aws elemental

Consolidated Release Notes

AWS Elemental Live and Statmux Version 2.21 and later
AWS Elemental Conductor Live Version 3.21 and later

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ABOUT THESE RELEASE NOTES

These release notes cover older versions of AWS Elemental Live, AWS Elemental Statmux, and AWS Elemental Conductor. Specifically, it combines the release notes for this range of software:

- Elemental Live and Elemental Statmux versions 2.21.0 to 2.24.5
- Elemental Conductor Live version 3.17.0 to 3.24.5

These release notes are provided to help you to upgrade from any of the versions that are still available for download. Note that we don't support all of these older versions. We provide the installers for these versions only so that you can upgrade to one of the currently supported versions.

We always recommend that you upgrade to the newest version of AWS Elemental software.

Software version 2.25 (and 3.25) has its own release notes. Patch versions of that major version are still being released.

Software version 2.26 (and 3.26) has its own release notes. This version is the most recent major version.

Notice

Revision 7 of the consolidated Release Notes adds resolved issues in both Elemental Live 2.25.9 and Conductor Live 3.25.9.

Versions 2.25.9 and 3.25.9 are the last versions planned for the 2.25 (3.25).

We strongly recommend that you upgrade to version 2.26 and 3.26 as soon as possible. Read the Current release notes.

ABOUT THE SUITE OF LIVE PRODUCTS

AWS Elemental Live

AWS Elemental Live is a massively parallel video processing system that provides content distributors with video and audio encoding for live streaming to new media platforms. With unprecedented density and support for adaptive bit rate protocols, HTML5, and multiple HD streams, AWS Elemental Live delivers the high-quality, high-efficiency performance required for current and future live streaming applications for any device. An intuitive web-based interface simplifies workflow, providing real-time controls and an easy-to-manage, seamless user experience.

AWS Elemental Live can be deployed in stand-alone mode or as part of a cluster controlled by Conductor Live.

AWS Elemental Statmux

AWS Elemental Statmux is an extension of the AWS Elemental Live product line that lets you produced MPTS outputs. Statmux functionality works only in a Conductor Live cluster. The Live nodes create the programs for the MPTS, and Conductor Live manages the MPTS itself.

AWS Elemental Statmux requires that each Live node has a license for the Statmux rate control addon.

AWS Elemental Conductor Live

AWS Elemental Conductor Live is a management system for controlling AWS Elemental Live and AWS Elemental Statmux.

Node-based redundancy

- AWS Elemental Conductor Live provides redundancy for AWS Elemental Live and AWS Elemental Statmux node (worker node) redundancy. Worker nodes (AWS Elemental Live and AWS Elemental Statmux) controlled by AWS Elemental Conductor Live can be set up so that if one node fails, a backup node takes over the activity of the failed node. A backup node is a passive reserve licensed worker node.
- AWS Elemental Conductor Live provides Conductor node redundancy: the cluster can be set up with one primary and one backup Conductor node, so that if the primary were to fail, the backup would take over management of the worker nodes. Conductor node failure and failover have no impact on work currently in progress on the worker nodes.

Profiles and parameters

- AWS Elemental Conductor Live requires profiles to create channels.
- AWS Elemental Conductor Live profiles support variables in the form of “channel parameters”. This feature allows profiles to be very flexible: where appropriate, the value of a field can be set to a profile parameter, instead of a hard value. When the profile is used to create the channel, profile parameter values are defined by the operator. This is commonly used for input source and destination values.
- AWS Elemental Conductor Live profile fields with blue treatment support channel parameters. Profile validation requires an operator to define validation values for the user configured profile parameters in order to save the profiles. The validation values are not used when creating a channel with the profile. The operator must specify values for the user configured channel parameters.
- A complete list of profile fields that support channel parameters is located in the AWS Elemental user documentation.
- Once profiles are created, they cannot be modified. Instead, a profile can be duplicated and modified, then saved with a new name.

Channel tasks – Bulk actions

- AWS Elemental Conductor Live supports the ability to start, stop, or delete several channels at the same time, and to change the profile of several channels at the same time.

MPTS management

- AWS Elemental Conductor Live provides MPTS creation and channel participation via the AWS Elemental Conductor Live interface.
- The MPTS created by AWS Elemental Conductor Live can reside on an AWS Elemental Live or an AWS Elemental Statmux node.

Status management

- Alerts and messages that occur on worker nodes are sent to AWS Elemental Conductor Live and displayed in the interface.
- AWS Elemental Conductor Live can be configured to send a notification to an email address or web callback URL when an alert occurs.
- Operators can provide operational notes from the Status notifications page.

Types of releases

Releases within a major version are numbered starting with 0. For example, a major series might have versions from 2.23.0 to 2.23.5. Each release in the series always includes fixes, and usually includes features.

Downloading the software

If you have an active AWS Elemental agreement, you can download releases from the AWS Appliances & Software services console.

Currently installed versions

You can find the currently installed version of AWS Elemental Live software at the bottom of the user interface or by typing the following at the command line:

```
cat /opt/elemental_se/versions.txt
```

Note that some features may be available only in certain models of AWS Elemental Live. For example, HEVC encoding is available only on licensed encoders.

AWS Elemental Live and AWS Elemental Statmux

New features in AWS Elemental Live and AWS Elemental Statmux

New features in version 2.26

Access to /home/elemental

The following permissions have been made. They apply only to a fresh install of Elemental software, starting with Elemental Live 2.26.4 and Conductor Live 3.26.4

The default folder permissions for /home/elemental have been changed from 755 to 750. This means that the folder is no longer world readable and writable.

The default UMASK has also been changed from 022 to 027 in /etc/login.defs. This means that any new files or directories that are created on the system are no longer world readable. (GLV-2979)

Accessibility signaling

In audio and captions in a CMAF Ingest output, you can now include accessibility data. This data describes the type of accessibility that the encode represents. For example, an audio track might actually be a spoken description of what's happening in the video. Or a captions track might provide a written translation (into another language) of the speech in the content. Accessibility data is also known as accessibility signaling.

Elemental Live supports accessibility signaling using DASH role audio, DASH role captions, and DVB DASH accessibility (for both audio and captions).

You set up for accessibility signaling in the individual audio and captions encodes in each CMAF Ingest output group. (GLV-3177)

CMAF Ingest output group

CMAF Ingest output groups are now supported on Elemental Live. (GLV-3172)

NMOS - New parameter for NMOS manifest

The NMOS node-config.json file contains a new parameter:

- Name: `manifest_href_base_url`
- Description: The URL for the HREF in the NMOS manifest.
- Default value: `https://<name of Live machine>`

(GLV-4655)

NMOS controlled by Conductor Live

Elemental Live now supports NMOS events that are controlled by Conductor Live. Support for this control includes failover when a Live node fails. The new implementation allows you to set up and manage the NMOS configuration independently of the event that will use that configuration. In other words, the configuration is decoupled from the event.

Performance - Improved density on AWS Elemental Live 98x appliances

This version of AWS Elemental Live includes density improvements in SDI UHD inputs on AWS Elemental Live 98x appliances.

Routers and HTTPS

Routes under /routers now require authentication when user authentication is enabled.

In addition, the /settings/cluster route has been removed from Elemental Live because clustering is handled by Elemental Conductor Live. (GLV-2903)

SCP disabled by default

Starting with kickstart version 5.9.29 (which aligns with Elemental Live 2.26.4, Elemental Statmux 2.26.4 and Conductor Live 3.26.4), the Elemental software now disables support for SCP by default. We have made this change because SCP has been deprecated in RHEL 9.

See the following Red Hat article for more details.https://www.redhat.com/en/blog/openssh-scp-deprecation-rhel-9-what-you-need-know?extIdCarryOver=true&sc_cid=701f2000001OH6kAAG

(GLV-2805)

SDI - Configuring SDI devices

You can now configure an SDI input device name from the web interface. (GLV-3658)

SMPTE 2110 input performance

With SMPTE 2110 inputs, you no longer have to alternate between primary and secondary interfaces to ensure maximum performance. (GLV-3839)

Support for SSSD in RHEL 9

Elemental Live now provides packages to support SSSD support in RHEL 9.

For detailed instructions, see the KBA with the title *How to integrate RHEL 9 Elemental Live appliance with Active Directory using SSSD* in the AWS Elemental Support Center. (GLV-3721)

Tiled media

AWS Elemental Live now supports the tiled media feature.

Timecodes

AWS Elemental Live now includes a Program-Date-Time-Clock field. This field lets you set the PDT clock to System Clock, in order to automatically resynchronize PDT to the wall clock, when PDT drifts.

The default value for this field is "Initialize From Output Timecode", which means that there is no automatic resynchronization of PDT.

Upgrade - Improvement to the process for upgrading a standalone Live node

The events on a standalone Elemental Live now will now restart automatically if you intentionally stop the elemental_se service. You might shut down, for example, to perform a software upgrade. When you restart elemental_se, the events that were previously running will automatically restart.

Note that this change doesn't apply to channels that are managed through Conductor Live. Those channels won't automatically resume, but instead will continue to use the failover feature of Conductor Live. In other words, when you stop elemental_se on node A, the events will fail over to a backup node. When you restart elemental_se on node A, the events will continue to run on the backup node. (GLV-3786)

Video quality – Bandwidth reduction filter

Bandwidth Reduction Filtering (BRF) is now available as a video pre-processor. BRF is an in-loop filter that is designed to increase compression efficiency, allowing users to reduce output bitrates while maintaining the same or a similar picture quality. We recommend that you set BRF to Auto and, if desired, test each of the post sharpening strengths, starting with the lowest strength. (GLV-3746)

Virtual input switching - Improvement to virtual input switching

We have made internal improvements to input switching that mean that when a switch occurs, black video will no longer occur for a few frames. (GLV-3467)

Video quality improvements

This version of AWS Elemental Live introduces core improvements to video quality in HEVC outputs, specifically in the handling of dark scenes and moving objects.

Zixi outputs - SDK for Zixi outputs

Elemental Live now implements version 16.10.44864 of the Zixi Feeder SDK. (GLV-929)

New features in version 2.25

Stream ID field in SRT outputs

The SRT output in Reliable TS output group now includes the Stream ID field. (SOCK-38864)

Default passwords

There is a change to the password rules for the operating system root password. Starting with version 2.25.6, if you kickstart the operating system, you must change the root password from the default value.

This password requirement is in addition to the current requirement that you always change the default password for the *elemental* user. (GLV-1758)

Dolby Vision and tvOS devices and operating systems

A change has been made to the HLS manifest, in order to support Dolby Vision 8.1 with tvOS devices/OS.

Previously, the #EXT-X-STREAM-INF tags were split into two lines for video. Starting with version 2.25.5, Elemental Live signals DolbyVision 8.1 with one #EXT-X-STREAM-INF tag that includes both the CODECS and SUPPLEMENTAL-CODECS attributes. (GLV-722)

RTMP outputs and fill behavior

There is a change to how you can configure an RTMP output group when you have set up the video for constant bitrate. (SOCK-38971)

Elemental Live might achieve a constant bitrate for the video by including filler units (FILL NAL units) within the elementary video stream. Elemental Live does this when the video is not complex and doesn't need to use the full specified bitrate.

Before version 2.25.2, in an RTMP output group, Elemental Live stripped the filler units from the output video. Stripping out the units results in video that isn't really a constant bitrate. This variable bitrate can cause problems for some downstream systems.

With version 2.25.2, an RTMP output group includes the Include Filler NAL Units field. This field lets you control whether to keep or strip out the filler. The field has an effect only when you have set up the video for CBR. It is ignored with other bitrates.

Setup in the web interface

In the Elemental Live event, in Output Groups, choose the Adobe RTMP tab. Find the Include Filler NAL units field, and choose the preferred option. The options are Auto, Drop (the default), and Include.

We recommend that you choose Auto.

- If you choose Auto and you find that the video quality drops, then change the value to Include.
- If you know that your downstream system definitely can't handle a bitrate that varies a lot over time, then choose Include. Elemental Live will include the filler so that the bitrate of the entire stream is constant.
- If you know that your video quality doesn't vary in complexity, then you might want to choose Drop, to clearly define the behavior that you want.

API change

The new field is located in the XML file as follows:

```
<output_group>
     <rtmp_group_settings>
          <include_filler_nal_units>
```

Audio attenuation for AC3

Elemental Live now supports audio attenuation for AC3 (Dolby Digital) output audio when the coding mode is 3/2 LFE. Previously, this feature was supported only with EAC3 (Dolby Digital Plus). (SOCK-39052)

KLV metadata

Elemental Live now supports ingest of KLV data included in the SMPTE-2038 in a transport stream. The ingested metadata can then be passed through in an HLS (with a TS container) output group or a UDP/TS output group. Previously, passthrough was supported only on UDP/TS outputs. (SOCK-28219)

To pass through the KLV metadata, follow these steps:

1. In the input, expand the Advanced section and enable Prefer SMPTE 2038.
2. In the HLS or UDP/TS output group, expand the Advanced section and set these
   - KLV Passthrough: Enable this field.
   - KLV PID: Enter the PID or PIDS for the metadata. Valid values are in the range 32 to 8182. Enter the value in decimal or hexadecimal. Multiple values are accepted, and can be entered in ranges and/or by comma separation.

In an HLS output group, these settings are in the m2ts container. In an HLS output group, they are in the m3u8Settings container.

API change

In the XML file, the fields are located as follows:

<input>		<prefer_smpte2038>
<output_group><output>	<m3u8_settings> or <m2ts_settings>	<klv_passthrough>
<output_group><output>	<m3u8_settings> or <m2ts_settings>	<klv_data_pids>

Delivering to AWS MediaPackage using sigV4 credentials

Elemental Live now supports SigV4 authentication for outputs to MediaPackage Live v2, which will be released later in late April, 2023. MediaPackage v2 supports both HLS and low-latency HLS.

There are no changes to the API for this feature.

The Elemental Live user guide has been updated to include information about this output.

Low latency workflows using AWS MediaPackage

If you are delivering HLS output to a MediaPackage that is using MediaPackage v2, you can implement a glass-to-glass low latency HLS workflow that uses AWS Elemental Live for encoding and AWS Elemental MediaPackage as the origin server. For this workflow, there are specific setup steps in both Elemental Live and MediaPackage:

- The Elemental Live event must have a short segment: 1 second. If the segment length is longer, you will probably not achieve end-to-end low latency. The table below identifies other fields that can affect latency.
- The MediaPackage channel must use MediaPackage v2, which will be released in late April, 2023.

There are no changes to the API for this feature.

The Elemental Live user guide has been updated to include information about this output.

Improved video quality

Version 2.25.0 includes enhancements that result in better video quality.

New features in version 2.24

SMPTE 2110 audio inputs

Elemental Live now supports the ability to ingest audio from more than one audio SDP file. This ability applies to both SMPTE ST 2110-30 (PCM) and SMPTE ST 2110-31 (Dolby Digital Plus).

The following limitations apply:

All the tracks in all the SDP files that you set up in the event must have the same audio sampling rates and the same bit depths.

The number of audio channels in the SDP file must be an even number.

There are no changes to the API as a result of this enhancement.

(SOCK-38535)

Time zone for Nielsen audio watermarks

When the Nielsen audio watermarks feature is configured, Elemental Live inserts watermarks that have a time stamp. The time stamp is in a time zone.

Previously, when you have configured to use NAES watermarks, the only time zone that was supported was the "appliance time zone" that you configured when you installed the software or ran the configuration script with the -t option.

Now, Live includes a field to set the time zone for the time stamp.

On the web interface, go to the audio output stream, select Advanced, and enable the Nielsen Watermarking section. The field is called Timezone.

Note that the new field doesn't apply to CBET. That process type has always used UTC, and still uses UTC.

(SOCK-38516)

API change

In the XML file, the new field is located at:

```
<stream_assembly><audio_description><nielsen_audio_watermarking_settings><timezone>
```

Value: One of these strings:

```
UTC, America/Puerto Rico, US/Eastern, US/Mountain, US/Arizona, US/Pacific, US,Hawaii,
US/Samoa
```

Default: UTC

The field applies only when the process type is `NAES II + VI`, or `NAES II + VI + CBET`.

Required action

After you install Live version 2.24.1 (or later), you must make a one-time change to events that use the Nielsen audio watermarks feature.

Make sure that you set the time zone in every output. The feature no longer uses the time zone that you configured using the configure or install script.

Timestamp for RTMP output

In the event, an RTMP output now includes a Timestamp Start Time field. This field lets you control the handling of the timestamp within the RTMP packets. You can set it so that timestamps are based on 0, where 0 is the event start time. Timestamps will reset back to 0 when events are restarted. Or you can set it so that timestamps are based on the Live system clock. In both cases, the timestamp is absolute, and its format follows the RTMP specification. (SOCK-38443)

API change

In the XML file, the new field is located at:

```
<output_group><rtmp_group_settings><output><use_system_clock_start>
```

Value: zero based, use_system_clock_start

Default: zero based

Virtual input switching – maximum inputs

There is a new configuration parameter for the virtual input switching feature. You can now set the maximum number of virtual inputs allowed on each node. The parameter is on the Settings > Advanced page of the web interface.
If you increase the maximum, keep in mind that in the events on the node, every virtual input is being continually demuxed, which increases the load on the CPU.
In addition, in Live nodes running in a Conductor Live cluster, make sure that all the nodes in the same redundancy group have the same value in this field. (SOCK-38429)

New features in version 2.23

Passthrough in an MPTS

Conductor Live 2.23.4 introduces support for two passthrough features:

- Program Passthrough: An MPTS can now include programs encoded by third-party encoders. The passthrough program must be a CBR.
- Passthrough of a stream that is an SI/PSI table: An MPTS can now include a stream that corresponds to an SI/PSI table. To support this feature, Elemental Statmux includes the ability to suppress any SI/PSI table that Elemental Statmux normally generates in the MPTS.

For information about these features, see Including passthrough programs, Passing through custom streams, and Passing through SI/PSI tables.

Video enhancements

Enhancements have been made to these existing fields that control video quality:

- Input > Video Selector > Filter Strength field: This field now includes an Auto value that lets Elemental Live choose the best strength. We recommend choosing Auto as the initial value.

  This field controls a filter on the input side.

- Outputs > Stream > Video > Preprocessors > Noise Reducer: When the Filter field is set to Sharpen, there are now different values in the Strength field that sets the strength of the sharpen filter. This filter previously had an on/off choice, to sharpen the ediges or not. The field now has more values: 0 (off), 1 (low) up to 3 (high). The new default is 1 (low).

  This field is a filter on the output side.

Logging utility

All the products in the AWS Elemental Live family now include a utility that lets you easily capture and deliver a wide array of diagnostics data, and send the data to AWS Elemental Support for troubleshooting purposes. You run this utility from the command line on a Conductor Live, Elemental Live, or Elemental Statmux node.

For more information, see this KBA in the Elemental Support Center: How to collect diagnostics data with elemental log collector utility.

12G SDI input

AWS Elemental Live now supports ingest of uncompressed 12G-SDI content. Using this input type means that you no longer need to implement a quadrant ingest of 4 x 3G in order to ingest a 12G source.

