

# Xpect<sup>®</sup>

**| 24/7 Transport Stream Monitoring**



## **USER MANUAL**

September 2020

**DeKtec**

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## Introduction

### 1.1 General description

Xpect is a '24/7' transport stream monitoring software package, which continuously checks transport streams for compliance to TR 101 290 and compares each stream to a user-created template (defining the expected properties of the transport stream). Any violations of the TR 101 290 rules, or mismatches to the template, will be logged in a database and can be signalled to an NMS through SNMP traps or as an IP/UDP based message.

Xpect also keeps logs of statistical information (e.g. bitrates, number of CC errors and scrambled status) for the services, tables and individual components in the monitored stream. The period over which to gather the statistical information is user-configurable and can be set from several seconds up to multiple days/weeks.

Xpect monitors multiple transport streams simultaneously, applying different test criteria to each stream. Each stream is independently monitored and can be paused without affecting the other streams, for example when new test criteria are being loaded by the user. The maximum number of streams that can be monitored in parallel is defined by the required configuration, the bit rate for each transport stream and the resource availability of the host PC (Xpect server).

The Xpect server software is installed on a PC platform. It consists of the main Xpect 'application' and a companion 'guardian' service. The Xpect guardian will launch and shut down Xpect gracefully to protect its databases against corruption should a user-invoked shut-down be attempted during database writes. Furthermore, the Xpect guardian will regularly communicate with each Xpect 'instance' (TS monitoring thread) to ensure they are each running properly. If an instance does not respond within a time limit then the Xpect guardian will automatically re-initialise that instance without interrupting the monitoring of the other instances. Once configured, each Xpect monitoring instance is designed to run autonomously without any human supervision.

For remote control purposes Xpect provides both SNMP and SOAP interfaces. These will allow a 3<sup>rd</sup> party NMS, or custom-built client application, to fully configure Xpect and download captured transport stream files as well as giving full access to the event log and statistical information databases. Xpect provides a web interface which can be used to check the live status of the monitored stream, access event logs and perform basic configuration tasks using a standard browser.

Finally, Xpect provides a fully configurable Multi-TS viewer (Mosaic) of decoded video, audio bars and monitoring status. Mosaic output uses a standard PC graphics card.

The Xpect software runs on a standard Windows-based PC and can be combined with almost all DekTec hardware input devices. Using a DekTec hardware interface, you will be able to monitor transport streams from DVB-ASI, DVB-T/T2, DVB-S(2), QAM, ATSC(8VSB), ISDB-T and IP networks.

## 1.2 Licensing

As is true for most other DekTec software applications, Xpect requires the presence of a valid licence before it can be used. The Xpect software uses a licence point mechanism. The basic idea behind this points-based license mechanism is that you need a certain amount of licence points per monitored transport stream (see table below).

TS type	Points	Description / Remarks
SPTS Radio	¼	A single-program transport stream carrying a radio service.
SPTS TV	½	A single-program transport stream carrying a TV service.
MPTS	4	A multi-program transport stream i.e. stream carrying multiple services

Given the above, you can compute the number of licence points needed to run Xpect on the basis of the number of multi- and/or single-program transport streams you want to monitor. For an example of how to compute the number of points required please refer to §2.5 Number of licence points.

**NOTE:** you can only buy whole points, therefore the number of total number points required must be rounded upwards to the nearest whole number (e.g. if your setup requires 7.75 points you must round this up to 8 points).

### 1.2.1 How long is a licence valid?

There are two types of licence available for Xpect, the first being a time limited evaluation licence and the second a permanent licence.

The evaluation licence is intended for evaluation purposes and will always be time-limited (i.e. after a certain amount of time the licence will expire and Xpect will no longer be able to run).

A permanent licence will never expire; however, it does have a time-limited maintenance period associated with it (by default: 1 year). This means that you will be able to freely upgrade to the latest Xpect version as long as it was released prior to the end date of the maintenance period. If you upgrade to a version which was released after the maintenance end date, the licence will not be accepted and you will need to renew the maintenance period to be able to use the latest version.

**NOTE:** *your licence will still be valid for any Xpect version released prior to the maintenance end date (i.e. you can still use the older version).*

### 1.2.2 Where is the licence located?

Although you may have received a file with the licence for Xpect, the licence itself will be stored on a DekTec card after you have activated the licence. This means that the file is no longer needed after activation and that the DekTec card is effectively a dongle for Xpect (i.e. the licence moves with the DekTec hardware). It is possible to have multiple DekTec cards with Xpect licences on more than one of them.

When Xpect starts it will check all cards which are part of its configuration (i.e. cards which are specified in the [XpectGeneralConfig.xgen](#) configuration file) to see if they have a valid licence. The points of all valid licences will be accumulated and if there are enough points available to run the configuration, Xpect will start. For example if the configuration contains two cards 'A' and 'B' with respectively a licence for four and two points on them, Xpect will start successfully as long the number of licence points needed does not exceed six points.

**NOTE:** *if your system contains the cards 'A', 'B', and 'C', and a valid Xpect licence is stored on each of them, but card 'C' is not used in the configuration of Xpect (i.e. no transport stream received via*

*card 'C' will be monitored), then the licence points on card 'C' will not be included in the sum of available points.*

### 1.3 List of Abbreviations

CC	Continuity Count
DVB	Digital Video Broadcasting
EULA	End User Licence Agreement
IP	Internet Protocol
Mbps	Megabits per second
MIB	Management Information Base. The set of status and control variables accessible through the SNMP protocol
MPTS	Multi-Program Transport Stream
NA	Not Applicable
NMS	Network Management System
PCI	PCI Bus
PCIe	PCI Express Bus
PCR	Program Clock Reference
ppm	Parts per million
SNMP	Simple Network Management Protocol
SPTS	Single Program Transport Stream
TSoIP	Transport Stream over IP
UDP	User Datagram Protocol
URL	Uniform Resource Locator
XCT	Xpect Configuration Tool. A tool for editing and creating Xpect configuration files

## 2. Pre-installation considerations

Before explaining how to configure Xpect, we will first discuss some important considerations related to the choice of the PC and DekTec interface(s).

The desired setup has a big impact on the hardware requirements needed to run Xpect smoothly and it is therefore important to ask yourself a number of questions prior to selecting a hardware platform for your Xpect installation. The table below lists a number of requirements and the parameters on which they depend.

#	Requirement	Depends on
1	Minimum system specification	<ul style="list-style-type: none"> <li>Windows OS used</li> </ul>
2	Amount of memory (RAM) needed	<ul style="list-style-type: none"> <li>Number of transport streams monitored</li> <li>Number and type of cells part of the Mosaic</li> <li>Size of pre- and post-trigger buffers</li> </ul>
3	Hard disk space needed	<ul style="list-style-type: none"> <li>Number of transport streams monitored</li> <li>Will transport stream capturing will used?</li> <li>Number of days to keep in log databases</li> </ul>
4	Number of DekTec interface cards	<ul style="list-style-type: none"> <li>Number of transport streams monitored</li> <li>Which interface types are used (DVB-ASI, DVB-T, DVB-S(2), TSolP, etc.)?</li> <li>Can you use cards with multiple input ports?</li> </ul>
5	Number of licence points	<ul style="list-style-type: none"> <li>Number of transport streams monitored</li> <li>Type of transport streams (i.e. SPTS Radio/TV or MPTS)</li> </ul>

### 2.1 Minimum system specs

The minimum system specifications for running Xpect are given in the table below.

Platform:	64-bit : 2k12, 2k16, 2k19, Win 7, Win 8 or Win 10
Processor:	Intel Core i5
Memory:	≥8GB RAM
Hard disk:	Minimum of 40GB of free space
PCI/PCI Express	Enough free slots to fit required DekTec interface cards
Prerequisites	Silverlight 4 runtime Administrator rights IE11 browser is required Windows User Access Control (UAC) should be disabled Screensaver and Sleep mode should be disabled Automatic Windows update installation should be disabled

The minimum system specifications for running Xpect including Mosaic are given in the table below.

Platform:	64-bit : 2k12, 2k16, 2k19, Win 7, Win 8.1 or Win10
-----------	--

Processor:	Intel Core i7
Memory:	≥ 16 GB RAM
Video Card:	AMD R7 250 1GB DDR (AMD/ATI out-performs higher spec NVIDIA cards for this application)
Hard disk:	Minimum of 100GB of free space
PCI/PCI Express	Enough free slots to fit required DekTec interface cards
Prerequisites	Silverlight 4 runtime Administrator rights IE11 browser is required Windows User Access Control (UAC) should be disabled Screensaver and Sleep mode should be disabled Automatic Windows update installation should be disabled

**IMPORTANT NOTE: For running Mosaic, an Xpect configuration with multiple PC's might be required! Typical decoding performance indications for a 64 bit Win7 Intel Core i7 3770 are:**

- 60x SD AVC/MPEG-2, or
- 9x HD AVC, or
- 5x HD AVC + 30x SD AVC/MPEG-2

## 2.2 Xpect server: required memory

The amount of memory required for Xpect consists of two parts, namely: (1) the minimum amount of memory required for the Windows operating system and (2) the runtime amount of memory required by Xpect itself. For the first we recommend you consult the system requirements of the Windows version you will be using; but, as a minimum, we recommend at least 1GB. The runtime memory requirements depend on the number of transport streams and the sizes of the pre- and post-trigger buffers.

To compute the amount of memory required for an Xpect server the Xpect Configuration Tool could be used to define your configuration and show the memory required for Xpect.

