

telestream | cloud
Stream Monitor Service



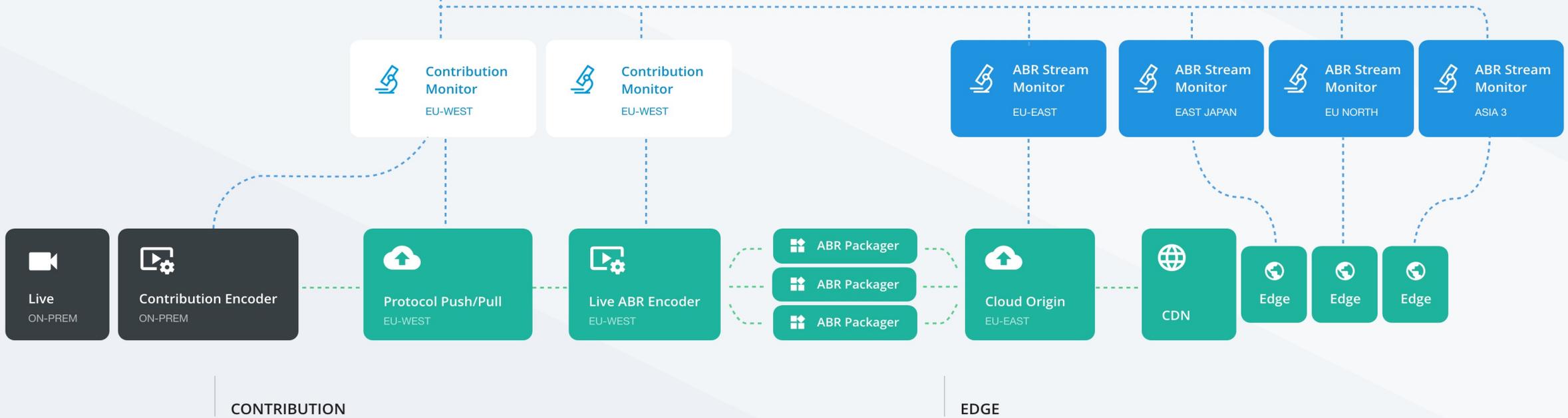
+ May 2018



Stream Monitor

For programmers and event producers delivering live content, who need to make sure their streams are reaching their viewers at the highest quality possible.

- Live Monitoring Dashboards
- Alarms & Notifications
- Reports
- Analytics
- SCTE-35
- API



Contribution Feed Monitoring

Analyze live transport streams being delivered to cloud encoding, packaging, ad insertion and delivery services

- Analyze network conditions at the point of cloud ingress
- Full support for secure, reliable cloud contribution protocols with Zixi (Push/Pull) and SRT (Caller/Listener) support
- Validate encoding settings with realtime measurement and deep audio/video quality analysis
- Ensure monetization policies are being realized with live SCTE-35 signal detection, analysis and frequency alerts
- Identify impaired feeds being delivered in to 3rd party live encoding services

The image displays three overlapping screenshots of the Contribution Feed Monitoring interface. The top-left screenshot shows the 'Contribution Feed Status' page with a 'Streaming' status, Zixi - Push protocol, and a video player. The top-right screenshot shows the 'Media Info' tab with video details: H.264 codec, Progressive variant type, High(100) @ L4.2 profile, 1920 x 1080 resolution, 60.0 frame rate, 13.66 Mbps bit rate, 4:2:0 chroma format, 16:9 aspect ratio, and 32 GOP length. The bottom screenshot shows the 'Contribution Feed Monitor Setup' form for 'The Big Game' asset, configured with SRT Listener (Push) protocol, AES-256 encryption, West US (Azure) monitoring point, and a path format of :asset_name/:session_date/:monitoring_point/:stream_resolution@str.

Live ABR Stream Monitoring

Measure asset availability and CDN delivery performance across the globe

- Multi-cloud deployment of monitoring services in 70+ global regions
- Detect presence (or absence) of vital ad signaling
- Best in class streaming analysis with live audio/video quality reporting
- Realtime concurrent comparison of stream health & CDN delivery performance in all regions
- Monitoring dashboards present actionable insights in an easy to understand, intuitive interface
- Open API centralizes programmatic monitoring & provides access to all collected data

