Streambox® Media Player™ for iOS and macOS

(HD • 2K • UHD • 4K • 8, 10, & 12-bit • HDR, Dolby Vision • 5.1 & 7.1 Audio)

Setup Guide

Update:

Version: 0322a

Table of Contents

Introduction

Streambox® Media Player for iOS and macOS is an HD/UHD/4K/HDR player for IP video arriving from Streambox encoders or from the Streambox Cloud services. The Media Player is well suited for streams being pushed (routed to) or pulled from the Streambox Cloud Services.

Getting Started

Installing the Media Player:

- Install the *Streambox Media Player* from the Apple App Store
- Make sure your device has a good Internet connection (LAN, Mobile, or WiFi)
- Open Streambox Media Player

Home/Main Screen

The video is presented in the top panel in portrait orientation (image above), and in full screen when the device is held in a landscape orientation (image below) or with macOS, when clicking the green Zoom button.

Landscape Orientation:

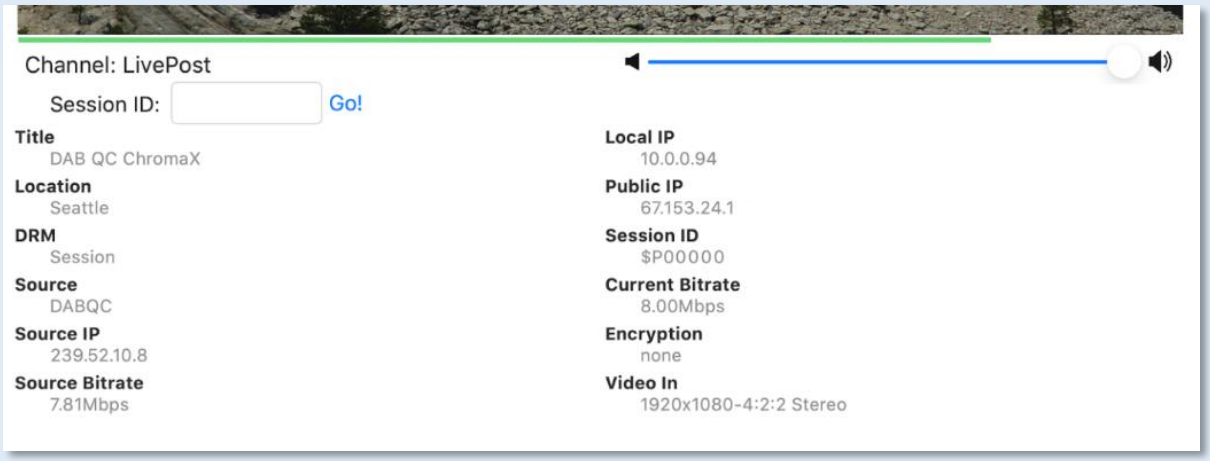
When the orientation is in landscape (or horizontal), or in the case of macOS (when clicking the green Zoom button, or upsizing the window), you can display the control buttons by clicking anywhere in the video display area (see red outline in image).

Note: to return to a portrait layout, you may have to manually resize the window.

Portrait Orientation:

In the portrait layout, the metadata and video properties are displayed under the video view (for macOS, you must resize the window so view the Portrait layout):

- **Status line** appears just above the video image and displays the player status, the incoming video format and color profile.
- **Video display** provides an aspect correct display of the incoming video. When there is no incoming stream, a standard splash screen is displayed (see top image on previous page).



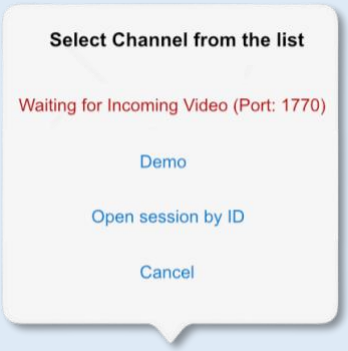
- **Audio meter** is displayed as a green bar just under the video display (see green bar just below video display in above image).
- **Volume control** is a slider located on the right side below the video display on macOS devices
- **Channel:** Name of current Channel or Session
- **Session ID:** Field used to enter Session ID (see Sessions section below). The Session ID will be provided to you from a session host. Once the Session ID is entered (Go!) the Media Player pulls the session if it is active.
- **Metadata:** Text encoded in video stream); i.e., *Title*, *Location*, *DRM* (a.k.a. Group, Network1), *Source* (a.k.a. Reporter), *IP* address of stream source, and *Bitrate* from stream source.
- **Stream data** (ascertained from incoming stream); i.e., *Local/Public IP* of the unit, *Port* receiving stream, *Bitrate* of incoming stream, *Encryption* status of incoming stream, and *Video In*, the format and color profile of the incoming stream and audio channels (e.g., Mono, Stereo, 5.1, and 7.1).
    - **Local IP** is needed if you want to send a video stream directly to the Media Player. If the video source and the Media Player are on separate networks separated by a firewall, you may have to set up port forwarding on the network where the Media Player is connected. Port forwarding is a router setting. Make sure both the device IP and desired port match (see Channel Settings for Port ID below).

  - **Encryption** indicates if the incoming stream is encrypted. If the stream is encrypted, a matching 'Decryption Key' will need to be set for the channel used (see Setup Channels section below) or from the main Settings menu. If the encryption keys do not match, an error, 'wrong key', will be displayed.