$M_{REQ} = M_{OS} + M_{RUNTIME}$ , where

$M_{REQ}$  = Total amount of memory required for an Xpect system

$M_{OS}$  = Minimum amount of memory required by Windows

For example, suppose you have a setup with 4 transport streams and with the pre- and post-trigger buffer sizes set to respectively 32MB and 16MB. In this case the total amount of memory required would be:

$$M_{REQ} = 1GB + 562MB$$

$$M_{REQ} = >1.5 GB$$



### IMPORTANT NOTES:

*The runtime memory required by Xpect ( $M_{\text{RUNTIME}}$ ) must not exceed 75% of the total amount of memory available. Xpect applies this restriction to ensure the system does not become unusable due to resource starvation.*

*The memory usage estimate for HD AVC Mosaic service is less accurate compare to a SD service, so make sure to have sufficient free Memory available.*

## 2.3 Xpect server: required hard disk space

Like the memory usage, the required hard disk space depends on a number of variables such as the number of transport streams, pre- and post-trigger buffer sizes and the maximum number of entries to be stored in the log database.

The required disk space can be computed using the formulae below (all values in MB):

$HD_{\text{CAP}} = (B_{\text{PRE}} + B_{\text{POST}}) \times (212 \div 188) \times N_{\text{FILES}}$ , where:

$HD_{\text{CAP}}$  = Amount of disk space required for transport stream captures

$B_{\text{PRE}}$  = Size of pre-trigger buffer

$B_{\text{POST}}$  = Size of post-trigger buffer

$N_{\text{FILES}}$  = Number of transport streams capture files to store

$HD_{\text{LOG}} = N_{\text{LOG}} \times S_{\text{LOG}}$ , where

$HD_{\text{LOG}}$  = Amount of disk space, per TS, required for the log database

$N_{\text{LOG}}$  = Maximum number of log entries to store

$S_{\text{LOG}}$  = Size of log entries in database (typically = 1 kB)

$HD_{\text{STAT}} = (N_{\text{SHORT}} + N_{\text{MEDIUM}} + N_{\text{LONG}}) \times (N_{\text{SVC}} + N_{\text{BS}} + N_{\text{TBL}}) \times S_{\text{stat}}$ , where

$HD_{\text{STAT}}$  = Amount of disk space, per TS, required for the statistics database

$N_{\text{SHORT}}$  = Maximum number of short-term statistics entries to store

$N_{\text{MEDIUM}}$  = Maximum number of medium-term statistics entries to store

$N_{\text{LONG}}$  = Maximum number of long-term statistics entries to store

$N_{\text{SVC}}$  = Number of services in transport stream

$N_{\text{BS}}$  = Number of basic streams in transport stream

$N_{\text{TBL}}$  = Number of tables in transport stream

$S_{\text{LOG}}$  = Average size of log entries in database (typically = 1 kB)

$HD_{\text{REQ}} = N_{\text{TS}} \times (HD_{\text{CAP}} + HD_{\text{LOG}} + HD_{\text{STAT}})$ , where

$HD_{\text{REQ}}$  = Total amount of required disk space

$N_{TS}$  = Number of transport streams monitored

For example, suppose you have a setup with 4 transport streams, with pre- and post-trigger buffer sizes of respectively 32MB and 16MB, a maximum of 16 capture files are stored on disk, the number of log entries is limited to 100,000 and the number of short-, medium- and long-term statistics entries is set to 60, 60 and 48 respectively, the number of services is 8, number of basic streams is 40 and the number of tables is 60. In this case the total hard disk space required would be:

$$HD_{CAP} = (32 + 16) \times (212 \div 188) \times 16 = \sim 866\text{MB}$$

$$HD_{LOG} = 100,000 \times 1\text{kB} = \sim 98\text{MB}$$

$$HD_{STAT} = (60 + 60 + 48) \times (8 + 40 + 60) \times 1\text{kB} = \sim 18\text{MB}$$

$$HD_{REQ} = 4 \times (866 + 98 + 18) = \sim 3928\text{MB}$$

**NOTE:** in the above formula, we do not account for the disk space required for installing Xpect, however, this is a relatively small amount (<100MB) that can be disregarded.

## 2.4 Number of DekTec cards

It is important to consider the number and type of DekTec input cards (DVB-ASI, DVB-T, DVB-S(2), TSolP, etc.) required for your setup. The number of cards needed depends largely on the number of transport streams you will be monitoring. The number of cards used will have an impact on the number of available PCI/PCIe slots your target PC will need to have. If the number of PCI/PCIe slots in your target PC is limited, it is worthwhile considering the use of a DekTec card with multiple input channels on a single board (if available for the type of interface you need). See our website for details of the currently available input cards ([www.dektec.com](http://www.dektec.com)).

## 2.5 Number of licence points

Xpect uses a point-based licensing system (see §1.2 Licensing). The number of licence points required depends on the number of transport streams you will be monitoring and the type of transport stream (single- or multi-program).

The formula below can be used to compute the number of required points:

$$LP_{TOT} = (N_{SPTS\text{RAD}} \times LP_{SPTS\text{RAD}}) + (N_{SPTS\text{TV}} \times LP_{SPTS\text{TV}}) + (N_{MPTS} \times LP_{MPTS}), \text{ where}$$

$LP_{TOT}$  = Number of licence points required

$N_{SPTS\text{RAD}}$  = Number of single-program radio transport streams to monitor

$LP_{SPTS\text{RAD}}$  = Number of licence points (= ¼) required for each SPTS Radio

$N_{SPTS\text{TV}}$  = Number of single-program TV transport streams to monitor

$LP_{SPTS\text{TV}}$  = Number of licence points (= ½) required for each SPTS TV

$N_{MPTS}$  = Number of multi-program transport streams to monitor

$LP_{MPTS}$  = Number of licence points (= 4) required for each MPTS

For example, suppose you have a setup where you want to monitor eight radio SPTS streams, two TV SPTS streams and three MPTS streams:

$$LP_{TOT} = (8 \times \frac{1}{4}) + (2 \times \frac{1}{2}) + (3 \times 4) = 15 \text{ licence points}$$

### 3. Installation

In this chapter we will discuss how to set up an Xpect server. Before continuing, please make sure you have read the §2. Pre-installation considerations and have selected a suitable PC for use with Xpect.

The two installation steps are discussed in the following sections.

#### 3.1 Hardware installation

The table below lists the hardware installation steps

#	Action	Description
1	Install driver(s) prior to inserting DekTec interface cards	<ul style="list-style-type: none"> <li>• Download the latest version of the DekTec Dta driver (<a href="#">Dta.zip</a>), DtPcie (<a href="#">DtPcie.zip</a>) and/or Dtu2xx driver (<a href="#">Dtu.zip</a>) from the DekTec website (<a href="https://www.dektec.com/downloads/SDK/">https://www.dektec.com/downloads/SDK/</a>);</li> <li>• If you will be using PCI/PCIe cards make sure to check if the legacy 'Dta.zip' or 'DtPcie.zip' file is needed.</li> <li>• Run the Dta driver installation program ('DtaInstall.exe') using the 'Run as Administrator' option;</li> <li>• Or run the DtPcie driver installation program ('DtPcieInstall.exe') using the 'Run as Administrator' option</li> <li>• If you will be using USB-2 adapters extract the 'Dtu.zip' file and</li> <li>• Run the Dtu driver installation program ('DtuInstall.exe') using the 'Run as Administrator' option;</li> <li>• Continue to step 2</li> </ul>
2	Insert DekTec interface cards in target PC	<ul style="list-style-type: none"> <li>• Power down the PC;</li> <li>• Open the PC housing;</li> <li>• Carefully insert each DekTec card in PCI/PCIe slots;</li> <li>• Close PC housing;</li> <li>• Continue to step 3</li> </ul>
3	Boot PC to complete driver installation	<ul style="list-style-type: none"> <li>• Power-up the PC;</li> <li>• Shortly after logging on, the "Found New Hardware Wizard" should pop-up to indicate Windows has found new hardware;</li> <li>• Choose "Install the software automatically (Recommended)";</li> <li>• Press "Next" and "Finish", and the driver installs;</li> <li>• If you have fitted multiple cards this process may be repeated several times;</li> <li>• Now your hardware should have been installed successfully and you are ready to move on to the software installation phase.</li> </ul>

**NOTE:** In the above steps we are assuming the driver(s) will be installed prior to inserting the DekTec interface cards. It is also possible to first insert the card in the PC, boot-up and then run the driver installation. In this case the "Found New Hardware Wizard" will pop up again when you first boot the PC, but you should close it at this stage and then run the driver setup programs as described in step 1.

For a detailed driver installation description and for troubleshooting driver issues, please refer to the '[Dta Installation.pdf](#)' , '[DtPcie Installation.pdf](#)' and/or '[Dtu Installation.pdf](#)' documents included in driver ZIP files.

The Mosaic feature requires a mid-range video card since most of the decoding is done on the video card. We strongly recommend the AMD R7 250 (AMD/ATI out-performs higher spec NVIDIA cards for this specific application). Also make sure, using the Windows Device Manager, that the latest AMD Video card drivers are installed:

### 3.2 Software installation

Setting up Xpect requires the server and the Configuration Tool. The Installer will install both the Xpect Configuration Tool and the Xpect server software. The Xpect Configuration Tool could also be installed separately on a remote client PC. An internet connection is required for downloading some of the installer packages.

To make the PC ready for 24/7 monitoring it is recommended to:

- Disable Windows automatic updates
- Disable sleep mode and automatic screen blanking

For the Service decoding feature you will need to install the Microsoft Expression Encoder.

The Xpect Configuration Tool provides you with a facility to create and edit the configuration required by the Xpect software.

The Xpect server software consists of the main Xpect monitoring application ([Xpect.exe](#)) and a companion 'guardian service' ([Xpectguardian.exe](#)) which is used to systematically stop and start Xpect.

The table below describes the basic steps for setting up an Xpect server.

**IMPORTANT NOTE:** Upgrade from Xpect 1.3 and 2.0 requires a complete uninstallation of Xpect including the configuration files located in '[C:\Users\Public\Documents\DekTec\Xpect\Config](#)' and '[C:\Users\Public\Documents\DekTec\Xpect\ConfigTool](#)'. Contact DekTec for support to upgrade an existing configuration.

