Xpect

24/7 Transport Stream Monitoring

USER MANUAL

April 2011

Table of Contents

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 second 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 3rd 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. Finally, 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.

The Xpect software runs on a standard Windows based PC (Win XP, 2k3, Vista, 2k8 or Win 7) 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, DVB-S(2) 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 point 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

CATV	Cable Television
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	• Windows OS used
2	Amount of memory (RAM) needed	• Number of transport streams monitored • Size of pre- and post-trigger buffers
3	Hard disk space needed	• Number of transport streams monitored • Will transport stream capturing will used? • Number of days to keep in log databases
4	Number of DekTec interface cards	• Number of transport streams monitored • Which interface types are used (DVB-ASI, DVB-T, DVB-S(2), TSoIP, etc)? • Can you use cards with multiple input ports?
5	Number of licence points	• Number of transport streams monitored • Type of transport streams (i.e. SPTS Radio/TV or MPTS)

2.1 Minimum system specs

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

Platform:	Win XP, 2k3, Vista, 2k8 or Win 7 NOTE: both 32-bit and 64-bit operating systems are supported
Processor:	P4 3GHz or better
Memory:	≥1GB RAM
Hard disk:	Minimum of 1GB of free space
PCI/PCI Express	Enough free slots to fit required DekTec interface cards
Prerequisites	.NET 2.0 with SP1, .NET 4.0 and Silverlight 4 runtime

NOTE: Please also check minimum system requirements for the Windows OS you will be using

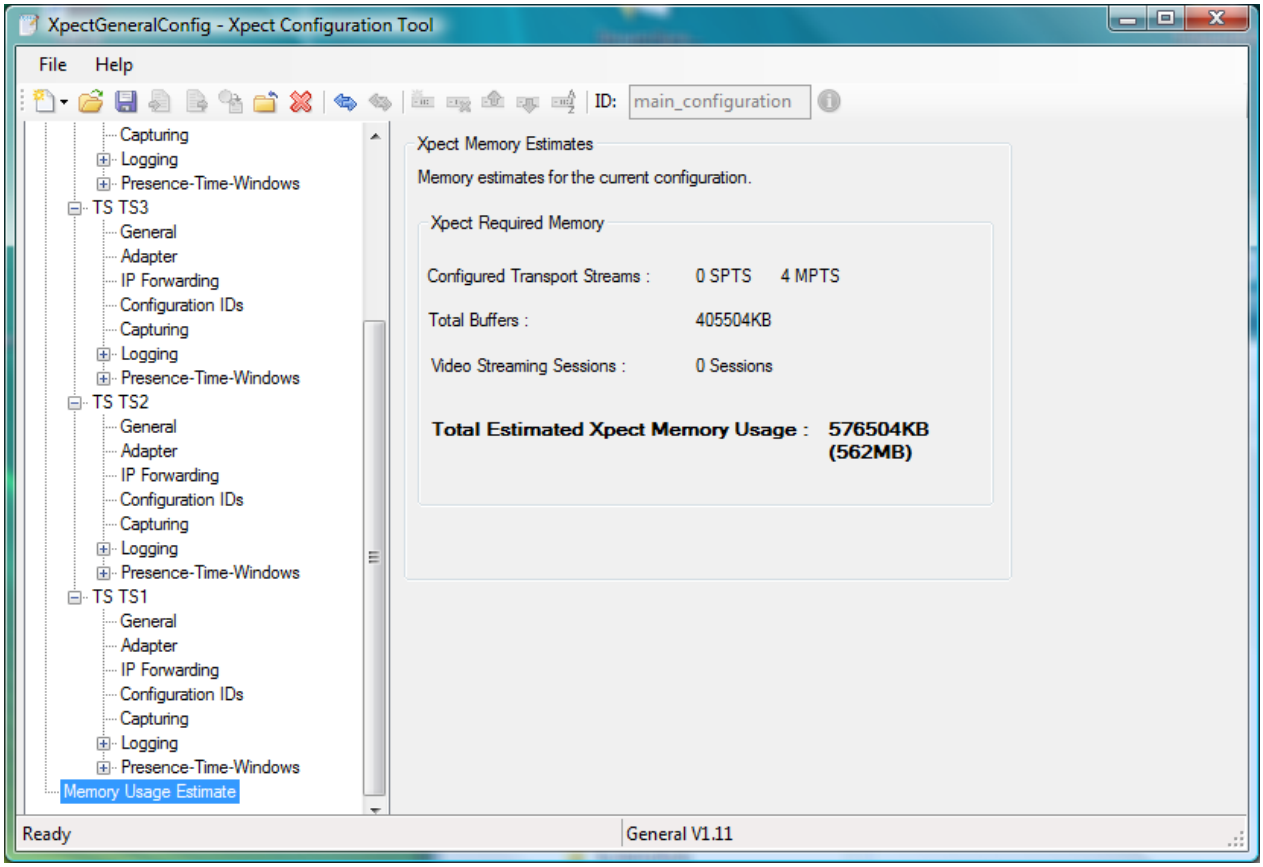
NOTE: In the next sections we will go into the memory and hard disk requirements in more detail