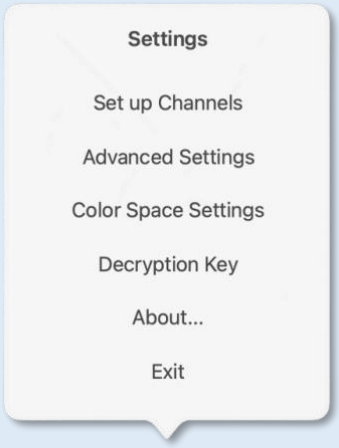
- **Version number** is displayed at the bottom-middle of the screen. This is only needed for Support assistance.

Control Buttons

Control buttons appear at the bottom of the main page (click anywhere on the video display in landscape orientation to show the control buttons).



- **Channels** button opens a menu from which to select programmable channels (only active channels are displayed). See image on right.
- **Settings** button opens a menu (second image on right) from which to select *Set up Channels, Advanced Settings, Color Space Settings, Decryption Key, and About*; covered in sections below. *About…* opens the About page.
- **Stop** button initiates a stop stream process to shut down the current incoming stream. This can take up to 30 seconds. Once completed, the Channel display will be changed to "Please select a channel". This is a prompt to remind you to select a new channel or enter a new Session ID.



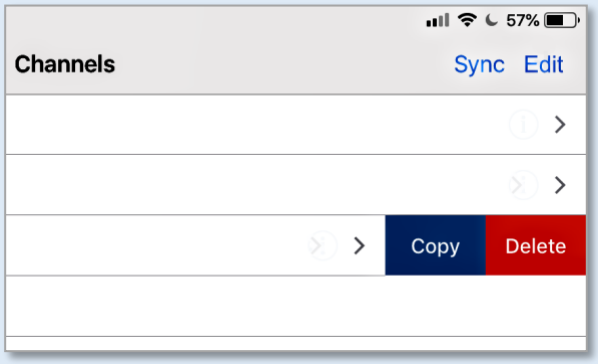
- **PurePQ/NativePQ** switch (when present) is used to change between NativePQ (where luminance is mapped) and PurePQ (where luminance is clipped according to the display's maximum luminance/nit level). PQ (Perceptual Quantization) is an HDR encoding that uses the PQ transfer function for 10-bit color/gamma management.
- **+ and –** buttons (when present) increases or decreases screen luminance.

Setup Channels

The Media Player supports 30 programmable channels on iOS devices and 50 on macOS. This allows you to have channels to receive direct streaming over more than one port, and other channels to pull from Streambox Cloud services, and other channels to display multicast streams, and other channels for recurring Sessions, and of course any combination of the above. Each channel can be assigned a unique name. Once setup, it is easy to select an active channel from the Channels menu.

To create/edit channels, select 'Set up Channels' from the Settings menu on the Home page; the *Channels* page will open (image below). From here, you can modify a currently defined channel by pressing anywhere on its row, or you can choose 'Edit' (blue arrow) to add, delete, or reorder the channels, or 'Sync' (green arrow) to synchronize all channel settings with your group; see Sync Channels section below.

With iOS players, you can duplicate or delete a channel by swiping left on the channel, then select Copy to duplicate the channel or Delete to delete the channel (see image on right).

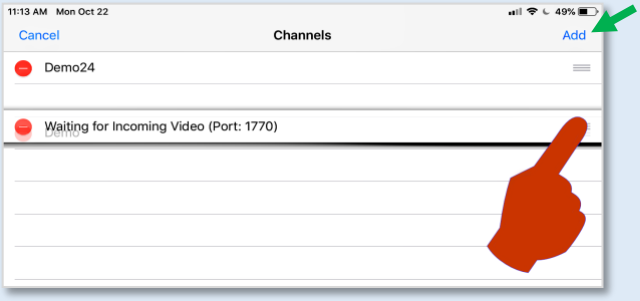


Modify Channels

You can modify a channel by pressing anywhere on a channel's row to open its respective page.

Edit Channels

When you chose 'Edit' channels the Channels page displays the pancake-controls for reordering the channels. Simply press on the control for a second or two until the row pops out (see image to right) and then drag channel row up or down to the desired position.