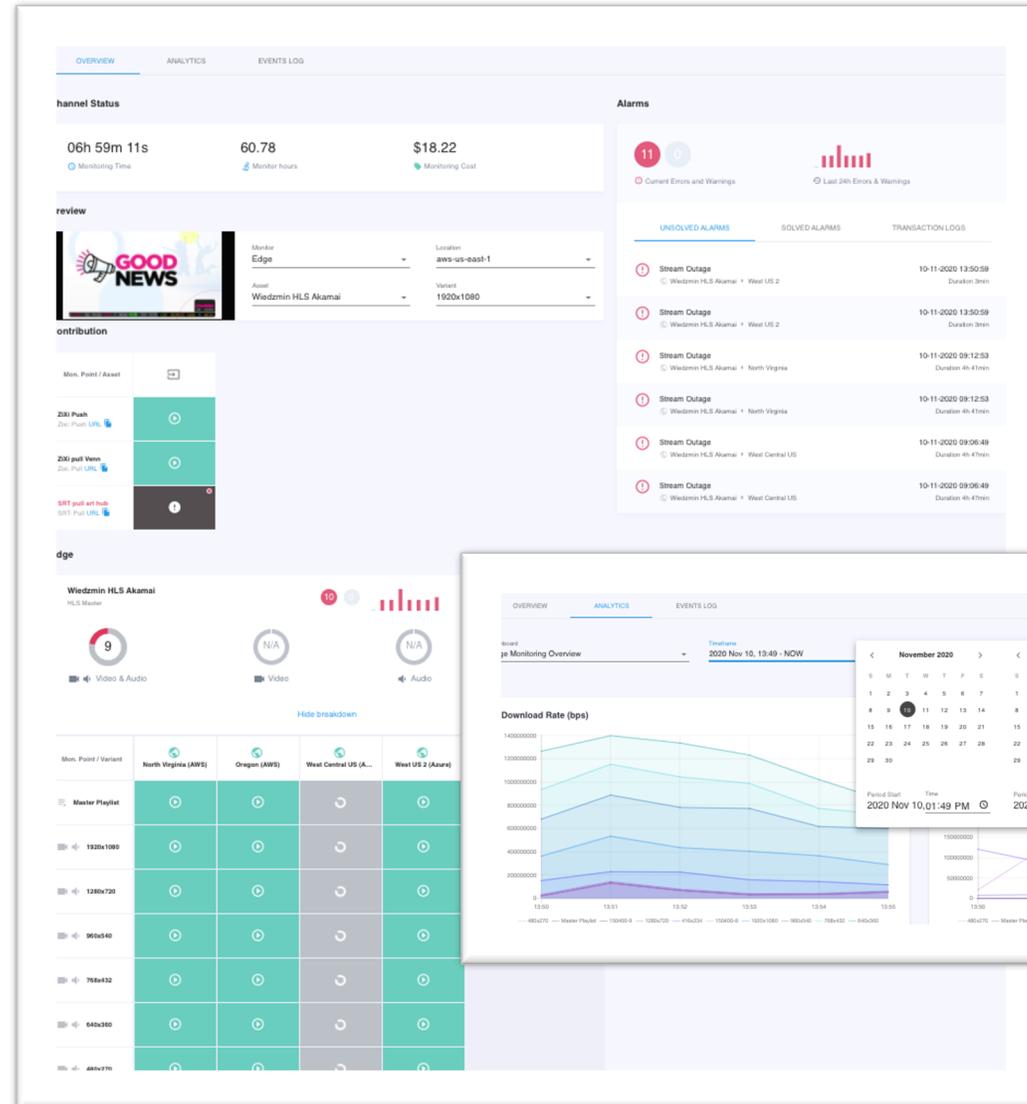
The screenshot displays the Telestream Cloud monitoring interface. At the top, there's an 'Events feed' with search filters and a calendar view for April 2020. Below this is the 'Asset details' section, which includes monitoring time (00:19:49), a progress indicator (10/10), and various status gauges for Monitoring Points, Alarms, and Video & Audio. A 'CURRENT ALARMS' section lists several DNS-related alerts for different regions. To the right, there's a 'General' tab with asset information like Variant Name (1920x1080), Monitoring Point (UK West), and Resolution (1920x1080). Below that is an 'Alarms' section showing 'No alarms triggered'. A 'Thumbnail' section displays a video frame with associated QoS and QoE metrics. At the bottom, a 'VARIANTS SUMMARY' table shows a grid of monitoring points across various cloud providers and regions, with green checkmarks indicating successful monitoring. A world map is overlaid on the bottom right, showing monitoring locations across the globe.

	aws-ap-nor...	aws-eu-we...	aws-us-we...	aws-us-east...	azure-cna...	azure-sou...	azure-ukwest	gcp-europ...	gcp-europ...	gcp-us-west2
Master Playlist (m3u8)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1920x1080	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1280x720	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
960x540	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
768x432	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
640x360	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
480x270	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
416x234	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
416x234	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