This input type is enabled only for AWS Elemental Live appliances L859 and L889 that include a 12G SDI card. The new appliances provide maximum flexibility because they let you implement SD-SDI inputs, HD-SDI inputs, 3G-SDI inputs, and 12G-SDI inputs.

With a 12G-SDI input, you can implement the following workflows:

- 1 x 4K HEVC workflow, on the L859 appliance
- 2 x 4K HEVC workflow, on the L889 appliance
- 1 x 4K HEVC ABR stack, on the L889 appliance

These maximums apply even though the card includes four ports. None of these appliances support ingest of four 12G sources at one time.

There is a new section on 12G inputs in the Inputs section of the AWS Elemental Live User Guide.

Performance optimizations for SMPTE 2110 inputs

Version 2.23.3 includes performance optimizations for SMPTE 2110 inputs and SMPTE 2022-6 inputs. These inputs require an appliance that includes the Mellanox 25 GbE card. These optimizations improve read density at the device interface. Customers with SMPTE 2110 inputs and 2202-6 inputs will see density improvements for some workflows.

If you already implement SMPTE 2110 inputs or outputs or SMPTE 2022-6 inputs, you might need to perform an extra step after you upgrade to Elemental Live version 2.23.3. For more details, see "Changes to usage of the Mellanox card" on page 49.

Support for auto adaptive quantization with HEVC outputs

Version 2.21 of AWS Elemental Live introduced auto adaptive quantization for AVC outputs. This feature is now also the default for HEVC outputs.

The Auto setting uses machine learning techniques to select the optimal settings for Adaptive Quantization, Temporal AQ, Spatial AQ, and Flicker AQ. With this setting, AQ strengths can now vary across a video stream instead of remaining constant.

Enhancement for Teletext source captions

Previously, there was a problem with how Elemental Live handled some characters when converting a Teletext source captions to another format. To solve this problem, the Input > Captions selector section of the event now includes a Language code field when the source captions is set to Teletext.When Elemental Live has information about the language, it can select the correct character set to use when converting.

Before you use this feature, see the issue SOCK-38330, on page 56.

Latency improvements for SMPTE 2110 outputs

Improvements continue to be made to reduce the latency of SMPTE 2110 outputs. For Live to EMX to Live workloads, streamlining audio/video packet sends has reduced latency by up to 50%. For 1080p60 outputs, latency has been reduced from 500ms to 250ms.

Installing and upgrading – configuring OCR conversion

There are three new options for enabling OCR when installing, upgrading, or configuring Live.

- The first option is to skip OCR prompts and not enable OCR.
- The second option is for a node with an internet connection; the install includes a step to download OCR libraries.
- The third option is for a node with no connection; the install uses libraries that you previously downloaded and copied to the node.

The AWS Elemental Live Install Guide has been updated for this information.

Input switching using a POIS

AWS Elemental Live includes two features for switching inputs using a POIS.

Virtual input switching

AWS Elemental Live version 2.20.2 introduced the virtual input switching feature. The feature lets you set up so that a POIS controls switching from one event to another. This method has these key features:

- Support for input switching based on SCTE-35 messages in the input.
- Support for the POIS to send unsolicited requests to switch inputs.

Asynchronous input switching with ESAM

Version 2.23.0 introduces the asynchronous input switching feature. You can set up any event so that a POIS server can send asynchronous input switching requests to Elemental Live. The requests are handled using the ESAM protocol. You can set up for POIS input switching with the following types of inputs:

- TS inputs from an MPTS. These inputs let you include live sources in the event.
- File inputs. These inputs let you include VOD sources.

For more information about these features, see the AWS Elemental Live user guide.

Dialnorm for Dolby inputs

A new environment variable lets you control the processing of Dolby audio inputs. This variable is useful for events that have a Dolby input and a non-Dolby output. In these scenarios, you can't change the dialnorm on the output. But you can set this environment variable to change it on the input side, in order to reduce the loudness of the entire output.

1. To use this feature, set the environment variable DOLBY_DYNAMIC_RANGE_CONTROL_MODE. Set the variable to one of these values:

   1: Sets the dialnorm of the input audio to -20 decibels.

   2: Sets the dialnorm of the input audio to -31 decibels.

   3: Passes through the dialnorm of the input audio.
2. To set the variable, read "How to add environment variables", on the Elemental Support Center. You must have an AWS account to access the Elemental Support Center.

If you don't set this variable, Live sets the dialnorm of the input audio to -20 decibels (which is the same value as setting 1 in the environment variable).

Dolby Digital Plus and fourCC value

A new environment variable lets you specify the value for the fourCC value for EAC3 (Dolby Digital Plus) signaling for a TS output.

3. To use this feature, set the environment variable FORCE_EAC3_FOURCC_TS_SIGNALING. Set the variable to one of these values:

   Enabled: Sets the value to EAC3
   Disabled: Sets the value to ec-3
4. To set the variable, read How to add environment variables, on the Elemental Support Center. You must have an AWS account to access the Elemental Support Center.

If you don't set up this environment variable, Live sets the fourCC value to ec-3.

New features in version 2.22

Dolby Digital Plus with Atmos

Elemental Live now supports encoding audio outputs as Dolby Digital Plus with Atmos.

Elemental Live can ingest an audio source that contains up to eight channels, and convert it to Dolby Digital Plus with Atmos.

RTSP inputs

Elemental Live now supports RTSP inputs, to support delivery over the RTSP protocol. The source video can be HEVC or AVC with resolutions up to 4K, and framerates up to 60 fps. The source audio must be AAC.

The RTSP protocol is popular with devices such as security cameras.

Additional support for mixed video codecs

The mix of video codecs possible in an MPTS has been enhanced. Previously, an MPTS could be set up so that some events have HEVC video, and othes have AVC video. Now, MPEG-2 is included. An MPTS can include an event with any combination of HEVC, AVC, and MPEG-2.

SRT outputs

Elemental Live now supports delivering TS outputs over the SRT protocol. Elemental Live can have the role of caller or listener in the transmission.

The feature is available in the existing Reliable TS output group.

The Elemental Live User Guide will be updated shortly to include steps for setting up this type of output.

Support for RTMPS inputs

Elemental Live now supports ingest of sources that use a secure connection – RTMPS. To ingest RTMPS, choose Network input, and set the protocol to rtmps://

SMPTE 2110 inputs and NMOS – Static receiver

Elemental Live now lets you choose whether to use static or dynamic information for the Device and Label tags that Elemental Live sends to the NMOS receiver. This feature is controlled by the new field in the NMOS Control section in a SMPTE 2110 input.

The new field is called Use Static Receives:

- When the field is unchecked (the legacy behavior), dynamic tags are used. The device is set to a random ID that Elemental Live assigns. The label is set to the event ID plus the input ID (for example, Live_Event1_Input1).
- When the field is checked, static tags are used. Enter a custom name in the input name field. When you do this, the Device is set to the event GUID. The Label is set to custom input name. Furthermore, if you check the field for two inputs in the same event, and assign the same input name, then the tags have identical values. This behavior is useful for workflows that rely on static device IDs.

SMPTE 2110 – NMOS support with JPEG XS inputs and outputs

- SMPTE 2110 inputs and outputs with JPEG XS now support NMOS. Previously, only uncompressed inputs supported NMOS. (SOCK-36952)
- SMPTE 2110 outputs with JPEG XS now support NMOS. The Elemental Live user guide has been updated. (SOCK-36953)

SMPTE 2110 – passthrough of Dolby Digital audio

Elemental Live now supports passthrough of Dolby Digital audio codec from any input to a SMPTE 2110 output. This passthrough applies to Dolby Digital but not to Dolby Digital Plus. (SOCK-37345)

SMPTE 2110 – improved alerts

Elemental Live now includes more alerts and validation messages for problems with configuring or processing SMPTE 2110 inputs. (SOCK-34046)

Elemental Statmux – PID passthrough

Elemental Statmux now supports passthrough of PIDs. With passthrough, you identify one or more passthrough PIDS in any transport stream in the Statmux. Elemental Statmux extracts those PIDs, remap each PID to an outgoing PID, and include the remapped PIDs in the outgoing MPTS. (SOCK-37020)

Trick-play track

Elemental Live now supports an implementation of trick-play track that conforms with the Image Media Playlist specification, version 0.4. Previously, you could implement trick-play track only using I-frames. Both these trick-play implementations apply only to HLS output groups.

The new feature encodes a series of JPEG thumbnails, one per video segment, along with the standard video segments. This thumbnail implementation provides a better user experience, when the user is fast forwarding or rewinding in a downstream player. The player can show a preview of the video rather than showing a frozen screen until the fast forward or rewind is complete.

The Elemental Live user guide has been updated to document this feature. (SOCK-37312)

Alerts, messages, and logs

- We now log messages when inserting HLS timed metadata in response to a schedule action. We also submit with a DTS of 0 for late-processed injection requests for slightly improved latency. (SOCK-37480)
- A log message has been added to notify you when the port for a UDP source changes more than twice within five seconds. Frequent switching of a port can indicate that two different upstream systems are sending to the same input, when only one system should be sending. (SOCK-37465)
- The "HTTP Transfer Failed" alert now clears immediately if the next transfer attempt succeeds, or clears after 30 seconds in other situations. (SOCK-37472)
- Conductor Live – There is now a CL3 alert when a failover causes a node replacement. The alert is active for 1-2 minutes, then automatically clears itself. (SC-78)

Captions – 608 captions and extended character set

If source 608 captions include characters from an extended character set, those characters are now passed through as is to a captions output. (SOCK-37474)

HLS manifests for SCTE-35

There has been a change to the base64 in SCTE-35 data in HLS manifests that are type SCTE-35 enhanced. (This is the only manifest type that includes the base64 data) . The values for PTS adjustment, PTS, and duration now match the output clock. Previously, they incorrectly matched the source base64 data. (SOCK-37466)

Support for field pictures

Elemental Live now supports input sources encoded as field pictures. (SOCK-37468)

QVBR enhancement

There is now a default value for the Buffer Size in the video stream (encode) for H.264 and H.265, when you set the Rate Control Mode field to QVBR. The buffer size is set to be 2 times the Max Bitrate. (SOCK-37479)

Firmware Upgrade

The NIC driver firmware has been upgraded to resolve issues on appliances that include a 1 G Cu SFP interface. These issues occurs on specific appliances in the L800 series. (SOCK-37222, SOCK-37222)

The issues include the following:

- After the interface disconnects, the link status of the interface doesn't update to show the new state. (SOCK-36051)
- The link status of the interface doesn't correctly identify that it is in a bond. (SOCK-36779)
- The interface can unexpectedly perform a link renegotiation, resulting in a link speed dropping from 1000Mbps to 100Mbps.

All these problems are resolved by the firmware upgrade. The firmware upgrade is automatically performed when you install Elemental Live version 2.20.0 or later.

Producing output captions using OCR conversion

Elemental Live now supports optical character recognition (OCR) conversion of captions. OCR lets you convert image-based source caption to text-based output captions. Specifically, you can configure your Live event to convert DVB Sub and SCTE-27 source captions to WebVTT output captions. (SOCK-370031)

For the list of languages that are supported with this conversion feature, see page 11.

5. Currently, to use this feature, you must set the environment variable ENABLE_OCR_DVBSUB_OR_SCTE27 as follows:

```
ENABLE_OCR_DVBSUB_OR_SCTE27=TRUE
```

6. To set the variable, read How to add environment variables, on the Elemental Support Center. You must have an AWS account to access the Elemental Support Center.

Nielsen Watermark Encoding

Elemental Live now supports insertion of Nielsen watermarks in audio outputs using the NAES II, NAES VI, and CBET watermarking algorithms. Nielsen audio watermarking is the process of inserting watermark codes into the audio signal in order to that measure content viewership. These codes are inaudible to the human ear, but are detected by Nielsen meters in the downstream devices.

The Nielsen watermark contains a timestamp and an identifier (SID) that is unique for each broadcast channel. The Nielsen audio watermarking feature supports audio streams with the following characteristics:

- Frequency of 48 kHz (48000 samples per second)
- Up to 8 audio channels, with interleaved samples.

This feature requires a new paid add-on pack license from AWS Elemental Live. The Elemental Live implementation has completed the official certification process with Nielsen. (SOCK-36314)

L800 Series appliances – Performance Improvements

Elemental Live on L800 series appliances now produces higher channel density in workflows with 1080 ABR outputs. (SOCK-37348)

SMPTE 2110 Dolby Digital audio

SMPTE 2110 inputs and outputs now support 5.1 coding mode in Dolby Digital and Dolby Digital Plus audio. This functionality is part of SMPTE 2110-31. (SOCK-37288)

Statmux Latency Improvements

A Statmux MPTS can now achieve an additional 500ms latency reduction. To configure for this reduction, enter a lower value in the maximum video buffer delay setting on the MPTS.

Languages Supported with OCR

For information about captions conversion using OCR, see the list that follows.

Afrikaans
Amharic
Arabic
Assamese
Azerbaijani
Azerbaijani - Cyrillic
Belarusian
Bengali
Tibetan
Bosnian
Bulgarian
Catalan; Valencian
Cebuano
Czech
Chinese - Simplified
Chinese - Simplified Vertical
Chinese - Traditional
Chinese - Traditional Vertical
Cherokee
Welsh
Danish
German
Dzongkha
Greek, Modern (1453-)
English
English, Middle (1100-1500)
Esperanto
Estonian
Basque
Persian
Finnish
French
German
Fraktur
French, Middle (ca. 1400-1600)
Irish
Galician
Greek, Ancient (-1453)
Gujarati
Haitian; Haitian Creole
Hebrew
Hindi Croatian
Hungarian
Inuktitut
Indonesian
Icelandic
Italian
Italian - Old
Javanese
Japanese
Japanese Vertical
Kannada
Georgian
Georgian - Old
Kazakh
Central Khmer
Kirghiz;
Kyrgyz
Korean
Korean Vertical
Lao
Latin
Latvian
Lithuanian
Malayalam
Marathi
Macedonian
Maltese
Malay Burmese
Nepali
Dutch; Flemish
Norwegian
Oriya
Panjabi; Punjabi
Polish
Portuguese
Pushto; Pashto
Romanian;
Moldavian; Moldovan
Russian
Sanskrit
Sinhala; Sinhalese
Slovak
Slovenian
Spanish; Castilian
Spanish; Castilian - Old
Albanian
Serbian
Serbian - Latin
Swahili
Swedish
Syriac
Tamil
Telugu
Tajik
Thai
Tigrinya
Turkish
Uighur; Uyghur
Ukrainian
Urdu
Uzbek
Uzbek - Cyrillic
Vietnamese

New features in version 2.21

SMPTE ST 2110-22 JPEG XS decoding for inputs and outputs

Elemental Live now offers an add-on license for the JPEG XS codec for SMPTE ST 2110-22 inputs and outputs. Using this codec provides between 1:2 and 1:12 compression.

For an input, support for this codec means that Elemental Live can ingest SMPTE 2110 streams encoded with JPEG XS. Elemental Live automatically detects the codec, no user setup is required.

To use this codec in a SMPTE 2110 output, on the Video tab, select JPEG XS in Video Codec. You can use a compression ratio between 1:2 and 1:12.

Dynamic ARIB audio stereo output

There is a new option in the audio stream for an output, available when the input is ARIB and the output is ARIB. In the ARIB Dynamic Audio field, there is a Forced Stereo option. This option automatically remixes the audio into stereo. It can convert any coding mode to stereo. If upmixing, Elemental Live repeats the mono input in both stereo channels. If downmixing, Elemental Live selects the first two channels from the input and discards other channels.

SCTE 35 splice insert API support for new tags

Added support in the API for the following tags in Elemental Live splice insert:

- unique_program_id
- avail_num
- avails_expected

AWS Elemental MediaConnect input support

Elemental Live now includes support for inputs from AWS Elemental MediaConnect using ARN based specifiers. You can create an output from MediaConnect using the SRT listener protocol and Elemental Live will parse required information from the MediaConnect flow ARN and MediaConnect output ARN to ingest the SRT source. AES encryption is optional. AWS Elemental MediaConnect inputs can also be configured and managed in Elemental Conductor Live.

NMOS IS-04 and IS-05 support for SMPTE ST 2022-7 seamless protection switching for SMPTE ST 2110 inputs

Elemental Live has expanded existing NMOS IS-04 Device Discovery and IS-05 Device Connection Management to support SMPTE ST 2022-7 seamless protection switching for SMPTE ST 2110 inputs.

RiverMax SDK upgrade

Elemental Live has upgraded to version 1.5.23 of the Mellanox RiverMax SDK.

Power supply alerts

When a power supply issue is detected, Elemental Live and Elemental Statmux will now display an alert in the web interface and send an SNMP trap. If Elemental Conductor Live is present, the alert is also visible there.

Conductor Live MPTS Channel web interface updates

On the MPTS Channel page of Elemental Conductor Live, you can now view and edit TS Endpoints, Complexity Endpoints, and Rate Allocation Endpoints for Live to Statmux communication. By default this occurs via UDP multicast on ports 5000 to 5055.

SRT inputs

Elemental Live introduces caller/listener mode support for Secure Reliable Transport (SRT) inputs, where Elemental Live is the caller and the SRT source is the listener. You can now receive secure, reliable, low latency video sources with protection against packet loss. SRT security is provided via optional Advanced Encryption Standard (AES) encryption of messages.

To configure an event for an SRT input:

7. For the input type, select Secure Reliable Transport and enter a name for the input.
8. In the Network Location field, enter the URI of the SRT to ingest.

Specify a host name and port that begins with srt://. For example, srt://192.168.1.2:5000.

9. Optional: In the Interface field, enter a network interface, such as eth1. If you leave this field blank, the system routing table will select an interface for you.
10. Optional: In the Latency field, enter the minimum number of milliseconds that the SRT sender should buffer a packet without receiving an acknowledgement before discarding it. For example, 300.

Note: This is not guaranteed to be the latency value used, as SRT uses the larger of the latency values requested by the caller and listener during the connection handshake. If you do not enter a value here, the default is 120ms.

11. In the Encryption field, select an encryption key length for the SRT media stream.

Note: You have the option to enter None. If you do this, you must leave the Passphrase field blank.

12. In the Passphrase field, enter a passphrase between 10 and 72 characters for the SRT sender and receiver.

Important: If you entered a value other than None in the Encryption field, you must enter a value here. If you entered None in the Encryption field, you must leave this field blank.

13. Optional: In the Stream ID field, enter a unique identifier between 1 and 512 characters for the SRT sender to use during the connection handshake.

Dolby Vision certification

Elemental Live is now Dolby Vision certified for profile 5 and profile 8.1.

Auto adaptive quantization

A new default and recommended Auto setting is now available for Adaptive Quantization. This setting applies to AVC encoding. The Auto setting uses machine learning techniques to select the optimal settings for Adaptive Quantization, Temporal AQ, Spatial AQ, and Flicker AQ. With this setting, AQ strengths can now vary across a video stream instead of remaining constant.

