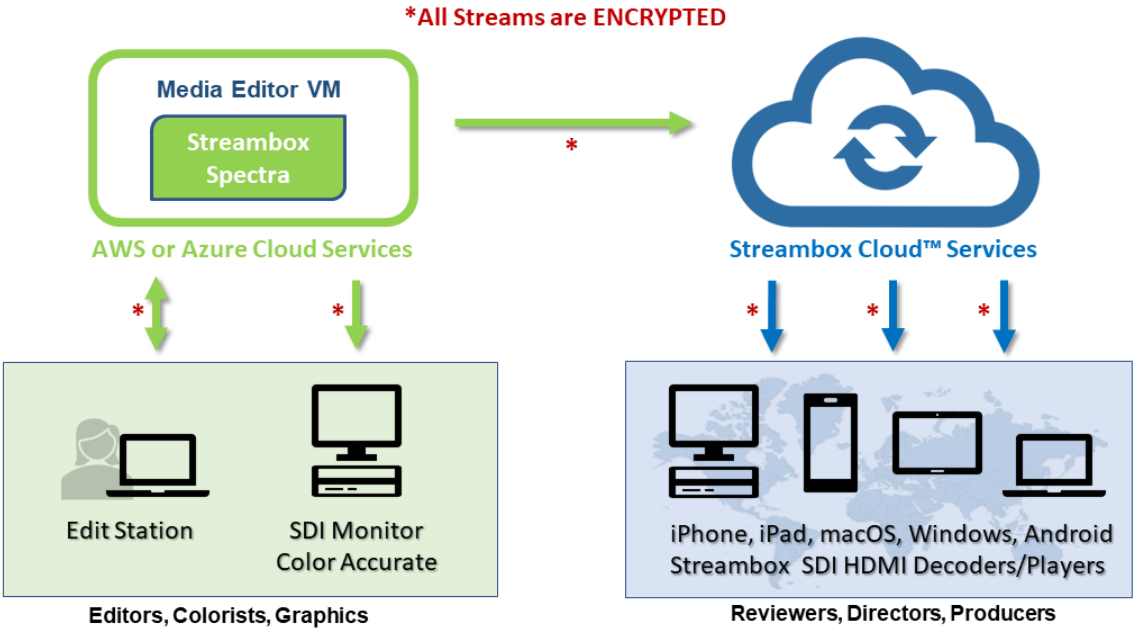
Streambox® Spectra™



2-Channel Setup Guide (Windows)

Note: This document reflects the current feature-set which may change without notice (May 2023). We will attempt to keep all users up to date on any such changes.

Contents

Introduction

Streambox Spectra is a software-based encoder that delivers near lossless streaming. Spectra runs as a device plug-in for video editing software that can be used locally or on a cloud-based setup.

Video technology software, such as Adobe Premiere Pro, Blackmagic Design DaVinci Resolve, Avid Media Composer, Epic Games Unreal Engine, and others, are now being deployed on virtual cloud-based systems or from remote/home offices. There are two main limitations to this approach, 1) lack of sufficient resolution and color accuracy for critical review and color grading, and 2) long latencies for high-resolution video.

Using Spectra 2-Channel setup, an editor or colorist can deliver point-to-point, real-time, high-quality video to a reference monitor via one channel and distribute to multiple viewers anywhere in the world, via the second channel. Spectra plus Streambox Cloud Services provides one-to-many global connectivity with no compromise in quality, effectively creating multiple virtual screening rooms. In addition, Spectra supports NDI stream ingest/ouput over the local network.

There is significant utility of having 2 Spectra encoders on the same system/network, in addition to having 2 separate inputs and multiple outputs. Here are some workflows where both encoders receive the same input:

- Output 1 = Reference Monitor (point-to-point), Output 2 = Sessions (distributed stream)
- Output 1 = Reference Monitor (point-to-point), Output 2 = Sessions (distributed stream), Local Network = NDI stream for on-set review
- Output 1 = Sessions (distributed output) High bitrate for LAN connect devices, Output 2 = Sessions (distributed output) Low bitrate for WiFi connected devices

