

SAPPHIRE BBG • Standalone Devices

Set a SAPPHIRE BBG Network Address Using the DIP Switches

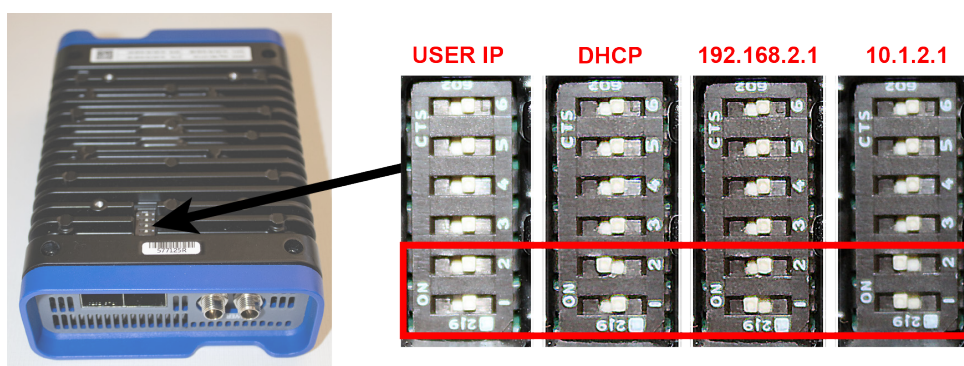
Configuration of a unit is done via a 1GbE Ethernet connection using the RJ45 connector. This is an out-of-band port, there is no media traffic in/out of this connection. This port is referred to as the “control port” in this document.

There is a six-position DIP switch (Dual In-line Package switch) on the exterior of the unit.

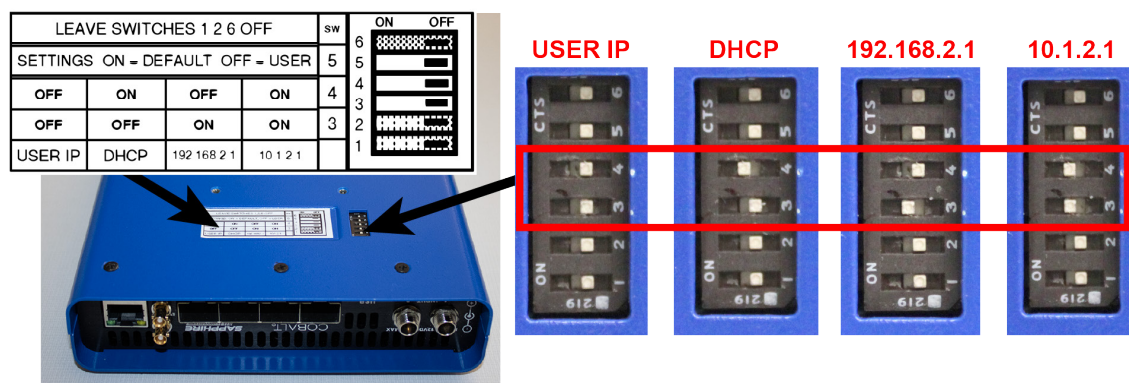
- BBG-2110-H/S and BBG-2110-2H unit DIP switches SW1 and SW2 force the IP Address.

These units have limited space on the outer shell, so no label has been placed for DIP switch positions.

SW1	SW2	IP Address
OFF	OFF	User IP Address
OFF	ON	Force to DHCP (Dynamic Host Configuration Protocol), override user setting
ON	OFF	Force to 192.168.2.1
ON	ON	Force to 10.1.2.1