Auto QVBR quality level

You can now use Auto mode to automatically set quality level in QVBR rate control mode for AVC and HEVC. Auto is the new default and recommended setting. An algorithm will determine the best setting for your content.

SPTS output monitoring in Elemental Statmux

Elemental Statmux now allows you to add a secondary SPTS output for monitoring use cases.

HTML5 motion graphics

With the motion graphics add-on pack, you can now use Elemental Live to overlay HTML motion graphics on video outputs.

To set up a motion graphics overlay:

From the Elemental Live event page, set the Motion Image Inserter to ON.

Choose HTML as the Insertion Mode, and enter the URL of the page you want to overlay in the Input field. Optional: Select the Overlay Active check box if you want HTML overlays to start activated.

Optional: Select the check boxes to Enable REST Control and Enable SCTE-35 Control.

Note: For SCTE-35 controlled events, SCTE-35 deactivate messages only turn off overlays that were activated with this control. SCTE-35 deactivate does not turn off overlays that were activated in other ways.

To run a motion graphics overlay event, start an event that was set up using this motion graphics overlay method.

SDI performance enhancements

SDI capture cards have upgraded firmware, saving significant bandwidth and CPU utilization for workflows that convert 4:2:2 inputs to 4:2:0 outputs.

Important: Firmware updates require a full power cycle after install before using Elemental Live.

Essential notes, resolved issues, newly identified issues in Elemental Live and Elemental Statmux

Version 2.26

Essential Notes in version 2.26 – new operating system

Read this information if you are upgrading from an earlier version of AWS Elemental software.

Version 2.26.0 runs on RHEL 9 and won't run on RHEL 7 or CentOS 7. Therefore, to use the new versions of the AWS Elemental software, you must install the new operating system as well as upgrade the software.

Migration guides for version 3.26 and 2.26

There are special migration guides to perform this upgrade:

- To upgrade to AWS Elemental Live 2.26 (or later), follow the instructions in the *AWS Elemental Live migration guide*.
- To upgrade a Conductor cluster to AWS Elemental Conductor 3.26 (or later) and AWS Elemental Live 2.26 (or later), follow the instructions in the *AWS Elemental Conductor Live migration guide*.

  This migration guide doesn't apply to clusters that include AWS Elemental Statmux. For guidance in migrating these clusters, contact AWS Elemental Customer Support.

Don't follow the instructions in one of the upgrade guides. Those procedures won't work.

Required reading

If you have not upgraded your AWS Elemental Live software since several versions, you must read the Release Notes for the versions you missed.

Specifically, you must read the essential notes in those Release Notes. You can't just read the essential notes in the most recent Release Notes because with each major revision (for example, from 2.23 to 2.24), the essential notes from the previous major revision are removed from the Release Notes.

Recommendation for converting from software RAID to hardware RAID

When you migrate to RHEL 9, note that conversion from software RAID to hardware RAID is optional.

If you do want to convert to hardware RAID, we recommend that you perform the conversion before you've migrated your system to version 2.26.x of the AWS Elemental Live software.

For information about the Migration guides for version 3.26 and 2.26, see page 26.

For detailed instructions about converting to hardware RAID, see the KBA with the title *How to reconfigure an appliance from software RAID to hardware RAID* in the AWS Elemental Support Center.

Changes to features in version 2.26.0

Changes to support for Python, Ruby, and scripts

Starting with AWS Elemental Live version 2.26.0, there are new versions for some libraries. The supported versions are installed with AWS Elemental Live 2.6.0. Make sure that you update scripts (including preprocessing and post-processing scripts) that you have created so that they are compliant with the new versions.

- Python version 3

- Ruby version 2.6.10.

Change to support for HTTPS

Starting with version 2.26.0, HTTPS is enabled by default. (Previously, HTTP was enabled by default. You could enable HTTPS using the install script or configuration script.)

You can't disable HTTPS. But you can set up with both HTTP and HTTPS enabled:

- To enable HTTP when it is currently disabled, run the script with `--http`.
- To disable HTTP when it is currently enabled, run the script with `--https`.
- To retain the current protocol configuration (whatever that is), run the script without the option. (Note that this is a change in behavior. Previously, if you ran the script with no option, you disabled HTTPS.)

Take these steps:

- Review any scripts that you have created to make sure that you are happy with the new behavior, especially with the fact that `--https` disables HTTP.
- Make sure that users or applications use a secure connection and trusted certificates to communicate with AWS Elemental Live. You must provide the trusted certificates.

  Note that if you don't provide your own trusted certificates, you will see an error in your browser when you access the web interface. The error will indicate the site certificate is not valid.

Changes to Elemental AWS licenses

Starting with AWS Elemental Live version 2.26.0, SMPTE 2110 outputs require an Elemental license. The add-on package is free of charge, but it must be installed on appliances where you want to run events that create SMPTE 2110 outputs.

To obtain the license, contact your AWS Elemental sales person. To deploy the license, see the section about configuring licenses in the AWS Elemental Live Configuration Guide.

Removed features

Starting with AWS Elemental Live 2.26.0 GA software release, the following features are no longer part of the software:

- Civolution watermarking
- DTS Express encoding, which means that you can no longer choose DTS as the codec for video outputs.
- Flash motion graphics

If you obtain an appliance that already has version 2.26.0 or later installed, or if you install version 2.26.0 or later on qualified hardware (as a fresh install), these features are not part of the software.

If you migrate a node to version 2.26.0 or later, the migration procedure includes a step to remove fields related to removed features from the event XML. You don't have to manually remove these fields.

Impact of Mellanox driver changes

The following information applies if you implement SMPTE 2110 inputs or outputs.

RHEL 9 works only with versions 5.8 and higher of the Mellanox driver. As a result, the AWS Elemental Live installer for versions 2.26.0 and higher installs this new version of the Mellanox driver.

This version of the Mellanox driver isn't compatible with CIFS.

If you have an appliance that includes a Mellanox NIC, and you have been using CIFS to mount remote file shares, you must decide which feature you want to use:

- You can continue to use Mellanox. When you install, the install script will detect the Mellanox NIC and will automatically install the driver. In this case, you will no longer be able to use CIFS.
- You can postpone installation of the new Mellanox driver. This option is useful, for example, if you have an appliance with a Mellanox NIC that you aren't yet ready to use in your workflows. You can continue to use CIFS until you need to use the Mellanox NIC. When you install, include the `--skip-mellanox` option in order to skip driver detection. The installer won't install the new Mellanox driver.

Resolved issues in AWS Elemental Live 2.26

Version	Key	Topic	Description
2.26.5	GLV-1647	Audio inputs, Dolby Digital	There was an issue with events configured to pass through Dolby Digital audio. If the event was also configured to perform automatic input failover if audio silence was detected, then the 5101 (silence exceeded) alert appeared for the secondary input. This alert should not appear in this scenario. This issue has been fixed.
2.26.5	GLV-1954	Caption outputs	There was an issue with source Teletext (OP-47) captions that are wrapped in SMPTE 2031in SDI inputs. Sometimes extra data was passed through, which resulted in garbage text in the output captions. This issue has been fixed.
2.26.5	GLV-131	Caption outputs	There was an issue with events configured to pass through SCTE-27 or DVBSub captions. If a PID was selected in the caption selector, then only the selected PID would be present in the output, other caption PIDs were removed. This issue has been fixed so that Live ignores the caption selector, and passes through all the captions that are in the source.
2.26.5	GLV-4401	Input switching	Fixed an extremely rare edge case where input switching might fail.
2.26.5	GLV-3668	Input switching	There was an issue on Elemental L88x and L98x appliances. Input switching might cause a memory leak. This issue has been fixed.
2.26.5	GLV-4574	Installing	Sometimes the Elemental installer would run out of diskspace. This issue has been fixed.
2.26.5	GLV-4477	Installing	The RHEL 9 installed on the appliances now includes packages that better support policy-based routing rules.
2.26.5	GLV-4499	Logs	The amount of data about ad avails in the Elemental logs has been reduced, making it easier to scan the logs for the pertinent information.
2.26.5	GLV-3446	Logs	There were duplicate SCTE 35 messages and ad avail messages in the logs. The duplicates no longer appear.
2.26.5	GLV-2248	Logs	The SCTE-35 logging for M2TS ingest now shows the identifier for the input where the SCTE-35 message came in.

Version	Key	Topic	Description
2.26.5	GLV-4133	Motion graphic overlay	Previously, motion graphic overlays might disappear after an input switch. This issue has been fixed.
2.26.5	GLV-3024	Motion graphic overlay	There was an issue with events configured with motion graphic overlays. If the event included many input switches, the audio and video might become unsynchronized. This issue has been fixed.
2.26.5	GLV-4642	NMOS configuration	Previously, NMOS failed to start when bonded interfaces were present. NMOS now works with bonder interfaces.
2.26.5	GLV-4640	NMOS configuration	NMOS had issues with custom CA certificates. NMOS now works with custom CA certificates.
2.26.5	GLV-4599	NMOS configuration	Previously, NMOS required the name of the Elemental Live appliance to resolve to localhost. This issue has been fixed
2.26.5	GLV-4597	SCTE 35	Some SCTE 35 Segmentation Event types were not correctly honoring cancellation indicators in time signals. This issue has been fixed. The types are: Break Start, Provider Advertisement Start, Distributor Advertisement Start, Provider Placement Opportunity Start, Distributor Placement Opportunity Start
2.26.5	GLV-4612	SMPTE 2110 inputs	Previously, on each input switch away from an NMOS-controlled 2110 source, the event crashed. This issue has been fixed.
2.26.5	GLV-3434	SMPTE 2110 inputs	There was an issue with Live events that use SMPTE 2110 input with static SDP files. The web server that provides the SDP file might respond with a non-200 HTTP status. When Live attempted to fetch the SDP file, the event and any similar events would crash. This has been fixed.
2.26.5	GLV-4134	SMPTE 2110 outputs	There was an issue with events configured with motion graphic overlays and SMPTE 2110 outputs. An input switch would cause discontinuities on the SMPTE 2110 outputs. This issue has been fixed.
2.26.5	GLV-4595	Web interface	On the Devices Settings page, an orange backgrounds appeared on some saved fields. This background no longer appears.
2.26.4	GLV-1826	Alerts	The output listening alert no longer clears after 30 seconds. The alert clears only when the issue gets resolved.

Version	Key	Topic	Description
2.26.4	GLV-4145	API	The XML format of the devices API (GET /devices.xml) was changed by mistake in Elemental Live 2.26.3. The unintentional changes have been reverted. Starting with Elemental Live 2.26.3, we have also made an intentional change to the API: ▪ SMPTE 2110 receiver groups have been added to the XML. ▪ Empty elements have the `nil='true'` attribute
2.26.4	GLV-4143	API	Previously, the `system_status.json` API returned an error when SDI devices were present on the system. This error no longer gets returned.
2.26.4	GLV-2372	Audio, Dolby Atmos	Dolby Atmos encoding now uses the latest library.
2.26.4	GLV-1156	Captions, TTML	Previously, with TTML output captions, a slow memory leak could occur. This problem has been fixed.
2.26.4	GLV-3961	Environment variable	Change to the environment variable `HLS_VOD_MODE_DURATION_BEFORE_ALERT_IN_MSEC`. This environment variable was was previously limited to the maximum size of an int32. This restriction caused an alert to trigger earlier than expected. This environment variable has been revised to support longer durations.
2.26.4	GLV-4233	Input switching	Previously, with some file-based input switches, the channel would stop emitting output. The only workaround was to restart. This problem has been fixed.
2.26.4	GLV-4035	Input switching	Fixed a scenario where input switches could sometimes fail.
2.26.4	GLV-3562	Input switching	Previously, an event might crash if the event was configured for virtual input switching or perpetually-prepared inputs, and an input switch occurred. This problem has been fixed.
2.26.4	GLV-3959	Inputs	Fixed a performance regression on 2022-6/2022-7 inputs.
2.26.4	GLV-3914	Motion graphics	Fixed an issue whereby motion graphics insertion sometimes fell behind for demanding inputs (for example 4K at 60fps).
2.26.4	GLV-3541	NMOS	Previously, if user authentication was enabled on a node, NMOS wouldn't work. This problem has been fixed.

Version	Key	Topic	Description
2.26.4	GLV-241	Outputs, Zixi	Fixed Zixi stream validation to allow primary and secondary streams to allow same destination IP address and port w/ unique stream ids. You can set up the two streams in one of these ways: ▪ With the same IP address and port, but different interfaces. ▪ With different IP addresses, port, and interfaces
2.26.4	GLV-3915	SCTE 35	Fixed an issue that prevented users from creating events with RTMP ad markers.
2.26.4	GLV-3120	Video quality	We have made improvements of approximately 5% to the video quality of speed 0 HEVC. At the same time, compute speed either remains unchanged or is actually faster.
2.26.3	GLV-2610	Alerts and logging	We have implemented improvements in the Elemental Log Collector script.
2.26.3	GLV-2654	Audio, Dolby Digital	The Elemental Live implementation of the Dolby Digital (AC3) decoder has been modified to match the specification. You should not see any change in behavior.
2.26.3	GLV-2695	Captions, CEA-608	Previously, there was an issue with garbled content when CEA-608 embedded captions were passed through. The captions were garbled. This issue has been fixed.
2.26.3	GLV-3723	Captions, output	There was an issue with the rollover number for CEA-708 embedded captions carried in an ancillary stream in an output. Previously, when the caption distribution packet sequence number rolled over it is incorrectly the rollover number as a duplicate caption packet and is discarded. This issue has been fixed.
2.26.3	GLV-3562	Input switching	There was an issue with switching inputs in a running event configured for virtual input switching or perpetually-prepared inputs. It was possible for the event to crash. The root cause has been fixed.
2.26.3	GLV-2885	NMOS	Since Live version 2.26.0, there has been an issue with the NMOS service when the node was configured for HTTPS. The NMOS service no longer able to discover and register Live event output elementary streams as NMOS senders on the upstream registry. This issue has been fixed. The registration now succeeds.

Version	Key	Topic	Description
2.26.3	GLV-2487	Outputs, HLS	There was an issue with CUE OUT and CUE IN tags in the manifest in HLS outputs that occurred in very specific event configurations. The tag was sometimes not inserted or was inserted with an invalid value. This issue has been fixed.
2.26.3	GLV-3713	Outputs, Reliable TS	Fixed an issue on the web interface where ReliableTS StreamID field had a double entry.
2.26.3	GLV-2875	Scripts	Previously arbitrary commands could be run from the pre-processing and post-processing fields on Elemental Live and Elemental Conductor Live. Now only scripts can be run and those scripts must be located in either /data or /opt/elemental_se/web/public/script directories. Note that the script PID is logged to live_runner.output. This makes it easier to stop a command if the script runs for too long.
2.26.2	SOCK-38878	Audio output	Fixed an issue where the initial audio gain was not being set correctly when the event starts.
2.26.2	GLV-829	Captions	Fixed an issue whereby captions weren't included in the output in an event with hot backup inputs.
2.26.2	GLV-715	Captions, input	Previously, in very specific use cases, AWS Elemental Live failed to extract SMPTE 2038 Teletext data from the input because the decoder didn't read the data correctly. This issue has been fixed.
2.26.2	GLV-1448	Captions, output	There was an issue with EBU-TT-D captions. If the caption didn't have a specified alignment with its text region, AWS Elemental Live didn't choose the best default alignment. AWS Elemental Live now right-aligns the captions in the text region.
2.26.2	GLV-3388	Inputs, SMPTE 2110	There was an issue when a Live event is configured to use a SMPTE 2110 input with SMPTE 2022-7 and embedded timecodes. If one of the ancillary streams (either primary or secondary) that carries the timecode ancillary packets drops, the event might fail to resync timecodes. This issue has been fixed.
2.26.2	GLV-2800	Inputs, SMPTE 2110	There was an issue with SMPTE 2110 inputs that have an ancillary stream that contains timecodes. Sometime, the timecodes were being parsed incorrectly. This issue has been fixed.
2.26.2	GLV-1834	Outputs, in transport steams	There was an issue whereby SDTs in transport streams were always labeled as stream type of 1, regardless of content. This issue has been fixed.
2.26.2	GLV-2114	Platform	A firmware issue has been fixed.

Version	Key	Topic	Description
2.26.2	GLV-3314	REST API	There was an issue with the /api/devices/preview endpoint returning 500 errors. This issue has been fixed.
2.26.2	GLV-3452	SCTE 35	The encoder now performs segment drift correction on SCTE 35 boundaries.
2.26.2	GLV-2553	SCTE 35	There was an issue with using ESAM POIS server to process SCTE 35 messages. Sometimes, if frames were dropped, the splice preroll could get set to a negative number. This issue has been fixed.
2.26.2	GLV-2414	SCTE 35	Previously, SCTE 35 messages weren't detected if the PID wasn't present in an input when the channel starts. This issue has been fixed.
2.26.1	GLV-2614	Inputs, SMPTE 2110	When an AWS Elemental Live event with SMPTE 2110 input had JPEG XS video, Live was incorrectly rejecting a valid JPEG XS license. This has been fixed.
2.26.1	GLV-1122	Installer	Previously, there was no error message when the user installed a GPU build on a CPU-only node. Now, the installer validates the system hardware matches the installer type.
2.26.1	GLV-2389	Licenses	There was an issue where the MOTD was not always accurately displaying correct license information. This has been fixed.
2.26.1	GLV-2773	Logging	Response times were not being printed in Apache SSL access logs. This issue has been resolved
2.26.1	GLV-1489	Output locking	There was an issue where output locking resync was off by 1 frame when the input is 50fps and the output is 25fps. This issue has been fixed
2.26.1	GLV-907	Outputs, HLS	Previously, Live didn't honor the baseurl setting for fMP4 HLS output init files. This issue has been fixed
2.26.1	GLV-2510	SCTE 35	We have added an environment variable, REPEAT_AVAIL_IN_NEST, that toggles to determine whether or not previously reported avails are repeated when a nested avail occurs.

Newly identified issues in AWS Elemental Live 2.26

Version	Key	Topic	Description
2.26.2	GLV-3408	Output captions	There is an issue with the following event configuration: Two (or more) HLS output groups that both include DVB-Sub input captions and Web VTT output captions that using OCR. When the event starts, the event gets stuck in the pre-processing stage. This message appears: All Caption Target OCR Languages must match for a given caption selector. The workaround for this issue is to set up each HLS output group in a separate event.

Resolved issues in AWS Elemental Statmux 2.26

Version	Key	Topic	Description
2.26.2	GLV-2243	Passthrough programs	There was an issue on AWS Elemental Statmux, whereby audio-only passthrough programs could fail after 20 to 30 minutes. This problem has been fixed.

Version 2.25

Essential Notes in version 2.25

Last minor release of the 3.25 major version

Versions 2.25.9 and 3.25.9 are the last versions planned for the 2.25 (3.25).

We strongly recommend that you upgrade to version 2.26 and 3.26 as soon as possible. Read the Current release notes.