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 (typical=512MB)

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:

$M_{REQ} = 512 + 562$

$M_{REQ} = >1GB$

IMPORTANT NOTE:

The 32-bit Xpect version cannot use more than 2GB (i.e. $M_{RUNTIME} \leq 2GB$) even if your system contains more memory. Also note that the runtime memory required by Xpect ($M_{RUNTIME}$) 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.

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):

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

- HD_{CAP} = Amount of disk space required for transport stream captures
- B_{PRE} = Size of pre-trigger buffer
- B_{POST} = Size of post-trigger buffer
- N_{FILES} = Number of transport streams capture files to store

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

- HD_{LOG} = Amount of disk space, per TS, required for the log database
- N_{LOG} = Maximum number of log entries to store
- S_{LOG} = Size of log entries in database (typically = 1kB)

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

- HD_{STAT} = Amount of disk space, per TS, required for the statistics database
- N_{SHORT} = Maximum number of short-term statistics entries to store
- N_{MEDIUM} = Maximum number of medium-term statistics entries to store
- N_{LONG} = Maximum number of long-term statistics entries to store
- N_{SVC} = Number of services in transport stream
- N_{BS} = Number of basic streams in transport stream
- N_{TBL} = Number of tables in transport stream
- S_{LOG} = Average size of log entries in database (typically = 1kB)

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

- HD_{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:

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

HD_{LOG} = 100,000 × 1kB = ~98MB

HD_{STAT} = (60 + 60 + 48) × (8 + 40 + 60) × 1kB = ~18MB

HD_{REQ} = 4 × (866 + 98 + 18) = ~3928MB

NOTE: in the above formulae we do not account for the disk space required for installing Xpect, however, this is a relatively small amount (<100MB) that it 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), TSoIP, 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).

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:

$LP_{TOT} = (N_{SPTSRAD} \times LP_{SPTSRAD}) + (N_{SPTSTV} \times LP_{SPTSTV}) + (N_{MPTS} \times LP_{MPTS})$, where

- LP_{TOT} = Number of licence points required
- $N_{SPTSRAD}$ = Number of single-program radio transport streams to monitor
- $LP_{SPTSRAD}$ = Number of licence points (=¼) required for each SPTS Radio
- N_{SPTSTV} = Number of single-program TV transport streams to monitor
- LP_{SPTSTV} = 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:

$LP_{TOT} = (8 \times ¼) + (2 \times ½) + (3 \times 4) = 15$ *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	• Download the latest version of the DekTec Dta1xx driver (Dta1xx.zip) and/or Dtu2xx driver (Dtu2xx.zip) from the DekTec website (http://www.dektec.com/Downloads/Drivers.asp); • If you will be using PCI/PCIe cards extract the 'Dta1xx.zip' file and run the Dta1xx driver installation program ('Dta1xx setup.exe'); • If you will be using USB-2 adapters extract the 'Dtu2xx.zip' file and run the Dtu2xx driver installation program ('Dtu2xx setup.exe'); • Continue to step 2
2	Insert DekTec interface cards in target PC	• Power down the PC; • Open the PC housing; • Carefully insert each DekTec card in PCI/PCIe slots; • Close PC housing; • Continue to step 3
3	Boot PC to complete driver installation	• Power-up the PC; • Shortly after logging on, the "Found New Hardware Wizard" should pop-up to indicate Windows has found new hardware; • Choose "Install the software automatically (Recommended)"; • Press "Next" and "Finish", and the driver installs; • If you have fitted multiple cards this process may be repeated several times; • Now your hardware should have been installed successfully and you are ready to move on to the software installation phase.

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 'Dta1xx Installation.pdf' and/or 'Dtu2xx Installation.pdf' documents included in driver ZIP files.

3.2 Software installation

When setting up an Xpect server there are two software installs required. First you will need to install the Xpect Configuration Tool and then the Xpect server software. 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 files required by the Xpect software (see §4.2 Creating/editing configuration files).

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.

