

NeuLion® MC Encoder

Powerful, Real-Time Video Encoding For All Devices

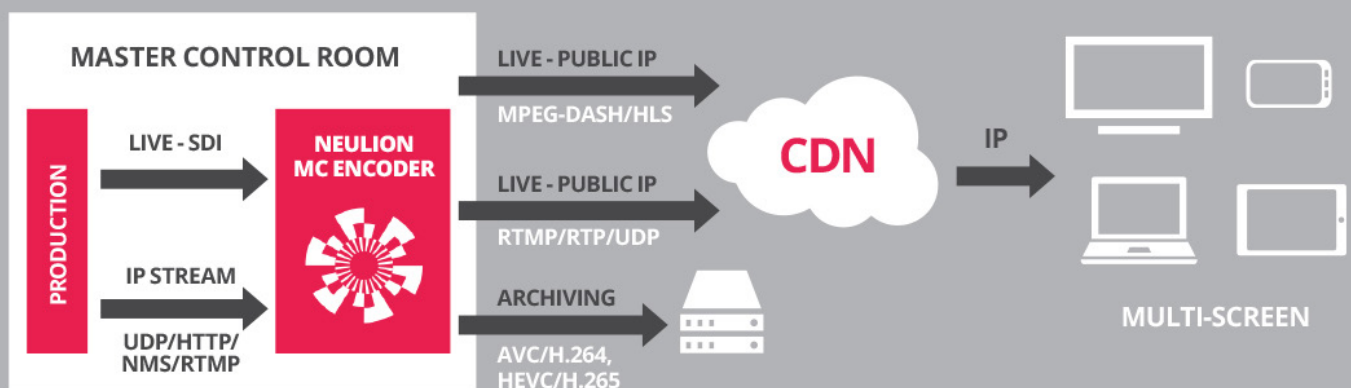


The demand for live event broadcasting is constantly increasing. Content owners, broadcasters and video delivery services are striving for solutions that ingest, prepare and stream audio-visual content for OTT delivery to consumer devices. At best, the output is directly transferred to a CDN or an online video platform via RTMP streaming. The market is striving for tools that allow live encoding and streaming of sports and cultural events as well as for governmental and educational institutions targeting multi-screen delivery services. This also covers file recordings for VOD and highlight archiving purposes.

Introducing the NeuLion® MC Encoder, a production ready real-time multi-screen encoding platform for both Windows and Linux that allows input from different sources, such as SDI and IP networks, including UDP, RTMP, RTSP and HTTP for transcoding into adaptive streaming formats. The encoder is based on the market proven NeuLion OTT Platform Encoder that is streaming more than 300 live linear channels 24/7 and delivers over 50,000 live events every year.

Creating Apple HLS, DASH-264 and DASH-265 compliant streams up to 4K 10-bit as well as support for various HDR flavors like HLG (*Hybrid Log Gamma*), PQ10 and HDR-10 support, with multi-bitrate and multi-resolution quality layers, the NeuLion® MC Encoder takes care of packaging as well as playlist generation. The latest version introduces full HLS content creation by encoding live to HEVC in fMP4 and AVC in Transport Stream, including hybrid playlist generation compliant with the recent Apple OS and device updates. CDN upload support includes Akamai and Amazon CloudFront. For live archiving the encoder can write files to disk or Amazon S3 locations. In addition, the NeuLion® MC Encoder outputs IP streams via UDP as Transport Streams, via RTSP as Elementary Streams, and RTMP streams as MP4.

REAL-TIME WORKFLOW



Besides real-time software encoding, the latest version adds parallel live HEVC / H.265 and AVC / H.264 encoding on single cost-efficient desktop Intel® Core™ i7 and Xeon® E3 CPUs with a dedicated graphics unit.

The NeuLion® MC Encoder includes a management layer for monitoring and controlling the encoder. It allows flexible administration through an intuitive web client and a REST API for integration in existing workflows. SNMP (*Simple Network Monitoring Support*) Traps will monitor the system and notify the user about important events or errors. Built-in Redundancy Management features provide useful 1+1 and N+M failover modes. The live encoding system is a software platform that runs on standard x86 server hardware.

