

StreamGuru MPEG2 & DVB Analyzer Version 3.00

Manual



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1. Introduction

First of all, we would like to thank you for choosing the StreamGuru MPEG2 & DVB Analyzer. This manual contains an introduction to most of the features supported by the analyzer. Please contact our support team if you do not find your questions answered here or if you have an idea for new features.

1.1. Installation

The software is available for Windows and Linux. The software uses a USB-dongle based copy protection scheme. Licenses always activate both versions.

1.1.1. Microsoft Windows

The Windows build comes as a zipped Windows Installer(.msi) package that will install the application to your system just like any other Windows application. The .msi file and all executables contained in the package should come with a valid Authenticode signature from “GkWare e.K.”. Please make sure that the installer signature is intact before deploying the software in security-critical environments.

The application itself and the DirectShow filters used for interaction with receiver devices and for audio/video playback are 32bit binaries that should run on every Windows version since Windows XP. The software has been tested for compatibility with all Windows versions up to and including Windows 10 22H10 and Windows 11.

The Windows-version of the analyzer comes in the form of a GUI application which can optionally also expose a Web-UI.

Please also install the latest Codemeter runtime from the download page to make sure that the software can locate/access the license dongle. For Windows, the Codemeter Runtime comes in the form of a .EXE installer.

1.1.2. 64bit Linux

The Linux version comes in the form of a tar.gz archive that contains the main executable and a couple of data files. Please extract all files in a directory of your choice and run it from there.

The Linux-version of the analyzer has no graphical user interface. It currently only supports UDP/RTP streams as input and only exposes the Web-UI interface.

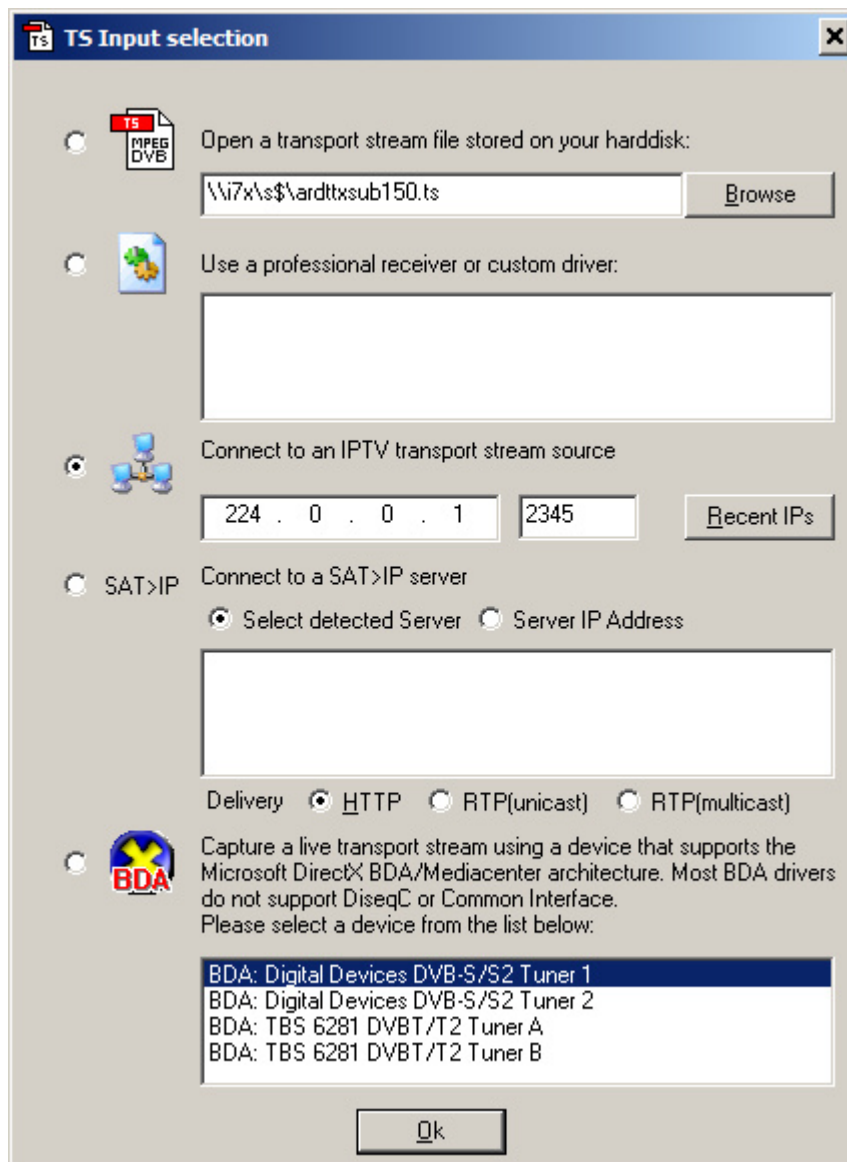
The software has been built and tested on Ubuntu 22.04.3 LTS. Other 64bit Linux distributions based on x86_64 Linux kernel 5.x should work as well if basic C-runtime dependencies are met.

Please also install the latest Codemeter runtime from the download page to make sure that the software can locate/access the license dongle. For Linux, the Codemeter Runtime is available as .deb or .rpm installer.

2. The classic Windows application

2.1. Selecting an Input Device

After starting the Analyzer on Windows, the first thing you will usually see is the input selection dialog. It allows you to select the device that is used to receive the transport stream that will be decoded.



The analyzer supports several different input methods and devices.

2.1.1. Transport stream files

The analyzer allows you to read and decode files which are stored on the filesystem of your computer. To read a file, you can either enter a valid filename manually or select a file using the Browse button. The analyzer currently supports transport stream files in the following formats:

- n*188 bytes (plain transport stream packets)
- n*204 bytes (transport stream packets followed by 16 byte error correction code)
- n*192 bytes (transport stream packets with 4 byte clock, as used by Blu-Ray streams)

The file format will be detected automatically.

At the first start after the installation, the software will also allow you to register the analyzer as default handler for .trp / .ts / .m2ts / .mpg files.



2.1.2. Professional Receiver devices

This category will contain devices that are supported using manufacturer supplied SDKs or driver interfaces. Devices in this category will be:

- Dektec receiver cards
Our analyzer supports a large number of USB devices and PCI/PCI-Express receiver cards manufactured by Dektec (<http://www.dektec.com>). Devices that have been tested for compatibility include:
 - DTA-115 Modulator with 1 ASI port
 - DTA-140 DVB-ASI In/Out
 - DTA-124 Quad DVB-ASI Input
 - DTA-160 Gig-E + 3x DVB-ASI Input/Output (only ASI ports supported)
 - DTA-2145 dual ASI In/Out
 - DTU-225 ASI In
 - DTU-245 ASI In/OutIf the card has more than one input port, then each port will appear separately in the device list. If the device is not listed in analyzer, please make sure that you update to the latest Dektec driver version.
- SAA7146 based PCI receiver cards with a GkWare supplied driver.
OEM customers who purchase our PCI receiver cards will probably find their installed card in this category.

2.1.3. IPTV feeds

The analyzer can receive and decode IPTV streams reaching your PC over IPv4 or IPv6. For unicasts, a local IP address can be used. To connect to a multicast on your network, you can enter an arbitrary multicast address. Streams received using this feed type, can be encoded using plain UDP or RTP. The encapsulation type will be detected automatically.

For more complex configurations (especially source-specific-multicast and the selection of a specific network interface to listen on), please use the detailed IP feed configuration dialog.

2.1.4. SAT>IP Feeds

SAT>IP receivers which support the “pids=all” feature can also be used as input for the MPEG analyzer. The analyzer comes with its own SSDP client software. SSDP services running on the same machine (including Windows System services) blocking access to the SSDP ports have to be disabled for the SAT>IP client feature to work. If a conflicting SSDP client on the same machine is detected, a warning message should appear. Administrative privileges might be necessary to stop the service in this dialog.

Please note that many SAT>IP servers either completely lack support for the “pids=all” feature or quickly run into bandwidth and CPU resource issues if more than one client using this feature is connected. The self-certification process for devices carrying the SAT>IP logo does unfortunately not include a compliance test for this feature.

Another frequent problem is the common “feature” of SAT>IP servers to optimize stuffing packets out and drop them from the RTP stream. While this does save network bandwidth for the normal consumer, it can have side-effects on measurements of the analyzer that depend on a fixed and stable CBR (constant bitrate) broadcast stream. Especially PCR measurements can become problematic, showing errors where there are none in the real feed.

2.1.5. BDA devices / Microsoft Mediacenter compatible drivers

Normal consumer receivers usually come with a BDA (Broadcast Driver Architecture) driver. BDA is a driver interface defined by Microsoft for simple TV playback purposes. It is not intended for use in applications like an MPEG analyzer but many devices are able to forward the full MPEG2 transport stream to applications. Please use our demonstration version for Windows to make sure that your device works as expected before purchasing a permanent license for use with your device.

A few technologies which are frequently used in the digital TV field are missing in the BDA architecture. BDA devices typically do not allow

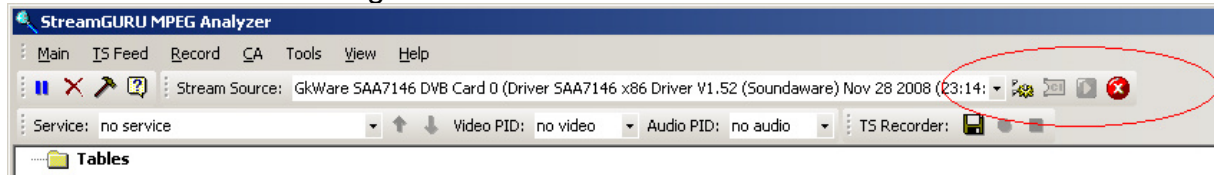
- DiseqC control (or any other kind of motor control)
- EN 50221 Common Interface

or they hide these features in proprietary software that needs external configuration.

If you encounter problems with BDA drivers, then please do not hesitate to contact our support. We try to keep a list of supported and unsupported devices.

2.2. Controlling the feed

Feeds are controlled using the stream source control bar:



The drop down box can be used to select a different feed after the analyzer has been started. The buttons on the right side (marked red) can be used to control the feed.

2.2.1. Tuning / Selecting a file / Selecting an IP Address



This icon will open the feed configuration dialog. For file feeds, you will be able to select a new file or change the playback bitrate. For DVB-S, DVB-C and DVB-T receivers you will be able to tune to a new channel.

2.2.2. Common Interface



If the selected feed has a supported DVB common interface slot, then this icon can be used to display information about the currently inserted CAM module. The icon will be disabled if no CAM inserted or if the current feed does not have any CI slot.

2.2.3. Starting & Stopping the stream

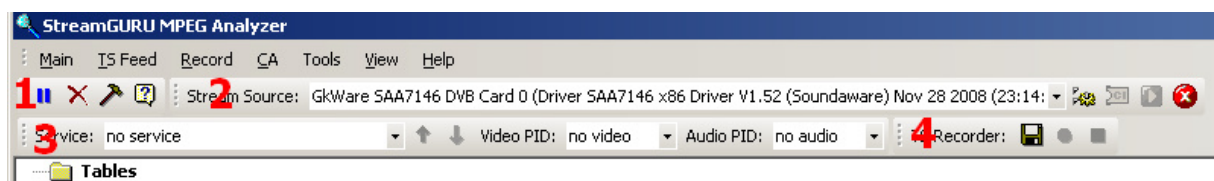


Most feed types do not allow you to change the tuning (or other input) parameters while the stream is active. These two buttons can be used to re-start the feed after tuning or other configuration changes or to stop the feed.

If the feed does not enter the running state after pressing the „Play“ button, then the current configuration or tuning parameters are invalid. You should open the feed configuration dialog (see 2.2.1) to fix this problem.

2.3. The Main Window

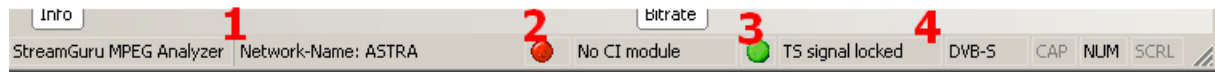
2.3.1. Toolbars



Just below the menu, you will find a number of toolbars which provide quick access to the most important analyzer features.

1. This toolbar allows you to:
 - a. Freeze the current analyzer status.
After pressing this button, most views in the analyzer will stop updating. This specifically includes the table decoder and the service tabs. To resume decoding, just press the button again.
 - b. Reset
Pressing this button will clear most views in the analyzer. It should be used to force a re-acquisition of the SI information. This can be necessary if SI tables are updated without updating the version field.
 - c. Analyzer configuration
This button will open the configuration dialog.
 - d. Info
This button will open the License information dialog.
2. This is the feed selection and configuration toolbar. Please see section 2.2 for details.
3. This toolbar can be used to select a service for the TV playback.
4. This toolbar can be used to record complete transport streams to the harddisk.

2.3.2. Status bar

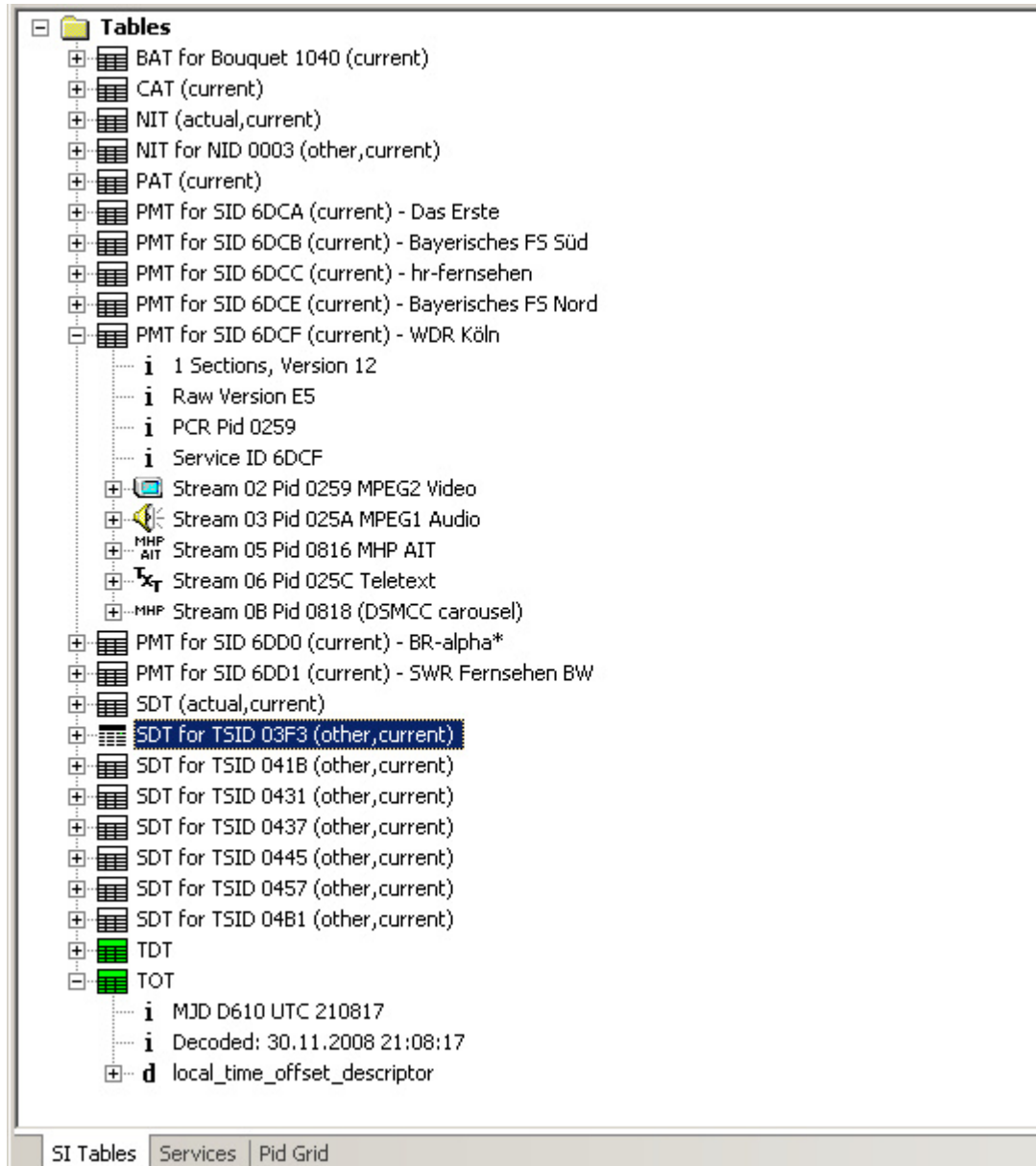


At the bottom of the window, you will find the status bar. It contains the following information fields.

