Release Notes

AWS Elemental Live, AWS Elemental Statmux, and AWS Elemental Conductor Live



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AWS Elemental Live, AWS Elemental Statmux, and AWS Elemental Conductor Live: Release Notes

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About these release notes

These release notes describe the new features, resolved issues, and newly identified issues in each release of the following AWS Elemental products:

- AWS Elemental Live version 2.*x*
- AWS Elemental Statmux version 2.*x*
- AWS Elemental Conductor Live version 3.*x*

The three products are released together. Each Elemental Live and Statmux version 2.*x* release has a matching Conductor Live version 3.*x* release. For example, Elemental Live 2.28.0 and Conductor Live 3.28.0 are part of the same release.

The release notes are organized by major version, with the newest version first. Starting with version 2.27, each major version has one page for each point release. For versions 2.21 to 2.26, each major version has pages for essential notes, new features, resolved issues, and newly identified issues, where the release has them, and each table of issues has a column that shows the point release. Each table of issues includes a key that identifies the issue.

Some versions in these release notes are no longer supported. We provide the installers for some older versions only so that you can upgrade to a supported version. We recommend that you upgrade to the newest version of the AWS Elemental software.

About the suite of Live products

The suite of Live products includes AWS Elemental Live, AWS Elemental Statmux, and AWS Elemental Conductor Live.

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 high density and support for adaptive bitrate protocols, HTML5, and multiple HD streams, Elemental Live delivers the high-quality, high-efficiency performance that current and future live streaming applications need for any device. A web-based interface simplifies your workflow and provides real-time controls.

You can deploy Elemental Live in standalone mode or as part of a cluster that Conductor Live controls.

AWS Elemental Statmux

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

Statmux requires that each Elemental Live node has a license for the Statmux rate control add-on.

AWS Elemental Conductor Live

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

Node-based redundancy

- Conductor Live provides redundancy for Elemental Live and Statmux nodes (worker nodes). You can set up the worker nodes that Conductor Live controls so that if one node fails, a backup node takes over the activity of the failed node. A backup node is a passive, licensed worker node that is held in reserve.
- Conductor Live provides Conductor node redundancy. You can set up the cluster with one primary and one backup Conductor node. If the primary node fails, the backup node takes over management of the worker nodes. Conductor node failure and failover have no impact on work that is in progress on the worker nodes.

Profiles and parameters

- Conductor Live requires profiles to create channels.
- Conductor Live profiles support variables, which are called *channel parameters*. This feature makes profiles flexible. Where appropriate, you can set the value of a field to a channel parameter instead of a fixed value. When an operator uses the profile to create a channel, the operator specifies the values for the channel parameters. This feature is commonly used for input source and destination values.
- Profile fields that are highlighted in blue on the web interface support channel parameters. To save a profile, the operator must enter validation values for the channel parameters in the

profile. Conductor Live doesn't use the validation values when you create a channel from the profile. Instead, the operator must specify values for the channel parameters.

- For a complete list of profile fields that support channel parameters, see the AWS Elemental Conductor Live User Guide.
- After you create a profile, you can't modify it. Instead, you can duplicate the profile, modify the duplicate, and save it with a new name.

Channel tasks – Bulk actions

- Conductor Live lets you start, stop, or delete several channels at the same time, and change the profile of several channels at the same time.

MPTS management

- You can create MPTS outputs and manage channel participation on the Conductor Live web interface.
- The MPTS that Conductor Live creates can reside on an Elemental Live node or a Statmux node.

Status management

- Alerts and messages that occur on worker nodes are sent to Conductor Live and appear on the web interface.
- You can configure Conductor Live to send a notification to an email address or a web callback URL when an alert occurs.
- Operators can add operational notes on the **Status notifications** page.

Types of releases

Releases within a major version are numbered starting with 0. For example, the 2.27 major version has releases from 2.27.0 to 2.27.5. Each release in a major version includes fixes, and usually includes new features.

Downloading the software

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

Finding the installed version

To find the version of the software that is installed on a node, look at the bottom of the web interface, or enter the following command:

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

Some features are available only on certain models of Elemental Live. For example, HEVC encoding is available only on licensed encoders.

Release notes for version 2.28 and 3.28

The following pages describe each release in version 2.28 (3.28 for Conductor Live), with the newest release first.

Version 2.28.1 and 3.28.1

This release includes AWS Elemental Live and AWS Elemental Statmux version 2.28.1, and AWS Elemental Conductor Live version 3.28.1.

New features in version 2.28.1

This release includes the following new features:

Security updates

This release includes updates that address potential security issues.

Resolved issues in Elemental Live 2.28.1

The following table lists the issues that are resolved in Elemental Live 2.28.1.

Key	Topic	Description
V2308875836	Audio, Nielsen	Previously, when you enabled Nielsen watermarking, audio could drift ahead of video after each input switch. This issue has been fixed for switches between inputs that have the same audio sample rate and channel count.
P470092114	Audio	Previously, an event that ran for about 926 days without an input switch could start dropping audio. This issue has been fixed.
V2400818686	API, Audio	Previously, when you updated an event with the REST API, its audio selector groups could be duplicated instead of updated. This issue has been fixed.

Key	Topic	Description
V2323293642	Captions, DVB Teletext	Previously, after an input switch, when several DVB Teletext caption selectors shared a packet identifier (PID), only the first language had captions. This issue has been fixed.
P484730223	Captions	Previously, when you prepared an input, switched away from it, and then switched back to it, its captions could be missing from the outputs. This issue has been fixed.
P510217468	Captions	Previously, when outputs used several channels of an input's embedded captions, such as CC1 and CC3, one channel could lose captions after an input switch. This issue was introduced in version 2.28.0 and has been fixed.
P519940624	Captions	Previously, when Elemental Live cleared CEA-608 captions, such as at an input switch, captions on CC2, CC3, and CC4 could stay on screen. This issue has been fixed.
P482222778	Captions, DVB-Sub	Previously, when you used one embedded caption selector for both DVB-Sub captions and embedded passthrough captions, the embedded captions were lost. This issue has been fixed.
TDP-210	Captions	Previously, some captions on CC3 or CC4 could appear for only one frame. This issue has been fixed.
V2344207117	Captions, SCTE-35	Previously, embedded 608 captions could stop in the output after the first SCTE-35 ad avail. This issue has been fixed.
P510327877	Event processing, Timecode	Previously, when Elemental Live generated timecode for an input with an invalid frame rate, all events on the node could fail. This issue has been fixed.
EML-10912	Inputs, Input failover	Previously, an event that used a hot backup input could fail during input failover. This issue has been fixed.

Key	Topic	Description
V2307138347	Inputs, Event processing	Previously, when you prepared an input after a scheduled input switch to the input that was already active, the event could fail. This issue has been fixed.
D476660020	Inputs, HLS	Previously, audio could stop on HLS inputs with a separate audio rendition until you restarted the event. This issue has been fixed.
P511000342	Inputs, HLS	Previously, when you added an HLS input with audio rendition selectors to the input list, a simultaneous input switch could cause black frames. This issue has been fixed.
V2314086343	Inputs	Previously, memory usage grew each time a file input with Loop Source enabled looped. This issue has been fixed.
P441178615	Inputs, RTP	Previously, RTP inputs with very high packet rates, such as JPEG XS, could report false packet loss. This issue has been fixed.
P528948357	Inputs, SRT	Previously, an SRT input that repeatedly failed to connect could degrade encoder performance over time. This issue has been fixed.
P537871981	Inputs, TS	Previously, some transport stream inputs that carried DVB Teletext could be detected as AV1 video, and the input could fail. This issue has been fixed.
TDP-199	Inputs, TS	Previously, transport stream inputs could report false continuity counter errors, which could trigger an unnecessary input failover. This issue has been fixed.
P485630114	Outputs, MP4, HEVC	Previously, MP4-based outputs with 10-bit or 4:2:2 HEVC video signaled the video as 8-bit 4:2:0. This issue has been fixed.

Key	Topic	Description
V2403314242	Outputs, CMAF Ingest, SCTE-35	Previously, in CMAF Ingest outputs, a SCTE-35 time signal End marker with the same event ID as its Start marker was delayed. This issue has been fixed.
P491107487	Outputs, Amazon S3	Previously, HLS, DASH ISO, and MS Smooth outputs to Amazon S3 or S3-compatible destinations ignored the FileCache Size setting. During a destination outage, they could drop segments early. This issue has been fixed.
P470383493	Outputs, HLS	Previously, HLS audio-only outputs with packed audio segments used a video content type, which some players reject. This issue has been fixed.
V2372495977	Outputs, HLS, Captions	Previously, in HLS output groups, caption-only outputs used the event start time for the dt, d, and t identifiers in every segment file name. These identifiers now update for each segment, which changes the caption segment file names.
D484864506	Outputs, MP4	Previously, MP4-based outputs other than DASH ISO, such as HLS fMP4, could have incorrect HE-AAC audio timing when the video had no B-frames. This issue has been fixed.
P441493597	Outputs, SRT	Previously, Elemental Live ignored the latency that you configured on an SRT output and used the default of 120 ms. This issue has been fixed.
V2238976565	Outputs, TS	Previously, after you paused a constant bitrate (CBR) UDP/TS output for a long time and then unpaused it, the output could stop sending data. This issue was introduced in version 2.28.0 and has been fixed.
V2372063207	Platform	Previously, a log file was never rotated and could grow to several GB. This issue has been fixed.