Change to cluster management 3.25.3

In the Release Notes for version 3.25.2 of Conductor Live and 2.25.2 of the worker nodes (Elemental Live and Elemental Statmux), we described a change to the rules for node recruitment and software downgrades. The change affected these actions when these actions involve "crossing over the x.25.2 boundary". You cross the boundary when you:

- Recruit a worker node with version 2.25.2 (or higher) into a cluster where the Conductor Live node is running a version lower than 2.25.2.
- Downgrade from a version x.25.2 (or higher) to a version below x.25.2.

In version 3.25.3 and 2.25.3, we are now introducing improvements that mean that it is no longer necessary to follow those rules.

If you haven't yet recruited or downgraded in the way described in those release notes (version 3 of the document), then do not follow the procedures in those release notes when you do recruit or downgrade. Instead, follow these new procedures.

Recruiting worker nodes

You might want to recruit a new worker node into a cluster where the nodes are running software versions lower than x.25.2. You might not want to upgrade the cluster yet, but you want to add the new nodes immediately. Follow this procedure:

1. Obtain the new worker node (it will be delivered with version 2.25.3 or later installed). Or locate a node that you already have and upgrade the version to 2.25.3 or later.
2. Set the following environmental variable to True:

   LEGACY_RECRUIT
3. Recruit the new worker node into the cluster as described in the Conductor Live Configuration Guide.

Recruiting worker nodes after you have crossed the boundary

Eventually, you will upgrade the Conductor Live nodes and will "cross the boundary". The worker nodes that have LEGACY_RECRUIT set to true will determine that Conductor Live has crossed the boundary, and will ignore the value of the environment variable. You don't need to set the environment variable to False on these nodes.

Downgrading nodes

You might have upgraded all the Conductor Live and workers nodes to the high side of the boundary. For example:

- The Conductor Live nodes are running version 3.25.2
- The worker nodes are running 3.26.0.

You might want to downgrade the worker nodes to the low side of the boundary, for example, to version 2.25.0.

In version x.25.2 (but only in that version), there was a rule that both the Conductor Live software versions and the worker software versions must be on the same side of the boundary.

With version x.25.3 and later, this rule no longer exists. But do keep in mind the existing rule that the Conductor Live and worker nodes can run different versions, so long as the Conductor Live nodes aren't running a higher version than the worker nodes.

K80 GPU is no longer supported

Starting with the 2.25.0 GA software release, all Group 3 Elemental Live appliances containing an NVIDIA K80 GPU will no longer be supported by new Elemental Live software releases.

All Group 3 AWS Elemental Live appliances containing a K80 GPU reached End of Life (EOL) status on December 31, 2020.

If you try to upgrade one of these appliances to version 2.25.0 or later, an error message will appear. The installation will stop. The encoder retains its current version of software. It can be restarted and operated as before with the software version it had active.

To determine the GPU on any Elemental Live appliance, log in and run the command:

```
sudo nvidia-smi -q | grep Product
```

If your Elemental appliance has a GPU, you will see the GPU details. If your appliance does not have a GPU, you will get a message saying command not found.

Resolved issues in AWS Elemental Live 2.25

Version	Key	Topic	Description
2.25.9	GLV-829	Captions	Fixed an issue whereby captions weren't included in the output in an event with hot backup inputs.
2.25.9	GLV-3723	Captions, output	There was an issue with the rollover number for CEA-708 embedded captions carried in an ancillary stream in an output. Previously, when the caption distribution packet sequence number rolled over it is incorrectly the rollover number as a duplicate caption packet and is discarded. This issue has been fixed.
2.25.9	GLV-3961	Environment variable	Change to the environment variable `HLS_VOD_MODE_DURATION_BEFORE_ALERT_IN_MSEC`. This environment variable was was previously limited to the maximum size of an int32. This restriction caused an alert to trigger earlier than expected. This environment variable has been revised to support longer durations.
2.25.9	GLV-3388	Inputs, SMPTE 2110	There was an issue when a Live event is configured to use a SMPTE 2110 input with SMPTE 2022-7 and embedded timecodes. If one of the ancillary streams (either primary or secondary) that carries the timecode ancillary packets drops, the event might fail to resync timecodes. This issue has been fixed.
2.25.9	GLV-2540	Web interface	There was an issue with the MPTS Perform tab. It was possibly to press a combination of keys and buttons that makes a different tab appear.

Version	Key	Topic	Description
2.25.8	SOCK-38878	Audio output	Fixed an issue where the initial audio gain was not being set correctly on event start.
2.25.8	GLV-2800	Inputs, SMPTE 2110	When running a Live event with a SMPTE 2110 input with an ancillary stream containing timecodes, in some instances the timecodes were being incorrectly parsed. This has been fixed.
2.25.8	GLV-2614	Inputs, SMPTE 2110	When an Elemental Live event with SMPTE 2110 input had JPEG XS video, Live was incorrectly rejecting a valid JPEG XS license. This has been fixed.
2.25.8	GLV-2510	SCTE 35	We have added an environment variable, REPEAT_AVAIL_IN_NEST, that toggles to determine whether or not previously reported avails are repeated when a nested avail occurs.
2.25.7	GLV-1751	Nielsen watermarking	Fixed an issue whereby Nielsen watermarking didn't work with AC3 inputs.
2.25.7	GLV-1464	SMPTE 2038 passthrough	Previously, there was an issue with passing through SMPTE 2038 data when the input was a network input. Even if the SMPTE 2038 passthrough checkbox was checked (on a TS output), the output didn't actually include SMPTE 2038. This issue has now been fixed.
2.25.7	SOCK-38666	Web interface	Previously, the banner to display the web interface included a message to enter a URL. This message now includes the IP address of the appliance.
2.25.6	GLV-1624	Output locking	There was an issue where an event could get stuck while trying to resync in an event set up for output locking. This issue has been fixed.
2.25.6	GLV-1708	Outputs, HLS manifest	There was an issue with the contents of the manifest in HLS outputs. If you were implementing, redundant manifests, the CHANNELS attribute was missing from the manifest. This issue has been fixed.
2.25.6	GLV-673	SCTE 35	There was an issue with handling SCTE 35 PIDs in an input that contains a TS. If the SCTE 35 PID wasn't present when the event started but appeared in the input later, Elemental Live would ignore it.
2.25.6	GLV-1785	Video outputs	There was an issue with video artifacts appearing when the scene transitioned from the field to a white bright logo. This issue has been fixed.
2.25.5	GLV-1345	REST API	Previously, the api/live_events/:id/bulk_metadata REST endpoint didn’t perform the bulk metadata correctly. This issue has been fixed.
2.25.5	GLV-1222	Inputs, SDI	There was an issue with the processing of ancillary data streams from an SDI source. All the data wasn’t being successfully processed. This issue has been fixed.

Version	Key	Topic	Description
2.25.5	GLV-1125	Outputs, UDP	There was an issue with handling Teletext captions from an SDI source. This issue has been fixed.
2.25.5	GLV-1111	Unsolicited ESAM	There was an issue with accessing unsolicited_esam endpoints using the REST API. You must enable API authentication to use these endpoints. To enable authentication, see "Enable user authentication" in the AWS Elemental Live Configuration Guide. Then go to the Elemental Live API and User Guide and search for the section "Authentication and REST".
2.25.5	GLV-851	Video, HEVC source	Previously, an HEVC video source didn't produce an output in the correct aspect ratio. The problem occurred in a video source with the SAR set to anything other than 1:1 and the PAR was absent. The issue has been fixed, and the output now has a suitable aspect ratio.
2.25.5	GLV-796	Captions	Very rarely, 608 captions in the source were dropped in the output. This issue has been fixed.
2.25.5	GLV-791	Audio only outputs	There was a problem with the handling of an audio-only HLS output. Elemental Live sometimes inserted a zero-duration audio-only segment into the manifest. This could cause problems for the downstream systems. Elemental Live no longer inserts zero-duration segments for audio-only outputs.
2.25.5	GLV-707	Outputs, SMPTE 2110	There is an error in the Elemental Live User Guide, in the General Procedure to set up a SMPTE 2110 output. Step 1 says "Open the section and choose **Low Framerate Input**." It should say: "Open the section and choose **Low Low Latency Mode**." The Elemental Live User Guide will eventually be fixed.
2.25.5	GLV-259	Audio, AAC format	Elemental Live recently adopted new content for the DVB AAC descriptor in the PMT of a TS output. The new descriptor is compliant with EN 300 468 V1.16.1 standard for SI data from DVB. We have now made a further change to provide better support for a wider range of TS analyzers.
2.25.5	GLV-160	Input switching	There is a change to the way that Elemental Live handles input switches. If the active input ends but there is an input switch scheduled within the next 2 seconds, Live won't switch to the failover input. Instead, Live will insert fill frames until the scheduled input switch is due.
2.25.4	GLV-403	Audio, input	An improvement was made that will improve resiliency when different incoming audio tracks aren't formatted consistently.

Version	Key	Topic	Description
2.25.4	GLV-168	Captions, output	There was an issue whereby the styling (such as a font color) that applies to TTML captions sometimes appeared in other content in the output. This issue has been fixed.
2.25.4	GLV-132	Crash	Fixed an issue where starting and stopping RTMP caused Elemental Live to crash.
2.25.4	GLV-154	Log files	There was an issue that was causing the log files to have many repetitions of a log message. In this case, the message occurred when the Content-Length header was not set in an HTTP response. The message now repeats a maximum of three time.
2.25.4	GLV-137	MPTS (Statmux)	An improvement has been made to the MPTS demuxer to address customer concerns. The MPTS demuxer previously generated audio stream buffers for all incoming streams received from incoming MPTS. When handling MPTS inputs featuring many programs, this caused unnecessary performance strain. There have been issues in the PMT that should only impact unused streams. In response, we've updated the MPTS demuxer: ▪ If PID-specific audio selectors are included, the demuxer skips buffer creation for unused audio streams. This handling results in improved system performance and resilience to bad input PMTs. ▪ If no such selectors are included, the demuxer won't apply any filter to incoming audio streams. Instead, the legacy handling applies.
2.25.4	GLV-264	MPTS (Statmux)	Elemental Live now supports the ability to specify the TSID in the NIT for Statmux MPTS output. Elemental Live also now supports the ability for the user to specify the Original Network ID in the NIT for Statmux MPTS output, and to include that ID in the output.
2.25.4	GLV-482	Output locking	Fixed an issue that could very occasionally result in segmentation drifts in the outputs.
2.25.4	SOCK-38874	SCTE 35	There was an issue whereby captions might appear in the output when ad avail blanking was applied. This issue has been fixed.
2.25.3	GLV-258	Audio outputs	Elemental Live recently added support in the PMT for the "MPEG-4 AAC descriptor" type of AAC descriptor (in line with tables 2-71 and 2-72 of ISO/IEC 13818-1 2015). As it happens, the addition of this new descriptor revealed a feature of Safari and QuickTime behavior, which is that they don't support PMTs that span more than one TS packet.

Version	Key	Topic	Description
			In order not to break existing workflows, Elemental 2.25.3 resolves this problem by applying special logic to the "MPEG-4 AAC descriptor": ▪ Live will add the "MPEG-4 AAC descriptor", if doing so wouldn't cause a split in the PMT. ▪ If the addition would cause a split, Live won't add "MPEG-4 AAC descriptor" but it will add other types of AAC descriptors (the descriptors that Elemental Live has traditionally supported). This conditional behavior applies only to AAC audio descriptors, not to audio descriptors for other audio formats. Also note that the special logic doesn't apply to TS or archive outputs, because Safari and QuickTime are typically not involved in those types of workflows.
2.25.3	GLV-237	Deployment, node recruitment	There was an issue with node recruitment in a Conductor cluster. For information about the issue and the fix, see the revised information in about changes to cluster management on page 35.
2.25.3	GLV-196	Logging and messages	Updated Elemental Log Collector (ELC) to add support for customers using RHEL and fixed some minor bugs.
2.25.3	GLV-540	Multiplex and Statmux outputs	Performance and jitter with multiplex and statmux workflows have been improved.
2.25.3	GLV-265	Multiplex and Statmux outputs	Previously, the transport_stream_id for statmux/multiplex output MPTS wasn't set in the SDT info. Now, the TSID will be included in the output SDT info and will be updated as needed.
2.25.3	GLV-263	Multiplex and Statmux outputs	Previously, the TDT time info for statmux/multiplex MPTS output was not being initialized to the current time, making TDT dates/times wrong. Now, the TDT time info will be accurate in the output MPTS.
2.25.3	GLV-458	Output locking	Fixed a scenario where resyncs could trigger segmentation drift.
2.25.3	GLV-384	RTMP inputs	Previously, RTMP pull inputs were not responding quickly enough to input switches away from the RTMP input to a different input. The slow response caused fill frames to get generated even if the next input was prepared and ready to activate. That issue has been resolved, and fill is no longer generated.
2.25.3	GLV-81	SDI inputs	Fixed issue with Elemental Live not detecting embedded timecode of SD/625i SDI inputs.
2.25.2	GLV-178	Audio input	There was an issue if an event includes an audio track selector, but there is no incoming audio on that track when the event starts. Previously, Elemental Live failed to detect the audio if it appears later. This issue has been fixed.

Version	Key	Topic	Description
2.25.2	SOCK-21662	Audio output	Previously, the AAC descriptor was missing from the PMT in TS outputs. The descriptor is now present.
2.25.2	GLV-67	Captions	There was an issue when Teletext captions were converted to Web VTT. The issue resulted in colored text having a black background. This issue has been fixed.
2.25.2	GLV-59	Input cropping	There was an issue with input cropping. Elemental Live sometimes failed to crop the video on all video renditions in an ABR stack. This issue has been fixed.
2.25.2	GLV-56	Output locking	A memory usage problem was fixed when two encoders were output locked.
2.25.2	SOCK-39174	SCTE 35	There was an issue with converting SCTE 104 messages to SCTE 35. Elemental Live didn't always handle the Auto Return correctly during the conversion. As a result, the ad avail in the event output didn't always return correctly. This issue has been fixed.
2.25.2	SOCK-39075	Static image	Previously, Elemental Live ignored the position for the static image in the output. This position is set by the Left and Top fields in the Image Inserter in the Global Processor section of the event. This issue is now fixed and Elemental Live positions the image correctly.
2.25.2	GLV-40	Video color space	There was an issue with the color space when the input was HDR with a chroma subsampling of 4:2:2, and the output was 4:2:0. The issue exhibited as a small amount of red bleeding at the edges of lines. This issue has been fixed.
2.25.2	SOCK-39331	Web interface	There was a problem with the web interface in Elemental Live 2.25.1. The web interface couldn't display event details. This problem has been fixed
2.25.1	SOCK-39291	Outputs, epoch locking	There was a problem where an event with epoch locking enabled could produce an invalid HLS manifest. The two outputs weren't correctly epoch locked, and one of the segments had an incorrect duration. This problem has been resolved.
2.25.1	SOCK-38580	SCTE 35	Previously, when a SCTE 104 message included multiple nested SCTE 35 messages, Live parsed and ingested only the first message. This issue has been fixed. Live now ingests all the nested SCTE 35 messages.
2.25.1	SOCK-39250	Time	The timezone component of Elemental Live has been updated to the newest version using the IANA Timezone database version 2023c.
2.25.0	SOCK-38903	Alerts and messages	Previously there was no alert when a SMPTE 2110 redundant input pair was missing a source. There is now an alert: 5318 Redundant input pair is not receiving data from source: <identification of the source>.

Version	Key	Topic	Description
2.25.0	SOCK-38892	Alerts and messages	Previously there was no alert when a 2022-6 input was missing a source. There is now an alert: 5318 Redundant input pair is not receiving data from source: <identification of the source>.
2.25.0	SOCK-39076	Output, Zixi	There was an issue that could cause instability in delivering a Zixi output. The output would continually fail and restart. The root cause that prevented a successful connection has been resolved.
2.25.0	SOCK-38860	Outputs, Zixi or SRT	There was a latency issue in a Reliable TS output that uses Zixi or SRT. The latency is made up of the value in the Zixi Latency or SRT Latency field and an internal buffer (hard-coded to 1000ms) that is used to smooth out the stream. The combined values could result in too much overall latency. The buffer latency is now in a field that you can set. This Buffer Msec field appears on the web interface in the Output section, above the Zixi Latency or SRT Latency field.
2.25.0	SOCK-39053	Video	There was sometimes an issue with corrupted color when ingesting SDI source video. This issue has been resolved.

Resolved issues in AWS Elemental Statmux 2.25

Resolved issues	Key	Topic	Description
2.25.8	GLV-2243	Audio only passthrough	Fixed an issue where certain configurations of Statmux could lead to MPTS Overflow alerts.
2.25.4	GLV-264	NIT	Elemental Live now supports the ability to specify the TSID in the NIT for Statmux MPTS output. Elemental Live also now supports the ability for the user to specify the Original Network ID in the NIT for Statmux MPTS output, and to include that ID in the output.
2.25.4	GLV-137	Demuxer	An improvement has been made to the MPTS demuxer to address customer concerns. The MPTS demuxer previously generated audio stream buffers for all incoming streams received from incoming MPTS. When handling MPTS inputs featuring many programs, this caused unnecessary performance strain. There have been issues in the PMT that should only impact unused streams. In response, we've updated the MPTS demuxer: ▪ If PID-specific audio selectors are included, the demuxer skips buffer creation for unused audio streams. This handling results in improved system performance and resilience to bad input PMTs. ▪ If no such selectors are included, the demuxer won't apply any filter to incoming audio streams. Instead, the legacy handling applies.
2.25.3	GLV-237	Deployment, node recruitment	There was an issue with node recruitment in a Conductor cluster. For information about the issue and the fix, see the revised information about changes to cluster management on page 35.

Version 2.24

Resolved issues in AWS Elemental Live 2.24

Version	Key	Topic	Description
2.24.01	SOCK-38673	Outputs, SMPTE 2110	In situations where Live was converting interlaced inputs to progressive SMPTE 2110 outputs it was found that our SMPTE 2110 output would fall out of compliance and not be consumable by some devices. This has been fixed.
2.24.0	SOCK-38657	Outputs, to MediaStore	There was a problem in delivering encodes to AWS Elemental MediaStore when the encode used chunked transfer encoding (CTE). The output could not be written to the MediaStore container. The specific cause for these failures has been resolved.
2.24.0	SOCK-38648	Outputs, SMPTE 2110	SMPTE 2110 outputs to devices with extremely small buffers could not always be handled by the downstream system. This issue has been fixed.
2.24.0	SOCK-38610	Outputs, SMPTE 2110	There was a problem with using NMOS in Elemental Live versions 2.19.3 to 2.23.3 and in version 2.23.5. NMOS events would not post to NMOS registration server, which meant that flow connection wasn't possible from the server side. This issue has been resolved and the NMOS registration server can now find and post SDP files.
2.24.0	SOCK-38601	Outputs, SMPTE 2110	Some downstream systems had problems decoding Elemental Live JPEG XS outputs. This problem occurred even though the Elemental Live implementation was compliant with the standard. These issues have been resolved and tested with a wide variety of interoperability tests.
2.24.0	SOCK-38596	Captions	There was a problem with events that included EBU-TT-D captions in the output. The log files were spammed with region and style messages. This issue has been fixed.
2.24.0	SOCK-38579	Outputs, Reliable TS	Previously, with a Reliable TS output that uses the SRT protocol, the attempt to connect to the remote SRT endpoint could time out. To resolve this problem, the default connection timeout when using primary-only connections has been increased.
2.24.0	SOCK-38529	Ad avails, with ESAM	ESAM SCTE 35 stopped outputting in events longer than 53 hours. This issue has been resolved.
2.24.0	SOCK-38476	Outputs, SMPTE 2110	We have made density improvements on appliances that have events that are ingesting SMPTE 2101 NMOS 1080p.
2.24.0	SOCK-38475	Inputs, RTMP	A race condition was encountered for workflows where two events ingested from the same RTMP stream. When one event was restarted after the RTMP stream was lost, the ingest process could subsequently crash. This issue been resolved.