End-to-end Correlated Channel Performance Analysis

Channels define related contribution and edge assets

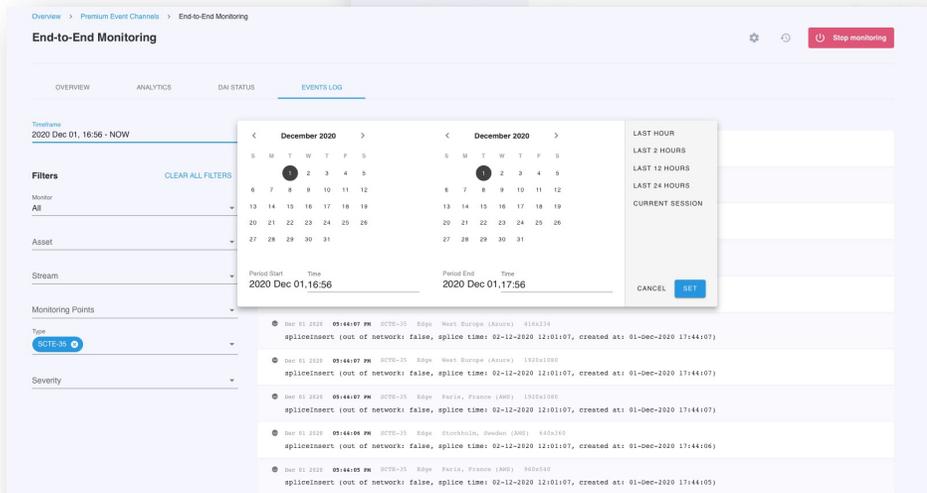
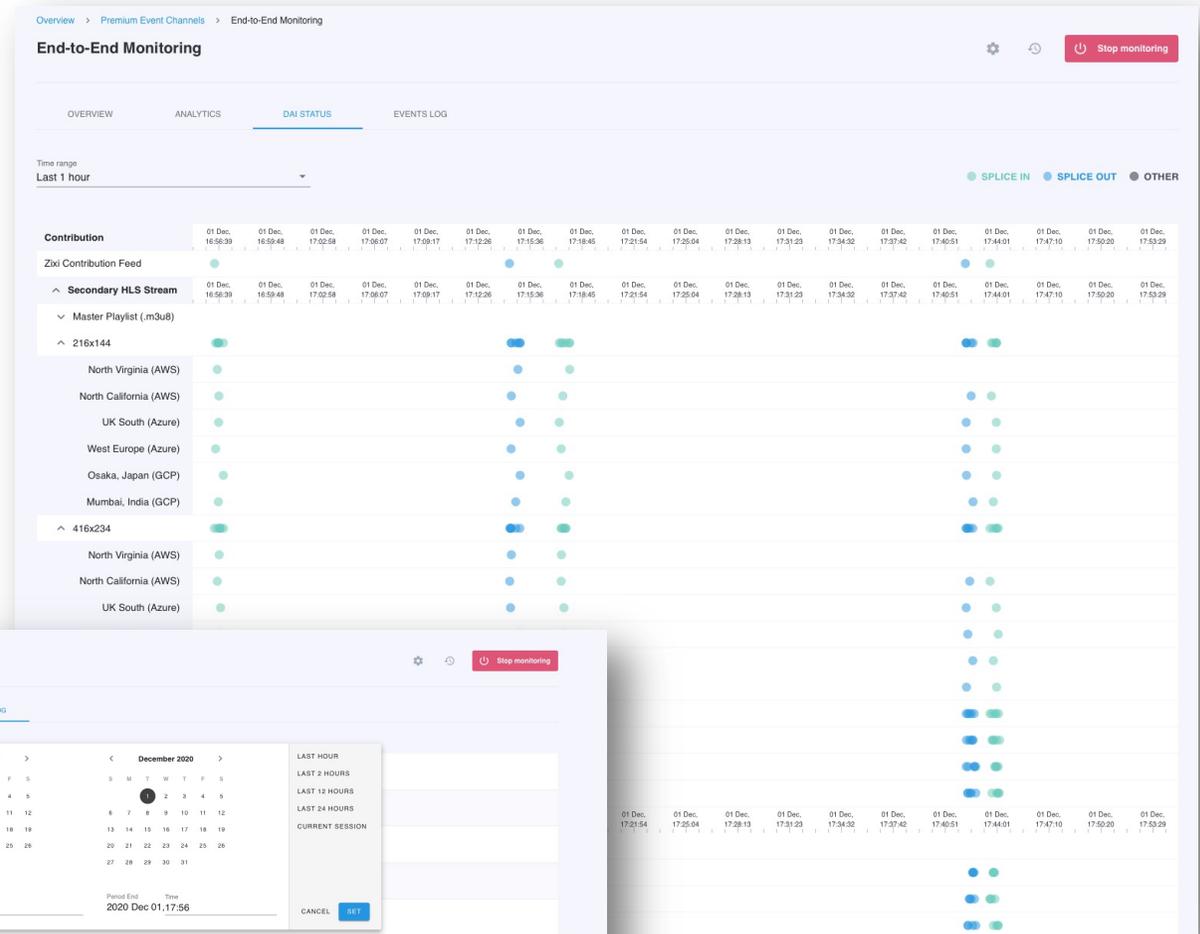
- Rapid identification of faults in the delivery pipeline
- Analyze how impaired signals are impacting downstream playback
- Validate ad signal propagation from contribution feed to CDN edge
- Verify audio/video quality each time the stream is modified
- Root cause analysis that can be traced through 3rd party processing centers



Advanced Advertising Assurance DAI Monitoring

Validate ad insertion workflow with realtime SCTE monitoring

- Validate that contribution input includes properly formatted SCTE-35 signal
- Measure ad break messaging through to ABR output
- Analyze frequency and alarm on out of threshold activity
- Measure ad insert quality and compliance



Realtime Access to Performance Details & Operational Dashboard

Simple, effective & insightful dashboards and reports

- Simplified “red light/green light” dashboards draw attention where its needed
- Detailed access to live performance metrics, transaction logs and event messages
- Customizable alarm templates tailored to your content and streaming needs
- Export comprehensive metric and event reports with trendline analysis and aggregated data functions

The screenshot displays the Telestream Cloud interface for the Kids Channel. Key features include:

- Monitoring Points:** 3/3 green, indicating all points are active.
- Alarms:** 10 red, indicating active alerts.
- Variant Summary Table:**

