Telestream Pulse

Real-Time Insights for Live Media Workflows

Executive Summary

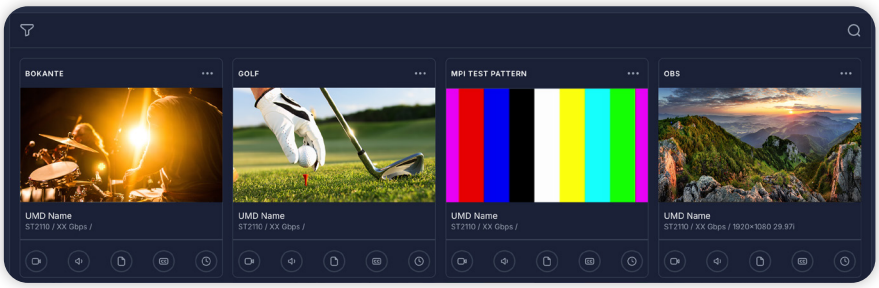
Modern IP-based production environments introduce new challenges in visibility, timing, and system-wide monitoring. Engineers are often required to troubleshoot issues across distributed systems where problems may not be immediately visible at the signal level.

Pulse is a software-defined monitoring platform designed to address these challenges. Built for modern IP production environments, supporting SMPTE ST 2110 and future workflows, Pulse provides system-wide observability across signal integrity, timing, and content quality.

By combining Telestream's heritage in waveform monitoring and precision timing with a scalable, multi-user architecture, Pulse enables engineering and operations teams to detect, diagnose, and resolve issues faster—ensuring reliability across live production environments.

The Pulse Advantage

Pulse Capability	Technical Value	Business Impact
Multi-Stream Observability	**Simultaneous monitoring** of multiple ST 2110 streams across video, audio, and ANC	**Faster detection** of issues across the entire facility
Integrated QoS + QoE Analysis	**Correlates transport metrics** with content-level quality	**Reduces troubleshooting** time and complexity
Continuous Monitoring Engine	**Always-on monitoring** independent of user interaction	**Identifies issues before** they impact production
PTP Visibility	**Deep analysis** of PTP behavior and synchronization	**Review timing-related failures** in live workflows
Scalable Architecture	**Multi-user** access model	**Supports growth** from single to multi-user
Software-Defined Platform	**Containerized services** on COTS infrastructure	**Reduces dependency** on fixed hardware and enables long-term flexibility



Pulse Core Services

Input Monitoring

Provides real-time analysis of ST 2110 streams, including video (-20), audio (-30/-31), and ancillary data (-40). Supports continuous monitoring of stream integrity, format compliance, and performance metrics.

Ideal For: Broadcast Engineers, QC Operators, Network Engineers

PTP & Timing Analysis

Delivers deep visibility into Precision Time Protocol behavior, including alignment, drift, and synchronization across networked devices.

Ideal For: Network Engineers, Systems Engineers, Broadcast Engineers

Visualization Tools

Provides trusted signal analysis tools for real-time workflows, enabling precise evaluation of signal integrity and QoE through waveform, vector, and audio bar visualizations.

Ideal For: Shading Operators, Broadcast Engineers, QC Operators

Dashboard

A web-based, thin-client interface that allows users to build fully customized displays. Dashboards deliver real-time and historical visibility across all streams, enabling faster identification and response to issues.

Ideal For: Everyone

Observability & Alarm Engine

Continuous QoS and QoE monitoring with configurable thresholds, alerting, and event tracking. Designed to surface issues quickly and provide actionable insight.

Ideal For: Operations, Engineering, Management

Applications

- Live broadcast production (sports, news, events)
- Master control and playout monitoring
- Remote and distributed production workflows
- Engineering troubleshooting and validation
- Facility-wide monitoring and operations

User Experience

Pulse introduces a modern, intuitive interface designed for both engineering depth and operational efficiency:

- Dashboard-driven workflows with customizable layouts
- Role-based access for Administrators, Managers, and Users
- Rapid drill-down from system-level overview to stream-level diagnostics
- Consistent experience across devices via web-based UI