1. Status / Network name Information
This field will contain a short help text if you navigate in the menu.
If the current transport stream contains a NIT (Network information table) with a network name descriptor, then this field will show the network name like in the sample above.
2. Common Interface status
This indicator will be green if a CAM has been detected.
It will be red the current feed has no CI slot or if no CAM is inserted.
3. Lock indicator
This indicator will be green if the current input device has a tuner lock (or other type of valid input signal) or red otherwise.
4. Feed type
This indicator will show the type of the current feed. This can be:
 - DVB-S/S2
 - DVB-C/C2
 - DVB-T/T2
 - DVB-ASI
 - File
 - IPTV

2.4. Core features

2.5. *The table decoder*



The table decoder will display all MPEG-2 and DVB tables and sections found in the current transport stream. The only exception is the EIT (Event information table). Due to the potentially high number of sections, the EIT is handled in a separate decoder.

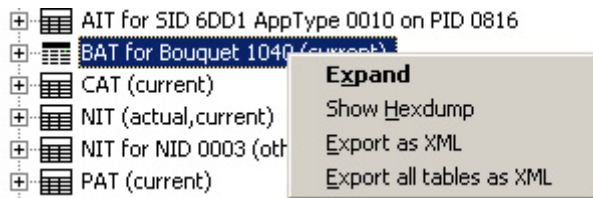
The tables in this view can have different colors, depending on their status:

- Tables which appear for the first time or which change to a new version are displayed in green.
- Tables which are periodically sent in the stream (unchanged) will be displayed in white.

- Tables which are removed from the stream will be displayed in red for a number of seconds before they are removed completely.

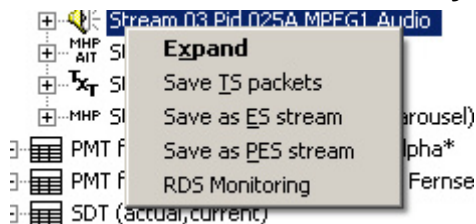
Tables in this view are completely decoded, including all the descriptors defined in the MPEG-2 and DVB specification. A number of additional tasks can be performed using the context menu.

2.5.1. Table level



A raw dump can be opened using the „Show Hexdump“ option. You can also export either the currently selected table or all tables into an XML file.

2.5.2. PMT Elementary Stream level (Audio / Video)



Audio and video PES streams can be recorded to the hard disk in three different formats. The options are:

- Save TS packets
This will store the raw 188 byte packets
- Save as ES stream
This will store only the payload of the PES packets (without header)
- Save as PES stream
This will store the full PES packets (including their header)

For MPEG1 or MPEG2 audio, there is the additional option to search for RDS/UECP data. Only a few radio stations are currently sending RDS data together with their regular DVB broadcasts. See section 4.1 for details.

The analyzer supports the decoding of several proprietary string encodings, including:

2.6. Services

The services tab will display information about the services which are signaled inside the current transport stream.



The information displayed in this view comes from several different sources.

The elementary stream PIDs are taken from the PMT.

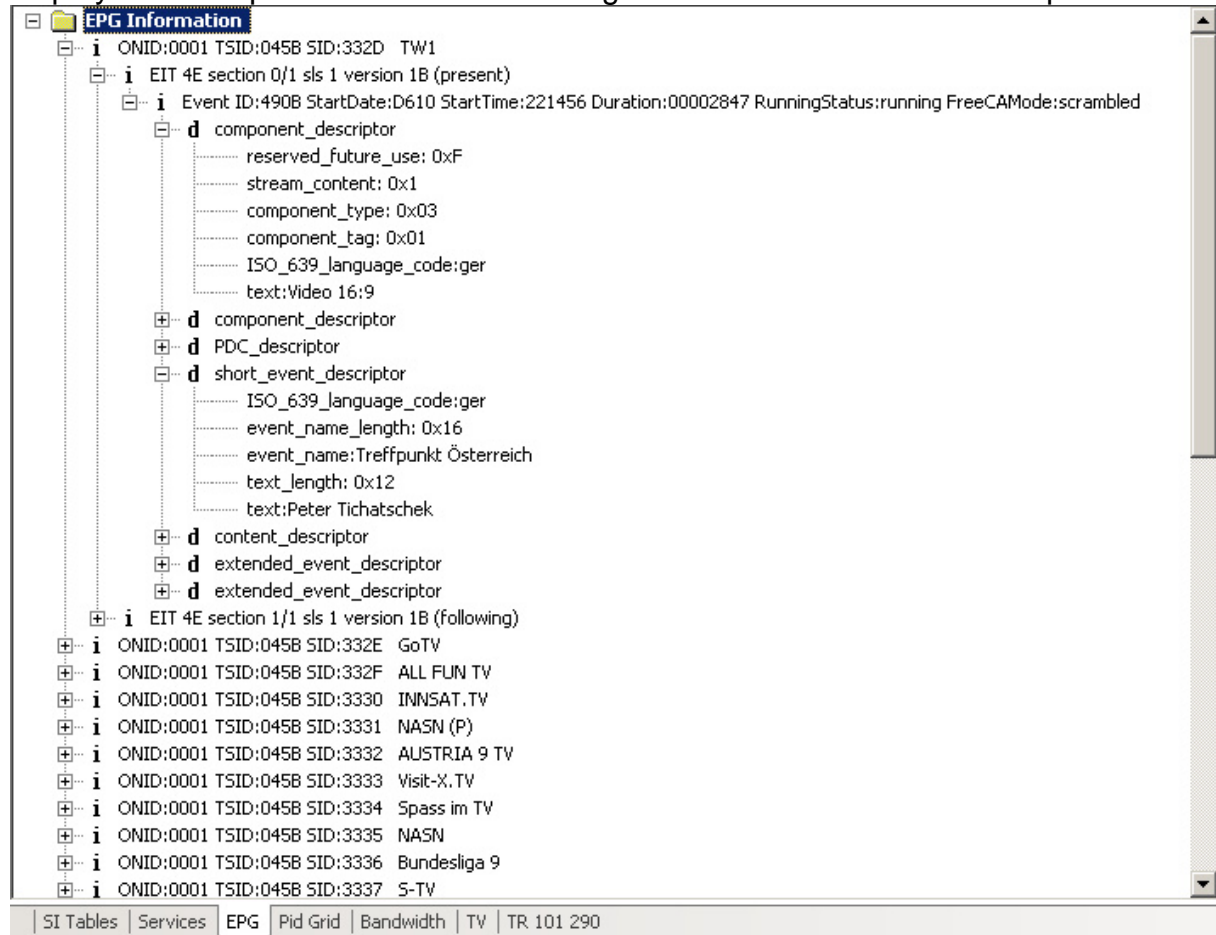
The service name and provider information is taken from the PMT.

Scrambled services and streams will have a little key symbol as overlay icon.

The options which are available in the table decoder for elementary stream PIDs can also be invoked using the context menu.

2.7. EIT/EPG

Due to the high data volume, the EPG data which is transmitted in the DVB EIT, is displayed in a separate view. The following screenshot shows a little sample:



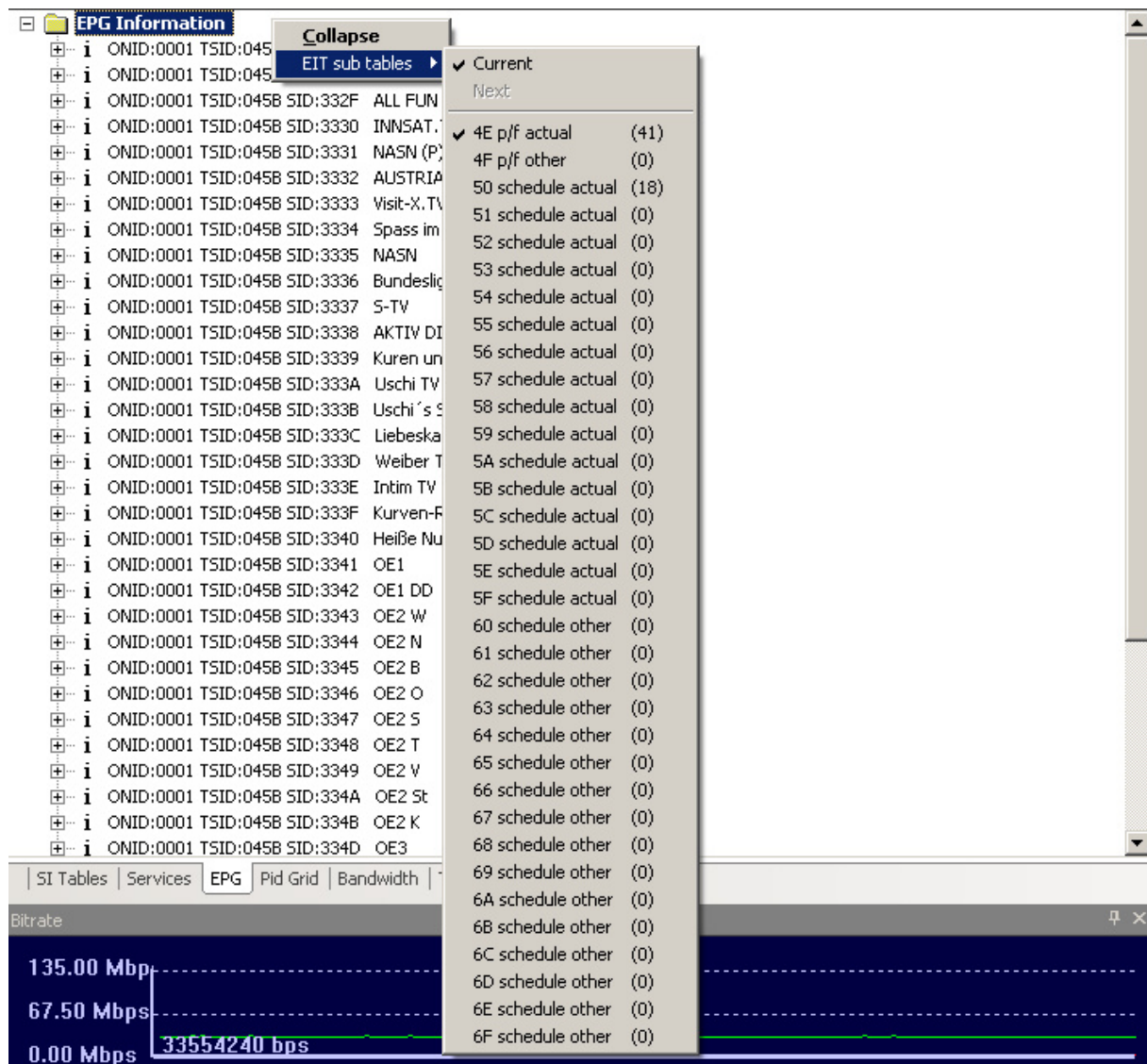
EITs are decoded down to the descriptor level.

At the root you will find all services which are sending EITs on this transponder. The service line contains the full DVB triple (Original Network ID, Transport Stream ID, Service ID) and the service name.

At the next level, the table ID (0x4E in the sample above) the section-number, last-section-number and „segment last section“-number are displayed, followed by the version number of the section.

At the event level, the event ID and the other fields from the DVB EIT event loop are decoded.

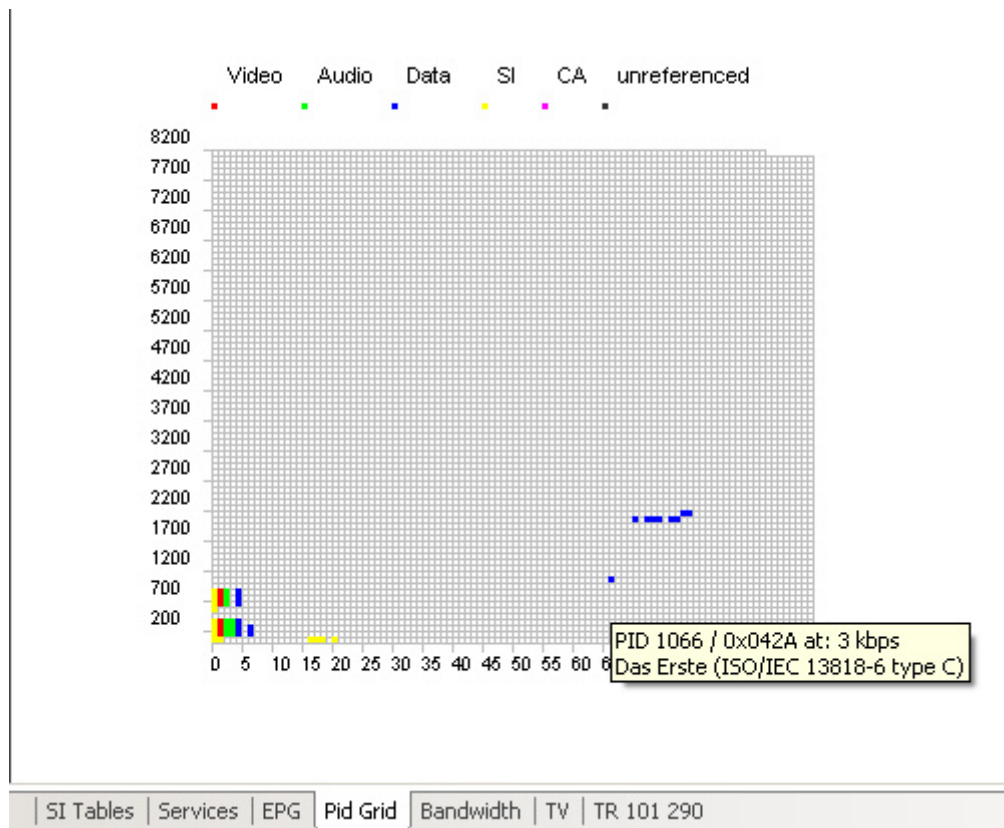
By default, the EPG view only shows the present/following sections. In the context menu you can select different sub-tables:



The numbers in the bracket show the number of currently stored sections in the cache. This cache will grow continuously. It will only discard information if the analyzer is reset.

Please note that it may take several minutes to collect the entire EIT information on a transponder.

2.8. *Pid Grid*



The Pid Grid provides a quick overview over the PID distribution on the current TS. It also allows you to identify unreferenced pids.

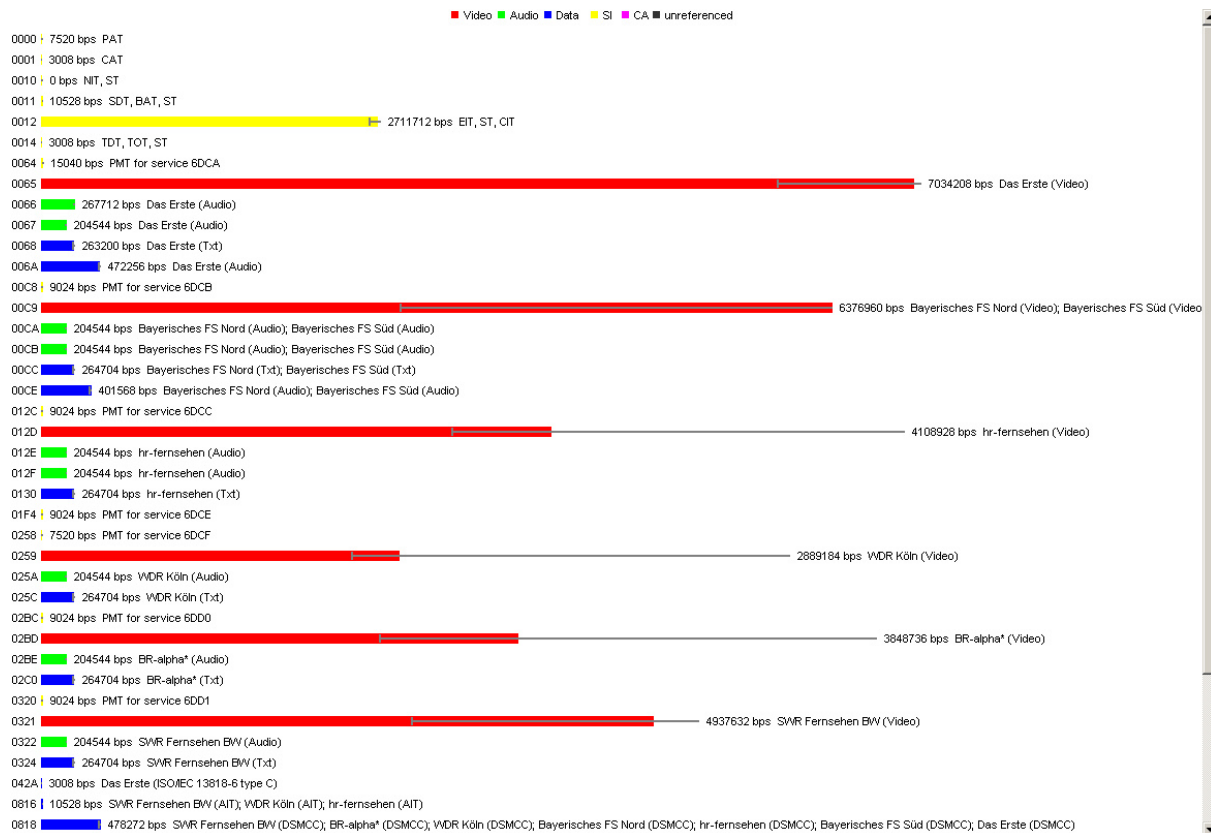
Hovering over a pid with the mouse cursor will open a tooltip with more information about the pid. This tooltip will contain the service name and stream types.

