SOAP Interface – Revision History

Version	Date	Change Description
V3.12	2018.09.27	• Xpect release v3.5.0.5353 version • Added OTT services • Added ServNameIdT to enable searching for serviceid in logs. • SOAP API version is now v1.5
V3.11	2018.01.08	• Xpect release v3.4.0.5332 version • Added HEVC-H265 video type and SCTE-35 data type to xpect__mpegStreamType list of elementary stream types. Added HEVC video type to xpect__VideoType. Added HEVC video metadata items to xpect__VideoEsInfoT • SOAP API version is now v1.4 • Minor typo corrections
V3.10	2016.03.09	• Xpect release v3.3.0.5226 version • Added RF Information RfInfoT for demodulating input cards, accessible via new Stat-GetStaticstics2 method and configured via StatConfig2T • PCR PID has its own defined type for use in PCR-only basic stream reporting • ECM and EMM PIDs now have their own defined types • TableContent can now contain CAT contents • Active-Log-Entries now accessible via EvLogGetActiveEntries and configured via EvLog-ConfigT.TrackActiveEntries • SOAP API version is now v1.2
V3.01	2014.04.29	• Added MacAddr to AvailablePortsT
V3.00	2013.04.10	• TableContent is now an optional member of TableInfoT • AudioMetadata is now an optional member of AudioEsInfo
V2.15	2013.03.20	• Version 3.0.0 update • Added new Extra Test definitions for Frozen-AV • Added ATSC stream types • Added ATSC SCTE-35 Template test
V2.14	2012.11.27	• Added Unique Attribute (aka 'Snippets') ConfSetAttribute interface.
V2.13	2012.11.19	• Added Audio Metadata items • Updated formatting of PMT descriptor contents items.
V2.12	2012.11.15	• Update to ConfSetSettings command detail.
V2.11	2012.11.13	• Interim update to Xpect version 2.0.1 release: • Added PMT descriptor contents (tunnelled SI tables, subtitles) in PmtContentT. • Rename to AFD/WSS entries to overcome renaming error in service referencing.
V2.10	2012.10.19	• Xpect version 2.0.1 release version: • Added AFD and WSS information in BsInfoT. • Added TableContentT in TableInfoT.
V2.01	2012.05.16	• Event limit documented.
V2.00	2012.04.16	• Version 2.0 update • Types & Enumerations Added: AspectRatio, AudioLayer, AudioMode, AudioObjectType, AudioType, AudioVersion, bandwidth, ChromaFormat, constellationType, FrameRate, InputType, modulationStandard, polarisation, scrambledStatus, VideoType, xpectStreamingResultCode. Changed: EventAttributeSemantic renamed items, extraTest renamed to extratTestT and renamed items, monState added state, mpegStreamType added DVB items, settingsType added types, templRule order changed. • Data Structures

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		Added: AdapterT, AvailableMosaicScreenT, AvailablePortsT, AudioEsInfoT, PortInfoAsiT, PortInfoIpT, PortInfoRfT, TsNamePortInfoT, VideoEsInfoT. Changed: BsInfoT added scrambled and ES info, MonStatusT added LastErrorTime, OverallStatusT added last error times, SettingsInfoT removed and renamed fields. • Functions Added: ConfGetAvailableMosaicScreens, ConfGetAvailablePorts, ConfGetTsNamesPortInfo, EvLogGetEntriesByIndex, GlobalGetLastError, PreviewSelectService Changed: ConfSetUserSettings renamed ConfSetSettings, GlobalGetServerInfo additional parameters. Removed: ConfClearUserSettings.
V1.00	2010.03.05	• First release to the field
V0.15	2009.12.04	• Add MonState to OverAllStatusT • Add Disabled to monStatus enumeration • Add eventAttributeType and eventAttributeSemantic enumerations • Add EventAttributeT and EventResourceT structs • Add EvGetStringResources • Add missing fields EvInfoT struct • Add inputDeviceInvalidSync to systemEvent enumeration and SystemEventIdT struct • Add remark that password must be Base64 SHA1 encrypted
V0.14	2009.11.04	• Add timeout parameter to the SessionOpen and SessionConfigOpen methods • Add invalidTimeout to xpectResultCode enumeration • Add StatGetOverallStatus method, OverallStatusT and TsInfoShortT structures • Fixed few typos
V0.13	2009.10.26	• Add captureError to captStatus enumeration • Add captTrigger enumeration. Add CaptTrigger member to CaptInfoT structure and add CaptTrigger parameter to CaptGetState method • Add extraOverall value to extraTest enumeration • Add reserved to mpegStreamType enumeration • Add systemEvent enumeration. Add SystemEventIdT structure and added SytemEventId member to EventIdT structure. • Add pcrMeasurements to tr101290Type enumeration
V0.12	2009.10.22	• CaptDeleteFile method can only be called in config-mode • Add IsActiveConfig and IsStdConfig flags to SettingInfoT structure. • Add GlobalGetServerInfo method
V0.11	2009.09.23	• Add StatGetStatistics method • Add EvLogGetEntryRange method • Add EvLogGetEntryRangeByTime method • Add StatConfigT struct • Add EvFilter parameter to EvLogGetEntriesBySeqNr/EvLogGetEntriesByTime • Add Entries order functionality to EvLogGetEntriesBySeqNr/EvLogGetEntriesByTime • Add functionality to return all available data when input parameter; Pids/StatIds/ServiceIds/TableIds is empty in StatGetBasicStreamInfo/StatGetMonStatus/StatGetServiceInfoStats/StatGetTableInfo
V0.10	2008.11.14	• Add log-storm prevention and notification log settings to EvLogConfigT structure • Removed ErrEventIds parameter from EvCreateComposite and EvSubscribe. Removed ErrSubscrIds parameter from EvUnsubscribe • Add start and end time fields to StatLogEntryT structure • Updated IpForwParsT structure to support forwarding via a local NIC • Add ConfClearUserSettings method • Changed name of RuleId attribute in TemplRuleIdT structure to RuleIndex
V0.09	2008.10.02	• Removed CaptClearTriggerCondition and updated behavior CaptSetTriggerCondition after comments from Fen
V0.08	2008.10.02	• Add CaptArmTrigger, CaptClearTriggerCondition, CaptGetTriggerCondition and

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		CaptSetTriggerCondition methods
V0.07	2008.09.29	• In EvLogGetEntriesByTime: defined values for SeqNrFirst and SeqNrLast if there are no log/notification entries within the specified period • Updated EvSubscribe to include an output parameter with invalid event ids • Updated EvUnsubscribe to include an output parameter with invalid subscription IDs • Add definition of serviceType enumeration
V0.06	2008.08.20	• Add pcrDrError, pcrFoError and pcrOjError to tr101290Type enumeration • Add svcUndefStreamAllowed to templRule enumeration
V0.05	2008.08.02	• Changed captStatus “idle” enumeration value to “stopped” • Changed tr101290Type “overall” enumeration value to “tr101290Overall” • Changed templRule “overall” enumeration value to “templateOverall” • Replaced duplicate occurrence of the metedataPes enumeration value by metadataSdp • Corrected several typos found by Fen • Updated definition of EvCreateComposite: composite event name is now an input parameter
V0.04	2008.06.24	• Review by SD
V0.03	2008.06.24	• First complete draft for internal review • Removed XML description; XML description shall be made available in the form of a WSDL file, so no need to duplicate the work in this document
V0.02	2008.06.10	• Extended specification • Add both pseudo-C and XML description for each method and type defined in this document.
V0.01	2008.06.05	• Fen Technology first revision
V0.00	2007.01.28	• Initial version

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Document Conventions

This document uses pseudo-C to describe data types, structures and SOAP calls. The text box below provides an example of pseudo-C code used in this document.

```
enum myEnumeration {
   enumValue1                 // Enumeration value 1
   enumValue2                 // Enumeration value 2
   enumValue3                 // Enumeration value 3
};

struct MyStructT {
   int  Field1                // Integer field
   bool  Field2               // Optional boolean field
   string[3]  Field3          // String list field
   union {
     int  Field4              // Choice 1: integer field
     string  Field5           // Choice 2: string field
   }
};

XpectResultT  MySoapCall (
   [in] int  Par1             // Integer parameter 1
   [in] string  Par2          // String parameter 2
   [out] MystructT[]  Par3    // List of MyStruct items
);
```

The naming convention used is as follows:

- Lower-camel-case for enumerations and enumeration values;
- Upper-camel-case with 'T' suffix for data structures;
- Upper-camel-case for SOAP calls;
- Upper-camel-case for function parameters and structure members.

A gray struct member indicates that the member is optional. In the XML equivalent of pseudo-C this is an optional element.

Struct members or function parameters suffixed by brackets ("**[]**") are lists. If the brackets are left empty the list can have any length. If the brackets contain an index (e.g. "**[4]**"), then the number indicates the maximum size of the list.

A **union** is used to describe a choice between multiple fields.

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AspectRatio

Video ES info Aspect Ratio enumeration.

```
enum AspectRatio {
   arForbidden              // not allowed
   arSquare                 // square sample
   ar4_3                    // display 4:3
   ar16_6                   // display 16:9
   ar221_1                  // display 2.21:1
   arExplicit               // given by AspectRatioX:AspectRatioY
   arReserved               //
};
```

Please refer to **`VideoEsInfoT`** for a full description of enumeration values.

AudioLayer

Audio ES info layer.

```
enum AudioLayer {
   alReserved               // not possible
   al1                      // layer I
   al2                      // layer II
   al3                      // layer III
   alForbidden              // not allowed
};
```

Please refer to **`AudioEsInfoT`** for a detailed description of audio layers.

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AudioMode

Audio ES info mode.

```
enum AudioMode {
   amStereo                  //
   amJointStereo             //
   amDualChannel             //
   amSingleChannel           // Mono
   amCh1Ch2                  // 2 Channel
   amCenter                  // Mono: Centre only
   amLR                      // 2 ch stereo: Left, Right
   amLCR                     // 3 ch stereo: L, Centre, R
   amLRS                     // 2 ch stereo with mono surround: L, R, S
   amLCRS                    // 3 ch stereo with mono surround: L, C, R, S
   amLR_SL_SR                // 4 ch quadrophonic: L, R, LS, RS
   amLCR_SL_SR               // 5 ch surround: L, C, R, LS, RS
   amLCR_SL_SR_LFE           // 5.1 ch: L, C, R, LS, RS, Low Freq Effects
   amLCR_SL_SR_OL_OR_LFE     // 7.1 ch: L, C, R, LS, RS, Outside L, OR, LFE
   amUnknown                 //
};
```

Please refer to **`AudioEsInfoT`** for a detailed description of audio mode channels.