#	Action	Description
1	Make sure you have the latest versions	• Download the zip file 'Xpect.zip' with the latest version of Xpect and configuration tool from the DekTec website (http://www.dektec.com/Downloads/Applications.asp); • Continue to step 2
2	Install configuration tool	• Run the configuration tool ('Config Tool Setup.exe'); • Follow the instructions of the setup program; • Continue to step 3

3	Install Xpect server	• Run the server setup program ('Xpect Setup.exe');
		• It is recommend that you let the installer perform a complete installation;
		• The Installer will start separate installers for:
		  ○ VC9 Runtime
		  ○ Microsoft Expression Encoder 4 (part of this installation could be a separate web install of the .NET framework 4.0)
		• Continue to step 4

4	Create the General configuration file[1]	• Start the Xpect Configuration Tool[2]. - Select *File->New->General* to create a new general configuration file; • In the "*General Settings*" section: - Set 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[3] or disable streaming. • The setting in the "*Time Windows*" section can be left at their default values; • In the "*Interface Settings*" section: - Ensure the SOAP / Web Interface is enabled[4]; - Set the SOAP/Web server port or leave it on the default value of 5089;

[1] The General Configuration File will be unique to your server configuration; Xpect will not start correctly unless the general configuration (XpectGeneralConfig.xgen) is set-up to match the configuration of the server hardware)
[2] The XCT must be run locally on the Xpect server for creating a General configuration file;
[3] Make sure sufficient memory and CPU resources are available for all streaming sessions
[4] If you plan to use SNMP enable the SNMP interface as well.

		• In the "*Transport Streams*" section: - Add the number of TSs you will be monitoring ('right-click' to add/remove transport streams) • For each transport stream: - Enter a unique name; - Select the Licence Type (SPTS Radio/TV or MPTS); - On the Adapter pane select the DekTec input adapter (and its port) from the drop down list and if needed configure the RF or IP settings; - All other settings can be left at their default value; • Save the new configuration file in the following directory: - Windows XP/2k3: 'C:\Documents and Settings\All Users\Documents\DekTec\Xpect\Config'; - Vista, 2k8 or Win 7: 'C:\Users\Public\Documents\DekTec\Xpect\Config'; • Continue to step 5
5	Reboot the system	• Reboot the PC; • Continue to step 6
6	Test the installation	• Open an internet browser (recommended: IE7/8 or Google Chrome); • Go to http://localhost:5089[5] - 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. • 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 • 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; • Greyed out 'LEDs' in the right hand pane mean that the condition is not currently being monitored. • You should now be able to browse through the status of the transport streams you have configured. • The basic setup process is now completed.

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 files used by Xpect can be found in §4. Configuration Files. For more details about the Web GUI please refer to §5. Web GUI.

REMARK: For using the Video Streaming function on Windows Server 2008 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)

[5] NOTE: if you changed the default SOAP/Web port replace 5089 with the port you specified

4. Configuration Files

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 'XpectGeneralConfig.xgen'.
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, Media Loss Rate and Table version tests. Each test can be enabled and disabled and the limits for the extra test can be specified.

4.1 Configuration file location

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 initially 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). However, these can be overridden by user configuration files even after Xpect has started monitoring.

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/2k8/7 'C:\Users\Public\Documents\DekTec\Xpect\Config'

The files located in this directory are typically created by the Xpect server administrator as a set of default configurations which are available at all times. Next to these "permanent" files it is also possible to dynamically upload user-created TR 101 290, Extra Test or Template configuration files to Xpect.

As soon as you upload a user configuration it will become active (i.e. Xpect will start using it). At any time there can only be one user configuration active per configuration type and per transport stream instance. As soon as you upload a new user configuration file or restore one of the 'permanent'

configurations, the current user configuration will be replaced. Loading a new 'user' or 'permanent' configuration file will cause the Xpect monitoring instance to stop and restart (these will be logged in Xpect's Event log which is visible via the web GUI).

The General configuration cannot be modified while Xpect is running. Changes to the General configuration will require manually stopping and restarting of Xpect (via the Xpect guardian) as this could involve major changes to the hardware configuration of Xpect.

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*'.

4.2 Creating/editing configuration files

Although all types of configuration files are XML-based and can be created or edited 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 type and ensures that the XML fields generated are correctly formatted. Upon creation of a new configuration file it will initiate each setting to sensible default values and for a template it is even possible to dynamically fill the template based on the current state of a monitored transport stream. This means you can instruct the XCT to download the current transport stream status from Xpect and automatically fill the template with a set of rules for the services, tables and basic-streams detected in the monitored TS; afterwards only minor adjustments are required to get a valid configuration.

The XCT can also connect remotely to an Xpect server to upload a user configuration and/or load an active configuration from the Xpect server right into the tool.

NOTE 1: Creating or editing a General configuration file should always be done on the Xpect server itself. Also note that the "permanent" configuration files should not be uploaded via the upload functionality in the XCT, but should be copied to the configuration directory mentioned in §4.1 Configuration file location.

