

## Zixi Transcoder

### LEVERAGE ZIXI FOR LIVE VIDEO TRANSCODING AND MEDIA SERVICES

The Zixi Transcoder adds high quality and high-density live video transcoding to the Zixi platform, which flawlessly delivers broadcast-quality video over unmanaged and managed IP networks, at lower cost, at scale, and with sub-second transcoding and delivery latencies. With the live transcoding feature, the Zixi Broadcaster provides a single solution for the universal origination and distribution of high quality, adaptive live broadcast content to OTT workflows, digital MVPDs, MSOs, hotels, cinemas, iPhone, set top boxes, and Android player apps as well as other destinations. It is a complete transcoding solution including decode, encode, packaging and delivery to origin layered on top of the Zixi Broadcaster's support of various IP ingest formats and IP distribution formats, including low latency HLS and DASH. The Zixi Transcoder supports encoding to H.265/HEVC and H.264/AVC video codecs as well as a variety of audio codecs most commonly used for live broadcast and OTT workflows. The Zixi Transcoder also supports NDI and webRTC workflows.

Using NVIDIA GPU, the Zixi Transcoder provides high density SD to UHD transcoding to multiple stream renditions for adaptive delivery. NVIDIA GPUs are available in PCIe boards for bare-metal installations and on cloud providers such as AWS, Google Cloud Platform, and Azure. The Zixi Transcoder also supports a CPU only solution using the X264 codec for lower density applications. Currently the Zixi Transcoder is only available on X86\_64 platforms; ARM platform support is coming soon.

The Zixi Transcoder is managed via the Zixi Broadcaster's Web User Interface, REST API or via Zixi's ZEN Master orchestration, management, and monitoring control plane. ZEN Master makes it easy to manage inputs and outputs for hundreds of live video streams at scale. With just a few clicks, and with automatic configuration details for network resources and distribution targets, users can create new live channels and spin up required streams on the fly.

Typical workflows for the Zixi transcoder include:

- **Broadcast backhaul** – Compress high bitrate live mezzanine MPEG2 to lower bitrate H264 or H265, at the same quality level, to reduce bandwidth requirements for video uplink. When uplink bandwidth is scarce or cost is at a premium, compression of live content can make possible an otherwise impractical workflow.
- **Over the Top (OTT)** – Deliver live mezzanine video transcoded into multiple renditions of H264 or H265 and packaged into HLS or DASH formats to laptops, mobile devices and set top boxes via Content Delivery Networks, YouTube Live or similar services. Adaptive streams can also be delivered via the Zixi protocol to Zixi enabled endpoints.
- **Bitrate reduction and packaging for Social Media** – Deliver live mezzanine video transcoded to lower bitrate H264 and packaged into RTMP or HLS to Social Media sites such as Facebook Live, YouTube Live, and Twitch.



## Zixi Transcoder Specifications

### Inputs

Zixi, NDI, RIST, SRT, HLS, RTMP, RTP, UDP, WebRTC, and more

### Outputs

Zixi, NDI, RIST, SRT, HLS, RTMP, RTP, UDP, WebRTC, and more

### Captions

ATSC 608/708 ES passthrough to Zixi TS, HLS, DASH, and RTMP  
 DVB track passthrough to Zixi TS  
 WebVTT generation from ATSC 708 Elementary Stream

### Audio Processing

Transcode up to 16 audio tracks  
 Passthrough of all audio tracks  
 PID mapping and pass-thru  
 Audio Sample Rate Conversion - 44.1KHz to/from 48KHz

### Audio Decode

AAC Low Complexity, High Efficiency V1, High Efficiency V2  
 ADTS and LATM encapsulation  
 AC3 (Dolby Digital)  
 MP2 (MPEG-2 Audio Layer II)  
 MP1 (MPEG-1 Audio Layer II)  
 Opus

### Audio Encode

AAC Low Complexity, High Efficiency V1, High Efficiency V2  
 E-AC-3 (Enhanced Dolby Digital)  
 Opus

### Video Processing

MPTS De-multiplexing  
 Passthrough  
 10-bit to 8-bit color downscaling  
 Thumbnail extraction as HLS playlist  
 Deinterlacing (non-telecine) on all input codecs  
 Interlaced output (only with X264 S/W encoder and NDI)  
 PID mapping and PID pass-thru  
 Black bar insertion  
 Cropping  
 Smooth framerate conversion – up and down  
 Image Overlay/Logo Insertion  
 Copy GOP from source or generate new GOP  
 GOP synchronization when generate new GOP  
 Omit or keep closed captions  
 I-frame synchronization of outputs with different FPS  
 I-frame injection at SCTE-35 markers  
 Preserve all video source color primaries

### Advanced Features

ML-based adaptive bitrate control based on network conditions

### Ad Insertion

SCTE-35 passthrough to Zixi TS  
 SCTE-35 converted to CUE-OUT/CUE-IN in HLS  
 SCTE-35 converted to Splice Events in DASH  
 SCTE-35 converted to OnCuePoint in RTMP  
 API Injection with output to SCTE-35 in Zixi TS  
 API Injection with output to CUE-OUT/CUE-IN in HLS  
 API Injection with output to Splice Events in DASH  
 API Injection with output to OnCuePoint in RTMP

### NVIDIA Hardware Encoder Codec and Color Support

	Codec	Chroma Subsampling	Color Depth
Video Decode	MPEG-2	4:2:0	8-bit
	H.264/AVC	4:2:0	8-bit
	H.265/HEVC	4:2:0, 4:4:4	8-bit, 10-bit
Video Encode	H.264/AVC	4:2:0, 4:4:4	8-bit
	H.265/HEVC	4:2:0, 4:4:4	8-bit, 10-bit

### X264 Software Encoder Codec and Color Support

	Codec	Chroma Subsampling	Color Depth
Video Decode	MPEG-2	4:2:0	8-bit
	H.264/AVC	4:2:0	8-bit, 10-bit
Video Encode	H.264/AVC	4:2:0, 4:2:2, 4:4:4	8-bit, 10-bit

### NDI Software Library Codec and Color Support

	Codec	Chroma Subsampling	Color Depth
Video Decode	NDI*	4:2:0, 4:2:2, 4:4:4	8-bit, 10-bit
Video Encode	NDI*	4:2:0, 4:2:2, 4:4:4	8-bit, 10-bit

\* NDI v4 original format, not NDI|HX

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