Stream types are colour-coded:

- Red: Video
- Green: Audio
- Data: Blue
- SI: Yellow
- Conditional Access Streams (ECM / EMM): Pink
- Unreferenced: Grey

Unreferenced pids will disappear after a few seconds when the data on this pid disappears.

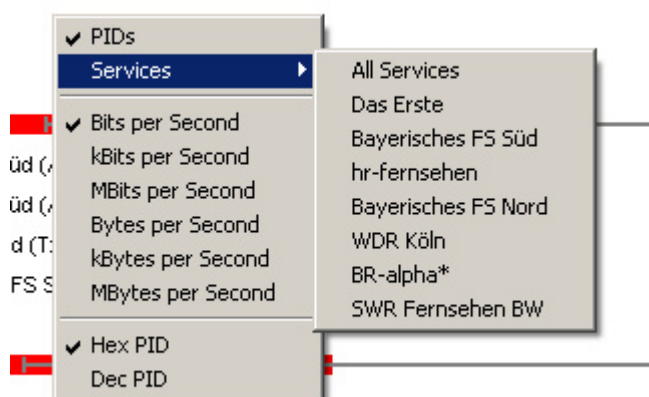
2.9. Bandwidth



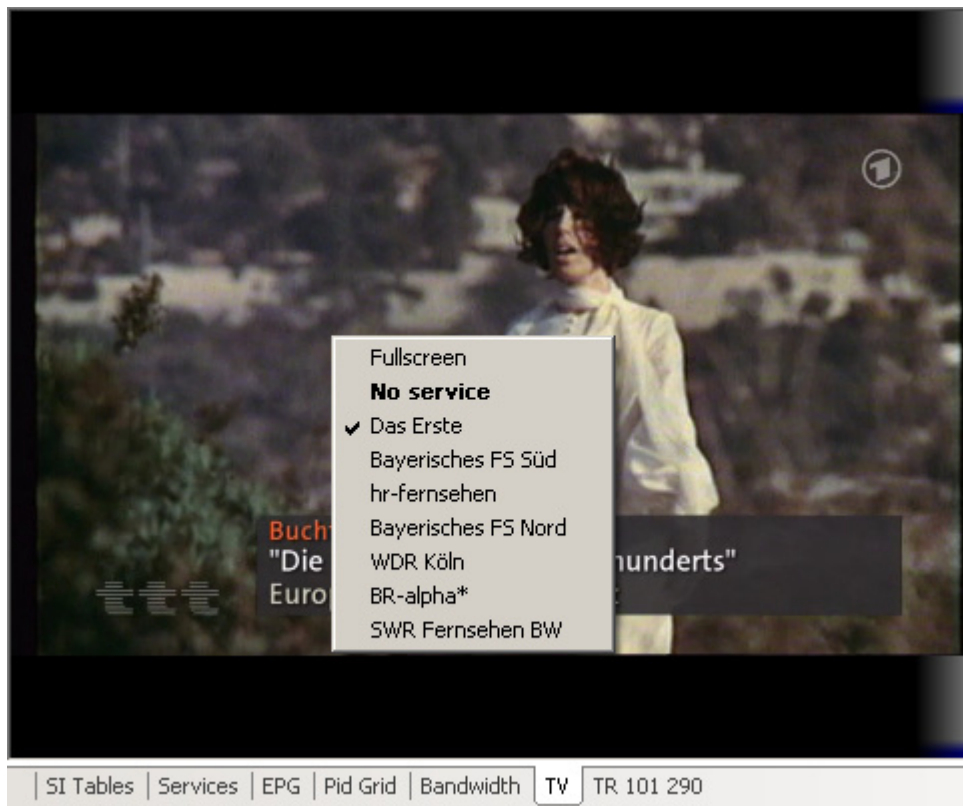
The bandwidth tab allows you to track the bandwidth usage of

- all pids
- or all services (includes all pids referenced in the pid of a service)
- or the pids of one specific service

The mode of operation can be selected using the context menu:



2.10. TV Playback



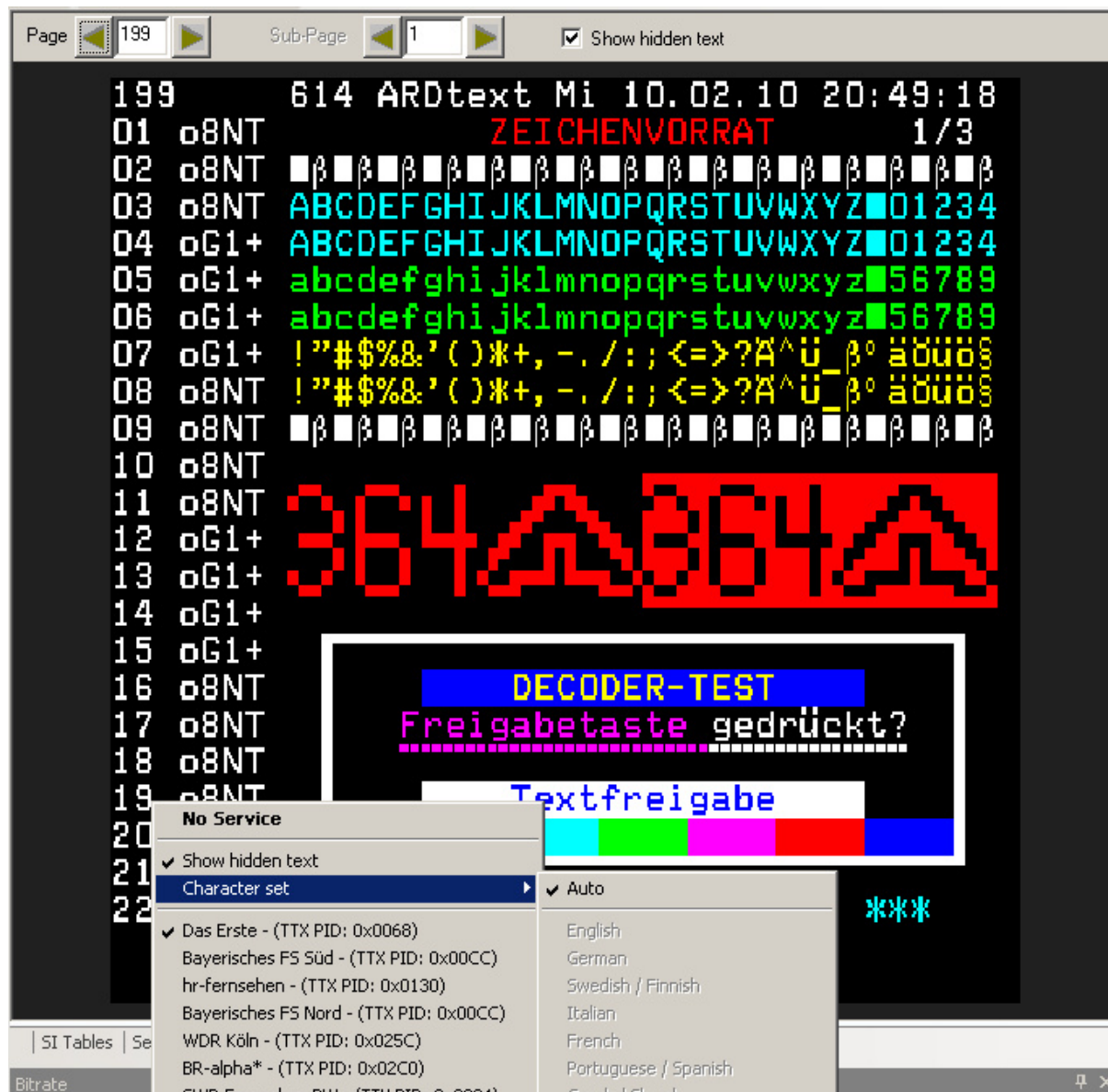
The analyzer is able to decode live audio and video if appropriate codecs are installed. A large number of 3rd-party DirectShow codecs are supported.

Please select one of the supported codecs in the analyzer configuration before starting the playback.

For MPEG2, we recommend installing the FFDshow tryouts. The latest version can be obtained free of charge from: <http://ffdshow-tryout.sourceforge.net/> . Please make sure that you enable the MPEG2 support during the installation !

For MPEG4 AVC/AAC, we recommend installing the codecs from Mainconcept.

2.11. Teletext decoder (EN 300 706)



The analyzer contains a teletext level 1.5 decoder which is based on the EN 300 706 V1.2.1 specification. The controls above the teletext view allow you to select the main page. The “show hidden text” checkbox allows you show or hide text that is encoded using the conceal (1/8) code.

To start the decoder, please select a service from the context menu. Only services with valid teletext signaling (teletext descriptor) will be included in this list.

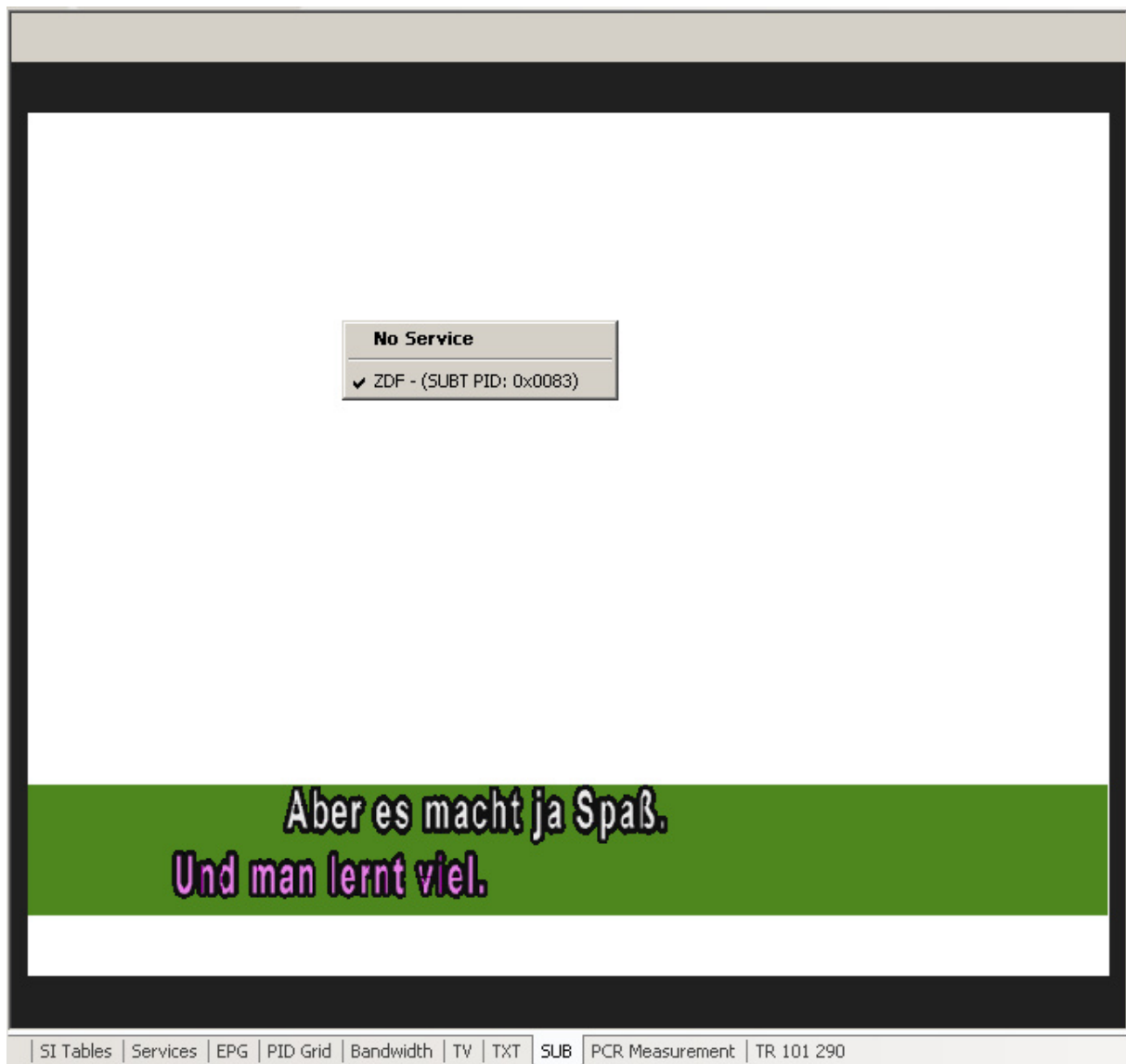
For pages with multiple sub-pages, the sub-page can be selected as well.

The following character sets are currently supported:

- Latin G0
- Latin National option Sub-Sets
- G1 Block Mosaics Set

The correct character set will be configured automatically based on the page header.

2.12. DVB-Subtitling decoder



The analyzer contains a DVB Subtitling decoder based on the EN 300 743 V1.3.1 specification. Due to technical limitations, subtitles are not superimposed onto a live TV picture.

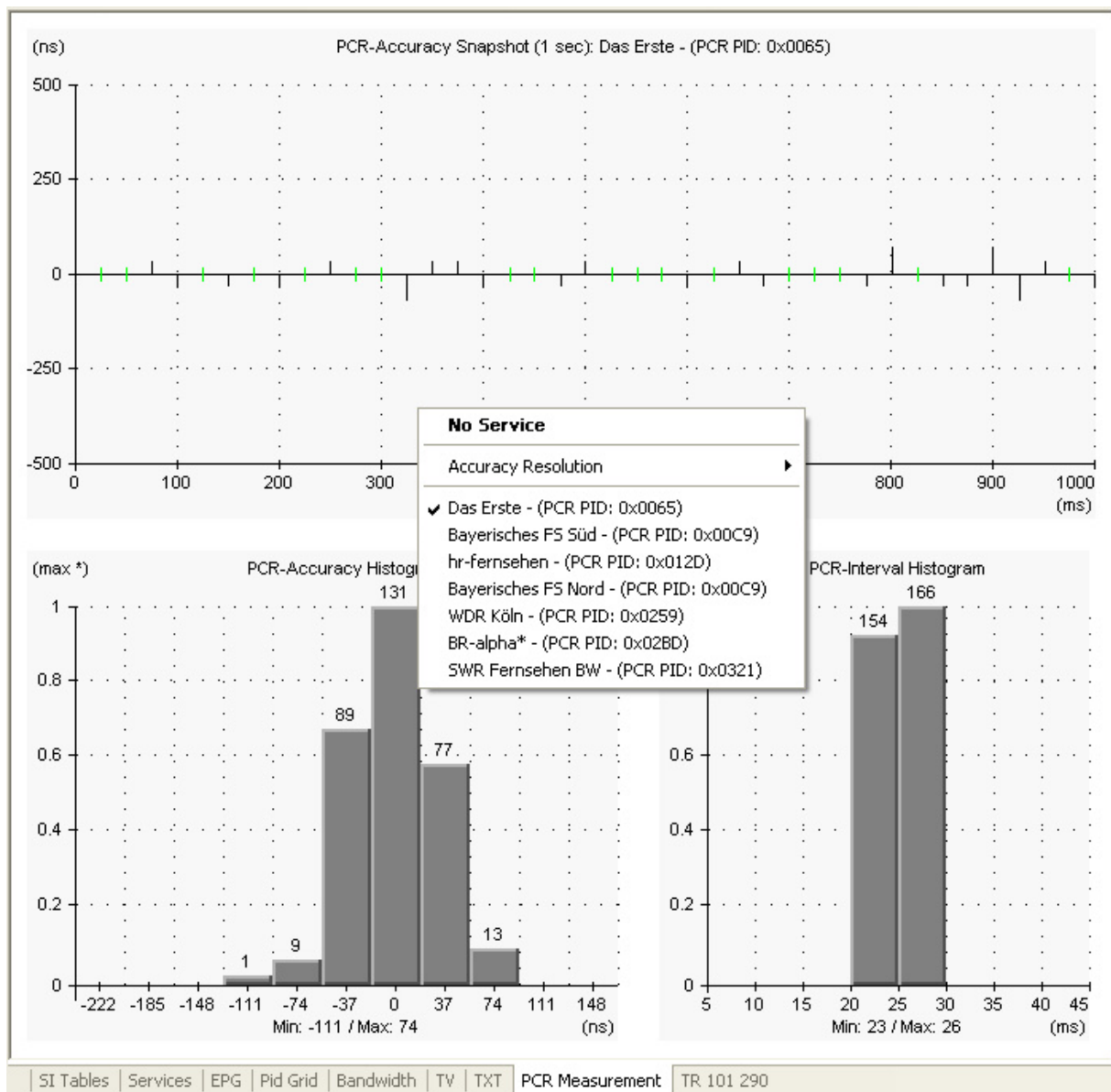
In the sample above, the white area is the transparent background which should normally show video.