NOTE 2: the default configurator password is: "*admin*"

4.2.1 Creating a new TR 101 290 configuration file

To make a new x290 configuration file you can use the Xpect Configuration Tool (XCT) too either create one from scratch (*File->New->TR101290*) or import and edit the current configuration from a running Xpect instance using the '*Import from Xpect*' button on the toolbar. To connect to the Xpect server use the '*Connect to Xpect*' button on the XCT toolbar (you will need to enter the Configurator password specified in the General configuration to do this). For this task the XCT application can be run remotely to the Xpect server.

Once you have modified the tests to be made and entered a Configuration ID for this new TR 101 290 configuration file, it should be saved. It can then be uploaded to Xpect using the '*Export to Xpect*' button on the XCT toolbar.

NOTE: The Configuration ID embedded within each of the configuration files need not necessarily be the same as the filename; however it may be helpful to ensure they are similar.

4.2.2 Creating a new Template configuration file

To create a Template configuration file from a monitored stream via the XCT, start with a new template (*File->New->Template*), then connect to the Xpect server using the Connect to Xpect button on the toolbar (you will need to enter the Configurator password specified in the General configuration to do this). Once connected, select the Configuration from TS Analysis button on the toolbar; when prompted by a pop-up, confirm that you wish to Continue and discard changes from the template. Next, select which transport stream you wish to analyse using the drop down Selected Transport Stream box. Decide which of the Template tests you wish to enable using the check boxes. A pop-up will then advise whether the Configuration has been created successfully.

Once you have entered an ID for this new template it should be saved. It can then be uploaded to Xpect using the '*Export to Xpect*' button on the toolbar.

NOTE: Xpect will momentarily stop monitoring whenever a new configuration is specified.

4.2.3 Creating a new Extra tests configuration file

To make a new Extra Tests configuration file you can use the Xpect Configuration Tool (XCT) to either create one from scratch (*File->New->Extra tests*) or import the current configuration from a running Xpect instance using the Import from Xpect button on the toolbar. To connect to the Xpect server use the Connect to Xpect button on the XCT toolbar (you will need to enter the Configurator password specified in the General configuration to do this). For this task the XCT application can be run remotely to the Xpect server.

Once you have entered an ID for this new Extra test configuration file it should be saved. It can then be uploaded to Xpect using the Export to Xpect button on the XCT toolbar.

NOTE: The Configuration ID embedded within each of the configuration files need not necessarily be the same as the filename; however it may be helpful to ensure they are similar.

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. IE7/8, Google Chrome, Firefox 3.x) and browse to the URL address for the Xpect web server:

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

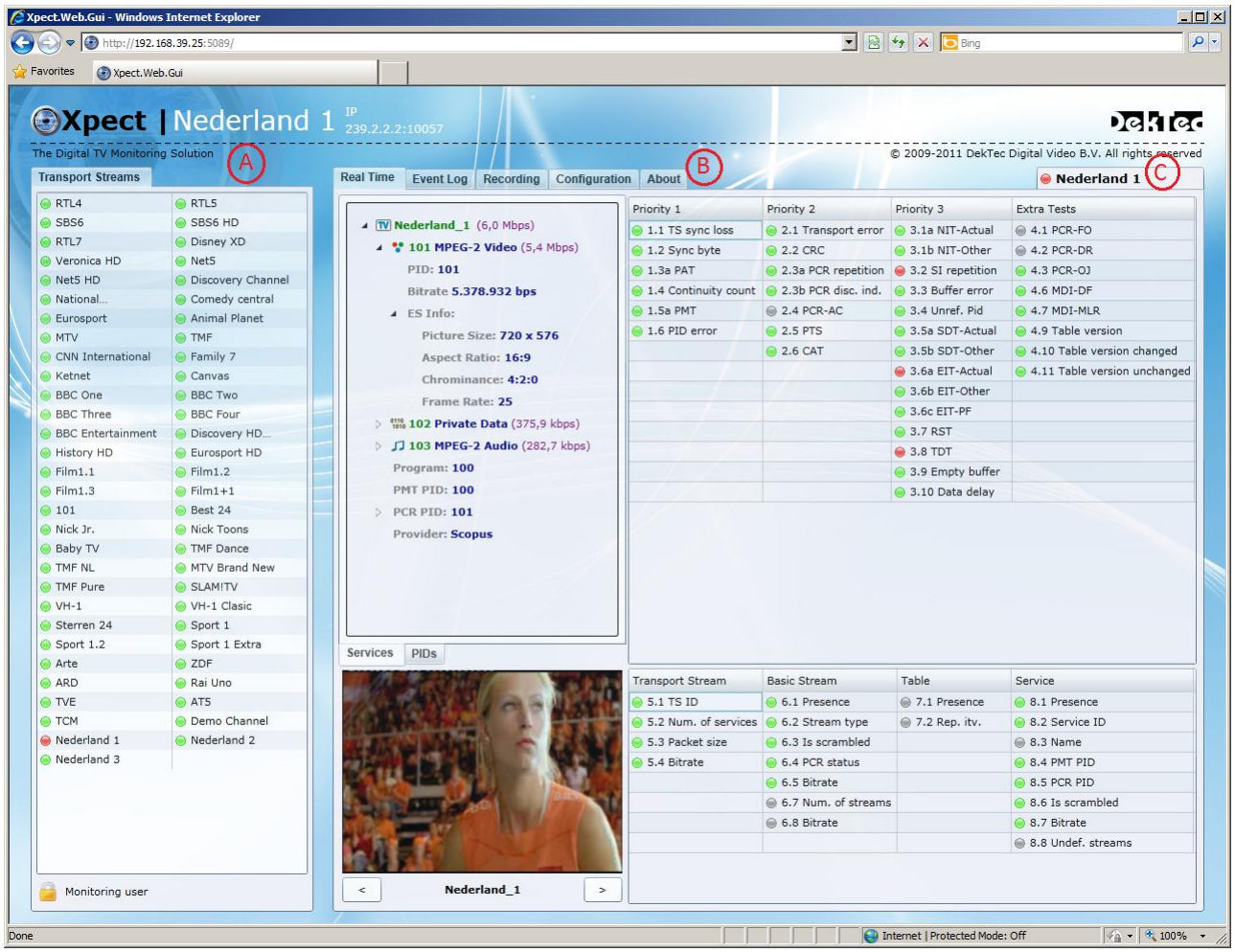
<*server_ip_address*> = IP address or name of the PC on which Xpect is running