Version	Key	Topic	Description
2.24.0	SOCK-38365	Alerts and messages	Starting in version 2.23.2, Elemental Live failed to raise an alarm when the SRT connection was lost on an SRT output. The alarm has been restored.
2.24.0	SOCK-38283	Outputs, SMPTE 2110	A change has been made to SMPTE 2110-22 outputs. There is now information in the output payload in the first RTP packet for each video frame or field. The information is the Video Support Box and the Color Specification Box. This change brings the implementation into line with the JPEG XS VSF standard.
2.24.0	SOCK-38242	Outputs, SMPTE 2110	There was an issue where SMPTE 2110-20 (uncompressed) video output. Frequently, the video was out of phase and did not keep the virtual receive buffer at the correct level. This issue has been resolved, so that the SMPTE 2110-20 output is completely compliant.
2.24.0	SOCK-38154	Outputs, SMPTE 2110	A change has been made to SMPTE 2110-22 outputs. The default value for the video profile parameter has been changed from Main to High. This change brings the implementation into line with the JPEG XS VSF TR 08 standard.
2.24.0	SOCK-38152	Outputs, SMPTE 2110	A change has been made to SMPTE 2110-22 outputs. The number of RTP payload bytes is now a multiple of 8. This change brings the implementation into line with the JPEG XS VSF TR 08 standard.
2.24.0	SOCK-36891	Outputs, SMPTE 2110	A change has been made to SMPTE 2110-22 outputs to make it compliant with the standard when the output is Interlace Mode with Top Field First.
2.24.1	SOCK-35771	Audio gain, preview	The Preview page for a running event includes an indicator that shows the current audio gain. There was a problem that caused the indicator to not refresh properly. This problem has been resolved. The indicator continually updates to show the current audio gain as the event is running.
2.24.1	SOCK-38705	Captions, SMPTE 2110 outputs	There was a problem with captions in an event that included input switching and that included SMPTE 2110 outputs. Sometimes an unreliable network caused captions be garbled in the SMPTE 2110 output. This problem has been resolved.
2.24.1	SOCK-38725	Outputs, DASH	There was an issue where Live could get stuck when trying to stop an event that included a DASH output group with one audio output. The problem has been fixed, so that the event stops successfully.
2.24.1	SOCK-38284	Outputs, Reliable TS	Previously, there was a problem with Reliable TS that used Zixi. The value in the Zixi Latency field (in the output) was

Version	Key	Topic	Description
			ignored when the user saved the event. This problem has been resolved.
2.24.1	SOCK-38790	Virtual input switching	Starting with the 2.24.0 release of Live, there was a problem with the virtual input switching feature. The UTC point time in the ESAM Signal Processing Event was incorrect. This has been fixed.
2.24.2	SOCK-38918	Crash	Very rarely, when restarting one Live Event, all the events on the appliance crashed. This issue has been fixed.
2.24.2	SOCK-38871	Web interface	There was a problem on the web interface for an event, in the section for a Reliable TS output group with an output with the Delivery Protocol set to Secure Reliable Transport. The SRT Connection mode was not visible. This issue has been fixed.
2.24.2	SOCK-38859	PTP	Previously, the PTP alert activation threshold was set to a hard-coded value. Now, it is configurable via the environment variable PTP_ALERT_PTP_OFFSET_THRESHOLD. The field specifies the maximum number of nanoseconds that the PTP clock can be offset from the Grandmaster clock. If the offset is more, an alert occurs.
2.24.2	SOCK-38809	Time format conversion	There was a problem on appliances that were set up with the FORCE_LTC_TO_UTC environment variable set to True. The conversion was inaccurate. This issue has been fixed.
2.24.3	SOCK-38928	Audio input	There was a problem with blank lines in the logs when the event includes Dolby Digital Plus audio. This problem has been fixed.
2.24.3	SOCK-38895	API	The following additional security headers have been added by default to the web server HTTP(S) requests. ▪ X-Frame-Options: deny ▪ X-XSS-Protection: 1; mode=block ▪ X-Content-Type-Options: nosniff ▪ Strict-Transport-Security: max-age=47304000; includeSubDomains (added only to HTTPS) ▪ Cache-Control: no-cache
2.24.3	SOCK-38822	Memory leak	Previously, the L842 appliance ran out of memory within one week. The memory leak that caused this problem has been fixed.
2.24.3	SOCK-38778	Captions input	Occasionally, ARIB captions in SDI inputs caused the event to stop. This issue has been fixed
2.24.3	SOCK-38529	SCTE 35	ESAM SCTE 35 stopped outputting in events longer than 53 hours. This issue was reported as a known issue in version 2.24.2. This issue has been fixed.

Version	Key	Topic	Description
2.24.5	SOCK-39063	Caption outputs	There was an issue with corrupted output captions. This issue occurred in an event that passes through SMPTE 2038 to a SMPTE 2110 output. This issue has been fixed.
2.24.5	SOCK-38565	Caption outputs	There was an issue with missing output captions in an event that converted DVB-Sub or SCTE 27 source captions to WebVTT or Burnin captions. This issue has been fixed.
2.24.5	SOCK-39194	HLS manifests	Sometimes Live stopped emitting child manifests in an HLS output group. This issue has been resolved.
2.24.5	SOCK-39195	Input switching	Sometimes a scheduled input switch didn't occur. This issue has been fixed.
2.24.5	SOCK-38914	Input switching	There was an issue that caused Live to crash during an input switch in an event with a low framerate encode. This issue has been fixed.
2.24.5	SOCK-38917	Output, crash	There was an issue whereby Live didn't respond well when the downstream system for an output wasn't responsive. This situation no longer causes Live to crash.
2.24.5	SOCK-38931	Output, Zixi	There was an issue with an event with a Zixi output, if the event started but the Zixi endpoint was not accepting connections. After the Zixi endpoint did start to accept connections, Live could become unresponsive. This issue has been fixed. Live no longer becomes unresponsive and will start to deliver to the endpoint.
2.24.5	SOCK-39193	PDT	Very rarely, production of the PDT in an HLS output became sporadic. This issue has been fixed.
2.24.5	SOCK-39192	Unpause	Occasionally unpausing the event occasionally caused segment drift. This issue has been fixed.
2.24.4	SOCK-38970	Inputs, AJA cards	Previously, there was a problem with how Elemental Live handled problems reading an AJA card. Elemental Live created a log entry, then immediately tried again to read from the card (instead of waiting for an interval). This could result in filling up the storage disk. This issue has been resolved with three improvements: The attempt to read now has a retry interval (10 milliseconds). In addition, only one entry is written to the log for each attempted input start attempt. And finally, the message in the log provides more detail.
2.24.4	SOCK-38969	Inputs, SMPTE 2022-6	Previously, there was a problem with how Elemental Live extracted ancillary data from a SMPTE 2022-6 input. If the video was SD (standard definition), the ancillary data wasn't extracted properly. This issue has been fixed.
2.24.4	SOCK-38937	Outputs, Zixi latency	Previously, there was a problem with handling of the Latency field in a Zixi output in a Reliable TS output group. If you

Version	Key	Topic	Description
			changed the value in the field, Elemental Live overwrote it back to the default. This issue been resolved.

Newly identified issues in AWS Elemental Live 2.24

Version	Key	Topic	Description
2.24.0	SOCK-38143	Output, JPEG XS	There is an issue with output encoded with JPEG XS. The encode doesn't include a timecode. This issue doesn't affect passthrough of JPEG XS.
2.24.2	SOCK-38529	Ad avails, with ESAM	ESAM SCTE 35 stopped outputting in events longer than 53 hours. This issue was mistakenly marked as resolved in version 2.24.0
2.24.2	SOCK-36270	Performance on L8xx appliances	There is an issue with the competing demands of different workflows on the same L88x appliance. You might sometimes want to use the appliance for workflows that require optimization for source ingestion, at other times for workflows that require optimization for outputs. We continue to look into this issue.

Version 2.23

Essential notes for version 2.23

Conductor Live user guide revision

The Conductor Live user guide has been revised and brought more up to date. More improvements will be published in the upcoming months.

Find the guide on the landing page for the AWS Elemental Live suite of products.

The user guide includes information about three recent new features in Elemental Statmux that enhance the capabilities of an MPTS:

- Program passthrough
- Passthrough of a custom stream
- Passthrough of a custom stream that is a SI/PSI table.

Changes to usage of the Mellanox card

Read this information if, before upgrading to version 2.23.3, you were already running events with SMPTE 2110 inputs or outputs or with SMPTE 2022-6 inputs.

For these workflows, you must be using an Elemental Live node or VM or qualified hardware unit that includes a Mellanox card. Version 2.23.3 of Elemental Live includes changes to the way that Elemental Live works with the card.

The changes are as follows:

- Version 2.23.3 introduces performance optimizations for SMPTE 2110 inputs and SMPTE 2022-6 inputs. These optimizations don't apply to SMPTE 2110 outputs. For more information about these optimizations, see page 15.
- In earlier versions, you needed to reserve cores for SMPTE 2110 inputs and outputs, and for SMPTE 2022-6 inputs. Starting with version 2.23.3, you no longer reserve cores for SMPTE 2110 outputs.

You might need to make changes to the Elemental Live configuration.

Scenario 1

You might previously have been running events with SMPTE 2110 inputs or SMPTE 2022-6 inputs (and possibly SMPTE 2110 outputs). If so, you must reboot the Elemental Live hardware unit, to apply the performance optimizations.

Follow these steps:

- Upgrade to version 2.23.3, as described in the AWS Elemental Live upgrade guide.
- Go to the command line interface (CLI) and run the following command:

```
sudo shutdown -r now
```

Scenario 2

You might previously have been running events with SMPTE 2110 outputs, but not with SMPTE 2110 inputs or SMPTE 2022-6 inputs. If so, you followed instructions to reserve cores for these outputs.

Starting with version 2.23.3, you don't need to reserve cores. Therefore, you should release the cores, so that all processes can access them. Follow these steps:

- Upgrade to version 2.23.3, as described in the AWS Elemental Live upgrade guide.

- Release the reserved cores. For information, in the AWS Elemental Live user guide, in the navigation bar, choose **Features**, then **SMPTE 2110 inputs and outputs**, then **Setup: Reserving processing cores**. Follow the procedure to *release* cores. Remember to reboot.

Log4JS has no impact on the Live suite

AWS Elemental Conductor Live 3 uses logstash, but not in a configuration that was susceptible to the widely reported Log4j issue. Out of an abundance of caution, and to allay any concerns from customers, we are upgrading logstash in Conductor Live to the latest patched version.

Note that neither AWS Elemental Live nor AWS Elemental Statmux use logstash.

Release types

Starting with the 2.22.x series, all Elemental Live General Availability (GA) releases include both features and fixes. Releases within a major version are numbered starting with 0. For example, a major series might have versions from 2.22.0 to 2.22.5. Each release in the series always includes fixes and usually includes features.

Required reading

If you have not upgraded your Elemental Live software since several versions, you must read the Release Notes for the versions you missed.

Specifically, you must read the Essential Notes in those Release Notes, because with each major revision (for example, from 2.21 to 2.22), the essential notes from the previous major revision are removed.

Resolved issues in AWS Elemental Live 2.23

Version	Key	Topic	Description
2.23.0	SOCK-37998	Alerts and messages	Previously, the warning about mismatched events in dual socket performance mode was included in the log file, even when the mode was not enabled. This issue has been fixed.
2.23.1	SOCK-37868	Alerts and messages	Alerts have been added to help detect when the Live time is not synchronized with the NTP server.
2.23.2	SOCK-37868	Alerts and messages	There is now an alert when the time on the Live node isn't synched with the NTP server.
2.23.5	SOCK-38587	Alerts and messages	Previously, an issue with the frame drop alert in certain events caused a large number of error log lines to be recorded in the live_runner.output log file. This has been resolved.
2.23.3	SOCK-38313	Alerts, logs, messages	Fixed an issue where the Download Log Files button was not working.
2.23.3	SOCK-38241	Alerts, logs, messages	Previously, there was a problem with the system clock alert not disappearing after 15 minutes of occurrence. This issue has been fixed.
2.23.0	SOCK-37882	Audio	Previously, there were problems with audio and video synch issues in SMPTE 2110 outputs. Elemental Live 2110 outputs now implement AES67, which resolves the problems.
2.23.1	SOCK-38099	Audio	Fixed a problem where bad audio sometimes occurred in the output after an input switch.

Version	Key	Topic	Description
2.23.1	SOCK-38061	Audio	There was a problem whereby Live was incorrectly inserting a discontinuity indicator for audio. This indicator caused issues for the playback system. The problem has been fixed so that the indicator is no longer inserted.
2.23.0	SOCK-37880	Captions	Resolved an issue where a DVB-Sub caption spread over several PES packets can cause our decoder to mistakenly insert a premature “clear screen” caption operation.
2.23.0	SOCK-37137	Captions	There was an issue with 608 input captions that used channels 3 and 4 in addition to channels 1 and 2. Previously, when the captions were converted to WebVTT, lines might be truncated. This problem has been fixed.
2.23.1	SOCK-37756	Configuration	The SSLH listening agent has been removed from Live. As a result of this change, RTMPS input is now supported only on port 1935.
2.23.1	SOCK-38012	Configuration, PTP and chronyd	Previously, there was a problem with the timing daemons. If you enabled PTP and then reinstalled or upgraded Live, chronyd was re-enabled. Now, the chronyd daemon is not re-enabled.
2.23.5	SOCK-37327	DRM	Previously, events that used DRM could cause an enormous increase in memory usage. This problem has been fixed.
2.23.5	SOCK-38440	Event crash	Resolved an issue that led to a seg fault.
2.23.3	SOCK-37977	Event failure	Previously, there was an issue with running an event that include GPU encode information, on a Live node that was CPU-only. This problem has been fixed.
2.23.3	SOCK-38110	Firewall	There was a problem where Elemental Live could stop receiving multicast traffic when the firewall is enabled. This problem has been fixed.
2.23.4	SOCK-38272	Input switching	There was an issue with creating a Live event via the REST API. If the event has multiple inputs and the inputs do not have labels/names it was not possible to switch between inputs, either via the web interface or via the REST API. This has been fixed.
2.23.5	SOCK-38530	Inputs	Previously, if there was a problem ingesting a source, ingest of other similar sources might stop. This problem has been fixed. We also added a message when a timeout occurred in stopping a thread.
2.23.5	SOCK-37516	Inputs	Fixed a scenario when if there are inputs with differing base frame rates (i.e. 25 vs 30) then one of them may fail.
2.23.3	SOCK-37346	Inputs, removing	Fixed issue when removing inputs timed to occur in the future. When the operator removed the inputs, Live might crash during an input switch.
2.23.0	SOCK-37782	Inputs, RTMP	Fixed a memory leak on RTMP inputs.

Version	Key	Topic	Description
2.23.2	SOCK-38053	Inputs, RTMP	Previously, for RTMP Pull inputs, Live would remove query parameters from the URL. This could cause issues if, for example, the query presented user credentials to the RTMP server. Now, query parameters are preserved. But note that Live doesn't read the query and will not act on the instructions in the query.
2.23.2	SOCK-37831	Inputs, RTMP	Previously, events with RTMP inputs could crash (stop) abruptly. We have fixed the memory handling issue that caused this crash.
2.23.0	SOCK-37891	Inputs, RTSP	For RTSP inputs, fixed the Interface field on the web interface to correctly set the network interface.
2.23.1	SOCK-38088	Inputs, SDI	Fixed a problem where Live stopped ingesting SDI input if the user stopped and restarted the event.
2.23.5	SOCK-38550	Inputs, SDI	Previously, there was a problem when an SDI input port didn't have a cable attached. The ingest.log could fill up with junk messages, leading to disk fill up. This issue has been fixed.
2.23.0	SOCK-37886	Inputs, SDI and SMPTE 2110	Fixed a problem where debug buffers were consuming extra memory for SDI and SMPTE 2110 inputs.
2.23.0	SOCK-37742	Inputs, SMPTE 2110	SMPTE 2110 NMOS inputs were updated so that when an event is restarted, it will re-register the input with a registration server.
2.23.0	SOCK-37739	Inputs, SMPTE 2110	Added an error message if the input name is blank when setting up NMOS static receivers.
2.23.0	SOCK-37736	Inputs, SMPTE 2110	Previously, there was a problem with static receivers (for SMPTE 2110 inputs with NMOS). The steps for creating two events with different receiver IDs was complicated. This problem has been fixed. Now, if you want two events to have the same receiver IDs, give event B the same input name as event A. Do this any way you want: by duplicating A, by creating B from scratch, by creating B from scratch and then modifying. If you want the events to have different receiver IDs, give both events different input names.
2.23.4	SOCK-38388	Live crash	We have fixed an error that occurs in a specific scenario. The error causes a crash with the error message "EME has a media error ..." The crash no longers occurs in the identified scenario.
2.23.4	SOCK-38214	Live crash	Fixed a situation where appliance was crashing due to "scaler position rectangle is outside output frame" error.
2.23.3	SOCK-37776	Mellanox card	In rare cases, events outputting through 25GbE interfaces could have black frames. This problem has been fixed.