The green bar is the location of an active DVB subtitling segment.

Only the text inside this segment would be visible on a real set-top device.

To select a service for the decoder, please use the context menu.

2.13. PCR Measurements



The PCR Measurement view allows you to measure the PCR Interval distribution (lower-right graphics) and the PCR accuracy (top graphics and lower-left graphics).

The scale for the accuracy resolution is selectable between 500ns (default) and 100ns.

PCRs which perfectly match the expected PCR value are drawn in **green**.

PCRs with a deviation smaller than the currently selected resolution are drawn in black.

PCRs with a deviation that exceeds the currently selected resolution are drawn in **red**.

2.14. TR 101 290

The DVB TR 101 290 standard defines a number of standard tests that monitoring soft- or hardware should support.

	Indicator	# Err...	Time of last error	Error Message
Priority 1				
●	TS_sync_loss	1	-	-
●	Sync_byte_error	0	-	Synchronized to transport stream
●	PAT_error_2	0	-	-
●	Continuity_count_error	71	Sun Jun 28 01:44:14 2009	-
●	PMT_error_2	0	Sun Jun 28 01:44:12 2009	invalid PMT repetition rate for SVC6DD1 pid 0320
●	PID_error	0	-	-
Priority 2				
●	Transport_error	0	-	-
●	CRC_error	0	-	-
●	PCR_repetition_error	8	Sun Jun 28 01:44:13 2009	PCR interval > 40 ms on PID: 0x02BD
●	PCR_discontinuity_indicator_error	8	Sun Jun 28 01:44:13 2009	PCR interval > 100 ms on PID: 0x02BD
●	PCR_accuracy_error	250	Sun Jun 28 01:44:13 2009	PCR accuracy exceeds +-500 nsec on PID: 0x02BD
●	PTS_error	0	-	-
●	CAT_error	0	-	-
Priority 3				
●	NIT_actual_error	0	-	-
●	NIT_other_error	0	Sun Jun 28 01:44:19 2009	NIT (other) repetition rate error
●	SI_repetition_error	0	-	-
●	Buffer_error	0	-	-
●	Unreferenced_PID	0	-	-
●	SDT_actual_error	0	-	-
●	SDT_other_error	0	-	-
●	EIT_actual_error	0	-	-
●	EIT_other_error	0	-	-
●	EIT_PF_error	0	Sun Jun 28 01:24:06 2009	EIT p/f error
●	RST_error	0	-	-
●	TDT_error	0	-	-
●	Empty_buffer_error	0	-	-
●	Data_delay_error	0	-	-

The analyzer supports most of these tests. The indicator on the left side can show three different colors.

A green dot means that everything is ok.

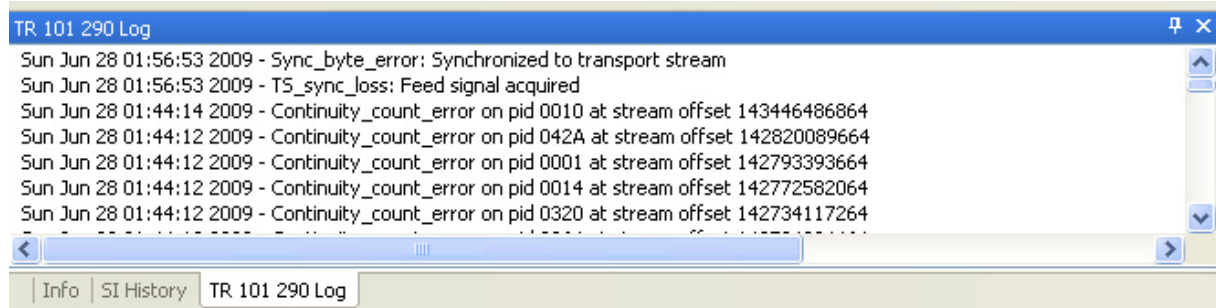
A red dot means there is an error condition.

A grey dot means that this monitoring feature is unsupported.

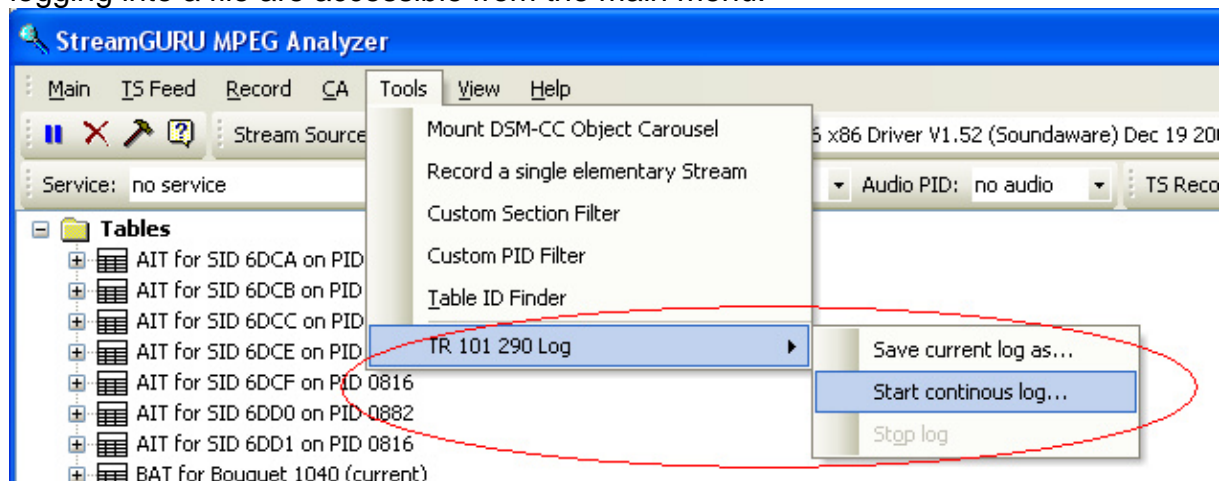
Errors details will be shown on the right side.

The statistics can be reset using the context menu.

TR101 290 errors are also logged into a protocol which can be selected at the bottom left side of the screen:



This log can also be written into a text file. The commands to start and stop the logging into a file are accessible from the main menu:



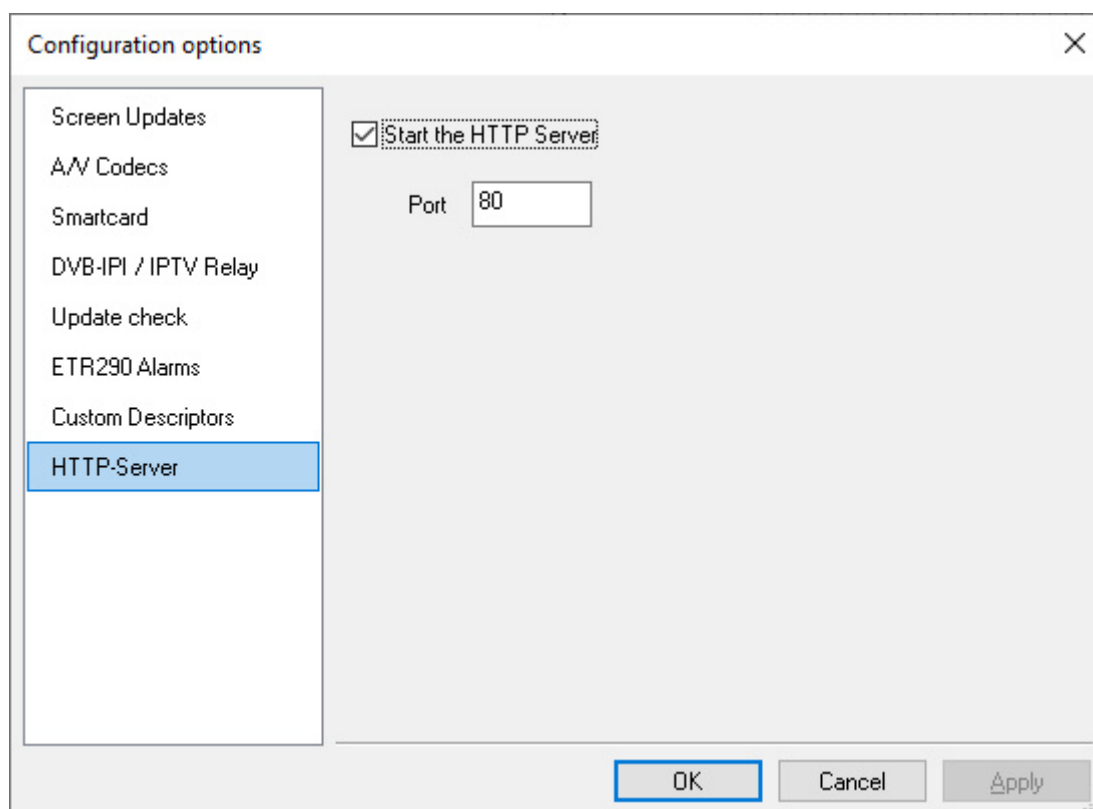
3. Web-UI

The software comes with a builtin standalone webserver. It does not depend on any external webserver software. Neither IIS nor Apache, nginx are required as dependency but the software can co-exist with them as long as there are no port/address conflicts.

3.1. Enabling / Starting the Webserver...

3.1.1. ...on Windows

On Windows, enabling the webserver is optional. The Web-UI is enabled by this checkbox in the configuration dialog:



3.1.2. ... on Linux - Launching from the commandline

The Linux version of the analyzer only consists of the Web-UI.

You can launch the analyzer and pass the UDP/RTP listening address and the webserver port number on the command line:

```
mtsaweb <input uni- or multicast ip:port> [HTTP server port, default=80]
```

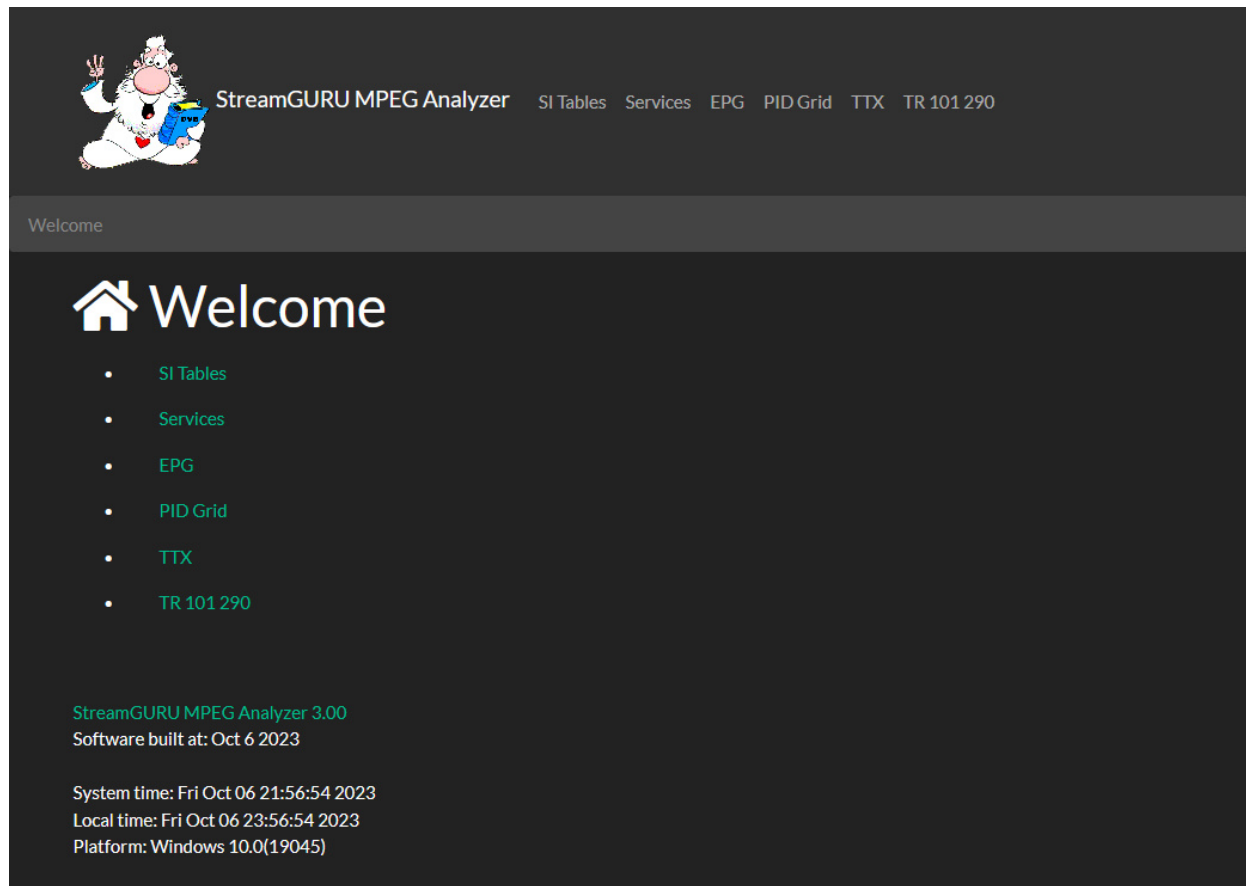
for example:

```
mtsaweb 224.0.0.1:1234 8080
```

3.2. *Web-UI features*

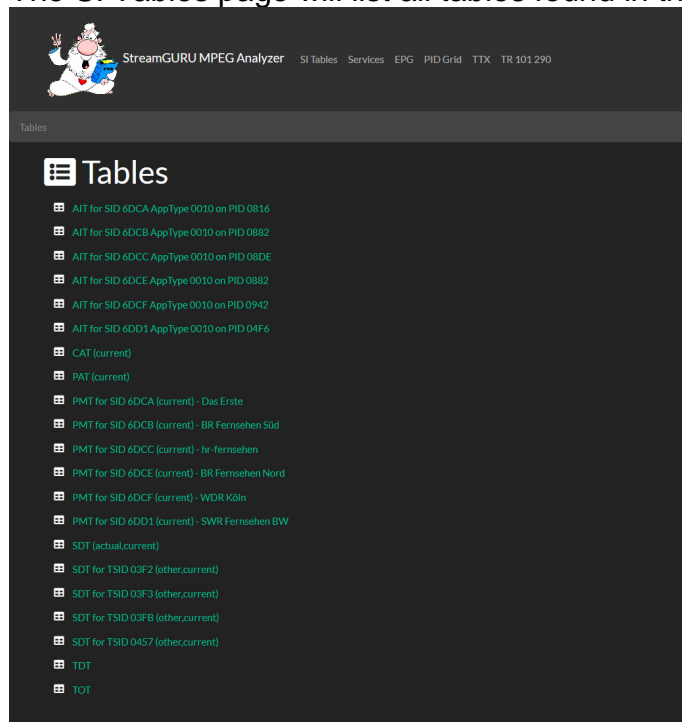
3.2.1. *System Overview*

The start page will report the application and host operating system version as well as the system local and UTC time.

