DATASHEET

Zixi Broadcaster

Universal Media Gateway and Real-Time Video Processing Software

Zixi Broadcaster is the core media processing engine of the Zixi Software Platform, providing intelligent routing, normalization, conditioning, and delivery of live broadcast-quality video over IP networks.

Designed for flexible deployment in-cloud, on-prem, or hybrid environments, Zixi Broadcaster enables reliable contribution, primary distribution, and channel delivery over managed or unmanaged IP. It delivers the performance, security, and observability required for mission-critical live workflows, with the interoperability needed to integrate into existing broadcast systems.

Zixi Broadcaster supports a broad range of input and output protocols, enabling transport between diverse devices and platforms while maintaining synchronization, quality, and resiliency across networks.

LATEST RELEASE

New in Version 19

Version 19 extends Zixi Broadcaster across transport resilience, media storage, stream conditioning, and transcoding density:

Zero Latency Frame Thinning

Gracefully reduces output frame rate for video transported by Zixi protocol (Zixi Push and Zixi Pull), under constrained network conditions without adding latency, preserving audio and key frames to keep streams continuous through congestion and failover.

Time Addressable Media Store (TAMS)

Write live streams as time-stamped segments directly into your existing TAMS store over the standard TAMS API, for frame-accurate retrieval, real-time clipping, highlights, and compliance recording with no rendering or file transfers. Zixi writes to the TAMS store you already run.

SPTS Multiplex

Combines selected PIDs from multiple SPTS sources into a single output stream natively, with audio and video pairing and PID mapping configured through ZEN Master or API, removing the need for external multiplexing hardware.

HLS Normalization

Repairs timeline irregularities (PCR, PTS, DTS), remultiplexes segments, and cleans SCTE-35 markers to convert inconsistent HLS inputs into stable, broadcast-grade MPEG-TS output.

Native NETINT VPU Support

Adds native support for NETINT Video Processing Units, delivering ASIC-based high-density HEVC and H.264 transcoding for on-prem and cloud deployments, with up to 10x higher channel density per rack unit compared to CPU-based encoding.

Transcoding Enhancements

Adds HTML-based overlays with Audio support in the encoding path and expands supported chroma subsampling and color-depth formats across the software, NVIDIA GPU, and NETINT VPU paths.

CAPABILITIES & WORKFLOWS

Core Capabilities

- **Multi-Protocol Ingest and Egress**

  Ingest and deliver over Zixi, SRT, RIST, RTP/UDP, RTMP, HLS, WebRTC, and ATSC 3.0 STLTP with error correction and adaptive rate control.

- **Resilient, Low-Latency Transport**

  Recover from up to 40% packet loss with Zixi's adaptive FEC/ARQ and congestion-aware retransmission. Hitless failover and bonding maintain uninterrupted video at sub-second latency across fiber, 5G, satellite, and public internet. Zero Latency Frame Thinning sustains continuity under extreme network variability by reducing frame rate without adding latency.

- **Stream Processing and Conditioning**

  Perform on-the-fly transcoding, transmuxing, PID mapping, and program normalization. Combine PIDs from multiple SPTS sources into a single output with SPTS Multiplex, and normalize inconsistent HLS inputs into clean MPEG-TS with HLS Normalization. Manipulate and insert SCTE-35/224 signals with ESAM and POIS integration for precise regionalization and ad insertion.

- **Time Addressable Media Store (TAMS)**

  Write live streams as time-stamped segments directly into your existing TAMS store over the standard TAMS API. Retrieval stays frame-accurate and API-driven, enabling clipping, highlights, and compliance recording without rendering or file transfers. Zixi Broadcaster is an interoperable write path into the store you already operate.

- **Redundancy and Failover**

  Support automated switching and failover for complex redundancy designs. Latency offsets and GOP alignment ensure frame-accurate SCTE insertion during transitions.

- **High-Performance Transcoding**

  Choose between software, NVIDIA GPU, or NETINT VPU transcoding. Native NETINT VPU support delivers ASIC-based high-density HEVC and H.264 encoding, supporting dozens of HD streams per card. Zixi Broadcaster optimizes density per core and minimizes CPU load using DPDK for high-throughput packet handling.

