noisypeak

THE APEX OF VIDEO OVER IP SOLUTIONS

LIVE ENCODING AND TRANSCODING · PRODUCT BROCHURE

Noisypeak Cell

Multi-GPU live encoder and transcoder: AV1, HEVC and H.264 from one input to every output format.



Noisypeak Cell is the X series live encoder and transcoder built on the UEN2 engine. One input becomes AV1, HEVC and H.264 ladders for HLS, DASH, SPTS/MPTS, SRT, RTMP, SDI and NDI, from a 1U mainstream unit to a 20-GPU hyperscale transcoder.

16K
HEVC VIDEO PROCESSING

20
GPUS IN ONE NP CELL X HS

160
HD ABR CHANNELS PER X HS

55+
JSON API METHODS

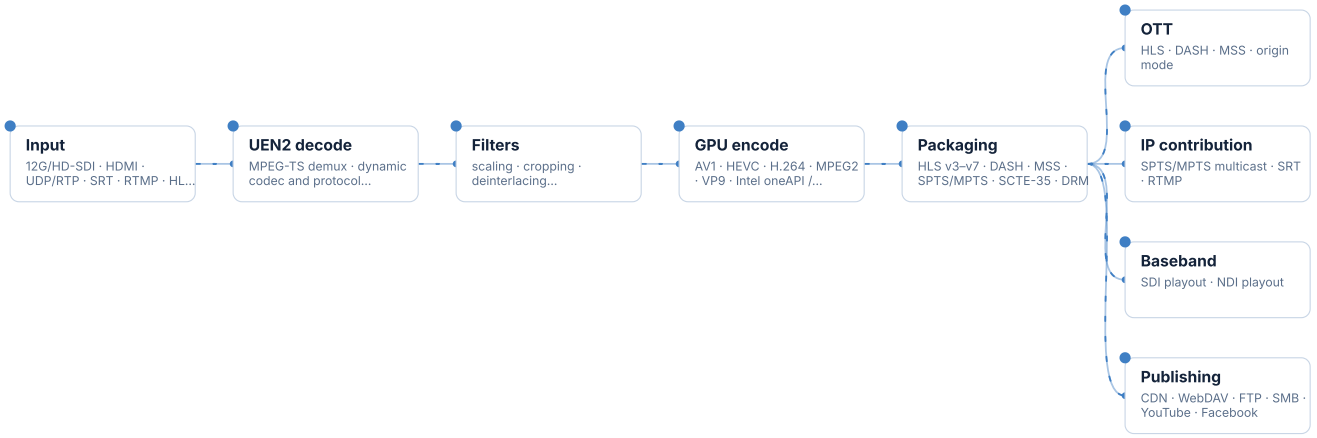
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NOISYPEAK CELL — LIVE ENCODING AND TRANSCODING

Noisypeak Cell is the X series of live encoders and transcoders: NP Cell XS, X, X2 and X HS. All run the UEN2 uniform encoding engine on Intel 14th Gen or Core Ultra 200 CPUs with Intel Arc A- or B-series GPUs. It captures SDI, HDMI and IP sources and produces multibitrate output for OTT, IPTV and cable platforms, on premise or as a cloud service.

One input becomes a multi-stream output: a single channel feeds HLS, DASH, SPTS/MPTS, SRT, RTMP, SDI and NDI in parallel, with SCTE-35, closed captions and DRM carried through. The engine processes up to 4K AV1 and 16K HEVC. Deployments scale linearly from one node to hundreds; the Cell IMC fleet API fronts the whole fleet at one endpoint.

How Noisypeak Cell turns one input into every output



Single input to multi-stream output: every rendition and every format comes from the same UEN2 pipeline.

UEN2 — ONE ENGINE FROM CAPTURE TO PACKAGING

UEN2, the uniform encoding engine, is the software core of every Cell model. It decodes any supported input, applies video post-processing and encodes AV1, HEVC/H.265, AVC/H.264, MPEG2 and VP9 with Intel oneAPI or Nvidia NVENC acceleration. Framerate is fixed to the source; linear time-code is generated; a look-ahead buffer is available.

Encoding parameters are exposed down to the bitstream: Baseline, Main and High profiles, CABAC/CAVLC, HRD buffer length and initial delay, frame-accurate closed GOP length, B-frame and reference frame counts, IDR interval and slice count. H.264 is accepted as AVCC or Annex B at the input and emitted as Annex B for multicast and HLS or AVCC for RTMP.

