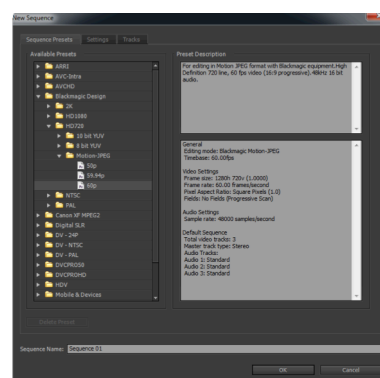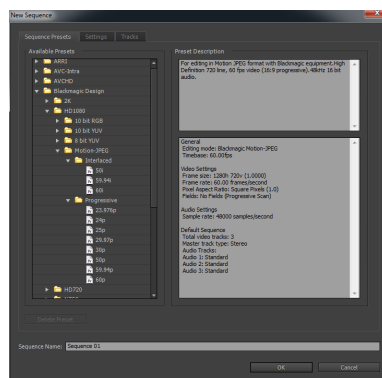
- Import the video clip.
  1. Go to: File > Import
  2. Select the video file and select open
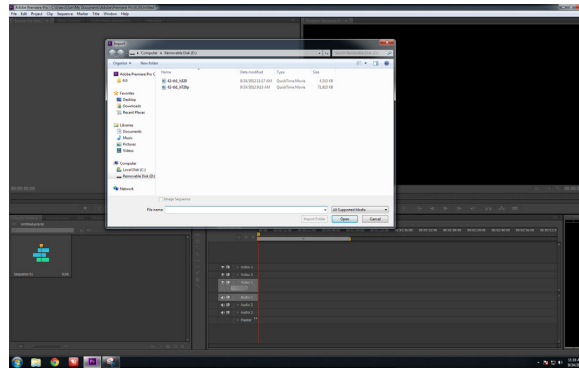
The imported file should appear in the clip bin:

`
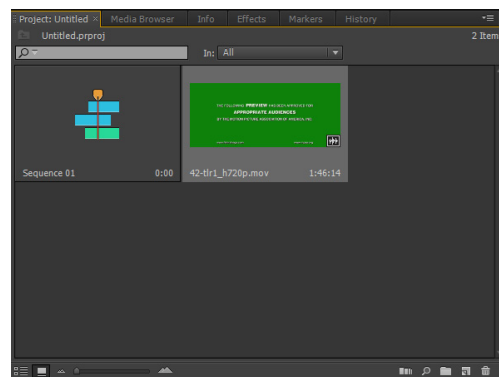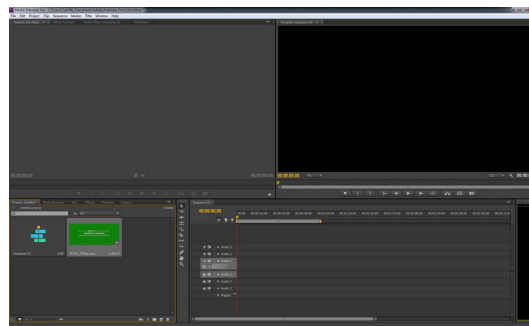
- Drag the clip into the timeline.
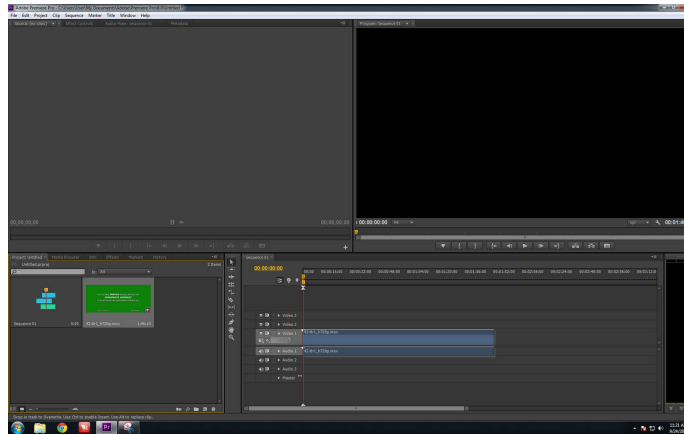
1. The user will be prompted to Change or Keep Sequence Settings.
2. Choose "Keep Sequence Settings."
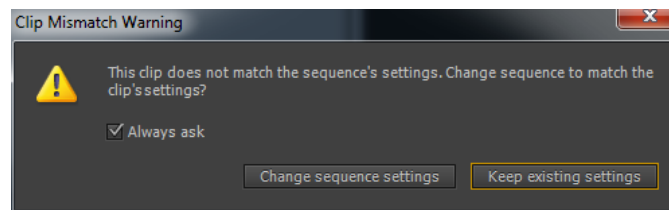
- Exporting video clip:
    1. Go to File > Export > Media
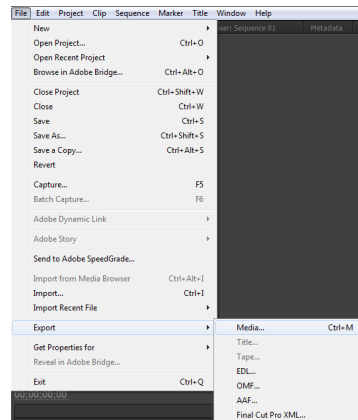
- Select "Match Sequence Settings"
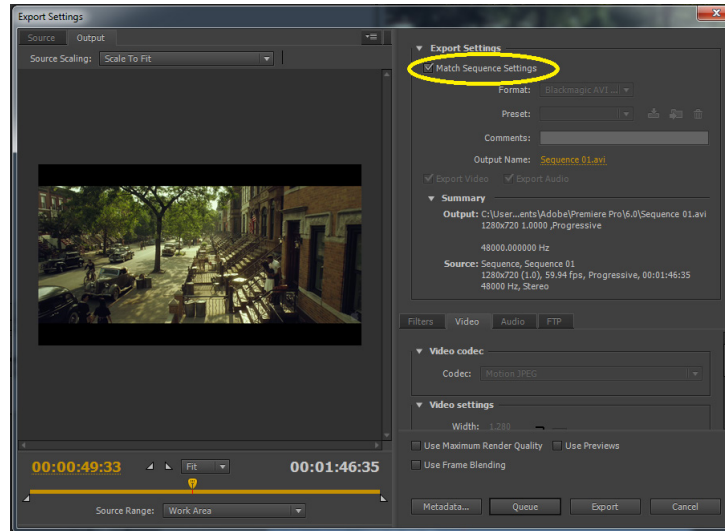
- Enter an output name
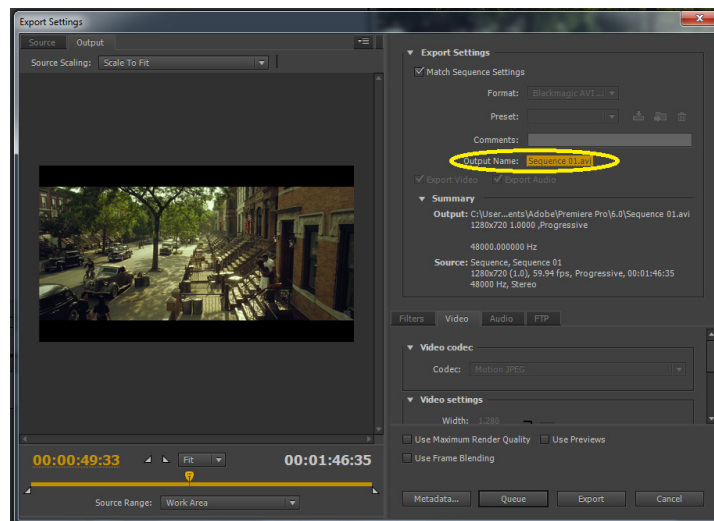
- Click 'Export'
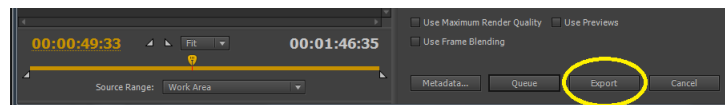
- Once exporting this window will appear:
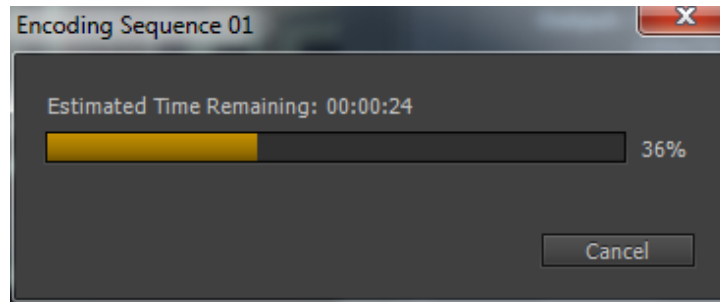
See section 10 about adding clips to the media player.

