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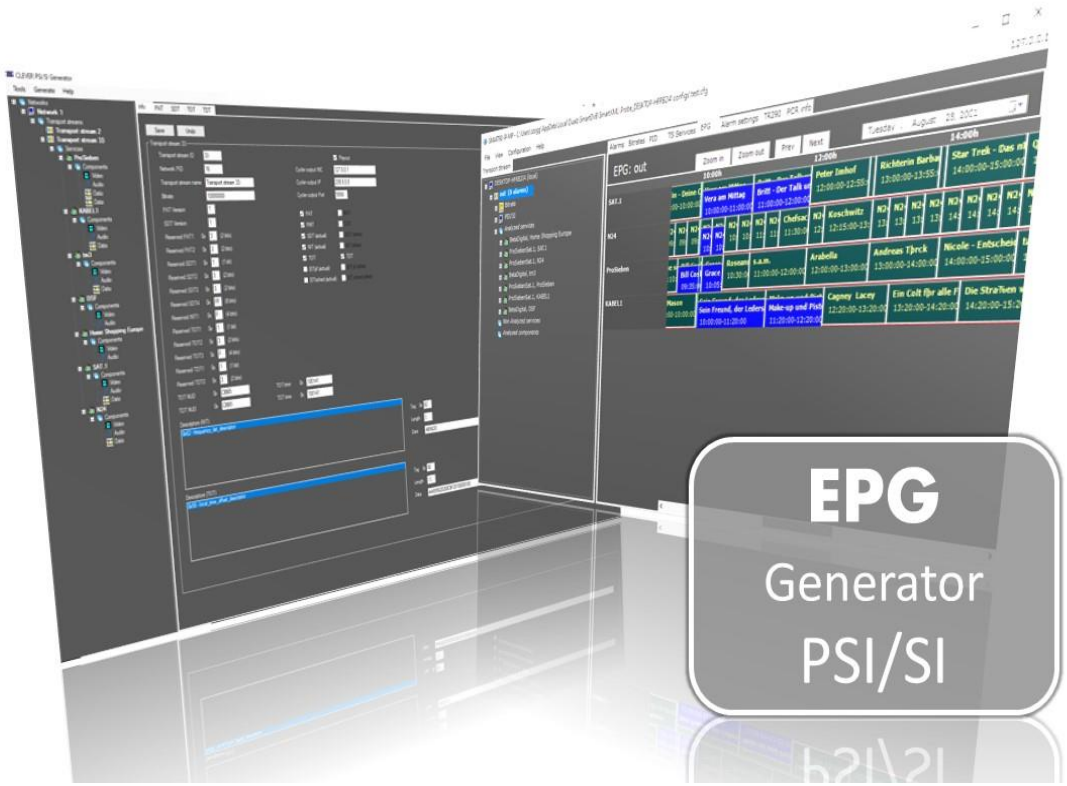

CLEVER PSI/SI and EPG generator

User manual

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Contents

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Introduction

Linear broadcast services require Program Specific Information/System Information (PSI/SI) as an essential part of the stream. Tuning information as well as Electronic Program Guide (EPG) can be generated by the Dualz "CLEVER" PSI/SI Generator. The Dualz PSI/SI Generator conforms to MPEG and DVB standards. Generated tables include PAT, PMT, TOT, TDT, CAT, BAT, NIT, SDT, EIT pf/scheduled and more, actual as well as others. Dualz PSI/SI Generator imports data from several interfaces, from file (XML) or REST API interfaces.

CLEVER PSI/SI generator prepares and 24x7 delivers your DVB transport stream metadata. Static network and transport stream setup as well as Electronic Program Guide (EPG) information. It supports interfaces for event injection via the EIT generator.

CLEVER engine and cycler are implemented in cross platform implementation, meaning that they can run in Windows or Linux environment, on-premise or in the cloud.

Operating system

The CLEVER engine and cycler is available both in Linux as well as in Windows.

CLEVER User Interface runs on any Windows operating system. Win10 prof 64bit recommended. The UI can connect locally or remotely to a CLEVER engine and supports redundant modes.

Installation CLEVER application on windows

NOTE: Not needed for Cloud services

The CLEVER generator comes with 2 parts:

1. CLEVER engine: runs 24x7 in Windows services mode. Even when the UI is closed the engine services will keep running 24x7, generating your streams.
2. CLEVER UI: Windows application that can be started on demand. Via this user interface the complete setup of CLEVER engine can be configured.

Install CLEVER engine

In order to install the CLEVER engine, you need the file 'CLEVERSetup.msi'.
Run the file 'setup.exe', in order to automatically install the prerequisites as well.

Install CLEVER UI

In order to install the CLEVER engine, you need the file 'CLEVERUISetup.msi'.
Run the file 'setup.exe', in order to automatically install the prerequisites as well.

The CLEVER UI can be started via 'Programs – Dualz Solutions – CLEVER PSI generator'.
NOTE: The application UI can also be started via shortcut "CLEVER PSI generator" on desktop.