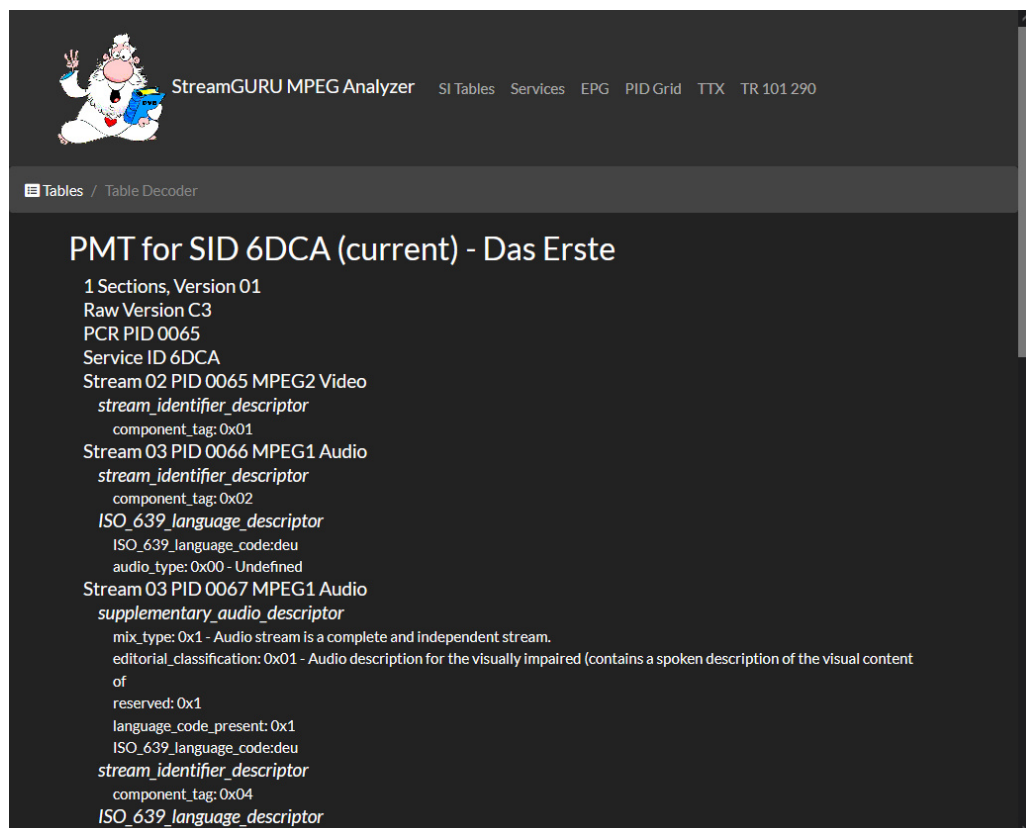


3.2.2. SI table decoder

The SI Tables page will list all tables found in the current transport stream.

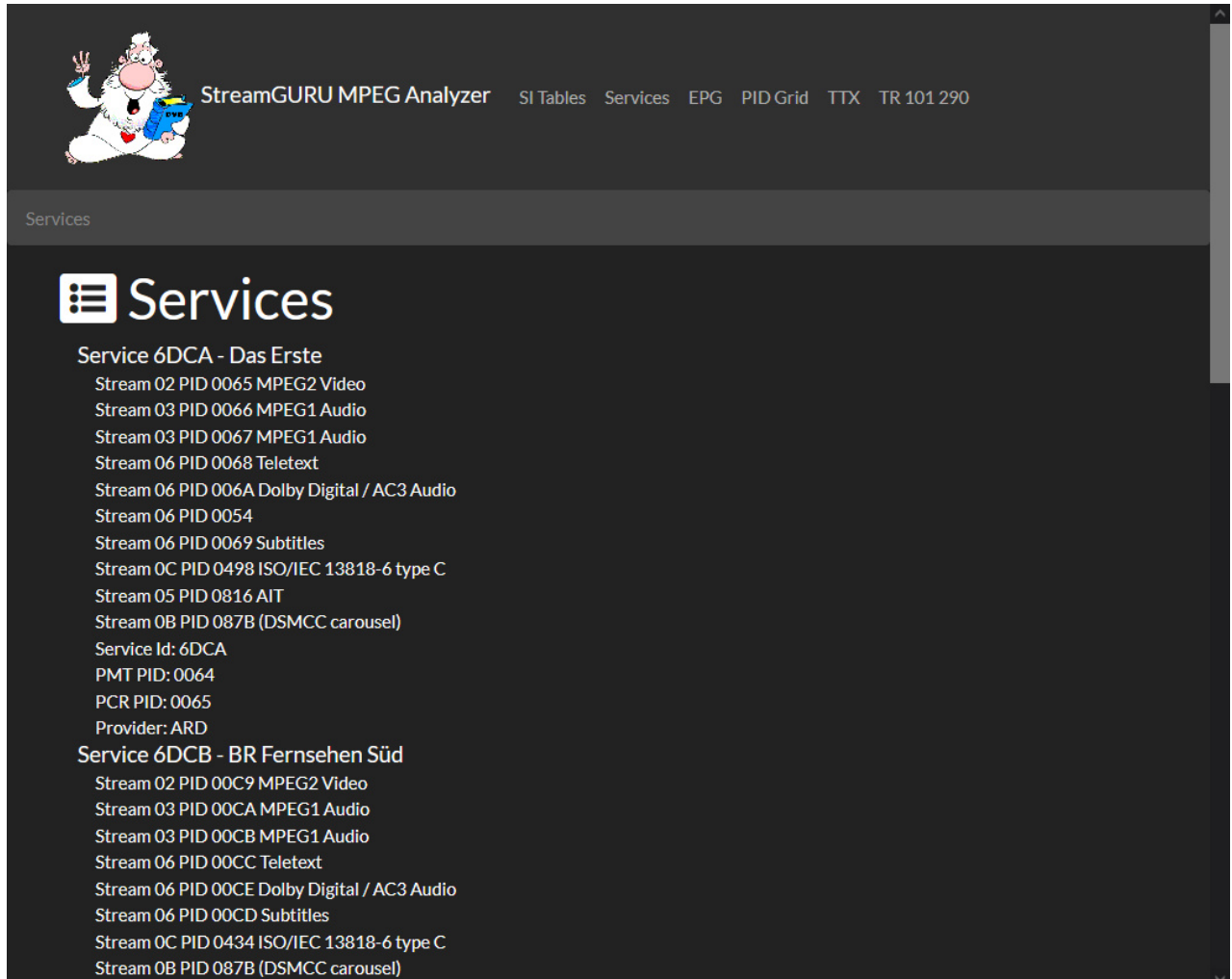


Selecting a table will open the detailed decoding, just like in the tree control of the Windows user interface.



3.2.3. Services list

The Services page will list all Services found in the current transport stream, including all associated streams, their decoded description and name/provider information from the SDT.



StreamGURU MPEG Analyzer SI Tables Services EPG PID Grid TTX TR 101 290

Services

Services

Service 6DCA - Das Erste

- Stream 02 PID 0065 MPEG2 Video
- Stream 03 PID 0066 MPEG1 Audio
- Stream 03 PID 0067 MPEG1 Audio
- Stream 06 PID 0068 Teletext
- Stream 06 PID 006A Dolby Digital / AC3 Audio
- Stream 06 PID 0054
- Stream 06 PID 0069 Subtitles
- Stream 0C PID 0498 ISO/IEC 13818-6 type C
- Stream 05 PID 0816 AIT
- Stream 0B PID 087B (DSMCC carousel)
- Service Id: 6DCA
- PMT PID: 0064
- PCR PID: 0065
- Provider: ARD


Service 6DCB - BR Fernsehen Süd

- Stream 02 PID 00C9 MPEG2 Video
- Stream 03 PID 00CA MPEG1 Audio
- Stream 03 PID 00CB MPEG1 Audio
- Stream 06 PID 00CC Teletext
- Stream 06 PID 00CE Dolby Digital / AC3 Audio
- Stream 06 PID 00CD Subtitles
- Stream 0C PID 0434 ISO/IEC 13818-6 type C
- Stream 0B PID 087B (DSMCC carousel)

3.2.4. EPG

The EPG page makes information from the DVB EIT accessible. The main page contains a list of services on the left side and links to the EIT sub-tables in a table format. The page is split into EPG information for the current transport stream on the top and information for services on other transport streams on the bottom. The numbers in the table indicate are a link to corresponding detail pages and show how many events have already been collected.

A “-“ instead of a no link indicates that no such events are present.




StreamGURU MPEG Analyzer SI Tables Services **EPG** PID Grid TTX TR 101.290

EPG

Services (actual)		p/f	Schedule table IDs															
#	Service	4E	50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F All
1	Das Erste	2	125	139	81	89	89	72	104	-	-	-	-	-	-	-	-	701
2	BR Fernsehen Süd	2	119	132	100	100	90	79	89	-	-	-	-	-	-	-	-	711
3	hr-fernsehen	2	145	173	99	104	98	93	100	-	-	-	-	-	-	-	-	814
4	BR Fernsehen Nord	2	122	137	92	68	96	97	88	-	-	-	-	-	-	-	-	702
5	WDR Köln	2	138	149	105	102	84	81	72	-	-	-	-	-	-	-	-	733
6	SWR Fernsehen BW	2	122	140	70	81	77	88	83	-	-	-	-	-	-	-	-	663
Services (other)		p/f	Schedule table IDs															
#	Service	4F	60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F All
1	Service_0001_03F2_2B8E	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
2	Service_0001_03F2_2B98	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
3	Service_0001_03F2_2BA2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
4	ZDF HD	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
5	zdf_neo HD	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
6	Das Erste HD	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2

localhost/epgserviceevents/?trpl=0001_044D_6DCA_52

The next step is a list of events present for a specific table id.




StreamGURU MPEG Analyzer SI Tables Services EPG PID Grid TTX TR 101 290

EPG / EPG Service Events

EPG Service Events for "Das Erste" schedule (52)

#	Start	Duration	EID	Status	CA/FTA	Eventname
1	14.10.2023 12:00:00	1h 30m	9B86	undefined	FTA	Ein Strauß voll Glück
2	14.10.2023 13:30:00	1h 30m	9B87	undefined	FTA	Die Fischerin
3	14.10.2023 15:00:00	10m	9B88	undefined	FTA	Tagesschau
4	14.10.2023 15:10:00	35m	9B89	undefined	FTA	Brisant
5	14.10.2023 15:45:00	2h 12m	9B8A	undefined	FTA	Sportschau
6	14.10.2023 17:57:00	3m	9B8B	undefined	FTA	Lotto am Samstag
7	14.10.2023 18:00:00	15m	9B8C	undefined	FTA	Tagesschau
8	14.10.2023 18:15:00	1h 30m	9CFB	undefined	FTA	Scheidung für Anfänger
9	14.10.2023 19:45:00	1h 30m	9D24	undefined	FTA	Harter Brocken: Der Bankraub
10	15.10.2023 01:48:00	2m	9B93	undefined	FTA	Tagesschau
11	15.10.2023 01:50:00	45m	9DB9	undefined	FTA	Die Tierärzte - Retter mit Herz (43) (43)
12	15.10.2023 02:35:00	8m	9DBA	undefined	FTA	Deutschlandbilder
13	15.10.2023 02:43:00	2m	9B95	undefined	FTA	Tagesschau

Clicking on a specific event will decode details and show all descriptors for this event.



StreamGURU MPEG Analyzer SI Tables Services EPG PID Grid TTX TR 101 290

EPG / EPG Service Events / EPG Event

Das Erste - Event 9B6D

Saturday: 14.10.2023 00:53:00 - Duration: 2m

Language: "deu"

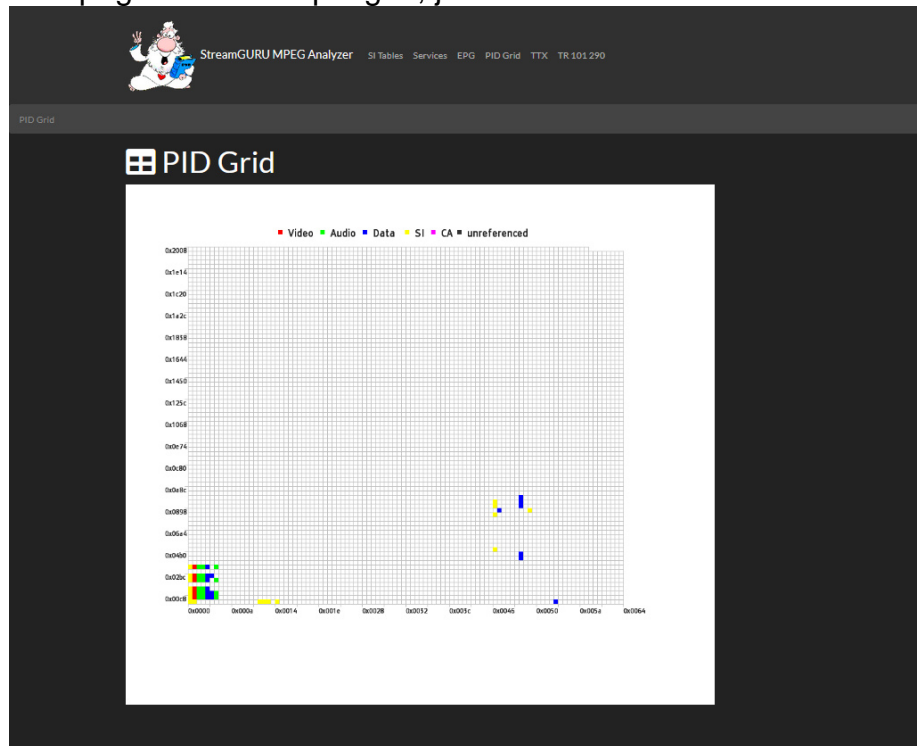
Tagesschau

Components: "deu"

Tag	PID	Text	Type
1	0065	SD	MPEG-2 video, 16:9 aspect ratio without pan vectors, 25 Hz
2	0066	stereo	MPEG-1 Layer 2 audio, stereo (2 channel)
4	0067	ohne Audiodeskription	MPEG-1 Layer 2 audio, stereo (2 channel)
17	006A	Dolby Digital 2.0	reserved for AC-3 audio modes
6	0069	ohne DVB-Untertitel	DVB subtitles (for the hard of hearing) with no monitor aspect ratio criticality

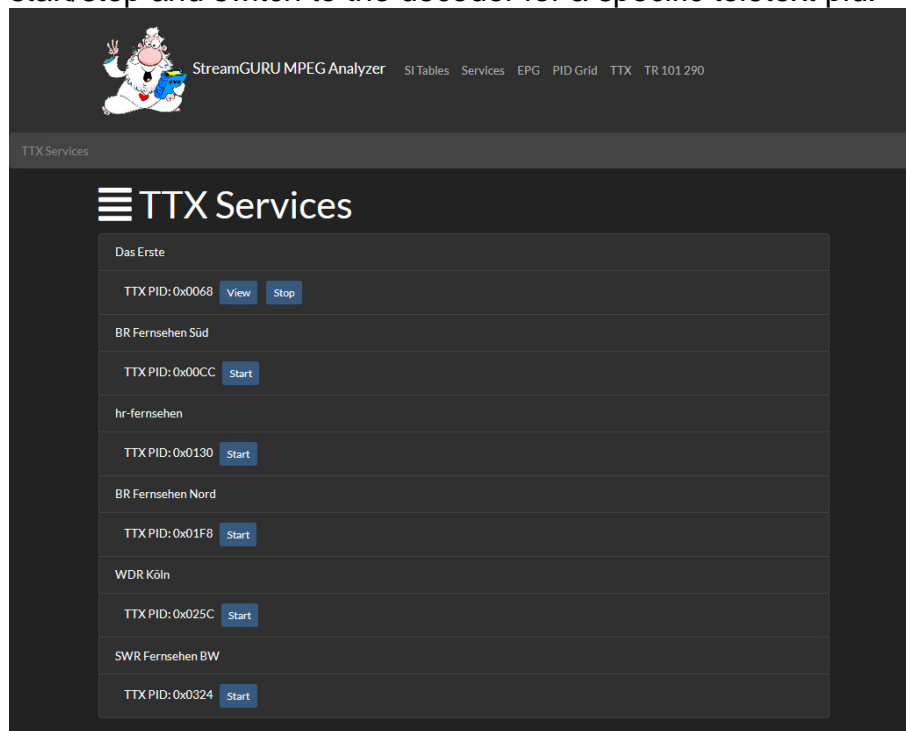
3.2.5. Pid grid

This page shows the pid grid, just like the Windows UI version.