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AudioObjectType

Audio ES info object type, from MPEG-4 Part 3.

```
enum AudioObjectType {
   aotnull                    // = 0 invalid, unspecified
   aotAacMain                 // contains AAC LC
   aotAacLc                   // aka AAC-LC
   aotAacSsr                  // Scalable Sample Rate
   aotLltp                    //
   aotSbr                     // aka HE-AAC Version 1
   aotAacScalable             //
   aotTwinvq                  //
   aotCelp                    //
   aotHvx                     //
   aotResv1                   // reserved
   aotResv2                   // reserved
   aottTsi                    // text To speech interface
   aotMainSynthetic           //
   aotWavetableSynthetic      //
   aotGeneralMidi             //
   aotAlgoSynthesisAndAudioFxe
   aotErAacLc                 // Er = Error Resilient
   aotResv3                   // reserved
   aotErAacLtp                //
   aotErAacScalable           //
   aotErTwinvq                //
   aotErBasc                  //
   aotAacLd                   //
   aotErCelp                  //
   aotErHvxc                  //
   aotErHiln                  //
   aotErParametric            //
   aotSsc                     //
   aotPs                      // aka HE-AAC Version 2
   aotMpegSurround            //
   aotEscape                  //
   aotLayer1                  //
   aotLayer2                  //
   aotLayer3                  //
   aotDst                     //
   aotAls                     //
   aotSls                     //
   aotSlsNonCOre              //
   aotErAacEld                //
   aotSmrSimple               //
   aotSmrMain                 //
};
```

Please refer to **`AudioEsInfoT`** for a detailed description of audio object types.

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AudioType

Audio ES info type.

```
enum AudioMode {
   atForbidden                  //
   atAC3                        //
   atMPEG                       //
   atAAC                        //
   atHE_AAC                     //
   atReserved                   //
};
```

Please refer to **AudioEsInfoT** for a detailed description of audio types.

AudioVersion

Audio ES info version.

```
enum AudioVersion {
   avMpeg1                      //
   avMpeg2                      //
   avMpeg25                     //
   avForbidden                  //
};
```

Please refer to **AudioEsInfoT** for a detailed description of audio versions.

bandwidth

Enumerates the bandwidth.

```
enum bandwidth {
   bandwidth_unknown            // Unknown Bandwidth
   bandwidth_1_7_mhz            // 1.7 MHz
   bandwidth_5_mhz              // 5 MHz
   bandwidth_6_mhz              // 6 MHz
   bandwidth_7_mhz              // 7 MHz
   bandwidth_8_mhz              // 8 MHz
   bandwidth_10_mhz             // 10 MHz
};
```

Refer to **ConfGetTsNamesPortInfo** for a detailed description of the enumeration values.

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captStatus

Capture status enumeration.

```
enum captStatus {
   diskFull                  // Disk is full: cannot write capture file
   stopped                   // The capturing process is idle
   flushing                  // Flushing capture buffer to disk
   success                   // Capturing was completed successfully
   timeOut                   // Time-out: incomplete file on disk
   triggered                 // A capture event has occurred and the
                             // capture buffer is being filled
   catureError               // Capture failed due to system error
};
```

Refer to **CaptGetState** for a full description of enumeration values.

captTrigger

Capture trigger type enumeration.

```
enum captTrigger {
   manuallyTriggered         // Manually triggered capture
   eventTriggered            // Event triggered capture
};
```

Refer to **CaptInfoT** for a full description of enumeration values.

CaType

Conditional Access stream type enumeration.

```
enum CaType {
   ctEMM                     // EMM stream type
   ctECM                     // ECM stream type
   ctINVALID                 // Invalid CA stream type
};
```

Refer to **CaptInfoT** for a full description of enumeration values.

ChromaFormat

Video ES info Chroma format enumeration.

```
enum ChromaFormat {
   cfReserved                //
   cf420                     // 4:2:0
   cf422                     // 4:2:2
   cf444                     // 4:2:4
};
```

Please refer to **VideoEsInfoT** for a full description of enumeration values.

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constellationType

Enumerates the constellation.

```
enum constellationType {
   constellation_unknown     // Unknown Constellation
   qam4                      // 4 QAM
   qamnr                     // QAM-NR
   qam16                     // 16 QAM
   qam32                     // 32 QAM
   qam64                     // 64 QAM
   qam128                    // 128 QAM
   qam256                    // 256 QAM
   qpsk                      // QPSK
   vsb8                      // 8 VSB
   vsb16                     // 16 VSB
};
```

Please refer to **VideoEsInfoT** for a full description of enumeration values.

crossCarriedTable

Cross-carried table type enumeration.

```
enum crossCarriedTable {
   EITpf                     // EIT present/following
   EITschedule               // EIT schedule
   EITplusplus               // EIT++ table
   SDT                       // SDT
   BAT                       // BAT
   TDT                       // TDT
   TOT                       // TOT
   NIT                       // NIT
   Reserved                  // Reserved
   RecordableVideo           // Recordable video
   RecordableAudio           // Recordable audio
   PostcodeTables            // Postcode tables
   RNT                       // RNT
};
```

currNextTable

Current/next table enumeration.

```
enum currNextTable {
   currTable                 // Current table
   nextTable                 // Next table
};
```

Refer to **TableIdT** declaration for a full description of enumeration values.

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extraTestT

Enumerates extra tests.

```
enum extraTest {
   extraOverall              // Overall extra test
   ipQos                     // IP QoS
   ipQosDf                   // IP QoS delay-factor
   ipQosMlr                  // IP QoS media-loss-rate
   tableVersion              // Table version
   tableVersionError         // Table version: version error
   tableVersionChanged       // Table version: table changed
   tableVersionUnchanged     // Table version: table unchanged
   frozenAv                  // Frozen-AV tests
   frozenVideo               // Frozen-AV: frozen video
   blackVideo                // Frozen-AV: black video
   silentAudio               // Frozen-AV: silent audio
};
```

Refer to **`ExtraTestIdT`** for a detailed description of enumeration values.

EventAttributeSemantic

Event attribute possible semantic types.

```
enum EventAttributeSematic {
   syncByte                  // Sync Byte
   pid                       // PID
   contCount                 // Continuity Count
   packetSize                // Packet size
   streamType                // Stream Type
   streamCount               // Basicstream Count
   serviceId                 // Service Id
   serviceName               // Service Name
   serviceCount              // Service Count
   tableVer                  // Table Version
   tableId                   // Table Id
   tableIdExt                // Table Id Extension
   pcrDiff                   // Notification event
   pcrAc                     // PCR Accuracy
   pcrFo                     // PCR Frequency Offset
   pcrDr                     // PCR Drift Rate
   pcrOj                     // PCR Overall Jitter
   bitrate                   // Bitrate
   ipQosDelayFactor          // IP QOS Delay Factor
   ipQosMediaLossRate        // IP QOS Media Loss Rate
   transportStreamId         // Transport Stream Id
   repItv                    // Table repetition interval
   ruleIndex                 // EventId rule Id
   general                   // General (string type)

};
```

Refer to **`EventAttributeT`** for usage information.

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EventAttributeType

Event attribute possible units of measurement.

```
enum EventAttributeType {
   bitsPerSecond              // bps
   timeInNanoSecs             // ns
   timeInMicroSecs            // us
   timeInMilliSecs            // ms
   partsPerMillion            // ppm
   partsPerMillion            // ppm
   partsPerMillionPerNanoSec // ppm/ns
   packetsPerSec              // pps
   float                      //
   integer                    // 32 bit Integer
   integer64                  // 64 bit Integer
   string                     //
};
```

Refer to **`EventAttributeT`** for usage information.

eventType

Type of event.

```
enum eventType {
   notification               // Notification event
   logged                     // Logged event
};
```

Refer to **`EvInfoT`** for a detailed description of enumeration values.

InputType

Video ES info Frame Rate enumeration.

```
enum InputType {
   itUnknown                  //
   itASI_SDI                  //
   itMOD                      //
   itIP                       //
   itSPI                      //
};
```

Please refer to **`AvailablePortsT`** for a full description of enumeration values.

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FrameRate

Video ES info Frame Rate enumeration.

```
enum FrameRate {
   frForbidden                //
   fr23_976                   //
   fr24                       //
   fr25                       //
   fr29_97                    //
   fr30                       //
   fr50                       //
   fr59_94                    //
   fr60                       //
   frExplicit                 // value in FrameRateVal
   frReserved                 //
};
```

Please refer to **VideoEsInfoT** for a full description of enumeration values.

ipFecMode

SMPTE-2022-1 FEC mode.

```
enum ipFecMode {
   fec2d                      // SMPTE-2022-1 FEC
   fecNone                    // No FEC
};
```

Refer to **IpForwParsT** for a full description of enumeration values.

ipProt

IP protocol.

```
enum ipProt {
   udp                        // UDP protocol
   rtp                        // RTP protocol
};
```

Refer to **IpForwParsT** for a full description of enumeration values.

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modulationStandard

Enumerates the modulation.

```
enum modulationStandard {
   modulation_unknown          // Unknown Modulation
   adtbt                       // ADTB Terrestrial
   atsc                        // ATSC
   dmbth                       // DTMB Terrestrial/Handheld
   dvbc                        // DVB Cable
   dvbc2                       // DVB Cable 2
   dvbt                        // DVB Terrestrial
   dvbt2                       // DVB Terrestrial 2
   dvbs                        // DVB Satellite
   dvbs2                       // DVB Satellite 2
   isdbt                       // ISDB Terrestrial
   qamb                        // QAM Annex B
   qamc                        // QAM Annex C
};
```

Refer to ConfGetTsNamesPortInfo for a detailed description of the enumeration values

monState

Monitoring process state.

```
enum monState {
   active                      // Monitoring process is active
   idle                        // Monitoring process is idle
   idle_not_configured         // Idle and not configured
};
```

Refer to **`ConfGetMonitoringState`** for a full description of enumeration values.

monStatus

Monitoring status.

```
enum monStatus {
   unknown                     // Unknown/undetermined
   disabled                    // Statistic item disabled  noErrors
   noErrors                    // No errors detected
   error                       // One or more violations detected
};
```

Refer to **`StatGetMonStatus`** for a full description of enumeration values.

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mpegStreamType

MPEG stream-type enumeration

```
enum mpegStreamType {
   mpeg1Video                // MPEG-1 video
   mpeg2Video                // MPEG-2 video
   mpeg1Audio                // MPEG-1 audio
   mpeg2Audio                // MPEG-2 audio
   privateSections           // Private sections
   privateData               // Private data
   mheg                      // MHEG
   dsmcc                     // DSMCC
   h222-1                    // H222-1
   iso13818-6-TypeA          // 13818-6 Type A
   iso13818-6-TypeB          // 13818-6 Type B
   iso13818-6-TypeC          // 13818-6 Type C
   iso13818-6-TypeD          // 13818-6 Type D
   auxiliary                 // Auxiliary
   aacAudio                  // AAC audio
   mpeg4Video                // MPEG-4 video
   mpeg4Audio                // MPEG-4 audio
   mpeg4Pes                  // MPEG-4 PES
   mpeg4Sections             // MPEG-4 sections
   iso13818-6-Sdp            // 13818-6 SDP
   metadataPes               // Metadata PES
   metadataSections          // Metadata sections
   metadataDc                // Metadata DC
   metadataOc                // Metadata OC
   metadataSdp               // Metadata SDP
   ipmpStreamMpeg2           // IPMP stream MPEG-2
   avcVideo                  // AVC video
   ipmpStream                // IPMP stream
   teletextData              // DVB teletext
   subtitlesData             // DVB subtitling
   ac3Audio                  // DVB AC3
   ddPlus                    // DVB dd plus
   dts                       // DVB DTS
   digicipher                // Digicipher-2 video
   hevcH265Video             // HEVC H265 video atscAc3   // ATSC AC-3
audio
   pcrPid                    // PCR-only PID
   scte35                    // SCTE-35 data
   streamTypeReserved        // Reserved
};
```

Refer to **`StreamTypeT`** for a full description of enumeration values.