<*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

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.

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

B: Video player panel. Use buttons or service view context menu to change active service.

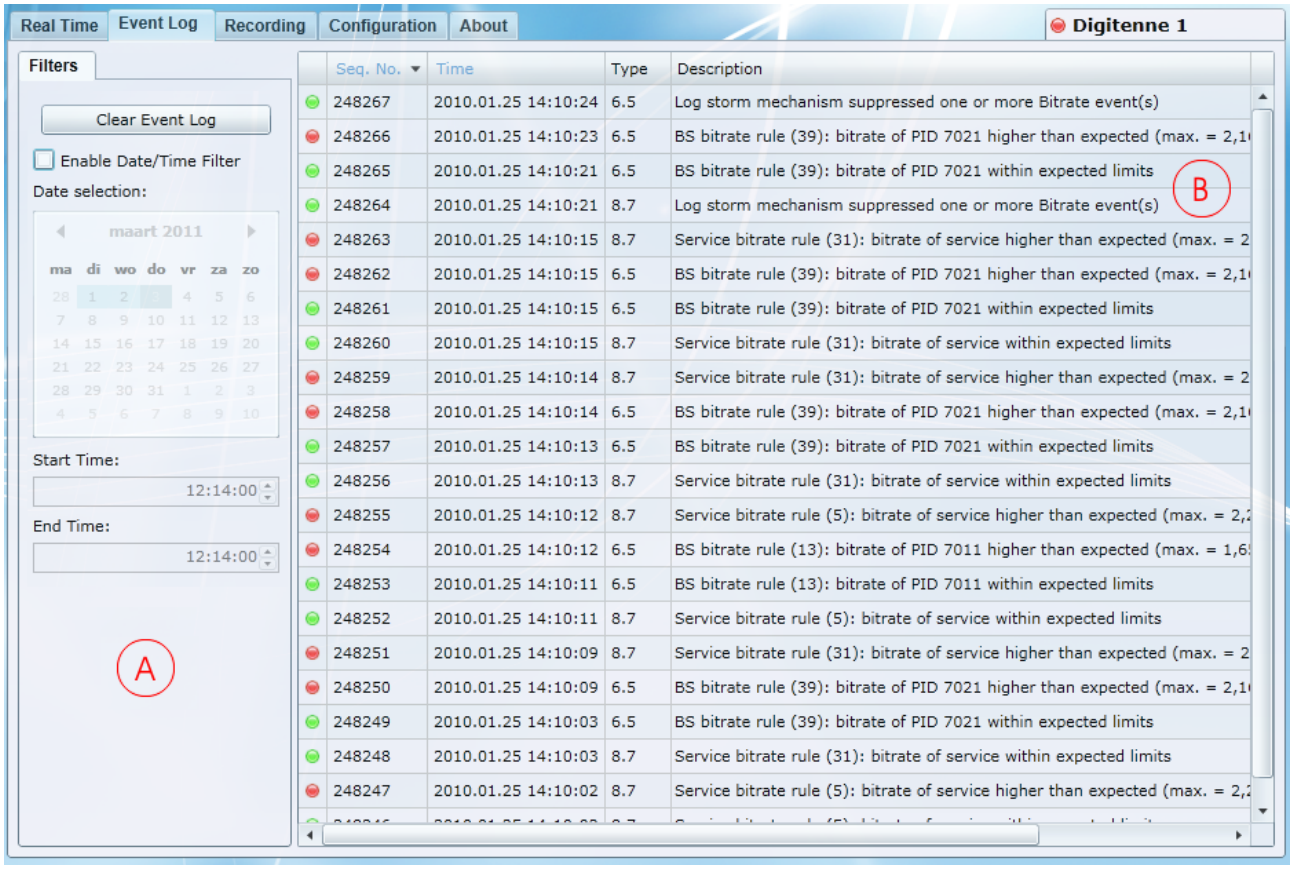
C: Status of compliancy tests (TR101290 + Extra Test). Green means no error, red means an error was detected, orange means resolved error[6] and gray means the test is disabled.