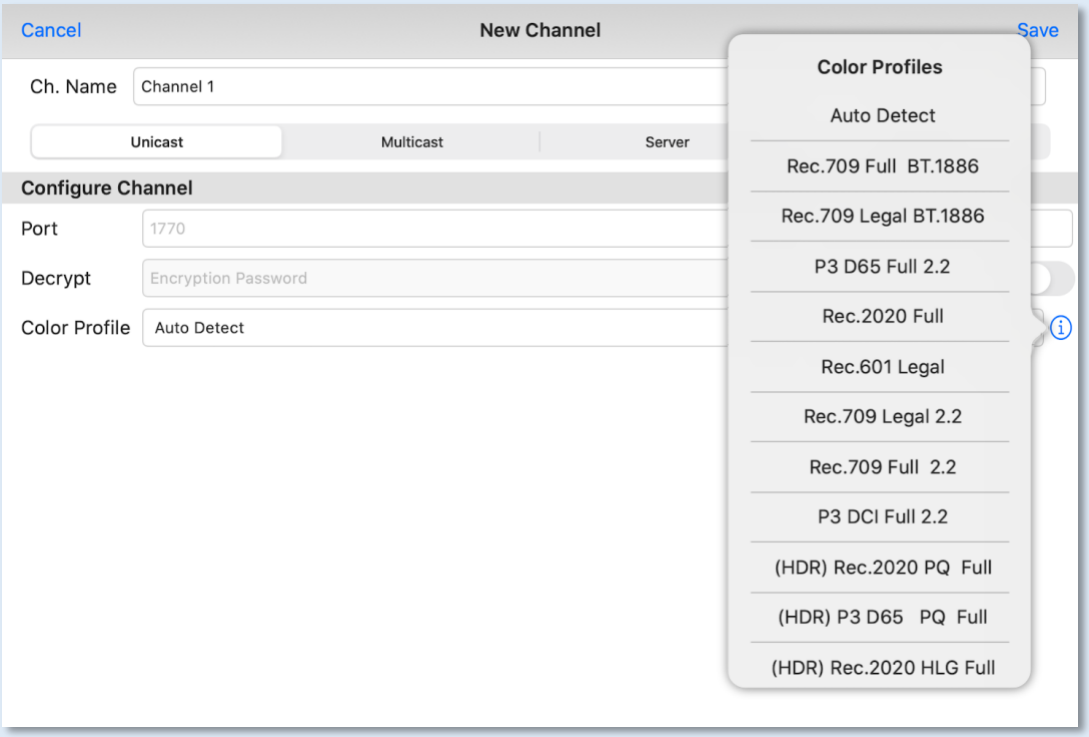


Add a Channel

To add a channel, select the 'Add' button at the top right of the page (green arrow). This will open a blank channel page. You can choose from Unicast, Multicast, Server, and Session modes (see respective sections below).

Unicast

Selecting 'Unicast' mode allows a video stream to be delivered directly to the Media Player. This is ideal for point-to-point streaming from a media source via Streambox Cloud services directly to the Media Player.[1]



- Provide a Name that helps you remember the behavior of the channel.
- Set *Port* number (1770, 1771, 1772, and 1773 are typical for Streambox video streaming). 1770 is the default.
- Enter *Decrypt* key that matches the encryption key used by the encoder. Leave blank if no encryption was used.
- Select *Color Profile*. We recommend *Auto Detect*. See image to right.
- Click 'Save' in upper right corner

Now you can stream directly to the Media Player by selecting a Unicast channel. Set the Decoder IP (destination) on your Streambox source (encoder or cloud routing) to the IPv4 address of the network where the Media Player is located. IPv4 addresses have the common IP appearance (e.g., 72.21.215.90) of a numeric address. Set the Port number to match the one set for the Media Player channel (e.g., 1770). Start the stream – it should appear on the Media Player within just a few seconds (but

[1] See www.Streambox.com for a list of Streambox encoders and Cloud services

sometimes it can take a minute).

Remember: If the video source and the Media Player are on separate networks, separated by a firewall, you must set up port forwarding on the network where the Media Player is connected. Port forwarding is a router setting. Make sure both the Device IP and Port number match (you can usually define a port range to support multiple channels, e.g., 1770 to 1779).

Multicast

The use of IP multicast can be useful where a stream needs to be shared within a closed network, e.g., multiroom lectures or sermons. The one or several Media Players can be used to capture and display the multicast stream. Note: multicast is a router feature that is supported by most routers.

The Multicast mode must be used within a single network. A Streambox Encoder must be setup for multicasting with matching settings, IP and Port.

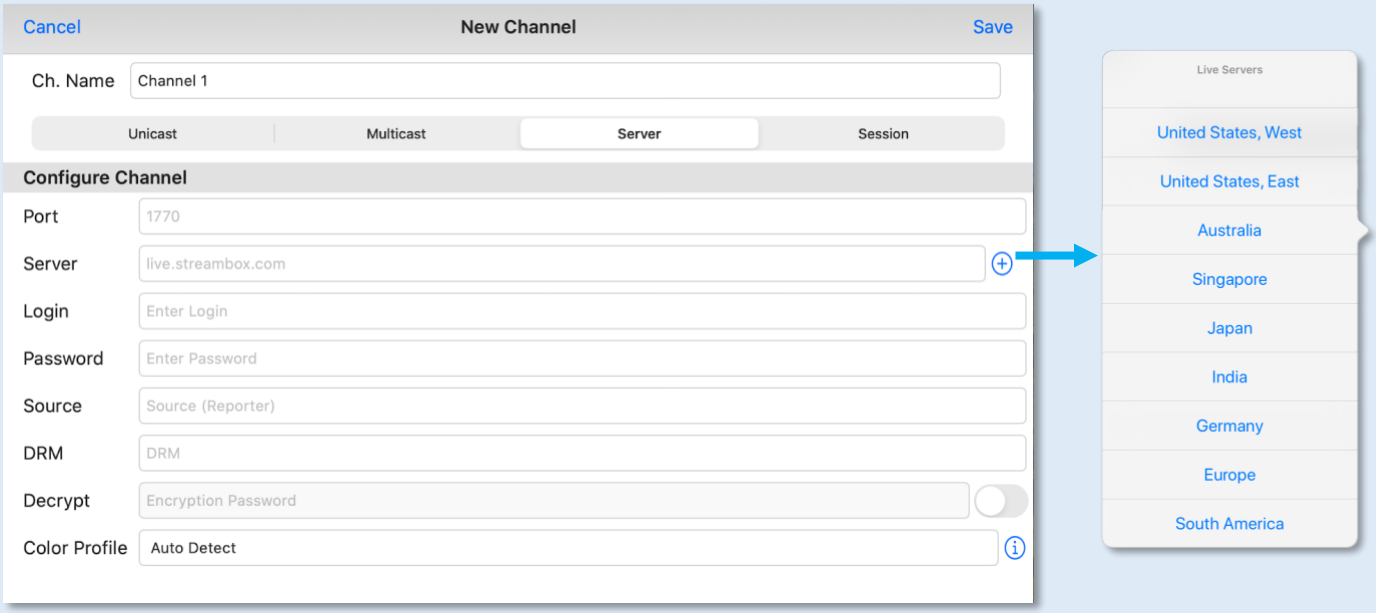
The IP address must be in the range reserved for multicast use: 224.0.0.1 to 239.255.255.255.