#	Action	Description
1	Make sure you have the latest versions	<ul style="list-style-type: none"> <li>• Download the zip file '<a href="#">Xpect.zip</a>' from the DekTec website (<a href="http://www.dektec.com/Downloads/Applications.asp">http://www.dektec.com/Downloads/Applications.asp</a>);</li> </ul>
2	Make sure the Xpect License is installed	<ul style="list-style-type: none"> <li>• A description of how to check and program the Xpect license using utility DtInfo can be downloaded from: <a href="http://www.dektec.com/AppNotes/DT-AN-DTLIC.pdf">http://www.dektec.com/AppNotes/DT-AN-DTLIC.pdf</a></li> </ul>
3	Install Xpect server and configuration tool	<ul style="list-style-type: none"> <li>• Run the server setup program ('<a href="#">Xpect Setup.exe</a>') using the 'Run as Administrator' option;</li> <li>• It is recommend that you let the installer perform a complete installation;</li> <li>• The Installer will start separate installers for:               <ul style="list-style-type: none"> <li>○ VC9 and VC15 Runtime</li> <li>○ Microsoft Expression Encoder 4</li> <li>○ .NET framework 3.5 and 4.0<sup>1</sup></li> </ul> </li> </ul>

<sup>1</sup> NOTE: Make sure an Internet connection is available else these packages need to be installed manually before the Xpect installer is started

		<ul style="list-style-type: none"> <li>• A special Xpect Windows User Account<sup>2</sup> can be used to automatically login and start a configured Mosaic<sup>2</sup>; ; this option will only work for a Windows 7 installation!</li> </ul>
4	Create the initial configuration	<ul style="list-style-type: none"> <li>• Start the Xpect Configuration Tool<sup>3</sup> <ul style="list-style-type: none"> <li>- Select the Xpect Server Location and press Connect;</li> <li>- Enter the default password "admin";</li> </ul> </li> <li>• In the "TS definition" section, see screenshot below:                     <ul style="list-style-type: none"> <li>- Select the required Port from the Available Ports list;</li> <li>- Enter a unique TS name (step A);</li> <li>- If applicable configure the IP Receive Address;</li> <li>- Select the Monitoring Mode: DVB, ATSC or ARIB (step B);</li> <li>- Select the Monitoring Type: SPTS Radio/TV or MPTS (step F);</li> <li>- Click on the checkbox (step C) to enable the configured Port;</li> <li>- Make sure enough Memory and License points are available (step D);</li> <li>- Click the 'Commit changes' Button (step E) to upload and activate the initial configuration;</li> </ul> </li> </ul>
5	Test the installation	<ul style="list-style-type: none"> <li>• Open an internet browser (recommended: IE9 or Google Chrome);</li> <li>• Go to <a href="http://localhost:5089">http://localhost:5089</a><sup>4</sup> <ul style="list-style-type: none"> <li>- It is possible that the browser will prompt you to install the Silverlight 4 runtime; if so, please follow the installation instructions shown in the browser.</li> </ul> </li> <li>• The Xpect web GUI should now be loaded (note all Xpect instances will automatically start when the PC booted) – if the GUI does not load please refer to: §6.2</li> <li>• The Xpect Web GUI will indicate the Transport Stream overall status: 'LEDs' (in the left hand pane) will either be Red (indicating TR 101 290 or Template or Extra Test errors have been detected) or Green (if no errors are currently being detected). If the 'LEDs' are grey then either there are no syncs present or Xpect is not yet monitoring;</li> <li>• Greyed out 'LEDs' in the right hand pane mean that the condition is not currently being monitored.</li> <li>• You should now be able to browse through the status of the transport streams you have configured.</li> <li>• The basic setup process is now completed.</li> </ul>

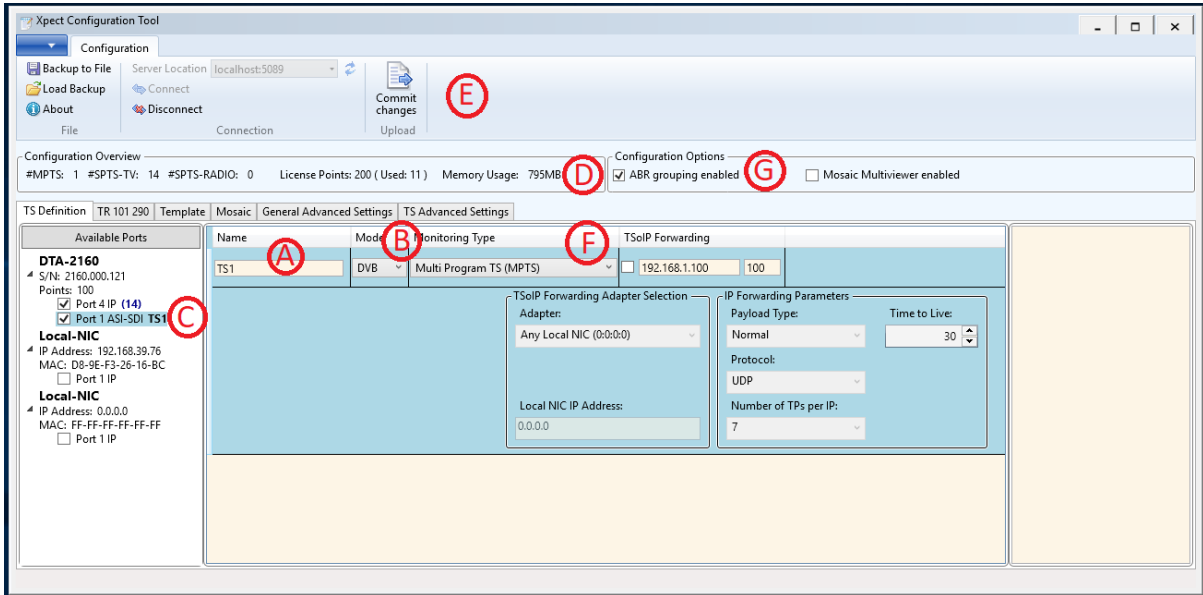
After successfully completing the steps above, you will have Xpect running in its most basic setup. You may now wish to further set up Xpect by creating templates and custom TR 101 290 configurations. More details about the configuration can be found in §4. Detailed Configuration. For more details about the Web GUI please refer to §5. Web GUI.

<sup>2</sup> NOTE: Local Machine User:"Xpect", Password:"dektec", this user is part of the Administrator Group

<sup>3</sup> NOTE: The XCT could be run locally on the Xpect server or run remotely

<sup>4</sup> NOTE: if you changed the default SOAP/Web port replace 5089 with the port you specified

**IMPORTANT NOTE:** For using the Video Streaming function on Windows Server 2012/16/19 make sure that the Windows Feature 'Desktop Experience' is enabled: Administrative Tools - Server Manager - select Features - Add Feature Desktop Experience (including Ink and Handwriting Services)



- A: A unique name identifying the TS
- B: The Monitoring Mode (DVB, ATSC or ARIB)
- C: Selected Port(s) for monitoring
- D: Overview of used License Points and memory for current configuration
- E: Upload current configuration using 'Commit Changes' button
- F: The Monitoring Type (SPTS Radio/TV or MPTS)
- G: ABR grouping and Mosaic Multiviewer options

**IMPORTANT NOTE:** Source Specific Multicast IP address (IGMP v3 support) configuration should be submitted, using syntax: <sourceaddress>@<multicastaddress>

## 4. Detailed Configuration

After executing the Basic Configuration steps you may wish to further set up Xpect by creating templates, custom TR 101 290 configurations and Mosaic configuration using the Xpect Configuration Tool.

### 4.1 TR 101 290 Tests

In the TR 101 290 section, enable the tests that should be included in the configuration. The default parameter values are used but these values can be adjusted; for example to increase the PAT error timeout.

Press 'Commit changes' to upload and activate this configuration.

When other inputs require different tests then a new Test Group should be created. Use the 'Add Test Group' button and define a unique name. Multiple inputs can use the same configuration by using drag and drop of the inputs in the left Test Group pane.

### 4.2 Extra Tests

The Extra tests defines tests similar like TR 101 290 priority 1, 2 and 3 but not part of this ETSI standard.

Examples of this Extra test are the Confidence Tests; Frozen Video, Black Video and Audio silence tests. For the Configuration of the Confidence tests we recommend the following defaults:

Frozen-Video: Sensitivity AVC = 35%, Sensitivity MPEG-2 = 28%, Timeout = 30s

Black-Video: Sensitivity AVC = 8%, Sensitivity MPEG-2 = 28%, Timeout = 30s

Silent-Audio: Sensitivity Audio = -50dB, Timeout = 30s

For low bandwidth video a lower AVC/MPEG-2 sensitivity might be required to avoid false positives.

**IMPORTANT NOTE:** *Only Services which are part of the Mosaic configuration will be tested for Silent-Audio. Frozen-Video and Black-Video will be tested for all services monitored (including the services not part of the Mosaic).*

### 4.3 Template Tests

In the Template section, select the Input TS and select the 'Configuration from TS Analysis' button. Next, select in the dialog which of the Template tests you wish to enable using the check boxes. The created Template is shown; review the created Transport Stream and Services Tab tests. A pop-up will advise what to do when the Configuration creation was not successful.

After reviewing and manually adjusting, press 'Commit changes' to upload and activate this template. Repeat these steps for the other Inputs.