Key	Topic	Description
P495863865	Scheduling	Previously, when you created a schedule 12 to 24 hours before its first start time, the scheduled events could be created late. This issue has been fixed.
P432012220	SCTE-35, HLS	Previously, when a SCTE-35 Program End and Program Start arrived together, HLS outputs could mark the next Program End with the wrong event ID. This issue has been fixed.
P474021370	SCTE-35	Previously, a SCTE-35 segmentation cue-in with a different event ID could end the active avail early. This issue has been fixed. A segmentation cue-in now ends an avail only when the event IDs match.
V2285676609	SCTE-35	Previously, SCTE-35 passthrough could stop for an input after it reached the end of its input clipping and the event later switched back to it. This issue has been fixed.
TDP-80	SCTE-35	Previously, when the duration of an active ad avail changed, some outputs could miss the change, so ad signaling could differ between outputs. This issue has been fixed.
P455331278	SCTE-35	Previously, SCTE-35 splice out messages with no duration and no matching splice in could cause dropped audio in long-running events. This issue has been fixed.
P429140724	SCTE-35, ESAM	Previously, with output locking, SCTE-35 messages condition ed by Event Signaling and Management (ESAM) could have an incorrect splice time on the follower node. This issue has been fixed.

Resolved issues in Statmux 2.28.1

There are no resolved issues in this release.

Resolved issues in Conductor Live 3.28.1

The following table lists the issues that are resolved in Conductor Live 3.28.1.

Key	Topic	Description
D482775726	Platform, High availability	Previously, the Conductor Live high availability health check could report false faults, which caused repeated failovers. This issue has been fixed.
V2281605698	Platform, High availability	Previously, after a Conductor Live high availability failover, the new primary Conductor could lose its mount points and delete the mount points on worker nodes. This issue has been fixed.
EDS-18264	Platform	Previously, Conductor Live kept all cleared alerts from worker nodes, which could slow the database and node removal on long-running clusters. Conductor Live now removes these alerts after they have been cleared for 30 days.
P496323727	User Interface	Previously, the Conductor Live profile editor hid the Prefer SMPTE 2038 checkbox for saved SMPTE 2022-7 inputs. This issue has been fixed.

Newly identified issues in version 2.28.1 and 3.28.1

There are no newly identified issues in Elemental Live, Statmux, or Conductor Live in this release.

Version 2.28.0 and 3.28.0

This release includes AWS Elemental Live and AWS Elemental Statmux version 2.28.0, and AWS Elemental Conductor Live version 3.28.0.

New features in version 2.28.0

This release includes the following new features:

Security updates

This release includes updates that address potential security issues.

Resolved issues in Elemental Live 2.28.0

The following table lists the issues that are resolved in Elemental Live 2.28.0.

Key	Topic	Description
P412200249	Audio	Previously, the ARIB audio mode did not function correctly. This issue has been fixed.
V2135638170	Captions	Previously, captions upconverted from CEA-608 to CEA-708 could be truncated. This issue has been fixed.
EML-7888	Captions, DVB subtitle	Previously, DVB subtitles could produce timestamp (PCR/PTS) violations that affected downstream compliance. This issue has been fixed.
TDP-137	Captions, TTML	Previously, TTML and EBU-TT-D caption documents could be produced without the required XML namespace, causing some players to fail to display captions. This issue has been fixed.
CAPYBARA-526	Event processing	Previously, long-running events could experience timing calculation errors that disrupted output. This issue has been fixed.
EML-7746	Event processing	Previously, very short inputs could trigger a race condition that disrupted event processing. This issue has been fixed.
P372006366	Event processing	Previously, a rounding error could cause inaccurate event duration calculations. This issue has been fixed.
V2141850574	Event processing	Previously, audio timing and frame capture could be inaccurate on certain events. This issue has been fixed.

Key	Topic	Description
V2176365863	Event processing	Previously, an orphaned persistent input could continue processing unnecessarily after it was no longer needed. This issue has been fixed.
P388173493	Inputs, CMAF	Previously, CMAF ingest could fail when its file cache became full. This issue has been fixed.
GLV-6034	Inputs	Previously, changes to the perpetual decode state of the active input might not take effect, and scheduled input changes could be applied out of order. This issue has been fixed.
P416253718	Inputs, audio	Previously, an external audio input could encounter a buffering error during demultiplexing. This issue has been fixed.
V2215729395	Inputs, Event processing	Previously, rapidly switching between inputs could cause the channel to fail. This issue has been fixed.
P434947261	Inputs, ingest	Previously, the ingest process could leak a small amount of memory over time. This issue has been fixed.
P447628360	Inputs, MP4	Previously, MP4 inputs stored in Amazon S3 could fail to start when S3 returned throttling responses. This issue has been fixed.
P405611279	Inputs, RTMP	Previously, stopping an RTMP input could cause a crash. This issue has been fixed.
V2166482033	Inputs, RTMP	Previously, RTMP inputs could leak thread resources over time. This issue has been fixed.
P411050851	Inputs, SRT	Previously, RTP headers on an SRT input were not detected and removed, which could disrupt input processing. This issue has been fixed.

Key	Topic	Description
P408608297	Inputs, ST 2110	Previously, stopping an ST 2110 ingest job could cause the input to hang. This issue has been fixed.
P381798055	Output locking	Previously, stale video frames could be emitted when output locking started. This issue has been fixed.
CAPYBARA-527	Outputs	Previously, output duration could be miscalculated during extended events. This issue has been corrected.
CAPYBARA-532	Outputs, CMAF	Previously, during very long-running events, output segment numbering could overflow and disrupt CMAF outputs. This issue has been fixed.
P410447465	Outputs, CMAF	Previously, unpausing a CMAF Ingest Output that started paused could cause segments to not be ingested by MediaPackage. This issue has been fixed.
P420036263	Outputs, CMAF	Previously, certain HTTP Headers were not sent with CMAF Ingest Outputs to MediaPackage following long interrupt ions. This issue has been fixed.
P408261903	Outputs, CMAF	Previously, caption burn-in and embedded captions were not supported for CMAF Ingest outputs. This issue has been fixed.
V2197580307	Outputs, frame capture	Previously, frame capture segments were not delivered to additional configured destinations. This issue has been fixed.
EML-7575	Outputs, HEVC	Previously, HEVC profile compatibility flags could be encoded incorrectly. This issue has been fixed.
P432431410	Outputs, HLS	Previously, HLS segment uploads that were still in progress could be dropped when a channel was stopped. This issue has been fixed.

Key	Topic	Description
P429140724	Outputs, HLS	Previously, SCTE-35 markers in HLS manifests could be placed with small timing rounding errors. This issue has been corrected.
V2177494908	Outputs, muxers	Previously, MPEG-2 Transport Stream and RTP output timestamps did not continue to advance while a pipeline was paused. This issue has been fixed.
P410568201	Outputs, SRT	Previously, establishing an SRT output connection could temporarily block other processing. This issue has been fixed.
P438126855	Outputs, TS	Previously, transport stream outputs using constant bitrate could experience timing drift that caused output segments to grow without bound. This issue has been fixed.
CAPYBARA-234	Platform	Previously, an internal numeric calculation could overflow and produce incorrect values under certain conditions. This issue has been fixed.
P418771308	SCTE-35	Previously, SCTE-35 markers could be lost following an input switch. This issue has been fixed.
P425577949	SCTE-35	Previously, ad avail durations could be reported as negative after a timestamp rollover. This issue has been fixed.
V2204798551	SCTE-35	Previously, SCTE-35 timing could drift on SDI inputs after an internal timing counter rolled over. This issue has been fixed.
P406855452	User Interface	Previously, edits to a schedule's 'Repeat Until' setting were not saved. This issue has been fixed.

Resolved issues in Statmux 2.28.0

There are no resolved issues in this release.

Resolved issues in Conductor Live 3.28.0

The following table lists the issues that are resolved in Conductor Live 3.28.0.

Key	Topic	Description
V2176216624	Platform	Previously, a database connectivity failure could leave Conductor connections in an unusable state. This issue has been fixed.
V2239399109	Platform	Previously, shadow and backup input associations could be incorrectly included in channel provisioning. This issue has been fixed.
GLV-7218	User Interface	Previously, valid Conductor template variables could be incorrectly rejected in certain URL fields. This issue has been fixed.
V2239390785	User Interface	Previously, configured device display names were not shown in the channel parameters. This issue has been corrected.

Newly identified issues in version 2.28.0 and 3.28.0

There are no newly identified issues in Elemental Live, Statmux, or Conductor Live in this release.

Release notes for version 2.27 and 3.27

The following pages describe version 2.27 (version 3.27 for Conductor Live). Each table of issues includes a **Version** column that shows the point release that the issue applies to.

Essential notes for version 2.27 and 3.27

Support for the migration lifeboat script

If you haven't yet migrated to RHEL 9, note the following. When you migrate your AWS Elemental software to a version that runs on RHEL 9, you must use the AWS Elemental lifeboat script to create a backup of the data on the node. For information about the script, see the AWS Elemental Live Migration Guide and the AWS Elemental Conductor Live Migration Guide.

> **Important**
>
> Version 2.27.0 (3.27.0) and later don't support the lifeboat script. If you use them to migrate, you can't keep your existing data. To use the lifeboat script and keep your existing data, first migrate to a 2.26 (3.26) version. You can then upgrade to a 2.27 (3.27) version.