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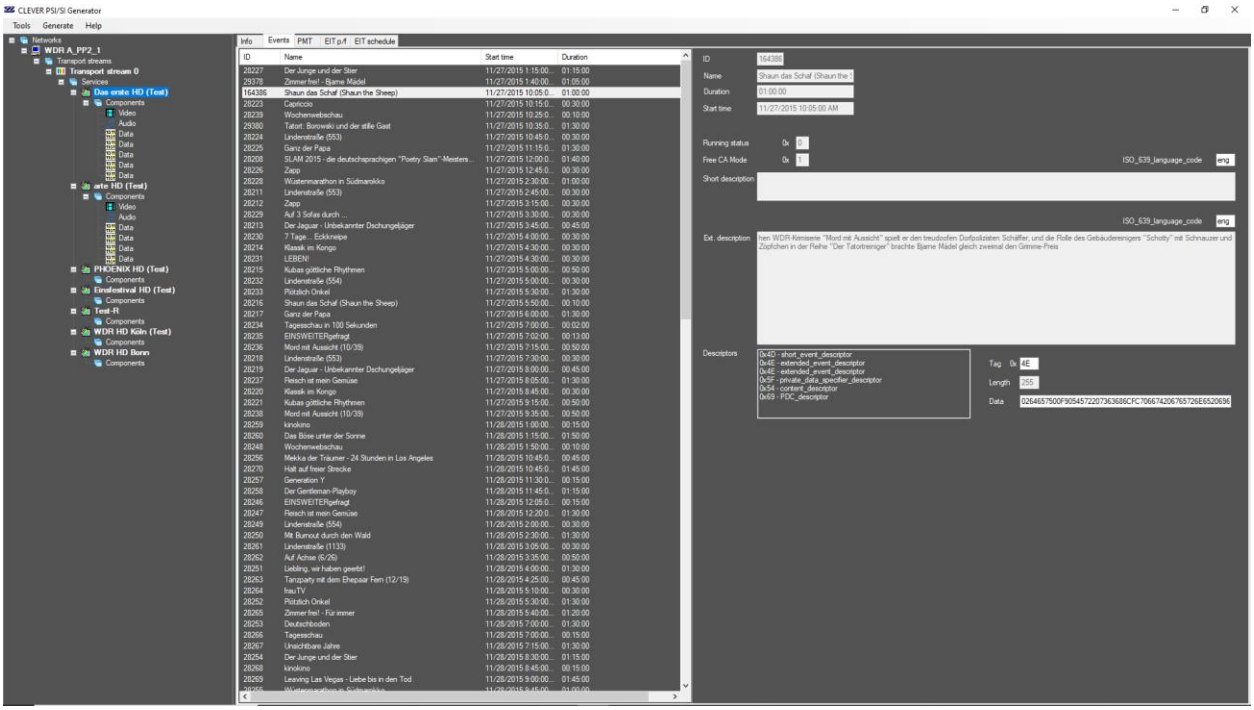
CLEVER PSI/SI generator UI.

The CLEVER user interface, shows an overview of your networks, transport streams, services and components. All detailed information can be set on different levels. PSI descriptors can be added or edited.

NOTE: Use menu "Generate – Update CLEVER engine" in order to make the UI changes active in the output stream!

If a change is done in UI that has not been sent to clever engine(s) yet, the UI color shall be light gray.



Menu

The main application menu contains:

- Tools
- Info
- Generate
- Help

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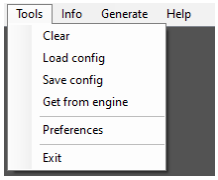
Tools Menu



Load config

Loads a previously saved configuration.

Save config

Saves the current configuration.

Get from engine

Retrieves information from main engine.

Preferences

First select 'Preferences', in order to configure your setup.

Exit

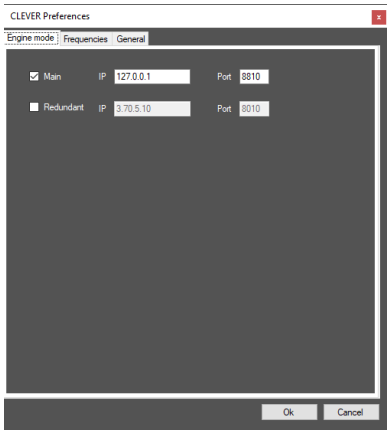
Closes the application

Preferences

The preferences menu show 3 tabs:

- Engine mode: Main / Redundant configuration
- Frequencies: Configure the timing of the PSI/SI tables
- General: General settings, like default code table.

Engine mode



Engine mode settings defines the main/redundant configuration of the engine. If redundant configuration is selected the configuration is supplied to a 1+1 redundant configuration..

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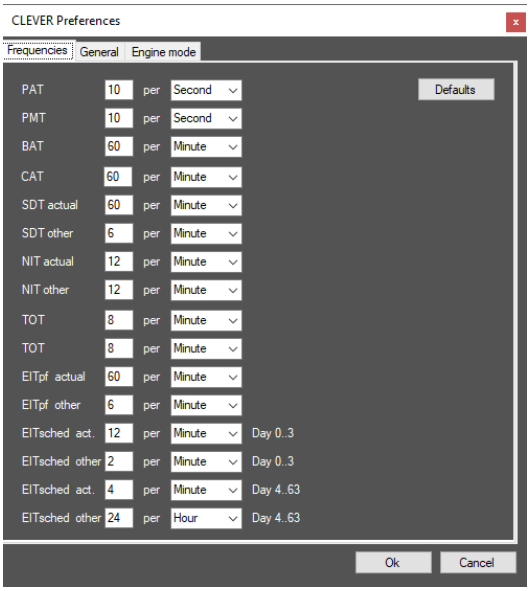
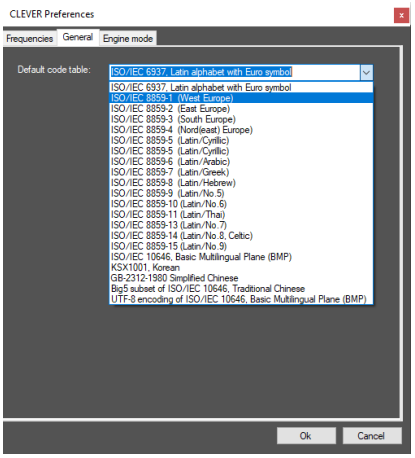
Frequencies

The frequencies settings define the PSI table frequencies in the transport stream outputs.