Variant	azure-sou...	azure-west...	gcp-us-cent...
640x360	🟢	🟢	🟢
960x540	🟢	🟢	🟢
1280x720	🟢	🟢	🟢
768x432	🟢	🟢	🟢
480x270	🟢	🟢	🟢
416x234	🟢	🟢	🟢
- Variant Details Panel:** Shows general information like Variant Name (1280x720) and a list of current alarms, including 'Error: West US 2 960x540 - Still Frame Error'.

low Labels	LT	Average of veristream	Sum of media_top_dup_ack	Min of media_download_rate (bps)	Average of media_download_rate (bps)	Average of media_download_time (ms)	Average of media_round_trip_time (ms)	drhmcnev-de-gen0013	Max of media_size
azure-centralus	1.8	1720	719	74,903	10,098,222	2025	39,308	2020	1560834
gcp-us-west2	2.0	1720	335	3,177,015	35,051,788	311	36,610	2020	1651502
azure-eastus2	2.0	282	1,796,684	10,942,661	15,507	2020	1630969		
2020-03-03 18:16:02.007 UTC	2.0	0	16,761,333	16,761,333	12	11,978	2020	25142	
drhmcnev-de-gen0012	2.0	0	16,761,333	16,761,333	12	11,978	2020	25142	
MISS	2.0	0	16,761,333	16,761,333	12	11,978	2020	25142	
drhmcnev-de-gen0013	2.0	0	16,761,333	16,761,333	12	11,978	2020	25142	
MIT	2.0	0	16,761,333	16,761,333	12	11,978	2020	25142	
2020-03-03 18:16:05.171 UTC	2.0	0	3,234,873	3,234,873	142	11,836	2002	57419	
drhmcnev-de-gen0008	2.0	0	3,234,873	3,234,873	142	11,836	2002	57419	
MISS	2.0	0	3,234,873	3,234,873	142	11,836	2002	57419	
drhmcnev-de-gen0013	2.0	0	3,234,873	3,234,873	142	11,836	2002	57419	
MISS	2.0	0	3,234,873	3,234,873	142	11,836	2002	57419	
chrno01-de-gmt0218	2.0	0	3,234,873	3,234,873	142	11,836	2002	57419	
MISS	2.0	0	3,234,873	3,234,873	142	11,836	2002	57419	
2020-03-03 18:16:05.446 UTC	2.0	0	3,864,870	3,864,870	487	11,682	2002	25274	
2020-03-03 18:16:05.171 UTC	2.0	1	20,514,748	20,514,748	425	11,750	2002	1089846	
drhmcnev-de-gen0012	2.0	1	20,514,748	20,514,748	425	11,750	2002	1089846	
MISS	2.0	1	20,514,748	20,514,748	425	11,750	2002	1089846	
drhmcnev-de-gen0008	2.0	69	13,497,189	13,497,189	874	11,878	2002	1474568	
MISS	2.0	69	13,497,189	13,497,189	874	11,878	2002	1474568	
drhmcnev-de-gen0012	2.0	69	13,497,189	13,497,189	874	11,878	2002	1474568	
MISS	2.0	0	3,693,333	3,693,333	54	11,702	1996	24930	
drhmcnev-de-gen0013	2.0	0	3,693,333	3,693,333	54	11,702	1996	24930	
MISS	2.0	0	3,693,333	3,693,333	54	11,702	1996	24930	
MIT	2.0	0	3,693,333	3,693,333	54	11,702	1996	24930	

- Playlist / Manifest Unavailable
- Consecutive Errors Maximum: 5
- Stalled Playlist/Manifest File
- Alarm Threshold (seconds): 30
- 4xx Errors
- Sliding Alarm Window Size (minutes): 5
- Window Errors Maximum: 3
- Status Code Exclusions:
- 5xx Errors
- Sliding Alarm Window Size (minutes): 5
- Window Errors Maximum: 3
- Status Code Exclusions:
- Derived Variant Startup Time
- Maximum (seconds): 15
- Connection Time Errors
- Threshold (milliseconds): 10000
- Connection Errors
- Sliding Alarm Window Size (minutes): 5
- Window Errors Maximum: 3
- Buffer / Gear Change Risk
- Duration Threshold (seconds): 20
- Sliding Alarm Window Size (minutes): 5
- Window Errors Maximum: 3
- Video MOS
- Duration Threshold (seconds): 20
- Duration (seconds): 20
- Black Screen
- Threshold: 90
- Duration (seconds): 20

Automated Notifications & Enhanced OpenAPI Access

- Define email notification profiles to ensure alerts are reaching those that need them
- Enable automated responses to alarm activation
 - AWS SNS
 - Azure Event Grid
 - GCP Pub/Sub
 - Oracle Cloud Notifications Service
 - Webhooks notifications
- Dynamically deploy cloud monitoring infrastructure programmatically via the RESTful OpenAPI
- Full programmatic access to all metric, alert, event and report data via REST API

The image displays three screenshots related to API management and notifications:

- OpenAPI Specification:** A JSON snippet showing service information (termsOfService, contact, license) and security schemes (apiKey).
- REST Client Interface:** A screenshot of a REST client showing a list of endpoints for the 'Maas' API, including GET /ivms, GET /projects, POST /projects, GET /projects/{id}, and PUT /projects/{id}. A detailed view for 'Get project metrics' is shown, including the endpoint URL, cURL command, and available aggregation functions (min, max, sum, count, avg) and metrics (manifest_size, manifest_download_time, connection_time, etc.).
- Notifications Form:** A screenshot of a 'Notifications' settings form. It includes fields for Service (Optiq Monitor), Factory/Project (Optiq Monitor Feature Channels), Asset (Telestream CH1 DASH), Delivery method (webhook), HTTP Method (POST), URL (http://localhost:4040/), Content Type (application/json), and Retries (10). It also has checkboxes for 'Alarm Triggered' and 'Alarm Resolved', and a 'Create' button.