D: Status of the template matching tests. Green means no error, red means an error was detected, orange means resolved error[6] and gray means the test is disabled.

[6] The orange indication will be used to show historical errors, status could 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.

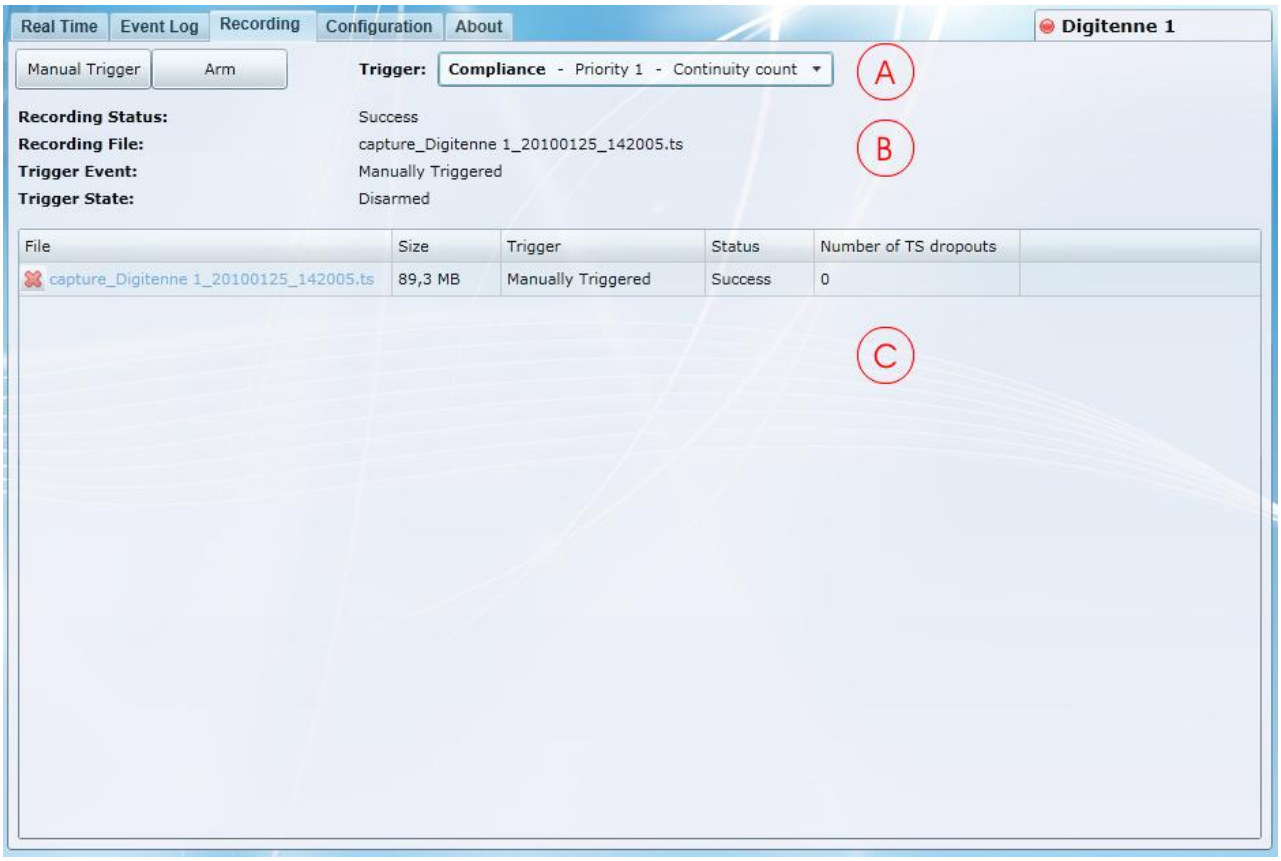


A: Filters to select a data/time range of events to show. A 'Clear Event Log' trigger will supress currently showed events.