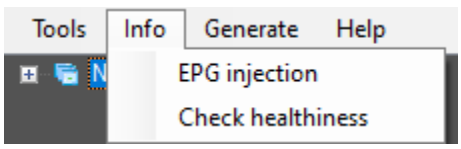


General

The general settings contains the default code table.



Info menu



The info menu shows:

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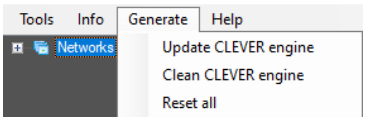
- EPG injection: Shows information about the current EPG injection configuration
- Check healthiness: Checks the healthiness of your configuration, like PID clashes, ntw/ts/srv numbers etc.

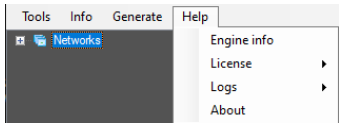
Generate menu



The Generate menu shows:

- Update CLEVER engine: Sends configuration to local or remote engines.
- Clean CLEVER engine, remove all data from the configured engines (main/redundant).
- Reset all: Clears the engines (main/redundant)

Help

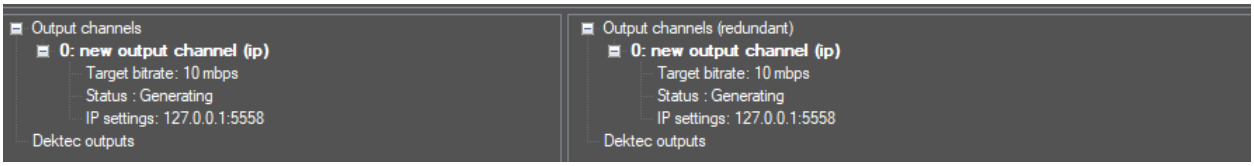


The Help menu contains:

- Engine info: Shows information from current engines.
- License: Shows license information. License can be retrieved or set via this menu.
- Logs: For analysis purpose
- About: Shows 'CLEVER PSI/SI generator' about information.

Output channels

The bottom part of the UI shows the output channels that are configured. You can add an unlimited amount of output streams.



Color indication

When information from an output channel can not be retrieved, the output channel line is shown in orange,

When an engine is not licensed all lines of the output channel are shown in orange.

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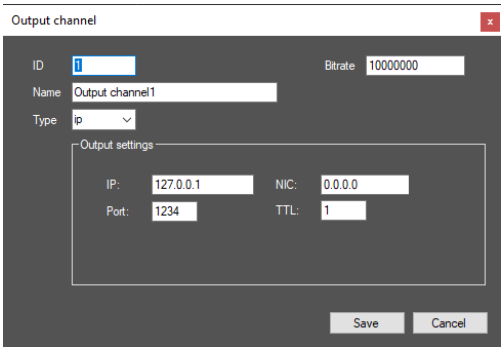
Add/Edit output channel



An output channel contains the following config items:

- ID: output channel ID
- Name: Name of the output channel
- Type: Output type can be: IP, ASI, FILE, SRT, ZIXI
- Bitrate: Output bitrate, null packets are inserted to fill the gaps.

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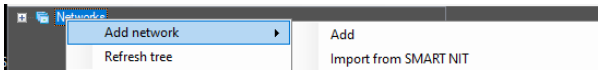
Add Network

In order to start creating your network, transport streams, services and components, select ‘Add network’ via right click in the networks tree on the left. You can add as many networks as you like. You can also add a network by imported SMART generated xml files (ask Dualz or your local reseller for more info on auto generating configuration from existing transport streams).



At any time, select “Refresh tree” in order to refresh the networks view, as well as the selected views on the right side of the user interface.

Network settings

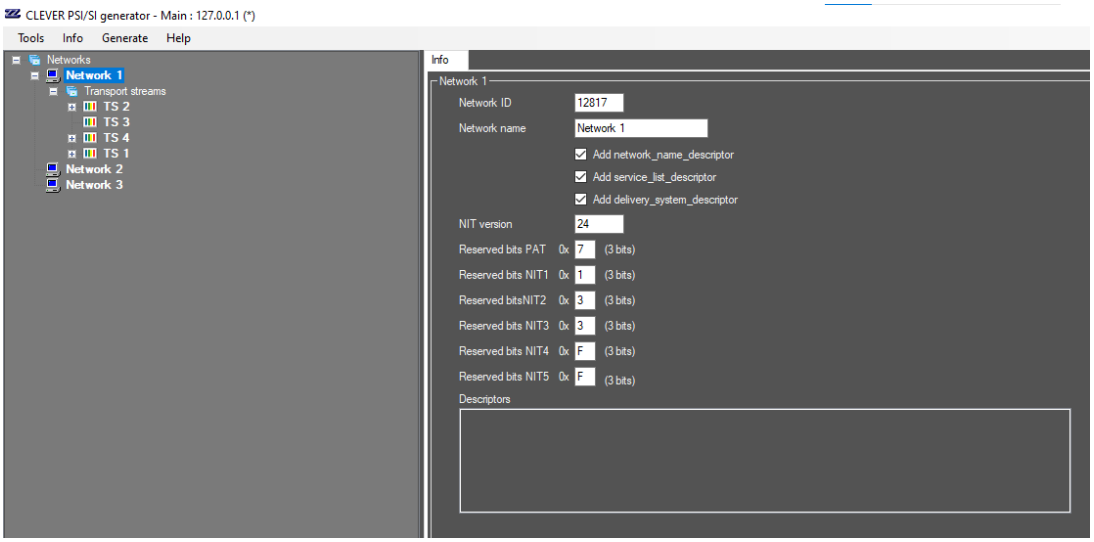
When a network is selected, the right side show the network views:

- Info

The network info view configures all the needed information on network level, like ‘Network ID’ and ‘Network name’. You can configure whether to automatically generate some descriptors in the NIT table.

Also some fields in PAT or NIT table can be given on network level.

Add the descriptors, to be included in the NIT table. See below, for a description of descriptor configuration.



Remove network

Select ‘Remove network’ in order to delete the network from the data structure.

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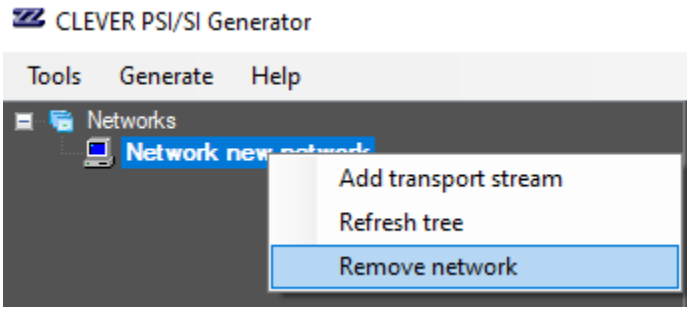
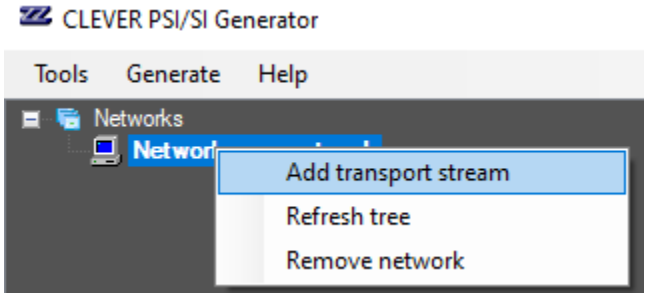


Add transport stream

In order to add transport streams to your network, select 'Add transport stream' via right click on network level. You can add as many transport streams as you like.



Transport stream settings

When a transport stream is selected, the right side show the transport stream views:

- Info
- NIT other
- SDT other
- EITpf other
- EITsched other

Transport stream info

The transport stream info view configures all the needed information on transport stream level, like 'Transport stream ID', 'Original network ID', 'Network PID', 'Transport stream name' and more.

You can configure the IP output settings for live playout. Also configure whether to include or exclude specific PSI/SI tables.

The TOT and TDT timing information can be set on transport stream level.

Also, configure the list of descriptors to appear in CAT, NIT and TOT.

The network type can be configured. The Network Delivery descriptor in the NIT shall be created accordingly:

- Satellite

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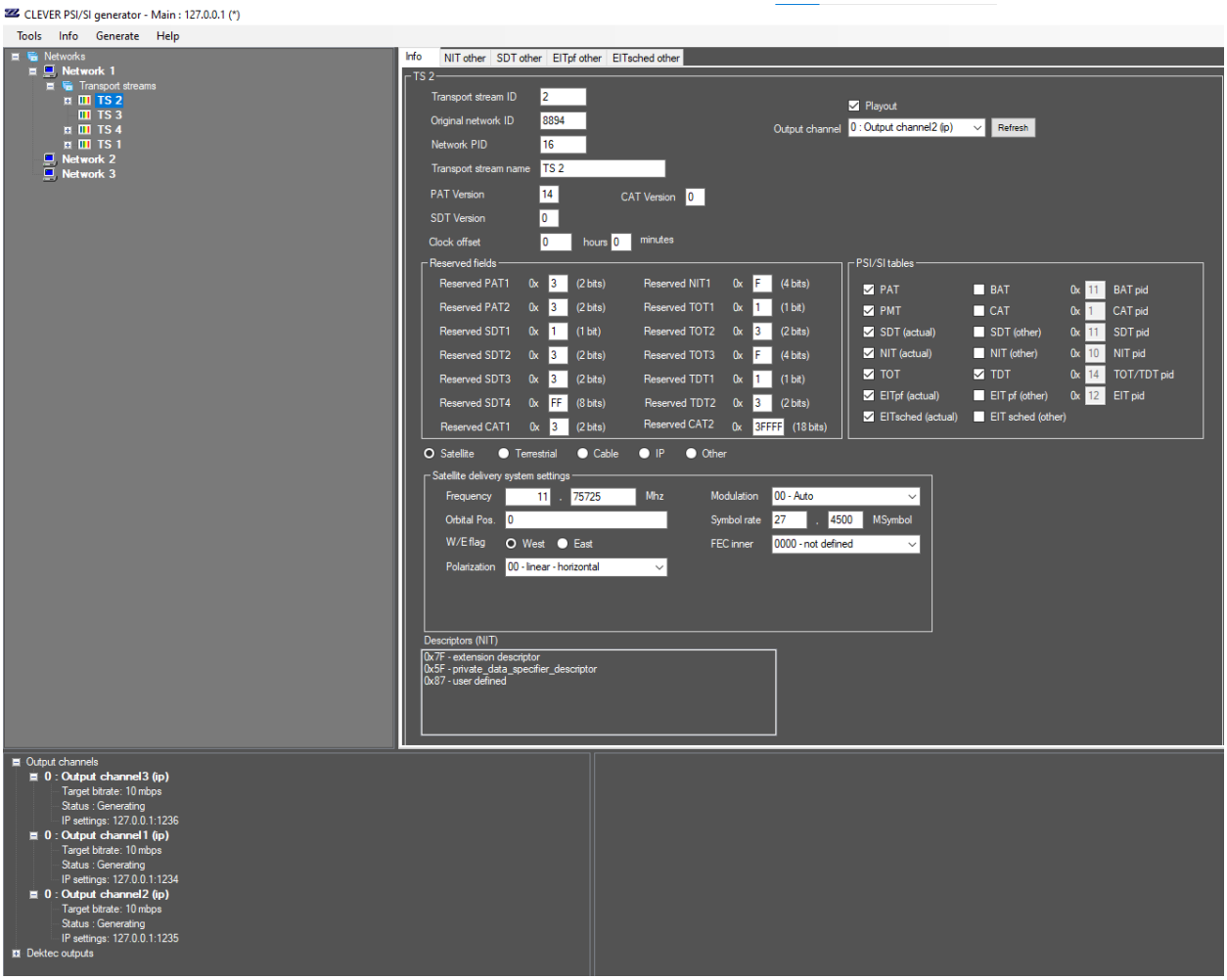
- Terrestrial
- Cable
- IP (no delivery descriptor)
- Other(no delivery descriptor)