Server

Selecting ‘Server’ mode allows a video stream to be pulled from the Streambox Cloud or from a Streambox Enterprise Server. This is ideal when you have many sources streaming videos and you want to select one of them.

- Provide a Name that helps you remember the behavior of the channel
- Enter Port number (1770 (default), 1771, 1772… are common)

- Select a Streambox Cloud Server (see pop-out in image below)



- Enter server login credentials; 'Login' and 'Password'
- Enter Source name (this must match *Reporter* of the source's metadata). Source is a generic designation and can be anything from a name to an event name, or a course name, etc.
- Enter DRM (aka, Group name or Network1)
- Enter *Decrypt* key that matches the encryption key used by the encoder. Leave blank if no encryption was used.
- Select *Color Profile*. We recommend *Auto Detect*; as mentioned above, *Color Profile*.
- Click 'Save' in upper right corner

Once a channel with Mode set to Server is selected from the *Channel* menu (on page 5), Media Player will attempt to log-on to the specified server with the provided credentials. If login succeeds, Media Player will then request a video stream with the specified Source (Reporter) name; if found, the stream will start. This process can take up to a couple of minutes.

Note: The Source (Reporter) name should not be the same as the user (login) name. For example, if the username is David, the Source (Reporter) name could be David1 or any other name except David itself.

Sessions

Streambox® Sessions™ makes video production collaboration easy. This is ideal for offsite producers, colorist, advisors, and others. All you do is create a session and stream to it, share the Session ID with collaborators, they plug the Session ID into the Streambox Media Play, and all are live, reviewing the same high quality, color rich, video. The Session ID can be entered directly on the Home page (see Page 3) or can be saved as a Channel for convenient recall (see image below).

Note: The host of the session will provide the Session ID.

- Provide a Name that helps you remember the behavior of the channel
- Enter the Session ID
- Enter a Decryption/Encryption password if used (switch on to apply)
- Select a Color Profile
- Click ‘Save’ in upper right corner

Advanced Settings

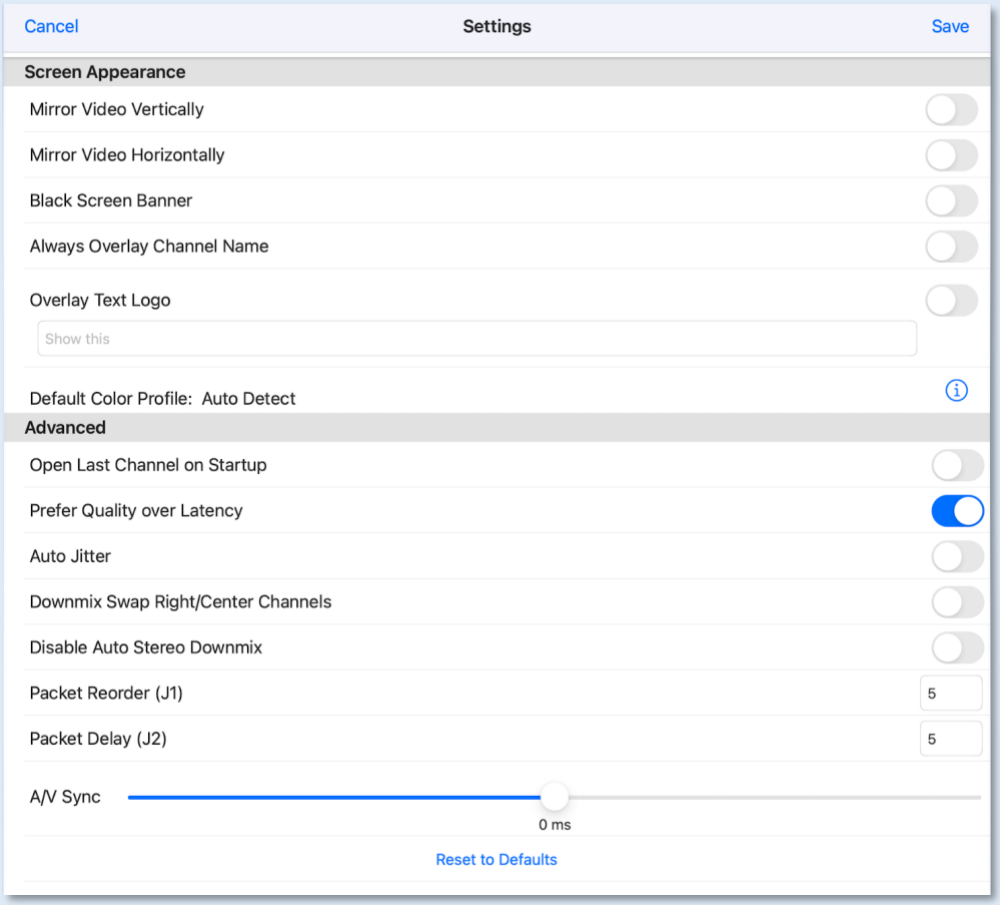
Selecting *Advanced Settings* from the *Settings* menu (on page 5) will open the Settings page (see image below).