Use Cases



Live Monitoring of Global / Regional Event

Kids Channel
[Back to Asset List](#)

Asset details

Monitoring Time: 02:45:22

Monitoring Points
 ● Monitoring 3
 ● Starting 0

Alarms
 ● Errors 6
 ● Warnings 0

Video & Audio

Video

Audio

Subtitles

● Starting ● Unknown ● Buffering ● Streaming ● Outage ● Complete

CURRENT ALARMS

- Error
West US 2 960x540 - Derived Variant Startup Time Error
- Error
West US 2 1280x720 - Derived Variant Startup Time Error
- Error
South Central US 1280x720 - Derived Variant Startup Time Error
- Error
South Central US 960x540 - Derived Variant Startup Time Error
- Error
Council Bluffs, Iowa, USA 1280x720 - Derived Variant Startup Time Error
- Error
Council Bluffs, Iowa, USA 960x540 - Derived Variant Startup Time Error

SOLVED ALARMS

VARIANTS SUMMARY

	azure-sout...	azure-west...	gcp-us-cen...
Master Playlist (.m3u8)			
640x360			
960x540			
1280x720			
768x432			
480x270			
416x234			

Alarms

Variant Details

General

Status: Streaming

Variant Name: 1280x720

Monitoring Point: Council Bluffs, Iowa, USA

CDN: AT&T Services, Inc.

Resolution: 1280x720

Bitrate (bps): 3,405,955

Codecs: avc1.64001F mp4a.40.2

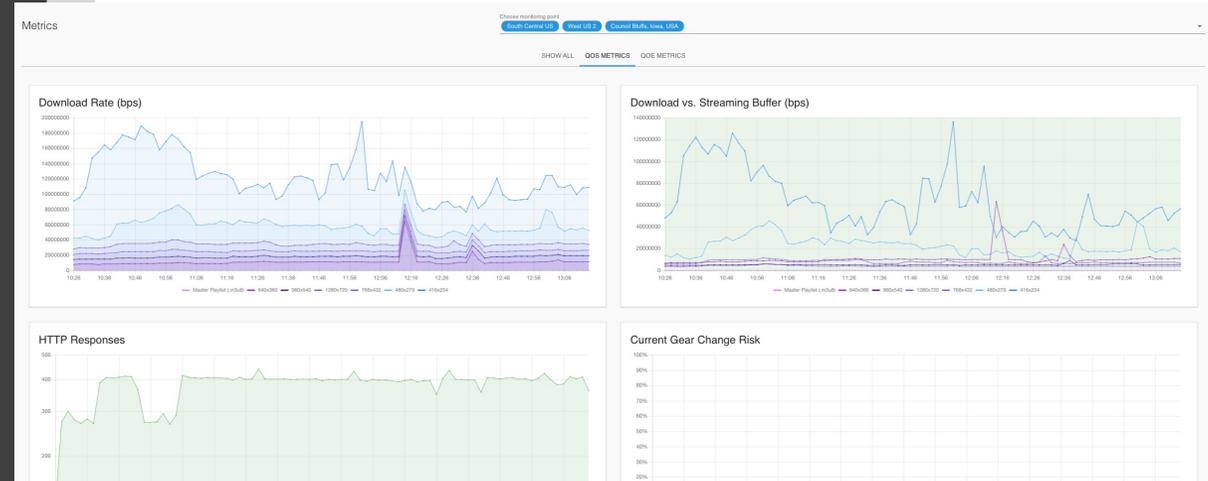
Alarms

- Error
gcp-us-central1 - Derived Variant Startup Time Error
14 minutes ago
- Error
gcp-us-central1 - Derived Variant Startup Time Error
27 minutes ago
- Error
gcp-us-central1 - Derived Variant Startup Time Error
1 hour ago
- Error
gcp-us-central1 - Derived Variant Startup Time Error
2 hours ago

- Measure live performance in every location at all times
- Define the assets to be monitored
- Specify the ideal monitoring points to measure stream health from
- Set performance thresholds to trigger alerts and notifications
- Start monitoring
- Realtime analysis of stream delivery performance by region
- Realtime analysis of encoder performance

”Warm the Cache” Workflow

- Avoid the crush of users on the content origin
- Define episodic VOD asset URL or live publishing point
- Identify strategic cache locations to prepopulate
- Begin requesting streaming variants by region
- Identify availability and performance issues in region by CDN partner BEFORE the audience starts connecting



OptiQ Monitor Feature Channels

[Back to Asset List](#)