Version	Key	Topic	Description
2.23.4	SOCK-38229	Output handling	There was an issue with the events that had both remote and non-remote output groups. A problem with the handling of the low video buffer delay interrupted the output to the muxer. This problem has been fixed.
2.23.3	SOCK-38179	Output locking	There was a problem where output looking between two Live appliances stopped synchronizing the outputs after certain SCTE 35 availability events, in particular a chapter start. This problem has been fixed.
2.23.0	SOCK-37853	Outputs, ancillary data	Previously, there was a bug that caused line numbers of ancillary data to be incorrect if they were greater than 256. There was also a bug that caused the line placement of the data to not be consistent with frames, in interlaced output. Both of these issues have been fixed.
2.23.0	SOCK-37881	Outputs, DASH	Fixed an issue for DASH MPD when output audio is Dolby Digital Plus with Atmos. Now, the required fields in the MPD (EC3_ExtensionType and EC3_ExtensionComplexityIndex) are correctly inserted.
2.23.3	SOCK-37611	Outputs, dropped frames	Live has optimized Mellanox workflows and improved 2022-7 buffer ability to recover from streams that don't comply with the specification. These changes have significantly improved density for 2022-6 to 2110 workflows.
2.23.3	SOCK-38075	Outputs, Reliable TS with SRT	Previously, there could be a problem with SRT Reliable TS outputs when the SRT server is geographically distant from the AWS Region when the AWS MediaConnect flow exists. This problem has been resolved
2.23.0	SOCK-37662	Outputs, RTMP	Fixed a problem that sometimes caused an event to crash when it included an RTMP output.
2.23.0	SOCK-37872	Outputs, RTP	Previously, with RTP outputs, the SMPTE 2110-40 ancillary data messages within the RTP packet were not inserted in raster order. This problem has been fixed.
2.23.2	SOCK-37674	Outputs, RTP	Previously, the "Number of TS packets per IP packet" configuration did not accurately apply to RTP outputs. The configuration was only implemented for UDP/TS outputs, even though both output types existed in the same output group. Now, this configuration has been implemented for RTP outputs.
2.23.5	SOCK-38559	Outputs, SMPTE 2110	When running an Elemental Live event with SMPTE 2110 output and a SMPTE 2110-40 ancillary stream, Live was not correctly ordering the ancillary packets within a single SMPTE 2110-40 RTP packet if the packets had the same line number. This behavior is not compliant per the specification. This has been fixed.

Version	Key	Topic	Description
2.23.5	SOCK-38524	Outputs, SMPTE 2110	When running an event that is configured to use the input clock as the output timing source with SMPTE 2110 output, the output streams may slowly drift behind real time. This problem has been fixed. We also recommend against using the input clock as the output timing source for SMPTE 2110 outputs. Instead, use the system clock.
2.23.5	SOCK-38415	Outputs, SMPTE 2110	There was a problem running an event with SMPTE 2110 output that had audio streams using 125 microsecond packets. When this event ran for more than 48 hours, the audio stream drifted behind the video.
2.23.5	SOCK-38332	Outputs, SMPTE 2110	Previously, if you changed the PTP when a SMPTE 2110 output is running, the event could crash. You shouldn't change the PTP while an event is running.
2.23.0	SOCK-37884	Outputs, SRT	This release fixes a problem (previously reported as a known issue) where, in an SRT output with a primary and a secondary destination, the output slows when one of the destinations goes offline.
2.23.4	SOCK-38319	Platform	There was a known issue where we fail to install latest Broadcom TG3 driver on RedHat and CentOS systems. This has been fixed.
2.23.2	SOCK-37791	REST API	Previously, a REST API call to time_signal would not return the number of frames. The number of frames has now been added to the response.
2.23.2	SOCK-37772	REST API	Previously, a REST API call to adjust_audio_gain didn't return information about either the success or failure of the call. Now, the call returns the new value or an appropriate failure message.
2.23.1	SOCK-37979	SMPTE 2110 and NMOS	Previously, after a Live software upgrade, it wasn't possible to restart events that included NMOS. This problem has been fixed; it is possible to restart the events.
2.23.2	SOCK-38103	Time clock configuration	Previously, the installer would not disable and stop chronyd, if ptp4l was enabled. This could lead to conflicts. Now, if the installer detects that ptp4l is enabled, the installer will disable and stop chronyd.
2.23.0	SOCK-37828	Video	Fixed a scenario where non-valid framerate could cause the event to fail.
2.23.4	SOCK-38425	Video codecs: FFMPEG	Elemental Live no longer installs the FFmpeg tool used for some earlier generation codecs. The codecs are still supported, but Live uses a different tool. If you still want to use FFmpeg, see this KBA.
2.23.2	SOCK-37160	Video, color space	There was an issue with Live's ability to recognize the color space in a SMPTE 2110 input. The issue caused corrupted colors. This issue has been fixed.

Version	Key	Topic	Description
2.23.4	SOCK-38412	Virtual input switching	There was a problem with virtual input switching in an event with that has many inputs with SCTE-35 messages. This high volume of messages could cause a loss of metadata in the output.
2.23.4	SOCK-38227	Virtual input switching	There was an issue with the virtual input switching feature that occasionally caused the event to crash. This issue has been fixed.
2.23.4	SOCK-38373	XML content	The XML for a Live event now includes the channel name. This data helps match up a channel in the Live XML to the corresponding channel in the Conductor Live XML.

Newly identified issues in AWS Elemental Live 2.23

Version	Key	Topic	Description
2.23.3	SOCK-38330	Captions, Teletext source	There is a known issue with converting Teletext source captions. If you select both Polish (and specify the language code) and English, there can be problems with the conversion of special characters
2.23.3	SOCK-38272	Input switching	If an event is created using the REST API, input switching doesn't work.
2.23.5	SOCK-38476	Inputs, SMPTE 2110	There is currently a limitation on the number of SMPTE 2110/NMOS 1080p sources that Live can encode. The maximum number of sources is 5 events, each with one SMPTE 2110/NMOS source.
2.23.3	SOCK-38319	Operating system driver	There is known issue where the installer fails to update to the latest Broadcom TG3 driver on RedHat systems.
2.23.4	SOCK-36891	Output – JPEG XS	SMPTE ST 2110-22 (JPEG XS) output issue is not compliant when Interlace Mode is Top Field First, instead of Progressive.
2.23.4	SOCK-38143	Output – Timecode in JPEG XS	There is an issue with output encoded with JPEG XS. The encode doesn't include a timecode.
2.23.4	SOCK-36839	Outputs to MediaStore get stuck	A few customers have reported that some events outputting to MediaStore are getting stuck in post-processing when trying to stop. If this happens, the workaround is to manually search for eme_live processes that are stuck, and then stop them.
2.23.3	SOCK-36891	Outputs, JPEG XS	There is an issue with JPEG XS interlaced outputs with some vendors. The problems can result in distorted or poor video quality.
2.23.3	SOCK-38325	Outputs, ProRes file outputs	There is an issue with ProRes file outputs with more than 12 audio streams, when the destination is a CIFS network storage. The outputs have discontinuities, which results in high IOPS (input/output operations per second).
2.23.3	SOCK-38240	Outputs, SMPTE 2110 with JPEG XS	Sometimes there is an issue with these outputs. The destination can't receive the output from Elemental Live. The problem might reside in a problem in the SDP.
2.23.5	SOCK-38365	Outputs, SRT	There is no alarm when the SRT connection is lost on an SRT output.
2.23.3	SOCK-38329	SCTE-35	SCTE-35 preroll for splice insert is translated incorrectly. As a result, ads are shown at the wrong time.
2.23.3	SOCK-36839	Stopping events	Occasionally, when cancelling several events at the same time, some of the events do not stop. The workaround is to restart the service, or to use the CLI to stop the process for each stuck event.

Version	Key	Topic	Description
2.23.3	SOCK-38143	Timecode	Occasionally, the timecode is not present in outputs that are encoded with JPEG XS.

Resolved issues in AWS Elemental Statmux 2.23

	Key	Topic	Description
2.23.1	SC-4334	Virtual sources	Previously, the virtual source field in an MPTS (Statmux) output was ignored. This issue has been fixed.

Version 2.22

Essential notes for version 2.22

Firmware upgrade

In Elemental Live 2.21.4, the NIC driver firmware has been upgraded to resolve issues on appliances that include the 1G Cu SFP link speed interface. These issues occurs on specific appliances in the L800 series.

The issues include the following:

- After the interface disconnects, the link status of the interface doesn't update to show the new state. (SOCK-36051)
- The link status of the interface doesn't correctly identify that it is in a bond. (sock-36779)
- The interface can unexpectedly perform a link renegotiation, resulting in a link speed dropping from 1000Mbps to 100Mbps.

All these problems are resolved by the firmware upgrade. The firmware upgrade is automatically performed when you install Elemental Live version 2.20.0 or later.

Change to release lines

All AWS Elemental Live, Statmux, and Conductor Live releases are now General Availability (GA). Historical Limited Availability (LA) releases are now available on the AWS Appliances & Console service.

Change to release notes

Going forward, AWS Elemental Live/Statmux and AWS Elemental Conductor Live release notes can be found together in one document. This single release notes document will continue to be updated and available at AWS Elemental Live Documentation and AWS Elemental Conductor Live Documentation.

Change to release notes location

The Elemental User Community is no longer available after December 31st, 2020.

Release notes for AWS Elemental Live/Statmux and Conductor Live continue to be updated and available at AWS Elemental Live Documentation and AWS Elemental Conductor Live Documentation.

Change to support for Statmux

AWS Elemental Live version 2.20.2 reintroduced support for MPTS and Elemental Statmux features.

For information on how to upgrade from Elemental Statmux 2.17 to 2.21, refer to Statmux 2.17 to 2.20 Cluster Upgrade Procedure.

Contact AWS Elemental Support if you have additional questions.

Mandatory password reset

There is a mandatory one-time password reset required for AWS Elemental Live and AWS Elemental Conductor Live, if your appliances have been configured with user authentication enabled. This change is to ensure that all users of the web interface and API have set strong passwords.

The new password requirements are the following:

- Minimum 8 characters.

- At least one uppercase letter, at least one lowercase letter, at least one number, and at least one symbol.

This password change is a one-time action. Therefore, for example, if you change the password when you install version 2.20, you won't be forced to change it again when you install 2.21.

For more details, and for important information about an issue with this procedure, see the AWS Elemental Conductor Live, version 3.20.2 LA section of these release notes.

Reminder to cycle the power when upgrading or downgrading

When you upgrade or downgrade any version of AWS Elemental Live, we strongly recommend that you turn off the appliance and turn it back on. Doing so ensures that any installer and firmware updates (or downgrades) are correctly set up.

Video quality vs. density

AWS Elemental invests in continuous improvement of VQ for the AWS Elemental Live appliance. In some cases, VQ improvements are achieved by trading off stream density. By upgrading to this new software version, you may experience moderate loss of density on some workflows. If density is more important than VQ, you may be able to recover lost density by adjusting VQ parameters, such as for an H.264 or HEVC stream changing SvQ from 0 to 1.

Deprecation information

Civolution watermarking will be deprecated in a later version.

When you start an event with the DTS Express audio encoder feature, you will see a notice that indicates future deprecation in a later version. Please disregard this notice. DTS Express is supported for all 2.20 versions.

Resolved issues in AWS Elemental Live 2.22

Version	Key	Topic	Description
2.22.0	SOCK-37117	Alerts	A new alert has been added when the output UDP buffer underflows. An underflow often indicates that the buffer_msec value is too small.
2.22.0	SOCK-37186	Alerts	An alert is now set for any statmux channel when complexity data from the encoder is arriving too late to be used. The alert is cleared 3 seconds after the complexity data begins arriving on time. The alert code is 7007, and an example of the alert message is: Setting alert [7007] [Program[program-A][0]] [7007-Program[program-A][0]] [Program progra- A late arriving complexity data from encoder on pipeline 0
2.22.4	SOCK-37242	Alerts and messages	The alert 6004 Output Protection Engaged now automatically clears after 30 seconds. Additionally, the text of the alert has been updated to read: Output loss detected on output (Primary: udp://xxx.xxx.xxx.xxx?interface=ethX). Starting transmission to ensure output continuity.

Version	Key	Topic	Description
2.22.4	SOCK-37302	Alerts and messages	Fixed a problem with UDP underflow alerts that weren't clearing properly.
2.22.1	SOCK-37470	Alerts and messages	Alert 5010 "Program input missing" is now automatically cleared after an input switch.
2.22.0	SOCK-37138	Audio	A problem has been fixed with distortion in the audio for SMPTE ST 2110-31 (Dolby Digital and Dolby Digital Plus audio streams).
2.22.4	SOCK-37357	Audio	Fixed scenario that would stop event audio from resuming, when audio channel count changed in an active event when using audio selector groups.
2.22.3	SOCK-37592	Audio, mute	Previously, if you used the API to call the `mute_audio` twice or more, you had to call the `unmute_audio` twice to cancel the mute. This problem has been fixed.
2.22.0	SOCK-37109	Captions	There was a problem with alignment in WebVTT output captions. This problem applies when the input source has Teletext or embedded (608/708) captions, and the event has been configured to produce WebVTT captions with pass style information enabled. The problem occurs when the captions are configured to automatically detect the VTT position. Captions that appear centered in the original input, while marked as align:center in the WebVTT output, do not appear centered when viewed. This problem has been fixed.
2.22.1	SOCK-37482	Captions, ancillary	Fixed a timing problem that could occur when in ancillary captions in a Quicktime output container.
2.22.1	SOCK-37487	Captions, EBU-TT-D and WebVTT	Fixed a timestamp problem in EBU-TT-D output captions or WebVTT output captions.
2.22.1	SOCK-37464	Captions, WebVTT	Previously, the timestamp on WebVTT output captions might be out of order, which could cause problems for the downstream system. This problem has been fixed.
2.22.3	SOCK-37618	Color space	Previously, there was a problem with handling color space in an SDI input. This problem has been resolved.
2.22.5	SOCK-37885	Deployment	Previous versions of AWS Elemental Live include an expired root certificate that might cause problems with one of the libraries that Elemental Live uses. The certificate has been removed.
2.22.1	SOCK-37499	Drivers	Previously, SSH connectivity could be lost when upgrading the TG3 NIC driver if the SSH connection and driver were both on the eth0 interface. This problem no longer occurs during an upgrade.

Version	Key	Topic	Description
2.22.1	SOCK-37527	Drivers	Previously, there was a problem with the TG3 or BNXT_EN NIC firmware installation. If the firmware was out of date but the respective driver was up to date, the firmware would not be installed. Now, the firmware will always be upgraded,, regardless of the driver update status.
2.22.3	SOCK-36317	Input switching	Fixed scenarios where Live could become unresponsive when doing an input switch to an input whose frame rate is double that of the output, and there is both an interlaced and progressive output.
2.22.1	SOCK-37175	Input switching	Previously, there was a problem with switching inputs where the current input and the new input didn’t have the same number of audio selectors. In this case, the input switch would not occur. Now, the switch will occur. Although note that the number of audio encodes in the output might not be as expected. For optimal user experience, all inputs must have the same number of audio selectors, with the same languages.
2.22.0	SOCK-37299	Input switching	When customers schedule an input switch ahead of the switch time, Live starts preparing the input. In a scenario where the the audio sample format in the source changes between the probe and the switch time, the updated audio information is not passed to audio sync. This resulted in corrupted audio on the output. The issue has been fixed
2.22.1	SOCK-37488	Input switching	Previously there was a problem when performing an input switch from an input with embedded captions extracted from SMPTE 2038 ancillary data to an input with embedded captions extracted from the native TS. Live didn't extract the captions from the new input. This problem has been resolved. It
2.22.3	SOCK-37652	Input switching	Previously, there was a race condition that could cause Elemental Live to crash when the user set up motion graphics and input switching in the same event.
2.22.3	SOCK-35661	Inputs, HDMI	Previously, when Elemental Live stopped ingesting an HDMI source, there was logic that caused a 10 second delay when Live started ingesting the source again. HDMI sources no longer have this extra 10 second delay at re-startup.
2.22.3	SOCK-37764	Inputs, SDI	A problem has been fixed with Elemental Live being slow to start ingest SDI inputs.
2.22.3	SOCK-37613	Inputs, SMPTE 2110	An improvement has been made for SMPTE 2110 inputs, so that Elemental Live can now read both SDP files that include source filters and files that don't include source filters.
2.22.4	SOCK-37799	Installing	Fixed issues where installer would fail when it had no internet access.

Version	Key	Topic	Description
2.22.1	SOCK-35472	Logs	Previously, both Elemental Live and Conductor Live mishandled situations where a port was misconfigured. The mishandling resulted in a dump of messages in the logs, filling up the logs. This problem has been fixed. Tthe logs are no longer flooded with messages.
2.22.0	SOCK-37225	Logs	There was an issue where the plat-api logs would fill up the log partition. This has been fixed by limiting the verbosity of the logs and decreasing the rotation duration.
2.22.1	SOCK-37471	Output locking	Previously, there was a problem in outputs that had SCTE-35 message and that had output locking enabled. The problem could lead to segment drift. This problem has been fixed.
2.22.1	SOCK-37473	Output locking	Previously, it sometimes happened that synchronizing of outputs that were set up with output locking might fail. This problem has been fixed.
2.22.1	SOCK-37481	Output locking	Previously, there was a problem with segment length and synching of audio and video in outputs with output locking enabled. This problem has been fixed.
2.22.4	SOCK-37659	Output quality	Previously, there was a problem that manifested in several ways in the output: low VQ (video quality), slow frame rate, dropped audio frames. This problem has been fixed.
2.22.0	SOCK-37330	Outputs	There is a problem with Live events that have a 4K source, and that have more than one output that is full HD (1920x1080) or lower resolution, and with the deinterlacer explicitly enabled. In some instances, one or more of the outputs may be incorrectly windowboxed (i.e., there are black bars on all four sides of the image). This problem has been fixed.
2.22.3	SOCK-37599	Outputs to MediaStore	Previously, outputs to AWS Elemental MediaStore caused memory usages to increase by 20% over 12 hours. This problem has been fixed.
2.22.3	SOCK-37646	Outputs, Archive	Previously, there was a problem in Archive outputs sent to Amazon S3. With a very large or a small ("0") rollover interval, Elemental Live was failing to upload the content to Amazon S3, which resulted in a timeout error. The issue has been fixed. If no interval is provided, timeout duration for uploads will fall back to default to 10 minutes. Otherwise, a suitable timeout will be calculated based on the rollover interval provided by the customer.
2.22.1	SOCK-36866	Outputs, DASH	A problem has been fixed in events with an AWS Elemental MediaStore container as the destination in a DASH output. Previously, the manifest file was not updated after a network outage. The problem has now been fixed.

Version	Key	Topic	Description
2.22.4	SOCK-37239	Outputs, DASH	Previously, there was a problem with storage of the SPS/PPS data in a DASH output stream. This problem could result in the downstream player being unable to play the content. This problem has been fixed.
2.22.1	SOCK-37467	Outputs, HLS	The EXTINF durations in FMP4 HLS I-Frame Only Playlists are now correct. Previously, if output locking created a short segment, that was not reflected in the EXTINF duration which has now been fixed.
2.22.1	SOCK-37476	Outputs, HLS	Previously, there was a problem with setting segment size for video outputs in an HLS output group that also contained a frame capture encode. The problem had a detrimental effect on SCTE-35 messages in the transport stream. This problem will no longer occur.
2.22.1	SOCK-37489 SOCK-37490	Outputs, Microsoft Smooth	Previously, a Microsoft Smooth output might have a corrupt or missing header. This problem has been fixed.
2.22.3	SOCK-37671	Outputs, Reliable TS	When Elemental Live tries to make a connection with Reliable TS, an alert now appears ("ReliableTs Connection Alert"). The alert now disappears when the connection has been made.
2.22.3	SOCK-37724	Outputs, Reliable TS	Previously, in the Reliable TS output group on the web interface, the Latency setting was omitted from the SRT and Zixi options. This has been fixed.
2.22.1	SOCK-37469	Outputs, RTMP	Previously, there was a problem with RTMP output that failed to deliver but that didn't receive an error message. These connections could linger indefinitely. Now, Live will reset the connection.
2.22.3	SOCK-37537	Outputs, SMPTE 2110	For SMPTE 2110 Output, an improvement has been made in this release to indefinitely retry sending whenever the send response failure code indicates the send queue is temporarily full. There is a 100 microsecond delay between each retry.
2.22.4	SOCK-37851	Outputs, SMPTE 2110	Previously, a crash could occur when streaming SMPTE a 2110 output with JPEG-XS video. The crash was related to lack of memory. This problem with handling the memory has been fixed.
2.22.0	SOCK-37017	Outputs, UDP	The maximum video buffer delay milliseconds on an MPTS now have a lower bound of 250 milliseconds which reduces latency at the expense of video quality. Each MPTS now has an encoder_buffer_msec setting that controls the UDP output buffering on all channels in the MPTS. Lower values reduce latency but may also cause instability during input switching or on heavily loaded nodes
2.22.1	SOCK-37485	Outputs, UDP	Previously, a DNS failure on UDP output might cause permanent loss of output. This problem has been fixed.

