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Administration guide

Noisypeak Encoders
NP One LT, NP Cell EX, NP Blade

Document version v. 3.12 0.2020

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Noisypeak Uniform Encoding Engine (UEN2)

Contents

Disclaimer

Thank you for purchasing Noisypeak Encoder. By using this product, you herby agree to this disclaimer and signify that you understand all points completely. Please use this product in strict accordance with the manual and be sure to pay attention to the warnings. When mounting and using the product follow all instructions carefully. Noisypeak Sarl and its affiliated companies assume no liability for damage(s) or injuries incurred directly or indirectly from improper use of this product.

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1.0 Introduction

This Administration Guide covers Noisypeak One LT , Noisypeak Cell EX and Noisypeak Blade. Noisypeak encoders are the family of high-performance GPU based video transcoders/encoders for processing media in MPEG2, h.264, h.265 (HEVC) formats, media files and streaming over IP networks.

1.1. Noisypeak product family

Noisypeak encoders covering needs of a wide range of potential customers – from individual and small-medium corporate users to large service providers, broadcasters and CDNs.

All models of encoders share the same engine - Noisypeak Uniform Encoding Engine (UEN2), performing hardware-assisted operation and offers wide range of possible inputs and outputs. Hardware appliances in Noisypeak portfolio differ by performance, physical characteristics (e.g. dimensions, number of available external ports, power supplies).

Product line consists of the following products:

1 **Noisypeak One LT**
Compact encoder for ad-hoc broadcasting and real time capture from various input sources. The appliance supports up to four Full HD inputs.

2 **Noisypeak Cell EX***
19" 1U rack-mounted device with redundant PSU. Designed for 24/7 non-stop operation in a data-center environment. Provides up 16 Full HD channels processing in real time (model based on Intel® Xeon™ E3-1275 v5 or E-2146G).

* EXTEND encoding power with Artesyn® SharpStreamer™ PCI card 4 X Intel® Core™ i7-5650U w. HD 6000 SharpStreamer™ PCIE-7207 is unique video acceleration technology offered as a standard or add-on card for Noisypeak Cell EX

3 **Noisypeak Blade**
3U, ultra high-density HEVC encoder IPTV/OTT encoder. Provides up to 162 Full HD channels IP to IP encoding, up to 80 HEVC Full HD channels encoding.

Model	Noisypeak One LT	Noisypeak Cell EX	Noisypeak Blade
Installation	Portable device	1U, Rack mountable	3U, Rack mountable
CPU	Intel® Core™ i7-5557U	Intel® Xeon™ E3-1275 v5 Intel® Xeon™ E-2146G	Up to 28 Intel® Xeon™ E3-1275 v5
GPU	Intel® HD Graphics 6100	Intel® HD Graphics P530 Intel® UHD Graphics P630	Intel® HD Graphics P530
Multi bitrate output channels			

SD	9 channels, 5 bitrates	32 channels, 5 bitrates	324 channels, 5 bitrates
HD	4 channels, 3 bitrates	16 channels, 3 bitrates	162 channels, 3 bitrates
HEVC HD	1 channel, 1 bitrate	9 channels, 2 bitrates	80 channels, 3 bitrates
PSU	Single	Dual	Up to 4

Noisypeak product family specs

1.2. Noisypeak Professional Services and Support

Noisypeak provides a full range of professional and technical support to its customers, including custom development, configuration assessment and a range of transcoding solution audits and optimizations.

For specific enquiries, please contact our service organization at Noisypeak Technical Support Portal (TSP):

support.noisypeak.com

2.0 Typical usage scenarios

2.1. Multi-bitrate adaptive streaming

This scenario is often used as part of IPTV/OTT solution or within any other setup where broadcasting over the network with non-guaranteed quality is required, Noisypeak encoders enable multi-screen viewing (any device from SmartTV to wide range of iOS, Android, etc. mobile devices). In this example, multi-bitrate adaptive streaming is required at the output of encoder (HLS, MPEG DASH, RTMP or SmoothStreaming formats).

Following table shows example input/output parameters for 1-to-5 bitrate transcoding (performance figures are for Noisypeak Blade):

Parameter	Input	Output
Protocol / Format	UDP Multicast	HLS
Codec	MPEG2/H.264	H.264
# of bitrates	1 (e.g. 6-12 Mbit/sec VBR)	3 (5mb/s, 2mb/s, 700kb/s)
Interlace	"i"	"p"
# of channels/streams (Total)	32 (UDP Multicast SPTS/MPTS channels)	32 (multi-bitrate HLS), 96 output streams.

2.2. Single-bitrate multicast output

This scenario is normally used in case the bitrate / codec change is required, preserving multicast at the output for broadcasting to cable TV network with set-top boxes as end-user devices.

Following table shows example input/output parameters for 1-to-1 bitrate transcoding (performance figures are for Noisypeak Blade):

Parameter	Input	Output
Protocol / Format	UDP Multicast (SPTS/MPTS	UDP Multicast (SPTS
Codec	MPEG2/H.264	H.264
# of bitrates	1 (e.g. 3-5 Mbit/sec, VBR)	1 (1.6 Mbit/sec, CBR)

# of resolutions	1	1
Interlace	"i"	"p"
# of channels/streams (Total)	72 (UDP Multicast)	72 (UDP Multicast)

3.0 Overview

3.1. Specifications

Noisypeak Encoders can be used as IP to IP transcoder and to capture from external sources (HD-SDI/SDI, HDMI, USB) as encoder providing full range of features of a modern GPU enabled universal audio/video processing device.

3.2. Standards and platforms

Noisypeak products operates using the IETF defined suite of IP-based protocols for real-time streaming. It also uses IETF recommendations dedicated to MPEG2, h.264/AVC, h265/HEVC transport over IP.

Input

- RTP/UDP SPTS/MBTS/MPTS
- TS files
- HLS
- HTTP TS stream
- RTMP live stream
- SDI/HD-SDI, HDMI trough Magwell®, Blackmagic® add on modules
- USB webcams and dongles
- NDI
- RTSP, SDP/Onvif for IP security cams
- Dynamic input adjustment for codec and protocols Audio AAC/AAC LATM, MP2/3, AC3, EAC3, audio pass-through

Output

- UDP unicast/multicast SPTS, MBTS, MPTS
- MPEG-DASH Live and VOD
- HLS - v2, v3, v5 or v7 with multi-language support Live and VOD
- Microsoft SmoothStreaming
- RTMP
- SHOUTcast
- SDI Playout
- NDI Playout
- TS and MP4 files
- Publication via FTP, WebDAV or Windows® share (Samba)
- Multi format simultaneous publishing
- DVB PID pass-through
- Closed captions - CEA-708, EIA-608, WebVTT
- SCTE35 support

DRM

- Nagra® PRM
- Microsoft Playready
- Fairplay
- Verimatrix®
- NexGuard Unified Marker
- Google® DRM for MPEG-DASH/CENC AES128 static key
- HLS Static key

High-availability

- Redundancy management system that support: n+1, n+m, 1+1
- Input source redundancy in standard image Publishing server redundancy

Video encoding

- Up to 4K video processing
- MPEG2, H.264, HEVC
- Static Images preview generation
- Logotype, text, video, subtitles overlays
- Baseline, Main and High profiles CABAC/CABVLC
- Picture in Picture up to 4 streams
- Framerates: fixed to source framerate
- Linear timecode generation
- Single input to multi-stream output
- Look ahead buffer
- NAL HRD conformance parameters:
    - HRD buffer length
    - HRD initial delay
- GOP structure adjustment:
    - frame-accurate closed GOP length b. B-frames count
    - re-frames count
    - IDR interval
    - Slice count
- h.264 AVCC/Annex B at the input h.264 Annex B for multicast/hls output
- h.264 AVCC for RTMP output

Video post-processing:

- Scaling
- Cropping
- Deinterlacing
- Letterboxing

Audio encoding

- Support of multi audio channels MP2/MP3
- AAC-LC/HE
- Gain control
- Sample rate transform Audio leveling
- Audio pass-through mode

▪ Audio-only output

Output streams can be published to internal HTTP server, external WebDAV, FTP or SMB server. Several simultaneous output streams for one input source are supported.

3.3. Monitoring and Administration

Noisypeak products allow network operators to dynamically monitor streaming through a Web-based interface, either online during operation in real time, or offline with a log file mechanism.

Comprehensive API is available for external monitoring and management systems integration.

Noisypeak supports SNMP and can be integrated with Datadog and Zabbix monitoring systems.

3.4. Typical video encoding profiles

Noisypeak allows flexible configuration of outputs. There are no fixed parameters defined.

Following are the typical transcoding profiles:

4K/UHD (HEVC)			HD			SD		
#	Bitrate	Resolution		Bitrate	Resolution		Bitrate	Resolution
1	8000	3840x2160		6000	1920x1080		1600	720x404
2	4500	1920x1080		4500	1280x720		1100	640x360
3	2500	1280x720		2500	1024x576		700	480x270
4	1600	1024x576		1600	720x404		400	312x176
5	1100	720x404		1100	640x360			
6	700	640x360		700	480x270			

3.5. Load balancing and redundancy

Noisypeak Encoders support input source reservation – one can specify the reserve channel source, in case there is a problem with the primary source, encoder switches to reserve one.

Noisypeak Blade has redundancy at GPU node level, if any GPU node fails, its tasks will be automatically move to remaining GPUs.

4.0 Hardware details

4.1. Noisypeak One LT

Compact encoder for ad-hoc broadcasting and real time capture from various input sources. The appliance supports up to four Full HD inputs.

Main usage is broadcasting from any place and from any type of camera. Provides the flexibility to capture signals from USB WebCams, HDMI, HD-SDI, IP SDP/Onvif and Sony® Action Cams

It consumes as little as 25w in a typical work cycle and can be powered from an external 12v battery.

Case size

140x127x102mm (WxDxH)

Power requirements

100-240V AC, 50-60Hz, 50W (external PSU - included)

Networking

1xGigablit Ethernet interface
Expandable with external USB cards

4.2. Noisypeak Cell EX*

19" 1U rack-mountable encoder with redundant PSU. Designed for 24/7 non-stop operation in a data-center environment. Provides up 16 Full HD channels processing in real time (model based on Intel® Xeon™ E3-1275 v5 or E-2146G).

* EXTEND encoding power with Artesyn® SharpStreamer™ PCI card 4 X Intel® Core™ i7-5650U w. HD 6000 SharpStreamer™ PCIE-7207 is unique video acceleration technology offered as a standard or add-on card for Noisypeak Cell EX.

Chassis size

437x503x43mm (WxDxH)

Power requirements

100-240V AC, 50-60Hz, 150W
Dual PSU

Networking

2xGigablit UTP Ethernet (Broadcom based), 1xIPMI
Replaceable card – other options are possible (four ports, SFP, etc.)

4.3. Noisypeak Blade

3 U Modular high-density ultra-performance IPTV/OTT encoder.

Provides up 182 Full HD channels IP to IP encoding, up to 80 HEVC Full HD channels encoding. Up to 14 Hot-plug blades. Up to 28 Intel® Xeon® E3-1275v5 processors (8MB Cache, 3.6 GHz, Intel Graphics P530)

Chassis Size

132.5x449x917mm (WxDxH)

Power Requirements

Up to 4 hot-swap High-efficiency 1600W, N+1 or N+N redundant power supplies

Networking

Up to 2x GbE switches with 2 x 40 GB/s QSFP or 8 x 10 GB/s SFP+ uplinks

5.0 Installation and initial Setup

5.1. Installation requirements

Noisypeak Encoders are to be installed in DC environment with controllable temperature (not more than 25 Degrees Centigrade) and stable power sources (110-220v). NP One can be used off DC environments but Noisypeak doesn't guarantee the device operation in 24x7-work cycle.

5.2. Assembling and wiring
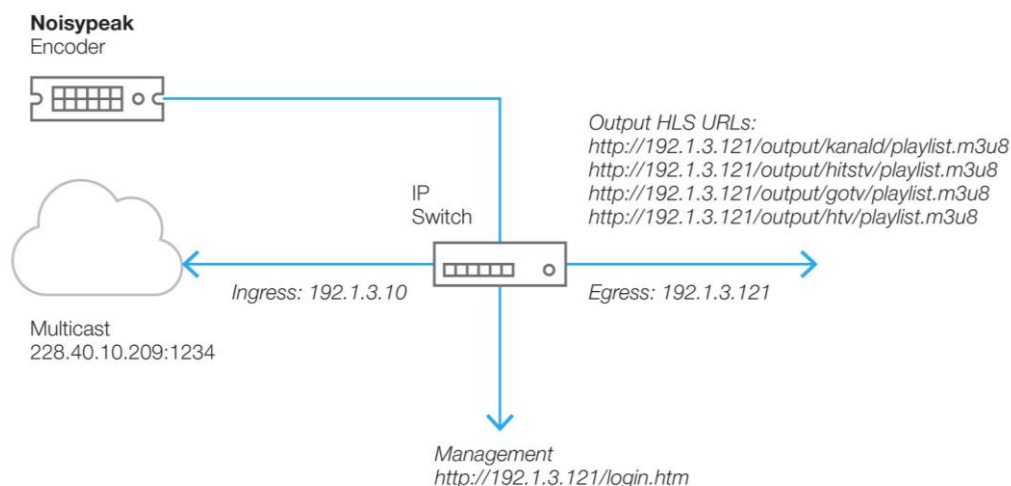
After unpacking Noisypeak Encoder undertake the following actions:

1 Connect Noisypeak Encoder to AC power via power supply provided in the package.

2 Connect Noisypeak Encoder to LAN (not provided in the package)

Note
Noisypeak One LT has only one Ethernet interface.