Changes to 2110 receiver group inputs

- Stream patching – Starting with Elemental Live 2.27.0, the default mode for stream patching is make-before-break. Previously, the only supported mode was break-before-make. If you have events that use 2110 receiver group inputs that you created before version 2.27.0, you must configure each event for the mode that you want. For more information, see the section called "NMOS next generation – receiver patching with two modes (GLV-4965)".
- Shadow inputs – Starting with Elemental Live 2.27.0, shadow inputs are required with 2110 receiver group inputs. If you have events that use 2110 receiver group inputs that you created before version 2.27.0, you must modify those inputs to enable shadow inputs. For more information, see the section called "Shadow inputs are required for 2110 receiver group inputs (GLV-4730)".

New features in version 2.27 and 3.27

The following sections describe the new features in each release of version 2.27 (3.27 for Conductor Live), with the newest release first. Version 2.27.1 (3.27.1) has no new features.

New features in version 2.27.5 and 3.27.5

Web interface – DVB subtitle type

A new option lets you specify the DVB subtitle type. You can choose between `normal` and `hearing impaired` labels for DVB subtitle tracks.

HLS outputs – PDT tags in I-frame playlists

Program date time (PDT) tags have been added to I-frame playlists, for compliance with the HLS specification.

New features in version 2.27.4 and 3.27.4

CMAF Ingest outputs – explicit frame rate

CMAF Ingest outputs now require an explicit frame rate (numerator and denominator) for H.264 outputs. Previously, **Initialize from source** was allowed.

Web interface – MediaPackage v2 settings

The CMAF Ingest output group settings now include an EMPv2 settings section when a MediaPackage v2 endpoint is configured.

MediaPackage v2 destination settings now include these fields: HLS auto-select, HLS default, audio rendition sets, and audio group ID.

Updated video engine

This release includes an updated video engine with general improvements to the quality of AVC and HEVC encoded video.

New features in version 2.27.3 and 3.27.3

Security updates

This release includes updates that address potential security issues.

Maximum audio output encodes (GLV-6306)

The maximum number of audio output encodes in one output group has increased from 16 to 32.

SMPTE 2110 with NMOS – multiple bitrates (GLV-6311)

Elemental Live now supports SMPTE 2110 inputs that have different bitrates in the same event.

New features in version 2.27.2 and 3.27.2

Color space conversion – support for 3D LUT files

You can now configure an event that is set up for color conversion to use 3D LUT files for color correction. You provide a list of 3D LUT files. Each 3D LUT file contains color mapping information for a specific source and output combination. For example, one file contains information for converting Rec. 709 to HDR10.

Rules for using 3D LUT files

- Source of the files – You must provide the 3D LUT files. Elemental Live doesn't have built-in files.
- One file for each combination – You must provide a file for each source and output combination. For example, a file for converting Rec. 601 to HDR10.
- Maximum of 8 files – You can provide a maximum of 8 files for each channel. This means that Elemental Live supports up to 8 source and output conversion combinations.
- Global application – Elemental Live uses a specific file in all the outputs where that file applies. For example, if there is a file to convert Rec. 601 to HDR10, Elemental Live uses that file in every output that it applies to. You can't configure some outputs to use the standard mechanism for conversion.

Rules for the contents of 3D LUT files

- Format – Each 3D LUT file must follow the `.cube` 3D LUT format.
- Maximum of one file for each combination – You can provide only one 3D LUT file for each combination. You can't configure some outputs to use a different 3D LUT file. When Elemental Live reads the list of 3D LUT files, it uses the first file that it finds for a source and output combination.

- HDR10 luminance – Elemental Live supports conversion of HDR10 content with a maximum luminance of 1000–4000 nits, but it supports only one maximum luminance. When Elemental Live reads the list of 3D LUT files, it uses the first file that it finds for each conversion from HDR10. For example, if you provide one file for 1000 nits and one file for 4000 nits, Elemental Live uses only the first file. Therefore, follow these guidelines:
  - Make sure that all the HDR10 content in all the inputs in one channel has the same maximum luminance. If a source has a different maximum luminance, Elemental Live converts the content, but the outputs have sub-optimal luminance.
  - In each 3D LUT file that converts from HDR10, make sure that the luminance handling is appropriate for the luminance of the source.

To set up 3D LUT files

1. Place the 3D LUT files in a location that Elemental Live can access:
   - A location that is local to the Elemental Live appliance. For example, `/data/assets/LUTS`.
   - A remote server that Elemental Live accesses through a mount point. For example, `/data/mnt/assets/LUTS`.
   - An Amazon S3 bucket. For example, `s3ssl://amzn-s3-demo-bucket/LUTS`.
2. On the Elemental Live web interface, open the event. On the **Global Processors** section, turn on **Color Mapping**.
3. Choose **Add Color Map** to display up to 8 lines. In each line, enter the following information:
   - The location of the 3D LUT file.
   - The input (source) color space that this file handles.
   - The output color space that this file handles. To set up a combination that works when converting to Dolby Vision 8.1, select HDR10 as the output color space.
4. Set up the inputs and the outputs in the usual way, as described in the AWS Elemental Live User Guide.

Audio limits

This release changes the following audio limits:

Audio inputs – limits for SMPTE 2110 audio inputs (GLV-5504)

Previously, there was a limit of 16 audio channels in an SMPTE ST 2110-30 or SMPTE ST 2110-31 input stream. Elemental Live now supports up to the limits that are defined in Table 2 of SMPTE ST 2110-30:2017.

Audio outputs – limit for each event

The maximum number of audio output encodes in a single event has increased from 20 to 32.

New features in version 2.27.0 and 3.27.0

Dolby Digital Plus with Atmos – decode

Elemental Live now supports decoding audio that is Dolby Digital Plus with Dolby Atmos (EAC3 Atmos). You can set up an EAC3 Atmos input to an EAC3 Atmos output in two ways:

- Pass the audio through, as in earlier versions.
- Re-encode the audio by choosing **EAC3 ATMOS** as the output codec. In this case, the Audio Decoder Package must be installed on the node.

Version 2.27.0 and later also use newer Dolby Digital libraries, which results in general improvements.

EBU-TT-D captions (GLV-2573)

EBU-TT-D captions now include a new metadata section that conforms to the standard. For example:

```
<metadata>
  <ebuttm:documentMetadata>
    <ebuttm:conformsToStandard>urn:ebu:tt:distribution:2018-04</
ebuttm:conformsToStandard>
    <ebuttm:documentOriginatingSystem>Elemental Media Engine(TM) Live 64-bit
 v2.27.0.0</ebuttm:documentOriginatingSystem>
  </ebuttm:documentMetadata>
</metadata>
```

ID3 segment tagging in HLS (GLV-4956)

HLS output groups now support ID3 segment tagging.

Installer – user authentication (GLV-4468)

The installer now includes options that enable or disable user authentication without authentication prompts. This change allows hands-free installs.

- To install without enabling authentication, include the `--skip-auth` option.
- To install with authentication enabled, include both the `--admin-login` and `--admin-password` options.

On an existing deployment, you have these options:

- To change the configuration without changing the current user authentication status, enter **`./configure --skip-auth`**.
- To enable or disable authentication, enter **`./configure --config-auth`**. The script prompts you to enable or disable authentication.

> **Note**
>
> In earlier versions of the software, `--skip-all` skipped the user authentication prompts. Starting with version 2.27.0, `--skip-all` doesn't skip those prompts.

For help, search the knowledge articles or open a case in the AWS Elemental Support Center.

Installer – port restrictions (GLV-4464)

When the firewall is enabled, the installer now restricts ports 22, 80, and 443 to private subnets by default. The default private subnets are `10.0.0.0/8`, `172.16.0.0/12`, and `192.168.0.0/16`.

- To customize the CIDR ranges for port restrictions, use the `--cidrs` option in the install command, or perform an interactive install.
- To use the default configuration, use the `--skip-all` or `--skip-cidrs` option.

For help, search the knowledge articles or open a case in the AWS Elemental Support Center.

Licenses (GLV-4322)

The JPEG XS license is now restricted to 75 events running at the same time. Contact AWS Elemental Support if you run into issues with this restriction.

Logging (GLV-5129)

Video backend logging now includes more detail about the configuration of the color corrector, scaler, and encodes.

NMOS next generation – 2110 receiver groups (GLV-3754)

Elemental Live now supports 2110 receiver groups as a way to handle NMOS-controlled 2110 inputs. You create a 2110 receiver group and add 2110 streams to it. You then create or modify an event to use the 2110 receiver group, instead of creating 2110 inputs directly in the event.

The 2110 receiver groups are independent of the event. You can modify an event to detach a 2110 receiver group, and the 2110 receiver group continues to exist. You can also modify a 2110 receiver group without modifying the event. You can modify the 2110 receiver group when the associated event, if there is one, is running, which lets you perform NMOS receiver patching. For more information, see the section called “NMOS next generation – receiver patching with two modes (GLV-4965)”.

To set up a 2110 receiver group on the web interface

1. On the main menu, choose **Settings**, then choose **Input Devices**. Choose **Create 2110 Receiver Group**.
2. In the **SMPTE 2110 Receiver Groups** section, in the **NMOS Label** field, enter a name for the 2110 receiver group.
3. Complete the **Video Receiver** row to configure the video stream: complete the **NMOS Label** field, the **Interface** field (for example, ETH6), and the optional **Secondary Interface** field.
4. To add audio or ancillary streams, choose **Add Audio SDP** or **Add Ancillary SDP**, and complete each **Label** row that appears.
5. Choose **Save 2110 Receiver Groups**.