B: List with all or filtered error events.

5.4 Recording Tab

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



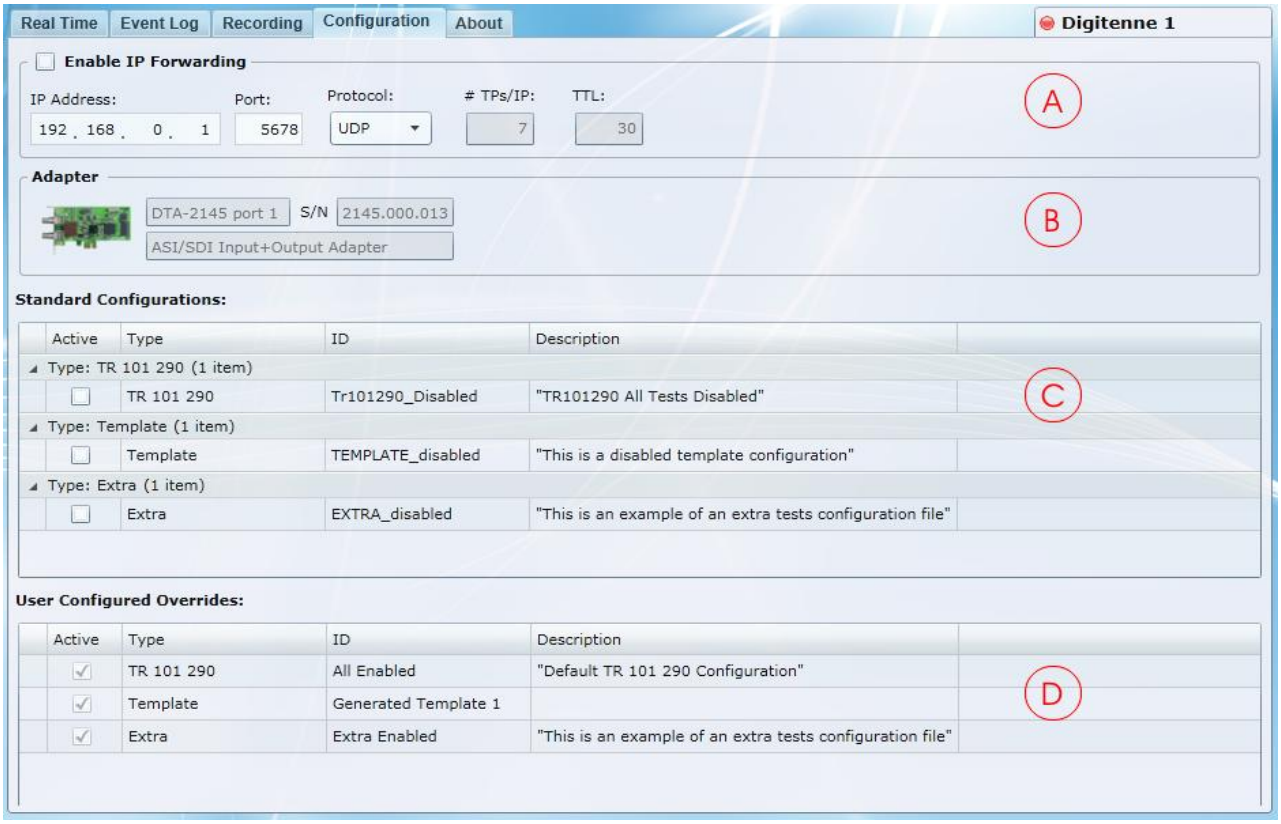
A: Trigger controls: used to define the trigger condition, arm the capture process or manually force a capture.

B: Current status of the capture process.

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

5.5 Configuration Tab

The Configuration tab allows you to perform basic configuration tasks such as setting up IP forwarding or verifying/setting a TR 101 290, Extra Test and Template configuration. These actions require you to be in configuration mode; if you try to change a 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.

