spin enc file

Spin Digital File Transcoder

Professional HEVC and VVC software transcoder enabling ultra-high-quality video with the highest compression level. Spin Enc File is tailored to offline media workflows for broadcast, VoD, and creative studios.

Product Highlights

- Fast offline software transcoder
- Significantly higher compression efficiency than HEVC hardware encoders
- Significantly higher performance than competing HEVC and VVC software encoders
- Enables WCG and HDR with up 12-bit video
- Support for extended color formats: 4:2:2, 4:4:4, RGB
- Perceptually optimized encoding mode
- Versatile high-precision pre-processing filters
- Next Generation Audio (NGA): MPEG-H Audio
- Plugins for FFmpeg and DaVinci Resolve Studio

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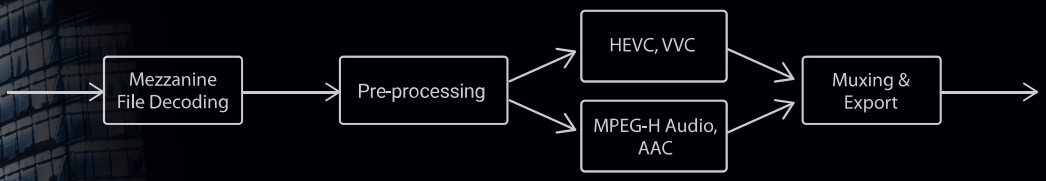
SPIN ENC FILE

Complete application for fast offline transcoding:

- Mezzanine file decoding
- High-precision pre-processing filters
- HEVC and VVC video encoding
- AAC and MPEG-H Audio encoding
- Muxing and export to the most popular container formats



USE CASES

Master file export for post-production and broadcast workflows:

- Transcoding plugin for Davinci Resolve Studio and FFmpeg
- HEVC, 4:2:0/4:2:2/4:4:4/RGB, up to 12-bit

Mezzanine-to-distribution 4K/8K-UHD transcoding with NGA:

- High-performance, broadcast-quality file encoding
- HEVC/VVC, 4:2:0, 10-bit
- MPEG-H Audio

Adaptive bitrate (ABR) streaming over HTTP for VoD:

- Closed GOP coding: HEVC, VVC
- Open GOP coding: VVC
- HLS, DASH

High-performance cloud encoding:

- Support for running on virtual instances in the cloud

Immersive VR encoding:

- 180-/360-degree video up to 16K with 3D audio
- Conversion between common spherical projection formats

FILE VVC ENCODER

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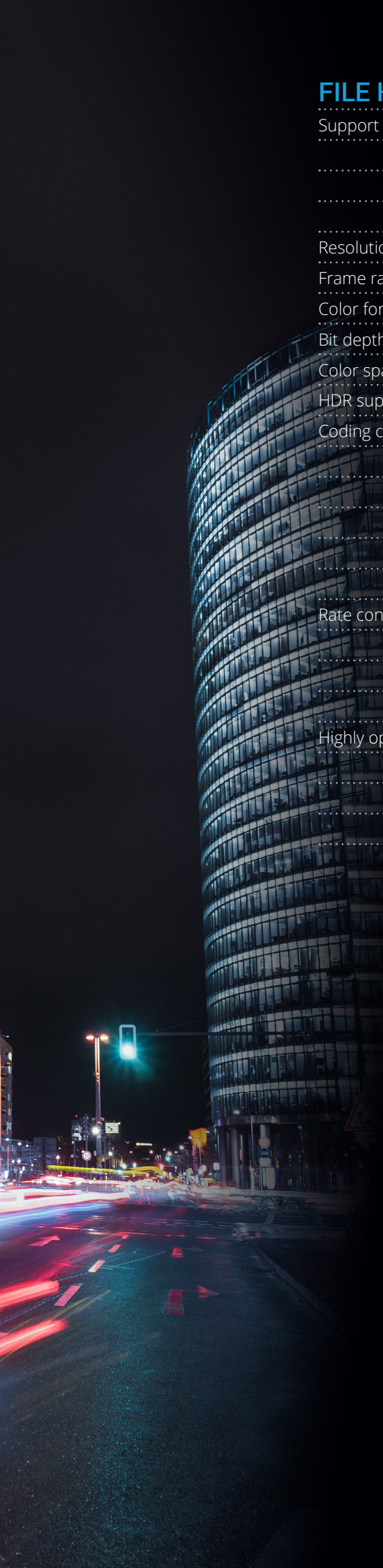
- Support for the VVC standard: Main 10 profile
- Resolutions (pixels): 1920x1080, 3840x2160, 7680x4320, custom
- Frame rates (fps): 23.98, 24, 25, 29.97, 30, 50, 59.94, 60, 100, 119.88, 120
- Color format: 4:2:0
- Bit depths: 8-, 10-bit
- Color spaces: BT.601, BT.709, DCI-P3, BT.2020
- HDR support: 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: slower, slow, balanced, fast, faster
  - Configurable HRD buffer
  - Perceptual encoding mode
- Rate control:
  - Broadcast-level CBR
  - Constrained VBR
  - Constant QP
- Highly optimized for recent CPUs:
  - SIMD processing: SSE4.1, AVX2, AVX-512, VNNI
  - Scalable multithreading: wavefront, frame parallelism, pipelining
  - Memory optimizations