IP Switch is not included. IP addresses at the diagram are the examples - use your network infrastructure and IP addresses provided by your network administrator.

5.3. Initial setup

As soon as everything is connected, as described in the previous chapter, press the "Power-On" button. Wait for about of 1 minute for the device to load. Follow the following action-list:

1 Open the web browser and go to http://IP_address/ (address of any unit interface).

2 At the login page, enter login you provided during Noisypeak software installation.

3 At the menu (top of the screen) click "Settings"-> "Network" and set the IP address, mask, default gateway and DNS, provided by your system administrator (see the screenshot below):

Name	IP address	Mask	Default gateway	DNS	Input Multicast Interface
eth8	▬▬▬▬	255.255.255.0	▬▬▬▬	8.8.8.8	
eth7	172.16.40.35	255.255.255.0			default
eth3	172.16.10.35	255.255.255.0		8.8.8.8	

4 You may change network parameters at Operating System level also ("Network connections")

5 We recommend set one of the interfaces as the "Default multicast input interface" by marking the checkbox (see the screenshot below):

6 Initial setup is now complete and you can access the web interface of the encoder via IP address you have set.

7 Setup the input sources and output streams according to "6. Noisypeak Management System" chapter. Check if transcoding works fine, for example pointing the iPad browser to appropriate link (output stream playlist).

Note
If transcoding doesn't start, first check if CPU graphics enabled in BIOS and the graphics driver installed

5.4. Remote access to encoder console

You can use IPMI remote console for the access.

Some encoders are equipped with VNC server preinstalled (port 5900), allowing remote access to the console for managing important parameters (such as network interfaces), using the operating system standard facilities. We recommend using TightVNC for remote connection, allowing files download. Contact Noisypeak for the access password.

You can enable Windows Remote Desktop access instead of VNC (except old Noisypeak software versions)

It is strongly prohibited to try to install any 3-rd party applications on encoder. In case of breach, devices will be removed from technical support and Noisypeak refrain form any support of it.

We also do not recommend connecting any ports of the encoder to the Internet directly.

6.0 Noisypeak Management System (web interface)

6.1. Login screen

Picture 1 Login screen

Login page is accessible on URL http://<DNS>/login.htm (Picture 1).

Default login: admin, default password: 2bechanged.

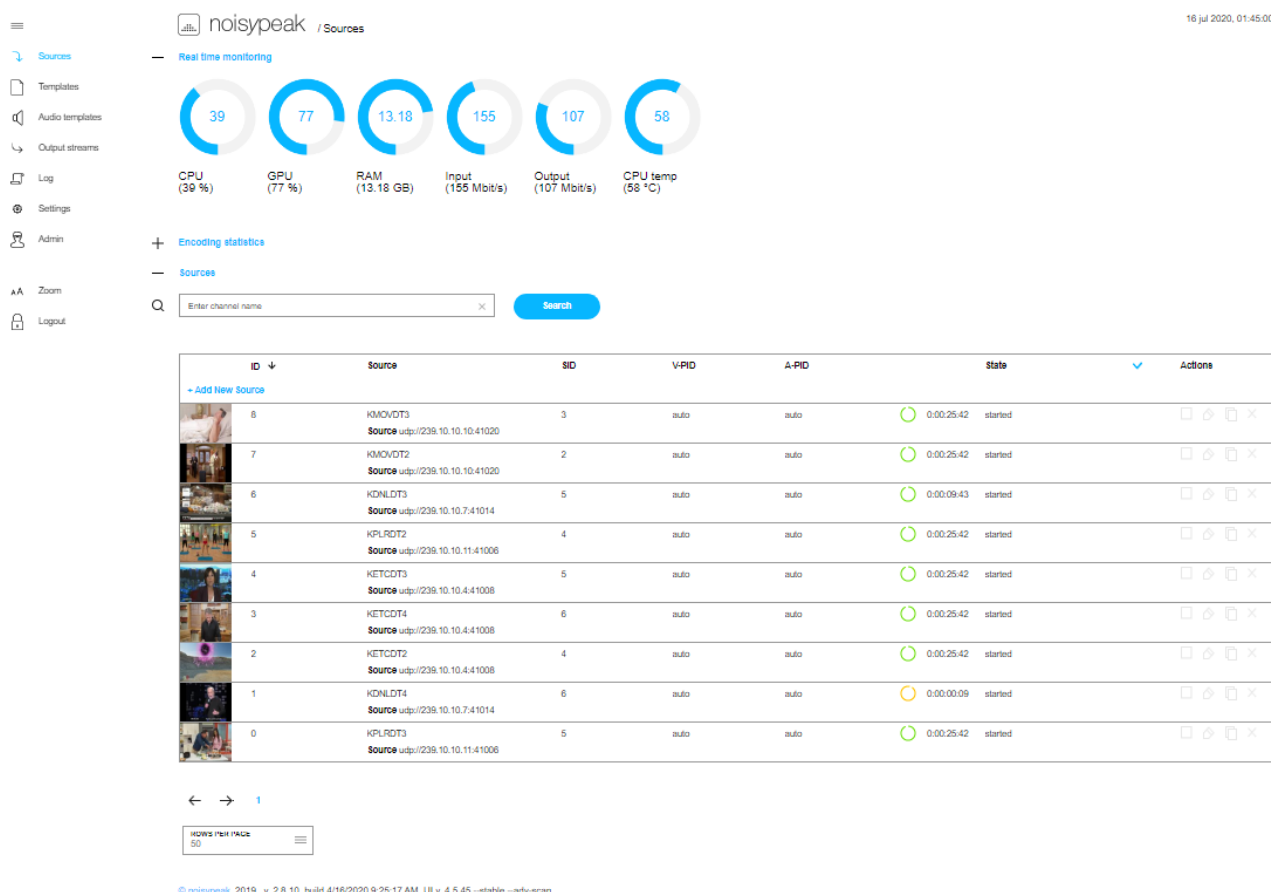## 6.2. General UI layout
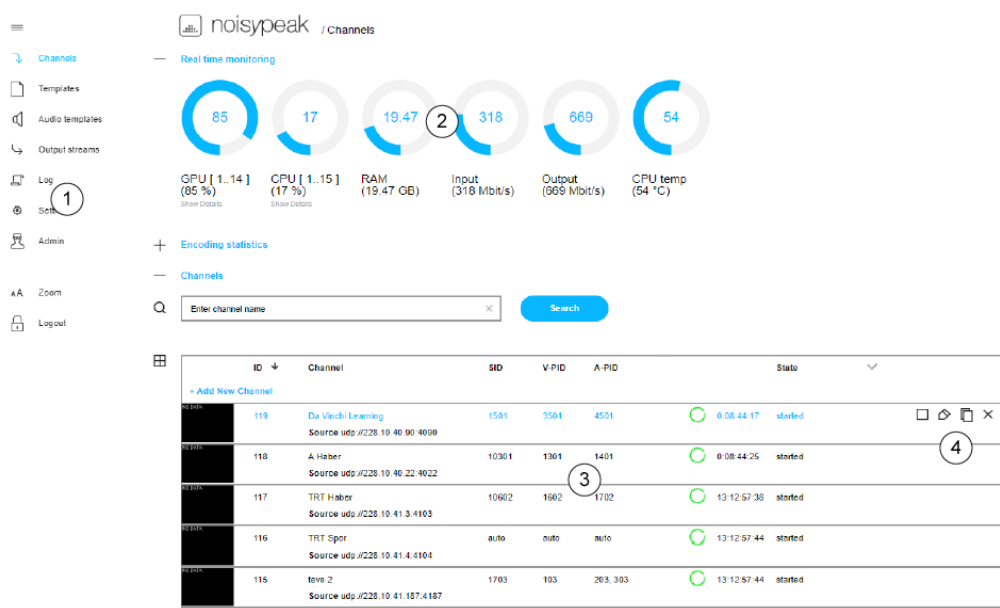
1. Main Menu
2. Performance Counter
3. Sources/Outputs Streams
4. Sources/Output Streams management controls

6.3. Input Sources

After logging in, "Sources" screen is presented by default. You can also come back to it any time by clicking "Sources" link at the top menu.

List of input streams (Picture 2) displays input source preview (if enabled), name, primary and backup addresses, service ID, video and audio tracks PIDs, current source state and the channel uptime. You can perform the following actions:

To Start/Stop transcoding, use "Start"/"Stop" icon;

To Edit parameters, use "Pen" icon;

To Copy source, use "Copy" icon;

To Delete source, use "Cross" icon;

To create new source, use "Add New Source" link on top of the list.

To Start/Stop or Delete several sources simultaneously you should check them under "checkmark" column

Picture 2.1 Add/edit channel

To add new source (Picture 2.1), specify the following parameters:

Field Name	Description	Available Values	Notes
Source name	Descriptive name of the input source		
Source	The type of source	UDP, RTP TS, HLS, HTTP TS stream, RTMP live stream, NDI, RTSP live stream, TS file, USB camera, Blackmagic Device, Magewell device, Magewell Pro device	
Source address		IP-address	For UDP -

		(xxx.xxx.xxx.xxx) or input stream URL.	172.17.50.74:239.255.3.18, where first IP is the ingress interface, second – Multicast group, you can skip ingress interface address in case the "Default input multicast interface" is specified in the network parameters screen. For Blackmagic, Magewell and USB devices leave empty
Source port	TCP port number of the source stream Logical port number for Blackmagic, Magewell and USB devices	Number	
Star Quick Scan	Quick scan of the source with defined parameters	Press button	Displays general stream information (Programs, Service IDs, Video PIDs, Audio PIDs, Data PIDs) If the encoder doesn't see input stream you will see "No service found" message Scanning doesn't work for Magewell and Magewell Pro devices
Start Advanced UDP Scan (Picture 2.2)	Detailed scan of the source	Press button	Displays a table with detailed stream information (Programs, Service IDs, Video PIDs, Audio PIDs, Data PIDs, resolutions, FPS, codecs, interlace type and so on) Works for UDP source only. Takes more time than «Quick scan»
Service ID	Service ID from the network input stream	Auto, service ID	After the clicking "Scan for available services" you can see here the dropdown list of all services in the stream
Video PID	Video PID (ID of video stream)	Auto, video PID	To select video PID, first you should set specific value of Service ID in the Service ID field
Audio PID	Audio PID (ID of audio stream)	Auto, audio PID/PIDs	To select audio PID, first you should set specific value of Service ID in the Service ID field. If the input stream has multiple audio tracks you can choose several of them
Data track	Data track ID	Disabled, auto, data track ID	If you have any data tracks in the source channel (subtitles, SCTE35 data or teletext), you can select

			their PIDs here to pass them through to the Output. If your input stream doesn't have any data tracks or you don't want to pass any data track to the input, you should set the field to Disabled
CC Passthrough	Enables Closed Captions subtitles pass-through to the output	Enabled/Disabled	"EnableCCInjector" parameter should be set to "true" in the configuration file "state.dat"
Blackmagic device mode (Advanced settings)	Choose SDI mode from dropdown list if your source is Blackmagic device	Auto or specific value from the list	Ignored for another types of the source
Interlace mode (Advanced settings)	Source signal interlace mode manual selection. Use auto by default, and try other modes if you see interlace artifacts in the output signal.	Auto, progressive, bottom field first, top field first	"Auto" works correct for most cases
Audio Gain (Advanced settings)	Set audio gain adjustment if you want to change audio volume level	+/- 20db	Optional
Backup (Advanced settings)	You can setup the Backup source that will be used by the encoder in case the primary source will fail. In order to do it, mark the checkbox "Backup" and specify the backup source address and other parameters in the appearing fields, as well as all the rest of the source channel parameters.	The same types of the parameters as for the main source	After migration to the backup source, encoder stay on it and do not move automatically to the main source after its recovering
Video cropping (Advanced settings)	The numbers in pixels to crop the picture from corresponding sides.	Four numbers separated by space in the format: left right top bottom. "Left" value should be non-zero.	
Overlay (Advanced settings)	Applies digital on-screen graphics - persistent logo, text, video or burn-in subtitles		

Advanced Scan Results

Advanced Scan Results						
Program ID	Video Stream			Audio Streams	Data Streams	
— 1	704x480@29.97 (bb) mpeg2video@main8			1	1	

Video Streams Index (1)

ID	Codec Name	Profile	Width x Height	FPS	Field Order	Level
7680	mpeg2video	Main	704x480	29.97	bb	8

Audio Streams Index (1)

ID	Language	Codec Name	Sample Rate	Ch. Count	Ch. Layout
4128	eng	ac3	48000	2	stereo

Data Streams Index (1)

ID	Codec Name	Type
4288	scte_35	data

— 2	1280x720@59.94 (progressive) mpeg2video@main4			1	1	

Video Streams Index (1)

ID	Codec Name	Profile	Width x Height	FPS	Field Order	Level
2049	mpeg2video	Main	1280x720	59.94	progressive	4

Audio Streams Index (1)

ID	Language	Codec Name	Sample Rate	Ch. Count	Ch. Layout
2050	eng	ac3	48000	6	5.1(side)

Data Streams Index (1)

ID	Codec Name	Type
2069	scte_35	data

Save

Picture 2.2 Advanced scan results

6.4. Transcoding templates

Templates allow you pre-define transcoding settings and apply them easily to the group of output streams, simplifying administration of the encoder.