The automatically-created tests can be adjusted manually and also extra tests can be added for:

- Tables; test repetition rates for standard or custom tables
- Global Basic Streams (Groups); test for PIDs not part of a Service or group of streams like all 'AVC' PIDs
- Service test for SCTE-35; test for availability of digital program insertion messages (default time out 300 sec)
- Service test for subtitles; availability of Closed Caption (EIA/CEA-608-B), DVB and Teletext (default time out 300 sec)

**IMPORTANT NOTE:** *Only Services which are part of the Mosaic configuration will be tested for the Service tests: CC608, DVB subtitles and Teletext subtitles. SCTE-35 events show future times as PTS values if that service is not part of the Mosaic, but if the service is in the Mosaic it shows the offset in seconds (e.g. "in 5s").*



## 4.4 General Advanced Settings

The General Advanced Settings section is used to specify less common settings, like:

- Change your configuration mode password (this is needed to protect remote access control of Xpect);
- In the “Video Audio Streaming” section:
  - Set Maximum number of allowed parallel streaming sessions<sup>5</sup> or disable streaming;
- Change the setting in the “Time Windows” section for example to add a Table Presence Time Window (PTW) to measure a table with a specific repetition rate;
- In the “Interface Settings” section:
  - Set the SOAP/Web server;
  - Enable and Configure the SNMP interface;

## 4.5 TS Advanced Settings

The TS Advanced Settings are used to specify less common TS settings, like:

- Change Capture Pre- and Post-Trigger buffer sizes;
- Override general Present Time Window (PTW) settings defined in the General Advanced section;
- Enable and configure Short, Medium and Long Term statistical databases<sup>6</sup>; used for example to store historical bitrate and service presence measurements;
- Enable Active Events logging; maintain a list of the active (not cleared) events, available via the SOAP interface (will decrease the maximum Xpect performance!).
- Enable Automatically Re-arm of the triggered recording functionality; **WARNING:** could result in extensive hard-disk space usage!

## 4.6 Mosaic Configuration

The XCT interrogates Xpect and determines the monitors connected to Xpect. The screen is divided into a grid to help with alignment and positioning. The XCT shows the available screen area.

Configuration steps:

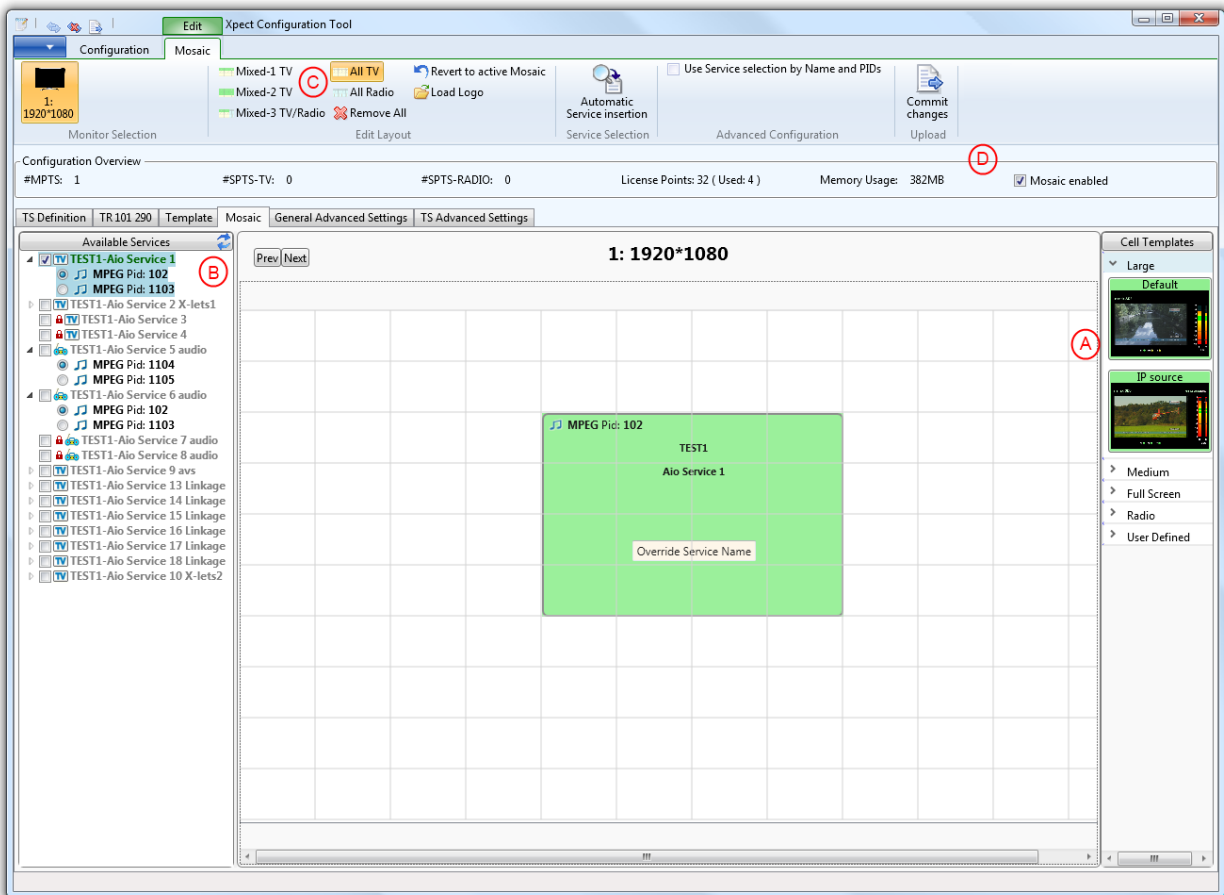
- A. Select a Cell Template from the Cell Templates in the right hand window pane. Click and drag onto the Mosaic grid. This can be a Full screen video cell, Large video cell, Medium video cell, Small video cell, Radio Cell, Clock or Picture/Logo. Different cell layouts are available per cell size. Most video cell Templates will have 4 indicators:
  - P1: TR 101 290 Priority 1 errors
  - P2: TR 101 290 Priority 2 errors
  - T: User defined Template errors
  - Alarm border for Confidence tests: Frozen/Black video or Audio silence errors
- B. Select a video/radio service from the list of available services<sup>7</sup> in the Left hand window pane of the XCT. Use one of the options;
  - Drag the service name you wish to display from the list of available services into the Cell Template. When you release you will see the Cell service information update.

<sup>5</sup> NOTE: Make sure sufficient memory and CPU resources are available for all streaming sessions

<sup>6</sup> NOTE: Statistical databases will decrease the maximum Xpect performance; make sure to only enable these databases when really required (for example when interrogating the stats using the SOAP interface).

<sup>7</sup> NOTE: Click the ‘Available Services’ button to refresh the list after making input changes

- Double click on the checkbox next to the service name you wish to display from the list of available services. You will see the Cell service information update.
- C. Instead of the manual Mosaic configuration you can also use the predefined template layouts (like 'All TV') and the 'Automatic Service insertion' to automatically assign the available services to a Cell Template.
- D. Enable the Mosaic and press 'Commit changes' to upload and activate the configured Mosaic.



Depending on the size of the mosaic, the mosaic will appear in a few seconds. Check the bottom left status bar for reported errors (in red).

The most common error is **"No Upload possible: Mosaic contains unassigned cells"**. This is reported when no service is assigned to one or more Template Cell(s) in the grid.

It's possible to adjust the XML based Cell Templates, for example to change text font-size and colour. The files are located in 'C:\Users\Public\Documents\DekTec\Xpect\ConfigTool'. The file names start with the size (Full/Large/Medium/Small) and each size have 3 to 5 types like the types shown in the configuration tool (For example L+R, L+R + IP source, 5.1, etc.)

Besides the manual Template changes it is also possible to add extra dynamic field information for the "Override Service Name" field located in a Service Cell (like shown in the picture above). By default a service cell uses dynamic fields **SvcName** + **SvcBitrate**. Changing the "Override Service Name" field overrides these default dynamic fields.

**{Tsid}**

Prints the TS ID, in decimal.

### **{NetworkName}**

Prints the Network Name from the NIT

### **{TsBitrate:< refresh rate in Secs>}** :

Shows the current TS bitrate at a defined interval.

This is auto-scaled to Mbps, kbps or bps. It will show to 3 decimal places for M or k values. The "bps" text should be added by the user.

e.g. will display 2.434M or 33.000k or 3323

The refresh rate is defined in Seconds

e.g. {TsBitrate:2} will define that the bitrate be updated at 2 second intervals.

Note the Bitrates will adjust the size of the text with a proportioned font, so should be separately defined and right aligned to prevent this if desired.

### **{SvcId}**

Prints the Service ID, in decimal.

### **{SvcBitrate: < refresh rate in Secs>}**

Shows the current Service bitrate at a defined interval.

Configuration and details identical to the TsBitrate above

### **{SvcComponents}**

Prints a Service Components string.

**Shows** "V" for video

**Shows** "A" for audio

**Shows** "D" for data

So a typical service may show "VAAD".

The component string is ordered by the ordering of the components in the PMT.

### **{SvcChans}**

Prints the Major/Minor channel numbers (ATSC only!)

General example.

**{NetworkName}{Tslid}:{TsBitrate:2}bps {SvcName}{SvcId} Ch {SvcChans}:{SvcBitrate:2}bps**

For more detailed information about XML Template modifications, contact DekTec.

## **4.7 Backup and Restore**

A backup of the complete configuration can be saved locally using the 'Backup to File' configuration function.

A backup can be restored using the 'Load Backup' configuration function. Make sure that XCT is connected with the Xpect server. The restore function will only succeed when the configured DekTec adapters are still available.

A backup configuration could be edited offline.

## 4.8 Configuration Files

Although all types of configuration files are XML-based and can be created or edited manually using any text editor, it is highly recommended that you use the Xpect Configuration Tool (XCT). The XCT provides a specialised interface for each configuration and ensures that the XML fields generated are correctly formatted. Upon creation of a new configuration it will initialise each setting to sensible default values.

Xpect is configured using a set of XML configuration files. The table below lists the different configuration files used by Xpect.