Thanks to the future proof MainConcept Codec technology, the NeuLion® MC Encoder is ready for 4K60p HEVC Live encoding today.

FEATURES

Live Adaptive Bitrate Stream Encoding to DASH & HLS

Live encoding to Apple HLS, DASH-264 (8-bit) or DASH-265 (8-bit / 10-bit) compliance streams up to 4K, including packaging as well as manifest and playlist generation. Encoding and packaging of Apple HLS using HEVC in fMP4, compliant with the latest updates to iOS and macOS for enhanced resolution at lower bitrates.

Hardware Encoding for both HEVC/H.265 and AVC/H.264

Parallel live HEVC/H.265 and AVC/H.264 encoding on single cost-efficient desktop CPUs making use of Intel's Quick Sync Video (IQSV) technology for an enhanced performance experience using Intel® Core™ and Xeon® E3 processors with a dedicated graphics unit.

Built-in Video and Audio Processing

Ensure to make encodes conform to specific parameters by applying a range of processing tools to content, including Scaling, cropping, framerate conversion, deinterlacing, logo insertion, and audio channel mapping.

Parallel DASH & HLS Layers Packaging

A single job for encodings of different quality layers and resolutions can be packaged in parallel for both DASH and HLS, including MPD file and playlist generation.

Common Input & Output Options

Support for SDI and IP network streams input via UDP (MPEG-2 / H.264 in TS), authenticated RTSP (in TS), RTMP and HTTP. Encoding to IP streams using RTMP (in MP4), RTP, RTSP, HTTP and UDP (in TS) for OTT delivery. Live streams can also be saved in AVC/H.264 (8-bit) and HEVC/H.265 (8-bit / 10-bit) as MP4 files for archiving.

High Dynamic Range Signaling

Hybrid Log Gamma (ITU-R BT.2100-1), PQ-10 (BT.2100 / SMPTE ST 2084) and HDR-10 (SMPTE ST.2086) HDR Encoding in HD and 4K for both HEVC/H.265 and AVC/H.264.

Flexible Deployment via Web UI & REST API

The intuitive web-based interface offers easy configuration and administration of the NeuLion® MC Encoder with full access to all available presets and output formats. The XML-based public REST API provides quick and simple integration into already available existing workflow systems for externally control of the distribution encoder.

Redundancy & Failover Management

For redundancy handling, the NeuLion® MC Encoder currently offers failover scenarios to provide uninterrupted service and automated encoding channel recovery in case of an issue, outage or hardware failure on the encoding node. It offers user-defined 1+1 and N+M redundancy options.

SPECS

SYSTEM

- Web-based configuration
- Windows & Linux 64-bit
- AJA & DeckLink SDI capture cards

INPUT

- SDI capturing
- IP streams: UDP (MPEG-2/H.264 in MPEG TS), HTTP, RTMP, authenticated RTSP (in TS)
- Hardware AVC/H.264 and HEVC/H.265 decoding for IP ingest using Intel's Quick Sync Video technology for dedicated Intel Core Processors
- Optimized low-latency streaming for NeuLion OTT platform
- Video Codecs: AVC/H.264 (8-bit / 10-bit), HEVC/H.265 (8-bit / 10-bit), MPEG-2, VC-1
- Audio: Codecs: AAC, MPEG Audio Layer 1/2, MP3

ENCODING

- Live encoding to HLS (AVC/AAC in TS and HEVC/AAC in fMP4) up to 4K, incl. hybrid playlist and packaging
- Live encoding to DASH-264 (AVC/AAC) up to 1080p (8-bit), incl. MPD and packaging
- Live encoding to DASH-265 (HEVC/AAC) up to 4K (8-bit/10-bit), incl. MPD and packaging
- Hardware AVC/H.264 and HEVC/H.265 live encoding using Intel's Quick Sync Video technology for dedicated Intel Core Processors (Skylake and Kaby Lake)
- Parallel packaging of DASH and HLS
- Simultaneous encoding of 8 DASH or HLS quality layers