Video templates

ID	Name	Codec	Version	Description	Actions
+ Add New Template	+ Get Reference Cloud Templates				
3	1312868	H.264			
2	HD 1br	H.264	1.2	HD standard quality template 1 bitrate	
1	HD 3br	H.264	1.2	HD standard quality template 3 bitrates	
0	SD 16:9 HQ 3br	H.264	1.2	SD 16:9 High Quality template 3 bitrates	

Picture 3 List of templates

List of video templates (Picture 3), outlines all the templates setup in the encoder. You can Add, Remove, Copy or Edit them.

You can click "Get Reference Cloud Templates", choose needed templates, and click "Install selected". The chosen templates immediately will be download and install.

To set up your own template click "Add New Template".

Following screen shows video templates parameters you can specify while adding or editing.

Templates / Edit Template / HD 3br version 1.2

Sources
Templates
Audio templates
Output streams
Log
Settings
Admin
Zoom
Logout

TEMPLATE NAME
HD 3br

CODEC
AVC encoder

DESCRIPTION
HD standard quality template 3 bitrates

Stream 1 - 640x360, 750kb/s, FPS 25

Stream 2 - 1280x720, 2500kb/s, FPS 25

Stream 3 - 1920x1080, 5500kb/s, FPS 25

(X) Remove

Resolution

◯ 3840x2160 ◯ 3200x1800 ◯ 2560x1440 ⦿ 1920x1080 ◯ 1280x720 ◯ 1024x576 ◯ 896x504 ◯ 640x360

CUSTOM RESOLUTION 1920x1080	BITRATE 5500	FPS 25
OPTIMIZATION TU7 - best speed	CODEC PROFILE Main	CODEC LEVEL 4.1
RATE CONTROL CBR	B-FRAMES COUNT 0	GOP LENGTH 100
ASPECT RATIO square pixel, video stretched		

Deinterlace

⦿ Enabled
◯ Disabled

DEINTERLACE MODE
ADVANCED

+ Advanced Template Settings

(+) Add new stream

Save

Picture 3.1 Add/Edit template

Field Name	Description	Available Values	Notes
Template name	Descriptive name of the template		
Codec	Codec for the output stream	AVC (h264), HEVC (h265), Mpeg2	
Resolution	Size of the screen frame in pixels	Choose from available radio buttons or set manually	
Bitrate	Video stream bitrate	kbit/s	Big bitrates require more GPU resources
Frames per second (FPS)	Number of frames per second in output stream	25, 23.98, 24, 29.97, 30, 50, 59.94, 60, Source FPS	

Optimization	Best speed (more streams – normal quality), balanced, best quality (less streams – maximum quality)	TU1-TU7
Codec profile	Baseline Profile: use for maximum compability or for small resolutions and bitrates Main Profile: use for medium and big resolutions up Full HD High Profile: use for Full HD and 4K video with high bitrates	Base, Main or High
Codec Level	Constrains the bitrate and macroblocks. Primarily used for device compatibility. For example, iPhone 1 supports H.264 Level 3, which means that a video's peak bitrate can't exceed 10,000kbps. Default: 3	3-5.2
Rate control	Constant or Variable bitrate for the output	CBR or VBR
Slice count	Specifies the number of sequences of macroblocks into which to divide a frame. H.264 compression allows the video to be divided and encoded in slices. The codec encodes each slice as an independent stream. This option is not available for the Baseline profile	0 means automatic selection (recommended value)
GOP length (frames)	Group of successive pictures within a coded video stream, specifies the order in which intra- and inter-frames are arranged. Should be equal FPSxMultiplier, where multiplier usually equal from 1 to 4. Recommended value for UDP output – FPSx2; for HLS, DASH, MSS, RTMP – FPSx4	If GOP = FPS, then length is 1 second
B-frames count	Specifies the number of B-frames to create between I-frames and P-frames. B-frames are predicted frames that contain only the changed information between the previous and next frames. This option is not available for the Baseline profile	Recommended values are from 0 to 2
IDR interval	Number of frames between Sequence Start headers.	0 (default) – every I-frame is marked as IDR (recommended value)
Reference frames number	Specifies the number of reference frames to create for each frame	Default value is 1. Use more reframes (2-4) if b-frames are enabled. More reframes require more GPU resources
NAL HRD Conformance	Enable or disable HRD-parameters (Hypothetical Reference Decoder)	Works for UDP output types only
HRD Buffer Length	Hypothetical reference decoder buffer	Use for UDP output only. Set this parameter approximately equal to the value of bitrate divided on 10, 0 – auto

HRD initial delay	Hypothetical reference decoder buffer delay		Use for UDP output only. Set this parameter approximately equal to HRD Buffer Length. HRD will not start to decode frames before filling this size, 0 – auto
Look Ahead Depth	This setting is used only for VBR (variable bitrate) type for the output stream. Quality is determined by the bitrate and the Look-Ahead depth. The larger the Look-Ahead, the better the quality	1-100	Lookahead rate control method introduced by Intel in the Haswell generation chips
Aspect Ratio	This setting is used for correct geometry of the output picture		
Deinterlace	Switch on/off de-interlacing function	on/off	
Deinterlace Algorithm		BOB/Advanced	Advanced algorithm use more processor resources but gives better quality then BOB
Hardware acceleration	Switch on/off hardware accelerated transcoding	on/off	Should be always «on» for the maximum performance

Specify parameters for at least one stream in a template. For the multi bitrate output, create several streams in the template. To add next stream, use "Add stream" link.

Audio templates
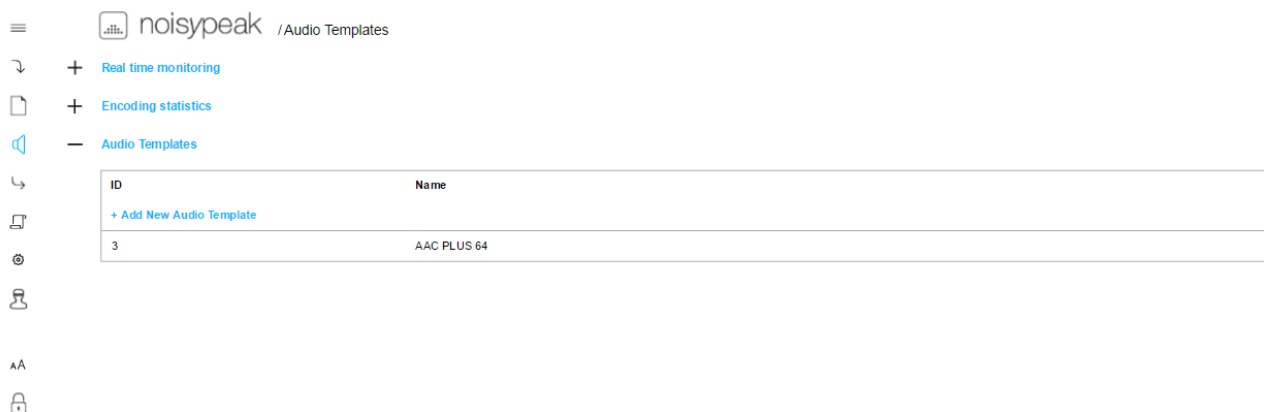
Picture 4 List of audio templates

List of audio templates (Picture 4), outlines all the templates setup in the encoder. You can Add, Remove or Edit them.

Following screen shows audio templates parameters you can specify while adding or editing.

List of audio templates (Picture 4), outlines all the templates setup in the encoder. You can Add, Remove or Edit them.

Following screen shows audio templates parameters you can specify while adding or editing.

Picture 4.1 Add or edit template

To add new audio template or edit existing one (Picture 4.1), specify the following parameters:

Field Name	Description	Available Values	Notes
Template name	Descriptive name		
Codec		AAC, AAC HE, Mpeg1 Layer2, Mpeg1 Layer3, Audio passthrough, PCM	
Sample Rate	Audio sampling rate, Hz	24000, 44100, 48000	
Bitrate	Audio bitrate, Kbit	for AAC - 48, 64, 128, 192; for AAC HE - 48, 64, 128; for MP2, MP3 - 64, 128, 192	

6.5. Output streams

Output streams list contains all configured sources, transmitted from the encoder (Picture 5).

You can see output URLs, which templates are associated with each output, encryption type (if used) and the output stream state.

Picture 5 List of output streams

You can add, delete, copy, edit, stop/pause streams or disable them.

Output Streams / Edit Output / Star TV HD

Description

Start mode

◉ Auto   ◯ Manual

SOURCE
Star TV HD

TEMPLATE
109 - HD 4 25 FPS test

AUDIO TEMPLATE
6 - AAC PLUS 64

FORMAT
HLSv2

— ## Advanced Output Settings

ENCRYPTION KEY PROVIDER
None

Key provider URL

KEY REQUEST INTERVAL (MINUTES)
10

DRM CONTENT ID
0

SEGMENT LENGTH
8

Format specific additional settings

OUTPUT
http://demo_2.noisypeak.com/xrNAl3YGqpvVDW3l

Save

Picture 5.1 Add/Edit output stream

The set of the parameters to configure an output stream depends on the "Format" parameter. To add new output stream, you must specify the following main parameters (Picture 5.1):

Field Name	Description	Available Values	Notes
Start mode		Auto, Manual	Auto - when you are starting a source its output stream will start automatically, manual - when you are starting a source its output stream will not start automatically
Source	Available input sources	Dropdown list of the sources, configured at the "Sources" menu page	
Template	Video template for the output	Dropdown list of the video templates, configured at the "Templates" menu page	
Audio template		Dropdown list of the audio templates, configured at the "Audio Templates" menu page	
Format		HLSv2, HLSv3, HLSv5, HLSv7, Advanced HLS, RTMP, Akamai RTMP, Mpeg DASH, SPTS, MPTS, MBTS, SmoothStreaming, SHOUTcast, SDI playout, NDI playout, FLV or MP4	
Encryption key provider	List of available providers	None, Fairplay, Nagra, NexGuard Unified Marker, PlayReady, Verimatrix, Widevine CENC, HLS Static Key	
Key Provider URL	HTTP URL to the key server		
Key Request Interval	Frequency of new key request	Seconds	
DRM content ID	Unique ID of channel		May be any integer number unique across your channels on all encoders
Segment length	Size of a chunk in seconds		Default recommended is 8 seconds, but must be an integer multiple of GOP size in seconds
Format specific additional settings	To change PSI/SI information you should use the field "format specific additional settings" of an output stream.		
Output	Defines the publishing protocol and where chunks will be located. For HLS, Mpeg DASH or SmoothStreaming output, you may specify some name – for example, the channel name. In this case, the encoder takes the "OutputDir" parameter (usually some publishing URL) from state.dat configuration file and add the specified name to the parameter value, building the full publication URL. The default value for the "OutputDir" parameter is http://localhost/output/. Encoder has built-in WebDAV server with that publishing point.

You can also specify the full publication path to WebDAV, FTP or Samba server, using a protocol prefix, like http://<WebDAV_server_IP address>/output_folder_name or ftp://<FTP_server_IP address>/output_folder_name or \\<SMB_server_IP address>\output_folder_name, in this case "OutputDir" parameter in state.dat file will be ignored.

In case you need to publish to RTMP server, please specify the output URL in the format rtmp://<IP_address_RTMP_server>/some_path, if you use a multi bitrate template, please specify the | | |

URL for each stream in the template, delimiting them with space.

In case of SHOUTcast output format you will see additional parameter fields: Target Address, Password, Genre, Station Name. When you will set these parameters the Output URL filed create automatically.

In case of «File to VOD» encoding you should use FLV or MP4 output format. In the Output URL field you must specify a path on the encoder's local filesystem where the output file will be located, for example D:\temp\output

For SPTS, MBTS or MPTS as type of the output, you will see additional strings with parameters, which help to make right Output URL (Multicast Group, Multicast Port, Multicast Bitrate). Number of the strings will be equal number of streams in the chosen template.

*Note
Before the editing the state.dat file, you must stop the service "Noisypeak Uniform Encoding Engine". You can use Windows «Services» snap-in for stopping the service and editing as described in chapter 4 (Remote access to encoder console).

You can setup several output streams for one source stream using the same video and audio templates. For example, for some source you can create several different outputs streams (HLS, RTMP, UDP and so on) with the same template, additional output streams will not affect the encoder's GPU load and overall performance.

You can start/stop particular output streams regardless of the input source state at the "Sources" menu.

Note
After any changes in the channel configuration (input source parameters, templates, output streams) you have to restart the source at the "Sources" menu.

6.6. Unicast/Multicast Outputs (SPTS, MPTS, MBTS)

What is SPTS, MPTS, MBTS?