Type	File extension	Description
General	.xgen	The master configuration file. It defines the number of transport-streams to monitor, sets parameters for SOAP/WEB/SNMP interfaces, specifies files locations and sizes of log/statistic databases, etc.  NOTE: There can only be one general configuration file and it should always be named ' <a href="#">XpectGeneralConfig.xgen</a> '.
TR 101 290	.x290	Configuration file for the TR 101 290 priority 1, 2 & 3 tests. Each individual test can be enabled or disabled and the custom limits can be specified.
Template	.xtpl	Configuration file for template matching. The file defines which services, tables and basic-streams are expected in a transport stream and defines a set of properties for each item in the template (e.g. min/max bitrate, PID, service name, scrambled or not, etc.).
Extra tests	.xtst	Configuration file for a set of tests which extend the standard TR 101 290 Priority 1, 2 & 3 tests. The extra tests include: Delay Factor, Packet Loss Rate, Confidence tests (like Frozen video) and Table version tests. Each test can be enabled and disabled and the limits for the extra test can be specified.
Mosaic	.xmos	Configuration file used for describing one or more screens and mosaic cell layouts.

There can be multiple different configuration files present on the Xpect server, except for the general configuration ([XpectGeneralConfig.xgen](#)), as long as each has a unique configuration ID. This allows you to define multiple sets of TR 101 290, Extra test or Template configurations and, via their unique configuration IDs, instruct Xpect to apply them to your monitored transport streams. The active configuration is determined by the settings in the General configuration file (which contains a setting per TS specifying the configuration IDs of the configuration files that should be used).

For Xpect to find the configuration files they should be stored in the following directory on the Xpect server PC:

Win XP/2k3                    '[C:\Documents and Settings\All Users\Documents\DekTec\Xpect\Config](#)'

Win Vista/ 2k8/2k12    '[C:\Users\Public\Documents\DekTec\Xpect\Config](#)'  
/7/8/10

The files located in this directory are typically created by the XCT as a set of consistent configurations.

The configuration cannot be manually modified while Xpect is running. Changes to the configuration will require manually stopping and restarting of Xpect (via the Xpect guardian).

Xpect is stopped by stopping the Xpect guardian service in the Windows Services window as follows:

*Windows Control Panel->Administrative Tools->Services (local)*

Select '*DekTec Xpect Guardian*' within the list of Services, then click '*Restart the service*'.

## 5. Web GUI

This chapter provides a quick introduction to Xpect's web GUI. The web GUI allows you to monitor the live status of each of the transport streams, browse through the event log with all the error messages, access stream captures and perform some basic control tasks.

To connect to the web GUI open an internet browser (e.g. IE9, Google Chrome) and browse to the URL address for the Xpect web server:

`http://<server_ip_address>:<web_server_port>`, where

`<server_ip_address>` = IP address or name of the PC on which Xpect is running

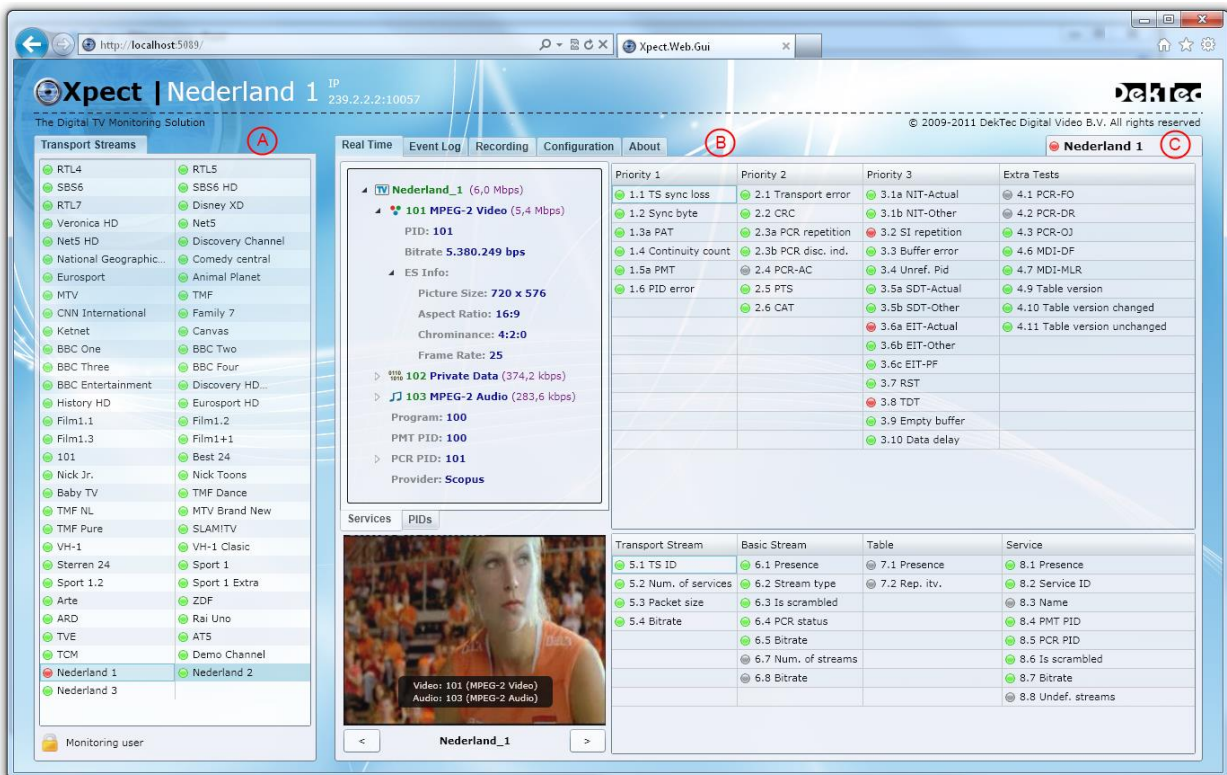
`<web_server_port>` = SOAP/web server IP port (from general configuration file)

For example: <http://10.10.1.21:5089>, <http://myxpectpc:5089> or <http://localhost:5089>

**NOTE:** Due to the resources required it is not advisable to run the Web GUI on the Xpect Server.

### 5.1 Main GUI elements

The screenshot below shows the main GUI elements of the web interface.



A: List of all transport streams monitored by Xpect. Select one to set the focus on it.

B: A TAB interface with several pages displaying status information about the currently selected transport stream.

C: The name of the transport stream that has the focus. The LED indicator is red if there are any errors detected for this transport stream, or green if there are none.

## 5.2 Real Time status Tab

The Real Time status tab provides an overview of the current status of the selected monitored transport stream. It shows a list with all basic-streams and services detected in the transport stream and the status of all compliance and template tests.

The screenshot displays the 'Real Time' status tab for a transport stream named 'Nederland\_1'. The interface includes a navigation menu at the top with tabs for 'Real Time', 'Event Log', 'Recording', 'Configuration', and 'About'. The main content area is split into two primary sections:

- Left Panel (Tree View):** Shows a hierarchy starting with 'Nederland\_1 (6,0 Mbps)'. Underneath, it lists '101 MPEG-2 Video (5,4 Mbps)' with details like PID: 101, Bitrate: 5.382.534 bps, and ES Info (Picture Size: 720 x 576, Aspect Ratio: 16:9, Chrominance: 4:2:0, Frame Rate: 25). Below this is '102 Private Data (375,7 kbps)' and '103 MPEG-2 Audio (282,5 kbps)'. At the bottom, it shows 'Program: 100', 'PMT PID: 100', 'PCR PID: 101', and 'Provider: Scopus'. A red circle 'A' is placed next to the PCR PID.
- Main Table (Compliance/Extra Tests):** A table with columns for Priority 1, Priority 2, Priority 3, and Extra Tests. It lists various tests with status indicators (green for pass, red for error, grey for disabled). A red circle 'C' highlights the '2.4 PCR-AC' test in the Priority 2 column.
- Bottom Section (Services/PIDs):** Contains a video player showing a woman in an orange shirt. Below the player is a 'Services' list and a 'PIDs' list. A red circle 'B' is placed below the video player. To the right is another table with columns for Transport Stream, Basic Stream, Table, and Service, listing various tests. A red circle 'D' highlights the '6.5 Bitrate' test in the Basic Stream column.

A: List of services and basic-streams found in the monitored TS.

B: Video player panel. Use buttons or right click in the Services list (A) to change active service.

C: Status of compliancy tests (TR101290 + Extra Test). Green means no error, red means an error was detected, orange means resolved error<sup>8</sup> and grey means the test is disabled.

D: Status of the template matching tests. Green means no error, red means an error was detected, orange means resolved error<sup>8</sup> and grey means the test is disabled.

<sup>8</sup> NOTE: The orange indication will be used to show historical errors. Status can be reset to green by using the right mouse button options.

### 5.3 Event Log Tab

Via the Event Log tab you can browse through the error messages in the log database.

The screenshot shows the 'Event Log' tab in the software. The 'Filters' panel on the left includes:

- Show Active Events** button
- Enable Date/Time Filter** with a **Clear Event Log** button below it.
- Enable Event-Type Filter** with a dropdown menu showing '1.1: TS sync loss'.
- Enable Service Name Filter** with a dropdown menu showing '100: Nederland\_1'.
- Exporting Log Events** section with an **Export ServName-Filtered Events** button and an 'Export progress:' field.

The table on the right has the following columns: Seq. No., Time, Type, and Description. It contains a list of log entries with various status icons (green and red) and descriptions of events such as 'Service bitrate rule', 'BS bitrate rule', and 'Service presence rule'. A red circle labeled 'A' is positioned over the filter controls, and another red circle labeled 'B' is positioned over the table.

A: Filter functions:

Show Active Events: all active events at that moment (when active events logging is on)

Date/Time Filter: all events within the data/time range

Event-Type Filter: all events with the selected event type

Service Name Filter: all events with the selected service name

Button to export events to CSV.

A 'Clear Event Log' trigger will suppress previously seen events.

B: List with all or filtered error events<sup>9</sup>.

