

# Intelligent LIVE Video Operations

Because your live video workflow is split across multiple stages and uses multiple vendors, we created SSIMPLUS® Live Monitor to observe video operations from content creation to consumption and to identify issues at scale. The software solution pinpoints problems with actionable data in real-time with smart alerts, performs behavioral analysis of each service, and helps automate quick resolution of issues.

The result: have more signal in the form of actionable data and less noise – with detailed reporting; customizable or self-learned alerting for maximizing true positives; and monitoring at network, region, market, service, and even stream level. At a glance NOC staff or executives can see real-time operational status to ensure everything is working as desired.

## Intelligent Automated Operations at Scale

- ✓ Significant reduction in mean time to resolution through isolating issues using a single pane of glass view from source all the way to playback. ‘Super search’ capability enables users to find anything of interest with the least number of clicks across deployments of any size.
- ✓ Automate video operations at scale using the viewer intelligent software solution - with smart alerts that maximize the efficiency of operational teams while making sure nothing slips through the cracks.

## Real Viewer Score and Solution for Streaming Challenges

- ✓ Benchmark performance for various workflow stages by tracing Viewer Experience from content creation to consumption using the most accurate metric—SSIMPLUS®.
- ✓ Industry—first metrics to fix difficult issues that impact customers the most, such as audio-to-video sync loss, high latency, content mismatch, and macroblocking due to content using fool-proof Deep Learning based approaches.
- ✓ Source quality assurance using the most accurate no-reference perceptual quality metric, plus reference based encoding and transcoding performance analysis in real-time at scale.

## Actionable Data Driven Insights and Compliance Reporting

- ✓ Real-time comprehensive ad monitoring enables users to pinpoint issues with Digital Program Insertion Cueing Messaging.
- ✓ User friendly and customizable business intelligence dashboards and actionable reporting that provide powerful insights for business planning.
  - Content behavioural analysis of video and audio
  - Ad insertion
  - Regulatory and CALM compliance monitoring
  - Closed caption



Monitoring more than 50 Million video hours of LIVE content per month



Measuring the Viewer Experience for more than 150M subscribers worldwide



Decreased MTTR from 25+ minutes to just 3-4 minutes for a Tier 1 North American TV service provider



Significant reduction of defects (85%) and increase in operators engagement for one of the largest pay TV operators in the world/North America

## A Standard for what ‘Good’ looks like

Previously, comparing output from different parts of the video workflow was an apples-to-oranges comparison, because different vendors or internal departments used different measurement metrics. With SSIMPLUS, you use the same scoring metric for content anywhere in a LIVE workflow.

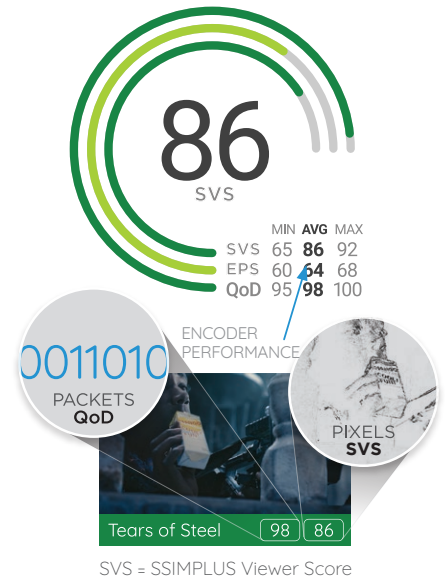


## Real viewers vs. packets based QoE

SSIMPLUS Live Monitor provides complete monitoring of Viewer Experience as perceived by the human visual system and impacted by content delivery, processing, compression, or playback. Our competitors look at packets, and extrapolate those for quality of experience, but we think the most accurate measurement is actually what the viewer sees.

Since most NOCs don't have enough people to watch every live stream on every device, our two-time Emmy Award-winning SSIMPLUS algorithm mimics the accuracy of millions of human eyes to accurately determine what is the most acceptable level of quality for the viewers.

Another benefit is that monitoring—detailed analytical knowledge is captured and can be used for evaluating business choices. These choices might include: comparing multiple workflow outputs to determine which is doing a better job; or ensuring higher quality encodes are used for premium content and lower quality ones are selected for news or long tail content.



SVS = SSIMPLUS Viewer Score

**SSIMPLUS Live Monitor** is a software-based solution that deploys on commercial off-the-shelf hardware. Run a single instance on a single server or scale to multiple instances on a cluster:

- Bare-metal
  - Redhat, CentOS
- Virtual machines (VirtualBox and VMWare)
- Containerized deployment
- Centralized data platform
- Database redundancy
- Geo-diverse deployment
- Hierarchical aggregation

### Content delivery

SDI, SDI over IP: SMPTE 2110, SMPTE 2022-6 | MP2TS: IP/UDP/MCAST  
 ABR: HLS, DASH-IF, DASH-CIF | HDMI 1.4a: HDCP 1.4 Enabled | Zixi, SRT

**Video resolution** SD, HD & UHD (SDR)

**Video codecs** H.264/AVC, H.265/HEVC, MPEG-2

**Audio codecs** PCM Audio (WAV/AES/BWF), AAC, HE-AAC, HE-AAC v2, Dolby Digital (AC-3), Dolby Digital, Dolby At Plus (EAC-3), Dolby Atmos, MPEG-2 (L1,2,3), MPEG-1 and IEC61937 (AC-3)

**Closed Captions** CEA-608/CEA-708 in Line 21 video

**Ad-insertion** SCTE35