SPTS - single program transport stream, UDP output stream with only program, each bitrate in a template presented by own IP:PORT pair

MPTS – multi program transport stream, UDP output stream with several programs, all bitrates in a template presented by one IP:PORT pair

MBTS – multi bitrate transport stream, UDP output stream with one program and several video tracks, all bitrates in a template presented by one IP:PORT pair

SPTS	MPTS	MBTS
Program - Video Track - Audio Track	Program 1 - Video Track - Audio Track Program 2 - Video Track - Audio Track	Program - Video Track 1 - Video Track 2 - Video Track 3 - Audio Track

SPTS output stream configuration with multi bitrate template and constant bitrate (CBR). Example for the template with three bitrates:

1. Bitrate type
2. Output interface
3. Constant output bitrate, calculated as the corresponding bitrate in the template +20%
4. Output URL string (created automatically)

SPTS output stream configuration with multi bitrate template and variable bitrate (VBR). Example for the template with three bitrates:

1. Bitrate type
2. Output interface
3. Zero values for the output bitrates
4. Output URL string (created automatically)
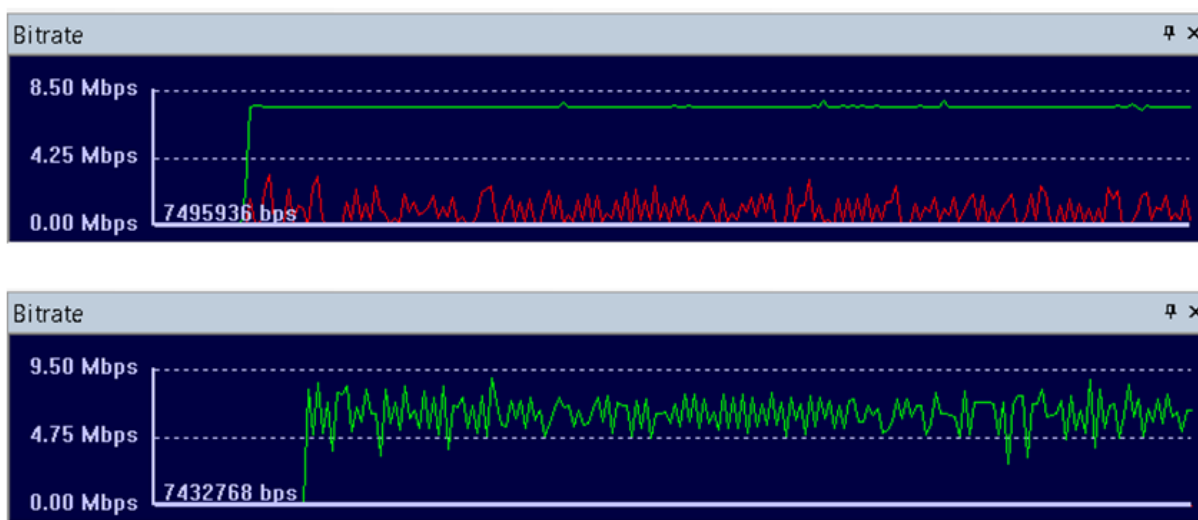
The output flow in StreamGuru analyzer for CBR and VBR SPTS streams

6.7. Transcoding advanced techniques

Audio only HLS

Set "HLSGenerateAudioOnlyQuality" parameter in state.dat to "true"

Use the following settings for the input:

- Service ID – "auto"
- Video Pid – "disabled"
- Audio Pid – "auto"

Use the following settings for output:

- Type – "HLSv2"
- Any video template
- Audio template with AAC codec

Audio only UDP

Use the following settings for the input:

Service ID – "auto"

Video PID – "disabled"

Audio PID – "auto"

Use the following settings for output:

Type – "MBTS"

Any video template

Audio template with AAC codec

Set Multicast IP, Port, Output interface

Widevine DRM encrypted Mpeg DASH output

Output stream encryption parameters:

- Encryption Key provider

- Key provider URL – HTTP/HTTPS URL to the key server

- Key request interval – frequency of new key request in minutes

- DRM content ID - An integer number unique across your channels on all encoders

  Additional parameters should be set in the configuration file state.dat:

  <WidevinePortalID>

  <WidevineLicenseServerRequestSigningKey>

  <WidevineLicenseServerRequestSigningIV>

You can use test parameters provided by Noisypeak to see how Widevine DRM works

Parallel outputs

You can create several parallel outputs for the same input using the same video template

Encoder will not be using additional GPU resources (only one encoding process)

Same input, same template, different outputs

Advanced HLS

Advanced HLS mode allows making HLS format «low tuning», customize HLS version, chunks location, folders and playlists naming, structure and so on

Advanced HLS options:

- HLS Version: 2,3 for maximum compatibility with most devices and players; 5 for maximum features support such as multi language support for IOS and so on

- Root Path: Root publishing point (http/ftp/samba), for example, http://localhost/output/discovery

- Backup Root Path: Backup publishing point

- Root Playlist Name: for example, my_root_playlist.m3u8. The following variables can be set:
  - %channelID% - channel ID
  - %id% - output stream ID
  - %name% - channel name
  - %datetime% - short data-time string

  for example, playlist_%name%_%id%.m3u8 will be converted to playlist_discovery_25.m3u8

- Sub playlists: one or several names or templates for subplaylists via colon. Variables:
  - %channelID%
  - %bitrate%
  - %id% - replacing to outputID_bitrateIndex (25_0, 25_1, 25_2 and so on)
  - %datetime%
  - %name%

- Chunk names: one or several templates for the chunk naming, for example fragment_%bitrate%_%id%.ts. The following variables can be set:
  - %name%
  - %bitrate%
  - %id% - segment number
  - %year% - this and all the following parameters are calculating at the moment of publishing
  - %month%
  - %day%
  - %hour%
  - %minute%
  - %second%
  - %datetime%

- Sliding window length: Playlist length in segments

- Use the same folder for all bitrates: all chunks for all bitrates and all playlists are located in the same folder. When you set this parameter use different names for subplaylists to avoid naming conflicts (for example, use %bitrate% parameter for subplaylists naming)

- Restart DVR: disable chunks and playlists deleting during a channel restart, continue the current playlist

"Format specific additional settings" in Output stream

To change PSI/SI information use the field "format specific additional settings" of an output stream. Examples:

-Programs[STREAM_INDEX].Tracks[TRACK_INDEX].Pid custom_pid – changing the PID for video/audio track

-Programs[STREAM_INDEX].PMTPid custom_pid – changing PMT pid

STREAM_INDEX – bitrate number (0…N)

TRACK_INDEX – track number (usually 0 – video track, 1 – first audio track, 2 – second audio track and so on)

-Programs[0].ProgramID custom_id – changing Service ID

-Programs[0].ServiceName custom_name – changing Service name

-Programs[0].ProviderName – changing Provider name

-ContentProcessor.PlaylistEntries[TRACK_INDEX].Name custom_name – changing track name

Overlays

Adjusted in the "source" setup.

Allow to overlay video, text, picture or burn-in subtitles to the input stream. Usually use for a logo insertion.

- Overlay position – position in pixels relative to input stream resolution from left bottom corner
- Overlay size – overlay size in pixels
- Overlay type – image, video, text or subs
- Overlay source – the path or URL to overlay (for image or text type)
- Luma Only Composition – allow to get transparent background for contrast pictures

Overlay ⊘

OVERLAY NAME
logo ⊘

OVERLAY POSITION
1728x852 ⊘

OVERLAY SIZE
192x228 ⊘

OVERLAY TYPE
image ☰ ⊘

IMAGE OVERLAY SOURCE
d:\np_demo.png ⊘

Luma Only Composition ⊘

◯ Enabled

◉ Disabled

Save

Logo inserted via overlay feature

Subtitles support

DVB-Subtitles. Pass-through mode

After the source scanning choose "service id" and use "data track" field to select subtitle or teletext track to pass-through as is

SCAN FOR AVAILABLE SERVICES.

SERVICE ID (SID)
12003 [□?RTL?Television] - on the air ⑦

VIDEO PID (V-PID)
163 [MPEG2_VIDEO] × ⑦

AUDIO PID (A-PID)
104 [MPEG1_AUDIO] - ger × ⑦

DATA TRACK
110
[ETSI_300_743_TEXT] × ⑦

DVB-Subtitles. Burn-in overlay.

Select single subtitles track at the "data track" and select "Subs" overlay type.

Use 0x0 for position and source screen resolution for the size (for example, 720x576 for SD source and 1920x1080 for HD source)

⌄ Overlay ⑦

OVERLAY NAME
Subtitles ⑦

OVERLAY POSITION
0x0 ⑦

OVERLAY SIZE
1920x1080 ⑦

OVERLAY TYPE
subs ⑦

Closed captions pass-through

Enable CC pass-through at the source settings and the parameter "EnableCCInjector" in the state.dat configuration file

INTERLACE MODE
auto ⑦

AUDIO GAIN (+/- DB)
0 ⑦

VIDEO CROPPING (PX)
0 ⑦

⌄ CC Passthrough ⑦

```
<EnableDX11Mode>true</EnableDX11Mode>
<EnableCCInjector>true</EnableCCInjector>
<WorkerGPULoadThreshold>87</WorkerGPULoadThreshold>
```
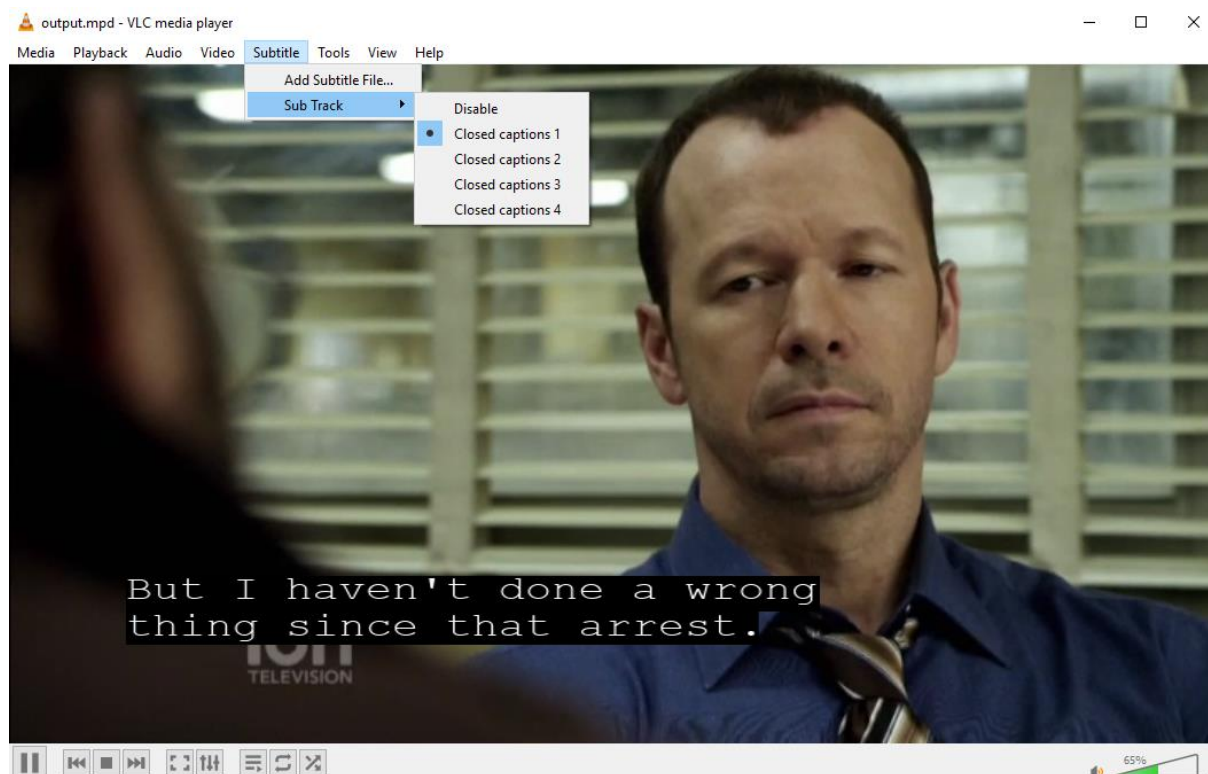
6.8. Logs

Log menu allows you to see the latest events in the encoder's log. Log helps to troubleshoot input and output streams, see Web UI login attempts, view channels job activity

You can set Time Interval and use Filter to show only particular messages, search by key words. To set number of messages for displaying on the page use Rows per Page dropdown list at the bottom of the screen.

Full log is available as a file. By default, the log is placed in "<drive_letter>:\Noisypeak\UEN2\current\log" directory. The main log file named beam.log. It is possible to change the log file location, specifying the path in <LogDir> parameter in state.dat file.

Note
Before editing the state.dat file, you must stop the service "Noisypeak Uniform Encoding Engine". You can use VNC for stopping the service and editing as described in chapter 4 (Remote access to encoder console).