PROCESSING

- HLG, PQ10 and HDR-10 support
- Closed Caption (EIA-608 & EIA-708)
- Ad-Insertion (SCTE-35 & SCTE-104)
- Logo insertion
- Slate insertion for lost signals
- Loudness normalization (CALM-Act / EBU R128)
- Video / Audio Processing Tools
 - Deinterlacing, framerate conversion, scaling
 - Channel mapping

OUTPUT

- Archive live streams to disk as MP4 (AVC/H.264 & HEVC/H.265)
- Amazon S3 file storage
- IP streams: RTMP, UDP, RTP, RTSP, HTTP
- CDN Support: Akamai, Amazon CloudFront
- Apple HLS AES-128 common encryption

CONFIGURATION

- User Rights Management for administration and monitoring
- REST API for remote encoding control
- SNMP Traps API
- Redundancy Management (1+1, N+M)
- Combined scheduler for encoding and publishing

TECH SPECS

For running the NeuLion® MC Encoder AVC/H.264, we recommend the following hardware specifications:

DELL POWEREDGE R430 RACK SERVER

- 2x Intel® Xeon® E5-2640 v3 2.6 GHz (8 Cores / 16 Threads per CPU), 20M Cache, 8.00 GT/s QPI, Turbo, HT, 8C/16T (90W) Max Mem 1866MHz
- 64 GB RDIMM, 2133 MT/s, Dual Rank, x4 Data Width
- Deltacast Delta-3G-elp-d 8c (Windows), AJA Kona 4 or Blackmagic DeckLink Duo SDI capture board

HP PROLIANT DL380 G9 2U/DL160 1U RACK SERVER

- 2 x Intel® Xeon® E5-2640 v3 2.6 GHz (8 Cores / 16 Threads per CPU)
- 64 GB Standard DDR4 SDRAM
- Deltacast Delta-3G-elp-d 8c (Windows), AJA Kona 4 or Blackmagic DeckLink Duo SDI capture board

For running the NeuLion® MC Encoder HEVC/H.265 4K, we recommend the following hardware specifications:

HP PROLIANT DL380 GEN9 2U RACK SERVER (8-BIT)

- 2 x Intel® Xeon® E5-2699v3 2.3 GHz (18-cores / 36 Threads per CPU), 45M Cache (145W)
- 64 GB Ram DDR4, 2133 MT/s, Dual Rank x4
- Deltacast Delta-3G-elp-d 8c (Windows), AJA Kona 4 SDI capture board

DELL POWEREDGE R630 RACK SERVER (10-BIT)

- 2 x Intel® Xeon® E5-2699v4 2.2 GHz (22-cores / 44 Threads per CPU), 55M Cache (115W)
- 64 GB RDIMM, 2400 MT/s, Dual Rank, x8 Data Width
- Deltacast Delta-3G-elp-d 8c (Windows), AJA Kona 4 SDI capture board

For hardware encoding in the NeuLion® MC Encoder for HEVC/H.265 or AVC/H.264, we recommend the following CPUs:

- Intel® Xeon® E3 CPU family with integrated graphics unit
- Intel® Core™ CPU family (6th or 7th Generation Intel® Core™ i7 processors), e.g. i7-7700 or i7-7000K, etc.
- RAM: Minimum DDR4 2x8 GB (Dual Ranks), installed in Dual mode
- Deltacast Delta-3G-elp-d 8c (Windows), AJA Kona 4 or Blackmagic DeckLink Duo SDI capture board

MINIMUM OPERATING SYSTEM

- Microsoft® Windows® Server 2012 (64-bit)
- Microsoft® Windows® 7 Ultimate and Professional SP1 x64
- Linux CentOS 7.2 (64-bit)

MINIMUM RECOMMENDED BROWSER VERSIONS FOR NEULION® MC ENCODER WEB CLIENT

- Mozilla Firefox v52.5.x ESR or newer
- Google Chrome v62.0.x or newer
- Microsoft Internet Explorer v11.0.x or newer