Screen Appearance

The Screen settings are straight forward and adjust the screen presentation:

- **Mirror Video Vertically** inverts the display along the vertical axis; that is, upside-down mirror image or prompter view (see comparison image below, page 12)
- **Mirror Video Horizontally** inverts the display along the horizontal axis; that is, mirror image (see comparison image below, page 12)
- **Black Screen Banner** is a black/blank opening screen

- **Always Overlay Channel Name** displays channel name in lower left-hand corner of the screen
- **Overlay Text Logo** displays custom text in the upper left-hand corner of the screen
- **Default Color Profile** sets the global color profile property. See list on Page 7.

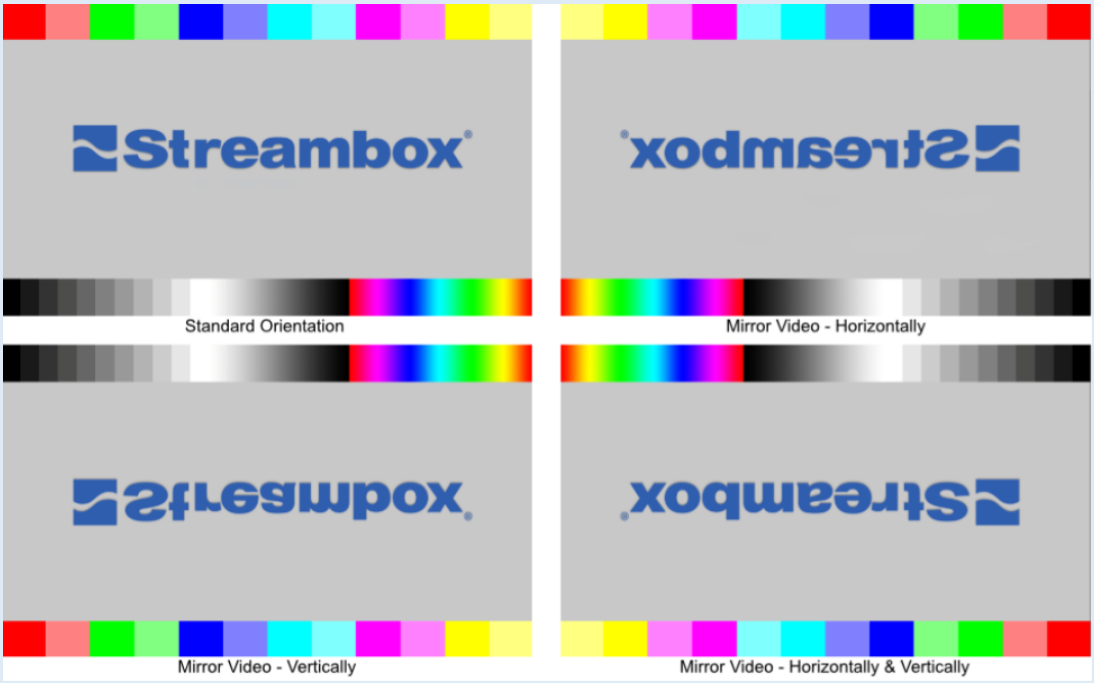


Advanced

Advanced settings are usually reserved for product support or fine tuning.

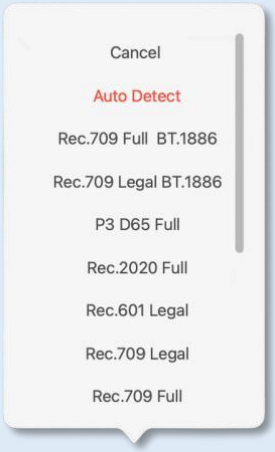
- **Open Last Channel on Startup** reloads last used channel on startup
- **Prefer Quality over Latency** compensates for network delays and should remain on unless Support recommends otherwise.
- **Auto Jitter** is a legacy filter that is rarely deployed.
- **Downmix Swap Right/Center Channels** for cinematic streams where the primary audio is encoded on channel #3 (Center).
- **Disable Auto Stereo Downmix** allows channels 3-16 to be rendered as unmixed audio so all channels can be passed to an external audio device. See

- **Packet Reorder (J1)** refers to the size of a buffer of data packets. This allows sufficient data to be buffered to compensate for small dips in network activity or occasional data corruption.
- **Packet Delay (J2)** refers to the initial offset buffer between when packets arrive and when packets are rendered into a video stream. This is another method to compensate for variations in network activity; that is, even if the network gets a little backed up, there should be enough data in the buffer to provide a smooth and continuous video. NOTE: When LDMP is active on the Encoder, these values may be overridden by the Encoder LDMP settings.
- **A/V Sync** is used to fine tune the synchronization between audio and video which are rendered separately. Sometimes you can see someone talking and the action of their mouth is a little out of sync with the audio of their speech. Usually the difference is temporary or so minor that most viewers are unaware. Should this become a significant issue, the A/V Offset can be used to add or subtract delay in the audio track.



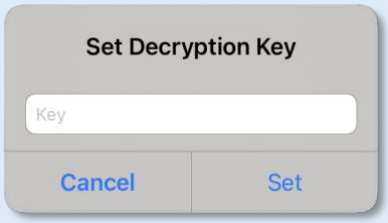
Color Space Settings

Streambox Media Player supports many color space profiles (see list, Page 19). For most cases, we suggest that Auto Detect should be selected.



Decryption Key

Streambox Media Player supports AES 128-bit and 256-bit decryption. To receive an encrypted stream, you must enter the matching symmetric encryption key.



When an encrypted stream is received without a matching decryption key, an 'Incorrect key' or 'Invalid Decryption Key' warning will be displayed. If a matching symmetric key is engaged then the method of encryption (e.g., AES 128-bit) is listed (when screen is in portrait orientation).