Time Interval

| | This Hour | Today | Week | Set | ✕ |

Filter

| Error (5) | Warning (0) | Info (102) | Debug (0) | ✕ |

| Enter search keyword | ✕ | | Search |

Date / Time	Severity	Source	Module		Message
14.01.2019 16:47:51	10	Admin	172.22.22.13	○	user action: channel 116 stopped
14.01.2019 16:47:51	10	sys		○	channel 116 stopped ok, uptime = 00:45:22.4096464
14.01.2019 16:47:47	10	Admin	172.22.22.13	○	user action: channel 117 stopped
14.01.2019 16:47:47	10	sys		○	channel 117 stopped ok, uptime = 00:45:18.1050507
14.01.2019 16:47:43	10	Admin	172.22.22.13	○	user action: channel 118 stopped
14.01.2019 16:47:43	10	sys		○	channel 118 stopped ok, uptime = 00:45:14.2331015
14.01.2019 16:47:22	10	Admin	172.22.22.13	○	user action: output 120 updated
14.01.2019 16:47:14	10	Admin	172.22.22.13	○	user action: output 121 updated
14.01.2019 16:47:03	10	Admin	172.22.22.13	○	user action: output 122 updated
14.01.2019 16:46:55	10	Admin	172.22.22.13	○	user action: output 123 updated
14.01.2019 16:46:47	10	Admin	172.22.22.13	○	user action: output 124 updated
14.01.2019 16:46:33	10	Admin	172.22.22.13	○	user action: output 125 updated
14.01.2019 16:45:57	10	Admin		○	user action: login
14.01.2019 16:40:06	30	115	StreamSource	○	Monitoring.CCErrors = 2

6.9. Settings

This screen is using for controlling the network interfaces, selecting the "Default input multicast interface", encoding firmware update, performing the backup of the configuration and importing the configuration – full or partial – from the previous backups.

"Network" screen allows you to change the parameters of the network interfaces:

noisypeak / Settings / Network

- + Real time monitoring
- + Encoding statistics
- Network
- Export
- Import
- Firmware
- Hardware
- License
- Reboot

Name	IP address	Mask	Default gateway	DNS	Input Multicast Interface
eth8	████████	255.255.255.0	████████	8.8.8.8	
eth7	172.16.40.35	255.255.255.0			default
eth3	172.16.10.35	255.255.255.0		8.8.8.8	

"Firmware" allows update Noisypeak encoding firmware. First you should get *.7z archive with the firmware from Noisypeak support. Use "Browse" button to locate the firmware file and then click "Update and reboot"

"Export" button saves configuration to Backup.dat file in the default browser downloads folder.

"Import" allows importing the configuration, saved earlier – full or partial. To locate the backup file press "Browse". In the "Settings" field, select the desired option:

- Replace all – current configuration is completely replaced by the imported one;
- Add channels, templates, output streams – adds to the current configuration channels, templates and output streams from the backup;
- Add channels – adds input channels to the current configuration;
- Add audio templates – adds audio templates;
- Add video templates – adds video templates.

See the screenshot below:

6.10. Admin

This menu allows creating/editing the local users information for Web UI.

"Users" allows creating the users of two sorts: with full access or read only access.

"Profile" allows changing the passwords for existing users.

7.0 Typical configuration examples

7.1. Connecting Blackmagic and Magewell capturing devices

Noisypeak encoder supports as a source SDI, HDMI, DVI signals via USB dongles or PCI-E cards Magewell®, Blackmagic®, Inogeni®

Connect your HD-SDI or HDMI camera to the input of the capturing device. Connect the capturing device to USB 3.0 port of the encoder. See an example wiring diagram below:
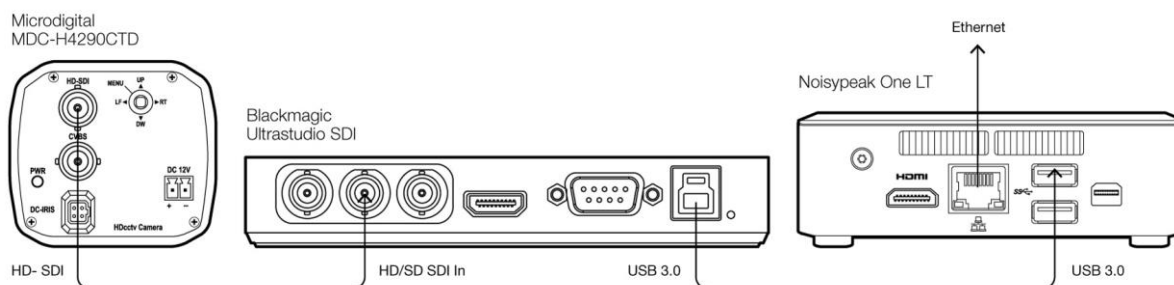
Depending on the capturing device you use, select "Source protocol".

Source protocol types:

- Blackmagic device: use for any Blackmagic devices and PCI-E cards

- Magewell: use for Magewell cards and USB dongles, not Pro series

- Magewell Pro: use for Magewell Pro series cards and USB dongles

- USB webcams and dongles: use for any USB devices with UVC (Universal Video Class) interface, for example USB cameras

  Leave "Source address" empty or set 0. Setup source port - the port on a card or dongle where source signal is coming. If you use SDI input, you should set correct SDI mode or set "auto" from the dropdown list.

=

+ **Encoding statistics**

↳ **Sources**

⬑ **Back**

📄 Templates

◁ Audio templates

↳ Output streams

Sources / Edit Source / SDI input

📜 Log

CHANNEL NAME
SDI input   ⦿

⚙ Settings

SOURCE
Magewell Pro   ☰   ⦿

👤 Admin

SOURCE ADDRESS	⦿	SOURCE PORT	⦿
0		2	

ᴀA Zoom

Start Quick Scan   **Start Advanced UDP Scan**

🔒 Logout

SERVICE ID (SID)
auto   ☰   ⦿

VIDEO PID (V-PID)
auto ✕   ⦿

AUDIO PID (A-PID)
auto ✕   ⦿

DATA TRACK	⦿	◯ CC Passthrough ⦿
disabled ✕		

+ **Advanced Source Settings**

+ **Advanced Scan Results**

Save

Number of HD-SDI and/or HDMI sources may be equal to the number of USB 3.0 ports at your encoder. Every new input source is setup the same way, just the "Source port" has to be incremented.

You can encode those input sources into any output streaming formats, supported by the encoder.

7.2. Broadcasting from UDP multicast input to HLS output

This case explains how to setup an encoder for a standard use scenario of broadcasting a UDP multicast input source, using a multi bitrate adaptive streaming format - HLS.

You can instantly view resulting stream using virtually any device - iOS, Android, Smart-TV, MacOS and Windows.

Create the video template for HLS

First, open the WEB UI of transcoder http://IP_address/ and login (defaults login/pass are admin/2bechanged). Then go to the "Templates" tab and click "Add template".

Enter the template name you want and select the "Codec" for output stream (H264 is recommending). Then you need to setup "Resolution" and "Bitrate" for your first stream. It is recommending set in the "Stream 1" smallest "Resolution" and "Bitrate" and "FPS".

Optimization can take one of three values: best speed, balanced, best quality. In most cases, it is enough to setup "best speed". If you set "best quality", then the performance decreases and you will be able to setup less number of sources.

For other parameters, if you do not understand them well, you can leave the default values:

Codec profile – base

Codec level – 3

Rate control – CBR

Slice count – 0

GOP length – 100

B-frames count – 0

IDR interval – 0

Reference frames number – 1

NAL HRD Conformance – Enabled

HRD Buffer Length – 0

HRD Initial Delay – 0

Look Ahead – Disabled

Look Ahead Depth – 0

Aspect Ratio – static pixel aspect ratio from first source IDR

Deinterlace Algorithm - Advanced

Deinterlace – Enabled

Hardware acceleration – Enabled

As soon as you are done with Stream 1, click "Add stream" and setup Stream 2

You should create as many streams, as many bitrates at the HLS output you want to have. We recommend sorting the streams in ascending order in terms of "Resolution" and "Bitrate", other values can be the same.

Create an audio template

Go to the "Audio templates" tab on a WEB UI and click "Add template".

Choose a codec.

Recommended values for «Sample rate» and «Bitrate»:

- Sample rate: 24000, 44100, 48000
- Bitrate: for AAC - 48, 64, 128, 192;

             for AAC HE - 48, 64, 128;

             for MP2, MP3 - 64, 128, 192

Setup a source

On the "Sources" menu, click "Add Source". Enter the source name. For UDP multicast input you should select from "Source protocol" drop down list "UDP TS stream". Enter values of "Source address" and "Source port" for input multicast group. If you receive the multicast group not at the "default multicast interface" you should set the IP address of ingress interface of the device before the address of the multicast group via colon (for example, 192.168.1.100:239.255.3.97). When you have set the source address and port, you should click "Start Quick Scan" to get all services and tracks. Wait for a several seconds and if there are no any error messages, you will see the list of the finded programs with service IDs, Video PIDs, Audio PIDs and Data PIDs.

Scan for available services   ✕

Results of scanning request are the following:
1001
- 400 Video track [MPEG2_VIDEO];
- 416 Audio track [AC3_AUDIO], language - eng;
- 417 Audio track [AC3_AUDIO], language - spa;
- 432 Data track [SCTE35];

1002
- 912 Video track [MPEG2_VIDEO];
- 928 Audio track [AC3_AUDIO], language - eng;
- 929 Audio track [AC3_AUDIO], language - spa;
- 944 Data track [SCTE35];

1003
- 1424 Video track [MPEG2_VIDEO];
- 1440 Audio track [AC3_AUDIO], language - eng;
- 1441 Audio track [AC3_AUDIO], language - spa;
- 1456 Data track [SCTE35];

1004
- 1936 Video track [MPEG2_VIDEO];
- 1952 Audio track [AC3_AUDIO], language - eng;
- 1953 Audio track [AC3_AUDIO], language - spa;
- 1968 Data track [SCTE35];

1005
- 2448 Video track [MPEG2_VIDEO];
- 2464 Audio track [AC3_AUDIO], language - eng;
- 2465 Audio track [AC3_AUDIO], language - spa;
- 2480 Data track [SCTE35];

OK

You can click "Service ID" drop down list to choose a service you need to setup it as the source.

Active services should have the status "on the air.

+ **Encoding statistics**

≡

↳ **Sources**

▢ Templates

◁ Audio templates

↳ Output streams

▯ Log

⚙ Settings

𝕊 Admin

AA Zoom

🔒 Logout

↩ **Back**

Sources / Edit Source / SUNHD

CHANNEL NAME	
SUNHD	⑦

SOURCE	
UDP TS stream ≡	⑦

SOURCE ADDRESS		SOURCE PORT	
239.120.1.35	⑦	5500	⑦

Start Quick Scan   **Start Advanced UDP Scan**

SERVICE ID (SID)	
1004 - on the air ≡	⑦

auto   ⑦

disabled

1001 - on the air   ⑦

1002 - on the air

1003 - on the air

1004 - on the air

+ **Advanced Source Settings**

+ **Advanced Scan Results**

Save

If you have only one service in the multicast group, you can select "auto". If you have a several audio tracks in the input, you can select which are you need.

You can setup a backup source for the channel in "Advanced Source Settings"

"Audio Gain" allow you to increase or decrease the gain level if you want. "Video Cropping" allow you to crop the picture for several pixels from all the sides.

Click "Save/Add". Your source setup is completed.

Setup an Output stream

Click on the "Output streams" tab and then "Add output". Enter a description if you want. Then fill the fields as follows:

Start mode – auto (auto – then you are starting a source its output stream will start automatically)

Source – select your source from the drop down list

Template – choose a video template you have created for HLS output

Audio template – select an audio template

Format – HLSv2, HLSv3, HLSv5 or HLSv7

Encryption key provider, Key provider URL, Key request interval (minutes), DRM content ID – these parameters are optional and used for content encryption

Segment length – 8 (recommended value for HLS output)

Output URL – you may just print some name

Starting the source and checking the output

On the "Sources" page, click the start icon. After a few seconds, if all settings are correct, the state of the source should be "started". Now you can check the output with any player supported HLS. The URL for playback you can see on the "Output streams" page.

Typical Scenario	Description	Links to articles
Camera sources types and capture devices	These devices allow capturing video streams from HD SDI or HDMI sources	https://www.noisypeak.com/use-cases-main/2019/8/6/camera-sources-types-and-capture-devices
Setup Noisypeak for NDI sources and NDI output	NDI (Network Device Interface) - standard developed by NewTek company, which allows the interaction of several video systems by IP connection for encoding and receiving high quality video and audio streams realtime with minimal delay. This article explains how to set up an encoder for receiving NDI streams and making NDI output.	https://www.noisypeak.com/use-cases-main/2019/8/6/setup-np-connected-for-ndi-sources-and-ndi-output
Encoding from udp input stream to udp output stream	Using UDP multicast/unicast as a source and encoding to multi/single bitrate UDP output	https://www.noisypeak.com/use-cases-main/2019/8/6/encoding-from-udp-input-stream-to-udp-output-stream
Using Widevine CENC DRM to protect MpegDASH output	Using UDP multicast/unicast as a source and encoding to multi/single bitrate Mpeg-DASH protected output	https://www.noisypeak.com/use-cases-main/2019/8/6/using-widevine-cenc-drm-to-protect-mpegdash-output
Setup RTMP output stream to YouTube		https://www.noisypeak.com/use-cases-main/2019/8/6/setup-rtmp-output-stream-to-youtube

8.0 Configuration file state.dat

This file contains important settings, controlling the encoder operation. The file can be editing in any text editor, such as Notepad.