Version	Key	Topic	Description
2.22.3	SOCK-37628	Outputs, UDP	Previously, UDP output underflow would occur on the Live events when using a Statmux with MPEG-2 channels. These output underflows should no longer occur.
2.22.3	SOCK-37630	Performance	Elemental Live now ensures CPUs will not throttle frequency by using lower power states, to ensure maximal performance.
2.22.2	SOCK-36929	SCTE-35	For a SCTE 104 avail (from an SDI input), there was a problem in computing the splice time that is embedded in a MS Smooth sparse track. For downstream software that obtains the avail start time from the MS Smooth sparse track, the result was that the video froze for about 2 seconds at the start time of the avail. This problem has been resolved. The start time of the avail that is embedded in a MS Smooth sparse track is now correct, and the video no longer freezes.
2.22.4	SOCK-36740	Security	The sudo package installed on Live and Conductor nodes has been upgrade to 1.8.23-10_9.1 to patch security vulnerability CVE-2021-3156. This upgrade applies to both CentOS and RHEL.
2.22.3	SOCK-37656	SMPTE 2110	Previously, Elemental Live entered a null value in some 2110 transport parameters that are not required. Null values are not allowed. This problem has been fixed. Also, nmos-live automatically updates to newer versions.
2.22.1	SOCK-36668	Starting and stopping	There was a fix to intermittent problems with activating the appliance after a software restart, in appliances with a more advanced network configuration.
2.22.5	SC-4321	Statmux	There was an issue in the 2.22.4 version of AWS Elemental Live that caused Statmux MPTS to fail. This issue has been fixed. If you use AWS Elemental Statmux, you should skip 2.22.4 when you upgrade, and install this new version instead.
2.22.5	SOCK-37885	Deployment	Previous versions of AWS Elemental Live include an expired root certificate that might cause problems with one of the libraries that Elemental Live uses. The certificate has been removed.

Newly identified issues in AWS Elemental Live 2.22

Version	Key	Topic	Description
2.22.4	SOCK-37884	Outputs, SRT (Reliable TS)	An SRT output with a primary and a secondary destination slows when one of the destinations goes offline.

Resolved issues in AWS Elemental Statmux 2.22

Version	Key	Topic	Description
2.22.0	SOCK-37286	Alerts	Statmux will now set an alert if the outputting of interleaved TS data falls below real time.
2.22.2	SOCK-37243	Alerts and logs	Previously, when a channel started in a Statmux MPTS, there were many alerts. These unnecessary alerts no longer appear.
2.22.4	SC-4262	Bandwidth	The new default behavior on a Statmux MPTS is to suppress null packets for communications between the Live channel and Statmux. This change reduces the bandwidth load.
2.22.2	SOCK-37636	Install	Starting with Elemental Live 2.22.2, Statmux core files will be stored in the directory /data/server/cores/
2.22.1	SC-4271	Modifying a running MPTS	Previously, modifying a running MPTS in a 1:1 statmux redundancy group didn't reconfigure the secondary MPTS. Now, both MPTS configurations are updated.
2.22.3	SOCK-37628	Outputs, UDP	Previously, UDP output underflow would occur on the Live events when using a Statmux with MPEG-2 channels. These output underflows should no longer occur.
2.22.0	SOCK-37017	Video buffer	The maximum video buffer delay milliseconds on an MPTS now have a lower bound of 250 milliseconds which reduces latency at the expense of video quality. Each MPTS now has an encoder_buffer_msec setting that controls the UDP output buffering on all channels in the MPTS. Lower values reduce latency but may also cause instability during input switching or on heavily loaded nodes
2.22.2	SOCK-37505	Video quality	An optimization has been made that automatically improves the video quality in a Statmux MPTS.

Version 2.21

Resolved issues in AWS Elemental Live 2.21

Version	Key	Topic	Description
2.21.3	SOCK-37094	API	Sometimes, the response time of mute/unmute API call goes up abnormally if the API call is requested repeatedly. This problem has been fixed.
2.21.3	SOCK-36040	Authentication	There was an issue where in certain circumstances PAM authentication would not allow a user to log in. This has been resolved.
2.21.1	SOCK-34897	Captions	When running an event with teletext input and WebVTT output with "Pass Style Information" enabled, there were occasional extraneous characters present in the output. This is now fixed.
2.21.3	SOCK-36196	Captions	Fixed an issue of RTMP onCuePoint SCTE-35 ad break message having unexpectedly long preroll value.
2.21.4	SOCK-37109	Captions	There was a problem with alignment in WebVTT output captions. This problem applies when the input source has Teletext or embedded (608/708) captions, and the event has been configured to produce WebVTT captions with pass style information enabled. The problem occurs when the captions are configured to automatically detect the VTT position. Captions that appear centered in the original input, while marked as align:center in the WebVTT output, do not appear centered when viewed. This problem has been fixed.
2.21.3	SOCK-37122 SOCK-37106	Captions	There was a problem starting in Live 2.20.1 that caused output captions to be out of sync with the video. This problem could occur when the source captions was Teletext. This issue has been fixed.
2.21.5	SOCK-37499	Drivers	Previously, SSH connectivity could be lost when upgrading the TG3 NIC driver if the SSH connection and driver were both on the eth0 interface. This problem no longer occurs during an upgrade.
2.21.5	SOCK-37527	Drivers	Previously, there was a problem with the TG3 or BNXT_EN NIC firmware installation. If the firmware was out of date but the respective driver was up to date, the firmware would not be installed. Now, the firmware will always be upgraded,, regardless of the driver update status.
2.21.1	SOCK-34727	Event log	The XML REST API Elemental Live event status was not reporting values for <buffer_avg>, <buffer_max>, and <fill_msec>. This is now fixed.

Version	Key	Topic	Description
2.21.4	SOCK-37222	Firmware	The NIC driver firmware has been upgraded to resolve issues on appliances that include the 1G Cu SFP link speed interface. These issues occurs on specific appliances in the L800 series.
2.21.3	SOCK-37063	Input	Sometimes Live wasn't always able to find Sync Bytes in Network Inputs. This prevented Live from using some sources. This problem has been fixed.
2.21.5	SOCK-37175	Input switching	Previously, there was a problem with switching inputs where the current input and the new input didn’t have the same number of audio selectors. In this case, the event would stop. Now, the switch will occur. Although note that the number of audio encodes in the output might not be as expected. For optimal user experience, all inputs must have the same number of audio selectors, with the same languages.
2.21.4	SOCK-37299	Input switching	When customers schedule an input switch ahead of the switch time, Live starts preparing the input. In a scenario where the the audio sample format in the source changes between the probe and the switch time, the updated audio information is not passed to audio sync. This resulted in corrupted audio on the output. The issue has been fixed
2.21.3	SOCK-37099	Input, SRT	There is a problem when a Live event is configured with either two events that use SRT as the input type or with two events that use AWS Elemental MediaConnect as the input type. Sometimes, when the even switches from one input to the other, Live crashes. This problem has been fixed.
2.21.3	SOCK-36109	Input, TS	There is sometimes a problem with the way that Live encodes a TS source. If the bitrate of the elementary stream is very low, "packet interleave error" messages might appear in the logs. An improvement has been implemented to resolve this problem. If you are still seeing this message, contact AWS Elemental Support for help.
2.21.1	SOCK-36684	Inputs	Elemental Live could fail to probe again after an input became degraded. This is now fixed.
2.21.1	SOCK-36840	Inputs	The Elemental Live encoder sometimes failed during resolution changes. This is now fixed.
2.21.2	SOCK-36957	Inputs	Changing the resolution on MPEG2, H264, and H265 inputs could cause Elemental Live to fail. This is now fixed.
2.21.2	SOCK-36974	Inputs	The Elemental Live encoder sometimes failed when a counter rolled over after 414 days. This is now fixed.

Version	Key	Topic	Description
2.21.0	SOCK-36635	Inputs - Audio	Elemental Live events that used a SMPTE ST 2022-6 stream with AC-3 audio as an input could crash during ingest if the first AC-3 audio frame parsed had an invalid AC-3 header. This is now fixed. The invalid AC-3 header is now discarded so that the audio stream continues to be probed until a valid audio frame is processed.
2.21.1	SOCK-36674	Inputs - Failover	Differences between CPU and GPU HEVC NAL could cause problems with failover. An environment variable now forces CPU only systems to use 64x46 HEVC tree blocks so that NAL packet PPS and SPS values between CPU and GPU encodes match.
2.21.1	SOCK-36701	Inputs - Frame rates	Frame rates that were not valid could cause Elemental Live to terminate. This is now fixed.
2.21.0	SOCK-36593	Inputs - Overlays and captions	In some situations, motion graphics overlays and non-passthrough image captions (burn-in, SMPTE-TT, and CFF-TT) appeared backwards or upside-down for HD inputs. This is now fixed.
2.21.0	SOCK-36034	Inputs - SDI	Ingest had the potential to fail if the SDI device was not recognized. This is now fixed.
2.21.1	SOCK-36737	Inputs - SMPTE	When an event is configured to use a SMPTE ST 2110 or SMPTE ST 2022-6 input with SMPTE ST 2022-7 redundancy, the network input could drop packets consistently. This could lead to the per- event ingest log filling up the /opt disk partition. This is now fixed.
2.21.1	SOCK-36766	Inputs - SMPTE ST 2110; Audio	Issues with packet timestamps could cause audio to drop for SMPTE ST 2110 inputs. This is now fixed, and SMPTE ST 2110 inputs now require the precision time protocol (PTP) of the source to be synchronized.
2.21.1	SOCK-36540	Inputs; Captions	Elemental Live events with SCTE-27 caption PIDs that did not match between inputs could cause validation errors that halted events in a preprocessing state. This is now fixed.
2.21.0	SOCK-25526	Inputs; CL3	The ZeroMQ library is updated to version 4.3.3 to address potential crashes in the web layer.
2.21.1	SOCK-36769	Inputs; Downgrade	Downgrading to version 2.18.1 or later of Elemental Live while simultaneously attempting to restore a database could cause the downgrade to fail. This is now fixed.
2.21.5	SOCK-35472	Logs	Previously, both Elemental Live and Conductor Live mishandled situations where a port was misconfigured. The mishandling resulted in a dump of messages in the logs, filling up the logs. This problem has been resolved, the logs are no longer flooded with messages.

Version	Key	Topic	Description
2.21.2	SOCK-36915	Logs; Statmux; CL3	Data that was retained for 90 days could fill up the logs, causing partitions to run out of space. This data is now retained for 30 days to avoid the issue.
2.21.3	SOCK-36947	Motion graphics overlay	Fixed problem where creating new motion graphics overlays could make Elemental Live crash.
2.21.1	SOCK-36665	Network - Log	In some situations, Elemental Live logged numerous duplicate messages in a short time frame, filling up the /var/log/ partition. This is now fixed.
2.21.0	SOCK-35851	NMOS	Previously, NMOS did not work properly in authenticated environments. This is now fixed.
2.21.3	SOCK-37013	Output	There was a problem with the output produced when the event includes a SMPTE 2110 source. The audio and video were not synchronized. This problem has been fixed.
2.21.3	SOCK-34214	Output locking	In complex output locking workflows, rare instances of caption packet corruption might cause a frame to have a DTS value that is less than the previous frame. The cause of the packet corruption has been fixed.
2.21.3	SOCK-36121	Output, DASH	A problem could cause intermittent or complete failure in playback of a DASH output sent to Akamai and then to a Shaka player.
2.21.3	SOCK-36994	Output, DASH	The Dolby MediaValidator failed the validation on DASH streams because the manifest was missing information about DVH1 or DVHE. Live now adds the appropriate information, depending on the HVC1 setting in the output.
2.21.3	SOCK-37121	Output, DASH	Under certain circumstances for DASH output containing audio, a signaling was missing from the DASH manifest. This is now fixed.
2.21.3	SOCK-36113	Output, HLS	There was a problem with the HLS manifest. Sometimes, invalid data was being appended to the appended to the EXT-X-MAP:URI line in the manifest. This problem has been fixed.
2.21.3	SOCK-36316	Output, HLS	When you have configured an HLS output group to pause when you start the event, Live might insert a discontinuity marker too early in the HL output.
2.21.3	SOCK-36963	Output, M2TS	There was a problem with missing data when upgrading from 2.19.5 The settings for an M2TS output were deleted. This problem has been resolved; starting with 2.21.3, the settings are no longer deleted.

Version	Key	Topic	Description
2.21.2	SOCK-34214	Outputs	Rare instances of caption packet corruption could cause non-monotonic DTS values. This is now fixed.
2.21.2	SOCK-35976	Outputs	After the WebDAV server disconnected and was restored, DASH output could still fail to recover the stream. This is now fixed.
2.21.2	SOCK-36044	Outputs	Publishing to an endpoint in chunked transfer mode could cause playback to fail when using DASH for ultra low latency streaming. This is now fixed.
2.21.1	SOCK-36101	Outputs	An SNMP trap cannot be sent out if the event name contains a double byte character. To work around this, Elemental Live now replaces invalid ASCII-8BIT characters with ? for SNMP traps that use event names.
2.21.1	SOCK-36823	Outputs	Previously, one failed endpoint statistics call resulted in a Zixi send error. It now takes three sequential failed endpoint statistics calls to trigger a Zixi send error and cause the link to reset and reconnect.
2.21.2	SOCK-36875	Outputs	When DVB subs were missing PTS values, Elemental Live DVB subs could become out of sync. This is now fixed.
2.21.2	SOCK-36931; SOCK-36693	Outputs	There was an issue that caused streaming to local Amazon S3 storage to fail with a 403 error. This is now fixed.
2.21.4	SOCK-37330	Outputs	There is a problem with Live events that have a 4K source, and that have more than one output that is full HD (1920x1080) or lower resolution, and with the deinterlacer explicitly enabled. In some instances, one or more of the outputs may be incorrectly windowboxed (i.e., there are black bars on all four sides of the image). This problem has been fixed.
2.21.1	SOCK-36822	Outputs - HLS	Missing presentation timestamp (PTS) values could result in delayed captions. This is now fixed.
2.21.1	SOCK-36266	Outputs - HLS; Output locking	Previously, the #EXT-X-DISCONTINUITY HLS tag was placed a segment late for output locking workflows when marking audio configuration discontinuities on remote encoders. This is now fixed. It now is consistently placed correctly across all output-locked encoders.
2.21.0	SOCK-36595	Outputs - MS Smooth	HTTP sometimes timed out after 30 seconds when publishing Microsoft Smooth (MSS) output to IIS servers/endpoints. This is now fixed.

Version	Key	Topic	Description
2.21.1	SOCK-36377	Outputs - SMPTE ST 2022	RTP streams can use FEC packets for error correction. According to SMPTE ST 2022-1-2007, FEC packets must have the same source port as data packets. Elemental Live was not doing this. Elemental Live now sets the FEC packet source port to be the same as the data packet source port.
2.21.0	SOCK-36580	Outputs - SMPTE ST 2110	Downgrading to a previous version of Elemental Live with events that had SMPTE ST 2110 outputs sometimes failed to retain video settings. This is now fixed.
2.21.5	SOCK-36866	Outputs, DASH	A problem has been fixed in events with an AWS Elemental MediaStore container as the destination in a DASH output. Previously, the manifest file was not updated after a network outage. The problem has now been fixed.
2.21.0	SOCK-36385	Outputs; CL3	Elemental Live events in Elemental CL3 clusters sometimes failed over to a backup, but came back with events running that could not be stopped by CL3. This caused duplicate events to be published to customer endpoints. This is now fixed.
2.21.2	SOCK-36934	Outputs; CL3	The monitoring output feed for Elemental Live to Elemental Statmux communication erroneously included telemetry data. This is now fixed.
2.21.1	SOCK-36832	Outputs; Statmux; CL3	The variable bitrate (VBR) check box was removed from the output transport stream settings page erroneously. This is now fixed, and the check box is once again present and functional.
2.21.6	SOCK-36929	SCTE-35	For a SCTE 104 avail (from an SDI input), there was a problem in computing the splice time that is embedded in a MS Smooth sparse track. For downstream software that obtains the avail start time from the MS Smooth sparse track, the result was that the video froze for about 2 seconds at the start time of the avail. This problem has been resolved. The start time of the avail that is embedded in a MS Smooth sparse track is now correct, and the video no longer freezes.
2.21.5	SOCK-36668	Starting and stopping	There was a fix to intermittent issues with activating the appliance after a software restart, in appliances with a more advanced network configuration.
2.21.0	SOCK-35578; SOCK-35097	Time codes	The new environment variable FORCE_LTC_TO_UTC allows the forcing of LTC time codes to UTC.
2.21.0	SOCK-34876	Time zones	Web callback timestamps were inconsistent for assertions and de-assertions. This is now fixed by adjusting them to local time.

Version	Key	Topic	Description
2.21.3	SOCK-37133	Video	When creating a Live event that has a 4K input and an ABR stack output, some of the lower resolution renditions may incorrectly be window-boxed (i.e., black bars on all four sides of the image). This has been fixed.

Newly identified issues in AWS Elemental Live 2.21

Version	Key	Topic	Description
2.21.3	SOCK-37299	Input prepare	When customers schedule an input switch ahead of the switch time, Live starts preparing the input. In a scenario where the audio sample format in the source changes between the probe and the switch time, the updated audio information is not passed to audio sync. This will result in corrupted audio on the output.
2.21.2	SOCK-37013	Inputs – SMPTE ST 2110	There is sometimes a sync drift of up to .1 seconds between audio and video for Elemental Live SMPTE ST 2110 inputs.
2.21.0	SOCK-36737	Inputs - SMPTE	When an event was configured to use a SMPTE ST 2110 or SMPTE ST 2022-6 input with SMPTE ST 2022-7 redundancy, the network input could drop packets consistently. This led to the per-event ingest log filling up the /opt disk partition. This is now fixed.
2.21.0	SOCK-36691	Outputs - SCTE-35	The combination of output locking resyncs and SCTE-35 conditioning could lead to segment drift.
2.21.3	SOCK-37300	SMPTE 2110	When running multiple SMPTE 2110+2022-7 or 2022-6+2022-7 HD events, there is a possibility that all events will intermittently drop video frames at the same time. As more events are added, the occurrences of packet drops increases. The problem is being actively investigated.