NIT other

The NIT other table view is shown below. Select the networks you want to include in the NIT other table.

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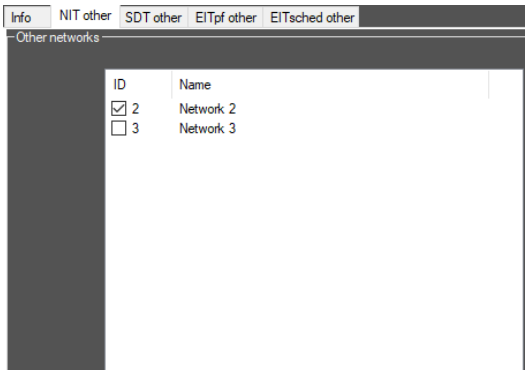
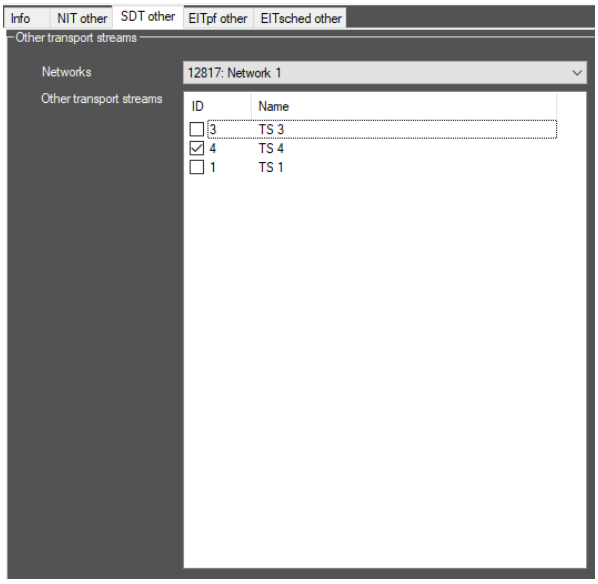


SDT other

The SDT other table view is shown below. Select the services you want to include in the SDT other table.



EITpf other

The EITpf other table view is shown below. Select the services you want to include in the EITpf other table.

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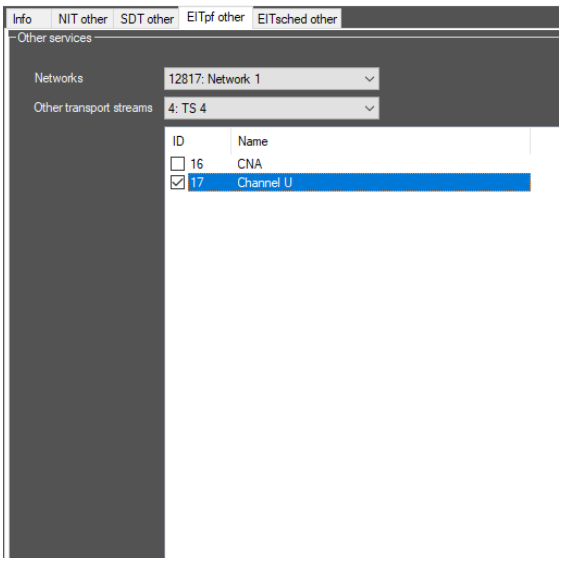
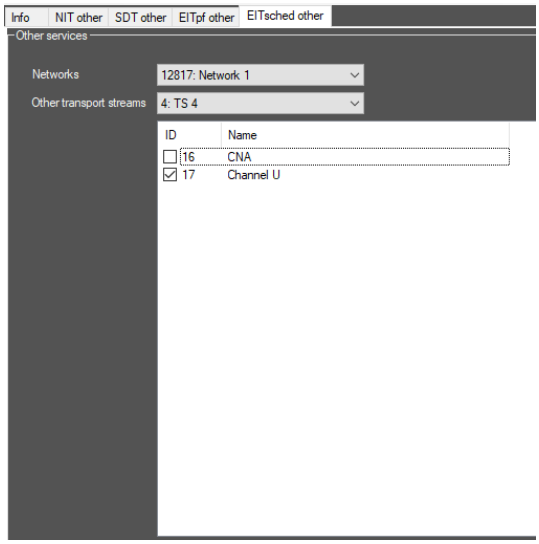


EITsched other

The EITsched other table view is shown below. Select the services you want to include in the EITsched other table.