When you save the changes to this file, the encoder's consoles or service (for new versions) must be stopped (use IPMI console, VNC or RDP connection for remote management, the default password you should get from Noisypeak support); otherwise, your changes will not be saved.

Location of the file for old versions – drive_letter:\config\current\state.dat

Location for service based versions – drive_letter:\Program files\Noisypeak
Sarl\UEN2\config\state.dat

Note
We do not recommend performing any changes to this file if you do not clearly understand what you
are doing. Encoder operation can be affected easily.

The list of some important parameters:

EnableLTCGenerator – switches on the synthetic timestamps (true suits most of the cases);

ZeroBasedLTC – resets the beginning of the synthetics timestamps to 0 (if true), or to the offset
from LTCReferenecePoint (if ZeroBasedLTC = false);

LTCReferencePoint – works if ZeroBasedLTC = false, setting the date for LTC generator to start
from. Important for DASH output, set the date not late then 6-8 months;

EnableVideoTranscoderMigration – (Multi GPU encoders only) – automatic load balancing, allowing
moving the tasks from highly loaded GPUs to the less loaded ones;

UIPort – port, where Web UI is working;

LogLevel – logging detail level in the range 0-100 (higher value – more detail)

FailedTaskRestartInterval – time in seconds for attempting to restart the stopped task;

TempDir – path for the temporary files;

OutputDir (works for HLS, MPEG DASH and SmoothStreaming output) – defines the output
protocol (HTTP, FTP or SMB) and the default path for the chunks publishing. For example, set
HTTP URL for publishing chunks to WebDAV server in the following format
HTTP://IP_WebDav_server/(folder_name). By default, encoder publishes to itself
(http://localhost/output/). If Output field of some output stream has full URL path (with protocol
prefix), OutputDir parameter will be ignored for that output stream;

LogDir – path to the logs folder in the local file system.

HLSWindowLengthSegments – number of chunks stored in publication point and in the playlists.

All the other parameters are set to the optimal values, changing them is not recommended.

9.0 Troubleshooting

9.1. Input streams

Make sure you set «Default input multicast interface» at the «Settings/Network» menu

Name	IP address	Mask	Default gateway	DNS	Input Multicast Interface
eth8	▮▮▮▮▮▮	255.255.255.0	▮▮▮▮▮▮	8.8.8.8	
eth7	172.16.40.35	255.255.255.0			default
eth3	172.16.10.35	255.255.255.0		8.8.8.8	

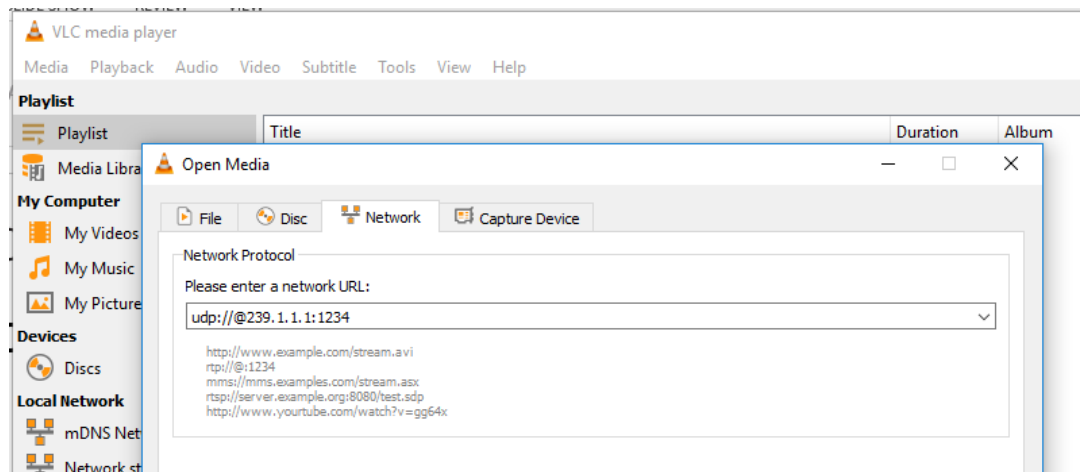Use "scan for available services" function in source setup to check if the encoder see the input
stream

SOURCE ADDRESS
http://98.67.121.116:9033

SOURCE PORT
9033

SCAN FOR AVAILABLE SERVICES.

SERVICE ID (SID)
auto

Try to open your source stream in VLC from the encoder

Check encoder's log for warnings and errors

Most popular messages:

Message	Description
Channel <number> initialization complete, output received	Channel has started normally
ERROR: failed to detect input tracks	No input source, or it has wrong ts data
[StreamSource] System.ArgumentException: no programs found at the input stream	No input signal or wrong input format
Monitoring.CCErrors = <number>	Transcoder receives the input signal with losses of UDP packets due to network or performance issues
Monitoring.PESHDRErrors = <number>	Source is scrambled or has corrupted data
Something is wrong with channel <number>, no output detected for a long time	Trascoder lost the source signal, the channel will be restarted
TS sync validation failed (TS packet is out of sync)	TS-packet size mismatch
Input buffer flushed	transcoder lost a part of input data due to the input buffer overflow
ERROR: corrupted data, skipping frame: unsupported signature	Corrupted frame is received or performance issues
WARNING: audio pts flow corrected	Transcoder fixed some video/audio synchronization issues
Audio decoder sync error detected	Transcoder detected sync error between video and audio
ERROR: Beam.Media.FileAccessor.QueuedHTTPFileAccessor+PutFileCommand command failed to execute	Transcoder could not publish chunk(s) to WebDAV server
System.IO.IOException: Unable to write data to the transport connection: An existing connection was forcibly closed by the remote host. (System.Net.Sockets.SocketException: An existing connection was forcibly closed by the remote host)	Transcoder lost connection with GPU nodes or WebDAV server
System.IO.EndOfStreamException: Attempted to read past the end of the stream	Transcoder did not recieve all data it expected
WARNING: session 6 will migrate to 10.6.6.15 worker due to GPU 10.6.6.18 overload	Transcoder detected an overlodaded GPU node and move a channel from it to less loaded node
WARNING: PES '10' field is 0, frame skipped	TS packet has wrong data

Failed to detect track type: System.InvalidOperationException	Transcoder could not detect the type of a source due to invalid stream format/data

9.2. Troubleshoot OTT Outputs (HLS, DASH, MSS)

Encoder has embedded player for HLS output at the Output streams page. Click HLS output URL to open HLS stream in embedded player

Use VLC to open and test any kind of output stream from the encoder
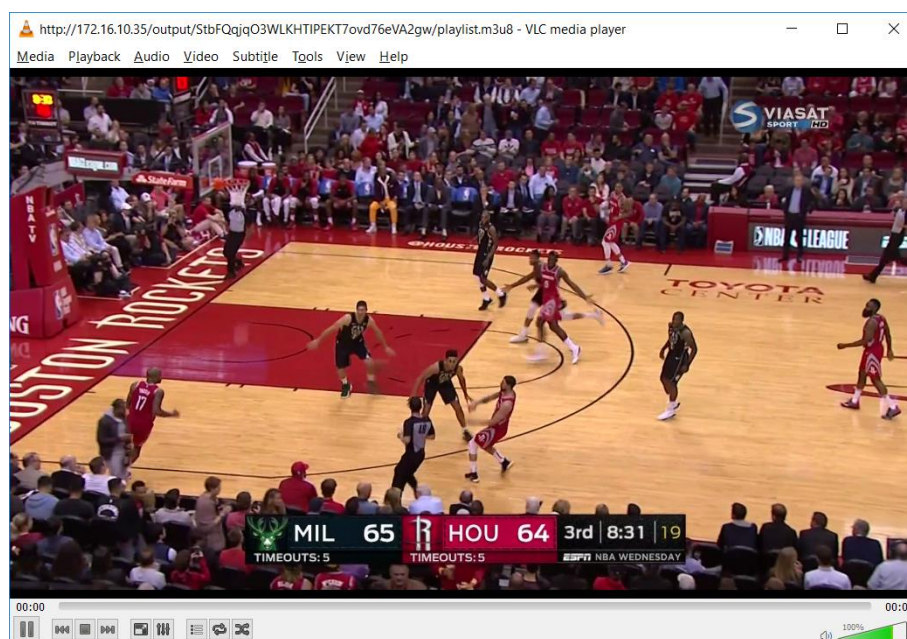
Use Noisypeak stream tester Web page to test HLS, DASH, MSS output streams

http://cloud.noisypeak.com/static/np-stream-tester/#/

9.3. Troubleshoot IP Outputs (SPTS, MPTS, MBTS)

- Use VLC for UDP output playback visually

- See encoder's log for warnings and errors (for example, the most popular warning «too low target CBR bitrate (<value>)» means you should increase the output bitrate in the output stream and restart the source)

- Use third party analyzers to check UDP output stream parameters

10.0 Integration with Zabbix

Using Zabbix custom "user parameter" feature and encoder's API you are able to monitor many parameters of the encoder, for example:

- total number of sources

- number of sources in the encoding state

- number of failed sources

- GPU load

- input network traffic

- output network traffic and other

Example of part Zabbix configuration file with custom user parameters:

- UserParameter=ch.up, curl -s http://localhost/api/1/monitoring/transcodingchannels

- UserParameter=ch.failed, curl -s http://localhost/api/1/monitoring/failedchannels

- UserParameter=ch.gpuload, curl -s http://localhost/api/1/monitoring/gpuloadsegmented

- UserParameter=ch.total, curl -s http://localhost/api/1/monitoring/totalchannels

- UserParameter=ch.input, curl -s http://localhost/api/1/monitoring/inputbitrate
- UserParameter=ch.output, curl -s http://localhost/api/1/monitoring/outputbitrate

To be able to get parameters via API copy curl.exe (Windows version) to System32 folder

Add encoder as a host to Zabbix and create an item for a custom user parameter, for example GPU load (ch.gpuload). Set ch.gpuload as the "Key", set other item parameters.

Click "Add" to create the Item.

Name	GPU Load
Type	Zabbix agent (active) ▼
Key	ch.gpuload [Select]
Type of information	Numeric (unsigned) ▼
Data type	Decimal ▼
Units	
Use custom multiplier	☐ 1
Update interval (in sec)	120
History storage period (in days)	14
Trend storage period (in days)	365
Store value	As is ▼
Show value	As is ▼ show value mappings
New application	
Applications	CPU Filesystems General Memory Network interfaces NP Encoder OS Performance Processes Zabbix agent
Populates host inventory field	-None- ▼
Description	
Enabled	☑

[Add] [Cancel]

Create a trigger for the item, for example, GPU load Too High.

Expression filed sets a condition when the trigger arises.

In the example, the trigger will arise when average value from last three checks for GPU load will exceed 90%.

Name	GPU Load Too High
Severity	Not classified | Information | Warning | **Average** | High | Disaster
Expression	{MiniHE_Youngstown:ch.gpuload.avg(#3)}>90 [Add]

Expression constructor

OK event generation	**Expression** | Recovery expression | None
PROBLEM event generation mode	**Single** | Multiple
OK event closes	**All problems** | All problems if tag values match
Tags	tag value Remove
	Add
Allow manual close	☐
URL	
Description	
Enabled	☑

[Add] [Cancel]

11.0 External Management API

11.1. Overall structure

Universal management API is available in all Noisypeak product family encoders. API is available via JSON/REST protocol.

11.2. Basic functions

Authorization

Encoder checks login and password combination, returning either "success" or "error".

POST

http://example.com/api/1/user/auth

Parameters

Parameter	Mandatory	Description
login	Yes	
password	Yes	

Example 1:

http://example.com/api/1/user/auth

{

"result": 1

}

Example 2:

http://example.com/api/1/user/auth

{

"result": 0,

"error": "Authorization error"

}

Get server information

Server information summary.

GET

http://example.com/api/1/server/info

Parameters

Parameter	Mandatory	Description
No		

Example

http://example.com/api/1/server/info

{

   "result":1,

   "CPULoad":73,

   "FailedChannels":3,

   "GPULoad":40,

   "MemoryUsage":0,

   "TotalChannels":5,

   "TotalInputBitrate":92,

   "TotalOutputBitrate":56,

   "TranscodingChannels":2,

   "id":"server0",

   "name":"Noisypeak",

   "time":"\/Date(1373924672809+0400)\/"

}

11.3. Channels management

Get channels list

Returns detailed channel list

POST

http://example.com/api/1/channel/get_list

Example

http://example.com/api/1/channel/get_list

{

"result": 1,

"channels":

 [

  {

```
"channel_id : 1,
"name": "BBC",
"source_address": "123.123.222.111",
"source_port": 5050,
"source_protocol": "udp",
"v_pid ": auto,
"s_pid": 31,
"service_id": 1290
  }
 ]
}
```

Add channel

Adds channel with source parameters

POST

http://example.com/api/1/channel/add

Parameters

Parameter	Mandatory	Description
name	Yes	
source_address	No	
source_backup_address	No	
source_port	No	
source_protocol	Yes	udp, rtp, hls, file, file2live
v_pid	No	
s_pid	No	
service_id	No	

Example

http://example.com/api/1/channel/add

```
{
 "result": 1,
 "channel_id": 456
}
```

Edit channel

Changes channel and source parameters

POST

http://example.com/api/1/channel/update

Parameters

Parameter	Mandatory	Description
channel_id	Yes	
name	Yes	
source_address	No	

source_backup_address	No		
source_port	No		
source_protocol	Yes		udp, rtp, hls, file, file2live
v_pid	No		
s_pid	No		
service_id	No		

Example

http://example.com/api/1/channel/update

{

"result ": 1

}

Delete channel

POST

http://example.com/api/1/channel/delete

Parameters

Parameter	Mandatory	Description
channel_id	Yes	

Example

http://example.com/api/1/channel/delete

{

"result ": 1

}

Start transcoding

Starts transcoding for a given channel.