- Output 1 = Sessions (distributed output) configured for local regional review (e.g., Los Angeles), Output 2 = Sessions (distributed output) configured for across-the-pond review (e.g., London).
- Output 1 = Reference Monitor (point-to-point) in Studio 1 (e.g., primary studio), Output 2 = Refence Monitor (point-to-point) in Studio 2 (e.g., colorist and lighting review), Local Network = NDI stream for on-set review
- And many other possible workflows. Below are two examples; Figure 1, on-premises with separate streams, each with unique properties tailored for different receiving hardware; and Figure 2, Spectra is installed on an AWS VPC where one encoder is set up for point-to-point streaming to a reference monitor and the other streams to a Session for multiple distribution points…

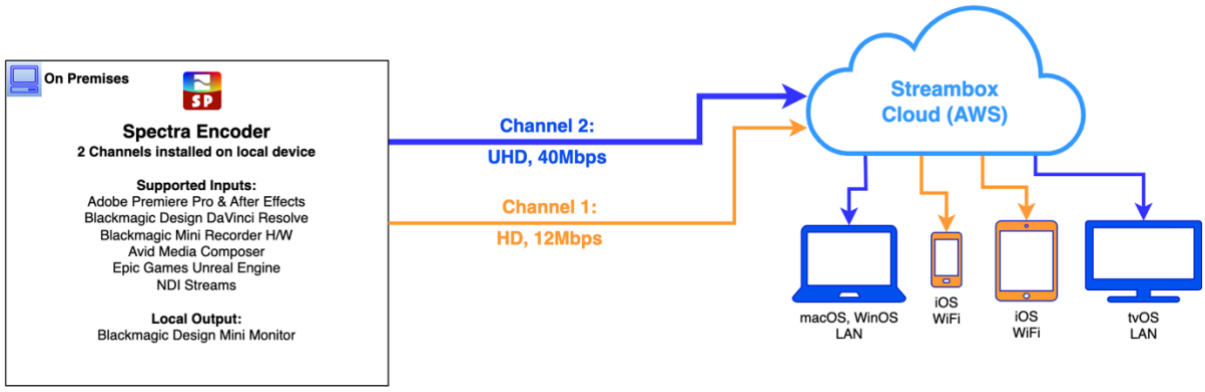


Figure 1. Local On-premises workflows – 2 streams with unique properties

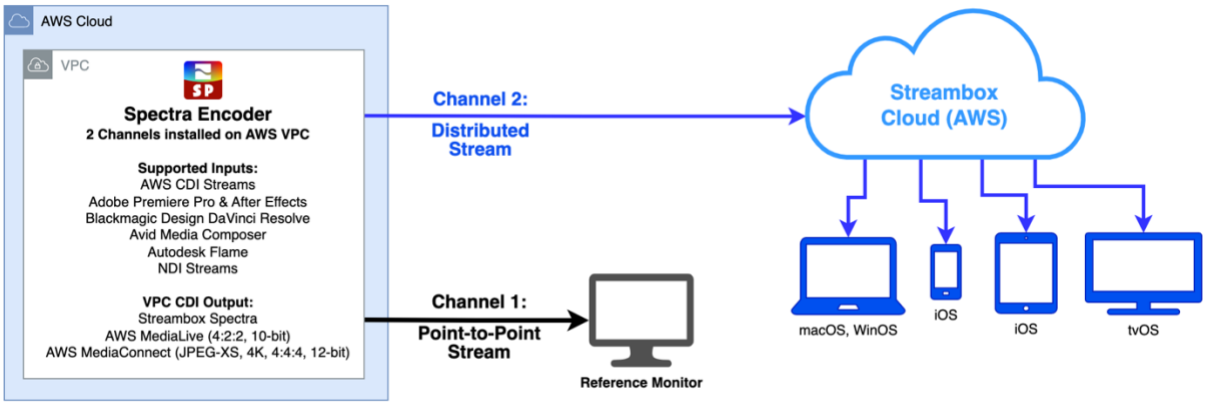


Figure 2. On AWS workflows – one stream point-to-point to reference monitor, the other to a Session

Installation

1. Download and install Spectra (2-Channel)
   https://streambox-spectra.s3-us-west-2.amazonaws.com/latest/win/universal/spectra_universal_win.exe
   Note: All new Spectra (Windows) encoders can be enabled for 2 Channel workflow.