Multi-channel Audio

Streambox® Media Player for iOS and macOS supports up to 8 channels of audio. By default, multi-channel audio is downmixed on systems with only 1 or 2 speakers – essentially all iOS and macOS devices. See "Disable Auto Stereo Downmix" in the Advanced Settings section above to disable downmixing.

There are several multi-channel flavors; e.g., 5.1, 7.1, and quadrophonic with different channel/speaker ordering. Below is the order common to Avid Pro Tools (based on RFC 7845):

- 1 channel: monophonic (mono).
- 2 channels: stereo (left, right).
- 4 channels: quadraphonic (front left, front right, rear left, rear right).
- 5 channels: 5.0 surround (front left, front center, front right, rear left, rear right).
- 6 channels: 5.1 surround (front left, front center, front right, rear left, rear right, LFE).
- 7 channels: 6.1 surround (front left, front center, front right, side left, side right, rear center, LFE).
- 8 channels: 7.1 surround (front left, front center, front right, side left, side right, rear left, rear right, LFE)

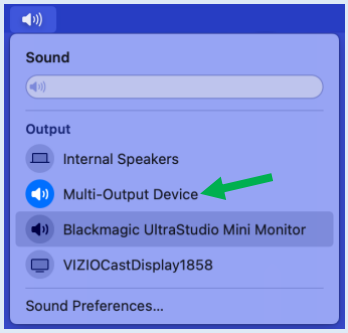
NOTE: Streambox uses downmixing algorithm per RFC 7845 and assumes that the stream channels are mapped as above. This automatically supports where LFE and Center channels are swapped in the original stream.

Some cinematic formats[2] swap Right and Center channels which may influence downmixing. Should this be a problem, you can use “Downmix Swap Right/Center Channels” in the Advanced Settings section to improve downmixing.

Playing Multi-channel Audio

For simplicity, let us assume you are using a MacBook Pro which has 2 internal speakers, left and right. Stereo streams arriving to the Streambox Media Player will work without any reconfiguration. By default, streams with surround 4, 5.1, or 7.1 configuration will be downmixed to stereo. If more than two channels of audio are being streamed you will need an external device, such as the Blackmagic UltraStudio Mini Monitor, to playout the complete complement of audio.

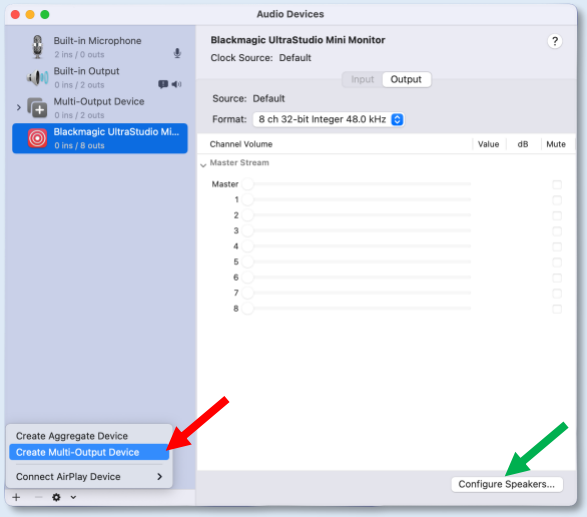
Audio Device Selection



Once the Blackmagic UltraStudio Mini Monitor (or other supported multichannel audio playout device) is connected, you may select it from the menu bar by clicking the speaker icon. This will direct all audio output to the attached audio device.

Depending on sound device selected, you might need to configure desired channel numbers and layout for proper output. You can use the ‘Audio MIDI Setup’ utility for macOS to configure speakers (it may be located in the ‘Other’ folder on Launchpad).

Common options are: Stereo, Quadrophonic, 5.1 and 7.1 (see Audio MIDI Setup User Guide). For example, you can select ‘Blackmagic UltraStudio…’ from the list on the left (image right), then use ‘Configure Speakers’ (green arrow) to open the speaker configuration dialog (image lower right), and then select ‘Stereo’. In this example, Streambox Media Player will downmix 5.1, 7.1, or Quad audio to 2-channel stereo.



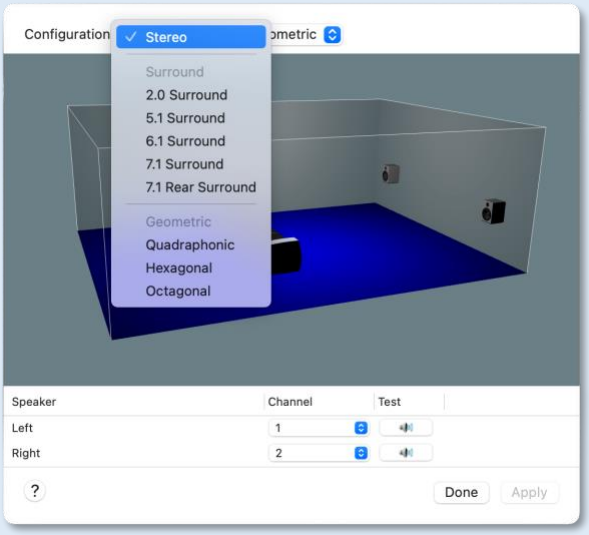
[2] Film: L,C,R,SL,SR,LFE. Audio editors like Avid Pro Tools and Adobe Audition and video editors like Adobe Premiere Pro and Blackmagic DaVinci Resolve all allow audio channel mapping.

If you select Quadrophonic, 5.1, or 7.1 for speaker configuration, Streambox will not remap or downmix channels, and output remains in the order specified in the Speaker Configuration. If you want audio sent to both the internal speakers and the connected device, you will have to create a 'Multi-Output Device' and then select that from the audio out list (see green arrow, image previous page).