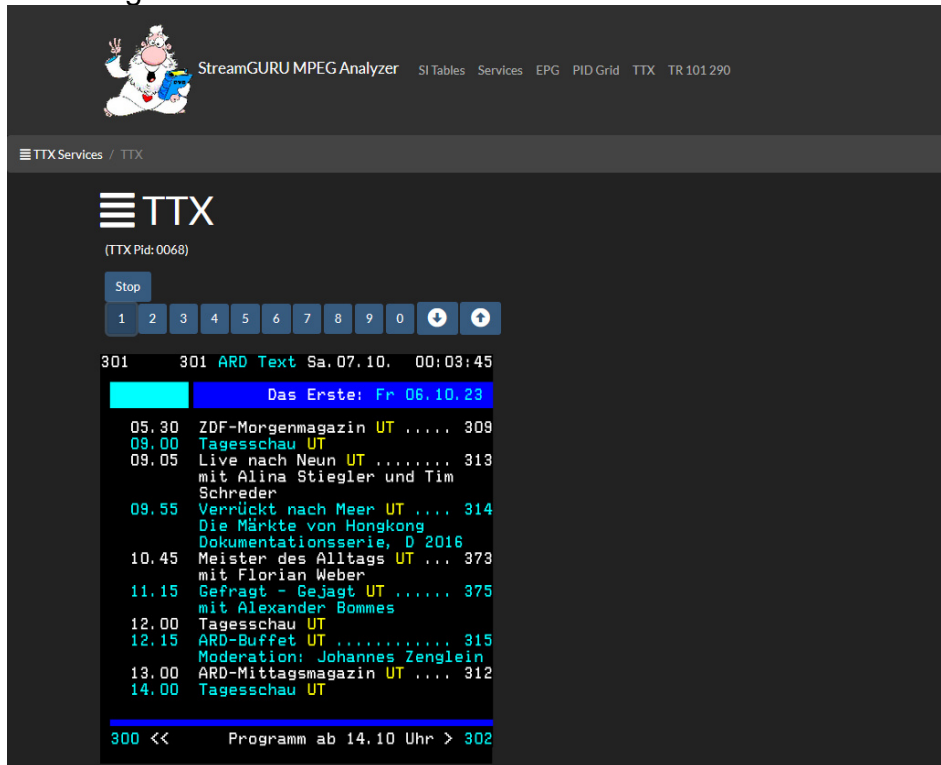


3.2.6. Teletext

Multiple teletext decoders can run at the same time. The TTX page can be used to start/stop and switch to the decoder for a specific teletext pid.



Following the “View” button will show a teletext decoder for the selected pid



StreamGuru MPEG Analyzer | SI Tables | Services | EPG | PID Grid | TTX | TR 101 290

TTX Services / TTX

TTX
(TTX Pid: 0068)

Stop

1 2 3 4 5 6 7 8 9 0

301 301 ARD Text Sa. 07.10. 00:03:45

Das Erste: Fr 06.10.23

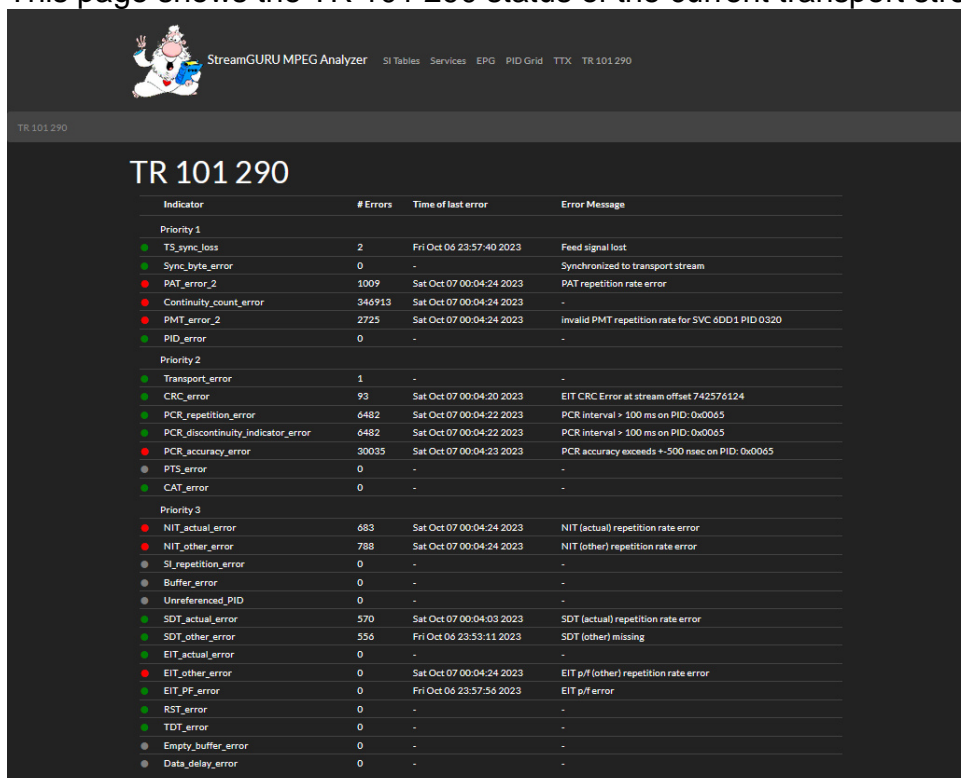
05.30 ZDF-Morgenmagazin UT 309
09.00 Tagesschau UT
09.05 Live nach Neun UT 313
mit Alina Stiegler und Tim
Schneider
09.55 Verrückt nach Meer UT 314
Die Märkte von Hongkong
Dokumentationsserie, D 2016
10.45 Meister des Alltags UT ... 373
mit Florian Weber
11.15 Gefragt - Gejagt UT 375
mit Alexander Bommes
12.00 Tagesschau UT
12.15 ARD-Buffer UT 315
Moderation: Johannes Zenglein
13.00 ARD-Mittagsmagazin UT 312
14.00 Tagesschau UT

300 << Programm ab 14.10 Uhr > 302

The number and page up/down buttons can be used to select pages.

3.2.7. TR 101 290

This page shows the TR 101 290 status of the current transport stream.



StreamGuru MPEG Analyzer | SI Tables | Services | EPG | PID Grid | TTX | TR 101 290

TR 101 290

TR 101 290

Indicator	# Errors	Time of last error	Error Message
Priority 1			
TS_sync_loss	2	Fri Oct 06 23:57:40 2023	Feed signal lost
Sync_byte_error	0	-	Synchronized to transport stream
PAT_error_2	1009	Sat Oct 07 00:04:24 2023	PAT repetition rate error
Continuity_count_error	346913	Sat Oct 07 00:04:24 2023	-
PMT_error_2	2725	Sat Oct 07 00:04:24 2023	invalid PMT repetition rate for SVC 6DD1 PID 0320
PID_error	0	-	-
Priority 2			
Transport_error	1	-	-
CRC_error	93	Sat Oct 07 00:04:20 2023	EIT CRC Error at stream offset 742576124
PCR_repetition_error	6482	Sat Oct 07 00:04:22 2023	PCR interval > 100 ms on PID: 0x0065
PCR_discontinuity_indicator_error	6482	Sat Oct 07 00:04:22 2023	PCR interval > 100 ms on PID: 0x0065
PCR_accuracy_error	30035	Sat Oct 07 00:04:23 2023	PCR accuracy exceeds +500 nsec on PID: 0x0065
PTS_error	0	-	-
CAT_error	0	-	-
Priority 3			
NIT_actual_error	683	Sat Oct 07 00:04:24 2023	NIT (actual) repetition rate error
NIT_other_error	788	Sat Oct 07 00:04:24 2023	NIT (other) repetition rate error
SI_repetition_error	0	-	-
Buffer_error	0	-	-
Unreferenced_PID	0	-	-
SDT_actual_error	570	Sat Oct 07 00:04:03 2023	SDT (actual) repetition rate error
SDT_other_error	556	Fri Oct 06 23:53:11 2023	SDT (other) missing
EIT_actual_error	0	-	-
EIT_other_error	0	Sat Oct 07 00:04:24 2023	EIT p/f (other) repetition rate error
EIT_PF_error	0	Fri Oct 06 23:57:56 2023	EIT p/f error
RST_error	0	-	-
TDT_error	0	-	-
Empty_buffer_error	0	-	-
Data_delay_error	0	-	-

4. Advanced features

4.1. Launching from the commandline

The main Windows executable MTSA.EXE can be launched with the following parameters for diagnostics purposes or to automate the launch of monitoring instances for specific streams. Unless noted otherwise, all parameters are case-sensitive.

MTSA.EXE /INSTALL

(re)registers the DirectShow filters that ship with the MPEG Analyzer software and optionally registers the .MPG .TS .TRP and .M2TS file extensions. Launching the software with this parameter will cause the dialog to show up that usually appears once after the software installation. Administrative privileges might be required for the registrations to succeed.

MTSA.EXE /UNINSTALL

(de)registers everything that /INSTALL has registered. Launching the software with this parameter will not show any visual feedback.
Can **not** be combined with other parameters.

MTSA.EXE /NAME:"My title is Stream #1"

Changes the window title (and also the name in the task bar) to "My title is Stream #1".
Can be combined with other parameters.

MTSA.EXE /IP:224.0.0.1:1234

Automatically selects the IP feed as input and skips the feed selection dialog. The example commandline starts monitoring the feed on the multicast address 224.0.0.1 port 1234. Unicast and multicast addresses can be used for this parameter. Can be combined with other parameters.

MTSA.EXE C:\demofile.ts

Automatically selects the file feed as input and skips the feed selection dialog. The example commandline reads the file C:\demofile.ts. Paths and filenames containing spaces need to be enclosed by "" like this: MTSA.EXE "C:\Documents and Settings\DemoUser\demo file.ts". Can be combined with other parameters.

MTSA.EXE /IPI:224.0.0.2:1234

Enables the RTP stream relay for the instance being launched, sending the stream to the multicast address 224.0.0.2 port 1234 in this example. Unicast and multicast addresses can be used for this parameter. Can be combined with other parameters. This parameter only affects the launched instance and does not affect other instances launched over the normal start menu links.

MTSA.EXE /IPI:OFF

Turns off the RTP stream relay for the instance being launched. Can be combined with other parameters. This parameter only affects the launched instance and does not affect other instances launched over the normal start menu links.

MTSA.EXE /TRLOG:C:\trlog.txt

Enables a pipe for TR 101 290 log output into the specified file. Can be combined with other parameters. This parameter only affects the launched instance and does not affect other instances launched over the normal start menu links. Paths and filenames containing spaces need to be enclosed by "" like this: MTSA.EXE /TRLOG:"C:\Documents and Settings\DemoUser\trlog.txt".

MTSA.EXE /SILOG:C:\trlog.txt

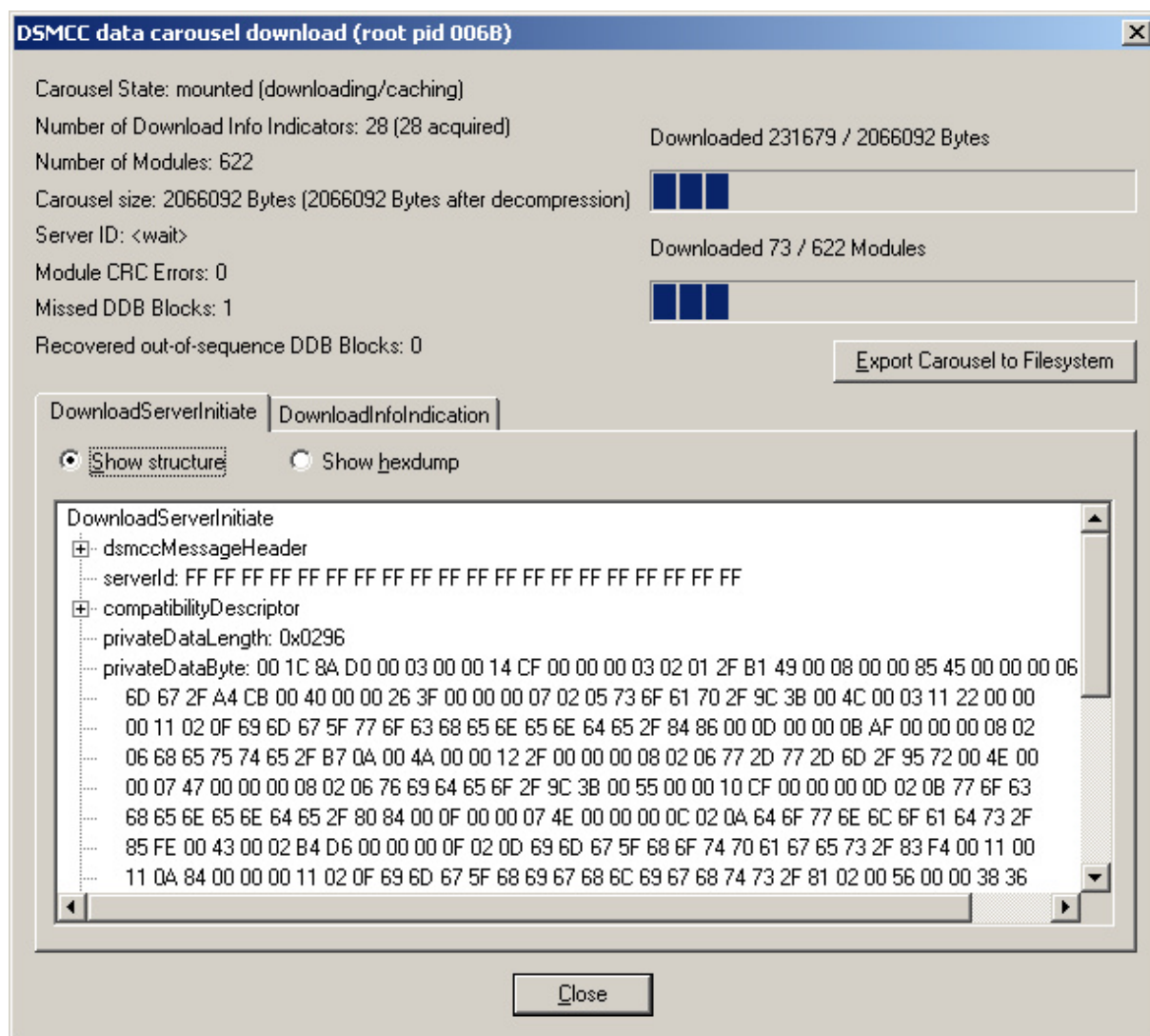
Enables a pipe for the SI history log output into the specified file. Can be combined with other parameters. This parameter only affects the launched instance and does not affect other instances launched over the normal start menu links. Paths and filenames containing spaces need to be enclosed by "" like this: MTSA.EXE /SILOG:"C:\Documents and Settings\DemoUser\trlog.txt".

MTSA.EXE /HTTP:4222

Enables the integrated webserver for remote-monitoring on TCP port 4222. This parameter only affects the launched instance and does not affect other instances launched over the normal start menu links.

4.2. DSM-CC Data Carousels

The analyzer can mount DSM-CC Data Carousels as they are used by various data services. This option is directly available in the context menu of PMT elementary streams if the corresponding data broadcast descriptors are present. Carousels launched this way will also use the correct carousel ID from the descriptors in the PMT. Carousel downloads started over the main menu will download/mount with a carousel-id wildcard.