To use the 2110 receiver group in an event that you are creating or editing

1. Choose **Add Input**. In the selector field, choose the 2110 receiver group that you created.

2. Choose **Add Input** again and choose the same 2110 receiver group.
3. For both of the 2110 receiver group inputs, choose **Advanced**, and turn on **NMOS Patching Pair**. Each 2110 receiver group input needs this additional patching pair input.

NMOS next generation – receiver patching with two modes (GLV-4965)

Before version 2.27.0, Elemental Live supported only break-before-make receiver patching. Starting with version 2.27.0, Elemental Live also supports make-before-break receiver patching.

- Break-before-make (BBM) – Elemental Live tears down the 2110 input before it starts to build up the new input processing. The benefit of this mode is that it doesn't require extra network bandwidth when patching. The drawback is that streams are patched one by one, which results in short periods of video fill and audio silence.

  Version 2.27.0 includes one change in the implementation: you must create a shadow input for each 2110 receiver group input. Elemental Live tears down the first 2110 input, then starts to build up the shadow 2110 input. For more information, see the section called “Shadow inputs are required for 2110 receiver group inputs (GLV-4730)”.
- Make-before-break (MBB) – Elemental Live builds up the second input and makes it ready before it seamlessly switches from the original input to the new input. This mode requires double the network bandwidth while the second input is being prepared.

To configure BBM or MBB

1. On the main menu, choose **Settings**, then choose **NMOS**.
2. In **Enable NMOS Access**, choose **Yes**. More fields appear.
3. In the **Use make-before-break for NMOS Receiver patching** field, choose a value:
   - **Yes** – Use MBB. This is the default.
   - **No** – Use BBM.

Shadow inputs are required for 2110 receiver group inputs (GLV-4730)

To use a 2110 receiver group input, you must create a shadow input for that input. This requirement applies to both break-before-make (BBM) and make-before-break (MBB) patching.

To set up a shadow input in an event that you are creating or editing

1. Go to the input that uses a 2110 receiver group.
2. Find the **NMOS Patching Pair** field, which is above the **Add Failover Condition** button.
3. Set the **NMOS Patching Pair** field to **Yes**.

Web interface and API support for 2110 receiver groups (GLV-3736)

2110 receiver groups are exposed in the NMOS Node APIs. You can disable NMOS support, including 2110 receiver groups, through the NMOS settings API or the web interface.

TLS (GLV-4695, GLV-3389)

TLS handling has been improved. The cryptographic security for SSL/TLS connections has been strengthened.

Resolved issues in version 2.27 and 3.27

The **Version** column shows the point release that the issue applies to.

Resolved issues in Elemental Live 2.27

The following table lists the resolved issues in Elemental Live 2.27.

Version	Key	Topic	Description
2.27.5	GLV-7202	Captions, SCTE-35	Previously, SCTE-35 messages with a non-zero `pts_adjustment` field were not being output when processed through the ESAM pipeline. This issue has been fixed.
2.27.5	GLV-7194	Event processing	Previously, editing an event with an audio selector group could cause the preview to break. This issue has been fixed.
2.27.5	GLV-6577	Outputs, encoding	Previously, the `field_based_flag` value was not being set correctly for AVC interlaced encodes. This has been corrected for improved spec compliance.

Version	Key	Topic	Description
2.27.5	GLV-6798	Platform, database	Previously, the sessions database table could encounter limitations with very high usage over time. The primary key has been migrated to support larger values.
2.27.5	GLV-7083	Platform, imports	Previously, importing event XML files from older software versions could fail. An automatic upgrade process has been added to handle older XML formats during import.
2.27.5	V2159100448	Platform	Previously, repeated privileged operations on systems running RHEL 9.6 could cause a gradual increase in kernel slab memory usage over time. This issue has been fixed.
2.27.5	P391933808	Outputs, CMAF	Previously, CMAF outputs with Dolby content could fail validation unnecessarily. Validation has been updated to allow CMAF outputs past Dolby validation where appropriate.
2.27.5	P375412968	Outputs, CMAF	Previously, MP4/CMAF outputs with EC-3 or AC-3 audio could have an incorrect track count in the sample description. This issue has been fixed.
2.27.5	P3811997444	Captions, SCTE-35	Previously, when ESAM returned late for immediate splice insert or time signal events, the start time was not adjusted. Changes have been made to move the start time forward in this situation.
2.27.5	V2041197194	Event processing	Previously, stopping an event could result in a gradual increase in memory usage over time. This issue has been fixed.
2.27.5	V1994113448	Event processing	Previously, unexpired SCTE-35 network end/start messages could be processed incorrectly. This issue has been fixed.

Version	Key	Topic	Description
2.27.5	EMM-4248	Event processing	In certain situations, H.264 auPPS and auSPS field parsing could cause event processing errors. This issue has been fixed.
2.27.5	828de255b9c	Inputs, SMPTE 2110	Previously, SMPTE 2110 setup could fail when hyperthreading was disabled. This has been fixed to handle the configuration more gracefully.
2.27.4	GLV-7161	Platform, Downgrades	Previously, license files could be lost during software downgrades. Changes have been made to preserve license files from existing installations when performing downgrades.
2.27.4	GLV-2849	Inputs, RTMP	Previously, an event could crash when an RTMP pull input was disconnected, such as during a stop or input switch. This issue has been fixed.
2.27.4	GLV-7090	Outputs, SRT	SRT output could block indefinitely in some instances. Send timeout and buffer size configuration has been added for reliable transport stream SRT senders to prevent blocking.
2.27.4	GLV-7116	Outputs, CMAF Ingest	The CMAF Ingest destinations have been updated for better path handling.
2.27.4	GLV-6993	Event processing	Previously, input pipeline preparation could fail to reset properly when cancelled for perpetually decoded inputs. This issue has been fixed.
2.27.4	GLV-7132	Platform, NMOS	Previously, there was an issue with null sender IDs in NMOS implementation. This issue has been resolved.
2.27.4	GLV-5513	Event processing	A timeout has been added to prevent indefinite blocking during event processing operations.
2.27.4	GLV-7074	Event processing	Frame sync black fill behavior has been improved to differentiate between active and ended input states.

Version	Key	Topic	Description
2.27.4	GLV-7081	SCTE-35	Previously, SCTE-35 `NotIndicated` signals could cause HLS segment doubling. This issue has been fixed.
2.27.4	GLV-3400	SCTE-35	Excessive "Does not contain an avail" messages could be generated in certain workflows. Message frequency has been limited to reduce log noise.
2.27.4	GLV-7109	Captions, CMAF Ingest	Previously, embedded captions could interfere with MediaPackage v2/CMAF frame capture functionality. This issue has been resolved.
2.27.4	EMM-4062	Outputs, CMAF Ingest	CMAF Ingest segment numbers could be incorrect after event stop/start operations. This issue has been fixed.
2.27.4	LIVESEC-12	API	Stricter validations on `/devices/{device_id}/preview` endpoint now restrict image locations to the `/public/images/preview` directory and filenames to alphanumeric characters.
2.27.4	GLV-7083	NMOS	Previously, importing an XML with a 2110 receiver group input without a corresponding shadow input required manual correction. The import process now automatically adds the shadow input.
2.27.4	GLV-7185	Platform	The latest Red Hat security patches have been applied. We continue to apply Red Hat security patches to keep the appliance secure, in accordance with the shared responsibility model.
2.27.3	GLV-6571	API	The playlist API endpoint (used to create a playlist of inputs to ingest) can sometimes result in a 500 error code. This issue has been fixed.

Version	Key	Topic	Description
2.27.3	GLV-6342	Data delivery	Previously, large file transfers to Amazon S3 could fail because the transfer timed out. The timeout has been increased.
2.27.3	GLV-6662	Data delivery	Previously, data transfers over slower connections could fail. This issue has been fixed.
2.27.3	GLV-6947	Deleting events	Previously, archived events sometimes didn't get deleted on the expected date. This issue has been fixed.
2.27.3	GLV-6363	Input preview	Sometimes input preview didn't appear when it was enabled. This issue has been fixed.
2.27.3	GLV-6944	Inputs, SMPTE 2110 with NMOS	There was an issue with patching of a SMPTE 2110 input that uses NMOS. If user authentication was enabled, the patch didn't occur. This issue has been fixed.
2.27.3	GLV-6714	Outputs, RTMP	There was an issue when creating an RTMP output group by duplicating an event or using a Conductor Live profile. Some settings didn't get copied over. This issue has been fixed.
2.27.3	GLV-5843	Performance	The resource allocation logic on Elemental Live, Elemental Statmux, and Conductor Live has been raised to prevent event crashes.
2.27.3	GLV-6383	Platform, downgrades	Previously, a downgrade to Elemental Live 2.27.0 might fail. This issue has been fixed.
2.27.3	GLV-6350	Platform, upgrades	There was an issue with events not automatically restarting after upgrading the software. This issue has been fixed.

