



Chroma 2023 Update

Requirements:

- Applies to the following hardware: Chroma 4K, UHD, 2K, HD, Chroma X, Chroma +, Halo
- Permanent (CapEx) Activation units must be added to at least a minimum software support contract (Bronze Support) to get the update.
- Monthly Subscribers qualify for the update for the duration of their activation.
- Upgrading requires reactivation of all current licenses.

New Features (included without additional cost)

- **Support for online activation** - Online activation allows the user to purchase activation codes that don't require exchanging the unit's hardware ID, and even volume licenses to activate multiple units. Requires that the Chroma have an internet connection.
- **Encoder Downconversion** - Encoder can now downconvert resolution before streaming. 4K downconverts to 2K; UHD downconverts to HD.
- **Advanced output options on Decoder:**
 - Force RGB color sampling and encoding conversion: force 4:2:2 or 4:4:4; YCrCb or RGB
 - Change resolution - A selector allows the decoder to convert the incoming stream to a different resolution. It can downconvert and upconvert.
 - Change interlace - Convert between interlaced and progressive display
 - Change framerate - Increase or decrease framerate
 - Change aspect ratio - Options include Center Cut, Letterbox, and Anamorphic
 - Audio Downmix and channel remapping - Mix multiple channels down to fewer, or remap channel order.
- **V-ANC pass through** - Adding support for the V-ANC (Vertical Ancillary Data) channel for transmitting metadata such as closed captions and time code.
 - **LTC/VITC time code** - Supports transmitting time code in these two formats through the V-ANC channel
- **P2P Session and Streambox Server Support** - Decoder will be able to connect to the Streambox Broker service which facilitates two new types of Session: the Streambox Server Session (Sessions using a private server instead of the public Cloud Service) and P2P Session, a direct connection from Encoder to Decoder that rarely requires firewall setup by the Decoder user, making it more flexible for the Decoder to pull a stream from anywhere without needing a server in between.
 - Improved Visual Readout for Session Status - Displays EXPIRED, OFFLINE, CONNECTING for the current state of the Session and the Encoder's connection to it.
- **Easy Switching between Single, Multi Channel, and Full Duplex modes** - for modes that're enabled by license.
- **Enhanced Blackmagic Video Hardware settings** - Adds additional options to the WebUI to configure the Blackmagic Decklink video hardware without having to go to the linux desktop.
 - Switch SMPTE output between Level A and Level B

- Switch between Progressive and PsF (Progressive segmented frame) modes for both input and output.
- Switch output display when not playing between black screen and freeze frame
- Change mode between half-duplex and full-duplex (along with a port-map for each mode) (Chroma 4K only)
- **Improved IFB client support** - Improved support to connect to Streambox IFB Server to receive an audio stream intended for foldback or monitoring.
- **REST API (Application Programmer Interface)** - New API allows developers to create custom UIs, or integrate Streambox Chroma controls into their own UIs
- **Colorist UI interface (React UI)** - New simplified web interface for Colorists, Editors, and other Creators to create and share session info and get streaming fast

Support for new paid features:

These features will be available but require a license to enable them.

- **Pull Stream (P2P) Sessions for Encoder** - This update allows Encoders to generate a Session ID which, added to a Media Player or Decoder, will create a single direct point-to-point stream to a Decoder without the usual need to configure a firewall.
- **Full-Duplex Streaming** - Chromas Encoders can be configured to allow both Encoder and Decoder software to run simultaneously, allowing simultaneous sending and receiving.
- **Dual-channel encoding (one input)** - Creates two Encoder channels on the same system that use the same video source but may have different quality settings and destinations.
 - Uses the new Virtual Input Capture via Spectra API
- **Multi Channel encoding (multiple inputs)** - Creates 2 or more Encoder channels, each with its own input. (Number of channels is limited by input hardware; resolution of channels may be limited by hardware as well.)
- **Multi Channel decoding** - Creates 2 or more Decoder channels to allow the same hardware to receive and output multiple streams. (Number of channels is limited by output hardware.)
 - Adds the SDM (Sync Decoder Manager) - Allows streams arriving in the Multi Channel Decoder to be locked in sync.

Version Updates

- New Encoder Version: 5.105.52.C01/2.205.52.C01
- New Decoder Version: X.52.C01
- Updated Web Interface
- New license requirement for update support - Updating to new releases requires a basic support contract

Enhancements

- **Encoder DownconvertHD Feature** - 4K can downconvert to 2K; UHD can downconvert to HD
- **Watermark Support improved** - More easily upload a transparent PNG file containing a watermark
- **Ultra Low Delay Encoding mode** - Encoder (VBR) buffer can now be set to zero for absolute minimal stream latency, around 4 frames plus the network latency.
- **LDMP Protocol improvements** - Improvements to our Low Delay MultiPath Transport Protocol which ensures reliability and limits latency over reliable and less-than-reliable networks.
- **Dynamic Resolution** - Allows the Encoder to reduce resolution if the average encoding quality metric is poorer than a set threshold.

- **Support for Domain Names in Destination IP** - Users can now use human-readable names such as decoder.domain.com as the Destination for the stream.
- **Video Quality Improvement** - Stills/Stop frame AP mode
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- **444 RGB input preview improvements** - Preview of RGB sources has greater fidelity.
- **Video Capture Format Readout improvement** - Readout has more information on the display.
- **Restart On Sync Loss** - Setting now has 3 options instead of on/off: Never, Smart, Always which offer options for if or when a stream should restart if the video source is interrupted.

Security improvements

- Legacy TLS cryptographic protocol versions 1.0-1.1 are disabled due to vulnerability
- ICMP timestamp is disabled due to vulnerability per CVE-1999-0524
- Disables support for SHA1 encryption in SSH connections, due to vulnerability
- Disables NFS (Network File System) Protocol due to vulnerability
- Chroma Self-signed SSL certificates are renewed within 365 days to allow HTTPS connectivity
- AES 256-bit Encryption Standard for units deployed in North America

Encoder Changelog from March 2021:

https://basecamp.com/2498935/projects/5361184/todos/436836315#comment_805557749

Covers through C23