12.4 Downloading and Installing the BlackMagic Design Driver for Final Cut Pro

Note: *Please ensure that Adobe Premiere is installed before performing this step.*

1. Go to: http://www.blackmagicdesign.com/support/ and select the product.

2. Download Desktop Video

3. Installing Desktop Video
    1. Open the saved Desktop Video file.
    2. Double Click the Installer file to begin installation.

`
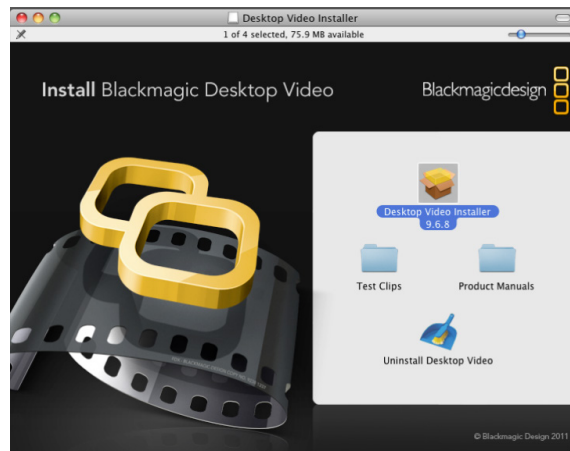
4. Follow the steps to complete installation.

5. When the driver completes installation, restart the computer.

12.5 Converting Video Files using Final Cut Pro 7

1. Open Final Cut Pro and choose a new project

2. Drag the video clip into the file bin

3. Drag the clip into the timeline

    1. A prompt to Change the Sequence Settings will display.

    2. Choose "Yes"

4. Go to File > Export > Quicktime Movie

5. Choose sequence settings

Note: *Settings must be exactly the same as the settings on the Livestream Studio™ project.*

6. Save the clip

See section 10 about adding clips to the media player.

`

Appendix

Appendix A – Supported Devices

PCIe Capture and Playback

- Blackmagic Design® DeckLink Quad™
- Blackmagic Design® DeckLink SDI™
- Blackmagic Design® DeckLink Duo™
- Blackmagic Design® DeckLink Optical Fiber™
- Blackmagic Design® DeckLink Studio™
- Blackmagic Design® Intensity Pro™
- Blackmagic Design® DeckLink HD Extreme 3D™
- Blackmagic Design® DeckLink 4K Extreme™

USB 3.0

- Blackmagic Design® UltraStudio Pro™
- Blackmagic Design® UltraStudio SDI™
- Blackmagic Design® Intensity Shuttle™ for USB 3.0
- Blackmagic Design® ATEM 1 M/E Production Switcher™
- Blackmagic Design® ATEM 2 M/E Production Switcher™

Thunderbolt

- Blackmagic Design® Intensity Shuttle™ for Thunderbolt™ http://www.blackmagicdesign.com/products/intensity/
- Blackmagic Design® Intensity Extreme™ http://www.blackmagicdesign.com/products/intensity/
- Blackmagic Design® UltraStudio Express™ http://www.blackmagicdesign.com/products/ultrastudio/
- Blackmagic Design® UltraStudio Mini Recorder™ and Mini Monitor™ http://www.blackmagicdesign.com/products/ultrastudio/

Tally Lights

- The Livestream Studio™ software currently supports Tally Light devices from metaSETZ (www.metasetz.com).