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polarisation

Enumerates the polarisation.

```
enum polarisation {
   polarisation_horizontal   // Horizontal Polarisation
   polarisation_vertical     // Vertical Polarisation
};
```

Currently unused.

scrambledStatus

Scrambled Status.

```
enum scrambledStatus {
   NotScrambled              //
   ScrambledReserved         //
   ScrambledEven             //
   ScrambledOdd              //
};
```

Please refer to **BsInfoT** for a description of scrambled status codes.

settingsType

Settings type.

```
enum settingsType {
   generalType               // General settings
   extraTests                // Extra test settings
   templateTests             // Template settings
   tr101290                  // TR101290 settings
   mosaicType                // Mosaic settings
};
```

Refer to **SettingsInfoT** for a full description of enumeration values.

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serviceType

Service type.

```
enum serviceType {
   unknownSvcType            // Unknown service type
   digitalTv                 // Digital television service
   digitalRadio              // Digital radio service
   teletext                  // Teletext service
   nvodReference             // NVOD reference service
   nvodTimeShifted           // NVOD time shifted service
   mosiac                    // Mosiac service
   advancedCodecRadio        // AAC radio service
   advancedCodecMosaic       // AVC mosiac service
   dataBroadcast             // Data broadcast service
   commonInterface           // Common interface service
   rcsMap                    // RCS MAP service
   rcsFls                    // RCS FLS service
   dvbMhp                    // MHP service
   mpeg2HdTv                 // HD MPEG-2 television service
   avcSdTv                   // SD AVC television service
   avcSdNvodTimeShifted      // SD AVC NVOD time shifted service
   avcSdNvodReference        // SD AVC NVOD reference service
   avcHdTv                   // HD AVC television service
   avcHdNvodTimeShifted      // HD AVC NVOD time shifted service
   avcHdNvodReference        // HD AVC NVOD reference service
};
```

Refer to **SvcInfoT** for a full description of enumeration values.

statLogType

Statistics-log type.

```
enum statLogType {
   shortTerm                 // Short-term statistics
   mediumTerm                // Medium-term statistics
   longTerm                  // Long-term statistics
};
```

Refer **StatLogGetEntriesByTime** to for detailed description of enumeration values.

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statItemType

Type of statistics item.

```
enum statItemType {
   ts                          // Transport-Stream statistics
   basicStream                 // Basic stream statistics
   service                     // Service statistics
   table                       // Table statistics
   tr101290Indicator           // Tr101290 indicator statistics
   templateRule                // Template rule statistics
   extraTest                   // Extra test statistics
   all                         // All statistics
};
```

Refer **StatIdT** to for detailed description of enumeration values.

subtitleType

Type of subtitle item.

```
enum subtitleType {
   dvbSubtitle                 // DVB Subtitle
   ttxSubtitle                 // Teletext subtitle
};
```

Refer to **SubtitleDescrT** to for a detailed description of enumeration values

systemEvent

Type of system events.

```
enum systemEvent {
   tsCapture                   // Transport stream capture event
   inputOverflow               // Overflow of input buffer event
   inputDeviceDisconnected     // Input hardware has been disconnected
   inputDeviceInvalidSync      // Invalid Sync byte detected
   settingsChanged             // Changed active settings
   ipForwardingAborted         // IP forwarding aborted due to timeout
};
```

Refer **SystemEventIdT** for a detailed description of enumeration values.

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templRule

Type of template rule.

```
enum templRule {
   templateOverall          // Overall template
   transportStream          // TS template
   tsId                     // TS: transport-stream ID
   tsNumSvc                 // TS: number of services
   tsPckSize                // TS: packet size
   tsBitrate                // TS: bitrate range
   basicStreamRule          // Basic-stream
   bsPresence               // Basic-stream: presence
   bsStreamType             // Basic-stream: stream-type
   bsScrambled              // Basic-stream: scrambled yes/no
   bsPcrStatus              // Basic-stream: PCR status
   bsBitrate                // Basic-stream: bitrate range
   basicStreamGroup         // Basic-stream group
   bsGroupNumStreams        // Basic-stream group: #basic streams
   bsGroupBitrate           // Basic-stream group: bitrate range
   tableRule                // Table
   tablePresenceReq         // Table: presence
   tableRepItv              // Table: repetition rate
   serviceRule              // Service
   svcPresence              // Service: presence
   svcId                    // Service: service ID
   svcName                  // Service: service name
   svcPmtPid                // Service: PMT PID
   svcPcrPid                // Service: PCR PID
   svcScrambled             // Service: scrambled yes/no
   svcBitrate               // Service: bitrate range
   svcUndefStreamAllowed    // Service: undefined streams allowed
   svcScte35                // Service: ATSC SCTE-35 status
};
```

Refer to **`TemplRuleIdT`** for a detailed description of enumeration values.

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tr101290Type

Enumerates the TR 101 290 indicators.

```
enum tr101290Type {
   tr101290Overall          // All Tr101290 indicators
   priority1                // Priority 1
   priority2                // Priority 2
   priority3                // Priority 3
   tsSyncLoss               // TsSyncLoss
   syncByteError            // SyncByteError
   patError2                // PatError2
   ccError                  // CcError
   pmtError2                // PmtError2
   pidError                 // PidError
   transportError           // TransportError
   crcError                 // CrcError
   pcrRepError              // PcrRepError
   pcrDiscIndError          // PcrDiscIndError
   pcrAcError               // PcrAcError
   ptsError                 // PtsError
   catError                 // CatError
   nitActualError           // NitActualError
   nitOtherError            // NitOtherError
   siRepError               // SiRepError
   bufError                 // BufError
   unreferencedPid          // UnreferencedPid
   sdtActualError           // SdtActualError
   sdtOtherError            // SdtOtherError
   eitActualError           // EitActualError
   eitOtherError            // EitOtherError
   eitPfError               // EitPfError
   rstError                 // RstError
   tdtError                 // TdtError
   emptyBufError            // EmptyBufError
   dataDelayError           // DataDelayError
   pcrMeasurements          // Global PCR measurement (DR, FO, OJ) error
   pcrDriftRateError        // PCR Drift-Rate error
   pcrFreqOffsetError       // PCR Frequency-Offset error
   pcrOverallJitterError    // PCR Overall-Jitter error
};
```

Refer to **`Tr101290IdT`** for a detailed description of the enumeration values.

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VideoType

Video ES info type.

```
enum VideoType {
   vtForbidden              // not allowed
   vtAVC                    // AVC
   vtMPEG                   // MPEG2
   vtVC1                    // VC1
   vtHEVC                   // HEVC/H265
   vtReserved               // Reserved (do not use)
};
```

Please refer to **`VideoEsInfoT`** for a detailed description of the enumeration values.

xpectResultCode

Xpect result codes.

```
enum xpectResultCode {
   alreadyExists            // Object already exists
   captureBusy              // Capture already in progress
   invalidEventId           // Invalid event ID
   invalidIpPars            // Invalid IP a paremeters
   invalidTimeout           // Invalid timeout
   maxNumSessions           // Maximum number of sessions reached
   noSnapShot               // No snapshot exists
   noSuchSession            // Session does not exist
   noSuchTs                 // Referenced Transport-stream does not exist
   noSuchSettingsId         // Unknown settings id
   notConfigMode            // Not in configuration mode
   notIdle                  // Monitoring state is not idle
   ok                       // Call was successful
   outOfResources           // No more resources available
   seqNrError               // Invalid sequence number
   unknownEventId           // Unknown event id
   unknownSubscrId          // Unknown subscription id
   invalidXml               // XML string passed is invalid
};
```

Please refer to result sections of SOAP calls for a detailed description of result codes.

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xpectStreamingResultCode

Xpect streaming result codes.

```
enum xpectStreamingResultCode {
   streamingAudioVideoSuccess     //
   streamingVideoSuccess      //
   streamingAudioSuccess      //
   errorStreamingDisabled     //
   errorMaxSessions           //
   errorNoAudioPids           //
   errorServiceScrambled      //
   errorNoSync                //
   errorStartFailed           //
   errorInitFailed            //
   errorNoFreePort            //
   errorUnkownError           //
};
```

Please refer to the **`PreviewSelectService`** SOAP call for a detailed description of result codes.

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AdapterT

Structure identifying a DekTec input adapter.

```
struct AdapterT {
   int64  Serial              // Serial number of adapter
   int  Port                  // Physical port number on Adapter

};
```

Members

Serial
Serial number of the DekTec adapter.

Port
Physical port number on the DekTec adapter.

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AudioEsInfoT

Audio Extra Stream info

```
struct AudioEsInfoT {
   AudioType  Type           // Type of audio info
   AudioVersion  Version     //
   AudioLayer  Layer         //
   AudioMode  Mode           // channel information
   AudioProfile  Profile     //
   AudioObjectType  ObjectType
                             // Type of audio info
   int BitRate               //
   int SampleRate            //
   int DialogueNormalisation //
   bool Copyright            //
   bool Original             //
   bool SpectralBandReplication  //
   bool ParametricStereo     //
   AudioMetadataT AudioMetadata // Audio metadata
};
```

Members

Type
Defines the encoding type of the audio.

Version
Defines the MPEG version.

Layer
Defines the layer (I, II or III).

Mode
Defines the channel mode of the audio.

Profile
Defines the audio profile.

ObjectType
Defines the MPEG-4 object type.

Bitrate
Bitrate.

SampleRate
Sample rate.

DialogueNormalisation
TRUE if dialogue is normalised.

Copyright
TRUE if audio is copyright.

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Original
TRUE if audio is original.

SpectralBandReplication
TRUE if audio spectral band is replicated.

ParametricStereo
TRUE if stereo is parametric.

AudioMetadata
Audio stream metadata, if present.

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AudioMetadataT

Audio Stream Metadata info.

For HE-AAC metadata item definitions, see ETSI TS 101 154 v1.7.1 section D.4.2 and ISO/IEC 14496-3 Table 4.52.

