spin enc
live

Spin Digital Live Encoder

HEVC/H.265 real-time software encoder optimized for high-end live applications in UHD broadcasting, Internet streaming, and immersive media.

Product Highlights

- State-of-the-art CPU-based HEVC encoder
- High-end real-time encoding: 4Kp120, 8Kp60, 12Kp30
- Compression and quality comparable to best-in-class offline encoders
- High-efficiency and low-latency encoding modes
- SDI and IP input capture
- Contribution-to-distribution live transcoding
- Low-latency streaming: UDP, RTP, SRT, RIST, Zixi
- Internet streaming: HLS
- Cloud streaming support
- Next Generation Audio (NGA): MPEG-H Audio

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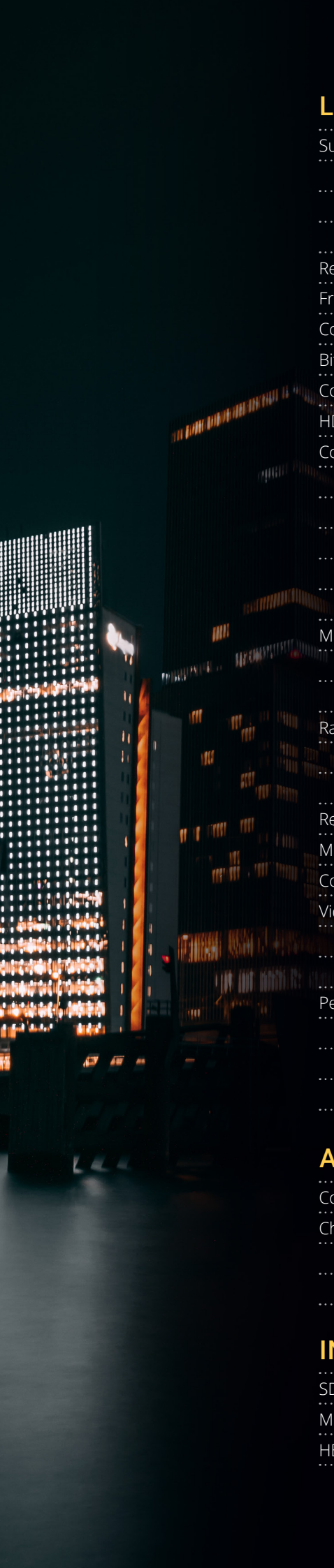

LIVE HEVC ENCODER

- Support for the HEVC standard:
  - Main and Main 10 profiles
  - Range Extensions (HEVCv2) profiles
  - ARIB STD-B32 version 3.9 (8K with 4 slices)
- Resolutions (pixels): 1920x1080, 3840x2160, 7680x4320, custom
- Frame rates (fps): 25, 30, 50, 59.94, 60, 100, 119.88, 120
- Color formats: 4:2:0, 4:2:2, 4:4:4, RGB
- Bit depths: 8-, 10-, 12-bit
- Color spaces: BT.601, BT.709, DCI-P3, BT.2020
- HDR support: ST2084 transfer function (PQ), ST2086 HDR metadata, HLG
- Coding configurations:
  - Intra-only, random-access, low-delay, chunk-based
  - Hierarchical GOP sizes: 1, 2, 4, 8, 16, 32 frames
  - Presets: balanced, fast, faster
  - Configurable HRD buffer
  - Perceptual encoding mode
- Minimum guaranteed end-to-end latency:
  - High-efficiency mode: 2680 ms
  - Low-latency mode: 470 ms
- Rate control:
  - Broadcast-level CBR
  - Constrained VBR
- Real-time operation mode
- Multi-resolution live encoding for Adaptive Bit Rate (ABR) streaming
- Contribution-to-distribution live transcoding
- Video pre-processing filters:
  - Scaling, format and color conversion, cropping/padding, overlays
  - Automatic filter chain generation
- Performance optimizations:
  - Highly optimized for recent CPUs
  - Advanced multithreading
  - SIMD processing: SSE 4.1, AVX2, AVX-512, VNNI

AUDIO

- Codec: AAC, MPEG-H Audio
- Channel formats:
  - AAC: 2.0, 5.1, 7.1, 22.2
  - MPEG-H Audio: low complexity profile up to level 4

INPUT CAPTURE

- SDI interface: 3G, 12G
- Multi-channel tiled SDI capture for flexible input layouts
- HEVC TSoIP: UDP, RTP, SRT, RIST, Zixi