`

Appendix B – Supported Formats for Transcoding

File Containers

Format	File Extensions	Media Source	Media Sink	Requires
3GP	.3g2, .3gp, .3gp2, .3gpp	MPEG-4 File	3GP File Sink	Windows 7
Advanced Streaming Format (ASF)	.asf, .wma, .wmv	ASF Media Source	ASF Media Sink	Windows Vista
Audio Data Transport Stream (ADTS).	.aac, .adts	ADTS File Source	None	Windows 7
AVI	.avi	AVI File Source	None	Windows 7
MP3	.mp3	MP3 File Source	MP3 File Sink	File source: Windows Vista File sink:
MPEG-4	.m4a, .m4v, .mov, .mp4	MPEG-4 File	MPEG-4 File	Windows 7
Synchronized Accessible Media Interchange (SAMI)	.sami, .smi	SAMI Media Source	None	Windows Vista
WAVE	.wav	AVI File Source	None	Windows 7

Audio Codecs

Format	Decoder	Encoder	Requires
μ-law Coding	Audio Compression Manager (ACM) μ-law Codec	None	Windows Vista
Adaptive Differential Pulse Code Modulation (ADPCM)	ACM ADPCM Codec	None	Windows Vista

`

livestream

Advanced Audio	AAC Decoder	AAC Encoder	Windows 7
MP3	Windows Media MP3 Decoder	None	Windows Vista
GSM 6.10	ACM GSM 6.10 Codec	None	Windows Vista
Windows Media Audio (WMA)	Windows Media Audio Decoder Windows Media Audio Voice Decoder	Windows Media Audio Decoder Windows Media Audio	Windows Vista

Note: *Media Foundation provides wrappers for several ACM codecs, listed in the previous table. However, Media Foundation does not support arbitrary ACM codecs.*

Video Codecs

Format	Decoder	Encoder	Requires
DV Video	DV Video De–coder	None	Windows 7
H.264	H.264 Video Decoder	H.264 Video Encoder	Windows 7
MJPEG	MJPEG Decoder	None	Windows 7
MPEG-4 Part 2	MPEG-4 Part 2 Video Decoder	None	Windows 7
MPEG-4 v1/v2/v3	Windows Media MPEG-4 V3 Decoder Windows Media MPEG4 V1/V2 Decoder	None	Windows Vista
Windows Media Video (WMV)	Windows Media Video 9 Decoder Windows Media Video 9 Screen Decoder	Windows Media Video 9 Encoder Windows Media Video 9 Screen Encoder Windows Media Video 7/8 En–coder	Windows Vista

"Supported Media Formats in Media Foundation (Windows)." Supported Media Formats in Media Foundation (Windows). Microsoft, 28 Nov. 2012. Web. 7 Feb. 2013. <http://msdn. microsoft.com/en-us/library/windows/desktop/dd757927%28v=vs.85%29.aspx>.

`

livestream

Appendix C – Input Source Troubleshooting

If there is no video signal in the **Livestream Studio™** Software please make sure to confirm the following:

Are you using a Blackmagic capture device?
The **Livestream Studio™** Software only accepts video signals from certified Blackmagic capture devices. If using a non-Blackmagic device there is a chance the signal will not appear in the software.

Do you have the latest version of the Blackmagic drivers?
Stock drivers are often out of date as Blackmagic frequently releases updates. Please be sure the latest version of the Blackmagic drivers are installed, which can be downloaded from http://www.blackmagicdesign.com/support

- Select the Operating System (Windows) in Step 1
- Select the device Series (Decklink, Intensity, etc) in Step 2
- Select the Product in Step 3
- Click Search
- Download the latest 'Desktop Video' for Windows and run the file

Are you getting a video signal in Blackmagic Media Express?
Click the 'Start' button, search for Media Express, and click Blackmagic Media Express to open the program. Select the 'Log and Capture' tab to display the video input. Click Edit on the menu bar at the top of the program and select 'Preferences,' then confirm that the Project Video Format matches the format of the video source. If a video signal is present in Media Express, check Livestream Studio™'s video format settings. If a video signal is not present in Media Express, confirm a connection to the correct input and that the camera is configured properly.