2. Open the download folder and double-click the installer file (spectra_universal…ext).

3. After installation is complete, open the Spectra folder (C:\Program Files\Streambox\Spectra), then right-click 'SpectraSetupDual.ps1' and 'Run with PowerShell'. This will result in 2 copies of Spectra with one labeled Spectra-CH1 and the other Spectra-CH2 on your desktop (image on right).

4. Open **Spectra-CH1** and complete the activation…

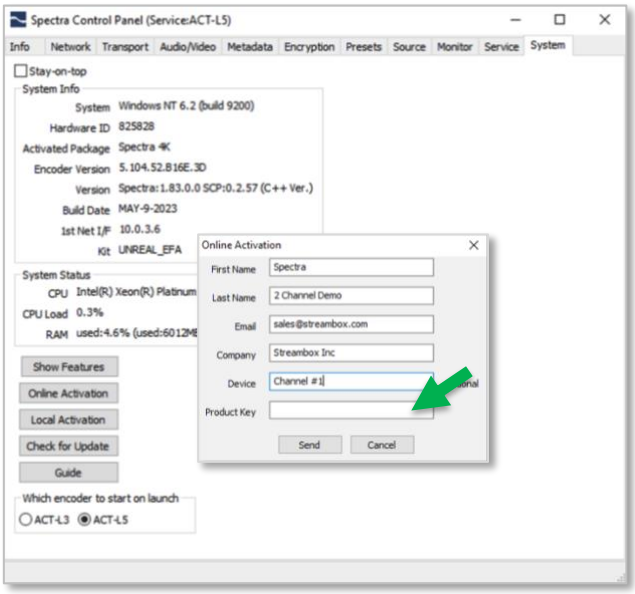
Activation

Once activated, you can click 'Show Features' to see what features were activated.

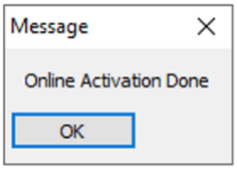
1. ***Online Activation*** requires a volume license, and the Spectra installation has internet connection.

   Note 1: You may skip this step if Spectra is already activated

   - Obtain Activation Product Key Number from your system administrator (this can be setup through Streambox Sales or Support).
     Note: You will want 3 keys:
     + **Spectra** (for desired app, e.g., Premiere Pro)
     + **Chroma2ch** (for 2 channels of Spectra)
     + **PullStream** (for Point-to-Point Streaming)
   - Fill in user information
   - Enter each applicable Product Key (green arrow), one at a time, and click 'Apply' for each.



Note: See sample messages below.



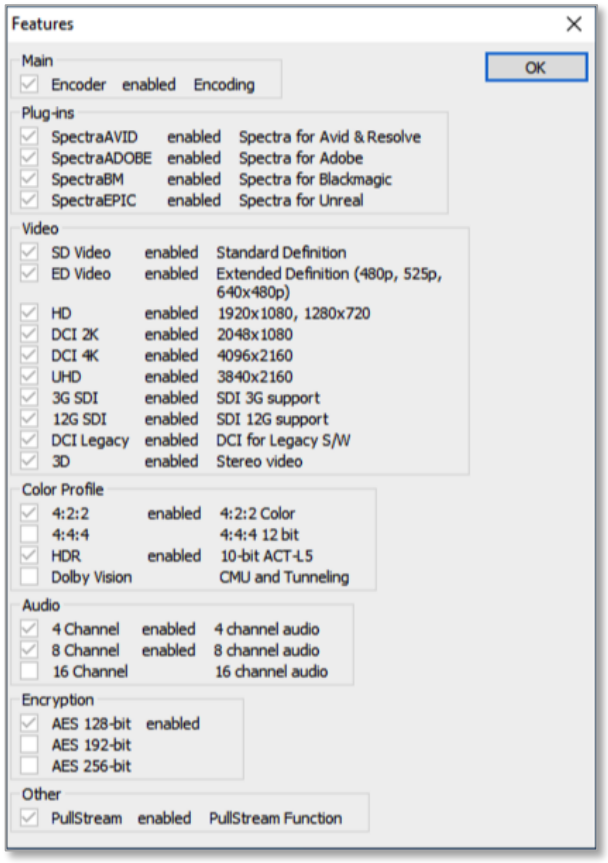
Dialog seen when online activation is accepted

