MAINCONCEPT

AVC/H.264

Fast, High-Quality, Reliable AVC Encoding and Decoding

MainConcept AVC/H.264 SDK is proven to encode faster than open source and comes packed with features, including 4:2:2 10-bit pro format support and HDR support for HLG and PQ/HDR-10. That's why MainConcept AVC remains the top choice of professionals.

FLEXIBLE PROCESSING VIA MAINCONCEPT EASY VIDEO API (EVA)

Our latest innovation combines MainConcept's renowned AVC/H.264 software encoding and decoding technologies with the high performance of today's GPU hardware processing powered by AMD, Intel and NVIDIA, plus decoding only on Qualcomm Snapdragon with Adreno GPU on Windows. Use our AVC/H.264 video codec to create full GPU decoding, encoding and transcoding pipelines on NVIDIA devices to significantly free CPU resources. Using one API instead of five, MainConcept EVA can significantly reduce implementation time and costs by 80%. Make use of ultra-fast hardware processing when speed is key for your workflow, and you don't want to rely on a single GPU vendor. And, if performance is not your focus, enjoy the unprecedented quality and unsupported GPU features with the MainConcept software encoder or decoder.

2X PERFORMANCE (SINGLE PASS VS. 2-PASS)

Getting the bitrate "right" is one of the most challenging tasks for any video encoder. MainConcept AVC/H.264 video encoding is optimized to meet the target bitrate for any video application – live streaming, VOD or production formats – in the first encoding pass with very little tolerance. A second pass is rarely required, meaning half the compute power and encoding time is needed to reach optimal results.

ANY CPU, ANY SYSTEM

CPUs come in different shapes and sizes as well as a variety of configurations. No matter the number of available cores, whether UMA or NUMA multi-socket configurations are used, the encoder features granular configuration settings to optimize performance for any target system.

PROFESSIONAL PRODUCTION FORMAT COMPLIANCE

Many AVC-based formats have matured into production standards. Whether it is Sony XAVC, Panasonic AVC-ULTRA or AVC-Intra, the MainConcept AVC SDK offers presets for guaranteed compliance with any of the standardized formats. MXF, MPEG-2 TS and MP4 multiplexing components are included for spec-compliant wrapping of audiovisual content for seamless material interchange between facilities and devices.

SYSTEM REQUIREMENTS

	x86	Arm
Windows	Windows 10, Windows 11	Windows 11 Arm
Linux	Ubuntu 20.04 LTS – 22.04 LTS, Rocky Linux 8.9	Ubuntu 20.04 LTS – 22.04 LTS
macOS	macOS 10.15 – 12.x	macOS 11.x – 12.x

PROFESSIONAL ENCODING AT ITS BEST

BENEFITS

- Up to 20% overall encoding speed improvement compared to previous major version
- Additional 20% encoding speed increase on ARM-based devices*
- 10% decoding speed increase; improved multi-instance behavior
- Featuring MainConcept EVA – One API for software or hardware (AMD AMF, Intel Quick Sync Video, Intel ARC, NVIDIA NVENC/NVDEC, Qualcomm Snapdragon Adreno) processing on Windows and Linux

KEY FEATURES

- XAVC XDF-01 and AVC-Intra production profiles for German broadcast contribution
- Precise bitrate adherence (+/-2%) for encoding to on-demand video targets
- GPU-accelerated generic 4:2:2 10-bit encoding & decoding on NVIDIA Blackwell
- Full on-GPU decoding, encoding and transcoding pipelines
- Professional camera support for Sony XAVC & Panasonic AVC-ULTRA 4:2:2 & 4:2:0
- Frame-accurate smart rendering for AVC Intra and other pro formats
- Improved threading mechanisms of video encoders and decoders to work on the next generation of Intel® Core™ processors (Meteor Lake) with low-power efficiency cores
- Includes MainConcept vScore video quality analysis suite built directly into the encoder featuring the most popular quality metrices PSNR & SSIM. VMAF, VMAF-CUDA, and AI-powered VMAF-E will follow soon.

OPTIMIZE WITH MAINCONCEPT PROFESSIONAL SERVICES

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ENCODER FEATURES

- ISO/IEC 14496-10 compliant
- Baseline, Main & High Profile up to 4:2:2 10-bit*
- Maximum resolution 8192x4320 @ 60 fps (Level 6.2)
- Unrivalled range of encoding presets
- SVR360 to encode VR spheres beyond the AVC resolution limit*
- Smart Rendering modes: Smart Copy and Re-Encode*
- HDR support for HLG and PQ/HDR-10 encoding
- Strict HRD compliance
- Advanced compression algorithms
- Parameter compatibility validation
- CBR/VBR, 1-pass & 2-pass encoding
- Low Delay flag (no latency) and rate-distortion optimization
- Pyramid GOP coding
- AMD AMF, Intel Quick Sync Video, Intel ARC & NVIDIA NVENC hardware encoding via MainConcept EVA
- 4:2:2 10-bit encoding via MainConcept software and NVIDIA NVENC hardware processing

* 4:2:2 10-bit encoding, Smart Rendering, and SVR360 are optional features which can be purchased as an add-on to your existing AVC/H.264 encoder license.