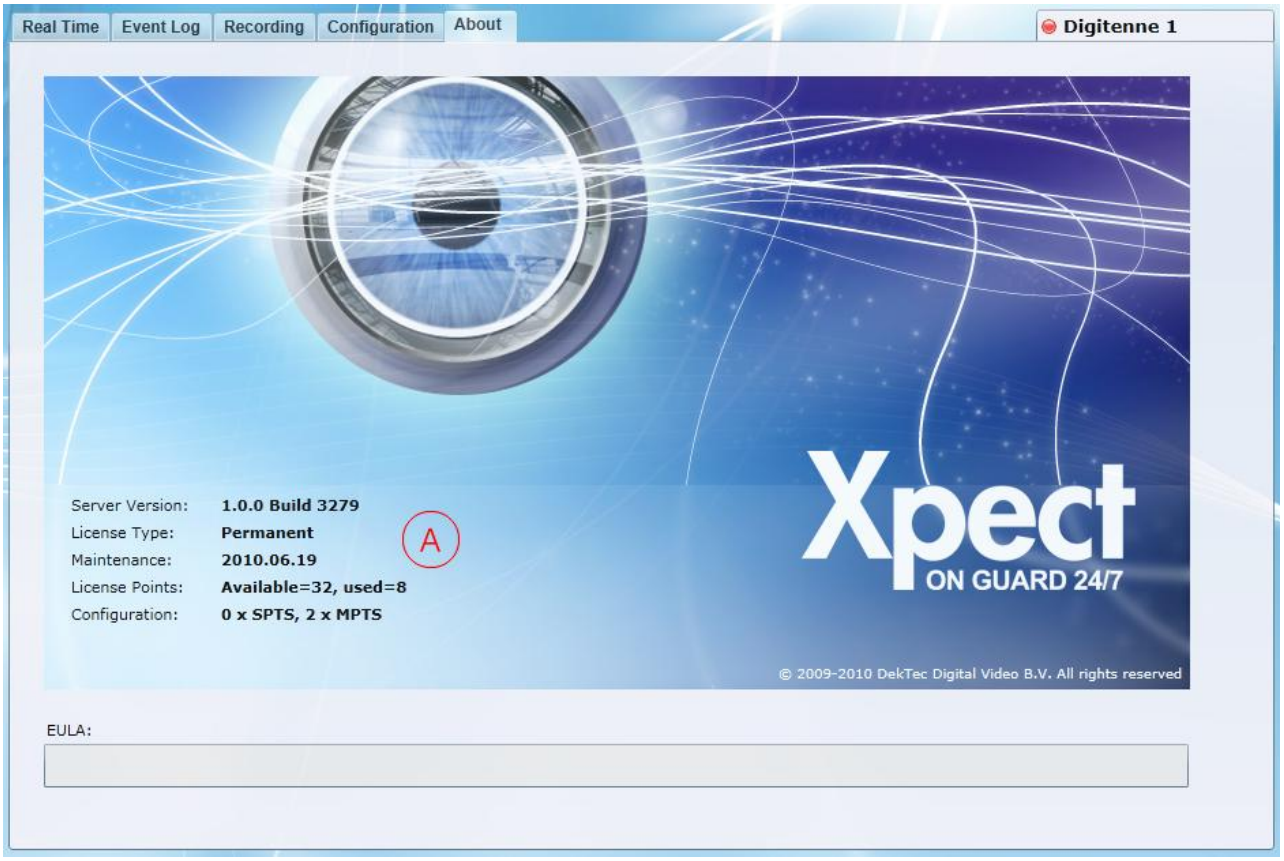
B: Shows the DekTec input adapter used for monitoring.

C: Lists the "permanent" configuration files located on the Xpect server and allows you to activate one by clicking the corresponding checkbox.

D: Lists the active user configurations (if any have been applied).

5.6 About Tab

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



A: 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 (IE8, Firefox or Google Chrome) 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 XpectGaurdian. The log messages should provide an important clue as to what may be wrong.

6.3 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.

7. Copyright Notices

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

7.1 Xpect software

7.2 3rd-party components

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

8. DTC-720 Xpect Revision History

Revision	Date	Changes
V1.3.0.3732	2011.04.28	• 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 • Added Orange Led indicator for historical errors • Added Clear Event log function in Web GUI • Added extra Elementary Stream info in Web GUI • Added TS details like IP address in Web GUI header • Improvements in Web GUI error reporting • Fix for possible Unicode characters problem in service names • Fix for possible inconsistent overall status • Fix for possible invalid minimum bitrate for XCT Template from TS analysis • Fix for invalid Buffer Errors on High profile MPEG-2 video • Fix for not correctly handled shared service components • Fix for Web GUI stream type mismatch • Fix for possible no response in password dialog of Web GUI
V1.2.1.3616	2011.02.03	• Added extra field for TS name in SNMP Xpect MIB • Fix for ordering of SNMP MIB test results • Fix for SNMP Overall Template test result • Fix for 'unknown' SNMP test results status at startup
V1.2.0.3530	2010.11.04	• Support for Multi TS grid in Web GUI • Guardian service improvements • Fix for disabled reported 3.2 error • Fix for invalid config id error message in Configuration Tool
V1.1.0.3447	2010.09.27	• Support for 64 bit Windows OS (600Mbps support)
V1.0.0.3295	2010.02.16	• Initial release