*Error seen on Info tab Channel #1 when not activated (requires **Spectra** activation on Channel #1 System tab)*

*Error seen on Info tab Channel #2 when not activated for 2 Channel setup (requires **Chroma2ch** activation on Channel #1 System tab)*

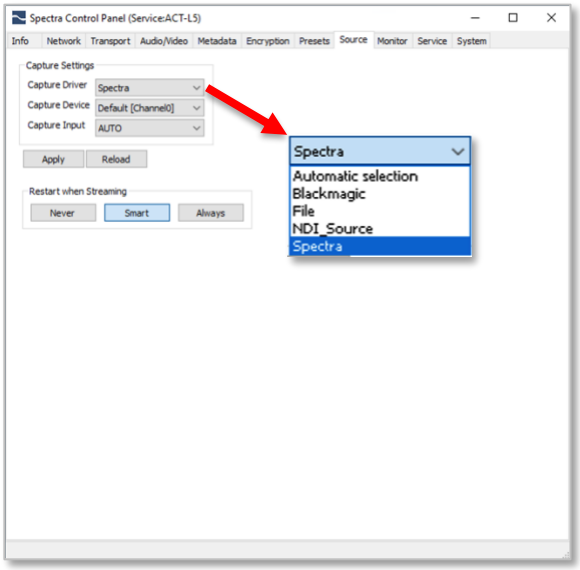
Note 2: You may click the 'Show Features' button to see what has been activated.

You may now use both Spectra channels.



Setting up Sources

Each Spectra channel (1 and 2) can ingest a unique source or the same source. On the ‘Source’ tab you select the type of source from the ‘Capture Driver’ dropdown; e.g., Spectra (for Avid Media Composer, Adobe Premiere Pro, Blackmagic DaVinci Resolve, etc.), NDI_Source, and others as available. This list is generated from poling at startup, so sources should be opened prior to launching Spectra.

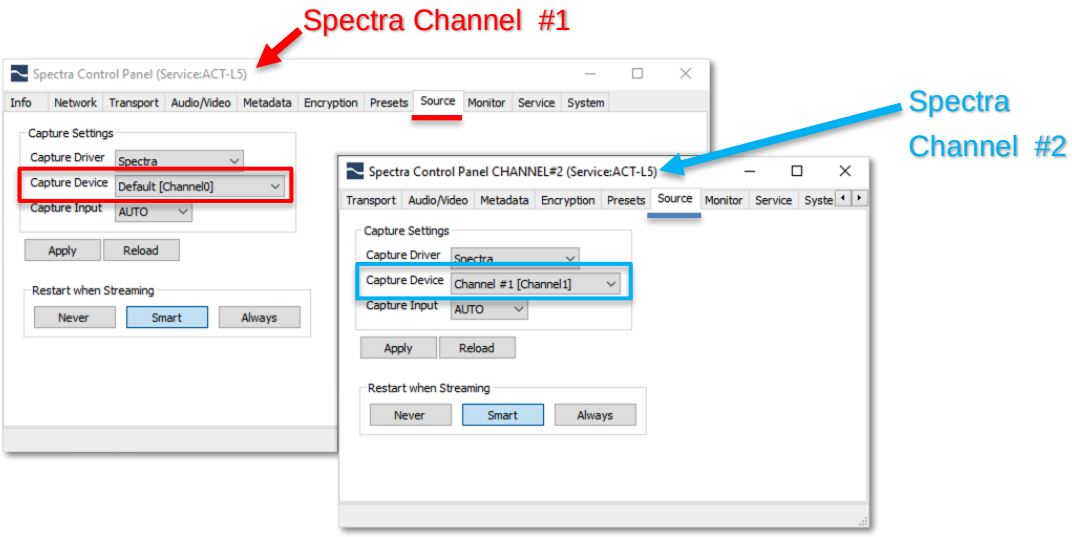


If you have more than one source of the same type (e.g., two different NDI streams), then you will first select the ‘Capture Drive’ and then the desired device from the ‘Capture Device’ dropdown. Note: You may have to click ‘Reload’ to re-pole and fill the device list.

Note 1: Remember to ‘Apply’ any changes.