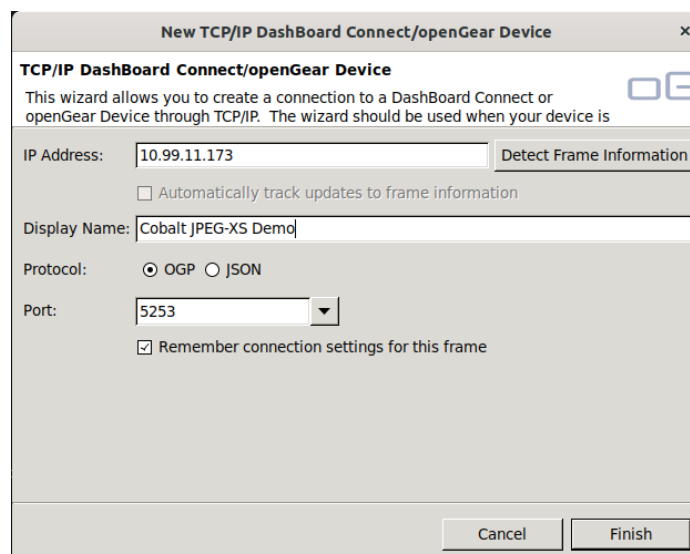
- BBG-2110-4Ho/4Sio (and variants) unit DIP switches SW3 and SW4 force the IP Address. The larger size of these units allows space for a label describing DIP Switch positions.



SW3	SW4	IP Address
OFF	OFF	User IP Address
OFF	ON	Force to DHCP (Dynamic Host Configuration Protocol), override user setting
ON	OFF	Force to 192.168.2.1
ON	ON	Force to 10.1.2.1

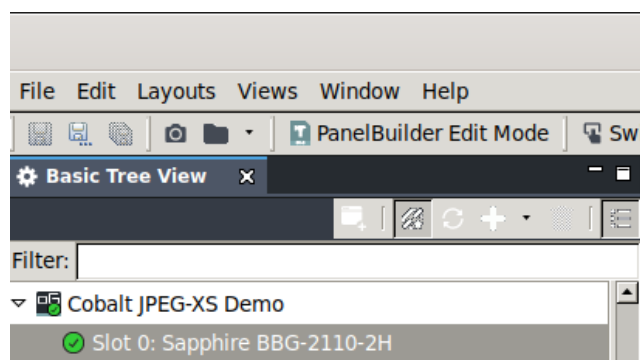
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The DashBoard™ software application is required for initial configuration of the unit and also serves as the UI for control/status. It is available for Windows/Linux/macOS here <https://www.opengear.tv/frame-and-control/control-system/download/>.



Once you have network connectivity via the control port you will need to add the device to DashBoard™. This is done under File >> New >> TCP/IP DashBoard Connect or openGear® Device. Type in the “IP Address” and “Display Name” fields and leave the other fields at their defaults as shown below, then click “Finish”

You should then see the unit appear in the tree view on the left side of DashBoard as follows:

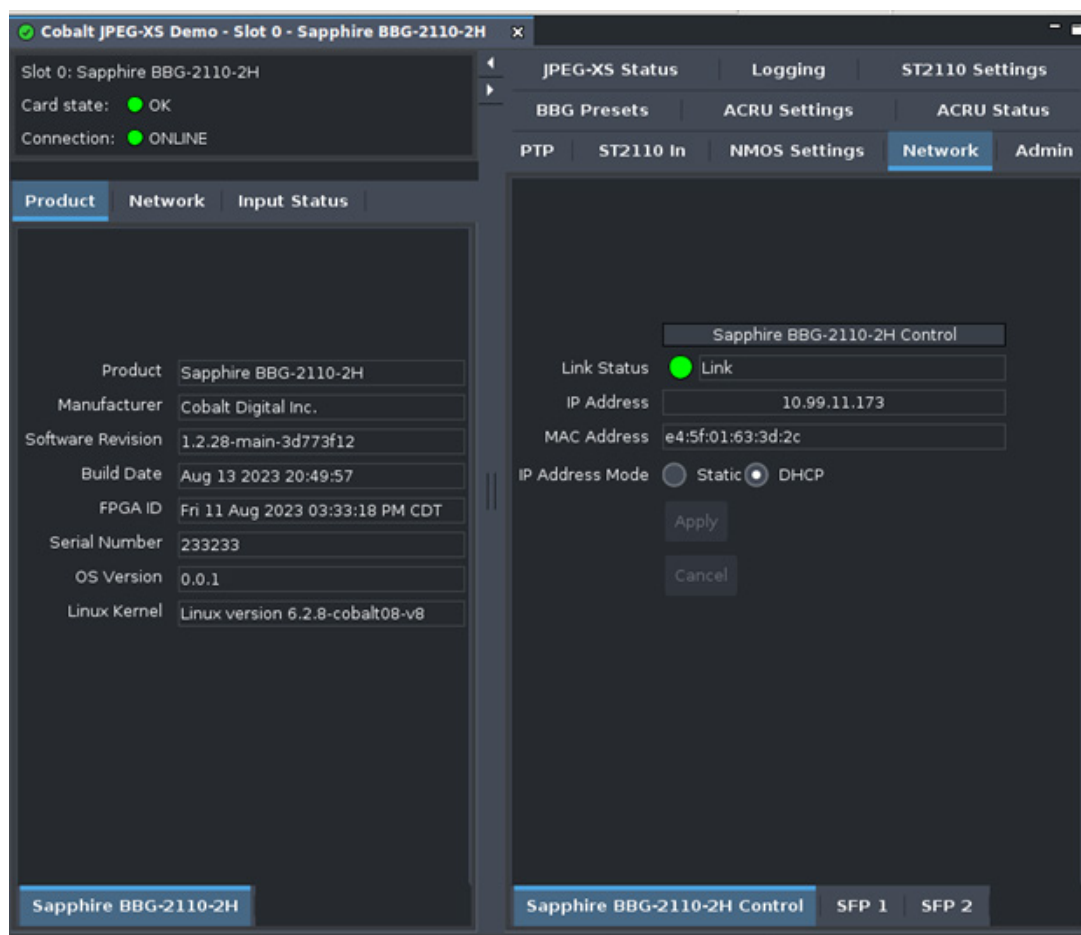


Double-click on the “Slot 0: Sapphire BBG-2110” item above and you will see the UI for the unit appear in the right-side of DashBoard. This UI will be used for initial configuration and status monitoring. It can be used for control as well, for example you can manually subscribe to media streams, or that can be done via NMOS.

OPTIONAL: At this point you can optionally set a different IP address for the control port. This is done

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on the “Sapphire BBG-2110 Control” subtab of the “Network” tab, as shown below. Once you have made changes via this tab, restore SW1 and SW2 of the external DIP to 00 to disable override of user settings for the control port. If you change the IP address of the control port, you will need to re-add the unit to DashBoard using the previous steps.