POST

http://example.com/api/1/channel/start

Parameters

Parameter	Mandatory	Description
channel_id	Yes	

Example

http://example.com/api/1/channel/start

{

"result ": 1

}

Stop transcoding

Stops transcoding for a given channel.

POST

http://example.com/api/1/channel/stop

Parameters

Parameter	Mandatory	Description
channel_id	Yes	

Example

http://example.com/api/1/channel/stop

{

"result ": 1

}

Get transcoding status

Returns current status for the specified channel

GET

http://example.com/api/1/channel/state

Parameters

Parameter	Mandatory	Description
channel_id	Yes	

Example

http://example.com/api/1/channel/state

{

"result ": "transcoding"

}

http://example.com/api/1/channel/state

{

"result ": "stopped"

}

Video preview

Returns static image for the specified channel

GET

http://example.com/api/1/channel/thumb

Parameters

Parameter	Mandatory	Description
channel_id	Yes	
Width	Yes	
Height	No	May be calculated based on aspect ratio

Example

http://example.com/api/1/channel/thumb?channel_id=0&width=100

Result: image/gif

Audio levels

GET

http://example.com/api/1/channel/peaks?channel_id=0

Parameters

Parameter	Mandatory	Description
channel_id	Yes	
Width	Yes	
Height	Yes	
Interval	No	Interval in seconds (default value = 5)

Example

http://example.com/api/1/channel/peaks?channel_id=0&width=64&height=64

Result: image/gif

Input stream analysis

POST

http://example.com/analyzer/analyze

Parameters

Parameter	Mandatory	Description
SourceAddress	Yes	
SourceProtocol	Yes	
Type	Yes	

Example response

{"result":1,"services":[{"Alive":false,"ID":1,"Name":"RIT-TV","Streams":null},{"Alive":false,"ID":209,"Name":"90numerisat","Streams":null},{"Alive":false,"ID":13900,"Name":"DorcelTV","Streams":null},{"Alive":false,"ID":13910,"Name":"DorcelT.V.","Streams":null},{"Alive":true,"ID":13920,"Name":"SHANTTV","Streams":[{"Codec":"MPEG2_AUDIO","ID":256,"Language":"","Type":"Audio"},{"Codec":"MPEG2_VIDEO","ID":308,"Language":"","Type":"Video"}]},{"Alive":false,"ID":13930,"Name":"PersianToon","Streams":null},{"Alive":false,"ID":13940,"Name":"PMC","Streams":null},{"Alive":false,"ID":13950,"Name":"ALRAFIDENTV","Streams":null},{"Alive":false,"ID":14802,"Name":"RTViEurope","Streams":null},{"Alive":true,"ID":14803,"Name":"inteRTVDetskiiMir-TeleClub","Streams":[{"Codec":"MPEG2_VIDEO","ID":45,"Language":"","Type":"Video"},{"Codec":"MPEG2_AUDIO","ID":46,"Language":"rus","Type":"Audio"}]},{"Alive":false,"ID":14804,"Name":"inteRTVNasheKino","Streams":null},{"Alive":false,"ID":14829,"Name":"PEIRAIKIEKKLISIA","Streams":null},{"Alive":false,"ID":14859,"Name":"TGNORBA24","Streams":null},{"Alive":false,"ID":14860,"Name":"RADIONORBATV","Streams":null}]]}

11.4. Templates managements

Get templates list

POST

http://example.com/api/1/template/get_list

Example

http://example.com/api/1/template/get_list

```
{
"result": 1,
"templates": [
 {
   "template_id": 33
```

```
            "name": "sample"
         }
       ]
     }
```

Get template

POST

http://example.com/api/1/template/get

Parameters

Parameter	Mandatory	Description
template_id	Yes	

Example

http://example.com/api/1/template/get

```
{
"result": 1,
"template": [
  {
    "template_id": 33
    "name": "sample template",
    "streams": [
        {
           "stream_id": 331,
        "resolution": "480x320",
        "bitrate": "200000",
        "target_fps": "25",
        "deinterlace": "0",
        "hw_acceleration": "1",
        "show_logo": "0"
        }
    ]
  }
]
}
```

Add template

POST

http://example.com/api/1/template/add

Parameters

Parameter	Mandatory	Description
name	Yes	Template name

Example

http://example.com/api/1/template/add

{

"result": 1,

"template_id": 123

}

Add stream to template

POST

http://example.com/api/1/template/stream/add

Parameters

Parameter	Mandatory	Description
template_id	Yes	Template ID
resolution	Yes	Screen resolution, example: «480x320»
bitrate	Yes	Bitrate
target_fps	Yes	FPS
deinterlace	Yes	Flag: 1, 0
hw_acceleration	Yes	Flag: 1, 0
show_logo	No	Show logo in video. Flag: 1, 0

Example

http://example.com/api/1/template/stream/add

{

"result": 1,

"stream_id": 123

}

Change template

POST

http://example.com/api/1/template/update

Parameters

Parameter	Mandatory	Description
template_id	Yes	Template ID
name	Yes	Template name

Example

http://example.com/api/1/template/update

{

"result": "1"

}

Change stream in template

POST

http://example.com/api/1/template/stream/update

Parameters

Parameter	Mandatory	Description
stream_id	Yes	Template ID
resolution	Yes	Screen resolution, example: «480x320»
bitrate	Yes	Bitrate
target_fps	Yes	FPS
deinterlace	Yes	Flag: 1, 0
hw_acceleration	Yes	Flag: 1, 0
show_logo	No	Show logo in video. Flag: 1, 0

Example

http://example.com/api/1/template/stream/update

```
{
"result": 1
}
```

Delete stream from template

POST

http://example.com/api/1/template/stream/delete

Parameters

Parameter	Mandatory	Description
stream_id	Yes	Stream ID

Example

http://example.com/api/1/template/stream/delete

```
{
"result": 1
}
```

Delete template

POST

http://example.com/api/1/template/delete

Parameters

Parameter	Mandatory	Description
template_id	Yes	

Example

http://example.com/api/1/template/delete

```
{
 "result": 1
```

}

Get the list of audio-templates

POST

https://example.com/ api/1/audio/template/get_list

Example

https://example.com/ api/1/audio/template/get_list

```
{
"result": 1,
"templates": [
 {
   "template_id": 33,
   "name": "sample",
   "codec": "AAC",
   "sample_rate": 44100,
   "bitrate": 64
 }
]
}
```

Get audio-template

POST

http://example.com/api/1/audio/template/get

Parameters

Parameter	Mandatory	Description
template_id	Yes	

Example

http://example.com/api/1/audio/template/get

```
{
"result": 1,
"template":
 {
   "template_id": 33,
   "name": "sample",
   "codec": "AAC",
   "sample_rate": 44100,
   "bitrate": 64
 }
}
```

Add audio-template

POST

http://example.com/api/1/template/add

Parameters

Parameter	Mandatory	Description
name	Yes	Template name
codec	Yes	Audio-codec. AAC/AACPLUS/MP3
sample_rate	Yes	int
bitrate	Yes	int

Example

http://example.com/api/1/audio/template/add

{

"result": 1,

"template_id": 123

}

Update audio-template

POST

http://example.com/api/1/audio/template/update

Parameters

Parameter	Mandatory	Description
template_id	Yes	
name	Yes	Template name
codec	Yes	Audiocodec. AAC/AACPLUS/MP3
sample_rate	Yes	Int
bitrate	Yes	Int

Example

http://example.com/api/1/audio/template/update

{

"result": 1,

}

Delete audio-template

POST

http://example.com/api/1/audio/template/delete

Parameters

Parameter	Mandatory	Description
template_id	Yes	

Example

```
http://example.com/api/1/audio/template/delete
{
"result": 1,
}
```

11.5. Output streams management

Get output streams list

Returns the list of output streams.

POST

http://example.com/api/1/output/get_list

Example

http://example.com/api/1/output/get_list

```
{
"result": 1,
"outputs": [
  {
   "output_id : 1,
   "channel_id": 12,
   "segment_size": 10,
   "output_url": "ftp://example.com"
   "template_id": 34,
   "audio_template_id": 34,
   "format": "HLS",
   "enabled": 1
  },
  {
   "output_id": 2,
   "channel_id": 12,
   "segment_size": 10,
   "output_url": "ftp://example.com"
   "template_id": 34,
   "audio_template_id": 34,
   "format": "SS",
   "enabled": 1
  }
 ]
}
```

Add output stream

Select the input channel, select the template, setup the playlist, start transcoding

POST

http://example.com/api/1/output/add

Parameters

Parameter	Mandatory	Description
channel_id	Yes	
template_id	Yes	
audio_template_id	Yes	
format	Yes	Stream type: UDP/HLS/RTMP
segment_size	Yes	Playlist segment size
output_url	Yes	relative URL or smb path
key_provider	No	none/Nagra/StaticKey
key_provider_url	No	Nagra key server URL or static key URL
content_id	No	Content ID for Nagra server (arbitrary string)
key_request_interval	No	Key request interval in minutes (default = 10)

Example

http://example.com/api/1/output/add

{

"result": 1,

"output_id": 1,

}

Change output stream

POST

http://example.com/api/1/output/update

Parameters

Parameter	Mandatory	Description
output_id	Yes	
channel_id	Yes	
template_id	Yes	
audio_template_id	Yes	
format	Yes	Stream type: UDP/HLS/RTMP
segment_size	Yes	Playlist segment size
output_url	Yes	relative URL or smb-путь
key_provider	No	none/Nagra/StaticKey
key_provider_url	No	Nagra key server URL or static key URL
content_id	No	Content ID for Nagra server (arbitrary string)
key_request_interval	No	Key request interval in minutes (default = 10)

Example

http://example.com/api/1/output/update

```
{
"result ": 1
}
```

Stop/Start transcoding

POST

http://example.com/api/1/output/enable

Parameters

Parameter	Mandatory	Description
output_id	Yes	
enable	Yes	0,1 – off / on

Example

http://example.com/api/1/output/enable

```
{
"result ": 1,
"enabled": 1
}
```

Delete output stream

POST

http://example.com/api/1/output/delete

Parameters

Parameter	Mandatory	Description
output_id	Yes	

Example

http://example.com/api/1/output/delete

```
{
"result ": 1
}
```

11.6. Administration functions

Get the list of interfaces

Returns the list of network interfaces

POST

http://example.com/api/1/nic/get_list

Example

http://example.com/api/1/nic/get_list

```
{
"result": 1,
"nics": [
```

```
{
"nic_id : 1,
"ip": "172.22.22.22",
"mask": "255.255.255.0",
"gateway": "172.22.22.1"
"type":"mgmt.",
"dns":"172.22.22.10",
"up": 1,
"connected": 1
},
]
}
```

Type: reserved for future use. Values: egress, ingress, mgmt.

Up: reserved for future use.

Connected: reserved for future use.

Change interface settings

POST

http://example.com/api/1/nic/update

Parameters

Parameter	Mandatory	Description
nic_id	Yes	
ip	Yes	
mask	Yes	
gateway	No	
dns	No	
type	No	Ignored in the current version

Example

http://example.com/api/1/nic/update

```
{
"result ": 1
}
```

11.7. Command line

Get log

Returns the server log in RAW UTF-8 format. Only the new lines, appeared after the last function call within the current session are returned.