For AC-3 metadata item definitions, see A/52B "Digital Audio Compression Standard (AC-3, E-AC-3) Revision B" section 5.4.2.

```
struct HEAACMetadataT {
  bool ancillaryDataPresent;
  MpegAudioType ancillDataMpegAudioType;
  DolbySurroundMode ancillDataDolbySurroundMode;
  bool ancillDataDownmixLevelsPresent;
  bool ancillDataCenterMixLevelOn;
  int  ancillDataCenterMixLevelValue;
  bool ancillDataSurroundMixLevelOn;
  int  ancillDataSurroundMixLevelValue;
  bool ancillDataAudioCodingModePresent;
  int  ancillDataAudioCodingModeValue;
  int  ancillDataCompressionValue;
  bool ancillDataCoarseGrainTimecodePresent;
  bool ancillDataCoarseGrainTimecodeOn;
  int  ancillDataCoarseGrainTimecodeValue;
  bool ancillDataFineGrainTimecodePresent;
  bool ancillDataFineGrainTimecodeOn;
  int  ancillDataFineGrainTimecodeValue;
  bool dynamicRangeControlInfoPresent;
  bool dynRangePceTagPresent;
  int  dynRangePceInstanceTag;
  bool dynRangeExcludedChansPresent;
  IntArrayA dynRangeExcludeMask;
  int  dynRangeAddionalExcludedChans;
  bool dynRangeBandsPresent;
  int  dynRangeBandIncr;
  DrcInterpolationScheme dynRangeInterpolationScheme;
  IntArrayA dynRangeBandTop;
  bool dynRangeProgRefLevelPresent;
  int  dynRangeProgRefLevel;
  IntArrayA dynRangeRngSng;
  IntArrayA dynRangeRngCtl;
};

struct AC3MetadataT {
  int  bsId;
  AC3BsMod bsMod;
  AC3AcMod acMod;
  AC3CMixLevel cMixLev;
  AC3SurMixLevel surMixLev;
  AC3DolbySurroundMode dSurMod;
  bool lfeOn;
  int  dialNorm;
  bool compre;
  int  compr;
```

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```
  bool langCode;
  int  langCod;
  bool audProdie;
  int  mixLevel;
  AC3RoomType roomType;
  int  dialNorm2;
  bool compr2e;
  int  compr2;
  bool langCod2e;
  int  langCod2;
  bool audProdi2e;
  int  mixLevel2;
  AC3RoomType roomType2;
  AC3Copyright copyrightb;
  AC3OriginalBitstream origbs;
  bool timeCod1e;
  bool timeCod2e;
  int  timeCod1;
  int  timeCod2;
  bool addBsie;
  int  addBsil;
  IntArrayA addBsi;
};

union {
  HEAACMetadataT HEAACMetadata;
  AC3MetadataT AC3Metadata;
};
```

Members

HEAACMetadata
HE-AAC Metadata.

AC3Metadata
AC-3 Metadata.

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AvailableMosaicScreenT

Description of the size of an available Mosaic Screen.

```
struct AvailableMosaicScreenT {
   int  ScreenId             // Screen ID
   int  ResolutionWidth      // Screen width
   int  ResolutionHeight     // Screen height
};
```

Members

ScreenId
An ID number to identify the screen.

ResolutionWidth
Horizontal resolution.

ResolutionHeight
Vertical resolution.

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AvailablePortsT

Description of an available input ports.

```
struct AvailablePortsT {
   int  TypeNumber           // Dektec adapter type
   int64  SerialNumber       // Serial number of adapter
   int  Port                 // Port on adapter
   InputType  InputType      // Type of input
   bool  InUse               // Flag set if port in use
   int  Points               // Number of license points available
   int64  MacAddr            // MAC address of NIC adapter };
```

Members

TypeNumber
The type number of the Dektec adapter.

SerialNumber
The serial number of the Dektec adapter.

Port
The port number.

InputType
The input type of the port.

InUse
Flag set if the port is currently being used.

Points
Number of license points available on this adapter. Note that this number is per adapter, not per port and each port will report the total available for the adapter.

MacAddr
The MAC address of the port, if the port is a Network Interface Card (NIC). Zero for non-NIC ports.

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BsInfoT

Basic-stream status information.

The information in this structure applies to the “current” information, this is the status at the time of the snapshot.

```
struct BsInfoT {
   int  Pid                  // PID
   bool  IsPresent           // Stream is present
   int  ServiceId            // Service ID of the containing service
   StreamTypeT  StreamType   // Stream-type
   int  Bitrate              // Bitrate in bps
   bool  CarriesPcr          // Stream carries a PCR
   scrambledStatus ScrambledStatus
                             // Stream scrambled type
   int  PcrAc                // PCR AC
   int  PcrDr                // PCR DR
   int  PcrFo                // PCR FO
   int  PcrOj                // PCR OJ
   int  PcrInterval          // PCR Interval
   union {
     AudioEsInfoT  AudioInfo
     VideoEsInfoT  VideoInfo
     CaEsInfoT  CaInfo
   }
};
```

Members

Pid
The PID of the basic-stream.

IsPresent
Basic stream is present in the Transport Stream.

ServiceId
Optional field with service ID of the service this basic stream belongs to. If this field is omitted the basics stream is not part of a service.

StreamType
Optional field with stream type as indicated by the PMT. If this field is omitted the stream type is unknown.

Bitrate
Current bitrate of the basic stream in bps.

CarriesPcr
Basic stream is carrying a PCR.

ScrambledStatus
An enumeration of the scramble status of the Basic stream. NotScrambled indicates an un-scrambled stream.

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PcrAc
PCR Accuracy in ns. This field is present only if *CarriesPcr* is true.

PcrDr
PCR Drift Rate in ppm/h. This field is present only if *CarriesPcr* is true.

PcrFo
PCR Frequency Offset in ppm. This field is present only if *CarriesPcr* is true.

PcrOj
PCR Overall Jitter in ns. This field is present only if *CarriesPcr* is true.

PcrInterval
PCR interval in ms. This field is present only if *CarriesPcr* is true.

AudioInfo
Structure containing ES audio info.

VideoInfo
Structure containing ES video info.

CaInfo
Structure containing Conditional Access info.

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BsPtwsT

Presence-Time-Window settings for basic streams.

```
struct BsPtwT {
   union {
     int  Pid                // PID of the basic stream
     StreamTypeT  StreamType // Stream type of the basic stream
   }
   int  Ptw                  // Length of Presence Time Window in ms
};

struct BsPtwsT {
   int  DefaultPtw           // Default length of PTW for basic streams
   BsPtwT[]  Ptws            // List of PTWs per PID/stream type
};
```

Members

Pid
Defines the PID of the basic-stream to which *Ptw* applies.

StreamType
Defines the stream type of the basic stream to which *Ptw* applies.

Ptw
Length of Presence Time Window in ms.

DefaultPtw
Default length of Presence Time Window in ms.

Ptws
List of Presence Time Windows per PID or stream type.

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BsStatsT

Basic-stream statistics over a statistics-log period.

```
struct BsStatsT {
   int  Pid                 // PID
   int  PresenceSec         // #seconds the stream was present
   MinMaxAvgIntT  Bitrate   // Bitrate statistics (avg/min/max)
   int  PcrSec              // #seconds the stream carried a PCR
   int  CcErrors            // Number of continuity count errors
   int  ScrambledSec        // #seconds the stream was scrambled
   MinMaxAvgIntT  PcrAc     // PCR AC statistics (avg/min/max)
   MinMaxAvgIntT  PcrDr     // PCR DR statistics (avg/min/max)
   MinMaxAvgIntT  PcrFo     // PCR FO statistics (avg/min/max)
   MinMaxAvgIntT  PcrOj     // PCR OJ statistics (avg/min/max)
   MinMaxAvgIntT  PcrItv    // PCR Interval statistics (avg/min/max)
};
```

Members

Pid
The PID of the basic stream.

PresenceSec
Number of seconds that the basic stream was present.

Bitrate
Average, minimum, and maximum bitrate.

PcrSec
Number of seconds that the basic stream was carrying a PCR.

CcErrors
Number of continuity-count errors.

ScrambledSec
Number of seconds that the basic stream was scrambled.

PcrAc
Average, minimum and maximum PCR Accuracy in ns. This field is only present if *PcrSec* is not zero.

PcrDr
Average, minimum and maximum PCR Drift Rate in ppm/h. This field is only present if *PcrSec* is not zero.

PcrFo
Average, minimum and maximum PCR Frequency Offset in ppm. This field is only present if *PcrSec* is not zero.

PcrOj
Average, minimum and maximum PCR Overall Jitter in ns. This field is only present if *PcrSec* is not zero.

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PcrItv

Average, minimum and maximum PCR interval in ms. NOTE: this field is only present if *PcrSec* is not zero.

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CaEsInfoT

Conditional Access Stream info.

```
struct CaEsInfoT {
   CaType  Type               // Type of CA info
   int  CaSystemId            // CA System ID
   string  CaProviderName     // CA System provider name
};
```

Members

Type

Defines the stream type of this CA stream.

CaSystemId

Defines the CA System ID.

CaProviderName

Defines the CA System provider name.

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CaptConfigT

Configuration parameters for a stream capture.

```
struct CaptConfigT {
   int  CaptBufP              // Size of pre-trigger buffer in MB
   int  CaptBufQ              // Size of post-trigger buffer in MB
   string  CaptUrl            // URL of capture directory
   int  MinDiskFree           // Minimum amount of free disk space in MB
};
```

Members

CaptBufP
Size of pre-trigger capture buffer in MB.

CaptBufQ
Size of post-trigger capture buffer in MB.

CaptUrl
URL of directory where capture files are stored.

MinDiskFree
Minimum amount of free disk space (in MB) to remain after storing the stream-capture file.

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CaptInfoT

Stream-capture information.

```
struct CaptInfoT {
   captTrigger  CaptTrigger  // Trigger type
   EvInfoT  EventInfo        // Event that caused the capture
   captStatus  Status        // Status of this stream capture
   string  TsUrl             // URL of TS-capture file
   string  TsTimUrl          // URL of time-stamp file
   int64  TsSize             // Size of TS-capture file
   int  NumDropOuts          // Number of drop outs
   bool  DropOutAtEnd        // Drop out occurred at end of capture
};
```

Members

CaptTrigger

Type of trigger that initiated the capture.

Value	Meaning
manuallyTriggered	Capture was triggered manually
eventTriggered	Capture was triggered by an event condition

EventInfo

Information about the event that caused the stream capture.

Status

Capturing status.

TsUrl

URL of TS-capture file that will be created or to which data currently is being flushed. If the capturing state is **stopped**, *TsUrl* is empty.

TsTimUrl

URL of time-stamp file.

TsSize

Size of the Transport-Stream capture file in number of bytes. In the case of Transport-Stream dropouts, the size of the capture file may be less than the configured size of the capture buffer.

NumDropOuts

Number of Transport-Stream drop outs that have occurred during capturing.

DropOutAtEnd

True if a drop out has occurred at the end of the capture. In this case, the capture must have been terminated by a time out (*Status* is **captTimeOut**).

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CatContentT

CAT table content.

```
struct CatSystemEntryT {
   int  CaSystemId           // CA System Id
   int  CaPid                // CA stream PID
   string  CaProviderName    // CA System provider name
};

struct CatContentT {
   int  NumCaSystems         // Number of CA systems defined in the CAT
   CatSystemEntryT[] CaSystemInfo // List of CA Systems
};
```

Members

CaSystemId
CA System ID.

CaPid
CA stream PID.

CaProviderName
CA System provider name.

NumCaSystems
Number of CA systems defined in CAT.

CaSystemInfo
List of CA system info [0..(NumCaSystems-1)].

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EitPfContentT

EIT-Actual Present/Following and EIT-Other Present/Following table content information.

```
struct EitPfContentT {
   int  TsId                  // Transport stream ID
   int  OnId                  // Original network ID
   int  ServiceId             // Service ID
};
```

Members

TsId
Transport stream ID.

OnId
Original network ID.

ServiceId
Service ID.

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EitSchedContentT

EIT-Actual Schedule and EIT-Other Schedule table content information.

```
struct EitSchedContentT {
   int  TsId                  // Transport stream ID
   int  OnId                  // Original network ID
   int  ServiceId             // Service ID
};
```

Members

TsId
Transport stream ID.

OnId
Original network ID.

ServiceId
Service ID.

EventAttributeT

EventAttribute information used by **EventResourcesT**.