FILE 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): 23.98, 24, 25, 29.97, 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-bit, 12-bit
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HIGH-PRECISION VIDEO PRE-PROCESSING FILTERS

Video conversion filters:

- Format conversion: chroma formats, bit depths, pixel layouts
- Resolution scaling: nearest, bilinear, bicubic, lanczos
- Color conversion: RGB/YUV, color space, SDR/HDR, custom LUT conversions
- Cropping, padding
- Orientation: flip, rotate, mirror
- Geometry conversion: equirectangular, cubemap, cylinder, viewport extraction

Filter chain:

- Filters can be used individually or combined for complex conversions
- Automatic filter chain generation based on desired target format

Highly optimized for CPUs: memory locality, SIMD, multithreading

AUDIO CODING

Codecs: AAC, MPEG-H Audio

Channel formats:

- AAC: 2.0, 5.1, 7.1, 22.2
- MPEG-H Audio: baseline profile up to level 4

INPUT FORMATS

YUV, DPX, TIFF, PNG, DNxHD, CineForm, JPEG2000, HEVC, AVC

OUTPUT FORMATS

HEVC: MP4, MPEG2-TS, MKV, HLS, DASH

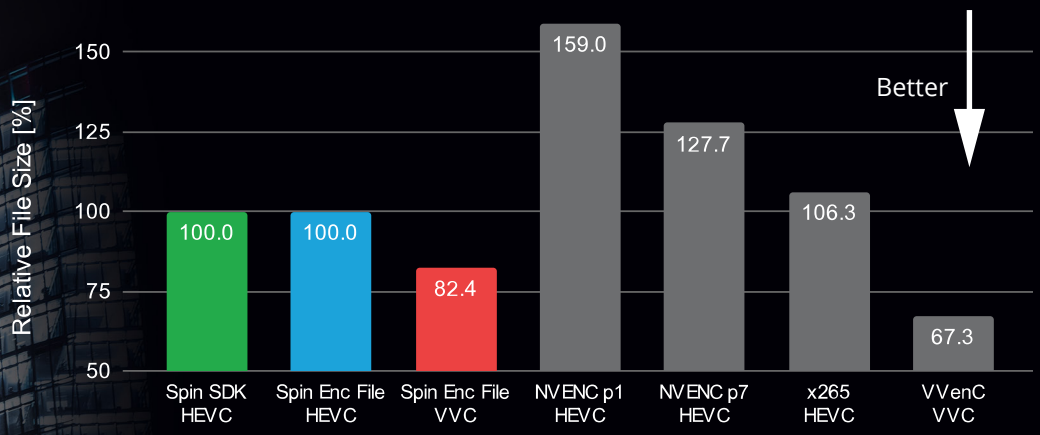
VVC: MP4, MPEG2-TS, HLS, DASH

COMPRESSION AND PERFORMANCE FOR 8K TRANSCODING

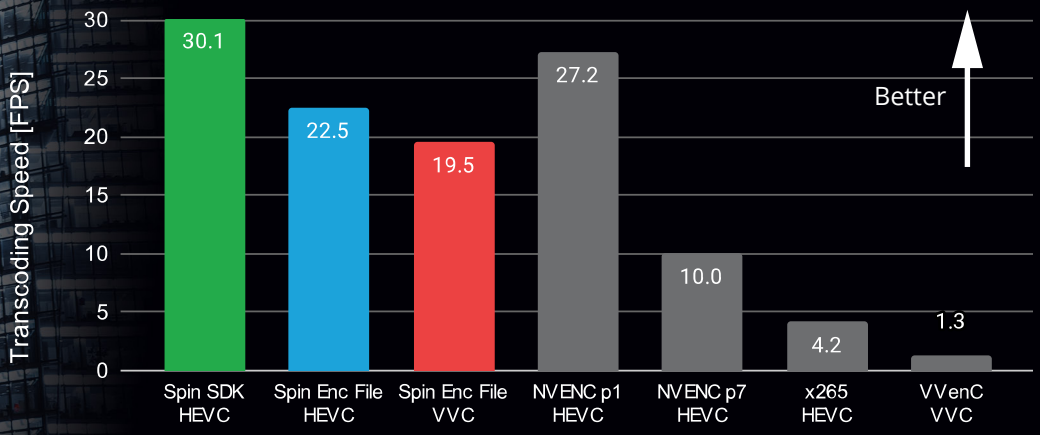
Key performance indicators:

- Significantly higher compression efficiency than HEVC hardware encoders
- Significantly higher performance than other HEVC and VVC software encoders

Video file size for the same quality (PSNR) relative to Spin Enc File HEVC (100%)