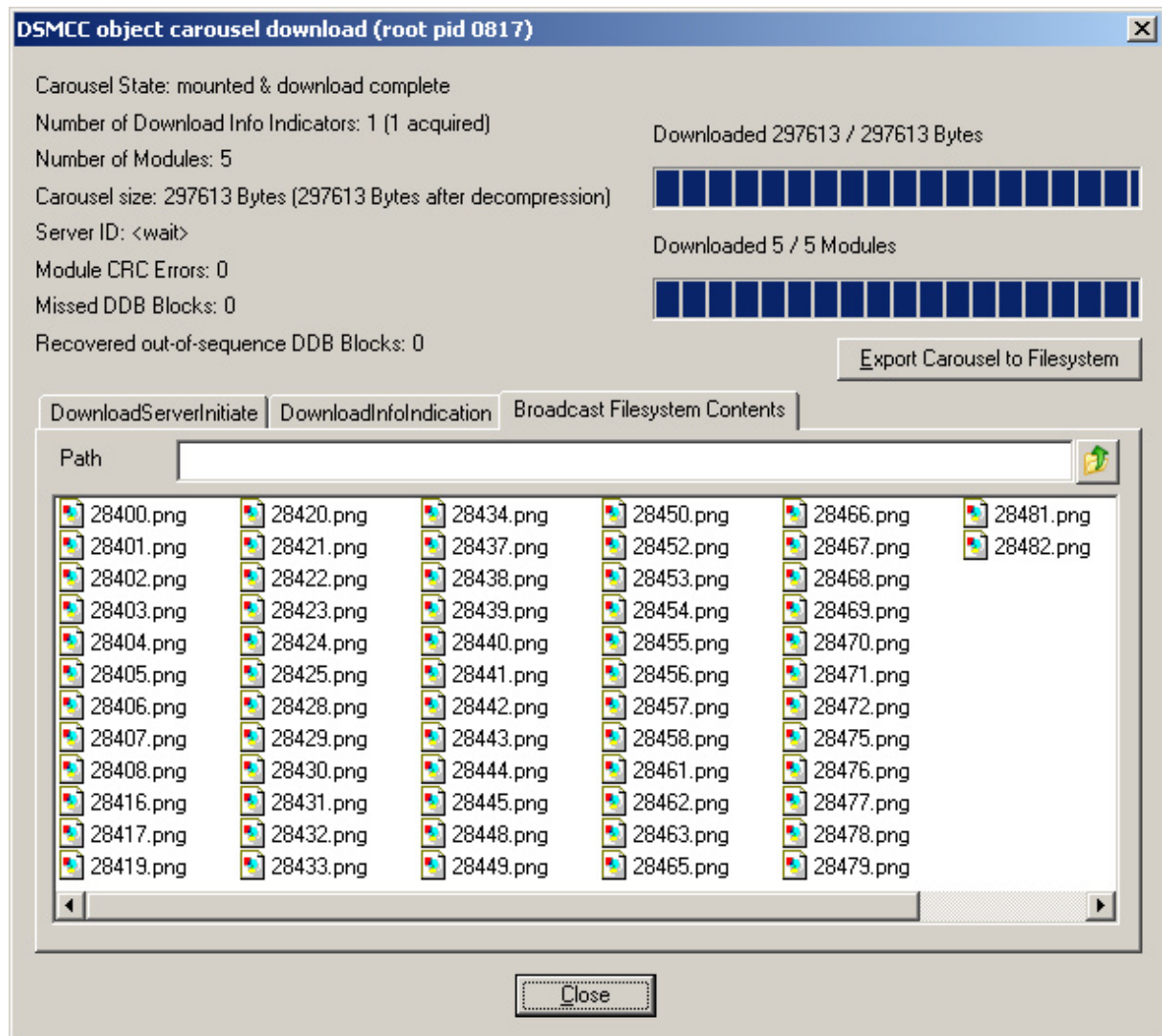


The dumps of the DSM-CC carousel will consist of raw module dumps. If a module compression descriptor is encountered, then the modules will automatically be decompressed.

DVB-SSU carousels are data carousels with a subtle syntax difference. The DSM-CC parser can be launched in both modes. A warning will appear if an attempt to mount an SSU carousel in "normal" data carousel mode is made over the PMT context menu if the descriptors clearly indicate the presence of an SSU structure.

4.3. DSM-CC Object Carousels

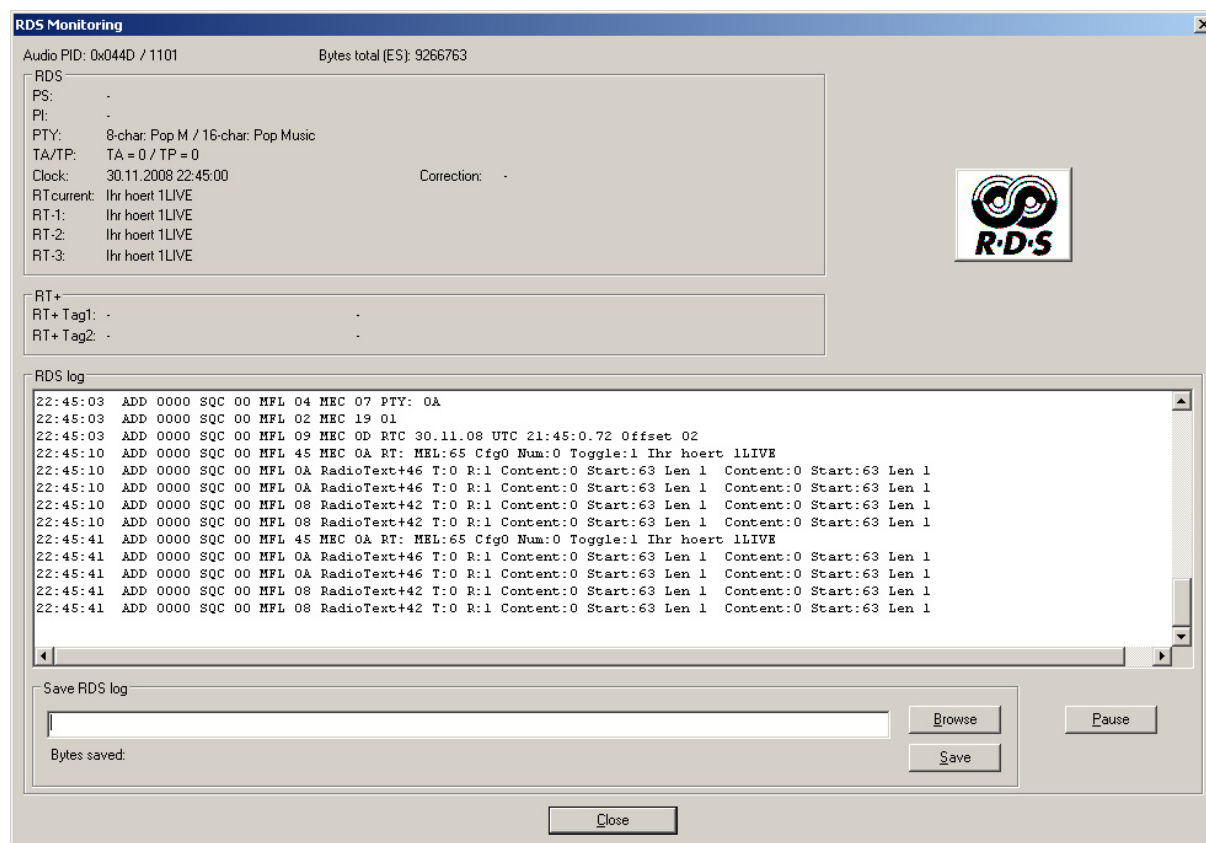
The analyzer can mount DSM-CC Object carousels as they are used by the HBBTV, MHEG-5, and MHP standards. Like data carousels, their download can be started over the PMT ES context menu or the main menu.



Once the root of the filesystem has been downloaded, it is possible to dump the contents of an object carousel to the hard disk. This dump will include all file and directory objects. The dump will also include raw dumps of the decompressed modules.

4.4. RDS Decoding

Only a few radio stations are currently sending RDS data together with their regular DVB broadcasts. The RDS decoder dialog can be opened from the context menu of a Audio stream in the table decoder view (Section 2.5, PMT) or the service view.



The RDS decoder will decode Radiotext and Radiotext+.

For the exact meaning of the different fields, please refer to the RDS/UECP specification.

This dialog will also allow you to save the text log to the hard disk.

4.5. *HBBTV, MHP/GEM and other interactive services*

The analyzer automatically identifies and downloads AITs (application information tables) as they are used by the HBBTV (<http://www.hbbtv.org>) , MHP and GEM (<http://www.mhp.org>) standards.

The analyzer filtering and decoding is based on the

**DVB A137 specification
"Signalling and carriage of interactive applications and
services in hybrid broadcast/broadband environments"**

For every PMT containing an `application_signaling_descriptor`, the analyzer will try to download and decode the AIT. If multiple services reference the same AITs, these AITs may appear multiple times in the "SI tables" view even if the content is identical.

The sample on the next page shows a service that carries one MHP and several HBBTV applications at the same time.

The application signalling descriptor points at PID 0816. On this pid, there are two AITs with different application types (0001 and 0010).

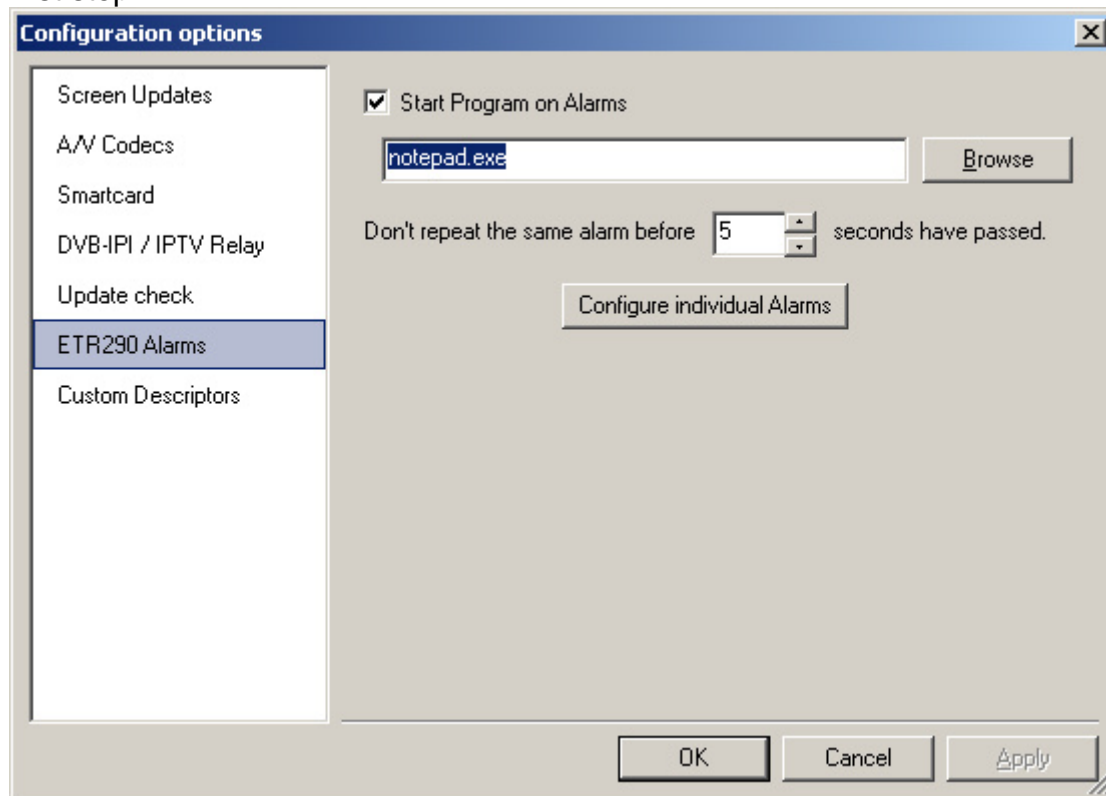
It is also possible to download object carousels, referenced in a `transport_protocol_descriptor` using the DSM-CC download dialog (see section 4.3).

- [-] AIT for SID 6DD0 AppType 0010 on PID 0882
- [-] AIT for SID 6DD1 AppType 0001 on PID 0816
 - i 1 Sections, Version 00
 - i test_application_flag: 0
 - i application_type: 0001 - DVB-J Application
 - [-] i OID:0013 AppId:0100 ControlCode:01/AUTOSTART
 - + d transport_protocol_descriptor
 - + d application_descriptor
 - + d application_name_descriptor
 - + d dvb_j_application_descriptor
 - + d dvb_j_application_location_descriptor
- [-] AIT for SID 6DD1 AppType 0010 on PID 0816
 - i 1 Sections, Version 00
 - i test_application_flag: 0
 - i application_type: 0010 - HBBTV
 - + i OID:0013 AppId:0065 ControlCode:01/AUTOSTART
 - + i OID:0013 AppId:0002 ControlCode:02/PRESENT
 - + i OID:0013 AppId:0003 ControlCode:02/PRESENT
 - + i OID:0013 AppId:0004 ControlCode:02/PRESENT
 - + i OID:0013 AppId:0005 ControlCode:02/PRESENT
 - + i OID:0013 AppId:000C ControlCode:02/PRESENT
- + BAT for Bouquet 1040 (current)
- + CAT (current)
- + NIT (actual,current)
- + NIT for NID 0003 (other,current)
- + PAT (current)
- + PMT for SID 6DCA (current) - Das Erste
- + PMT for SID 6DCB (current) - Bayerisches FS Süd
- + PMT for SID 6DCC (current) - hr-fernsehen
- + PMT for SID 6DCE (current) - Bayerisches FS Nord
- + PMT for SID 6DCF (current) - WDR Köln
- + PMT for SID 6DD0 (current) - BR-alpha*
- [-] PMT for SID 6DD1 (current) - SWR Fernsehen BW
 - i 1 Sections, Version 02
 - i Raw Version C5
 - i PCR PID 0321
 - i Service ID 6DD1
 - + Stream 02 PID 0321 MPEG2 Video
 - + Stream 03 PID 0322 MPEG1 Audio
 - + Stream 03 PID 0323 MPEG1 Audio
 - [-] AIT Stream 05 PID 0816 AIT
 - + d application_signalling_descriptor
 - application: 0x0001
 - reserved_future_use: 0x7
 - AIT_version_number: 0x02
 - application: 0x0010
 - reserved_future_use: 0x7
 - AIT_version_number: 0x00
 - + ~~Stream 06 PID 0324 Teletext~~
 - + MHP Stream 08 PID 0818 (DSMCC carousel)

4.6. ETR 290 Alarms

The analyzer can trigger automated alarms if errors appear in a stream.

An application which will be launched if an alarm is triggered has to be configured as first step:



This application will be started with a filename as first parameter. The file contains a text-description of the error(s) that raised the alarm. When the called application terminates, this alarm file will be automatically deleted.



The toolbar can be used to enable or disable the alarms (left button) or to open the alarm configuration (right button, see next page).

The "Configure individual Alarms" button or the toolbar button will open the following configuration dialog:

Priority 1 Alarms	
TS_sync_loss	<input checked="" type="checkbox"/> Alarm if event active < 1000 > msec.
Sync_byte_error	<input checked="" type="checkbox"/> Alarm if event active < 1000 > msec.
PAT_error_2	<input checked="" type="checkbox"/> Alarm if event active < 1000 > msec.
Continuity_count_error	<input checked="" type="checkbox"/> Alarm on < 5 > or more events/sec.
PMT_error_2	<input checked="" type="checkbox"/> Alarm if event active < 1000 > msec.
PID_error	<input checked="" type="checkbox"/> Alarm if event active < 1000 > msec.

Priority 2 Alarms	
Transport_error	<input type="checkbox"/>
CRC_error	<input type="checkbox"/>
PCR_repetition_error	<input type="checkbox"/>
PCR_discontinuity_indicator_error	<input type="checkbox"/>
PCR_accuracy_error	<input type="checkbox"/>
PTS_error	<input type="checkbox"/>
CAT_error	<input type="checkbox"/>

Priority 3 Alarms	
NIT_actual_error	<input type="checkbox"/>
NIT_other_error	<input type="checkbox"/>
SI_repetition_error	<input type="checkbox"/>
Buffer_error	<input type="checkbox"/>
Unreferenced_PID	<input type="checkbox"/>
SDT_actual_error	<input type="checkbox"/>
SDT_other_error	<input type="checkbox"/>
EIT_actual_error	<input type="checkbox"/>
EIT_other_error	<input type="checkbox"/>
EIT_PF_error	<input type="checkbox"/>
RST_error	<input type="checkbox"/>
TDT_error	<input type="checkbox"/>
Empty_buffer_error	<input type="checkbox"/>
Data_delay_error	<input type="checkbox"/>

☒ ETR290 Alarms On

OK Cancel

For every ETR 290 alarm, you can configure an individual threshold to avoid that an alarm goes off due to a single bit-error.