```
struct EventAttributeT {
   int  Index                 // Attribute Index
   string  Name               // Readable attribute name
   EventAttributeSemantic  Semantic
                              // Attribute semantic
   EventAttributeType  Type  // Attribute Type
};
```

Members

Index
Attribute Index referring to index in **EventAttribs** array of **EvInfoT**.

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Name
Readable attribute name.

Semantic
Semantic type; for example ‘bitrate’.

Type
Units of measurement for this attribute; for example ‘bps’.

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EventIdT

Event ID structure.

```
struct EventIdT {
   union {
     Tr101290IdT  Tr101290Id      // Identifies TR 101 290 indicator
     TemplRuleIdT  TemplRuleId    // Identifies template rule
     ExtraTestIdT  ExtraTestId    // Identifies extra test
     SystemEventIdT  SystemEventId
                                  // Identifies a system event
     string  CompositeId          // Identifies composite event
     ServNameIdT  ServNameId      // Identifies service name id
   }
};
```

Members

Tr101290Id
Identifies a TR 101 290 indicator.

TemplRuleId
Identifies a template rule.

ExtraTestId
Identifies an extra test.

SystemEventId
Identifies a system event.

CompositeId
String with the name of the composite event.

ServNameId
Identifies service name id.

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EvInfoT

Event information.

```
struct EvInfoT {
   eventType   Type           // Type of event: notification or log
   monStatus   Status         // EventId monitoring status
   bool   MaxEventsExceeded   // Log storm filtering indicator
   string   TsName            // Transport-Stream identifier
   int   SeqNr                // Event sequence number
   time   UtcTime             // UTC time when event was generated
   int   ResId                // Event string identifier
   EventIdT   EventId         // Event identfier
   string[]   EventAttribs    // Event attributes
   string   SettingsIdRef     // ID of active settings file
};
```

Members

Type

Type of event entry.

Value	Meaning
ntfEvent	Notification event
logEvent	Logged event

Status

Monitoring status of this Event.

MaxEventsExceeded

Field indicating Log storm prevention mechanism filtered one or more events of type EventId.

TsName

Ffield with name identifying the monitored Transport-Stream from which the event originated.

SeqNr

If *Type* is **notification**, this field contains the notification sequence number. If *Type* is **logged**, this field contains the log sequence number. In both cases, *SeqNr* is a 31-bit unsigned integer which wraps to 0 at 2^{31}-1. A *SeqNr* of -1 means the event was not logged in the notification or event log.

UtcTime

Time instance at which the event was generated.

ResId

Id of Event description, part of the **EventResourcesT** table in **EvGetStringResources**.

EventId

Event identifier.

EventAttribs

List with optional event attributes.

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SettingsIdRef

ID of the setting file active when the event was entered into the log.

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EventResourcesT

Event Resource structure used by **`EvGetStringResources`**.

```
struct EventResourcesT {
   int  ResId                // Event string identifier
   string  FormattedString   // Description string
   EventAttributeT[]  AttributeDescription
                             // Event attributes array
};
```

Members

ResId
ID of the string resource.

FormattedString
Description string optionally including place holders for event attributes part of AttributeDescription array.
For example: “text {8} more text {9}”.

AttributeDescription
Array including all attributes for this event.

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EvLogConfigT

Structure containing configuration parameters for event logging.

```
struct EvLogConfigT {
   int  NumDaysToLog          // Max. number of days to log
   int  MaxNumEntries         // Max. number of log entries to store
   int  LogStormWindow        // Log storm prevention window (in ms)
   int  LogStormMaxNumEvents // Max. # events to log during prev. window
   int  NotLogDuration        // Duration (in sec) of notification log
   int  NotLogMaxNumEntries  // Maximum # of entries to store in not. Log
   int  TrackActiveEntries   // Enable active-event-tracking
};
```

Members

NumDaysToLog

Maximum number of days to keep in the event-log.

MaxNumEntries

Maximum number of log entries to store in the event-log. If this maximum is exceeded to eldest entries will be purged.

LogStormWindow, LogStormMaxNumEvents

Size of the log storm prevention window (in ms) and the maximum number of events to log during this window.

NotLogDuration, NotLogMaxNumEntries

Duration of the notification log (in sec) and the maximum number of log entries to store.

TrackActiveEntries

Enables the Active-Event Tracking feature if set to 1.

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ErrorStatsT

Error statistics for TR 101 290 indicators, template rules and extra tests.

```
struct ErrorStatsT {
   int  ErrorCount           // Number of errors
   int  ErroredSec           // Errored seconds
   int  ErrorTime            // Time statistic-item was violated
};
```

Members

ErrorCount
Optional field with the number of times the statistics item was violated during the statistics time slice.

ErroredSec
Optional field with the number of errored seconds over statistics time slice.

ErrorTime
Optional field with the total time (in sec) the statistics item was violated during the statistics time slice. *ErrorTime* and *ErroredSec* are mutually exclusive.

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ExtraTestIdT

Identifies an Extra Test

```
struct ExtraTestIdT {
   extraTestT  Type          // Type of extra test
};
```

Members

Type

Specifies the type of the Extra Test.

Value	Meaning
extraOverall	Overall extra test status. Use this type to request the overall status of the extra tests (i.e. to determine if any extra test condition was violated yes/no)
ipQos	Use this type to request the overall status of the IP QoS test (i.e. to determine if any of its sub-tests are violated yes/no)
ipQosDf	IP QOS Delay Factor
ipQosMlr	IP QOS Media Loss Rate
tableVersion	Table version test Use this type to request the overall status of the table version tests
tableVersionError	The table version number changes by another increment then +1
tableChanged	The contents of a table change, but the table-version number remains the same
tableUnchanged	The table version number is incremented by one, but the contents of the table remain unchanged
frozenAv	Frozen-AV test Use this type to request the overall status of the Frozen-AV tests
frozenVideo	The video stream has been still for longer than the timeout
blackVideo	The video stream has been still and unicoloured for longer than the timeout
silentAudio	The audio stream has been below the loudness threshold for longer than the timeout

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IntArrayA

Generic array of integers.

```
struct IntArrayA {
   int  Element[]            // Array element
};
```

Members

Element
Array element.

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IpV4AddrPairT

IPv4 address/port pair.

```
struct IpV4AddrPairT {
   string  IpAddress          // IPv4 address string
   int  Port                  // IP port number
};
```

Members

IpAddress
IPv4 address in dotted number format (e.g. 194.169.54.22).

Port
IP port number.

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IpForwParsT

IP forwarding parameters.

```
struct IpForwParsT {
   bool  ForwEnabled         // IP-forwarding-enabled flag
   union {
     string  LocalNic        // Local NIC to use for IP forwarding
     AdapterT  Adaptor       // DekTec Adapter to use for IP forwarding
   }
   IpV4AddrPairT  IpAddress  // Destination IP address and port
   int  MulticastTtl         // TTL for multicast
   int  NumTpPerTp           // Number
   ipProt  Protocol          // UDP or RTP
   ipFecMode  FecMode        // Error-correction mode
   int  FecNumRows           // 'D' = #rows in FEC matrix
   int  FecNumCols           // 'L' = #columns in FEC matrix
};
```

Members

ForwEnabled

Indicates whether IP forwarding is enabled.

LocalNic

If a local NIC should be is used for IP forwarding this field indentifies the IP address of the local NIC to use. IP address "0.0.0.0" means any local NIC may be used.

Adaptor

If a DekTec adapter should be used for forwarding this field identifies the DekTec adapter to use.

IpAddress

Destination IP address and port number where the Transport-Stream is forwarded to.

MulticastTtl

Time-To-Live (TTL) value to be used for multicast transmission. When *MulticastTtl* is 0, a default value is used.

NumTpPerIp

Number of Transport Packets stored in one IP packet. The valid range is 1..7.

Protocol

Protocol to be used for forwarded stream.

Value	Meaning
udp	UDP
rtp	RTP

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FecMode

Error-correction mode.

Value	Meaning
fec2d	RFC2733 parity FEC with 2D extensions as described in SMPTE-2022-1
fecNone	No FEC

FecNumRows, *FecNumCols*

Number of rows and columns in the FEC matrix. In SMPTE 2022-1 these parameters are called *D* and *L* respectively. The following restrictions apply to *L* and *D*:

$4 \leq D \leq 20, \quad 1 \leq L \leq 20 \quad \text{and} \quad L*D \leq 100$

NOTE: when forwarding via a Local NIC the use of FEC is not possible (i.e. *FecMode*, *FecNumRows* and *FecNumCols* are not used).

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MinMaxAvgIntT

Structure with integer minimum, maximum and average values.

```
struct MinMaxAvgIntT {
   int  Average               // Averarge
   int  Minimum               // Minimum
   int  Maximum               // Maximum
};
```

Members

Average

Average integer value.

Mimumum

Minimum integer value.

Maximum

Maximum integer value.

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MonStatusT

Structure with status and status indicator rule.

```
struct MonStatusT {
   StatIdT  StatId           // Statistic-item identifier
   monStatus  Status         // Monitoring StatId Status
   time  LastErrorTime       // Time of last error
};
```

StatIdverage
Statistic-item identifier.

Status
Monitoring StatId Status.

LastErrorTime
Time of the last error.

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NitContentT

NIT-Actual table content.

```
struct NitTsEntryT {
   int  TsId                  // Elementary stream PID
   int  OnId                  // Elementary stream type
};

struct NitContentT {
   int  NetworkId             // Network ID
   int  TableVersion          // Table version
   int  NumSections           // Number of sections in the table
   string NetworkName         // Network name
   int  NumTss                // Number of TS defined in NIT
   NitTsEntryT[] TsInfo       // List of TS info
};
```

Members

TsId
Elementary stream PID.

OnId
Elementary stream type.

NetworkId
Network ID.

TableVersion
Table version.

NumSections
Number of sections in the table.

NetworkName
Network name.

NumTss
Number of TS defined in NIT.

TsInfo
List of TS info [0..(NumTss-1)].

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OttServiceT

Structure with OTT service name and profilenames.

```
struct OttServiceT {
   string  OttServiceName    // Identifies the OTT service name
   string[]  OttProfilenames // Monitoring profile names
};
```

OttServiceName

Indentifies the OTT service name to which the information in this structure applies.

OttProfilenames

Monitoring profile names.

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OverallStatusT

Overall status information for a transport-stream.

```
struct OverallStatusT {
   string  TsName            // Identifies the transport-stream
   monState  MonState        // Idle / Monitoring
   TsInfoShortT  TsInfo      // Status of transport-stream
   monStatus  Tr101290       // Overall status of TR 101 290
   time  LastTr101290ErrorTime
                             // Time of last TR 101 290 error
   monStatus  ExtraTest      // Overall status of extra tests
   time  LastExtraErrorTime
                             // Time of last Extra error
   monStatus  Template       // Overall status of template rules
   time  LastTemplateErrorTime
                             // Time of last Template error
};
```

Members

TsName
Indentifies the transport-stream to which the information in this structure applies.

MonState
Current monitoring state.

Value	Meaning
active	Xpect is actively monitoring the Transport Stream.
Idle	The monitoring process is idle.

TsInfo
Summary status information for the transport-stream.

Tr101290
Overall status of Tr101290 indicators (i.e. status of **tr101290Overall** indicator).

LastTr101290ErrorTime
The time the last TR 101 290 error was recorded.

ExtraTest
Overall status of Extra-Tests (i.e. status of **extraOverall** test).

LastExtraErrorTime
The time the last Extra-Test error was recorded.

Template
Overall status of Template rules (i.e. status of **templateOverall** rule).

LastTemplateErrorTime
The time the last Template rule violation error was recorded.

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OverallOttStatusT

Overall status information for a transport-stream.