Note 2: In most cases, you can click ‘Reload’ when you need Spectra to re-pole the available applications. In rare cases, you will have to close and re-open Spectra for the changes to be reflected.

Note 3: Ingesting Spectra channels 1 and 2 from the same application. Always open and assign Spectra Channel #1 first (red). The Default channel is ‘Channel 0’. Now open Spectra Channel #2 (blue). Set the Capture Device to the daisy-chained channel, ‘Channel 1’. Remember to ‘Apply’ any changes. Both encoders will now be ingesting the same stream (with no time delay between them).

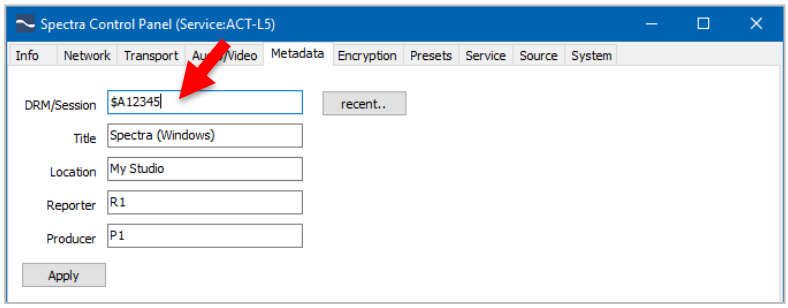


Sessions

Spectra utilizes Streambox Sessions to simplify connectivity between the primary user and 1 to 10 end users (more than 10 end users can be connected with additional services). You will need to set up a Session, Set the Session DRM, and set the Server IP:

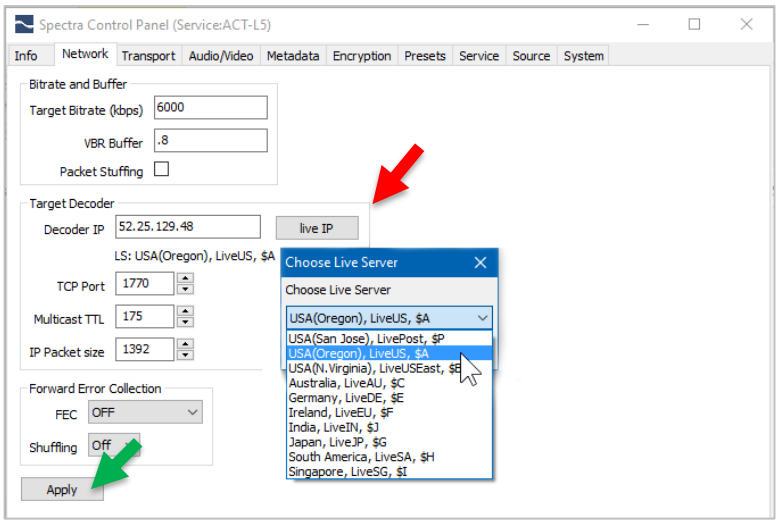
1. Setup or choose a current Session (remember, only one encoder can stream to an individual Session at a time). If you are not familiar with Streambox Sessions, please refer to the Sessions Quick Start Guide.

2. Set the Session DRM.
   Under the 'Metadata' tab, enter the Session DRM (red arrow). If you have previously entered a DRM, it will appear under the 'recent…' button



   The other values in Metadata are optional but are good practice and should help to identify the stream

3. Select the Target Decoder IP (live IP) under the **Network** tab to match the Session DRM prefix ($_). See red arrow. Use the table below to match the Session DRM prefix ($ plus next character). For example, in the image above, the sample Session DRM is $A12345, so from the table below, or the 'live IP' dropdown to the right, you see that the Live Server is "USA (Oregon), LiveUS, $A". You can simply click the 'live IP' button to select this server (or manually enter the IP address).



   Note: Remember to click 'Apply...' to save/initiate any changes (green arrow).