<sup>9</sup> NOTE: Besides the Export function it is also possible to use copy-paste to copy events to Excel.



## 5.4 Recording Tab

Via the Recording tab you can setup a trigger condition for TS file capturing and manage the available capture files.

File	Size	Trigger	Status	Number of TS dropouts
capture_Digitenne 1_20100125_142005.ts	89,3 MB	Manually Triggered	Success	0

A: Trigger controls: used to define the trigger condition, arm the capture process or manually force a capture.

B: Current status of the capture process.

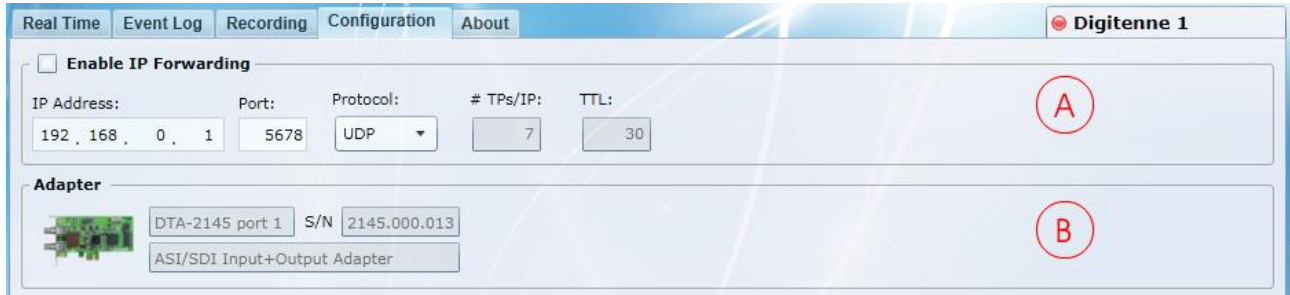
C: List of captured files. Click on a file to download it from the server.

**NOTE:** Maximum of 4 triggers can capture simultaneously.

**NOTE:** Automatically re-arm capturing could be enabled in the Config Tool - TS Advanced Settings

## 5.5 Configuration Tab

The Configuration tab allows you to perform IP forwarding. This action requires you to be in configuration mode; if you try to change this setting you will be asked to enter the administrator password for Xpect (as was specified in the General configuration). Once the password is entered, it is remembered for the duration of the session.



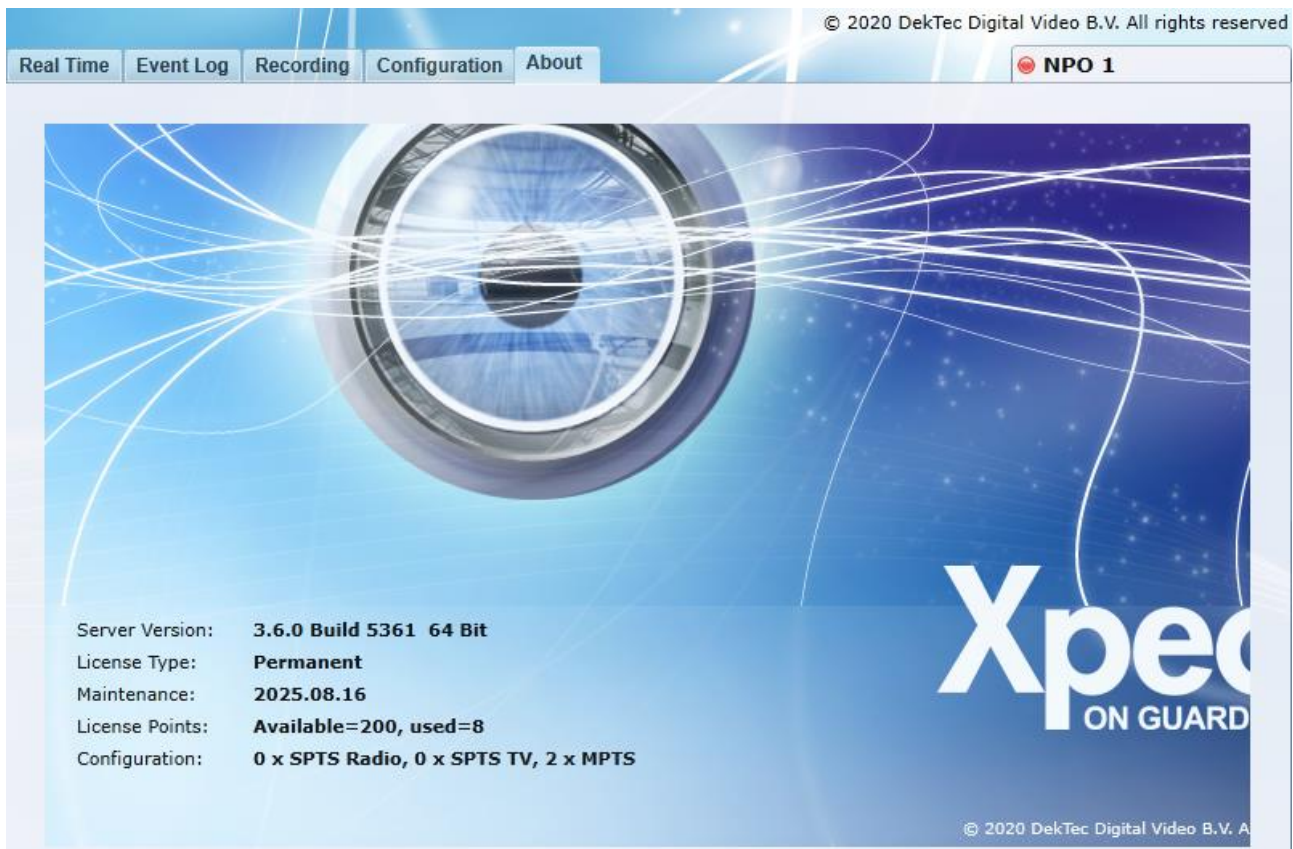
A: IP forwarding settings. Use to enable/disable forwarding of the monitored transport stream to a specific IP address.

B: Shows the DekTec input adapter used for monitoring.

**NOTE:** Maximum of 2 inputs can be forwarded simultaneously.

## 5.6 About Tab

The About tab shows the licence, version and copyright information for Xpect, as well as the EULA.



Version and licence status information for Xpect.

## 6. Trouble shooting

### 6.1 How to verify Xpect is running?

To check that Xpect is running please try each of the following in turn:

- 1) Using a browser (IE11) enter <http://localhost:5089/> (assuming you are using the default WEB/SOAP port). If the browser cannot display the webpage then Xpect is probably not running;
- 2) Another way to check whether Xpect is operational is to view the current running services: run Windows Task Manager then view the 'Processes' tab to see if `xpectguardian.exe` and `xpect.exe` are both running.

If Xpect is not running then please refer to the next section.

### 6.2 Check the Windows event log for errors

Xpect and the Xpect Guardian add log events with status and error info in the Windows event log. When you run into trouble it is advisable to look in the Windows event log to check for any error messages from Xpect or the Xpect Guardian service.

To view the logged events open the Windows Event Viewer via the Windows control panel:

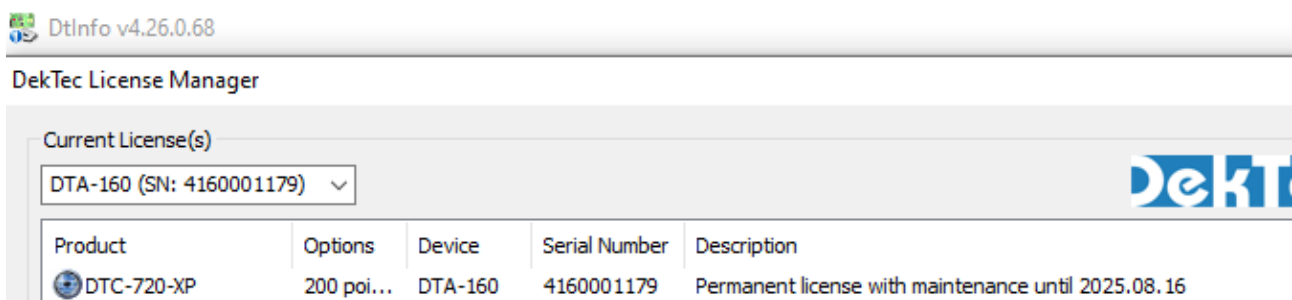
*Windows Control Panel->Administrative Tools->Event Viewer*

Open the 'Application' log and look for the events marked as being from Xpect and/or Xpect Guardian. The log messages should provide an important clue as to what may be wrong.

### 6.3 Check license for valid maintenance upgrade

In case of an Xpect upgrade, Xpect may fail to start or no licenses points will be available in the Configuration Tool. The license maintenance period may be expired in that case, make sure that the Xpect release date is not newer than the maintenance expire date. Contact DekTec for a license upgrade.

Use tool DtInfo <https://www.dektec.com/downloads/utilities/> :



### 6.4 Check if ASI ports are configured correctly, IP port is connected

If Xpect may fail to start when the used port is configured for SDI instead of ASI or for an IP configuration the ethernet cable is disconnected.

Use tool DtInfo <https://www.dektec.com/downloads/utilities/> :

## Port Configuration for DTA-160 #4160.001.179

### 6.5 Web GUI is not accessible remotely

If the Web GUI is started on the Xpect server but not on a remote PC then:

- 1) Make sure the Windows Firewall Allowed Programs: 'DekTec Xpect 24/7 Transport-Stream Monitoring' and 'DekTec Xpect Streaming Application' are enabled on the Xpect server.
- 2) Make sure the IP port used for the Web GUI (default: 5089) and configured IP port range for Streaming are not blocked by network components.