DECODER FEATURES

- Baseline, Main, High, High 4:2:2 / 4:4:4 profile support*
- Optimized for most efficient CPU usage
- 8-bit / 10-bit / 12-bit support*
- Low Delay flag (no latency)
- Symmetric multi-processing, optimized for Hyper Threading processors and multi-CPU platforms
- Color space conversion
- PQ/HDR-10 and HLG conversion support including PQ to SDR*
- Chroma upsampling
- Double rate (generating a progressive frame from every field)
- Hardware video decoding for AMD Radeon, Intel Quick Sync Video, Intel ARC discrete GPUs, NVIDIA NVDEC and Qualcomm Snapdragon with Adreno GPU
- 4:2:2 10-bit decoding via MainConcept software and NVIDIA NVDEC hardware processing
- API to retrieve decoded images directly from GPU memory when using NVIDIA hardware
- Color Conversion can now be performed on NVIDIA Hardware if required.
- DXVA Hardware acceleration
- Stream-Analyzing API (VESA)

STREAM TYPES & FORMATS

Elementary Stream: Generic AVC/H.264 ES up to 4:2:2 10-bit (up to 4:4:4 12-bit in decoder), Apple HLS, DASH-264

Program Stream: Generic AVC/H.264 Program Streams

Transport Streams: Blu-ray Disc, HD DVD, HDTV, Digital TV, AVCHD 1.0 / 2.0, Sony NXCAM, 1Seg

MP4: Sony XAVC-S, Sony XAVC 2.2, Sony PS3 / PS4, Sony PSP, Apple iPod / iPhone / iPad / TV, Adobe Flash (F4V), HTML, Microsoft Silverlight

3GP: Suitable for older generation cell phones and tablets

MXF (BROADCAST ONLY): Sony XAVC, Sony XAVC 2.2, Sony XAVC Sub Streams, XAVC XDF-01, Panasonic P2 AVC LongG, Panasonic P2 AVC-ULTRA (AVC-Intra Class 200), P2 AVC-Intra Class 50/100 (Specialized Operational Pattern “Atom” SMPTE 390M), Panasonic AVC-Intra LT-4K and LT-2K, RP 2027 AVC-Intra 50, 100 and 200 into OP-Atom (MXF)

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PACKAGES

- **AVC/H.264 Encoder SDK**
  Create AVC-based media in 4:2:0 color space with 8-bit-depth, including AMD AMF, NVIDIA NVENC, Intel ARC and Intel QSV hardware encoding plus related audio and multiplexing components
- **AVC/H.264 Encoder SDK Broadcast**
  Add-on package for AVC Encoder SDK supporting up to 4:2:2 10-bit (plus 4:2:0 8-bit Software, AMD AMF, NVIDIA NVENC, Intel ARC and Intel QSV) plus related audio and multiplexing components
- **AVC/H.264 Decoder SDK**
  AVC Decoder SDK with support for up to 4:2:0 8-bit video, including Qualcomm Snapdragon Adreno, AMD AMF, NVIDIA NVDEC and Intel QSV hardware decoding plus related audio and demultiplexing components
- **AVC/H.264 Decoder SDK Broadcast**
  AVC Video Decoder package that supports up to 4:4:4 12-bit video (including Qualcomm Snapdragon Adreno, AMF AMF, NVIDIA NVDEC, Intel ARC and Intel QSV hardware decoding) in unlimited resolution and HDR conversion, with audio and demultiplexing components for formats that use MPEG-2 Transport Stream, MP4/MOV, and MXF like Sony XAVC, Panasonic P2 and more
- **AVC/H.264 Smart Rendering**
  Optional package providing AVC/H.264 Smart Rendering functionality for editing, cutting and smart copy at any frame position to speed up conversion of AVC/H.264 source content, including Sony XAVC and Panasonic P2 AVC-ULTRA.
- **SVR360 For AVC/H.264 Encoder Broadcast**
  Add-on feature license to AVC Encoder SDK Broadcast allowing encoding in virtually unlimited resolution, designed to meet the needs of 360/VR applications

ABOUT MAINCONCEPT

MainConcept provides audio and video codec solutions that fuel creativity and business across the globe—from professional video production, multimedia, broadcast, digital signage, and gaming to the medical and security verticals. Our software development kits, transcoding applications and plugins deliver the simplicity you need with the customer experience you deserve. Since 1993, MainConcept codecs have been used by hundreds of organizations including Adobe, Autodesk, Corel, Dalet, Encoding.com, Endeavor Streaming, Grass Valley, Intel, MAGIX, Nikon, PlayBox Neo and Soliton. For more information, visit www.mainconcept.com.

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