Average transcoding speed in frames per second (FPS) at 50 Mbps on a 64-core workstation



TEST SETUP

Input format: HEVC, 8K, 4:4:4, 12-bit

Output format: HEVC/VVC, 8K, 4:2:0, 10-bit

Framework	Decoder	Encoder - preset
Spin SDK	Spin Dec HEVC	Spin Enc HEVC - balanced
SpinFFmpeg*	Spin Dec HEVC	Spin Enc HEVC/VVC - balanced
FFmpeg	NVDEC-HEVC	NVENC-HEVC v12.0.16 - p1_hq, p7_hq
FFmpeg	openHEVC	x265 v3.5 - medium
FFmpeg	openHEVC	VVenC v1.8.0 - faster

* FFmpeg with Spin Digital's decoding, filtering, and encoding modules

Encoding settings: rate control, 1-second intra period, long GOP

Encoding system:

- CPU: AMD Ryzen Threadripper 3990X (64 cores)
- GPU: GeForce RTX 3070 (for NVDEC and NVENC)

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PLATFORM REQUIREMENTS FOR FAST 8K TRANSCODING

Processor:

- AMD Ryzen Threadripper 3990X (64 cores), or
- 2x Intel Xeon Gold 6330 (2x28 cores)

RAM: 64 GB

OS:

- Ubuntu 20.04/22.04 (64-bit), or
- RedHat 8/9 (64-bit)

MINIMUM REQUIREMENTS

Processor:

- 64-bit x86 CPU
- With support for SSE4.1 (minimum), AVX2 (recommended)

RAM: 8 GB

OS:

- Windows 10/11 (64-bit)
- Linux: Ubuntu 20.04/22.04 (64-bit), or RedHat 8/9 (64-bit)

TRANSCODER PACKAGE

SpinFFmpeg - FFmpeg with Spin Digital's optimized modules:

- HEVC decoder
- Video pre-processing filters
- HEVC and VVC encoders
- MPEG-H Audio encoder

Transcoding plugin for DaVinci Resolve Studio: HEVC encoder

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