GET

http://example.com/api/1/server/log

Parameters

No

Example

http://example.com/api/1/server/log

26.02.2013 9:22:49 > http://localhost:80 host started

26.02.2013 9:22:49 > COM Ports found:

26.02.2013 9:22:49 > 20xfour display was not found

Execute command

Executes the command on the server

POST

http://example.com/api/1/server/execute

Parameters

Parameter	Mandatory	Description
cmd	No	Command line

Example

http://example.com/api/1/server/execute

{

"result ": 1

}

Error Codes

| Error	Description
Server error	Server end error
Wrong ID	Wrong element ID
Authorization error	Wrong login and/or password
Wrong parameter	Client end error

12.0 Performance tests

Configuration

- GPU: Intel HD P530
- Input: HD HTTP-TS
- Output: HLSv3 AVC
- Template: 3 bitrates
- 1920x1080@5000
- 1024x576@2500
- 640x360@1200
- Optimization: Balanced
- Codec profile: Main

Result

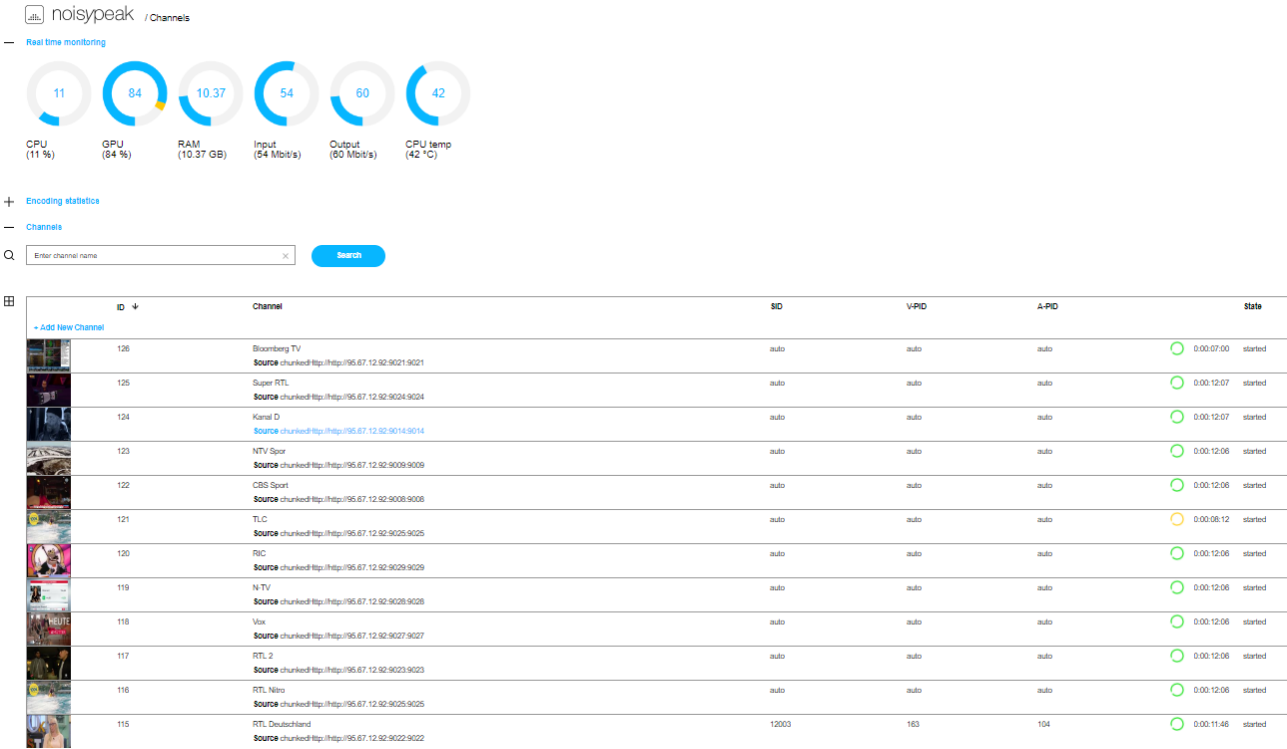6 channels

GPU load 75-85%
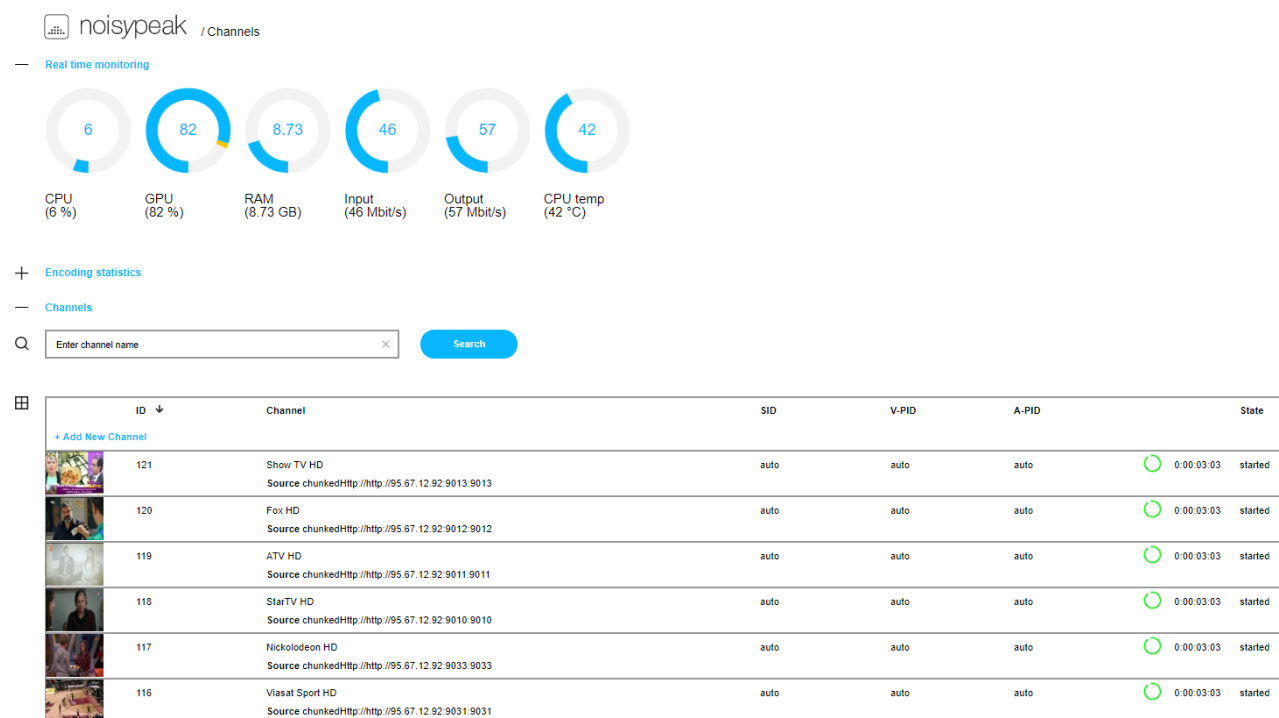
Configuration

- GPU: Intel HD P530
- Input: SD HTTP-TS
- Output: HLSv3 AVC
- Template: 3 bitrates
- 720x404@2500
- 640x360@1500
- 480x270@800

- Optimization: Balanced
- Codec profile: Main

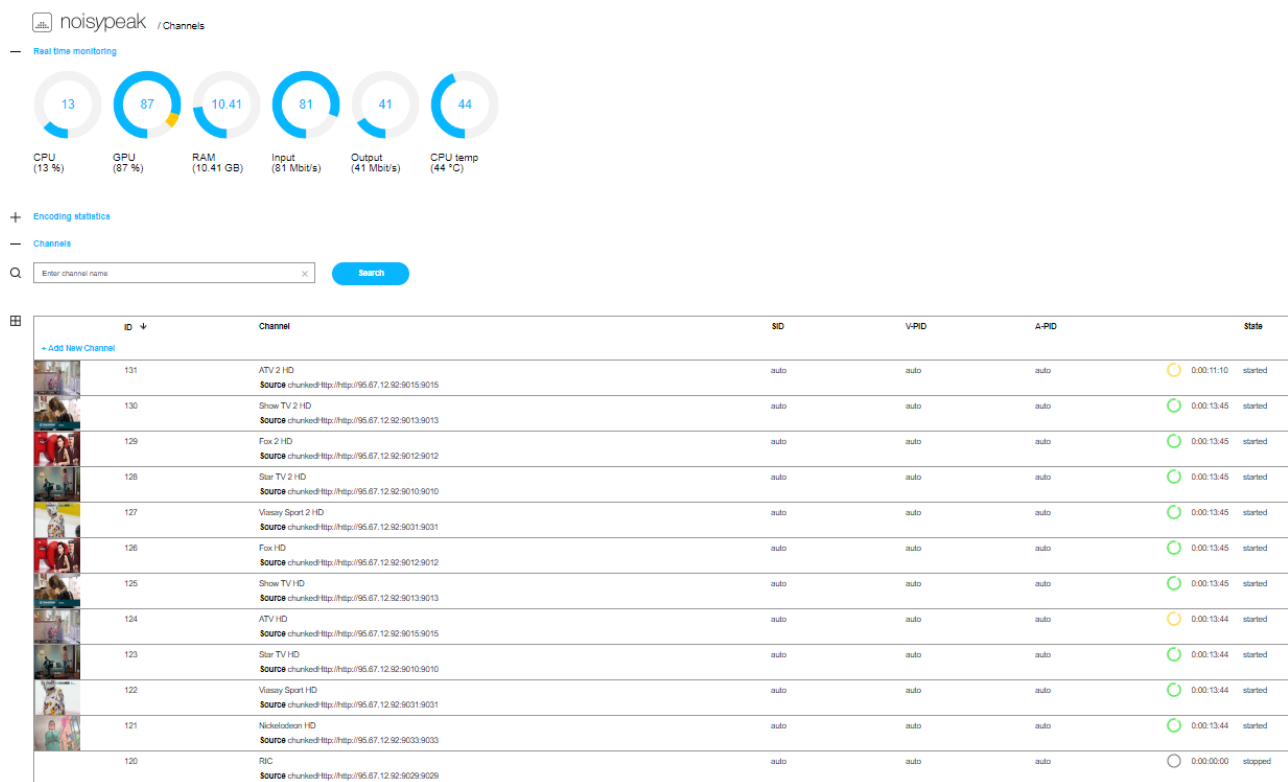Result

12 channels

GPU load 78-85%

Configuration

- GPU: Intel HD P530
- Input: HD HTTP-TS
- Output: HLSv3 AVC
- Template: 1 bitrate
- 1920x1080@5000
- Optimization: Balanced
- Codec profile: Main

Result

11 channels

GPU load 80-88%

- Configuration
- GPU: Intel UHD P630
- Input: UHD UDP-TS
- Output: HLSv3 HEVC
- Template: 1 bitrate
- 3840x2160@12000
- Optimization: TU6
- Codec profile: Main

Result

1 channel

GPU load 50-60%

13.0 Noisypeak Support

Noisypeak provides support via Zendesk portal

- To create an account at the portal, provide your name, organization name and email to Noisypeak employee.
- Click on the invitation in received email and set a password for your account.
- To create a ticket click on "submit request".

14.0 Latest changes

The list of the featoures and improvements during past half year:

- NDI support added for input and output (version 4x)

- Advanced UDP source scanner

- SCTE 35 support

- Syslog server support

- Fractional FPS values support

- Web UI performance optimization

15.0 Glossary

Bandwidth

Bandwidth has many meanings, depending on context. It started as a radio term and has been expanded to include other kinds of communications. It is the numerical difference between the highest and lowest frequencies of a radio band or channel.

Bandwidth means the same thing in audio, although in most applications, the lowest frequency is sufficiently low enough to be considered equal to zero. Hence, audio bandwidth usually means the highest frequency of an audio signal or the highest frequency that can be carried by an audio system.

Bitrate

The rate for transmitting data over a network. Noisypeak products use several bit rates. The channel capacity is the limit of the network. The maximum bit rate is a limit, less than the channel capacity that the fitter uses to fit data into the actual bandwidth for a streaming server.

The audio encoder uses an average bit rate and a maximum bit rate for variable bit rate encoding.

Codec

The software that encodes and decodes a file. The word is a shortened form of coder-decoder or compression-decompression. This product has an audio codec and a video codec.

HLS

HTTP Live Streaming (HLS) is an HTTP-based media streaming communications protocol implemented by Apple Inc. as part of their QuickTime and iOS software. It works by breaking the overall stream into a sequence of small HTTP-based file downloads, each download loading one short chunk of an overall potentially unbounded transport stream. As the stream is playing, the client may select from a number of different alternate streams containing the same material encoded at a variety of data rates, allowing the streaming session to adapt to the available data rate. At the start of the streaming session, it downloads an extended M3U (m3u8) playlist containing the metadata for the various sub-streams which are available.

HTTP

Hypertext Transfer Protocol

Internet

An interconnected system of networks that connects computers around the world via the TCP/IP protocol.

ISO

International Standards Organization.

Kbps

Kilobits per second.

MPEG

As defined on the MPEG website, mpeg (pronounced M-peg) stands for Moving Picture Experts Group, and is the name given to a family of International Standards used for coding audio-visual information in a digital compressed format. The MPEG family of standards includes MPEG-1, MPEG-2, and MPEG-4, which is formally known as ISO/IEC-11172, ISO/IEC-13818 and ISO/IEC-14496.

Multicast

Process where a single stream is served from one server to multiple clients. It is a one-to-many communication.

Multimedia

As the name suggests, one presentation with multiple forms of media—text, graphics, sound, video, and animation. MPEG-4 gives broadcasters the tools to deliver multimedia presentations over the Web.

Real-time

Rapid transmission and processing of event-oriented data and transactions as they occur instead of being stored and retransmitted or processed as batches.

RTP

Real-time Transport Protocol.

RTSP

Real Time Streaming Protocol.

Stream

The encoded media or scene description data in an MPEG-4 file.

Streaming

Sending media streams from a streaming server to a player as a steady, continuous stream. The player reconstructs media scenes using information in the scene description.

TCP

Transmission Control Protocol.

UDP

User Datagram Protocol.

Unicast

Unicast is communication between a single sender and a single receiver over a network.

URL

Uniform Resource Locator. A method of naming documents or places on the Internet.