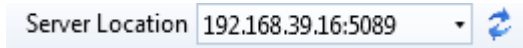
### 6.6 Web GUI decoding is not working

Make sure the video is not scrambled, also check the encoding type H.265 (HEVC) decoding is not supported. Another decoding issue could occur:

- 1) After a major Windows 10 feature update. In that case some media files could be missing, please run Xpect Installer Repair option to recover these files.
- 2) When a new Windows 10 user is created. In that case some media files could be missing, please run Xpect Installer Repair option to recover these files.

## 6.7 Xpect server address is not shown in the Configuration Tool

The Xpect server(s), part of the network, are discovered using UPnP. In some cases this discovery takes somewhat longer and requires one or more updates of the Server Location list using the Refresh button. Addresses could also be added manually; click on the current address to enter a new address.



In some cases the server firewall settings should be adapted, for example when domain PCs are used together with PCs not part of a domain. In case of discovery/connect problems make sure that Domain, Public and Private Profiles for the following Windows Firewall rules are enabled:

- 1) DekTec Xpect 24/7 Transport Stream Monitoring (TCP rule)
- 2) Network Discovery (UPnP-In)

In case of Windows Server 2008, make sure that services 'Function Discovery Resource Publication', 'SSDP Discovery' and 'UPnP Device Host' are started and set to automatic start.

## 6.8 One or more Mosaic programs not shown

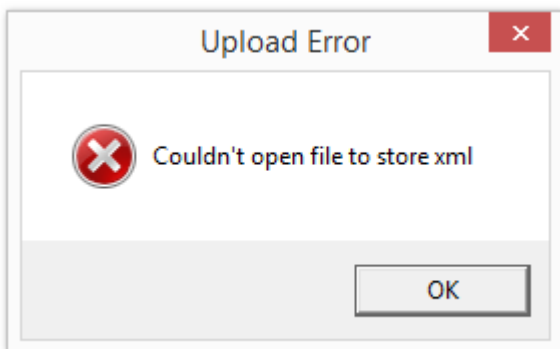
On Xpect/Mosaic start-up or reconfigure, all TS service information should be available. In some rare cases this service information is not yet completely received resulting in a missing program. An Xpect Guardian Service restart or resend of the configuration changes should resolve this missing program.

## 6.9 Xpect dongle license driver

In some cases the HASP key driver, needed for the dongle, is not available on the PC. In that case make sure that your Windows system is configured to auto search for Windows updates or download from <https://sentinelcustomer.gemalto.com/sentineldownloads/> the Windows GUI Run-time Installer.

## 6.10 Upload Error

A corrupted configuration file or database file could result in an error during upload. In this exceptional case the following error will be reported during configuration upload:



To resolve this error, remove all files located in the following (hidden) location:

C:\ProgramData\DekTec\Xpect

C:\ProgramData\DekTec\Xpect\Work

## 7. Copyright Notices

This section defines all the copyright notices associated with the Xpect software package.

### 7.1 Xpect software

Copyright © 2009-2020 by DekTec Digital Video B.V.

Copyright © 2009-2020 by Fen Technology Limited

DekTec Digital Video B.V. and Fen Technology Limited reserve the right to change products or specifications without notice.

### 7.2 3<sup>rd</sup>-party components

Net-SNMP	<a href="http://www.net-snmp.org/about/license.html">http://www.net-snmp.org/about/license.html</a>
zLib	<a href="http://zlib.net">http://zlib.net</a>
OpenSSL	<a href="http://www.openssl.org">http://www.openssl.org</a>
Firebird	<a href="http://www.firebirdsql.org/index.php?op=doc&amp;id=idpl">http://www.firebirdsql.org/index.php?op=doc&amp;id=idpl</a>
IBPP	<a href="http://www.ibpp.org/license">http://www.ibpp.org/license</a>

## 8. DTC-720 Xpect Revision History

<b>Revision</b>	<b>Date</b>	<b>Changes</b>
<a href="#">v3.6.0.5361</a>	2020.09.01	<ul style="list-style-type: none"> <li>• Support for DTA-2132 High-End Satellite Receiver</li> <li>• Support for DTA-2139C 12x ATSC T/T2 ISDB-T QAM Receiver</li> <li>• Support for DTA-2172 Dual 3G-SDI/ASI Ports for PCIe</li> <li>• Support for DTA-2174B Quad 3G-SDI/ASI ports (1x12G) with genlock</li> <li>• Support for DTA-2175 3G-SDI/ASI input+output with bypass relay</li> <li>• Support for DTA-2178-ASI Octal Bidirectional ASI Ports</li> <li>• Support for DTA-2178 Octal 12G-SDI/ASI Ports with Genlock for PCIe</li> <li>• Improvement for SDI output using DTA-2152 (no firmware v0 dependency anymore)</li> <li>• Improvement for duplicate Event messages “No more Errors” for Black video</li> <li>• Update TR 101 290 2.3a PCR repetition error default to 100ms; according latest TR 101 290 2020 specification</li> <li>• AVC ES info improvements for adjusting Horz/Vert size for cropping and added Chroma format field</li> <li>• AVC ES info bugfix for invalid framerate field</li> </ul>
<a href="#">v3.5.0.5359</a>	2019.03.29	<ul style="list-style-type: none"> <li>• Support for DTA-2139B 12 channel QAM/DVB-T2/ISDB-T receiver</li> <li>• Support for ABR grouping (multiple SPTS using same TS name) in XCT and WebGui</li> <li>• Added WebGui Event log service name filter</li> <li>• Added WebGui Event log active events filter</li> <li>• Added WebGui retry mechanism to automatically reconnect on communication lost</li> <li>• Improved WebGui: active event messages are shown as tooltip for each TR101-290/Template indicator in alarm</li> <li>• Improved cleanup of event logs</li> <li>• Improved Black/Freeze detection</li> <li>• Fix for possible “hanging” 1.2 and 1.6 active event</li> <li>• Fix for possible incorrect WebGUI scrambled indicator in the ES info</li> <li>• Fix for database with too many entries (&gt;MaxNumEntries)</li> <li>• Fix for possible failing Xpect start due to slow DtapiService</li> <li>• Fix for failing download of recorded file on latest IE11 browser</li> <li>• Fix for failing WebGUI decoder on fresh Windows installation or new user account</li> <li>• Fix for possible invalid subtitle language in the configuration tool</li> <li>• Fix for incorrect mosaic config when multiple subtitles are configured but not all are in use</li> <li>• Fix for possible condition that could result in Mosaic not starting</li> <li>• Fix for crash condition when 127.0.0.1 IP address is used for DTA-2160/62</li> <li>• Fix for possible crash seen when SNMP is active, and a specific input configuration change is made</li> <li>• Fix for possible invalid ‘logstorm filtered’ flag on active events SOAP call</li> </ul>
<a href="#">v3.4.0.5332</a>	2017.11.16	<ul style="list-style-type: none"> <li>• Support for persistent SNMP trap configuration</li> <li>• Support for HEVC indication and Template test (no decoding support)</li> <li>• Support for Auto re-arm of triggered recording</li> <li>• Support for SCTE-35 type indication and Template tests (streamtype 0x86)</li> <li>• Support for DTA-2131 8VSB, DVB-C and QAM-C</li> <li>• Support for DTA-2138B ISDB-T</li> <li>• Support for leading Template tests in all cases; before no Template error was generated when a PID was removed from the PMT</li> </ul>



		<ul style="list-style-type: none"> <li>• Support for special 6.1 Template configuration; do not generate an error on 0 bps but still part of PMT (sometimes seen for subtitles/txt/scte-35)</li> <li>• Support for FIPS compliant SHA1 hash code for Xpect password</li> <li>• Improved Windows 10 support; Windows apps are not disabled anymore</li> <li>• Improved Mosaic decoding; setup video only service when audio fails</li> <li>• Improved robustness on invalid data for streaming preview decoder startup</li> <li>• Improved filtering of duplicate events</li> <li>• Improved Active Events error reporting during logstorm</li> <li>• Improved 6.7 Basic Stream Group Template error reporting</li> <li>• Improved 8.8 Unreferenced stream Template error reporting</li> <li>• Improved Webgui error indicator clear on TS sync loss</li> <li>• Fix for possible Mosaic crash on invalid AAC meta-data</li> <li>• Fix for possible Mosaic crash on low end video adapter</li> <li>• Fix for possible StatlogGetEntriesByTime() timeout</li> <li>• Fix for possible invalid Event sequence number and Logstorm indication</li> <li>• Fix for possible hanging 6.1Template error in the Active Events list</li> <li>• Fix for possible false positive priority 3 table tests</li> <li>• Fix for invalid PIDs seen on Template Test creation after input stream change</li> </ul>
v3.3.0.5226	2016.10.10	<ul style="list-style-type: none"> <li>• Support for RF statistics like MER, SNR in SOAP interface and WebGUI for all supported demodulator cards</li> <li>• Support for EMM/ECM type indication</li> <li>• Support for CA system ID in SOAP interface and WebGUI</li> <li>• Support for SOAP call to retrieve only the active events; EvLogGetActiveEntries</li> <li>• Support for installer license maintenance date check</li> <li>• Improved template from analysis creation; one click for all inputs</li> <li>• Improved IP forwarding; don't stop on configuration upload or restart</li> <li>• Improved CC error event message; now includes related service name</li> <li>• Improved template component event message; now includes type of data</li> <li>• Improved filtering of repeating event messages like PID error</li> <li>• Improved template testing for shared PCR PID</li> <li>• Improved indication of shared PCR PID in the WebGUI</li> <li>• Improved 8.1 Service missing reporting; no error on missing component (6.1)</li> <li>• Improved event logstorm reporting; don't filter 'no-error' events</li> <li>• Fix for possible failing Mosaic decoder on AFD change</li> <li>• Fix for possible distorted Mosaic audio on 5.1 to stereo change</li> <li>• Fix for possible Mosaic decoder issue for H.264/AVC video decoding</li> <li>• Fix for decoding issue on low fps value</li> <li>• Fix for DVB-T2 PLP id configuration not working</li> <li>• Fix for DVB-T2 1.7MHz support not working</li> <li>• Fix for Configuration settings that were not always saved on change (like frequency and SNMP port)</li> <li>• Fix for Constellation and Bandwidth set to default on configuration load</li> <li>• Fix for Configuration Commit button not always updated on a change</li> <li>• Fix for unknown Template subtitle test status when data was not present</li> <li>• Fix for occasionally missing bitrates in the WebGUI/SOAP interface</li> <li>• Fix for rare condition of Xpect DekTec device scan failing on start up</li> <li>• Fix for IP forwarding not being fault tolerant</li> </ul>
v3.2.1.5133	2015.10.05	<ul style="list-style-type: none"> <li>• Improved performance when monitoring a large amount of PID's per TS</li> <li>• Improved Frozen/Black video detection for low resolution video</li> <li>• Improved Frozen/Black video detection for AVC without framerate specified</li> <li>• Fix for possible failing multicast IP address configuration</li> <li>• Fix for possible incorrect MPEG-4 AAC info shown in the WebGui</li> </ul>