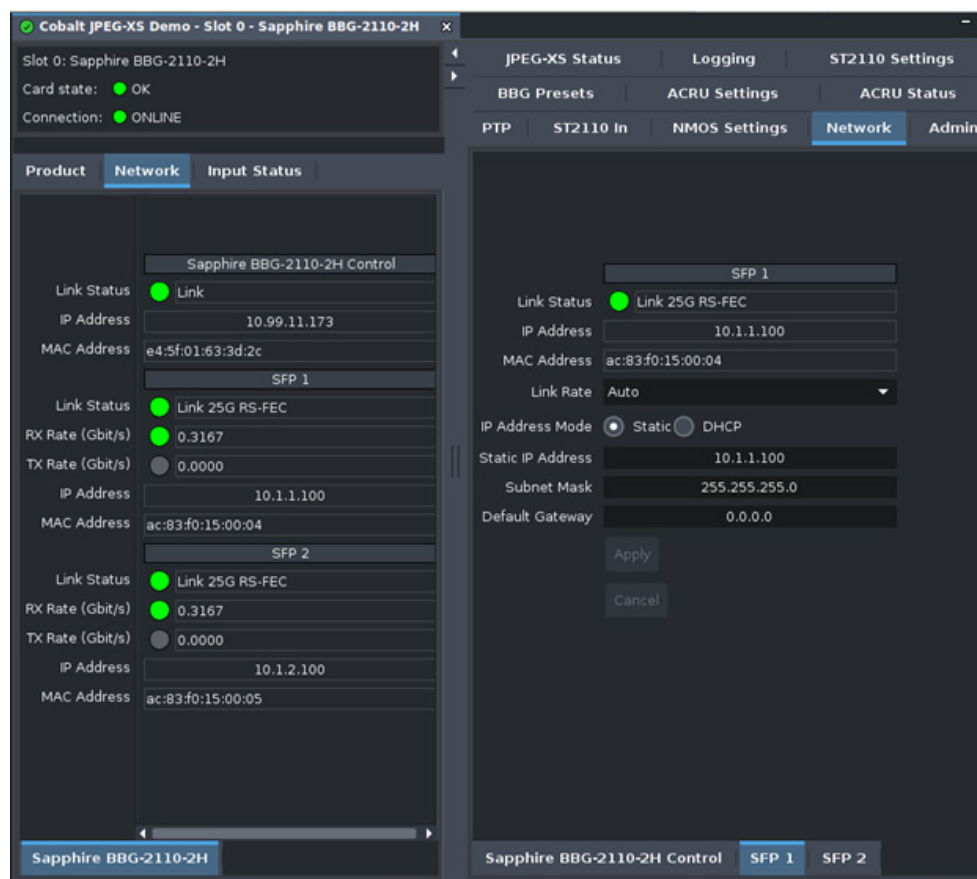


Now you have control of the unit.

Here are the steps to configure it for media:

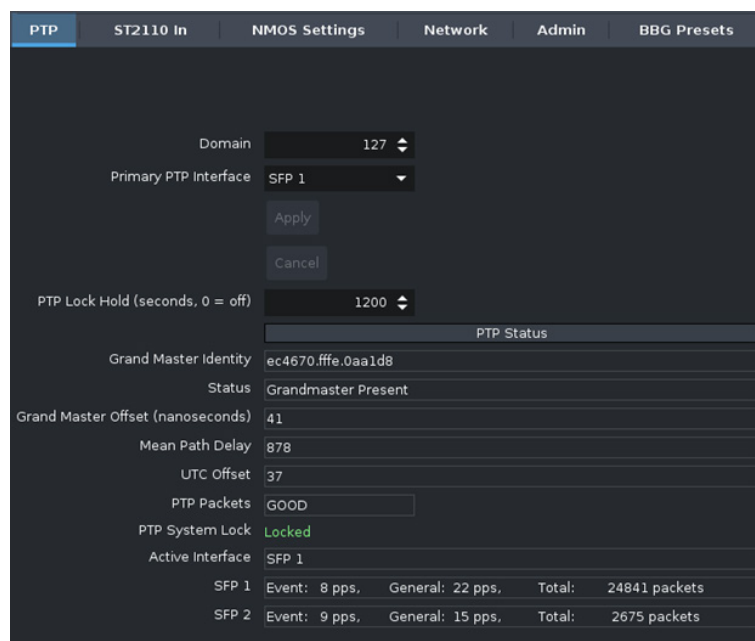
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1. Go to the “SFP 1” and “SFP 2” subtabs of the “Network” tab and configure the link rate and IP address settings for your media network. The “Link Status” field provides real-time indication of link status, and there are additional network statistics on the left side of Dashboard:



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- The default PTP domain used by the unit is 127. This can be changed and PTP status can be viewed on the PTP tab:

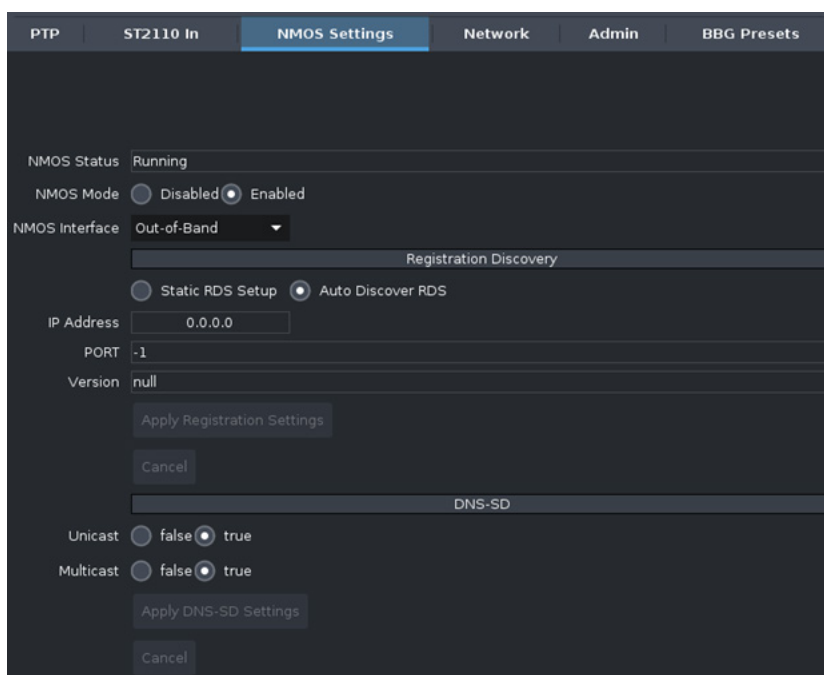


The screenshot shows the PTP configuration tab with the following settings:

- Domain: 127
- Primary PTP Interface: SFP 1
- PTP Lock Hold (seconds, 0 = off): 1200
- PTP Status: Grandmaster Present
- Grand Master Identity: ec4670.ffe.0aa1d8
- Grand Master Offset (nanoseconds): 41
- Mean Path Delay: 878
- UTC Offset: 37
- PTP Packets: GOOD
- PTP System Lock: Locked
- Active Interface: SFP 1

Interface	Event	General	Total
SFP 1	8 pps.	22 pps.	24841 packets
SFP 2	9 pps.	15 pps.	2675 packets

- NMOS can be used for either the control port or either of the SFPs. To use NMOS, go to the “NMOS” tab, select the network interface to use, and change the “NMOS Mode” to “Enabled”. To use the control port change the “NMOS Interface” control to “Out-of-Band”

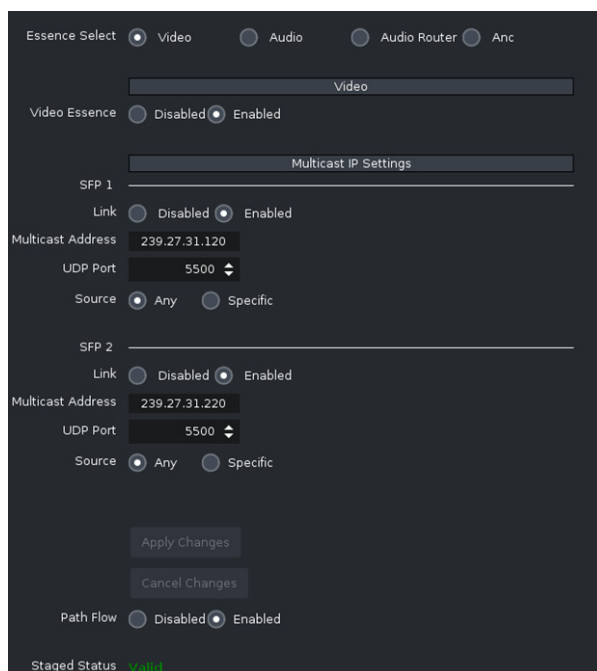


The screenshot shows the NMOS Settings tab with the following settings:

- NMOS Status: Running
- NMOS Mode: Enabled
- NMOS Interface: Out-of-Band
- Registration Discovery: Auto Discover RDS
- IP Address: 0.0.0.0
- PORT: -1
- Version: null
- Unicast: true
- Multicast: true

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- To manually subscribe to a ST 2110 stream, go to the “ST 2110 In” tab and set the “Essence Select” to “Video”. An example configuration is:



Essence Select: ☒ Video ☐ Audio ☐ Audio Router ☐ Anc

Video Essence: ☐ Disabled ☒ Enabled

Multicast IP Settings

SFP 1

Link: ☐ Disabled ☒ Enabled

Multicast Address: 239.27.31.120

UDP Port: 5500

Source: ☒ Any ☐ Specific

SFP 2

Link: ☐ Disabled ☒ Enabled

Multicast Address: 239.27.31.220

UDP Port: 5500

Source: ☒ Any ☐ Specific

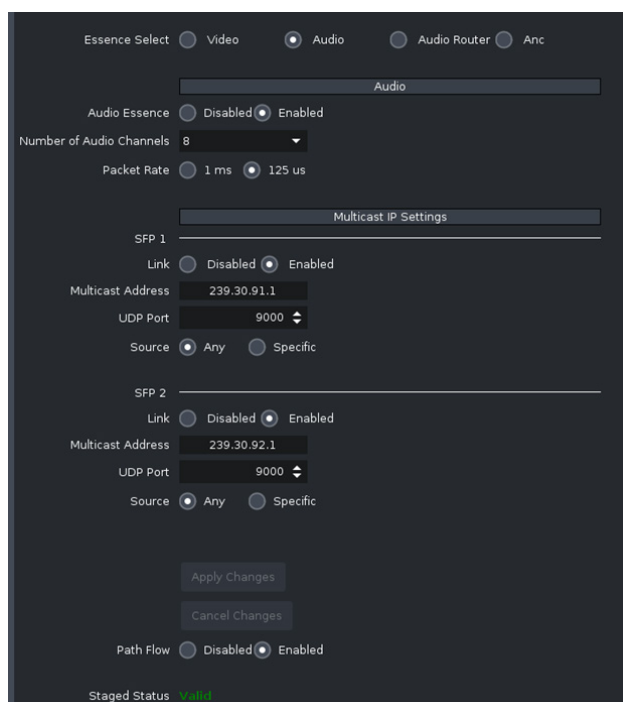
Apply Changes

Cancel Changes

Path Flow: ☐ Disabled ☒ Enabled

Staged Status: Valid

- To manually subscribe to a 2110-30 audio stream, go the “ST 2110 In” tab and set the “Essence Select” to “Audio”. An example configuration is:



Essence Select: ☐ Video ☒ Audio ☐ Audio Router ☐ Anc

Audio Essence: ☐ Disabled ☒ Enabled

Number of Audio Channels: 8

Packet Rate: ☐ 1 ms ☒ 125 us

Multicast IP Settings

SFP 1

Link: ☐ Disabled ☒ Enabled

Multicast Address: 239.30.91.1

UDP Port: 9000

Source: ☒ Any ☐ Specific

SFP 2

Link: ☐ Disabled ☒ Enabled

Multicast Address: 239.30.92.1

UDP Port: 9000

Source: ☒ Any ☐ Specific

Apply Changes

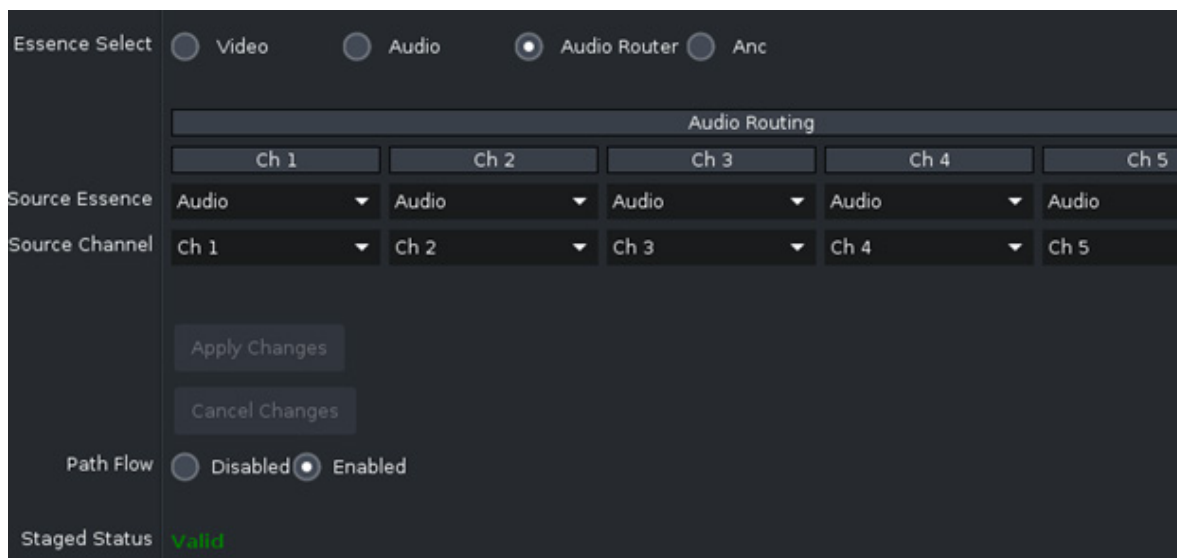
Cancel Changes

Path Flow: ☐ Disabled ☒ Enabled

Staged Status: Valid

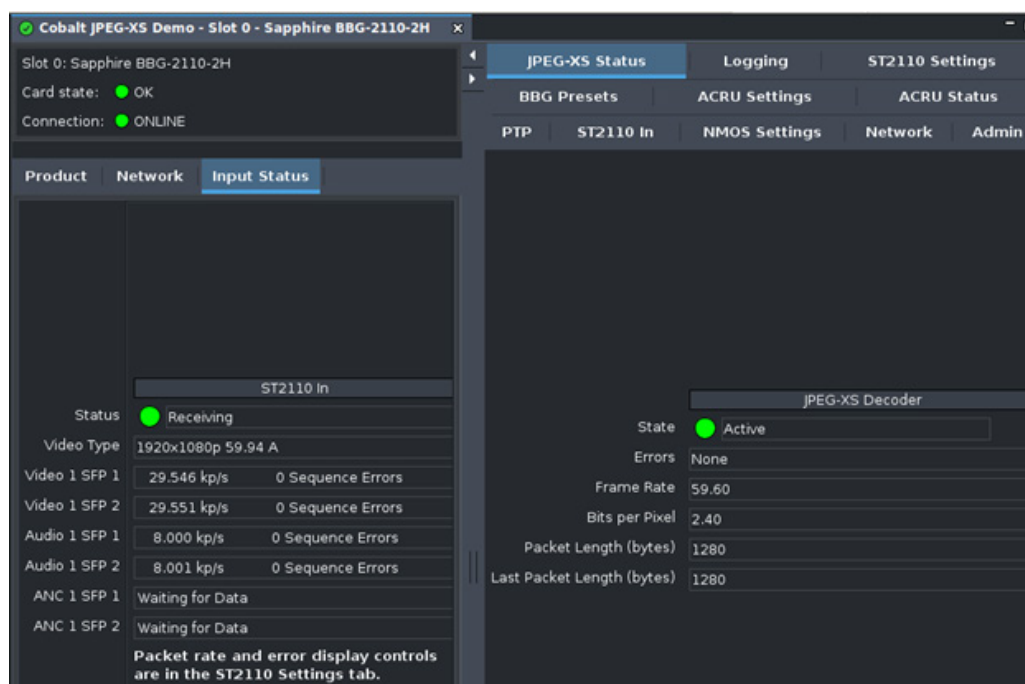
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- The default audio channel mapping is 1:1. You can manually map audio channels by changing the “Essence Select” to “Audio Router” and configuring as needed.



The screenshot shows the 'Audio Router' configuration window. At the top, 'Essence Select' has four radio buttons: Video, Audio, Audio Router (selected), and Anc. Below this is the 'Audio Routing' section with a table of five channels (Ch 1 to Ch 5). Each channel has a 'Source Essence' dropdown (all set to 'Audio') and a 'Source Channel' dropdown (all set to 'Ch 1' through 'Ch 5' respectively). At the bottom, there are 'Apply Changes' and 'Cancel Changes' buttons, a 'Path Flow' section with 'Disabled' and 'Enabled' radio buttons (selected), and a 'Staged Status' indicator showing 'Valid' in green.

- The unit can operate with a single link or with redundant links using 2022-7. The default is 2022-7. If you wish to disable this, go to the “ST 2110 Settings” tab to find this control.
- You can monitor overall status via the “Input Status” tab on the left side of DashBoard. There is also status info under the “Input Status” tab on the left:



The screenshot shows the 'Cobalt JPEG-XS Demo - Slot 0 - Sapphire BBG-2110-2H' dashboard. The left sidebar has tabs for 'Product', 'Network', and 'Input Status' (selected). The main area has a top navigation bar with 'JPEG-XS Status' (selected), 'Logging', and 'ST2110 Settings'. Below this are sub-tabs: 'BBG Presets', 'ACRU Settings', 'ACRU Status', 'PTP', 'ST2110 In', 'NMOS Settings', 'Network', and 'Admin'. The 'Input Status' tab shows 'ST2110 In' status as 'Receiving' (green dot). It lists video and audio SFPs with their respective rates and sequence errors. The 'JPEG-XS Decoder' section shows 'State' as 'Active' (green dot), 'Errors' as 'None', 'Frame Rate' as 59.60, 'Bits per Pixel' as 2.40, 'Packet Length (bytes)' as 1280, and 'Last Packet Length (bytes)' as 1280.