Version	Key	Topic	Description
2.27.2	GLV-2972	Authentic ation	A recent change inadvertently introduced the rule that if authentication was enabled, only users with the Admin role could download the XML from the web interface or using the API. This issue has been fixed so that any authenticated user can perform these actions.
2.27.2	GLV-5785	Captions, EBU-TT and TTML	Previously, Live might omit or skip some non-ASCII characters when encoding captions into TTML/EBU-TT format. This problem has been fixed.
2.27.2	GLV-5843	Event crash	Previously, a node might crash when a lot of events were running. Changes have been made to prevent the crash in this situation.
2.27.2	GLV-4829	Event crash	Previously, MXF archive output used in conjunction with WAV audio output could cause crashes. This problem has been fixed.
2.27.2	GLV-5881	Inputs, Dolby	Previously, there was an issue with handling Dolby audio input. The issue forced the user to restart the event. The issue has been fixed. In addition, a change has been made to reduce the number of log messages when problems like this one occur.
2.27.2	GLV-6069	Inputs, SMPTE 2110	ST 2110-30 output timing handling has been adjusted to be more resilient when faced with input timing disruptions.
2.27.2	GLV-5889	Platform, downgrade	Previously, there was an issue that prevented a downgrade from 2.27.1 to 2.26.5. This issue has been fixed.
2.27.2	GLV-5432	XML import	An issue has been corrected that prevented the import of a Live event XML file that included a SMPTE 2110 input.

Version	Key	Topic	Description
2.27.1	GLV-525	Alerts, logs, and messages	Loudness log files will now be retained for 30 days (by default) before being deleted from the appliance . The retention period is configurable in the **Settings** > **General** tab, and cleanup can be disabled by setting to 0 days.
2.27.1	GLV-2606	Backup files	TGF files will now be retained for 30 days (by default) before being deleted from the appliance. The retention period is configurable in the **Settings** > **General** tab, and cleanup can be disabled by setting to 0 days.
2.27.1	GLV-5696	Captions, EBU-TT-D	In Live 2.27.0, the calculation of `tts:lineHeight` in EBU-TT-D captions outputs was incorrect. This error caused the text to appear noticeably larger. This issue has been fixed.
2.27.1	GLV-5241	HLS manifests	Fixed an issue where pausing and unpausing an output group could result in partial HLS parent manifests being written.
2.27.1	GLV-5816	Inputs, SDI	In Live 2.27.0, the configuration of ancillary data (SCTE 35 messages) in an SDI input was reset when the channel was started. This caused any channel that was already running to stop ingesting ancillary data. This issue has been fixed.
2.27.1	GLV-5545	Inputs, SMPTE 2110	Fixed an issue where new NMOS events weren't being imported properly.
2.27.1	GLV-5677	Inputs, SMPTE 2110	Previously, the system status API didn't apply to 2110 inputs configured with NMOS receiver groups, or with SDI input groups. This meant that it wasn't possible to verify the status of these inputs. This issue has been fixed.

Version	Key	Topic	Description
2.27.1	GLV-5764	Inputs, SMPTE 2110 with NMOS	There was an issue when importing the XML for an event, when the event included configuration for a 2110 NMOS input. Elemental Live didn't handle the audio selectors correctly. This issue has been fixed.
2.27.1	GLV-3024	Motion graphic overlays	Previously, Elemental Live might lose AV Sync if motion graphics overlays were enabled and many input switches happened. Additionally, there was a memory leak with MOV motion graphics. Both of these issues have been fixed.
2.27.1	GLV-5382	Motion graphic overlays	Fixed an issue where motion graphics insertion would stop on looping inputs after the first input switch.
2.27.1	GLV-5609	Outputs, CMAF ingest	Previously, Elemental Live was incorrectly validating against output name modifiers across different CMAF Ingest output groups. Now, Live enforces modifier name uniqueness only within each output group.
2.27.1	GLV-5383	Outputs, SRT	Increased the send delay for SRT outputs to 4 seconds. Now, after a successful connection, Elemental Live attempts to send data for 4 seconds before timing out.
2.27.1	GLV-5610	Outputs, SRT	The passphrase length for SRT outputs has been increased from 72 characters to 80 characters.
2.27.1	GLV-5257	Video	Fixed an issue where Elemental Live was not always inserting RAI markers per specification.
2.27.1	GLV-5763	Web interface	In Elemental Live 2.27.0, you couldn't save changes to settings in the **Settings** > **General** page. This issue has been fixed.

Version	Key	Topic	Description
2.27.0	GLV-4662	Alerts and logging	Improved logging of SCTE 35 handling, to include a unique ID. This ID makes it easier to trace processing of customer SCTE 35 messages through the transcoding pipeline.
2.27.0	GLV-5070	Alerts and logging	There is improved logging during the assignment of output PIDs to used input streams.
2.27.0	GLV-4669	Alerts and logs	Logs for NMOS and motion graphics could grow indefinitely. There is now a limit to the number and size of these logs.
2.27.0	GLV-4749	Alerts and logs	Fixed an issue where the logs in `/opt/elemental_se/web/log` on Conductor Live were not correctly rotated.
2.27.0	GLV-5097	Alerts and logs	Unnecessary messages have been removed from the logs.
2.27.0	GLV-5262	Alerts and logs	SVQ is defined by the encoder favoring speed over quality. Diagnostic logging has been improved when SVQ occurs.
2.27.0	GLV-5367	Alerts and logs	Fixed an issue where missing IDs on deferred caption stores could cause spamming in logs.
2.27.0	GLV-4847	Audio	Fixed an issue where normalized mono audio can begin to slowly decay towards silence.
2.27.0	GLV-3763	Audio-only outputs	There was an issue with HLS audio-only outputs whereby the media segments were faster than real time. This issue has been fixed.
2.27.0	GLV-2571	Captions, EBU-TT-D	Previously, the data included in EBU-TT-D captions outputs had unreferenced (and unnecessary) style and region elements. This data has been removed.

Version	Key	Topic	Description
2.27.0	GLV-2572	Captions, EBU-TT-D	Previously, the data included in EBU-TT-D captions outputs had the style elements in both the body and paragraph sections. Now, the `tts:fontSize` and `tts:lineHeight` appear only in the paragraph <p> sections.
2.27.0	GLV-5404	Epoch locking	Very rarely, epoch locked events could crash. The underlying issue has been fixed.
2.27.0	GLV-5172	Inputs, RTP	There was an issue when a Live event with an RTP FEC input is erroneously sent streams from two different sources at the same time. The log might get filled with misleading messages about a change in the FEC protection parameters. This issue has been fixed.
2.27.0	GLV-3705	Motion graphics	Fixed an issue where motion graphics might render with an incorrect hue.
2.27.0	GLV-5039	NMOS	When upgrading from Live 2.26.1 to Live 2.26.4 or later, NMOS could stop working. This issue has been fixed.
2.27.0	GLV-4280	NMOS 2110	Live events with NMOS-controlled 2110 outputs sometimes would not appear in the NMOS network. This issue has been fixed.
2.27.0	GLV-4454	NMOS 2110	Fixed an issue whereby changing the secondary interface on a 2110 Receiver Group would not update the NMOS receiver.
2.27.0	GLV-4656	Output listening	There was an issue with Live's handling of output when output listening is enabled. The output bandwidth was unexpectedly high. This issue has been fixed.

Version	Key	Topic	Description
2.27.0	GLV-4856	Outputs, CMAF Ingest	Fixed an issue in CMAF Ingest outputs where video and audio segments didn't align when video had non-integer framerate.
2.27.0	GLV-5301	Outputs, SRT	There was an issue where SRT output connection failures resulted in the encoder favoring speed over quality. This SVQ resulted in alarms. The issue has been resolved.
2.27.0	GLV-5312	Outputs, Zixi	Fixed an issue where secondary Zixi outputs failed to initialize correctly.
2.27.0	GLV-5334	Platform	The operating system has been upgraded from RHEL 9.2 to RHEL 9.4.
2.27.0	GLV-5175	PTS	There was an issue where the PTS adjustment was set to 0. Elemental Live still performed the adjustment on some messages. This issue has been fixed.
2.27.0	GLV-4729	SCTE 35	Fixed a case where long Network Start blackouts didn't work properly.
2.27.0	GLV-4850	SCTE 35	Previously, some SCTE 104 messages in a 2110 input might not get successfully converted. This issue has been fixed.
2.27.0	GLV-5116	SCTE 35	There was an issue when an event includes SMPTE 2110 input and the SMPTE 2110 ancillary stream carries a SCTE 104 message in which the `duration_extension_frames` field is non-zero. The duration calculated for the number of frames was incorrect. This issue has been fixed.
2.27.0	GLV-5370	SCTE 35	Fixed an issue where resynching could cause empty SCTE 35 segments in CMAF Ingest outputs.
2.27.0	GLV-5226	SDI	Fixed an issue with the SDI router.

Resolved issues in Statmux 2.27

The following table lists the resolved issues in Statmux 2.27.

Version	Key	Topic	Description
2.27.3	GLV-5843	Performance	The resource allocation logic on Elemental Live, Elemental Statmux, and Conductor Live has been raised to prevent event crashes.
2.27.1	GLV-5763	Web interface	In Elemental Statmux 2.27.0, you couldn't save changes to settings in the **Settings** > **General** page. This issue has been fixed.
2.27.0	GLV-5070	Alerts and logging	There is improved logging during the assignment of output PIDs to used input streams.
2.27.0	GLV-5333	Virtual IPs	Fixed an issue where Statmux crashed when using virtual source IPs.

Resolved issues in Conductor Live 3.27

The following table lists the resolved issues in Conductor Live 3.27.