- **Advanced Monitoring and Analysis**

  Integrated TR-101 analysis, SCTE validation, and quality-of-service (QOS) metrics with timeline correlation. Upstream protocol metadata enables tracing of stream health through multi-hop Zixi Broadcaster chains.

- **Secure, Controllable, and Observable**

  AES-256 encryption and DTLS authentication secure content on ingest. Full input-to-output stream encryption is supported on the Zixi protocol, RIST and SRT paths. Per-stream session control and access policies apply across the workflow. Zixi Broadcaster integrates with ZEN Master for centralized orchestration, configuration, and performance monitoring.

Use in Live Video Workflows

Zixi Broadcaster is a core component across all Zixi live IP workflows:

- **Live Event Contribution**

  Aggregate live feeds from field encoders or bonded uplinks over public and private IP. Hitless failover and network bonding ensure contribution reliability for remote production, sports, and news events.

- **Ingest, Aggregation, and Normalization**

  Combine diverse source formats and network inputs, ensuring uniform transport stream structure, synchronized timestamps, and validated ad signaling across the delivery chain.

- **Cloud Playout / MCR Enablement**

  Provide reliable channel ingest, automated switching, and stream normalization for cloud-native master control and playout.

- **Satellite and Fiber Transition**

  Augment or transition legacy satellite and fixed fiber delivery to IP-based distribution. Maintain IRD compatibility, enforce SCTE compliance, and achieve high reliability with greater flexibility.

- **Station Distribution and Aggregation**

  Normalize feeds from multiple affiliate or regional stations, perform PID and bitrate alignment, and deliver conditioned streams to MVPDs, vMVPDs, and OTT platforms.

SPECIFICATIONS

Technical Specifications

Supported Protocols	Zixi, SRT, RIST, UDP/RTP, RTMP, HLS, WebRTC, ATSC 3.0 STLTP
Video Codecs	MPEG-2, H.264/AVC, H.265/HEVC
Audio Codecs	AAC, AC-3, E-AC3, MPEG-1/2, Opus
Transcoding Acceleration	Software (CPU), NVIDIA GPU, NETINT VPU
Latency	< 1 second (configurable)
Error Recovery	Adaptive FEC, ARQ, bonding, hitless failover
Encryption	AES (128/192/256) Zixi/RIST/SRT, DTLS
Control API	REST / JSON
Monitoring	TR-101, SCTE-35 validation, CQA metrics
Failover Modes	Merge, No-Merge, Hot/Cold standby
Media Store	TAMS (Time Addressable Media Store), API-driven segment write and retrieval to your existing store, AWS S3
Multiplexing	SPTS multiplexing with PID selection and mapping, MPTS creation
Deployment	On-premise, cloud, or hybrid
Throughput Optimization	DPDK support for high packet rates

Transcoding Support

ACCELERATION PATH	CODECS	CHROMA SUBSAMPLING	COLOR DEPTH
Software (CPU)	MPEG-2, H.264, H.265	up to 4:2:2	up to 10-bit
NVIDIA GPU	MPEG-2, H.264, H.265	up to 4:4:4	up to 10-bit
NETINT VPU*	H.264, H.265	4:2:0	up to 10-bit
NDI	NDI v4	up to 4:4:4	up to 10-bit

HTML-based overlays are supported in the software (CPU) and GPU encoding paths only. The full per-path codec and format matrix is available in product documentation.
**Frame Rate Conversion not supported on NETINT VPU.*

Deployment and Integration

Operating Systems	Linux x86_64 and ARM64 (AWS Graviton, OCI, Akamai Connected Cloud, bare metal). MacOS transcoding is not supported.
Interfaces	REST API and JSON endpoints for automation and orchestration.
Integration	Integrates with ZEN Master, monitoring systems (Prometheus, Kafka SCTE logging), and broadcast control systems via API.
Deployment Models	On-prem appliance, cloud instance, or hybrid clustered architecture.