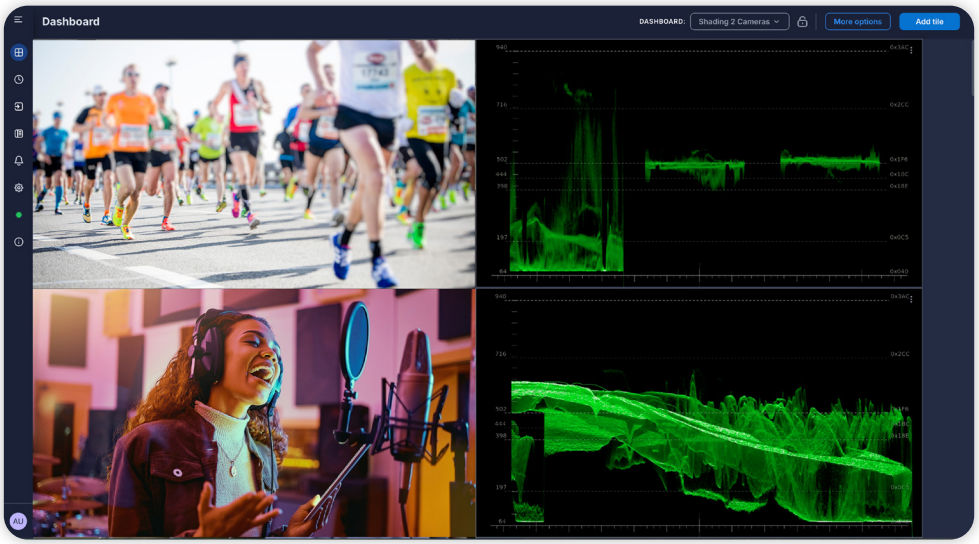
Deployment Options

On-Prem Deployment (Initial Release)

- High-performance COTS server-based deployment
- Dual 100G-capable network interfaces (QSFP28)
- Support for ST 2022-7 redundancy
- GPU-enabled processing for server-side waveform and visualization

Architecture

Pulse is a containerized, software-defined platform built on a modular architecture, enabling independent scaling of analysis, visualization, and monitoring functions.



Technical Specifications

Precision Time Protocol (PTP) Support

- SMPTE ST 2059-2 Profile
- AES67 Media Profile
- IEEE 1588-2019 Profile (General)

Media/Standards Support

SMPTE ST 2110

- -20 (Video)
- -30 (Audio)
- -40 (Ancillary Data)

Supported Video Resolutions

Resolution	Frame Rate
1280×720	23.98/24/25/29.97/30p
1280×720	50/59.94/60p
1920×1080	23.98/24/25/29.97/30p/50/59.94/60i, 50/59.94/60p
3840×2160	23.98/24/25/29.97/30/50p
3840×2160	59.94/60p

Supported Audio Conformance

- Up to 64 channels per stream
- 2110-30 Conformance Levels A, B & C

User Interface & Control

- **Interface Type:** Responsive Web-based GUI (HTML5); No client software or plug-ins required
- **Browser Support:** Optimized for Chrome, Firefox, Safari, and Microsoft Edge
- **Concurrency:** High-performance multi-user engine supporting up to 8 concurrent active sessions
- **Operational Modes:**
  - Standardized Views: Pre-configured layouts for rapid deployment (Input, PTP, Interface, Alarms & Events)
  - Custom Dashboards: User-definable tile-based layouts for tailored monitoring
- **Video & Waveform Scopes:**
  - Live Video Preview – with Closed Caption Overlays
  - Waveform - Luminance, RGB, YCbCr, Parade/Overlay
  - Vector – Color and Monochrome Traces
- **Audio Analysis:** Multi-channel level meters, Loudness Alarming
- **PTP Monitoring:** Dedicated PTP Analysis with PTP Graphs, and Grandmaster Status
- **Stream Timing Measurements:** Media Stream PIT Histogram & Path Delay
- **Data & Metadata:** ANC Session Data, Closed Caption/Subtitle decoding
- **System Visibility:** Real-time Interface Status, SFP/Physical Layer diagnostics, and System Health
- **Logging & Audit:** Persistent Alarm Log and Event Log with exportable CSV/JSON reporting

Technical Specifications, Continued

Security & Administration

- Role-Based Access Control (RBAC): Define user permissions and access levels by role (Admin, Manager, User) to ensure operational integrity.
- Local Authentication: Integrated local user database with encrypted password management for standalone or out-of-band deployments.
- Secure Management: HTTPS-encrypted web interface.

Key Features

- Software-defined, containerized architecture
- Multi-user access without heavy client device requirements
- Continuous QoS/QoE monitoring independent of UI sessions
- Integrated PTP timing and stream analysis
- Scalable monitoring and scopes though licensing
- Designed for modern IP and evolving media workflows

From Monitoring to Observability

Traditional monitoring tools provide visibility into individual signals.
Pulse extends this concept to full system observability—correlating timing, transport, and content-level data across the entire environment.