spin enc
live

# Spin Digital Live Encoder

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

**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
- Designed for live workflows
- SDI input capture (3G and 12G)
- Simultaneous broadcast and broadband streaming (RTP and HLS)

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## LIVE HEVC ENCODER

- Support for the HEVC standard:
  - Main and Main 10 profiles
  - Range Extensions (HEVCv2) profiles
- Resolutions/frame rates: 2Kp60, 4Kp120, 8Kp60, 12Kp30
- Multi-resolution live encoding for Adaptive Bit Rate (ABR)
- 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
- 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
- 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
- Web-based graphical user interface

## AUDIO

- Codec: AAC
- Channel formats: 2.0, 5.1, up to 22.2

## INPUT AND OUTPUT INTERFACES

- SDI input capture: 3G and 12G SDI
- Streaming output:
  - MPEG2-TS over IP: UDP and RTP (optional FEC)
  - HLS
- File encoding support:
  - Input: uncompressed YUV
  - Output: MP4, TS

# COMPRESSION AND PERFORMANCE FOR REAL-TIME

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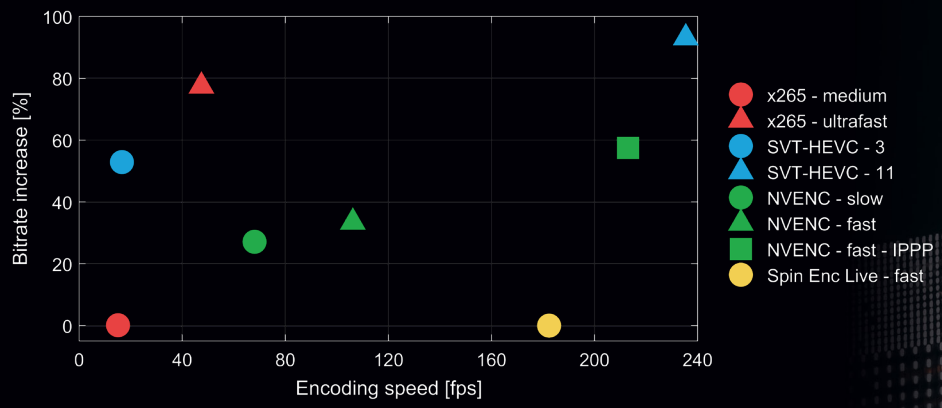
Key performance indicators:

- Similar quality to offline encoders at significantly higher encoding speeds
- Higher quality than real-time software and hardware-accelerated encoders

**4K**

Bitrate increase for the same quality (PSNR) referred to Spin Enc Live

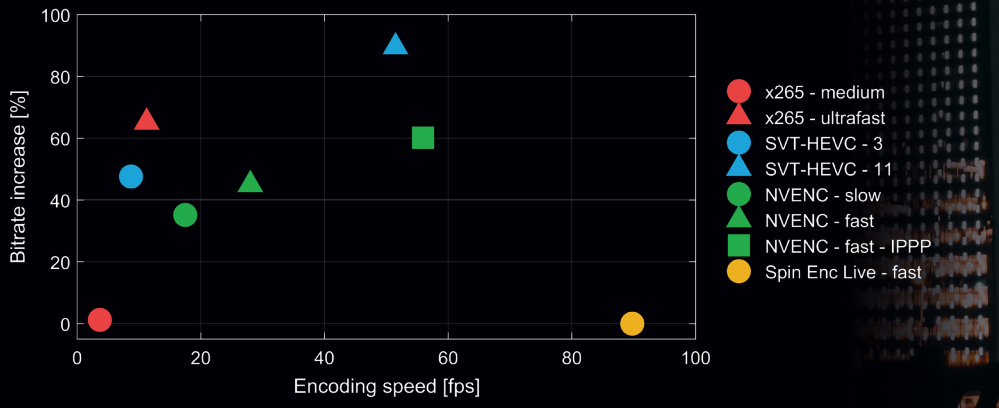
Encoding speed for 4K video on a 48-core workstation




**8K**

Bitrate increase for the same quality (PSNR) referred to Spin Enc Live

Encoding speed for 8K video on a 112-core server






# TEST SETUP

Encoders:

- Spin Enc Live - version: 1.0 - preset: fast
- x265 - version: 3.4 - presets: medium, ultrafast
- SVT-HEVC - version: 1.5.0 - presets: 3, 11
- Nvidia NVENC - GeForce RTX 2060 - presets: slow, fast

Encoding settings:

- Tuned for live content distribution: CBR, long GOP, 1-s intra period
- Seven 8K (7680x4320, 4:2:0 10-bit) videos

Encoding systems:

- 4K: 2x Intel Xeon Platinum 8268 (48 cores)
- 8K: 4x Intel Xeon Platinum 8280 (112 cores)

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## USE CASES AND PLATFORM REQUIREMENTS

| Use case | Format | Max bitrate | Platform |
|---|---|---|---|
| 4K distribution | 4Kp60 4:2:0 10 bit | 80 Mbps | CPU: Intel Xeon W-3265 (24 cores)<br>Memory: 48 GB (6x 8 GB, DDR4-2933) |
| 4K contribution | 4Kp60 4:2:2 10-bit | 100 Mbps | CPU: 2x Intel Xeon Platinum 8260 (48 cores)<br>Memory: 96 GB (12x 8 GB, DDR4-2933) |
| 4K HFR | 4Kp120 4:2:0 10-bit | 100 Mbps | CPU: 2x Intel Xeon Gold 6240 (36 cores)<br>Memory: 96 GB (12x 8 GB, DDR4-2933) |
| 8K distribution | 8Kp60 4:2:0 10-bit | 120 Mbps | CPU: 2x Intel Xeon Platinum 8368 (76 cores)<br>Memory: 256GB (16x 16 GB DDR4-3200)<br>or<br>CPU: 4x Intel Xeon Platinum 8280 (112 cores)<br>Memory: 384 GB (24x 16 GB DDR4-2933) |