Asset Options

Asset Name
Episode 3 Premier Goes Live At 9pm

Asset Type
HLS Master

Asset URL
http://qhttp.apple.com.edgesuite.net/1010qwoeury/g/sl.m3u8

Monitored Locations

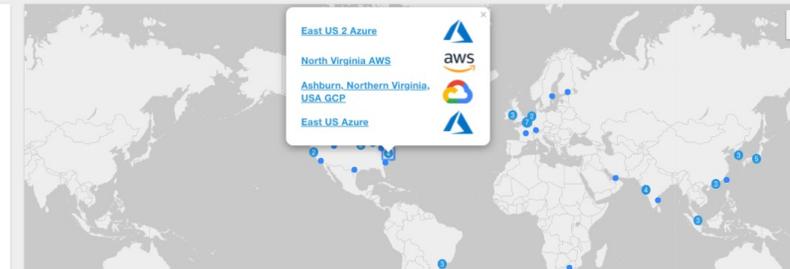
- East US (Azure)
- West US (Azure)
- Oregon (AWS)
- Moncks Corner, South Carolina, USA (GCP)
- North California (AWS)
- Ohio (AWS)

QoE

Alarm template
Audio Silence Detect

[+ ADD NEW](#)

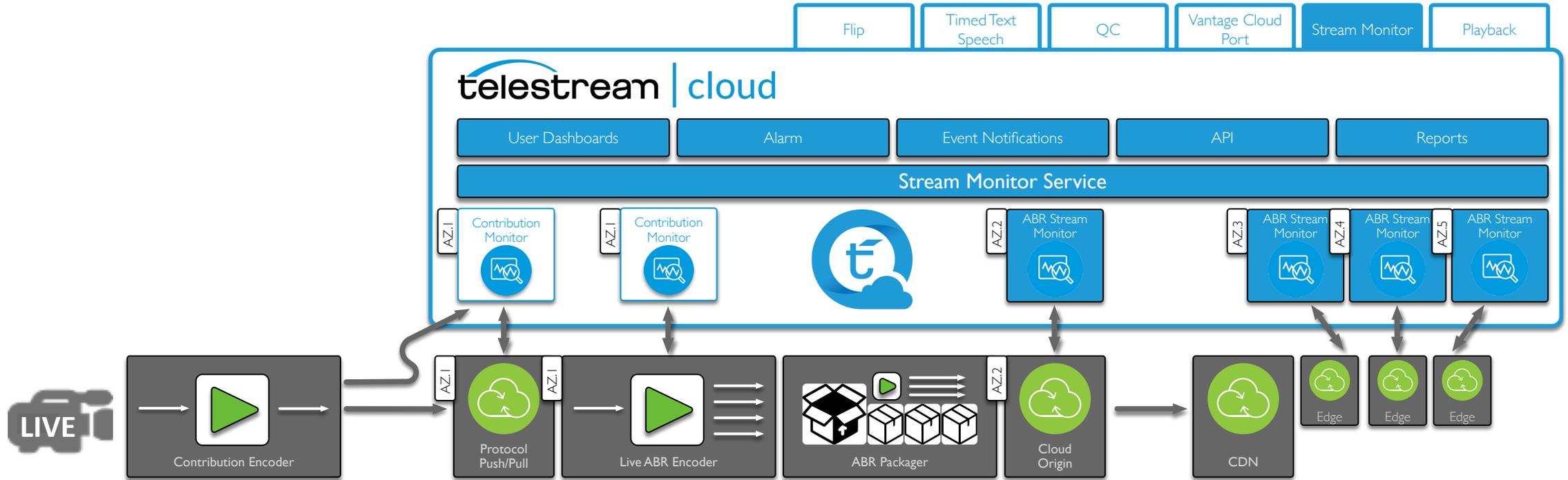
Select Monitoring Points



Historic 'Per Request QOS' Analysis

- Measure changes over time to CDN delivery performance & identify poorly performing cache nodes
- Enable 'Per Request QOS'
- Define custom headers to associate with request QOS metrics
- Query Live ABR Monitor Reports endpoint with target date range
- Plug reporting data in to large data analysis tools