Resolved issues in AWS Elemental Statmux 2.21

Version	Key	Topic	Description
2.21.2	SOCK-36915	Logs; Statmux; CL3	Data that was retained for 90 days could fill up the logs, causing partitions to run out of space. This data is now retained for 30 days to avoid the issue.
2.21.5	SC-4271	Modifying a running MPTS	Previously, modifying a running MPTS in a 1:1 statmux redundancy group didn't reconfigure the secondary MPTS. Now, both MPTS configurations are updated.
2.21.0	SOCK-36469	Statmux	Stopping a Multi Program Transport Stream (MPTS) could cause Elemental Statmux to become unresponsive as it continued attempting to run. This is now fixed.
2.21.0	SC-4208	Statmux; CL3	The maximum video buffer delay for MPTS MPEG2 programs was not set correctly. This caused higher than the 1.8 Mbit maximum allowed for SD MP2 video. This is now fixed.
2.21.0	SC-4234	Statmux; CL3	The following 1:1 redundancy group validations were added in Statmux: Prevent transfers: Prevent transfer from active to backup unless there are three active nodes. This can happen during automatic failover when there are two active nodes and one backup. Prevent transfer from active to backup if there is already a backup node. Prevent transfer from backup to active if there are already two active nodes Prevent additions: Prevent the addition of backup nodes unless there are already two active nodes. Prevent the addition of an active node if there are any MPTS jobs or MPTS enabled channels attached. Prevent removals: Prevent the removal of active nodes from the redundancy group when there are MPTS jobs or MPTS enabled channels attached, or when there is a backup node in the pool.
2.21.1	SC-4241	Statmux; CL3	Previously, the network could become overloaded by multicast traffic. This is now fixed. Network communication between Elemental Live and Elemental Statmux is now improved. You can also now edit multicast addresses and modify address allocation to avoid overload by multicast traffic.

Newly identified issues in AWS Elemental Statmux 2.21

Version	Key	Topic	Description
2.21.3	SOCK-37243	Alerts	The alerts for "MPTS channel output bitrate is 0" and "Program <N> switched active encoder to pipeline 0" will fire when a Statmux channel is started. These alerts will clear shortly after the channel has started. This is due to startup delays in the channel to statmux communications and do not represent an issue unless the alerts stay on indefinitely.
2.21.3	SOCK-37242	Alerts	The alert that appears for MPTS output protection does not get cleared after the underlying problem has been resolved.
2.21.3	SC-4279	Alerts	Many alerts (specifically those with alert codes greater than 5000) did not show in the Statmux web interface or Elemental Conductor Live web interface or the APIs. This has been resolved and these alerts will now appear.
2.21.0	SOCK-36700	Statmux - Log	A critical log message "Failed to send update MultiplexProgram message to MME" erroneously displays. This message is coming from Statmux, but there is no impact to Statmux customers.

AWS ELEMENTAL CONDUCTOR LIVE 3

New Features in AWS Elemental Conductor Live

New features in version 3.25

Default passwords

There is a change to the password rules for the operating system root password. Starting with version 2.25.6, if you kickstart the operating system, you must change the root password from the default value.

This password requirement is in addition to the current requirement that you always change the default password for the *elemental* user. (GLV-1758)

New features in version 3.24

New in version 3.24.3

More information is now included on the Channel Details page on the Conductor Live web interface. The page includes information for the following inputs:

- SMPTE 2022-6 inputs
- SMPTE 2110 inputs
- Elemental MediaConnect inputs.

(SC-4401, SC-4402, SC-4403)

New parameterized field in Conductor Live

The Zone Identity field for ESAM configuration (for SCTE 35 handling) can now be configured as a parameter. (SC-4399)

Virtual input switching – maximum inputs

There is a new configuration parameter for the virtual input switching feature. You can now set the maximum number of virtual inputs allowed on each node. The parameter is on the Settings > Advanced page of the web interface.
If you increase the maximum, keep in mind that in the events on the node, every virtual input is being continually demuxed, which increases the load on the CPU.
In addition, in Live nodes running in a Conductor Live cluster, make sure that all the nodes in the same redundancy group have the same value in this field. (SOCK-38429)

New features in version 3.23

There are no new features in this version of Conductor Live.

New features in version 3.22

Alerts, messages, and logs

Conductor Live – There is now a CL3 alert when a failover causes a node replacement. The alert is active for 1-2 minutes, then automatically clears itself. (SC-78)

New features in version 3.21

AWS Elemental MediaConnect input support

Elemental Live now includes support for inputs from AWS Elemental MediaConnect using ARN based specifiers. You can create an output from MediaConnect using the SRT listener protocol and Elemental Live will parse required information from the MediaConnect flow ARN and MediaConnect output ARN to ingest the SRT source. AES encryption is optional. AWS Elemental MediaConnect inputs can also be configured and managed in Elemental Conductor Live.

Power supply alerts

When a power supply issue is detected, Elemental Live and Elemental Statmux will now display an alert in the web interface and send an SNMP trap. If Elemental Conductor Live is present, the alert is also visible there.

Conductor Live MPTS Channel web interface updates

On the MPTS Channel page of Elemental Conductor Live, you can now view and edit TS Endpoints, Complexity Endpoints, and Rate Allocation Endpoints for Live to Statmux communication. By default this occurs via UDP multicast on ports 5000 to 5055.

Essential notes, resolved issues, newly identified issues in AWS Elemental Conductor Live

Version 3.26

Essential Notes in version 3.26 – new operating system

Read this information if you are upgrading from an earlier version of AWS Elemental software.

Version 2.26.0 runs on RHEL 9 and won't run on RHEL 7 or CentOS 7. Therefore, to use the new versions of the AWS Elemental software, you must install the new operating system as well as upgrade the software.

For more information, see page 26.

Resolved issues in 3.26

Version	Key	Topic	Description
3.26.5	GLV-3093	Events	Previously, in some situations Conductor might create multiple events on the Live appliance when only one event is appropriate. Conductor no longer creates multiple events
3.26.3	GLV-3720	Schedules	Previously (since version 3.26.1), it was not possible to enable the schedule feature. This issue has been fixed.
3.26.3	GLV-2875	Scripts	Previously arbitrary commands could be run from the pre-processing and post-processing fields on Elemental Live and Elemental Conductor Live. Now only scripts can be run and those scripts must be located in either /data or /opt/elemental_se/web/public/script directories. Note that the script PID is logged to live_runner.output. This makes it easier to stop a command if the script runs for too long.
3.26.2	GLV-2540	Web interface	There was an issue with the MPTS Perform tab. It was possibly to press a combination of keys and buttons that makes a different tab appear.
3.26.2	GLV-1104	Logging	There was an issue with continually duplicated entries the PSQL log when the user enables HA. This issue has been fixed.
3.26.1	GLV-1859	User authentication	There was an issue with how Conductor Live handled user login attempts. The issue has been resolved.
3.26.1	GLV-2773	Logging	Response times were not being printed in Apache SSL access logs. This issue has been resolved

Version 3.25

Essential notes in version 3.25

Last minor release of the 2.25 major version

Versions 2.25.9 and 3.25.9 are the last versions planned for the 2.25 (3.25).

We strongly recommend that you upgrade to version 3.26 as soon as possible. Read the Current release notes.

Change to cluster management 3.25.3

In the Release Notes for version 3.25.2 of Conductor Live and 2.25.2 of the worker nodes (Elemental Live and Elemental Statmux), we described a change to the rules for node recruitment and software downgrades. The change affected these actions when these actions involve "crossing over the x.25.2 boundary". You cross the boundary when you:

- Recruit a worker node with version 2.25.2 (or higher) into a cluster where the Conductor Live node is running a version lower than 2.25.2.
- Downgrade from a version x.25.2 (or higher) to a version below x.25.2.

In version 3.25.3 and 2.25.3, we are now introducing improvements that mean that it is no longer necessary to follow those rules.

If you haven't yet recruited or downgraded in the way described in those release notes (version 3 of the document), then do not follow the procedures in those release notes when you do recruit or downgrade. Instead, follow these new procedures.

Recruiting worker nodes

You might want to recruit a new worker node into a cluster where the nodes are running software versions lower than x.25.2. You might not want to upgrade the cluster yet, but you want to add the new nodes immediately. Follow this procedure:

4. Obtain the new worker node (it will be delivered with version 2.25.3 or later installed). Or locate a node that you already have and upgrade the version to 2.25.3 or later.
5. Set the following environmental variable to True:

   LEGACY_RECRUIT
6. Recruit the new worker node into the cluster as described in the Conductor Live Configuration Guide.

Recruiting worker nodes after you have crossed the boundary

Eventually, you will upgrade the Conductor Live nodes and will "cross the boundary". The worker nodes that have LEGACY_RECRUIT set to true will determine that Conductor Live has crossed the boundary, and will ignore the value of the environment variable. You don't need to set the environment variable to False on these nodes.

Downgrading nodes

You might have upgraded all the Conductor Live and workers nodes to the high side of the boundary. For example:

- The Conductor Live nodes are running version 3.25.2
- The worker nodes are running 3.26.0.

You might want to downgrade the worker nodes to the low side of the boundary, for example, to version 2.25.0.

In version x.25.2 (but only in that version), there was a rule that both the Conductor Live software versions and the worker software versions must be on the same side of the boundary.

With version x.25.3 and later, this rule no longer exists. But do keep in mind the existing rule that the Conductor Live and worker nodes can run different versions, so long as the Conductor Live nodes aren't running a higher version than the worker nodes.

Resolved issues in version 3.25

Version	Key	Topic	Description
3.25.9	GLV-3093	Conductor Creating Multiple Jobs in Encoder For The Same Channel ID	Previously, there was an issue whereby issuing multiple Channel Start API commands on Conductor Live could produce multiple events on the Live appliance. The problem was that with so many events starting at once, Conductor Live would assume some start requests had failed, so Conductor Live would submit a new request. But in fact, both the original request and the new request would succeed, resulting in duplicate events. This issue has been fixed.
3.25.3	GLV-237	Deployment, node recruitment	There was an issue with node recruitment in a Conductor cluster. For information about the issue and the fix, see the revised information about changes to cluster management on page 35.
3.25.5	GLV-1104	Logging	There was a problem that caused the PSQL log to fill up with repetitive messages. It also sometimes failed to synchronize the databases correctly during an HA failover. Both of these problems have been fixed.
3.25.7	GLV-1859	User authentication	There was a problem when https and auth were configured. The first login attempt with correct password faile every time. Then the wrong password worked on next attempt. This issue has been fixed.
3.25.8	SC-4339	Web interface	Fixed an issue where CL3 was not showing the correct Job Duration once it exceeded one month.

Version 3.24

Resolved issues in version 3.24

Version	Key	Topic	Description
3.24.0	SC-4165	Web interface	The Conductor Live web interface did not display the correct output playback controls for some output group types: Archive, HLS, RTMP, and Reliable TS. This issue has been resolved.
3.24.1	SC-4385 SC-4386	Channel starts in a cluster	We have made improvements to the robustness of channel starts. The incidence of failed channel starts should now be much lower, especially in node failover situations.
3.24.2	SC-4333	Inputs, SRT	Previously, there was a problem with the information displayed on the Conductor Live web interface for a running channel. The information for an SRT input didn't include information such as the video resolution. This issue has been fixed.
3.24.4	SC-4406	Web interface	Previously, the preview image and media info failed to display when the user edited channel parameters for file inputs. This issue has been resolved.
3.24.4	SC-4394	Web interface	Previously, the preview button was missing from the web interface when the was edited channel parameters for a SMPTE 2022-6 input. The button has been added and now returns a preview image and media info for the URI. Note this only works for a single input on a channel at the moment.

Newly identified issues in version 3.24

Key	Topic	Description
SOCK-38143	Output, JPEG XS	There is an issue with output encoded with JPEG XS. The encode doesn't include a timecode. This issue doesn't affect passthrough of JPEG XS.

Version 3.23

Resolved issues in version 3.23

Version	Key	Topic	Description
2.23.0	SC-4321	Crash	Previously, there was a problem starting an MPTS after upgrading to version 2.22.4. This problem has been fixed.
3.23.1	SC-4266	High availability and failover	Previously, there was a data loss problem when network connectivity failed in a high availability Conductor Live cluster. During the failure, the secondary Conductor node took control, then the primary regained control. Changes made while the secondary Conductor was in control were lost. This problem has been fixed; data loss no longer occurs.
3.23.5	SC-4366	SDI routers	Previously, there was an issue selecting Interleave 4K/2SI as a valid SDI router output in Conductor. This has been resolved.
3.23.4	SC-4353	SNMP	Previously, there was an issue with the enumeration of Conductor Live channels and Live events using SNMP. The enumeration might begin at the incorrect channel or event ID, and might return partial results. This problem has been fixed. An additional issue that prevented the use of the snmptable command has also been resolved.
3.23.4	SOCK-38373	XML content	The XML for a Live event now includes the channel name. This data helps match up a channel in the Live XML to the corresponding channel in the Conductor Live XML.

Newly identified issues in version 3.23

Version	Key	Topic	Description
3.23.5	SC-4165	Start and pause	The Conductor web interface doesn't display output controls for pausing, starting a Live event (channel).

Version 3.22

Resolved issues in version 3.22

Version	Key	Topic	Description
3.22.2	SC-4227	Alerts and logs	Previously, the logstash service would eventually fill up the disk with log messages in /var/log/messages. This has been resolved by configuring logstash to only log messages for warnings and higher severity messages.
3.22.4	SC-4254	Alerts and messages	Conductor alerts that have never been set will no longer appear in the list of inactive alerts. Only alerts that have first been set and then cleared will show in the list of inactive alerts.
3.22.4	SC-4312	Alerts and messages	Conductor Live alerts now display a Time Cleared field that shows when the alert was last cleared. If the alert has never been cleared, this field is empty.
3.22.3	SC-4315	Failover	Previously, there was an issue where the channels on an Elemental Live node would not fail over correctly. This problem has been fixed.
3.22.2	SOCK-37648	License	There is no detailed error message if the Statmux license (which is required to use Statmux features of Conductor Live) is not installed on the Conductor Live appliance. Instead, when the channel starts, the MPTS row on the web interface turns red and the Status change to Error. If you get this error, go to the Settings>Licenses page on the web interface to determine if the error has occurred because the license is missing. In a future release, we plan to add a specific error message for this problem.
3.22.4	SC-4307	Memory handling	There was a problem with memory handling that could manifest in several ways: folders on the node might run out of space, which could affect failover, or database replication, backup, and syncing. This problem has been fixed.
3.22.2	SC-4277	Statmux	Previously, an MPTS could time out when starting. This issue has been fixed.
3.22.2	SC-4271	Statmux	Previously, there was an issue with modifying a Statmux MPTS that was running in a redundant configuration. The second node didn't always get updated. This issue has been fixed: both nodes get updated.
3.22.2	SC-4250	Statmux	There was a problem with modifying the min and max bitrate fields in a Statmux MPTS. This is the scenario that applied: When you add a channel as an MPTS member, you can set custom values for the bitrate

Version	Key	Topic	Description
			fields for that channel. You do this from the MPTS Control page in Conductor Live. Previously, if you then changed the channel so that the channel uses a different profile, the custom bitrate values reverted to the default for that profile. Now, if you switch the profile, the custom values are kept if they are within the acceptable range for that profile. The bitrate values only revert to the default if the custom rates are outside the acceptable range.
3.22.1	SC-4290	Web interface	Previously, when you pasted a URL on a screen where channel filters are set, the paste action would clear the filters. Pasting no longer clears the filters.
3.22.3	SC-4296	Web interface and REST API	Fixed scenarios where Conductor Live was not able to process Live/Statmux node/channel updates in a timely manner, resulting in decrease in responsiveness of commands and status in the Conductor Live web interface.

Version 3.21

Resolved issues in version 3.21

Version	Key	Topic	Description
3.21.3	SC-4279	Alerts	Many alerts (specifically those with alert codes greater than 5000) did not show in the Statmux web interface or Elemental Conductor Live web interface or the APIs. This has been resolved and these alerts will now appear.
3.21.2	SC-4240	CL3	Channels that are part of a 1:1 redundancy pair are also paired together in the web interface. When viewing and searching, these channels always appear together. When you delete one, you also delete its pair. This was clear on the CL3 Channels index page and CL3 Channel Bulk action page, but was not clear on the MPTS index page. This is now fixed.
3.21.2	SC-4235	CL3 - MPTS	The Output Listening check box can now be found on the main configuration tab.
3.21.0	SC-4245	CL3 web interface	There was a defect in the web interface that caused profile duplication of SMPTE ST 2022-6 input to fail. This is now fixed.
3.21.0	SC-4244	Inputs - CL3	Previously, it was not possible to enter parameters for all SMPTE ST 2110 and SMPTE ST 2022-6 input fields. This is now fixed.
3.21.0	SOCK-25526	Inputs; CL3	The ZeroMQ library is updated to version 4.3.3 to address potential crashes in the web layer.
3.21.2	SOCK-36915	Logs; Statmux; CL3	Data that was retained for 90 days could fill up the logs, causing partitions to run out of space. This data is now retained for 30 days to avoid the issue.
3.21.2	SOCK-36934	Outputs; CL3	The monitoring output feed for Elemental Live to Elemental Statmux communication erroneously included telemetry data. This is now fixed.
3.21.0	SOCK-36385	Outputs; CL3	Elemental Live events in Elemental CL3 clusters sometimes failed over to a backup, but came back with events running that could not be stopped by CL3. This caused duplicate events to be published to customer endpoints. This is now fixed.
3.21.1	SC-4241	Statmux; CL3	Previously, the network could become overloaded by multicast traffic. This is now fixed. Network communication between Elemental Live and Elemental Statmux is now improved. You can also now edit multicast addresses and modify address allocation to avoid overload by multicast traffic.

Version	Key	Topic	Description
3.21.0	SC-4234	Statmux; CL3	The following 1:1 redundancy group validations were added in Statmux: Prevent transfers: • Prevent transfer from active to backup unless there are three active nodes. This can happen during automatic failover when there are two active nodes and one backup. • Prevent transfer from active to backup if there is already a backup node. • Prevent transfer from backup to active if there are already two active nodes Prevent additions: • Prevent the addition of backup nodes unless there are already two active nodes. • Prevent the addition of an active node if there are any MPTS jobs or MPTS enabled channels attached. Prevent removals: • Prevent the removal of active nodes from the redundancy group when there are MPTS jobs or MPTS enabled channels attached, or when there is a backup node in the pool.
3.21.0	SC-4208	Statmux; CL3	The maximum video buffer delay for MPTS MPEG2 programs was not set correctly. This caused higher than the 1.8 Mbit maximum allowed for SD MP2 video. This is now fixed.
3.21.5	SC-4290	Web interface	Previously, when you pasted a URL on a screen where channel filters are set, the paste action would clear the filters. Pasting no longer clears the filters.