Creating a Multi-Output Device

When you want the audio output directed to more than one device, you need to create a Multi-Output Device.

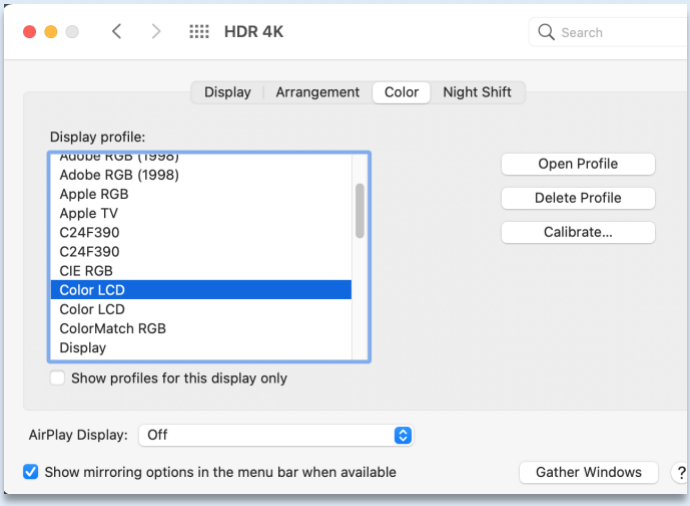
- Open the Audio MIDI Setup from the Launchpad (as above).
- Click on the add (+) button and select 'Create Multi-Output Device (red arrow, image above).
- Select the new Multi-Output Device and check the devices you want to include
- You may close this dialog box and from the Sound/Option dropdown (see green arrow, image previous page) you can now select the Multi-Output Device that was created.



Monitors and Color Gamuts

Monitors come in all shapes and sizes and support various color gamuts. Since human visual perception is quite adaptable, and consumer monitors/projectors are quite varied, the actual color in isolation is not as important as we may think. That said, movie producers and colorist want to deliver the most color accurate and ambiance precise product possible.

Streambox Media Player is best tuned for monitors with the color profile set to 'Color LCD'. Of course, you are free to test other profiles but from our tests, the most consistent color profile was 'Color LCD'.



Open the 'System Preferences' dialog, select the 'Displays' item, and then the 'Color' tab (see image on right). From the Display profile menu, select 'Color LCD'.

For Streambox Media Player, we found the best color space setting for most monitors is P3-D65. Of course, this is only a good starting point and, you are encouraged to trial other color profiles to determine the best for a specific monitor or project. Again, this is most important for colorists' workflows and is of less importance for the typical user (who can leave the default 'Auto Detect' setting).

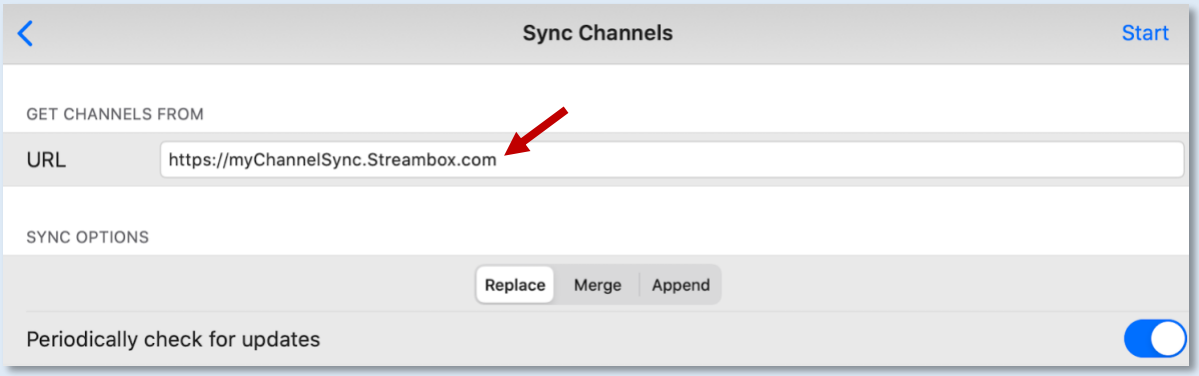
DaVinci Resolve & Spectra

If you are using Blackmagic's DaVinci Resolve with Streambox Spectra, you will want to ensure that you have activated the 4:4:4 feature on Spectra and set the output color profile to Rec.709, Rec.2020, or P3-65. Click here for more information

Sync Channels

You can set/update channel properties for all the devices listed in the Channels menu using the Sync Channels feature. This is accomplished by storing an XML file with the desired settings on an internet accessible server (e.g., Dropbox). Then open the Sync Channels page by selecting 'Set up Channels' from the Settings menu on the Home page; from here, you click on 'Sync' (see image below).

Then by providing the path/name of the XML file (e.g., see red arrow below) you can synchronize the current unit via the 'Start' button, or periodically by enabling the 'Periodically check for updates.' You have the option to Replace all settings, Merge with current settings to update channels without creating duplicates or Append the new channel settings to the current ones. We recommend using 'Merge' or 'Replace' if you set the 'Periodically check for updates' feature.



The group settings are provided in an XML file as described below. You can store your custom channel settings XML file on any server accessible to the internet. For example, you can place the XLM file in a Dropbox folder and then use the 'Copy Dropbox link' command to fetch a link for your 'Custom URL' (note: for this to work, replace the dl=0 with dl=1 at the end of the Dropbox link).