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STREAMING OUTPUT

Broadcast and contribution TSoIP: UDP, RTP with optional FEC, SRT, RIST, Zixi

HTTP live streaming: HLS

Live stream recording: HEVC+AAC in TS

CLOUD STREAMING AND DELIVERY

TSoIP streaming: compatible with AWS MediaConnect

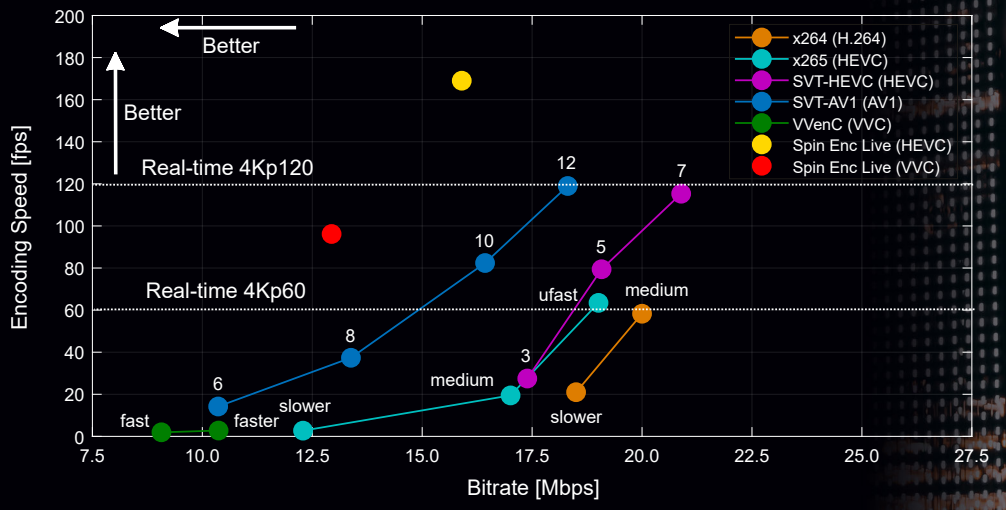
HTTP streaming: AWS S3, AWS Elemental MediaStore, Cloudfront

COMPRESSION AND PERFORMANCE FOR REAL-TIME 4K

Key performance indicators:

- Higher compression efficiency than software encoders under real-time conditions
- Highest encoding performance allowing high-end applications such as 4K HFR (120 fps)

Encoding speed at the same quality (bitrate that produces a VMAF score of 95)



TEST SETUP

Encoders:

- Spin Enc Live v1.2 - HEVC, VVC (under development) - preset: fast
- x264 r3075 - presets: slower, medium
- x265 v3.5 - presets: slower, medium, ultrafast
- SVT-HEVC v1.5.1 - presets: 3, 5, 7
- SVT-AV1 v1.0.0 - presets: 6, 8, 10, 12
- VVenC v1.3.1 - presets: fast, faster

Encoding settings:

- Tuned for live content distribution: CBR, 1-s buffer, 1-s intra period, long GOP
- 4K-UHD distribution format: 3840x2160 pixels, 4:2:0, 10-bit, HDR

Encoding system:

- CPU: 2x Intel Xeon Platinum 8368 (2x 38 cores)
- Memory: 128 GB (16x 8GB, DDR4-3200)

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USE CASES AND PLATFORM REQUIREMENTS

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Use case	Format	Max bitrate	Platform
4K distribution	4Kp60 4:2:0 10 bit	80 Mbps	CPU: Intel Xeon Gold 6312U (24 cores) Memory: 64 GB (8x 8GB, DDR4-3200)
4K contribution	4Kp60 4:2:2 10-bit	100 Mbps	CPU: Intel Xeon Gold 6330 (28 cores) Memory: 64 GB (8x 8GB, DDR4-2933)
4K HFR	4Kp120 4:2:0 10-bit	100 Mbps	CPU: 2x Intel Xeon Gold 6354 (2x 18 cores) Memory: 128 GB (16x 8GB, DDR4-3200)
8K distribution	8Kp60 4:2:0 10-bit	120 Mbps	CPU: 2x Intel Xeon Platinum 8368 (2x 38 cores) Memory: 128 GB (16x 8GB, DDR4-3200)

ENCODER PACKAGE

- Real-time encoder
- Web-based graphical user interface
- Product documentation

PLATFORM SUPPORT

OS:	Red Hat Linux 7/8, Ubuntu Linux 18.04/20.04
CPU:	X86_64. SIMD instructions: SSE 4.1, AVX2, AVX512, VNNI
SDI:	12G (AJA Kona 5, AJA Corvid 44), 3G (AJA Corvid 88)