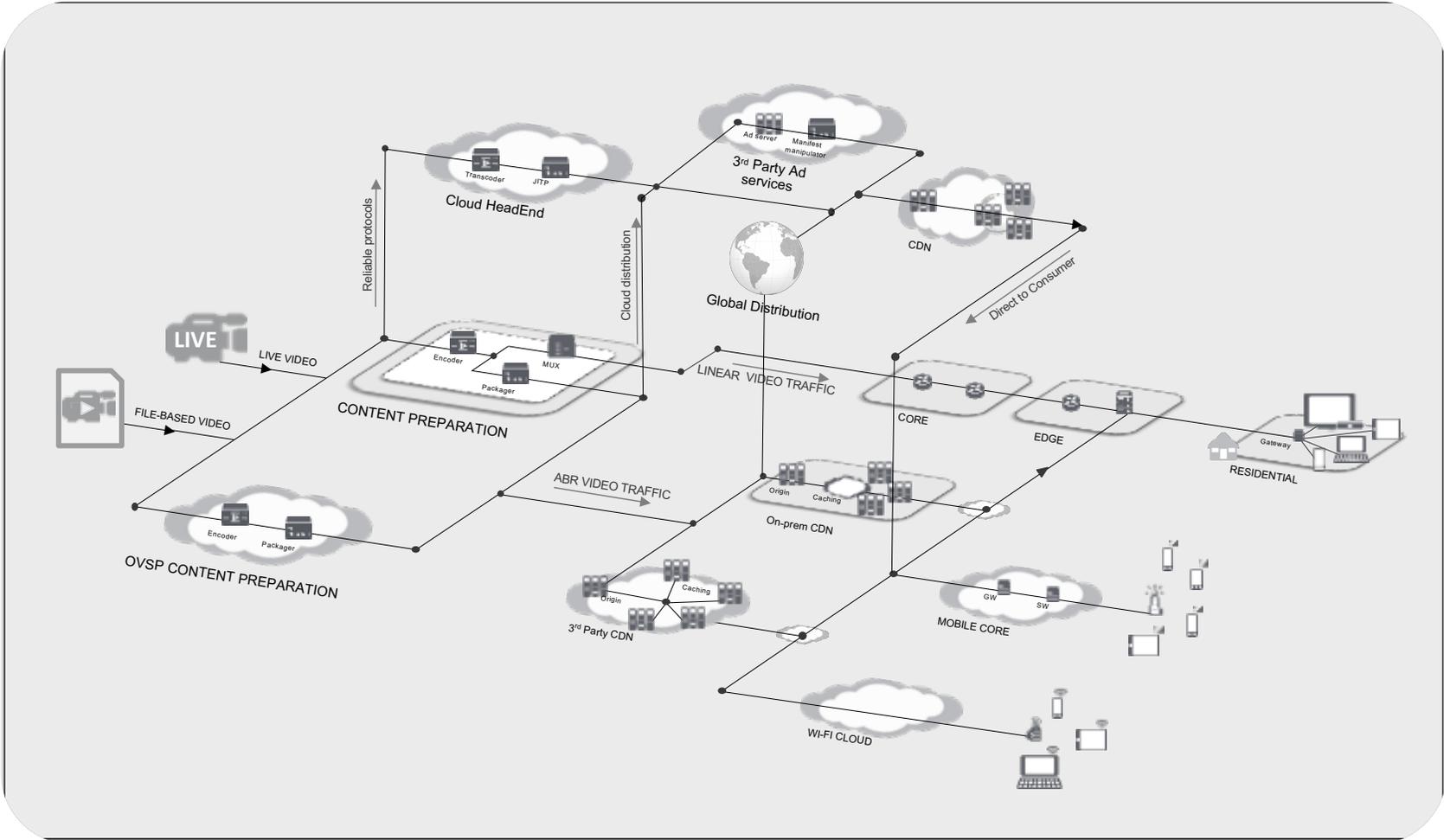
Row Labels	Average of veristream	Sum of media_tcp_dup_ack	Min of media_download_rate (bps)	Average of media_download_rate (bps)	Average of media_download_time (ms)
azure-centralus	1.8	733	74,903	10,498,222	2025
gcp-us-west2	2.0	1720	3,177,015	35,051,788	335
azure-eastus2	2.0	282	1,796,684	10,942,661	311
2020-03-03 18:16:02.067 UTC	2.0	0	16,761,333	16,761,333	12
/LIVE/1124/dash/cenc/WEATHHD_19131/audio1-12266309.m4s	2.0	0	16,761,333	16,761,333	12
drhmncev-de-gen0011	2.0	0	16,761,333	16,761,333	12
MISS	2.0	0	16,761,333	16,761,333	12
drhmncev-de-gen0013	2.0	0	16,761,333	16,761,333	12
HIT	2.0	0	16,761,333	16,761,333	12
2020-03-03 18:16:05.171 UTC	2.0	0	3,234,873	3,234,873	142
/LIVE/1124/dash/cenc/WEATHHD_19131/video5-12266309.m4s	2.0	0	3,234,873	3,234,873	142
drhmncev-de-gen0008	2.0	0	3,234,873	3,234,873	142
MISS	2.0	0	3,234,873	3,234,873	142
drhmncev-de-gen0013	2.0	0	3,234,873	3,234,873	142
MISS	2.0	0	3,234,873	3,234,873	142
chrlnc01-de-gmt0218	2.0	0	3,234,873	3,234,873	142
MISS	2.0	0	3,234,873	3,234,873	142
2020-03-03 18:16:05.446 UTC	2.0	0	3,864,870	3,864,870	487
2020-03-03 18:16:18.051 UTC	2.0	1	20,514,748	20,514,748	425
/LIVE/1124/dash/cenc/WEATHHD_19131/video2-12266315.m4s	2.0	1	20,514,748	20,514,748	425
drhmncev-de-gen0012	2.0	1	20,514,748	20,514,748	425
2020-03-03 18:16:18.233 UTC	2.0	69	13,497,189	13,497,189	874
/LIVE/1124/dash/cenc/WEATHHD_19131/video1-12266315.m4s	2.0	69	13,497,189	13,497,189	874
drhmncev-de-gen0012	2.0	69	13,497,189	13,497,189	874
2020-03-03 18:16:53.123 UTC	2.0	0	3,693,333	3,693,333	54
/LIVE/1124/dash/cenc/WEATHHD_19131/audio1-12266334.m4s	2.0	0	3,693,333	3,693,333	54
drhmncev-de-gen0008	2.0	0	3,693,333	3,693,333	54
MISS	2.0	0	3,693,333	3,693,333	54
drhmncev-de-gen0013	2.0	0	3,693,333	3,693,333	54
HIT	2.0	0	3,693,333	3,693,333	54