- Video post-processing: scaling, cropping, deinterlacing, letterboxing
- Logotype and text string overlays
- Picture in picture, up to 4 streams
- Static image preview generation
- Video and audio passthrough per output
- Different audio templates for each output of a single channel

INPUTS: BASEBAND AND IP IN THE SAME BOX

Capture up to 12G-SDI and 4K HDMI through Magewell or Blackmagic add-on modules, or take IP sources directly: RTP/UDP SPTS and MPTS, HLS and HTTP progressive, RTSP, RTMP, SRT, NDI, SHOUTcast and UVC 1.5 webcams. SDP/Onvif covers IP security cameras. TS files run as file2live or file2vod. Input codec and protocol are adjusted dynamically; audio is accepted as AAC/AAC-LATM, MP2/MP3, AC3, EAC3 and Opus.

OUTPUTS, CAPTIONS AND PROTECTION

Each channel publishes in several formats at once: HLS up to v7 with multi-language support, MPEG-DASH live and VOD with timelined manifests, Microsoft Smooth Streaming, RTMP with Akamai support, UDP unicast or multicast SPTS and MPTS, SRT, SDI and NDI playout, and TS or MP4 files to WebDAV, Windows share (Samba) or FTP. An HLS secondary destination point and WebDAV authorisation cover publishing redundancy.

SCTE-35 CUE-In/CUE-Out messages are detected, passed through or spliced. Closed captions are carried as CEA-708, EIA-608 and WebVTT; DVB subtitles can be burnt in; DVB PIDs pass through. DRM covers Apple FairPlay, Nagra PRM, Microsoft PlayReady, Verimatrix, Google DRM for MPEG-DASH/CENC and AES-128 static key.

ORIGIN MODE

In origin mode a Cell serves four streaming types in parallel from the same channel: HLS with separate audio and video TS renditions, HLS3 with muxed TS, HLS7 with separate fMP4 renditions, and MPEG-DASH with separate fMP4 renditions. Links can be tokenised with JWT (RFC 7519). In-memory start-over, content protection and access lists are configured per channel.

- Up to 2500 parallel streams over a 25 Gb/s interface
- Up to 20 Gb/s sustained delivery over 25 Gb/s or 2×10 Gb/s LACP

FLEET API — CELL IMC

Cell IMC serves one HTTP API in front of a fleet of cells, at /api/10/. Clients work with cluster-wide channel, output, template and overlay ids; a cell's own numbering is never exposed. Channel, output and overlay calls keep the node API's grammar, so no key is renamed or removed. Configuration writes are stored in the IMC first and then pushed to the cell, so the intent survives a cell that is down; writes to an offline cell are parked and applied when it returns.

New channels are placed on the cell with the lowest score, computed from free GPU load, average GPU load and channel count over the last 30 monitoring samples. A cell confirmed offline is failed over after failover_after_seconds (default 30 s); auto_recover moves work back when it returns. Per-cell channel and output ceilings are set manually or measured by a built-in capacity test. The IMC applies to Cell IMC 1.2.51 and later.

- Outputs: HLS, DASH, RTMP or UDP, each with its own video and audio template
- Overlays: image, text or picture-in-picture, with position and size
- Primary and backup source per channel, MPEG-TS service and PID selection
- Failover priority 1–10 per channel and per output
- One call starts or stops every channel in the cluster
- Cluster-wide and per-cell backup and restore
- Per-cell health: reachability, version, uptime, licence verdict

MANAGEMENT AND HIGH AVAILABILITY

Up to 50 encoders are managed in one web interface with real-time monitoring, statistics and video templates. Zabbix, Prometheus/Grafana and SNMP integrations and more than 55 JSON API methods expose the same data to external systems. Clustering services provide n+1, 1+1 and n+m redundancy, with input source redundancy and publishing server redundancy in the standard image; see Noisypeak Control for the NP-RFS failover software.

FEATURES

Multi-codec GPU encoding

AV1, HEVC/H.265, AVC/H.264, MPEG2 and VP9 on Intel oneAPI or Nvidia NVENC. Up to 4K AV1 and 16K HEVC.