Does Livestream Studio™'s video format match your input source?
Open Studio's Preferences by clicking the "Gear Wheel" icon at the top right-hand side of the program window. Click the 'General' tab at the left-hand side of the 'Preferences' window, and choose the video format that matches the input source's format. Please note that all input sources should match Livestream Studio™'s video format setting.

Are you connected to the correct input of your Blackmagic device?
Generally Blackmagic does not specifically mark the input/outputs of the device on the actual hardware. Please check the capture device's documentation to confirm the proper input.

`

livestream

Is your camera configured properly?

Many cameras with multiple output formats allow the user to define a specific output method. Check the camera's settings to confirm they are properly configured for HD-SDI, HDMI, or analog depending on the input to the Blackmagic device.

Does your camera output to an external display?

Connect the camera's output to an external display such as a monitor to verify the video signal. If a signal is not received, try a new wire of the same type or double-check the camera's settings.

Appendix D – Known Issues

Audio on SDI output

Updating the Blackmagic drivers may result in an echo on the audio output when sending the program feed via SDI. This is due to a configuration change within the Sound setting in the Windows control panel. To resolve, open the 'Sound' section of the Control Panel (Control Panel > Hardware and Sound > Sound) and disable all Blackmagic Audio outputs.

Input Source Conversion

When using a 1080i source within a project that is set to any other video format, some distortion or interlacing on the resulting preview may occur due to improper identification of the input source as Progressive. To avoid this issue:

- Change the Video Format of the project within the 'General' section of the 'Preferences Menu.'

- Within the Input Settings > Convert, manually select 1080i as the input format.

`

livestream

Warranty

Livestream provides a limited one (1) year warranty for Livestream Studio™. The limited warranty covers defects in components and workmanship as well as functionality of the Livestream Studio™ Software. The warranty start date begins on the day the item is shipped.

The limited warranty does not cover the following:

- Software, including the operating system and any third party software

- Failure due to viruses, bugs, or any type of malicious software

- Hardware or components not included in the original assembly

- External computer hardware products and peripherals

- Problems that result from:
  1. Accident, abuse, or misuse
  2. Servicing not authorized by Livestream
  3. Usage that is not in accordance with product instructions
  4. Failure to follow the product instructions or failure to perform preventive maintenance
  5. Failure to follow Livestream's technical support or RMA instructions including improper packaging

- Product that has been damaged by actions that are beyond Livestream's control, including for example, impacts, fluids, fire, flood, wind, earthquake, lightning or similar disaster, war, strike, lockout, epidemic, destruction of production facilities, riot, insurrection, or material unavailability

Livestream will replace or repair any component or system free of charge. Livestream will ship free of charge any item covered by warranty back to the customer in the continental United States via ground delivery. Any other shipping fees will be covered by the customer. Customer must insure both ways if insurance is desired. Livestream does not insure RMA shipments. To request an RMA, go to help.livestream.com and fill out a support claim.

Livestream Studio™ Dongle Policy
Lost or stolen dongles are your responsibility. The only way to replace a dongle is to buy another one. If you think your dongle is broken or malfunctioning you can contact support at support@livestream.com to request an RMA.

Livestream Store Return Policy

`

All returns must be shipped with an RMA (Returned Merchandise Authorization) number visibly printed on the outside of the return packaging. Any product returned without an RMA number will be returned to the customer. To request an RMA e-mail rma@livestream.com. Returns may be assessed a restocking fee as described below.

Livestream reserves the right to reject any RMA or refund request for a damaged unit or unit returned with missing parts.

`

livestream