```
struct OverallStatusT {
   string  OttServiceName    // Identifies the OTT service name
   monState  MonState        // Idle / Monitoring
   monStatus  Tr101290       // Overall status of TR 101 290
   time  LastTr101290ErrorTime
                             // Time of last TR 101 290 error
   monStatus  ExtraTest      // Overall status of extra tests
   time  LastExtraErrorTime
                             // Time of last Extra error
   monStatus  Template       // Overall status of template rules
   time  LastTemplateErrorTime
                             // Time of last Template error
};
```

Members

OttServiceName
Indentifies the OTT service name to which the information in this structure applies.

MonState
Current monitoring state.

Value	Meaning
active	Xpect is actively monitoring the Transport Stream.
Idle	The monitoring process is idle.

Tr101290
Overall status of Tr101290 indicators (i.e. status of **tr101290Overall** indicator).

LastTr101290ErrorTime
The time the last TR 101 290 error was recorded.

ExtraTest
Overall status of Extra-Tests (i.e. status of **extraOverall** test).

LastExtraErrorTime
The time the last Extra-Test error was recorded.

Template
Overall status of Template rules (i.e. status of **templateOverall** rule).

LastTemplateErrorTime
The time the last Template rule violation error was recorded.

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PatContentT

PAT table content.

```
struct PatProgramEntryT {
   int  ServiceId            // Program ID (Service ID)
   int  PmtPid               // Program PMT PID
};

struct PatContentT {
   int  TsId                 // Transport Stream ID
   int  TableVersion         // Table version
   int  NumSections          // Number of sections in table
   int  NumPrograms          // Number of programs defined in PAT
   PatProgramEntryT[] ProgramInfo // List of program info
};
```

Members

ServiceId
Program ID (Service ID).

PmtPid
Program PMT PID.

TsId
Transport Stream ID.

TableVersion
Table version.

NumSections
Number of sections in table.

NumPrograms
Number of programs defined in PAT.

ProgramInfo
List of program info [0..(NumPrograms-1)].

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PcrPtwsT

Presence-Time-Window settings for PCRs.

```
struct PcrPtwT {
   int  MinPid                // Minimum PID value
   int  MaxPid                // Maximum PID value
   int  Ptw                   // Length of Presence Time Window in ms
};

struct PcrPtwsT {
   int  DefaultPtw            // Default length of Presence Time Window
   PcrPtwT[]  Ptws            // List of PTWs per PID
};
```

Members

MinPid, MaxPid
Defines the PID range to which *Ptw* applies. If *MinPid* and *MaxPid* are equal one specific PID is identified.

Ptw
Length of PCR Presence Time Window in ms.

DefaultPtw
Default length of Presence Time Window in ms.

Ptws
List of PCR Presence Time Window per PID.

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PmtContentT

PMT table content.

```
struct PmtStreamEntryT {
   int  StreamPid                 // Elementary stream PID
   int  StreamType                // Elementary stream type
};

struct PmtContentT {
   int  PcrPid                         // PCR PID
   int  NumStreams                     // Number of ES defined in PMT
   PmtStreamEntryT[] StreamInfo        // List of stream info
   TunnelledSiDescrT[] TunnelledSiInfo // List of cross-carried SI tables
   SubtitleDescrT[] SubtitleInfo       // List of subtitles carried
};
```

Members

StreamPid
Elementary stream PID.

StreamType
Elementary stream type.

PcrPid
PCR PID.

NumStreams
Number of ES defined in PMT.

StreamInfo
List of stream info [0..(NumStreams-1)].

TunnelledSiInfo
List of cross-carried SI tables.

SubtitleInfo
List of subtitles carried.

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PortInfoAsiT

Information for an ASI port.

```
struct PortInfoAsiT {
   int  Port                  // Port number
};
```

Members

Port
ASI Port number of the connection.

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PortInfoIpT

Information for an IP port.

```
struct PortInfoIpT {
   string  IpAddress          // IP address
   int  Port                  // Port number
};
```

Members

IpAddress

A string containing the IP address of the port connection.

Port

IP Port number of the connection.

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PortInfoRfT

Information for an RF port.

```
struct PortInfoRfT {
   modulationStandard  ModulationStandard
                              // modulation standard
   int   Freq_kHz             // Frequency in KHz
   bandwidth   Bandwidth      // Bandwidth enumeration
};
```

Members

ModulationStandard
Modulation standard of this port as defined in *modulationStandard* enumeration.

Freq_kHz
Port frequency in units of 1 KHz.

Bandwidth
Bandwidth of this port as defined in *bandwidth* enumeration.

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RfInfoT

Radio-Frequency (RF)- status information.

The information in this structure applies to the “current” information, this is the status at the time of the snapshot.

```
struct RfInfoT {
   int  TsId                 // TS ID
   bool  RfInfoPresent       // RF Info is present
   AdapterT RfAdapter        // Input adapter info
   int  RfLevel              // RF-Level in dBm
   int  RfMer                // RF MER in 0.1 dB
   double  RfBerPostBch      // RF Bit Error Rate
   int  RfSnr                // RF SNR in 0.1 dB
   int  RfSymbolRate         // Symbol Rate for DVB-S(2) inputs only
   bool  RfSyncLock          // RF sync is locked
   double  RfCarrierFreqOffset   // RF Carrier Frequency Offset
   double  RfBitrateOffset   // RF Bitrate Offset
   double  RfBerPreLdpc      // RF Bit Error Rate: Pre-LDPC
   double  RfBerPostLdpc     // RF Bit Error Rate: Post-LDPC
   int  RfLdpcIterations     // RF LDPC Iterations
   double  RfBerPreBch       // RF Bit Error Rate: Pre-BCH
   double  RfBerPreRs        // RF Bit Error Rate: Pre-RS
};
```

Members

TsId
The ID of the Transport Stream arriving through this input adapter.

RfInfoPresent
The following RF info is present.

RfAdapter
The input adapter in use for this Transport Stream.

RfLevel
RF Power Level in dBm.

RfMer
RF-MER in 0.1 dB.

RfBerPostBch
RF Post-BCH Bit Error Rate.

RfSnr
RF-SNR in 0.1 dB.

RfSymbolRate
RF Symbol Rate in symbols/s, for DVB-S(2) input adapters only. Other adapter types return zero.

RfSyncLock
RF Carrier Lock status.

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RfCarrierFreqOffset
RF input frequency shift (Hz).

RfBitrateOffset
RF Sample Rate offset (ppm).

RfBerPreLDPC
RF Pre-LDPC Bit Error Rate.

RfBerPostLdpc
RF Post-LDPC Bit Error Rate.

RfLdpcIterations
RF LDPC iterations.

RfBerPreBch
RF Pre-BCH Bit Error Rate.

RfBerPreRs
RF Pre-Reed-Solomon Bit Error Rate.

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RfRcvParsT

RF reception parameters.

```
struct RfRcvParsT {
   TBD
};
```

Members

TBD

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ScramStatusPtwsT

Presence-Time-Window settings for scrambling status.

```
struct ScramStatusPtwT {
   int  MinPid               // Minimum PID value
   int  MaxPid               // Maximum PID value
   int  Ptw                  // Length of Presence Time Window in ms
};

struct ScramStatusPtwsT {
   int  DefaultPtw           // Default PTW for scrambling status
   ScramStatusPtwT[]  Ptws   // List of PTWs per PID
};
```

Members

MinPid, MaxPid
Defines the PID range to which *Ptw* applies. If *MinPid* and *MaxPid* are equal one specific PID is identified.

Ptw
Length of Presence Time Window for scrambling status in ms.

DefaultPtw
Default length of Presence Time Window for scrambling status.

Ptws
List of Presence Time Windows for scrambling status per PID.

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SdtContentT

SDT-Actual table content.

```
struct SdtServiceEntryT {
   int  ServiceId            // Service ID (Program ID)
   bool UnscrambledCaMode    // Scrambling mode
   int  ServiceType          // Service type
   string ServiceName        // Service name
   String ServiceProvider    // Provider name
};

struct SdtContentT {
   int  TsId                 // Transport stream ID
   int  OnId                 // Original network ID
   int  NumServices          // Number of services defined in SDT
   SdtServiceEntryT[] ServiceInfo// List of service info
};
```

Members

ServiceId
ID (Program ID).

UnscrambledCaMode
Scrambling mode, TRUE = unscrambled.

ServiceType
Service type.

ServiceName
Service name.

ServiceProvider
Provider name.

TsId
Transport stream ID.

OnId
Original network ID.

NumServices
Number of services defined in SDT.

ServiceInfo
List of service info [0..(NumServices-1)].

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ServNameIdT

ServName ID

```
struct ServNameIdT {
   int  ServiceId            // Id of the Service Name
};
```

Members

ServiceId

Specifies the id of the Service Name.

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SettingsInfoT

Standard and user supplied settings information.

```
struct SettingsInfoT {
   string  SettingsId        // Settings identifier
   settingsType  Type        // TR 101 290 / Template / Extra_Tests
   string  Desc              // Settings description
   bool  Active              // true if active for current TS
}
```

Members

SettingsId

Settings identification string.

Type

Type of settings.

Value	Meaning
generalType	General settings
extraTests	Extra Tests
template	Template settings
tr101290	TR 101 290 settings
mosaicType	Mosaic settings

Desc

Settings description string.

Active

True, if this configuration is currently active (i.e. in use by Xpect). False, if the configuration is currently unused.

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StatConfigT

Configuration specifies which statistics to be returned and if a new snapshot should be taken first.

```
struct StatConfigT {
  bool  CreateSnapshot          // Create a new snapshot
  bool  TsInfoNeeded            // Return TsInfoT Statistic data
  bool  BsInfoNeeded            // Return BsInfoT Statistic data
  bool  SvcInfoNeeded           // Return SvcInfoT Statistic data
  bool  TableInfoNeeded         // Return TableInfoT Statistic data
  bool  StatusInfoNeeded        // Return monStatus Statistic data
};
```

Members

CreatSnapshot
Create a new snapshot

TsInfoNeeded
Return TsInfoT Statistic data.

BsInfoNeeded
Return BsInfoT Statistic data.

SvcInfoNeeded
Return SvcInfoT Statistic data.

TableInfoNeeded
Return TableInfoT Statistic data.

StatusInfoNeeded
Return monStatus Statistic data.

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StatConfig2T

Configuration specifies which statistics to be returned and if a new snapshot should be taken first.

```
struct StatConfig2T {
  bool  CreateSnapshot          // Create a new snapshot
  bool  TsInfoNeeded            // Return TsInfoT Statistic data
  bool  BsInfoNeeded            // Return BsInfoT Statistic data
  bool  SvcInfoNeeded           // Return SvcInfoT Statistic data
  bool  TableInfoNeeded         // Return TableInfoT Statistic data
  bool  StatusInfoNeeded        // Return monStatus Statistic data
  bool  RfInfoNeeded            // Return RfInfoT Statistic data
};
```

Members

CreatSnapshot
Create a new snapshot

TsInfoNeeded
Return TsInfoT Statistic data.

BsInfoNeeded
Return BsInfoT Statistic data.

SvcInfoNeeded
Return SvcInfoT Statistic data.

TableInfoNeeded
Return TableInfoT Statistic data.

StatusInfoNeeded
Return monStatus Statistic data.

RfInfoNeeded
Return RfInfoT Statistic data.

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StatIdT

Statistic-item identifier.