Remove transport stream

Select 'Remove transport stream in order to delete the transport stream from the data structure.

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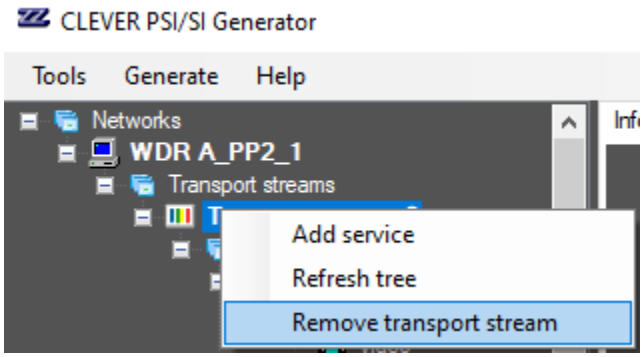
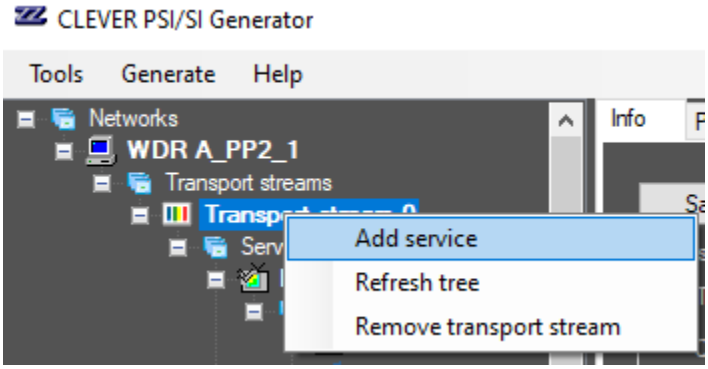


Add Service

In order to add services to your transport stream, select 'Add service' via right click on transport stream level. You can add as many services as you like.



Service settings

When a service is selected, the right side show the bouquet views:

- Info
- Injector

Service info

The service info view configures all the needed information on service level, like 'Service ID', 'Original network ID', 'Service name', 'Provider name', 'Service type', 'Program number' and more.

Also, configure the list of descriptors to appear in the PMT or SDT. Refer to Descriptor configuration.

Injector

The "Injector" page defines the service EPG injection settings. You need to define :

- Codepage: Character set to be used, UTF-8 is most commonly used.
- Input folder: Location where the event xml files are placed.

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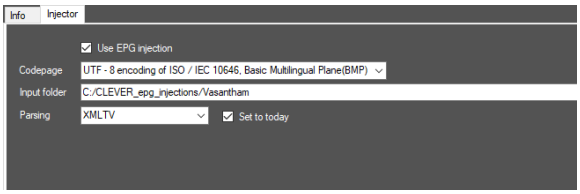
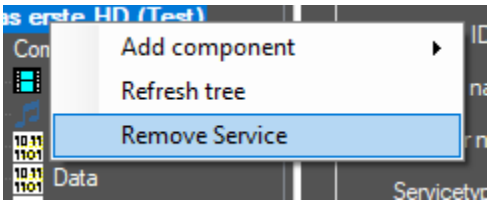
- Parsing: Defined the format of incoming event XML.
- Set to today: If older files are used, in demo or trial modes, this option sets the event start times to today.



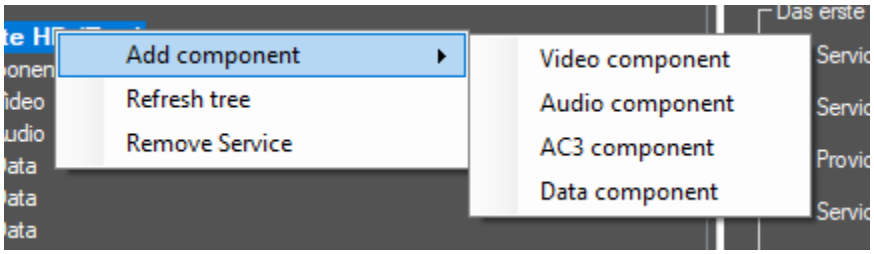
Remove service

Select 'Remove service' in order to delete the service from the data structure.



Add video/audio/AC3/data component

In order to add (video/audio/AC3/data) components service, select 'Add component' via right click on service level. You can add as many components as you like.



Component settings

When a component is selected, the right side show the component views:

- Info

Component info

The component info view configures all the needed information on (video/audio/AC3/data) component level, like 'PIP' and 'Stream type

Also, configure the list of descriptors to appear in PMT.