v3.2.0.5120	2015.03.24	<ul style="list-style-type: none"> <li>• Add support for Source Specific Multicast IP address (IGMP v3 support), using syntax: &lt;sourceaddress&gt;@&lt;multicastaddress&gt;</li> <li>• Added service ID/name to template tests 6.1 to 6.5</li> <li>• Added support for dynamic switching of picture cells using the SOAP interface</li> <li>• Added support for Windows 8.1</li> <li>• Added support for DTA-2152, DTA-2154 and DTA-2174</li> <li>• Added field to manually add a remote Xpect server IP address</li> <li>• Support for up to 300 IP ports (before limited to 200)</li> <li>• Improved Frozen video detection for high frame rates.</li> <li>• Improved error reporting during Xpect restart/reconfigure: ignore TS Sync loss</li> <li>• Improved DTA-2139 support (latest DTAPI fixes)</li> <li>• Fix for AAC audio information parsing</li> <li>• Fix for occasional memory increase</li> <li>• Fix for occasional Black video error not cleared</li> <li>• Fix for invalid EIT errors (3.6a/b/c) seen for some specific streams</li> <li>• Fix for SCTE-35 tests failing occasionally</li> <li>• Fix for incorrect test ID's in CSV exported 4.6-4.15 events</li> <li>• Fix for WebGui com errors on EventLog caused by specific culture setting</li> </ul>
v3.1.0.5093	2014.06.13	<ul style="list-style-type: none"> <li>• Added Service Template tests for DVB/Teletext subtitles, Closed Captions and SCTE-35</li> <li>• Added Local-NIC use, for input of IP transport streams without a DekTec card</li> <li>• Added license dongle support</li> <li>• Added Event log export to CSV file in the WebGui</li> <li>• Added new Mosaic templates for automatically configuring up to 3 separate audio channels per service, using a video overlay</li> <li>• Added support for ISDB-T number of segments and subchannel configuration</li> <li>• Improved Video preview in the WebGui: using correct aspect ratio</li> <li>• Improved detection of frozen/black video streams</li> <li>• Improved WebGui Event log performance: background fill of events</li> <li>• Improved Event log messages by adding service names and service ID's</li> <li>• Improved resilience of WebGui preview video to stream errors</li> <li>• Improved handling of multiple occurrences of subtitling language per service</li> <li>• Fix for WebGui streaming preview not working when SOAP port 80 was used</li> <li>• Fix for possible memory leak when Mosaic is active</li> <li>• Several other minor bugfixes</li> </ul>
v3.0.0.4977	2013.06.10	<ul style="list-style-type: none"> <li>• Added support for freeze frame and black frame testing (part of the Extra tests)</li> <li>• Added support for audio silence testing (part of the Extra tests)</li> <li>• Added support for ATSC monitoring including PSIP decoding</li> <li>• Added support for ARIB Japanese character set</li> <li>• Added WebGui Transport Stream ID field</li> <li>• Added WebGui Event message 'copy-paste' to Excel export function</li> <li>• Added WebGui Event type filter function</li> <li>• Added service name and id to specific WebGui Event messages</li> <li>• Added mosaic support for multiple DVB and Teletext Subtitles and CEA-608-B Closed Captioning</li> <li>• Added support for mosaic alarm border indicator</li> <li>• Added new mosaic cell templates</li> <li>• Added customizable mosaic clock</li> <li>• Added mosaic 5.1 audio bars, L+R audio bars and single EBU bar all according EBU R128</li> <li>• Added mosaic video cell responsive to dynamic AFD changes</li> </ul>

		<ul style="list-style-type: none"> <li>• Added support for mosaic audio output using HDMI or PC soundcard</li> <li>• Added support for sync loss and poor data by auto resetting of mosaic</li> <li>• Added support for dynamic mosaic text like: service id, bitrate, major-minor channel</li> <li>• Extended SOAP interface to dynamically control the mosaic layout, like fast service switching or text/picture overlays</li> <li>• Extended SOAP interface for ancillary data: NIT,TOT,TDI,EIT, HE AAC metadata, subtitle languages, AFD/WSS</li> <li>• Added support for mosaic HD-SDI output using DTA-2152 (including down-mixed 5.1 audio to augmented stereo and 1:1 pixel mapping option)</li> <li>• Added support for DVB-T2 and DVB-C2 streams using DTA-2131 or DTA-2138</li> <li>• Added support for ISDB-T using DTA-2131 (currently only 13 segment)</li> <li>• Added support for DTA-2139 for 12 channel QAM monitoring per DTA-2139</li> <li>• Fix for possible crash on SNMP trap port configuration</li> <li>• Fix for required restart on SNMP enable/disable/enable sequence using XCT</li> <li>• Fix for possible expire of Windows Xpect user password (“dektec”)</li> <li>• Fix for possible memory increase for specific mosaic content</li> <li>• Fix for possible incorrect mosaic resolution (1024x768) when using XCT</li> <li>• Fix for possible error on large IP configurations</li> </ul>
v2.0.0.4252	2012.06.22	<ul style="list-style-type: none"> <li>• Mosaic Multi-TS viewer: MPEG-2 and AVC (SD/HD) decoding using graphics card acceleration, alarms from Xpect visualized in mosaic, multi-screen support, EBU R128 loudness, radio services, XML defined cell templates and custom picture cells</li> <li>• Configuration Tool 2.0: easy remote control of all configurations, predefined mosaic layout configuration or fully customizable using ‘drag and drop’, Test groups to easily reuse test configurations for multiple inputs and backup and restore of complete configuration.</li> <li>• Support for DTE-3120</li> <li>• Support for DTE-3137</li> <li>• Fix for PIDs 0,1,16,17,18,19,20 shown in Web GUI but possibly not present</li> <li>• Fix for possible crash on custom PMT table Template test</li> <li>• Fix for duplicate service name not shown in Web GUI</li> <li>• Fix for possible incorrect service bitrate calculation</li> <li>• Fix for possible invalid StatLogGetEntriesByTime PCR results</li> <li>• Fix for MPEG 1 Audio ES information possibly being invalid</li> <li>• Fix for Guardian not working correct when SOAP port changes</li> </ul>
v1.3.1.3763	2011.05.27	<ul style="list-style-type: none"> <li>• Added support for DTA-2136</li> <li>• Added Web GUI Orange Led indicators clear all inputs function</li> <li>• Added Web GUI persisted storage of Orange Led status; cleared Orange indicators will not be shown again after restart of the web browser, unless a new Orange status has occurred</li> <li>• Fix for possible mismatch MPEG Audio Elementary Stream info</li> <li>• Fix for possible invalid minimum bitrate on missing Basic Streams for XCT ‘Template from TS analysis’ function</li> </ul>
v1.3.0.3732	2011.04.28	<ul style="list-style-type: none"> <li>• Added live Service decoding in Web GUI; support for MPEG-2 Video, AVC Video, AC-3 Audio, AAC Audio, HE-AAC Audio, MPEG-2 Audio and MPEG-1 Audio</li> <li>• Added Orange Led indicator for historical errors</li> <li>• Added Clear Event log function in Web GUI</li> <li>• Added extra Elementary Stream info in Web GUI</li> <li>• Added TS details like IP address in Web GUI header</li> </ul>

		<ul style="list-style-type: none"> <li>• Improvements in Web GUI error reporting</li> <li>• Fix for possible Unicode characters problem in service names</li> <li>• Fix for possible inconsistent overall status</li> <li>• Fix for possible invalid minimum bitrate for XCT 'Template from TS analysis'</li> <li>• Fix for invalid Buffer Errors on High profile MPEG-2 video</li> <li>• Fix for not correctly handled shared service components</li> <li>• Fix for Web GUI stream type mismatch</li> <li>• Fix for possible no response in password dialog of Web GUI</li> </ul>
<a href="#">v1.2.1.3616</a>	2011.02.03	<ul style="list-style-type: none"> <li>• Added extra field for TS name in SNMP Xpect MIB</li> <li>• Fix for ordering of SNMP MIB test results</li> <li>• Fix for SNMP Overall Template test result</li> <li>• Fix for 'unknown' SNMP test results status at startup</li> </ul>
<a href="#">v1.2.0.3530</a>	2010.11.04	<ul style="list-style-type: none"> <li>• Support for Multi TS grid in Web GUI</li> <li>• Guardian service improvements</li> <li>• Fix for disabled reported 3.2 error</li> <li>• Fix for invalid config id error message in Configuration Tool</li> </ul>
<a href="#">v1.1.0.3447</a>	2010.09.27	<ul style="list-style-type: none"> <li>• Support for 64 bit Windows OS (600Mbps support)</li> </ul>
<a href="#">v1.0.0.3295</a>	2010.02.16	<ul style="list-style-type: none"> <li>• Initial release</li> </ul>