```
struct StatIdT {
   statItemType  Type             // Type of statistics item
   union {
     int  Pid                     // PID of the basic stream
     int  ServiceId               // Identifies a service
     TableIdT  TableId            // Identifies a table
     Tr101290IdT  Tr10290Id       // Identifies a TR 101 290 indicator
     TemplRuleIdT  TemplRuleId    // Identifies a template rule
     ExtraTestIdT  ExtraTestId    // Identifies an Extra Test
   }
};
```

Members

Type

Specifies the type of the statistics item.

Value	Meaning
ts	Transport-stream statistics
basicStream	Basic stream statistics
service	Service statistics
table	Table statistics
tr101290Indicator	Tr101290 indicator statistics
templateRule	Template rule statistics
extraTest	Extra test statistics

Pid

PID of the basic-stream. Only used if *type* is **basicStream.**

ServiceId

ID of the service. Only used if *type* is **service.**

TableId

ID of the table. Only used if *type* is **table.**

Tr10290Id

ID of the Tr101290 indicator. Only used if *type* is **tr10290Indicator.**

TemplateRuleId

ID of the template rule. Only used if *type* is **templateRule.**

ExtraTestId

ID of the extra test rule. Only used if *type* is **extraTest.**

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StatLogConfigT

Configuration parameters for statistics logging.

```
struct StatLogConfigT {
   StatLogItvT  ShortTerm    // Short-term statistics log settings
   bool  EnableMediumTerm    // Enable medium-term logging
   StatLogItvT  MediumTerm   // Medium-term statistics log settings
   bool  EnableLongTerm      // Enable long-term logging
   StatLogItvT  LongTerm     // Long-term statistics log settings
};
```

Members

ShortTerm
Short-term statistics logging settings.

EnableMediumTerm
Enable medium-term statistics logging.

MediumTerm
Medium-term statistics logging settings. These settings are only valid if *EnableMediumTerm* is true.

EnableLongTerm
Enable long-term statistics logging.

LongTerm
Long-term statistics logging settings. These settings are only valid if *EnableLongTerm* is true.

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StatLogEntryT

Entry in the statistics log.

```
struct StatLogEntryT {
   StatIdT  Id                // ID of the statistic
   time  TimeStart            // Statistics entry start time
   time  TimeEnd              // Statistics entry end time
   union {
     ErrorStatsT  ErrorStats // Error statistics for tr101290, template
                              // and extra test statistics
     TsStatsT TsStats         // Transport-stream statistics log entry
     BsStatsT  BsStats        // Basic-stream statistics log entry
     SvcStatsT  ServiceStats // Service statistics log entry
     TableStatsT  TableStats // Table statistics log entry
   }
};
```

Members

Id
Statistic-item identifier.

TimeStart, TimeEnd
Start and end time of the period covered by the statistics entry.

ErrorStats
Error statistics for Tr101290 indicators, template rules and extra tests. This field is only present if *Id.Type* is **tr101290Indicator**, **templateRule** or **extraTest**.

TsStats
Transport-stream statistics information. This field is only present if *Id.Type* is **ts**.

BsStats
Basic stream statistics information. This field is only present if *Id.Type* is **basicStream**.

ServiceStats
Service statistics information. This field is only present if *Id.Type* is **service**.

TableStats
Table statistics information. This field is only present if *Id.Type* is **table**.

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StatLogItvT

Statistic logging interval settings.

```
struct StatLogItvT {
   int  LogInterval          // Logging interval
   int  NumMeasurements      // Number of measurements
};
```

Members

LogInterval
Interval (in ms) between statistic log measurements.

NumMeasurements
Number of statistic log measurement to keep.

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StreamTypeT

Data structure for stream-type.

```
struct StreamTypeT {
   union {
     mpegStreamType  Type    // Well-known MPEG-2 stream type
     int  CustomType         // Custom stream-type
   }
};
```

Members

Type

Well-known MPEG-2 stream-type.

Value	Meaning
mpeg1Video	MPEG-1 video
mpeg2Video	MPEG-2 video
mpeg1Audio	MPEG-1 audio
mpeg2Audio	MPEG-2 audio
privateSections	Private sections
privateData	Private data
mheg	MHEG
dsmcc	DSMCC
h222-1	H222-1
iso13818-6-TypeA	13818-6 Type A
iso13818-6-TypeB	13818-6 Type B
iso13818-6-TypeC	13818-6 Type C
iso13818-6-TypeD	13818-6 Type D
auxiliary	Auxiliary
aacAudio	AAC audio
mpeg4Video	MPEG-4 video
mpeg4Audio	MPEG-4 audio
mpeg4Pes	MPEG-4 PES
mpeg4Sections	MPEG-4 sections
iso13818-6-Sdp	13818-6 SDP
metadataPes	Metadata PES

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metadataSections	Metadata sections
metadataDc	Metadata DC
metadataOc	Metadata OC
metadataSdp	Metadata SDP
ipmpStreamMpeg2	IPMP stream MPEG-2
avcVideo	AVC video
ipmpStream	IPMP stream
ecmPid	ECM stream
emmPid	EMM stream
teletextData	DVB teletext
subtitlesData	DVB subtitles
ac3Audio	Dolby AC3 Audio
ddPlus	Dolby Digital Plus Audio
dts	DTS Audio
digicipher	Digicipher Audio
hevcH265Video	HEVC/H265 Video
atscAc3	ATSC AC-3 Audio
pcrPid	PCR-only stream
scte35	SCTE-35 data
reserved	Reserved

CustomType

If the stream type is not a well-known MPEG type, then this field contains the integer value of the stream-type.

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SubtitleDescrT

Data structure for subtitle descriptor contents.

```
struct SubtitleDescrT {
   subtitleType SubtitleType      // Subtitle type
   union {
     int  Channel                 // Closed caption channel number
     string Language              // ISO-639 language code string
   }
};
```

Members

SubtitleType
Identifies DVB, Teletext or Closed-Caption subtitles.

Channel
Closed-Caption channel number.

Language
DVB or Teletext subtitle 3-char null-terminated ISO-639 language string.

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SvcInfoT

Service status information.

```
struct SvcInfoT {
   int  ServiceId            // Service ID
   bool  IsPresent           // Service is currently present
   serviceType  ServiceType  // Type of service
   string  Name              // Name of service
   string  ProviderName      // Name of service provider
   int  PcrPid               // PID of basic-stream carrying the PCR
   int  PmtPid               // PID of basic-stream carrying the PMT
   int[] Components          // List with PIDs of all service components
   int  Bitrate              // Current bitrate in bps
   bool  IsScrambled         // Service is currently scrambled
};
```

Members

ServiceId
ID of the service as mentioned in the PAT/PMT

IsPresent
Service is currently present in the transport-stream

ServiceType
Optional field with type of service as identified by the SDT. If the field is omitted the service type is unknown.

Value	Meaning
unknownSvcType	Unknown service type (e.g. reserved value was used)
digitalTv	Digital television service
digitalRadio	Digital radio service
teletext	Teletext service
nvodReference	NVOD reference service
nvodTimeShifted	NVOD time shifted service
mosiac	Mosiac service
advancedCodecRadio	AAC radio service
advancedCodecMosaic	AVC mosiac service
dataBroadcast	Data broadcast service
commonInterface	Common interface service
rcsMap	RCS MAP service
rcsFls	RCS FLS service
dvbMhp	DVB MHP service

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mpeg2HdTv	High-Definition MPEG-2 television service
avcSdTv	Standard-Definition AVC television service
avcSdNvodTimeShifted	Standard-Definition AVC NVOD time shifted service
avcSdNvodReference	Standard-Definition AVC NVOD reference service
avcHdTv	High-Definition AVC television service
avcHdNvodTimeShifted	High-Definition AVC NVOD time shifted service
avcHdNvodReference	High-Definition AVC NVOD reference service

Name
Optional field with the service name as found in the SDT. If the field is omitted the service name is unknown (e.g. no SDT found).

ProviderName
Optional field with the service provider name as found in the SDT. If the field is omitted the service provider name is unknown (e.g. no SDT found).

PcrPid
Identifies the PID of the basic-stream carrying the PCR. A value of -1 indicates no PCR PID has been defined.

PmtPid
Identifies the PID of the basic-stream carrying the PMT. A value of -1 indicates no PMT PID has been defined.

Components
List of the PIDs of the basic-steams that belong to the service.

Bitrate
Current service bitrate in bps.

IsScrambled
Service is currently scrambled.

Remarks

When referring to the current bitrate the value measured at the time of taking the snapshot is meant.

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SvcStatsT

Service statistics.

```
struct SvcStatsT {
   int  ServiceId            // Service ID
   int  PresenceSec          // # of seconds the service was present
   MinMaxAvgIntT  Bitrate    // Avg, min, and max service bitrate
   int  CcErrors             // Number of continuity count errors
   int  ScrambledSec         // # of seconds the service was scrambled
};
```

Members

ServiceId
ID of the service as mentioned in the PAT/PMT

PresenceSec
Number of seconds that the service was present during the statistics log interval period.

Bitrate
Average, minimum, and maximum service bitrate measured.

ScrambledSec
Number of seconds that the service was scrambled during the statistics log interval period.

Remarks

The average, minimum, maximum figures are the values measured across the statistics log interval period.

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SytemEventIdT

Identifies an system event

```
struct SystemEventIdT {
   systemEvent  Type          // Type of system event
};
```

Members

Type

Specifies the type of the system event.

Value	Meaning
tsCapture	Transport-stream capture has started
inputOverflow	Overflow of input buffer
inputDeviceDisconnect-ed	Input hardware has been disconnected (i.e. USB-2 interface was unplugged)
inputDeviceInvalidSync	Invalid Sync byte detected, input hardware has been reset
settingsChanged	Active settings have changed
ipForwardingAborted	IP forwarding aborted due to timeout

Remarks

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TableContentT

Table content information.

```
struct TableContentT {
   union
   {
     PatContentT  PatContent // PAT table contents
     CatContentT  CatContent // CAT table contents
     PmtContentT  PmtContent // PMT table contents
     NitContentT  NitContent // NIT table contents
     SdtContentT  SdtContent // SDT table contents
     TdtContentT  TdtContent // TdT table contents
     EitPfContentT  EitPfContent // EIT-PF table contents
     EitSchedContentT  EitSchedContent     // EIT-S table contents
   }
};
```

Members

PatContent
PAT table contents.

CatContent
CAT table contents.

PmtContent
PMT table contents.

NitContent
NIT table contents.

SdtContent
SDT table contents.

TdtContent
TDT table contents.

EitPfContent
EIT-Present/Following table contents.

EitSchedContent
Eit-Schedule table contents.

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TableIdT

Table ID.