Single input, multi-stream output

One channel feeds HLS, DASH, MSS, RTMP, SPTS/MPTS, SRT, SDI and NDI at the same time, each with its own templates.

Baseband and IP capture

12G-SDI, HD-SDI and 4K HDMI via Magewell or Blackmagic modules; UDP/RTP, SRT, RTMP, HLS, RTSP, NDI, UVC and Onvif over IP.

SCTE-35 and captions

SCTE-35 detection, pass-through and splicing. CEA-708, EIA-608 and WebVTT closed captions; DVB subtitle burn-in and PID pass-through.

DRM on the encoder

Apple FairPlay, Nagra PRM, Microsoft PlayReady, Verimatrix, Google DRM for MPEG-DASH/CENC and AES-128 static key.

Overlays and PiP

Logotype and text string overlays, picture in picture up to 4 streams, static image preview generation.

Audio toolset

AAC-LC up to 512 kb/s, HE-AAC up to 128 kb/s, MP2/MP3 multi-audio, gain control, audio levelling, sample rate transform, audio-only radio transcoding and SHOUTcast output.

Publishing

Direct to CDNs, WebDAV, HTTP, FTP, SMB, RTMP, YouTube and Facebook; HLS secondary destination and WebDAV authorisation.

Fleet control

Up to 50 encoders in one web UI; Zabbix, Prometheus/Grafana, SNMP; Cell IMC API with GPU-aware placement and automatic failover.

SPECIFICATIONS

INPUTS

Baseband	4K HDMI · 12G-SDI · HD-SDI · HDMI through Magewell and Blackmagic add-on modules · UVC 1.5 webcams
IP	RTP/UDP SPTS and MPTS · HLS · HTTP progressive · HTTP TS · RTSP · RTMP · SRT · NDI · SHOUTcast · SDP/Onvif for IP security cameras
Files	TS files — file2live, file2vod
Audio in	AAC/AAC LATM · MP2/MP3 · AC3 · EAC3 · Opus
Behaviour	Dynamic input adjustment for codec and protocol · h.264 AVCC or Annex B at the input

OUTPUTS

OTT	HLS up to v7 with multi-language support · MPEG-DASH live and VOD, timelined manifest · Microsoft Smooth Streaming
Transport	UDP unicast/multicast SPTS and MPTS · SRT · RTMP with Akamai support · SHOUTcast
Baseband	SDI playout · NDI playout
Files and publishing	TS and MP4 files · WebDAV, Windows share (Samba), FTP · direct to CDNs · YouTube · Facebook · multi-format simultaneous publishing
Signalling	SCTE-35 detection, pass-through and splicing (CUE-In/CUE-Out) · DVB PID pass-through · HLS/SPTS stream selection
Captions	CEA-708 · EIA-608 · WebVTT · DVB burn-in subtitles
DRM	Apple FairPlay · Nagra PRM · Microsoft PlayReady · Verimatrix · Google DRM for MPEG-DASH/CENC · AES-128 static key

VIDEO ENCODING

Codecs	AV1 · HEVC/H.265 · AVC/H.264 · MPEG2 · VP9
Resolution	Up to 4K AV1 · up to 16K HEVC video processing
Acceleration	Intel oneAPI · Nvidia NVENC
Profiles	Baseline, Main and High · CABAC/CAVLC
GOP control	Frame-accurate closed GOP length · B-frames count · reference frames count · IDR interval · slice count
HRD	NAL HRD conformance: buffer length, initial delay · look-ahead buffer
Post-processing	Scaling · cropping · deinterlacing · letterboxing
Graphics	Logotype and text string overlays · picture in picture up to 4 streams · static image preview generation
Timing	Framerate fixed to source · linear time-code generation

AUDIO ENCODING

Codecs	AAC-LC up to 512 kb/s · HE-AAC up to 128 kb/s · multi-audio MP2/MP3 · audio passthrough
Processing	Gain control · audio levelling · advanced sample rate transform
Modes	Audio-only transcoding (radio) · SHOUTcast output · different audio templates per output of a single channel

ORIGIN MODE

Formats in parallel	HLS (separate TS renditions) · HLS3 (muxed TS) · HLS7 (separate fMP4) · MPEG-DASH (separate fMP4)
Features	JWT RFC 7519 link tokenisation · in-memory start-over · content protection · access lists
Target performance	Up to 2500 parallel streams over 25 Gb/s · up to 20 Gb/s sustained over 25 Gb/s or 2×10 Gb/s LACP