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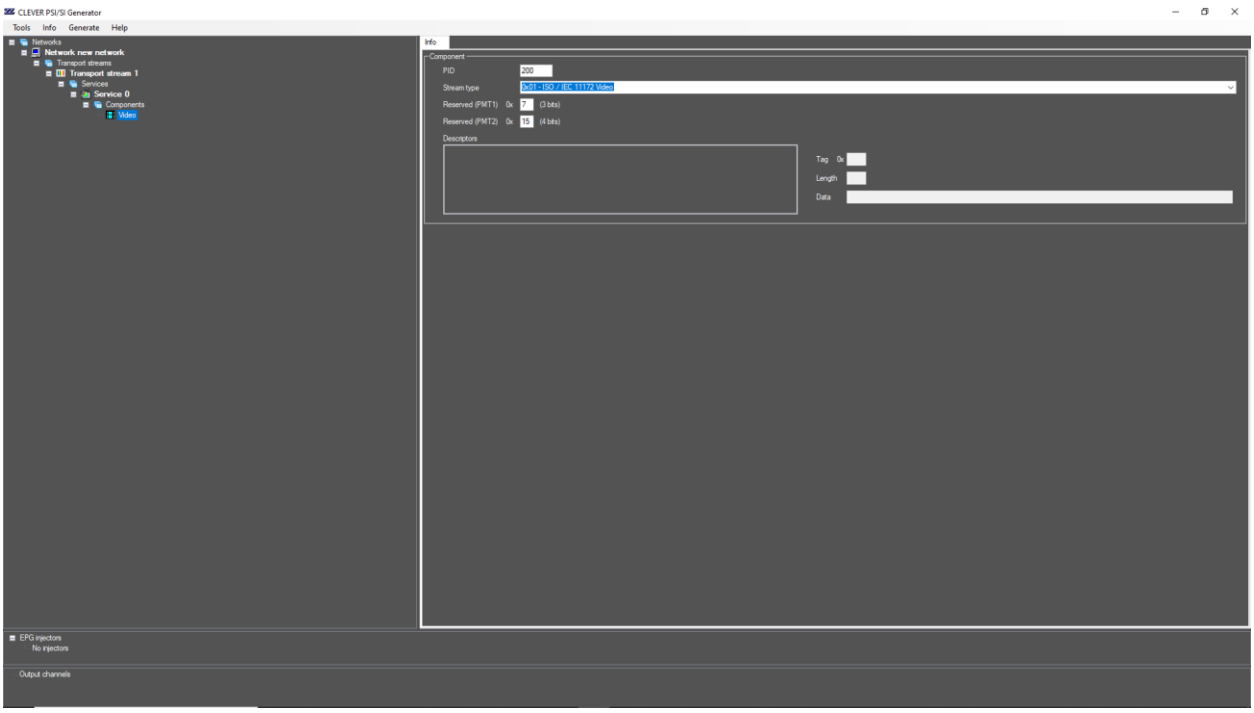
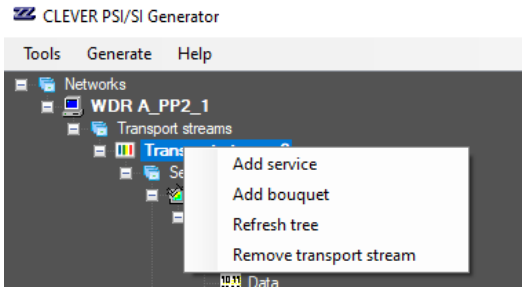


Add bouquet

In order to add bouquets to your transport stream, select 'Add bouquet' via right click on transport stream level. You can add as many bouquets as you like.



Bouquet settings

When a bouquet is selected, the right side show the bouquet views:

- Info

The bouquet info view configures all the needed information on service level, like 'Bouquet ID', 'Bouquet name', and more. Also, configure the list of descriptors to appear in the BAT. Refer to Descriptor configuration.

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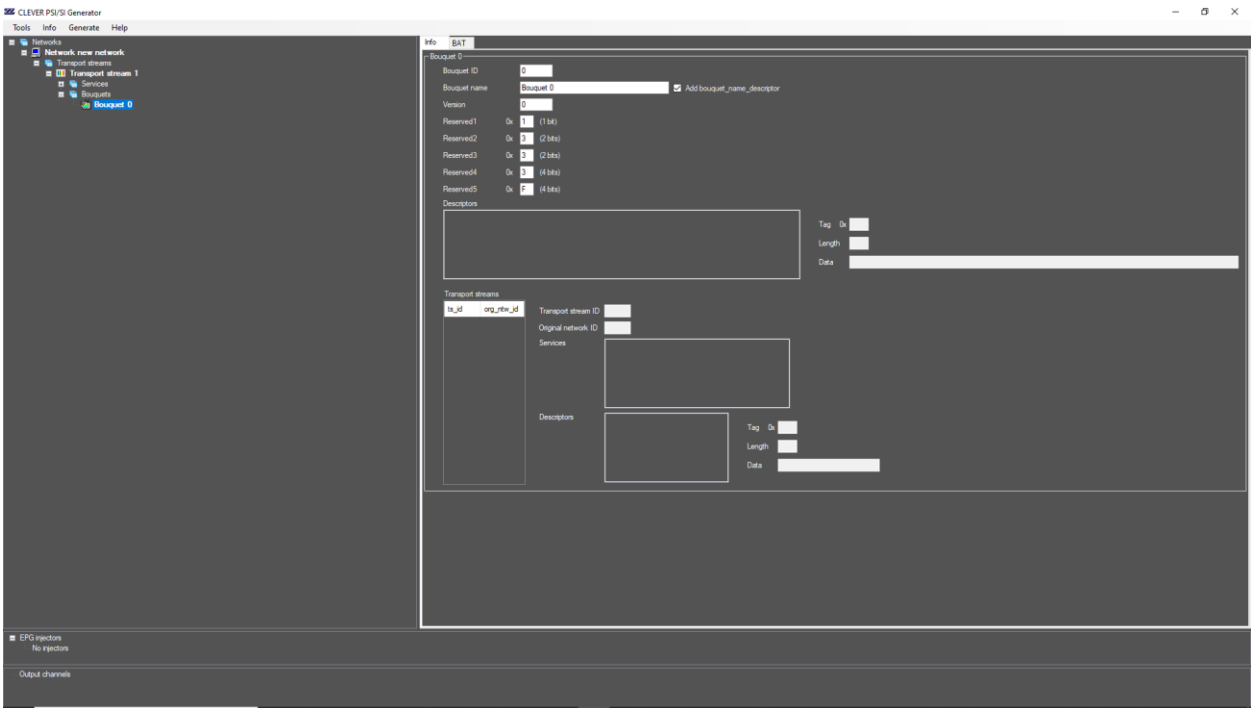
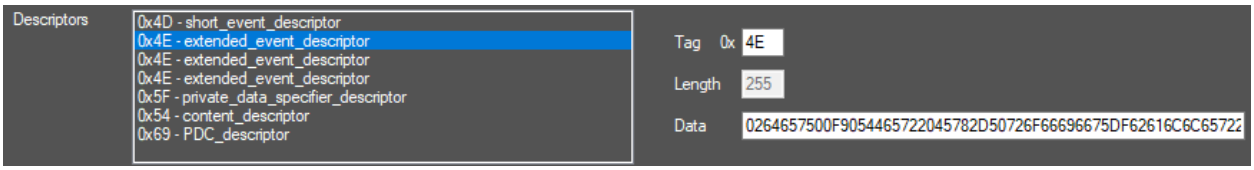