Live Contribution Feed Monitoring

- Place live monitoring at cloud contribution ingest location
- Complete visibility in to the health & performance of the contribution feed
- Realtime analysis of asset availability & contribution encoder quality
- Combine with edge monitoring for end-to-end visibility

Video Distribution Architecture



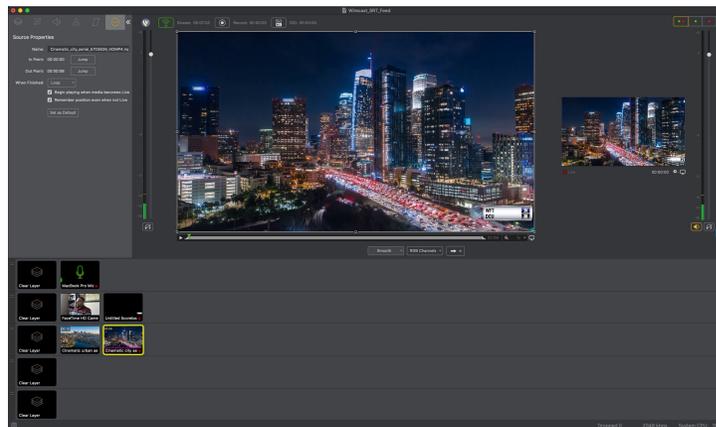
AWS MediaConnect Demo Flow

Here is an example flow being monitored through AWS MediaConnect

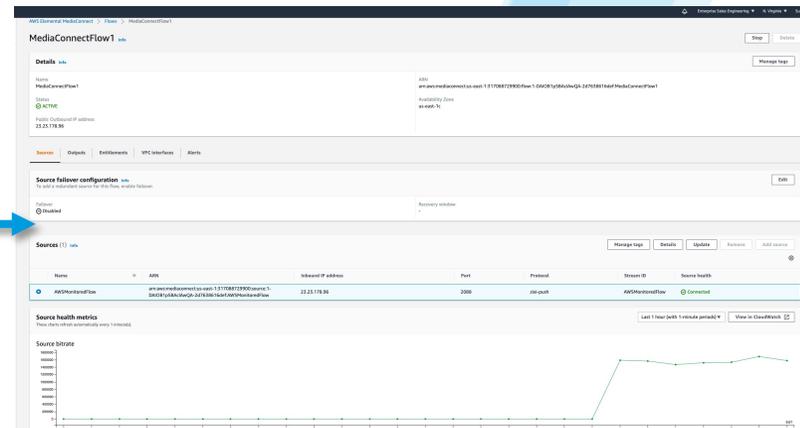
Wirecast

AWS MediaConnect

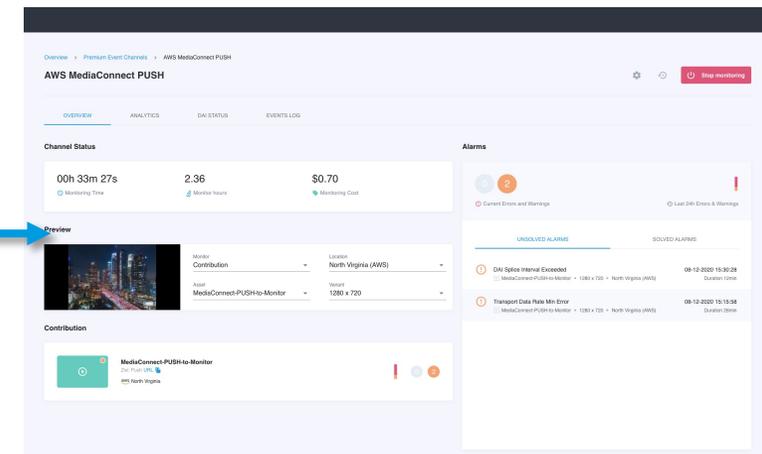
Telestream Cloud Stream Monitor



Zixi PUSH



Zixi PUSH



Wirecast publishes to AWS MediaConnect Flow using Zixi PUSH address and info supplied in AWS dashboard

AWS MediaConnect IP: 23.23.178.96
Zixi Port: 2088
StreamID: AWSMonitoredFlow

AWS MediaConnect Flow configured with Zixi PUSH OUTPUT that will be used to deliver a feed to Stream Monitor.

Must 1st start the Stream Monitor monitoring point, which will generate the URL that you must enter in to AWS to specify where the PUSH feed will be delivered.

Start the monitoring point, which will create a Zixi receiver address. You need to translate the address to an IP as AWS MediaConnect does not currently support FQDN paths.

Enhanced Stream Monitoring Across Distribution Chain

- New!** Support for live contribution feed monitoring with Zixi and SRT Protocol support
- New!** SCTE-35 DAI detection & ad marker signal propagation analysis
- New!** Correlate performance metrics for all assets in a single channel
- New!** More powerful alarm templates and trending analysis views