Version	Key	Topic	Description
3.27.3	GLV-5754	Deleting profiles	Previously, it was not possible to delete Conductor Live profiles that used SMPTE 2110 inputs. This issue has been fixed.
3.27.3	GLV-6619	Inputs, SMPTE 2110 with NMOS	There was a problem with updating Conductor Live profiles on SMPTE 2110 inputs that use NMOS. The problem resulted in an error in the web interface. This issue has been fixed.
3.27.3	GLV-6714	Outputs, RTMP	There was an issue when creating an RTMP output group by duplicating an event or using a Conductor

Version	Key	Topic	Description
			Live profile. Some settings didn't get copied over. This issue has been fixed.
3.27.3	GLV-5843	Performance	The resource allocation logic on Elemental Live, Elemental Statmux, and Conductor Live has been raised to prevent event crashes.
3.27.1	GLV-4997	Alerts, logs, and messages	Fixed an issue where some alerts were not clearing properly after channels were stopped or restarted.
3.27.0	GLV-3720	Schedule	Fixed an issue where the user couldn't enable schedules in Conductor Live.
3.27.0	GLV-5385	Upgrading	Sometimes a channel would not restart after an upgrade of the Conductor node. This issue has been fixed.

Newly identified issues in version 2.27 and 3.27

There are no newly identified issues in Elemental Live or Statmux 2.27, or in Conductor Live 3.27.

Release notes for version 2.26 and 3.26

The following pages describe version 2.26 (version 3.26 for Conductor Live). Each table of issues includes a **Version** column that shows the point release that the issue applies to.

Essential notes for version 2.26 and 3.26

New operating system

Read this information if you are upgrading from an earlier version of AWS Elemental software. This note applies to both Elemental Live 2.26 and Conductor Live 3.26.

Version 2.26.0 (3.26.0 for Conductor Live) 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 Live 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.

> **Important**
>
> 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 in several versions, you must read the release notes for the versions that you missed.

Specifically, read the essential notes for each major version that you skipped. Each major version in these release notes has its own essential 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 the section called “Migration guides for version 3.26 and 2.26”.

For detailed instructions about converting to hardware RAID, see the knowledge article 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

This version includes the following changes to existing features.

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 2.26.0. 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. 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 that the site certificate is not valid.

Changes to AWS Elemental 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 the 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 detects the Mellanox NIC and automatically installs 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.

New features in version 2.26 and 3.26

New features in Elemental Live and Statmux 2.26

This release includes the following new features.

Access to /home/elemental (GLV-2979)

> **Note**
>
> The following permissions apply only to a fresh install of AWS 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.

Accessibility signaling (GLV-3177)

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.

CMAF Ingest output group (GLV-3172)

CMAF Ingest output groups are now supported on Elemental Live.

NMOS – New parameter for NMOS manifest (GLV-4655)

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

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

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 (GLV-2903)

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 Conductor Live.

SCP disabled by default (GLV-2805)

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

For more details, see OpenSSH SCP deprecation in RHEL 9: What you need to know on the Red Hat website.

SDI – Configuring SDI devices (GLV-3658)

You can now configure an SDI input device name from the web interface.

SMPTE 2110 input performance (GLV-3839)

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

Support for SSSD in RHEL 9 (GLV-3721)

Elemental Live now provides packages to support SSSD in RHEL 9. For detailed instructions, see the knowledge article with the title *How to integrate RHEL 9 Elemental Live appliance with Active Directory using SSSD* in the AWS Elemental Support Center.

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 (GLV-3786)

The events on a standalone Elemental Live node 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.

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 fail over to a backup node. When you restart `elemental_se` on node A, the events continue to run on the backup node.

Video quality – Bandwidth reduction filter (GLV-3746)

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 you 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.

Virtual input switching – Improvement to virtual input switching (GLV-3467)

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.

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 (GLV-929)

Elemental Live now implements version 16.10.44864 of the Zixi Feeder SDK.

New features in Conductor Live 3.26

These release notes don't list separate new features for Conductor Live 3.26. Some of the features in the previous section, such as NMOS controlled by Conductor Live, also apply to Conductor Live 3.26.

Resolved issues in version 2.26 and 3.26

The **Version** column shows the point release that the issue applies to.

Resolved issues in Elemental Live 2.26

The following table lists the resolved issues in 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 2031 in 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.

Version	Key	Topic	Description
2.26.5	GLV-4574	Installing	Sometimes the Elemental installer would run out of disk space. 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.
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 bonded interfaces.
2.26.5	GLV-4640	NMOS configuration	NMOS had issues with custom CA certificates. NMOS now works with custom CA certificates.

Version	Key	Topic	Description
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 Opportuni ty 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 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.

Version	Key	Topic	Description
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.
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.

Version	Key	Topic	Description
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.
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.

Version	Key	Topic	Description
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 AWS 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.

Version	Key	Topic	Description
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 incorrect ly. 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.
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.

Version	Key	Topic	Description
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.

Resolved issues in Statmux 2.26

The following table lists the resolved issues in 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.

Resolved issues in Conductor Live 3.26

The following table lists the resolved issues in Conductor Live 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 AWS 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.

Newly identified issues in version 2.26 and 3.26

The **Version** column shows the point release that the issue applies to.

Newly identified issues in Elemental Live 2.26

The following table lists the newly identified issues in 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.

Release notes for version 2.25 and 3.25

The following pages describe version 2.25 (version 3.25 for Conductor Live). Each table of issues includes a **Version** column that shows the point release that the issue applies to.

Essential notes for version 2.25 and 3.25

Read these essential notes before you upgrade. Except where noted, each note applies to both Conductor Live and the worker nodes (Elemental Live and Statmux).

Last minor release of the 2.25 and 3.25 major version

Versions 2.25.9 and 3.25.9 are the last versions planned for the 2.25 (3.25) major version. We strongly recommend that you upgrade to version 2.26 and 3.26 as soon as possible. Read the release notes for *Version 2.26 and 3.26* and later versions.

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 Statmux), we described a change to the rules for node recruitment and software downgrades. The change affected these actions when they 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 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, then do not follow the procedures in those release notes when you 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 is 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 environment variable to `True`: `LEGACY_RECRUIT`.
3. Recruit the new worker node into the cluster as described in the AWS Elemental 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 worker 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 2.26.0.

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 keep in mind the existing rule that the Conductor Live and worker nodes can run different versions, as long as the Conductor Live nodes aren't running a higher version than the worker nodes.

K80 GPU is no longer supported

This note applies to Elemental Live appliances.

Starting with the 2.25.0 GA software release, all Group 3 Elemental Live appliances containing an NVIDIA K80 GPU are no longer 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 appears and the installation stops. 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 following command:

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

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

New features in version 2.25 and 3.25

New features in Elemental Live and Statmux 2.25

This release includes the following new features.

Stream ID field in SRT outputs (SOCK-38864)

The SRT output in the Reliable TS output group now includes the **Stream ID** field.

Default passwords (GLV-1758)

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.

Dolby Vision and tvOS devices and operating systems (GLV-722)

A change has been made to the HLS manifest, to support Dolby Vision 8.1 with tvOS devices and operating systems. Previously, the `#EXT-X-STREAM-INF` tags were split into two lines for video.

Starting with version 2.25.5, Elemental Live signals Dolby Vision 8.1 with one `#EXT-X-STREAM-INF` tag that includes both the `CODECS` and `SUPPLEMENTAL-CODECS` attributes.

RTMP outputs and fill behavior (SOCK-38971)

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

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 includes 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 (SOCK-39052)

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).

KLV metadata (SOCK-28219)

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.

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 fields:
   - **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 a UDP/TS 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:

- `<prefer_smpte2038>` is located at `<input>`.
- `<klv_passthrough>` is located at `<output_group><output>` under `<m3u8_settings>` or `<m2ts_settings>`.
- `<klv_data_pids>` is located at `<output_group><output>` under `<m3u8_settings>` or `<m2ts_settings>`.

Delivering to AWS Elemental MediaPackage using SigV4 credentials

Elemental Live now supports SigV4 authentication for outputs to AWS Elemental MediaPackage Live v2. MediaPackage v2 supports both HLS and low-latency HLS.

There are no changes to the API for this feature.

The AWS Elemental Live User Guide has been updated to include information about this output.

Low latency workflows using AWS Elemental MediaPackage

If you are delivering HLS output to 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. Other fields can also affect latency.
- The MediaPackage channel must use MediaPackage v2.

There are no changes to the API for this feature.

The AWS 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 Conductor Live 3.25

This release includes the following new features.

Default passwords (GLV-1758)

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.

Resolved issues in version 2.25 and 3.25

The **Version** column shows the point release that the issue applies to.

Resolved issues in Elemental Live 2.25

The following table lists the resolved issues in 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 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.
2.25.8	SOCK-38878	Audio output	Fixed an issue where the initial audio gain was not being set correctly on event start.

Version	Key	Topic	Description
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.

Version	Key	Topic	Description
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.
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. For more information, see the section "Authentication and REST" in the Elemental Live API and User Guide.
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.

Version	Key	Topic	Description
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 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 resilienc y 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-L ength 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.

Version	Key	Topic	Description
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.

Version	Key	Topic	Description
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. 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 about changes to cluster management in the section called “Change to cluster management 3.25.3”.
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.

Version	Key	Topic	Description
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 respondin g 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.
2.25.2	SOCK-21662	Audio output	Previously, the AAC descriptor was missing from the PMT in TS outputs. The descriptor is now present.

Version	Key	Topic	Description
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.

Version	Key	Topic	Description
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>.
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.

Version	Key	Topic	Description
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 Statmux 2.25

The following table lists the resolved issues in Statmux 2.25.

Version	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

Version	Key	Topic	Description
			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 in the section called "Change to cluster management 3.25.3".

Resolved issues in Conductor Live 3.25

The following table lists the resolved issues in Conductor Live 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

Version	Key	Topic	Description
			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 in the section called "Change to cluster management 3.25.3".
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 fails 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.