Session Servers

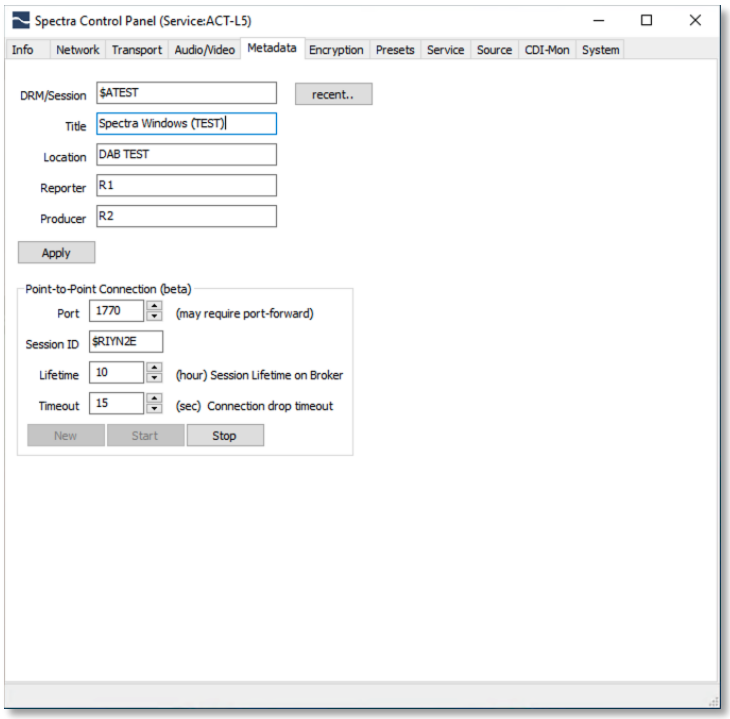
Ref: https://www.streambox.com/knowledgebase/streambox-cloud-server-ip-addresses:

Name	Public IP Address	Location
Live**US**.streambox.com	52.25.129.48	USA (Oregon), LiveUS, **$A**
Live**USEast**.streambox.com	54.83.19.155	USA (N. Virginia), LiveUSEast, **$B**
Live**AU**.streambox.com	52.62.2.246	Australia, LiveAU, **$C**
Live**DE**.streambox.com	54.93.179.19	Germany, LiveDE, **$E**
Live**EU**.streambox.com	54.247.100.52	Ireland, LiveEU, **$F**
Live**JP**.streambox.com	52.69.71.156	Japan, LiveJP, **$G**
Live**SA**.streambox.com	54.233.86.10	South America, LiveSA, **$H**
Live**SG**.streambox.com	52.76.243.157	Singapore, LiveSG, **$I**
Live**IN**.streambox.com	52.66.83.26	India, LiveIN, **$J**
Live**Post**.streambox.com	52.8.239.106	USA (San Jose), LivePost, **$P**

Point-to-Point (P2P)

1) Creating a P2P Session – Pull Port Number.
   Open the Metadata tab (see image below). On the P2P beta panel, enter a PULL PORT number (we recommend values between 1770 and 1800). 1720 in this example (see red arrow). Varying the value of this number is only important if you have more than 1 stream being sent to the same IP address (location).

   NOTE: When creating a P2P Session on an encoder that is behind a firewall (i.e., the encoder does not have a public IP address), you need to set up port-forwarding, using the Pull Port number you set above, on the router to that encoder.



2) Creating a P2P Session – Client Session ID.
   Click the 'New' button to generate a Client Session ID. This ID will remain for the next 10 hours (clicking New again within that window will not update the Client Session ID). You can Start or Stop the Session at any time.

Enter/Paste the Client Session into any of the latest versions of Streambox Media Player or Streambox Iris. The video should start within a minute.

Note: Make sure that the Destination IP on the Network tab is blank (and Apply if it wasn't).

NOTE: This is a Point-to-Point stream so only one player can pull the stream at a time. You can tell if the stream is being pulled by the bitrate value in the upper right corner (blue arrow, image above).

3) To receive the video, you just enter the Client Session ID from the P2P panel into the Session ID field of Streambox Iris or Streambox Media Player (green arrow, image below). Remember, this is Point-to-Point so only one player can pull this stream at a time.

Contact Information

+1 206.956.0544 Tel
+1 206.956.0570 Fax

Sales and Information
sales@streambox.com
+1 206.956.0544, Option 1

Technical Support
support@streambox.com
+1 206.956.0544, Option 2

Corporate Headquarters
1801 130th Ave NE, #200
Bellevue, WA 98005

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