4.7. Support for compressed DVB Strings

The MPEG Analyzer supports the decoding of several proprietary string compression methods.

The currently supported encoding formats are:

- DVB string encoding type 1F 01/02, as used by BBC/Freesat
- String encoding as used by Sky UK
- String encoding as used by Sky Italy

All of these encodings use huffman tables.

For legal reasons, we do not bundle these tables with the analyzer at the moment. The application will show a warning message when it encounters strings that can not be decompressed due to missing tables.

The missing tables have been reverse engineered and published by a few clever guys as part of a few open source projects where they can be downloaded free of charge. After downloading the files, please put them into the MPEG Analyzer application directory (where the MTSA.EXE is located).

4.7.1. Where can you get these tables ?

The tables for BBC/Freesat are available here:

<http://www.rst38.org.uk/vdr/>

(freesat.t1 and freesat.t2 – from the “Complete tables” link)

The tables for Sky UK and Italy are available here:

<http://lukkinosat.altervista.org/> (sky_uk.dict and sky_it.dict)

These tables should be complete.

Please note that several other versions of these files are available on the internet as well. Not all of these files contain the complete (as in: error free) huffman trees.

4.8. Custom descriptors

Since version 2.99 it is possible to import definitions of your own descriptors. The structure of descriptors needs to be described in an XML dialect which is described on this page. There is also limited support for logic in the form of "if this bit is set or that field has values between [a] and [b], this field appears here". 99% of the descriptors we are aware of in the current MPEG2 & DVB world can be decoded with this logic. The ability to map certain numeric field values to a descriptive human-readable text makes this feature complete.

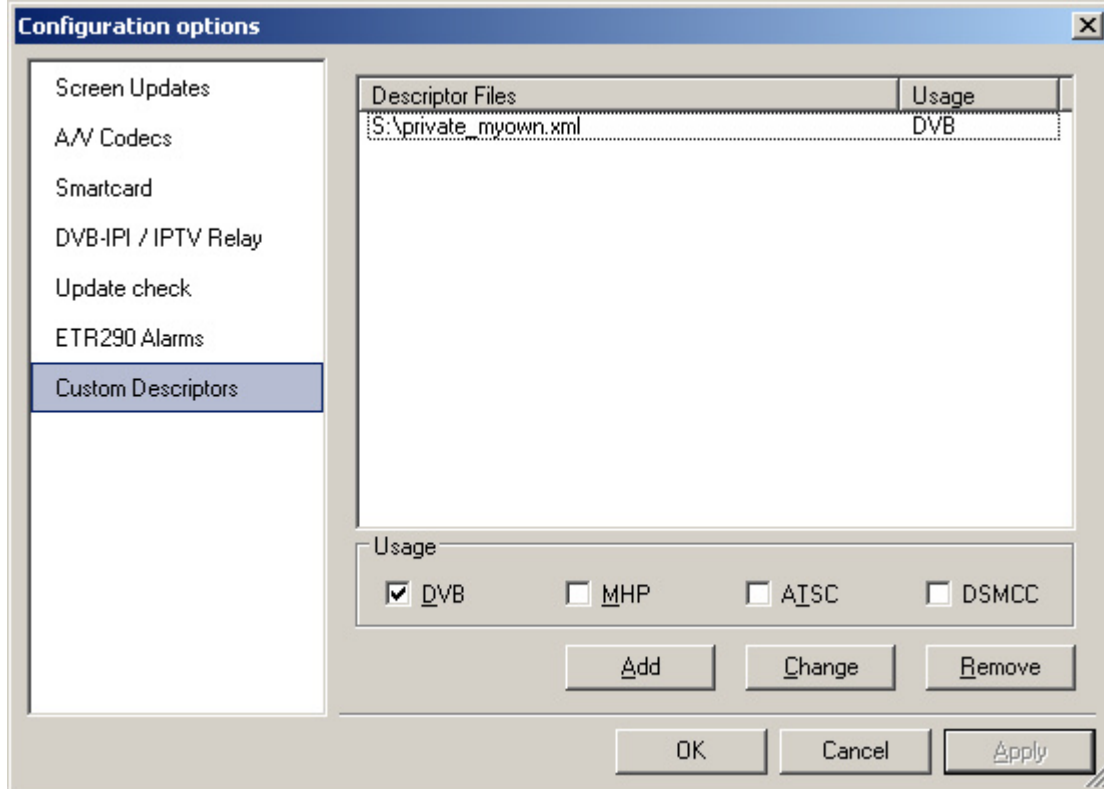
All files should be encoded in UTF-8.

The name of the XML root element is irrelevant. Root elements can contain elements of the type <struct> and <enum>. The following image shows the file containing (among other things) the description of the LCN Descriptor for the [private range](#) 00000028 which has been assigned to EACEM:

```
<?xml version="1.0" encoding="UTF-8"?>
<Private_EACEM>
  <!-- IEC/CENELEC 62 216 / "Baseline Digital Terrestrial TV Receiver Specification" -->
  <!-- see http://www.cenelec.eu --> EN 62216:2011 -- costs money -->
  <!-- http://webshop.ds.dk/templates/product.aspx?ProductGuid=M234186 -->
  <!--<struct name="logical_channel_descriptor" tagname="descriptor_83_00000028">
    <!--<looplevel length="exhaust">
      <!--<word name="service_id" />
      <!--<bitfield name="visible_service_flag" length="1" />
      <!--<bitfield name="reserved" length="5" />
      <!--<bitfield name="logical_channel_number" length="10" />
    <!--</looplevel>
  <!--</struct>
  <!--
  <!--<struct name="preferred_name_list_descriptor" tagname="descriptor_84_00000028">
    <!--<looplevel length="exhaust">
      <!--<char name="ISO_639_language_code" length="3" />
      <!--<byte name="name_count" ref4loop="1" />
      <!--<char name="name" referredlength="1" />
    <!--</looplevel>
  <!--</struct>
  <!--
  <!--<struct name="preferred_name_identifier_descriptor" tagname="descriptor_85_00000028">
    <!--<byte name="name_id" />
  <!--</struct>
  <!--
  <!--<struct name="eacem_stream_identifier_descriptor" tagname="descriptor_86_00000028">
    <!--<byte name="version_byte" />
  <!--</struct>
  <!--
  <!--<struct name="HD_simulcast_logical_channel_descriptor" tagname="descriptor_88_00000028">
    <!--<looplevel length="exhaust">
      <!--<word name="service_id" />
      <!--<bitfield name="visible_service_flag" length="1" />
      <!--<bitfield name="reserved" length="5" />
      <!--<bitfield name="logical_channel_number" length="10" />
    <!--</looplevel>
  <!--</struct>
  <!--</Private_EACEM>
```

4.8.1. Configuration

You need to tell the MPEG analyzer where your custom descriptor files are located on your PC and which context, tables or other descriptor-carrying data structures your descriptors can appear in. This option is not available in the demo/trial version.



In most cases, you will have to select "DVB" as usage. This will include your descriptors in the decoders for most MPEG2 & DVB related tables. Selecting MHP will include them in the AIT parser which uses a completely separate range of descriptor tags. ATSC will include it in the decoder for the limited decoding of ATSC that the software provides. DSMCC will include them in the decoder for the DII's descriptor loop (Please contact us if you need this, this works a bit different). The software has to be restarted for the new configuration to take effect. If the file(s) contain syntactical errors, a dialog box giving the filename and line of the error will appear.

4.8.2. <struct> elements

<struct> elements need to have the following two attributes:

- "name" => contains the free-text name that will be displayed when your descriptor is encountered.
- "tagname" => is used to identify your descriptor. It needs to take the form
 - "descriptor_[TAG]"
 - or "descriptor_[TAG]_[PRIVATERANGE]"
 - or "mpeg2exdescriptor_[TAG]"

where [TAG] needs to be replaced with the 2-digit hexadecimal descriptor tag and [PRIVATERANGE] needs to be replaced with the 8-digit/4-byte private data specifier id if you are trying to decode a private descriptor.

The mpeg2exdescriptor name is used for descriptors that make use of the extension_descriptor and descriptor_tag_extension. In this case, the [TAG] needs to be replaced with the descriptor_tag_extension value of your descriptor. The mapping from the extension_descriptor with its own descriptor_tag is done automatically by the analyzer.

Inside <struct> elements, there can be a wide range of other elements that (in the order of appearance) describe what your descriptor contains after the descriptor_tag and length field. The parser currently supports the following elements. Except for the logic elements <loop>, <loopnum> and <if>, all of them need to contain a name attribute. Some of them need a length field. Some of them support a "ref4loop" attribute that can copy their value into a stack where they can be used as input parameter for loops or if blocks. Elements describing some sort of numerical value can also have an "isenum" attribute to lookup the number in an enum map element.

<bitfield>

Describes a bitfield. The length parameter indicates the size (=number of bits). Can contain a "ref4loop" attribute.

Bitfields should always be followed by other bitfields until a byte-boundary (=at least 8 bits) is reached.

<byte>

Describes a single byte. Can contain a "ref4loop" attribute.

<word>

Describes a 16-bit word. Can contain a "ref4loop" attribute.

<dword>

Describes a 32-bit dword. Can contain a "ref4loop" attribute.

<hexblock>

Describes a block of bytes which will always be decoded as hex-dump. The length attribute contains the expected number of bytes and can have the special value of "exhaust" to indicate that this block ends at the end of the descriptor. Can contain a "ref4loop" attribute.

<char>

Describes a series of ASCII characters. The decoder will display the corresponding text. The length attribute contains the expected number of bytes and can have the special value of "exhaust" to indicate that this block ends at the end of the descriptor.

<dvbchar>

Describes a string which is encoded according to the EN 300 468 Annex A. The decoder will try to display the corresponding text, based on the encoded control code at the beginning. The length attribute contains the expected number of bytes and can have the special value of "exhaust" to indicate that this block ends at the end of the descriptor.

<loopnum>

Describes a loop of elements. The mandatory "count" attribute references a value that has been stored by a previous ref4loop attribute. It tells the analyzer **how often** a loop appears in the descriptor. <loopnum> elements can contain all elements that a <struct> can contain as well (=nesting loops is possible). Please note that the "ref4loop" stack is shared between inside and outside of the loop. There is intentionally only one such memory block per descriptor being parsed to allow complex decoding logic.

<loopen>

Describes a loop of elements. The mandatory "length" attribute references a value that has been stored by a previous ref4loop attribute. It tells the analyzer **how many bytes** the loop has. It can contain the keyword "exhaust" to indicate that this loop ends at the end of the descriptor. <loopen> elements can contain all elements that a <struct> can contain as well (=nesting loops is possible). Please note that the "ref4loop" stack is shared between inside and outside of the loop. There is intentionally only one such memory block per descriptor being parsed to allow complex decoding logic.

<if>

This is a logic element that tells the analyzer that a certain set of data fields only appear in the descriptor when certain conditions are met. These elements need to contain the following attributes:

- condleft: references a value on the "ref4loop" stack that contains the value from the descriptor you want to compare
- operator: can take the values "<", ">", "=="(equal), "!="(not equal)
- condright: contains the actual value you want to compare against

The following image for the actual MPEG-H_3daudio_multi-stream_descriptor contains an example which probably explains this better any any dry text description:

```
<struct name="MPEG-H_3daudio_multi-stream_descriptor" tagname="mpeg2exdescriptor_0C">
  <<<bitfield name="thisIsMainStream" length="1" ref4loop="1" />
  <<<bitfield name="thisStreamID" length="7" />
  <<<if condleft="1" operator="==" condright="1"><!-- if (thisIsMainStream) -->
    <<<<bitfield name="reserved" length="1" />
    <<<<bitfield name="numAuxiliaryStreams" length="7" />
    <<<<bitfield name="reserved" length="1" />
    <<<<bitfield name="mae_numGroups" length="7" ref4loop="1" />
    <<<<loopnum count="1"><!-- for (i=0; i< mae_numGroups; i++) -->
      <<<<<bitfield name="mae_groupID" length="7" />
      <<<<<bitfield name="isInMainStream" length="1" ref4loop="2" />
      <<<<<if condleft="2" operator="==" condright="0"><!-- if (isInMainStream == '0') -->
        <<<<<<bitfield name="isInTS" length="1" />
        <<<<<<bitfield name="auxiliaryStreamID" length="7" />
      <<<<<</if>
      <<<<</loopnum>
    <<<</if>
    <<<<hexblock name="reserved" length="exhaust" />
  <<</struct>
```


4.8.3. <enum> elements

<enum> elements can be used to translate numerical values from bitfields, bytes, words and dwords into human-readable text. They contain a series of <enumentry> elements which all need to contain a "name" and a "value" attribute.

Please note that the value attribute

- is encoded hexadecimal
- can accept ranges (like "12-15" in the following example):

```
<enum name="service_type">
... <enumentry name="reserved for future use" value="00" />
... <enumentry name="digital television service" value="01" />
... <enumentry name="digital radio sound service" value="02" />
... <enumentry name="Teletext service" value="03" />
... <enumentry name="NVOD reference service" value="04" />
... <enumentry name="NVOD time-shifted service" value="05" />
... <enumentry name="mosaic service" value="06" />
... <enumentry name="FM radio service" value="07" />
... <enumentry name="DVB SRM service" value="08" />
... <enumentry name="reserved for future use" value="09" />
... <enumentry name="advanced codec digital radio sound service" value="0A" />
... <enumentry name="H.264/AVC mosaic service" value="0B" />
... <enumentry name="data broadcast service" value="0C" />
... <enumentry name="reserved for Common Interface Usage" value="0D" />
... <enumentry name="RCS Map" value="0E" />
... <enumentry name="RCS FLS" value="0F" />
... <enumentry name="DVB MHP service" value="10" />
... <enumentry name="MPEG-2 HD digital television service" value="11" />
... <enumentry name="reserved for future use" value="12-15" />
... <enumentry name="H.264/AVC SD digital television service" value="16" />
... <enumentry name="H.264/AVC SD NVOD time-shifted service" value="17" />
... <enumentry name="H.264/AVC SD NVOD reference service" value="18" />
... <enumentry name="H.264/AVC HD digital television service" value="19" />
... <enumentry name="H.264/AVC HD NVOD time-shifted service" value="1A" />
... <enumentry name="H.264/AVC HD NVOD reference service" value="1B" />
... <enumentry name="H.264/AVC 3D digital television service" value="1C" />
... <enumentry name="H.264/AVC 3D NVOD time-shifted service" value="1D" />
... <enumentry name="H.264/AVC 3D NVOD reference service" value="1E" />
... <enumentry name="HEVC digital television service" value="1F" />
... <enumentry name="HEVC UHD digital television service with HDR" value="20" />
... <enumentry name="reserved for future use" value="21-7F" />
... <enumentry name="user defined" value="80-FE" />
... <enumentry name="reserved for future use" value="FF" />
</enum>
```


4.8.4. Submit your descriptors for inclusion in the public analyzer version (please)

Once you are done describing your own descriptors, please consider submitting your file for inclusion in the public mpeg analyzer version, ideally with a link to the original specification. Please note that we will not accept submissions that result in conflicts with existing official MPEG2 or DVB ranges or make use of user-private tag ranges without the corresponding private-data-specifier ID (Funfact: No, these 4 bytes will not kill you and cost you actual bandwidth - even if you send them 10 times in 10 different tables).

5. Contact & Support

The StreamGuru MPEG Analyzer is a product of

GkWare e.K.
Hatzper Str. 172B
D- 45149 Essen
Germany

For support, please contact us at support@gkware.com .

5.1. Purchasing information

Single user licenses can be purchased online.

Homepage: <http://www.streamguru.de/>

Direct shop link: <http://www.streamguru.de/mpeg-analyzer/buy-mtsa/>

We also offer student/hobbyist licenses and discounts if you need more than one license.

5.2. Licensing / USB License Dongles

Permanent licenses are installed on Codemeter USB license dongles. After completing the purchasing process, a dongle with the license is shipped by registered mail to the address provided as part of the purchasing process. In order to use these dongles, the Codemeter Runtime from our download page or <http://codemeter.com/us/service/downloads.html> needs to be installed.



Network/Floating licenses use UDP and TCP port 22350. These ports need to be made accessible in the firewall settings. Additional configuration is required for running a license server. A guide that explains the setup of a license server is available at <http://www.streamguru.de/mpeg-analyzer/buy-mtsa/floating-license/>