MANAGEMENT

Web UI	Up to 50 encoders in one uniform web interface · real-time monitoring and statistics · video templates
Integrations	Zabbix · Prometheus/Grafana · SNMP · more than 55 JSON API methods
Fleet API	Cell IMC at /api/10/ · cluster-wide ids · GPU-aware placement · failover_after_seconds (default 30) · auto_recover · capacity ceilings 1–1000 per cell
High availability	n+1 · n+m · 1+1 · input source redundancy · publishing server redundancy

MODELS

NP Cell XS	Mainstream · single PSU · up to 2 GPUs · 20 SD / 12 HD / 4 UHD multibitrate channels
NP Cell X / X2	Advanced · single or dual PSU · up to 3 GPUs · 35 SD / 24 HD / 6 UHD multibitrate channels
NP Cell X HS	Hyperscale transcoder · up to 4 PSUs · up to 20 GPUs · 230 SD / 160 HD / 32 UHD multibitrate channels
Platform	Intel 14th Gen / Intel Core Ultra 200 CPU · Intel Arc A-Series / B-Series GPU (e.g. Intel Arc A40)
Delivery	Software licence · subscription licence · cloud service under the NP X Connected brand

TYPICAL ABR LADDER — 4K/UHD (AV1, HEVC)

1	8000 kb/s · 3840×2160
2	4500 kb/s · 1920×1080
3	2500 kb/s · 1280×720
4	1600 kb/s · 1024×576
5	1100 kb/s · 720×404
6	700 kb/s · 640×360

TYPICAL ABR LADDER — HD

1	6000 kb/s · 1920×1080
2	4500 kb/s · 1280×720
3	2500 kb/s · 1024×576
4	1600 kb/s · 720×404
5	1100 kb/s · 640×360
6	700 kb/s · 480×270

TYPICAL ABR LADDER — SD

1	1600 kb/s · 720×404
2	1100 kb/s · 640×360
3	700 kb/s · 480×270
4	400 kb/s · 312×176

MODELS AND LICENCES

NPXS

Noisypeak Cell XS 1U · 1×CPU/iGPU · 2×GbE · 16 GB RAM · Windows or Ubuntu · includes NPXS-SW

NPX

Noisypeak Cell X 1U · 1×CPU/iGPU · 2×10GbE · 1×Intel Arc GPU · 32 GB RAM · Windows or Ubuntu · includes NPXS-SW and NPX-SW-A

NPX2

Noisypeak Cell X2 2U · 1×CPU/iGPU · 2×10GbE · 2×Intel Arc GPU · 64 GB RAM · 2×250 GB SSD · redundant PSU · Windows or Ubuntu · includes NPXS-SW and two NPX-SW-A licences

NPXS-SW

Noisypeak Cell software licence · MPEG2/H.264/HEVC/AV1 · HLS/DASH packetising · WebDAV · DRM · SCTE-35 · for one Intel integrated GPU (e.g. UHD770, Xe2)

NPX-SW-A

Noisypeak Cell software licence enabling transcoding on one Intel Arc PCIe card (e.g. Intel Arc A40 Pro)

NP-RPK-EMB

Noisypeak Repack · multi-protocol repacketiser · MCAST/HLS in, HLS/DASH out, TS and MP4 media · DVB to WebVTT OCR · Google DRM and FairPlay · thumbnail generator · start-over · for integrated solutions

WHERE IT IS USED

Live TV to multiscreen OTT

Encode a channel once and publish HLS, DASH and MSS ladders with DRM and SCTE-35 to CDNs or in origin mode.

Live TV to multicast IPTV and cable TV

SPTS and MPTS multicast output with DVB PID pass-through and burnt-in subtitles for IPTV head-ends and cable platforms.

External camera broadcasting

Capture SDI, HDMI, UVC or Onvif cameras and stream to RTMP, SRT, YouTube or Facebook from one unit.

Cloud and file encoding

Run the same engine as a cloud service, or process TS files as file2live and file2vod with TS and MP4 file output.

Broadcast, telco, medical, education, enterprise, sports venues

Content distribution, head-end solutions, live surgery streaming, classroom recording, surveillance monitoring, arena IPTV and digital signage.

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