Release notes for version 2.24 and 3.24

The following pages describe version 2.24 (version 3.24 for Conductor Live). Each table of issues includes a **Version** column that shows the point release that the issue applies to.

New features in version 2.24 and 3.24

New features in Elemental Live and Statmux 2.24

This release includes the following new features.

SMPTE 2110 audio inputs (SOCK-38535)

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.

Time zone for Nielsen audio watermarks (SOCK-38516)

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

On the web interface, open the audio output stream, choose **Advanced**, and enable the **Nielsen Watermarking** section. The field is called **Timezone**.

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

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 Elemental 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 (SOCK-38443)

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 reset back to 0 when events are restarted. Or you can set it so that timestamps are based on the Elemental Live system clock. In both cases, the timestamp is absolute, and its format follows the RTMP specification.

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 (SOCK-38429)

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 Elemental 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.

New features in Conductor Live 3.24

This release includes the following new features.

More information on the Channel Details page (SC-4401, SC-4402, SC-4403)

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
- AWS Elemental MediaConnect inputs

New parameterized field in Conductor Live (SC-4399)

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

Virtual input switching – maximum inputs (SOCK-38429)

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 Elemental 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.

Resolved issues in version 2.24 and 3.24

The **Version** column shows the point release that the issue applies to.

Resolved issues in Elemental Live 2.24

The following table lists the resolved issues in Elemental Live 2.24.

Version	Key	Topic	Description
2.24.1	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

Version	Key	Topic	Description
			occurred even though the Elemental Live implement ation was compliant with the standard. These issues have been resolved and tested with a wide variety of interoperability tests.
2.24.0	SOCK-3859 6	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-3857 9	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-o nly connections has been increased.
2.24.0	SOCK-3852 9	Ad avails, with ESAM	ESAM SCTE 35 stopped outputting in events longer than 53 hours. This issue has been resolved.
2.24.0	SOCK-3847 6	Outputs, SMPTE 2110	We have made density improvements on appliance s that have events that are ingesting SMPTE 2110 NMOS 1080p.
2.24.0	SOCK-3847 5	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 has been resolved.
2.24.0	SOCK-3836 5	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.

Version	Key	Topic	Description
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 implement ation into line with the JPEG XS VSF standard.
2.24.0	SOCK-38242	Outputs, SMPTE 2110	There was an issue where SMPTE 2110-20 (uncompre ssed) 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.

Version	Key	Topic	Description
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 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.

Version	Key	Topic	Description
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 and HTTPS 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.

Version	Key	Topic	Description
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.
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.

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

Resolved issues in Statmux 2.24

The release notes for this version don't list resolved issues for Statmux.

Resolved issues in Conductor Live 3.24

The following table lists the resolved issues in Conductor Live 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 informati on 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 resolutio n. 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 2.24 and 3.24

The **Version** column shows the point release that the issue applies to.

Newly identified issues in Elemental Live 2.24

The following table lists the newly identified issues in 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.

Newly identified issues in Conductor Live 3.24

The following table lists the newly identified issues in Conductor Live 3.24.

Version	Key	Topic	Description
3.24	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.

Release notes for version 2.23 and 3.23

The following pages describe version 2.23 (version 3.23 for Conductor Live). Each table of issues includes a **Version** column that shows the point release that the issue applies to.

Essential notes for version 2.23 and 3.23

Read these essential notes before you upgrade to version 2.23 (3.23 for Conductor Live).

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 Statmux that enhance the capabilities of an MPTS:

- Program passthrough
- Passthrough of a custom stream
- Passthrough of a custom stream that is an 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 use 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 the section called “Performance optimizations for SMPTE 2110 inputs”.
- 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:

1. Upgrade to version 2.23.3, as described in the AWS Elemental Live Upgrade Guide.
2. On the node, 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:

1. Upgrade to version 2.23.3, as described in the AWS Elemental Live Upgrade Guide.
2. 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.

Log4j 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**
>
> 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 for several versions, you must read the release notes for the versions you missed.

Specifically, read the essential notes for each major version that you skipped. Each major version in these release notes has its own essential notes.

New features in version 2.23 and 3.23

This version includes the following new features.

New features in Elemental Live and Statmux 2.23

Elemental Live and Statmux version 2.23 include the following new features.

Passthrough in an MPTS

Version 2.23.4 (3.23.4 for Conductor Live) introduces support for two MPTS passthrough features:

- **Program passthrough** – An MPTS can now include programs that are 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, Statmux includes the ability to suppress any SI/PSI table that 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 set the strength of the sharpen filter. This filter previously had an on/off choice, to sharpen the edges or not. The field now has more values: 0 (off) and 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 capture and deliver a wide array of diagnostics data, and send the data to AWS Elemental Support for troubleshooting purposes. The utility is available on Conductor Live, Elemental Live, and Statmux nodes.

For more information, search the knowledge articles in the AWS Elemental Support Center for *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 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 about 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 SMPTE 2022-6 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 the section called “Changes to usage of the Mellanox card”.

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 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 are 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 issue SOCK-38330 in the newly identified issues for version 2.23.

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 and 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 you install, upgrade, or configure 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 Installation Guide has been updated with 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, to reduce the loudness of the entire output.

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.

To set the variable, search the knowledge articles in the AWS Elemental Support Center for *How to add environment variables in CentOS 7/RHEL 7 from the CLI*. You must have an AWS account to access the AWS 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 fourCC value for EAC3 (Dolby Digital Plus) signaling for a TS output.

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`.

To set the variable, search the knowledge articles in the AWS Elemental Support Center for *How to add environment variables in CentOS 7/RHEL 7 from the CLI*. You must have an AWS account to access the AWS Elemental Support Center.

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

New features in Conductor Live 3.23

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

Resolved issues in version 2.23 and 3.23

The **Version** column shows the point release that the issue applies to.

Resolved issues in Elemental Live 2.23

The following table lists the resolved issues in 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 occurrenc e. 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.

Version	Key	Topic	Description
2.23.1	SOCK-38099	Audio	Fixed a problem where bad audio sometimes occurred in the output after an input switch.
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.

Version	Key	Topic	Description
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.

Version	Key	Topic	Description
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 longer 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 25 GbE interfaces could have black frames. This problem has been fixed.
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 locking between two Live appliances stopped synchronizing the outputs after certain SCTE 35 availability events, in particular a chapter start. This problem has been fixed.

Version	Key	Topic	Description
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.

Version	Key	Topic	Description
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.
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.

Version	Key	Topic	Description
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.

Version	Key	Topic	Description
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, search the knowledge articles in the AWS Elemental Support Center for *Advisory: AWS Elemental Live 2.23.4 no longer enables FFmpeg by default*.
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.
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.

Resolved issues in Statmux 2.23

The following table lists the resolved issues in Statmux 2.23.

Version	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.

Resolved issues in Conductor Live 3.23

The following table lists the resolved issues in Conductor Live 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-383773	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 2.23 and 3.23

The **Version** column shows the point release that the issue applies to.

Newly identified issues in Elemental Live 2.23

The following table lists the newly identified issues in 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,

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

Newly identified issues in Conductor Live 3.23

The following table lists the newly identified issues in Conductor Live 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).

Release notes for version 2.22 and 3.22

The following pages describe version 2.22 (version 3.22 for Conductor Live). Each table of issues includes a **Version** column that shows the point release that the issue applies to.

Essential notes for version 2.22 and 3.22

Read the following essential notes before you upgrade to version 2.22 (3.22 for Conductor Live).

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 occur 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 1000 Mbps to 100 Mbps.

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 support for Statmux

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

For information about how to upgrade from Statmux 2.17, search the knowledge articles in the AWS Elemental Support Center for *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 3.20.2 LA section of the release notes for version 2.20 and 3.20, in *Earlier versions*.

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 and density

AWS Elemental invests in continuous improvement of video quality (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 might experience moderate loss of density on some workflows. If density is more important than VQ, you might be able to recover lost density by adjusting VQ parameters. For example, for an H.264 or HEVC stream, you can change 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. Disregard this notice. DTS Express is supported for all 2.20 versions.

New features in version 2.22 and 3.22

This topic describes the new features in version 2.22 (3.22 for Conductor Live).

New features in Elemental Live and Statmux 2.22

Elemental Live and Statmux 2.22 include the following new features.

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 others 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 AWS 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 cleared (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 selected, 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 the custom input name. Furthermore, if you select 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 AWS Elemental Live User Guide has been updated. (SOCK-36953)

SMPTE 2110 – passthrough of Dolby Digital audio (SOCK-37345)

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

SMPTE 2110 – improved alerts (SOCK-34046)

Elemental Live now includes more alerts and validation messages for problems with configuring or processing SMPTE 2110 inputs.

Statmux – PID passthrough (SOCK-37020)

Statmux now supports passthrough of PIDs. With passthrough, you identify one or more passthrough PIDs in any transport stream in the Statmux. Statmux extracts those PIDs, remaps each PID to an outgoing PID, and includes the remapped PIDs in the outgoing MPTS.

Trick-play track (SOCK-37312)

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 AWS Elemental Live User Guide has been updated to document this feature.

Alerts, messages, and logs

- Elemental Live now logs messages when inserting HLS timed metadata in response to a schedule action. Elemental Live also submits 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 (SOCK-37474)

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

HLS manifests for SCTE-35 (SOCK-37466)

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.

Support for field pictures (SOCK-37468)

Elemental Live now supports input sources encoded as field pictures.

QVBR enhancement (SOCK-37479)

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.