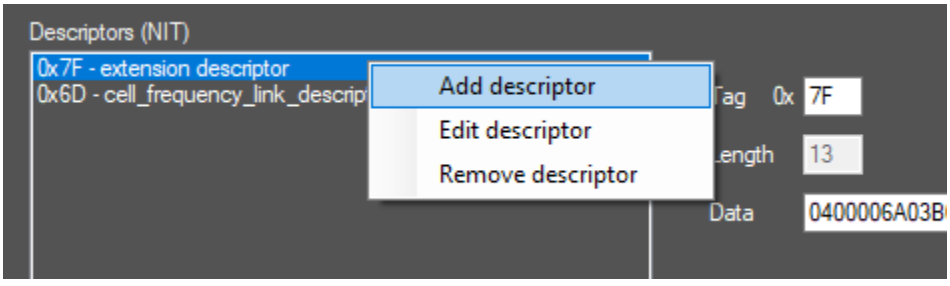
Descriptor configuration

On several levels, descriptors can be entered. A descriptor list defines all the descriptor entities, and when a descriptor is selected, on the right side, the descriptor details are shown.



Descriptor list popup

When right clicking on a descriptor, the popup menu is shown:



Add descriptor

Adds a new descriptor to the list. First you can enter the descriptor information. The descriptor data can be entered in HEX as well as (if known) parsed format.

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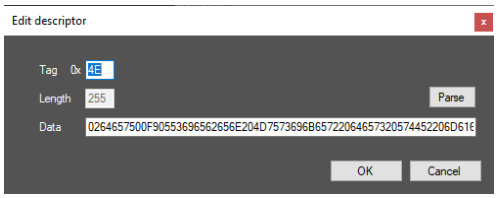

Parse

Use the 'Parse' button in order to enter descriptor information in more readable format, for example tag 0x4E (extended_event_descriptor):

Edit descriptor

Edits an existing descriptor. See above.

Remove descriptor

Removes an existing descriptor.

Licensing

Licensing can be delivered on a USB dongle. This dongle supports HW replacements, you can simply nsert the dongle in the system where you want to run the CLEVER engine.

Without a dongle, you can also license a specific HW system. Once you have received a valid CLEVER license key, insert that via 'Help' – 'License' – 'Set license':

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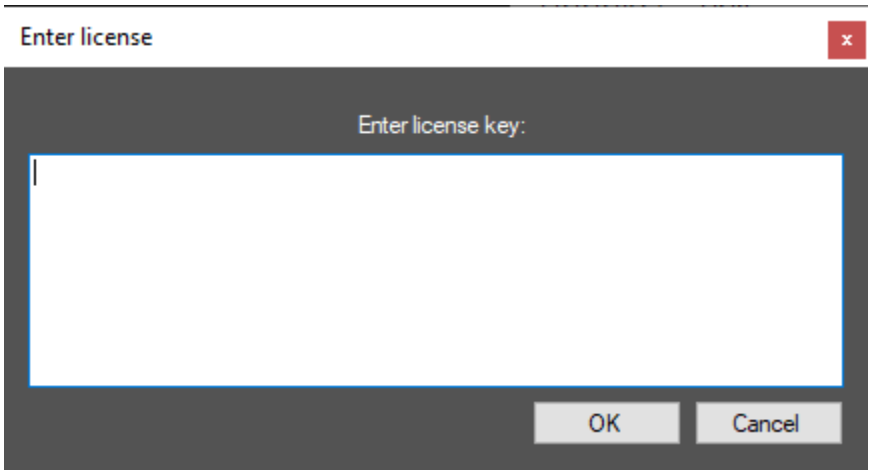

Press OK and your application is licensed correctly. Restart the application.

Recommended to store the key on a safe place as well.