NOTE: If you set the 'Periodically check for updates' with the 'Sync Options' set to 'Merge' then any local changes made will not be overwritten with next update.

Sync Channel Settings File

Channel Settings are stored in XML format. For example:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<root>
	<decChannels>
		<decChannel name="DemoUnicast" netmode="0" ip="" port="1775" login=""
		password="" reporter="" DRM="" encrypass="" colorstd="0"/>

		<decChannel name="DemoMulticast" netmode="1" ip="224.0.0.1" port="1775"
		login="" password=""/>

		<decChannel name="DemoServer" netmode="2" ip="52.25.129.48" port="1770"
		login="MyLogin" password="MyPassword" reporter="dab" DRM="MyGroup" encrypass=""
		colorstd="0"/>

		<decChannel name="DemoSession" netmode="3" sessionid="$Q6HSS7" encrypass=""
		colorstd="0"/>

	</decChannels>
</root>
```

Where

name: Channel Name – any descriptive alphanumeric; for example, **MyDemo**

netmode: 0=Unicast, 1=Multicast, 2=Server, 3=Session

ip: In Server netmode (2), the IP address of the source Streambox Live Server. For a list of Live Servers, see: https://www.streambox.com/legacy/streambox-cloud-server-ip-addresses

port: The local port receiving the video stream (1770 is the default or most common port)

login: The user login used in Server netmode (to logon Streambox Live or Enterprise server)

password: The user password used in Server netmode (to logon Streambox Live or Enterprise server)

reporter: The Source (Reporter) associated with the stream; for example, 'Camera1' or 'Mary' or 'Whitehouse'. This value is set on the Encoder side and must match for Server netmode.

DRM: This is your Group name for logging onto the Streambox Live or Enterprise server.

sessionid: This is the Session ID provide by the session Host

encrypass: This is the encryption key where encryption is deployed. This must be an exact match with the encryption key used on the Encoder side.

colorstd: This is the color standard used for display (we recommend '0' for AutoDetect).

0=AutoDetect,

1=Rec.709 Full BT.1886	9=(HDR) Rec.2020 PQ Full
2=Rec.709 Legal BT.1886	10=(HDR) P3 D65 PQ Full
3=P3 D65 Full	11=(HDR) Rec.2020 HLG Full
4=Rec.2020 Full	12=(HDR) P3 D65 HLG Full
5=Rec.601 Legal	13=(HDR) Rec.2020 PQ Legal
6=Rec.709 Legal	14=(HDR) P3 D65 PQ Legal
7=Rec.709 Full	15=(HDR) Rec.2020 HLG Legal
8=P3 DCI Full	16=(HDR) P3 D65 HLG Legal

Media Player Specifications

Feature	iOS	macOS (Catalina, and up)
Workflow		
Rec'v Point-to-Point Streams	YES	YES
Pull from Cloud	YES	YES
Pull from ES	NO	NO
Playout Features		
Play Files	NO	NO
Session Compatible	YES	YES
Quick Session	YES	YES
Programmable Channels	30	50
Channel Modes	Unicast, Server, Multicast, Sessions	Unicast, Server, Multicast, Sessions
Sync Channels, Remote	YES	YES
A/V Offset	YES	YES
Horizontal Flip	YES	YES
Vertical Flip (Teleprompter)	YES	YES
Full Screen playout	YES	YES
Output (Blackmagic adapter)	NO	YES
Decryption AES 128-bit	YES	YES
Decryption AES 192/256-bit	YES (Optional)	YES (Optional)
Video Stream		
ACT-L3 Codec (auto switch)	YES	YES
ACT-L5 Codec (auto switch)	YES	YES
Stream Resolution	SD/HD/2K/UHD/DCI4K	SD/HD/2K/UHD/DCI4K
Decoding	8, 10, and 12-bit	8, 10, and 12-bit
Chroma Subsampling	4:2:0, 4:2:2, 4:4:4	4:2:0, 4:2:2, 4:4:4
Video Output RGB	30-bit (10/channel), 4:4:4	30-bit (10/channel), 4:4:4
HDR Video (PQ encoding)	YES	YES
Dolby Vision	NO	YES
Color gamut	AutoDetect Rec.709 BT.1886 (Full & Legal) Rec.709 (Full & Legal) Rec.2020 (Full) Rec.601 (Legal) P3 DCI (Full) P3 D65 (Full) (HDR) Rec.2020 PQ (Full & Legal) (HDR) P3 D65 PQ (Full & Legal) (HDR) Rec.2020 HLG (Full & Legal) (HDR) P3 D65 HLG (Full & Legal)	AutoDetect Rec.709 BT.1886 (Full & Legal) Rec.709 (Full & Legal) Rec.2020 (Full) Rec.601 (Legal) P3 DCI (Full) P3 D65 (Full) (HDR) Rec.2020 PQ (Full & Legal) (HDR) P3 D65 PQ (Full & Legal) (HDR) Rec.2020 HLG (Full & Legal) (HDR) P3 D65 HLG (Full & Legal)
Full Color Fidelity	YES	YES
Audio Stream		
Audio Codecs	AAC, GSM, CELP, PCM	AAC, GSM, CELP, PCM
Audio Channels	Mono, Stereo	Mono, Stereo, 5.1, 7.1

Support

Email support@streambox.com for a response within 24 business hours.

The below information will help to expedite your support request:

- Your name
- Company name
- Contact information and best time(s) to reach you
- Media Player version number (include platform, iOS or macOS, and OS version)
- Type of Encoder used, and Serial number if known
- Steps to reproduce and/or a detailed description of your support question/need and the outcome expected

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