Firmware upgrade (SOCK-37222)

The NIC driver firmware has been upgraded to resolve issues on appliances that include a 1 GbE copper (Cu) SFP interface. These issues occur 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 1000 Mbps to 100 Mbps.

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 (SOCK-37031)

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

For the list of languages that this conversion feature supports, see the section called “Languages supported with OCR”.

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

```
ENABLE_OCR_DVBSUB_OR_SCTE27=TRUE
```

To set the variable, search the knowledge articles in the AWS Elemental Support Center for *How to add environment variables in CentOS 7/RHEL 7 from the CLI*. You must have an AWS account to access the AWS Elemental Support Center.

Languages supported with OCR

The following list shows the languages that OCR captions conversion supports.

- Afrikaans
- Albanian
- Amharic
- Arabic
- Assamese
- Azerbaijani
- Azerbaijani - Cyrillic
- Basque
- Belarusian
- Bengali
- Bosnian
- Bulgarian
- Burmese
- Catalan; Valencian
- Cebuano
- Central Khmer
- Cherokee
- Chinese - Simplified
- Chinese - Simplified Vertical
- Chinese - Traditional
- Chinese - Traditional Vertical
- Croatian
- Czech
- Danish

- Dutch; Flemish
- Dzongkha
- English
- English, Middle (1100-1500)
- Esperanto
- Estonian
- Finnish
- French
- French, Middle (ca. 1400-1600)
- Galician
- Georgian
- Georgian - Old
- German
- German - Fraktur
- Greek, Ancient (-1453)
- Greek, Modern (1453-)
- Gujarati
- Haitian; Haitian Creole
- Hebrew
- Hindi
- Hungarian
- Icelandic
- Indonesian
- Inuktitut
- Irish
- Italian
- Italian - Old
- Japanese
- Japanese Vertical

- Javanese
- Kannada
- Kazakh
- Kirghiz; Kyrgyz
- Korean
- Korean Vertical
- Lao
- Latin
- Latvian
- Lithuanian
- Macedonian
- Malay
- Malayalam
- Maltese
- Marathi
- Nepali
- Norwegian
- Oriya
- Panjabi; Punjabi
- Persian
- Polish
- Portuguese
- Pushto; Pashto
- Romanian; Moldavian; Moldovan
- Russian
- Sanskrit
- Serbian
- Serbian - Latin
- Sinhala; Sinhalese

- Slovak
- Slovenian
- Spanish; Castilian
- Spanish; Castilian - Old
- Swahili
- Swedish
- Syriac
- Tajik
- Tamil
- Telugu
- Thai
- Tibetan
- Tigrinya
- Turkish
- Uighur; Uyghur
- Ukrainian
- Urdu
- Uzbek
- Uzbek - Cyrillic
- Vietnamese
- Welsh

Nielsen watermark encoding (SOCK-36314)

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 to 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.

L800 series appliances – performance improvements (SOCK-37348)

Elemental Live on L800 series appliances now produces higher channel density in workflows with 1080 ABR outputs.

SMPTE 2110 Dolby Digital audio (SOCK-37288)

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.

Statmux latency improvements

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

New features in Conductor Live 3.22

Conductor Live 3.22 includes the following new feature.

Alerts, messages, and logs (SC-78)

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.

Resolved issues in version 2.22 and 3.22

The **Version** column shows the point release that the issue applies to.

Resolved issues in Elemental Live 2.22

The following table lists the resolved issues in 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. Additiona lly, 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.
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 automatic ally 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_au`

Version	Key	Topic	Description
			`dio` 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.

Version	Key	Topic	Description
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.
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 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.

Version	Key	Topic	Description
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.
2.22.1	SOCK-35472	Logs	Previously, both Elemental Live and Conductor Live mishandled situations where a port was misconfig ured. The mishandling resulted in a dump of messages in the logs, filling up the logs. This problem has been fixed. The logs are no longer flooded with messages.

Version	Key	Topic	Description
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 synchroni zing 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 windowbox ed (that is, 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.

Version	Key	Topic	Description
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.
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.

Version	Key	Topic	Description
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 a SMPTE 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.

Version	Key	Topic	Description
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.
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 upgraded 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.

Version	Key	Topic	Description
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.

Resolved issues in Statmux 2.22

The following table lists the resolved issues in 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

Version	Key	Topic	Description
			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.

Resolved issues in Conductor Live 3.22

The following table lists the resolved issues in Conductor Live 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

Version	Key	Topic	Description
			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, open 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.

Version	Key	Topic	Description
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 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 responsiv eness of commands and status in the Conductor Live web interface.

Newly identified issues in version 2.22 and 3.22

The **Version** column shows the point release that the issue applies to.

Newly identified issues in Elemental Live 2.22

The following table lists the newly identified issues in 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.

Release notes for version 2.21 and 3.21

The following pages describe version 2.21 (version 3.21 for Conductor Live). Each table of issues includes a **Version** column that shows the point release that the issue applies to.

New features in version 2.21 and 3.21

This topic describes the new features in version 2.21 (3.21 for Conductor Live).

New features in Elemental Live and Statmux 2.21

Elemental Live and Statmux 2.21 include the following new features.

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 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 Statmux will now display an alert in the web interface and send an SNMP trap. If Conductor Live is present, the alert is also visible there.

Conductor Live MPTS Channel web interface updates

On the MPTS Channel page of 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 through 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 through optional Advanced Encryption Standard (AES) encryption of messages.

To configure an event for an SRT input

1. For the input type, select **Secure Reliable Transport** and enter a name for the input.
2. 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`.
3. (Optional) In the **Interface** field, enter a network interface, such as `eth1`. If you leave this field blank, the system routing table selects an interface for you.
4. (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, because 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 120 ms.

5. 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.

6. 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.

7. (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 determines the best setting for your content.

SPTS output monitoring in Statmux

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

1. From the Elemental Live event page, set **Motion Image Inserter** to **ON**.
2. Choose **HTML** as the **Insertion Mode**, and enter the URL of the page you want to overlay in the **Input** field.
3. (Optional) Select the **Overlay Active** check box if you want HTML overlays to start activated.
4. (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.

New features in Conductor Live 3.21

Conductor Live 3.21 includes the following new features. These features are also available in Elemental Live and Statmux 2.21.

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 Conductor Live.

Power supply alerts

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

Conductor Live MPTS Channel web interface updates

On the MPTS Channel page of 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 through UDP multicast on ports 5000 to 5055.

Resolved issues in version 2.21 and 3.21

The **Version** column shows the point release that the issue applies to.

Resolved issues in Elemental Live 2.21

The following table lists the resolved issues in 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 connectio

Version	Key	Topic	Description
			n 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.
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.

Version	Key	Topic	Description
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 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 configure d 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 64 x 46 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.

Version	Key	Topic	Description
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.
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.

Version	Key	Topic	Description
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 `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.

Version	Key	Topic	Description
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.
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.

Version	Key	Topic	Description
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 (that is, 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.
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.

Version	Key	Topic	Description
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 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.

Version	Key	Topic	Description
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.
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.

Resolved issues in Statmux 2.21

The following table lists the resolved issues in 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 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

Version	Key	Topic	Description
			than the 1.8-megabit 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 overloade d by multicast traffic. This is now fixed. Network communication between Elemental Live and Statmux is now improved. You can also now edit multicast addresses and modify address allocation to avoid overload by multicast traffic.

Resolved issues in Conductor Live 3.21

The following table lists the resolved issues in Conductor Live 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

Version	Key	Topic	Description
			interface or AWS 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 Statmux communication erroneously included telemetry data. This is now fixed.

Version	Key	Topic	Description
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 Statmux is now improved. You can also now edit multicast addresses and modify address allocation to avoid overload by multicast traffic.
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.

Version	Key	Topic	Description
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-megabit 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.

Newly identified issues in version 2.21 and 3.21

The **Version** column shows the point release that the issue applies to.

Newly identified issues in Elemental Live 2.21

The following table lists the newly identified issues in 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

Version	Key	Topic	Description
			log filling up the /opt disk partition. This issue is fixed in version 2.21.1.
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.

Newly identified issues in Statmux 2.21

The following table lists the newly identified issues in 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 AWS Elemental Conductor Live web

Version	Key	Topic	Description
			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.

Release notes for earlier versions

The release notes for versions earlier than 2.21 (3.21 for Conductor Live) are available as PDF files:

- Release notes for version 2.20 and 3.20
- Release notes for version 2.19 and 3.19

Document history for the release notes

The following table describes the main changes to the release notes. To get a notification when the release notes for a new release are published, subscribe to the RSS feed.

Change	Description	Date
Version 2.28.1 and 3.28.1	Added the release notes for Elemental Live and Statmux 2.28.1 and Conductor Live 3.28.1.	November 4, 2026
Versions 2.21 to 2.26 and 3.21 to 3.26	Added the release notes for Elemental Live and Statmux 2.21 to 2.26, and Conductor Live 3.21 to 3.26. Previousl y, these release notes were published as a PDF file.	October 22, 2026
Version 2.28.0 and 3.28.0	Added the release notes for Elemental Live and Statmux 2.28.0 and Conductor Live 3.28.0.	October 22, 2026
Version 2.27 and 3.27	Added the release notes for Elemental Live and Statmux 2.27.0 to 2.27.5, and Conductor Live 3.27.0 to 3.27.5.	October 22, 2026
New guide	The release notes for AWS Elemental Live, AWS Elemental Statmux, and AWS Elemental Conductor Live are now published as an HTML guide. Previously, they were published as a PDF file.	October 22, 2026