```
struct TableIdT {
   int  TableId              // Table ID
   int  TableExtId[3]        // Table extension IDs
   currNextTable  CurrNext   // Current or next table
   int  Pid                  // PID of basic stream carrying the table
};
```

Members

TableId
Table ID

TableExtId
Table extension IDs. Set to -1 if extension ID is not used.

CurrNext
Current or next table.

Value	Meaning
currTable	Current table
nextTable	Next table

Pid
Optional field with the PID of the basic stream carrying the table.

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TableInfoT

Table status information.

```
struct TableInfoT {
   TableIdT  TableId              // Table ID
   bool  IsPresent                // Table is currently present
   int  Pid                       // PID of basic-stream carrying the table
   int RepInterval                // Current repetition interval (in ms)
   bool  RepItvOk                 // Repetition rate is currently OK
   int  TableSize                 // Size of table (in bytes)
   TableContentT  TableContent    // Decoded table content
};
```

Members

TableId
ID of the table.

IsPresent
Table is currently present in the transport-stream.

Pid
PID of the basic stream carrying the table.

RepInterval
Current repetition interval in ms.

RepItvOk
Table repetition interval is currently OK.

TableSize
Total size of the table in number of bytes.

TableContent
Decoded table content.

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TablePtwsT

Table presence-time-window settings

```
struct TablePtwT {
   TableIdT  TableId          // ID of table
   int   Ptw                  // Presence-time-window in ms
};

struct TablePtwsT {
   int  DefaultPtw            // Default presence-time-window in ms
   PcrPtwT[]  Ptws            // List of PTWs per table ID
};
```

Members

TableId
Defines the table ID to which *Ptw* applies.

Ptw
Presence-time-windows in ms.

DefaultPtw
Default Table presence-time-window in ms.

Ptws
Optional list with a per table ID presence-time-window.

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TableStatsT

Table statistics.

```
struct TableStatsT {
   TableIdT  TableId         // Table ID
   int  PresenceSec          // Number of seconds the table was present
   int  ErroredSec           // Number of seconds the table was invalid
   MinMaxAvgIntT RepInterval // Repetition rate (avg/min/max)
   int  RepItvErrorSec       // Number of sec. repetition rate was invalid
};
```

Members

TableId
ID of the table.

PresenceSec
Number of seconds the table was present during the statistics log period.

ErrorsSec
Number of seconds the table erroneous during the statistics log period.

Pid
PID of the basic stream carrying the table.

RepInterval
Average, minimum and maximum table repetition interval.

RepItvErrorSec
Number of seconds the repetition interval was invalid during the statistics log period.

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TdtContentT

TDT table content.

```
struct TdtContentT {
   int  MJD                    // Date in MJD format
   int  UTC                    // Time of day in UTC (GMT)
};
```

Members

MJD

Date in MJD format.

UTC

Time of day in UTC (GMT).

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TemplRuleIdT

Template rule ID.

```
struct TemplRuleIdT {
   templRule  Type           // Type of template rule
   int  RuleIndex            // Optional rule index
};
```

Members

Type

Specifies the type of template rule.

Value	Meaning
templateOverall	Overall template status. Use this type to request the overall status of the template (i.e. to determine if any rule in the template was violated yes/no)
transportStreamRule	Transport-stream rule Use this type to request the overall status of the transport-stream rule (i.e. to determine if any of its sub-rules are violated yes/no)
tsId	Transport-stream: transport-stream ID sub-rule
tsNumSvc	Transport-stream: number of services sub-rule
tsPckSize	Transport-stream: packet size sub-rule
tsBitrate	Transport-stream: bitrate range sub-rule
basicStreamRule	Basic-stream rule Use this type to request the overall status of a basic-stream rule (i.e. to determine if any of its sub-rules are violated yes/no)
bsPresence	Basic-stream: presence sub-rule
bsStreamType	Basic-stream: stream-type sub-rule
bsScrambled	Basic-stream: scramble status sub-rule
bsPcrStatus	Basic-stream: PCR status sub-rule
bsBitrate	Basic-stream: bitrate range sub-rule
basicStreamGroupRule	Basic-stream-group rule Use this type to request the overall status of a basic-stream-group rule (i.e. to determine if any of its sub-rules are violated yes/no)
bsGroupNumStreams	Basic-stream-group: number of basic-stream sub-rule
bsGroupBitrate	Basic-stream-group: bitrate range sub-rule
tableRule	Table rule

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	Use this type to request the overall status of a table rule (i.e. to determine if any of its sub-rules are violated yes/no)
tablePresenceReq	Table: presence required sub-rule
tableRepItv	Table: repetition interval sub-rule
serviceRule	Service rule Use this type to request the status of a service rule (i.e. to determine if any sub-rule of service rule was violated yes/no)
svcPresence	Service: Presence sub-rule
svcId	Service: service ID sub-rule
svcName	Service: service name sub-rule
svcPmtPid	Service: PMT PID sub-rule
svcPcrPid	Service: PCR PID sub-rule
svcScrambled	Service: is service scrambled sub-rule
svcBitrate	Service: bitrate range sub-rule
svcUndefStreamAllowed	Service: undefined streams allowed sub-rule

RuleIndex

Optional field identifying a specific template (parent-)rule. By omitting this field one can indicate that all rules of the specified *Type* are identified.
NOTE: this field has no meaning if *Type* is **overall**.

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Tr101290IdT

Tr101290 indicator ID

```
struct Tr101290IdT {
   tr10290Type  Type         // Type of TR 101 290 indicator
};
```

Members

Type

Specifies the type of TR 101 290 indicator.

Value	Meaning
tr101290Overall	All TR 101 290 indicators. Use this type to request the overall status of TR 101 290 (i.e. to determine if any indicator was violated yes/no)
priority1	Priority 1 indicators Use this type to request the overall status of a priority 1 indicators (i.e. to determine if any of priority 1 indicators are violated yes/no)
priority2	Priority 2 indicators Use this type to request the overall status of a priority 2 indicators (i.e. to determine if any of priority 2 indicators are violated yes/no)
priority3	Priority 3 indicators Use this type to request the overall status of a priority 3 indicators (i.e. to determine if any of priority 3 indicators are violated yes/no)
tsSyncLoss	1.1: TS_sync_loss indicator
syncByteError	1.2: Sync_byte_error indicator
patError2	1.3a: PAT_error_2 indicator
ccError	1.4: Continuity_count_error indicator
pmtError2	1.5a: PMT_error_2 indicator
pidError	1.6: PID_error indicator
transportError	2.1: Transport_error indicator
crcError	2.2: CRC_error indicator
pcrRepError	2.3a: PCR_repetition_error indicator
pcrDiscIndError	2.3b: PCR_discontinuity_indicator_error indicator
pcrAcError	2.4: PCR_accuracy_error indicator
ptsError	2.5: PTS_error indicator

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catError	2.6: CAT_error indicator
nitActualError	3.1a: NIT_actual_error indicator
nitOtherError	3.1b: NIT_other_error indicator
siRepError	3.2: SI_repetition_error indicator
bufError	3.3: Buffer_error indicator
unreferencedPid	3.4a: Unreferenced_PID indicator
sdtActualError	3.5a: SDT_actual_error indicator
sdtOtherError	3.5b: SDT_other_error indicator
eitActualError	3.6a: EIT_actual_error indicator
eitOtherError	3.6b: EIT_other_error indicator
eitPfError	3.6c: EIT_pf_error indicator
rstError	3.7: RST_error indicator
tdtError	3.8: TDT_error indicator
emptyBufError	3.9: Empty_buffer_error indicator
dataDelayError	3.10: Data_delay_error indicator
pcrMeasurements	Global extended PCR measurement error. Use this type to request the overall status of the extended PCR measurements (i.e. has a violation been detected for DR, FO or OJ).
pcrDriftRateError	PCR Drift-Rate error indicator
pcrFreqOffsetError	PCR Frequency-Offset error indicator
pcrOverallJitterError	PCR Overall-Jitter error indicator

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TsInfoT & TsInfoShortT

Transport-Stream status information.

```
struct TsInfoT {
   integer  TsId              // Transport-Stream ID
   bool  IsPresent            // TS is current present
   int  TsSize                // Size of MPEG-2 packets
   int  TsRate                // Currrent bitrate (in bps)
   int  TsOccupancy           // Current occupancy in percentage
   int[]  BasicStreams        // List of all basic streams
   int[]  Services            // List all services
   TableIdT[]  Tables         // List of all tables
};

struct TsInfoShortT {
   integer  TsId              // Transport-Stream ID
   bool  IsPresent            // TS is current present
   int  TsSize                // Size of MPEG-2 packets
   int  TsRate                // Currrent bitrate (in bps)
   int  TsOccupancy           // Current occupancy in percentage
};
```

Members

TsId
The transport-streams ID of the monitored TS.

IsPresent
The monitored transport stream is currently present.

TsSize
Size of the MPEG-2 packets (i.e. 188 or 204 byte).

TsRate
Current TS rate in bps.

TsOccupancy
Current TS occupancy expressed as a percentage.

BasicStreams
List with the PIDs of all basic streams currently detected in the TS.

Services
List with the service IDs of all services currently detected in the TS.

Tables
List with table IDs of all tables currently detected in the TS.

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TsStatsT

Transport Stream statistics.

```
struct TsStatsT {
   integer  TsId             // Transport-Stream ID
   int  PresenceSec          // Number of seconds the TS is present
   MinMaxAvgIntT  TsRate     // Bitrate (avg/min/max)
   MinMaxAvgIntT TsOccupancy // Occupancy in percentage
   MinMaxAvgIntT  NumBasicStreams
                             // Number of basic streams (avg/min/max)
   MinMaxAvgIntT NumServices // Number of services (avg/min/max)
   MinMaxAvgIntT NumTables   // Number of tables (avg/min/max)
};
```

Members

TsId
The transport-streams ID of the monitored TS.

PresenceSec
Number of seconds that the transport stream was present during the statistics log period.

TsRate
Average, minimum and maximum TS rate in bps.

TsOccupancy
Average, minimum and maximum TS occupancy expressed as a percentage.

NumBasicStreams
Average, minimum and maximum number of basic streams detected in the TS.

NumServices
Average, minimum and maximum number of services detected in the TS.

NumTables
Average, minimum and maximum number of tables detected in the TS.

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TsConfigT

Structure containing configuration parameters for a Transport Stream.

```
struct TsConfigT {
   string  TsName            // Transport-Stream Identifier
   int64   Adaptor           // RO: Serial of TS hardware adapter
   int   AdaptorPort         // RO: Port on the TS hardware adapter
   union
   {
     IpV4AddrPairT  IpRcvPars     // IP reception parameters
     RfRcvParsT  RfRcvPars   // RF reception paramters
   }
   IpForwParsT  IpForwPars   // IP forwarding on/off
   string  Tr101290Id        // TR 101 290 settings ID
   string  ExtraTestsId      // Extra-tests settings ID
   string  TemplateId        // Template ID
   CaptConfigT  CaptConfig   // RO: capture configuration
   EvLogConfigT  EvLogConfig // RO: event logging configuration
   StatLogConfigT  StatLogConfig // RO: statistics log configuration
   PcrPtwsT  PcrPtws         // RO: PCR PTW settings
   ScramStatusPtwsT  ScramStatusPtws
                             // RO: PCR PTW settings
   BsPtwsT  BsPtws           // RO: Basic-stream PTW settings
   TablePtwsT  TablePtws     // RO: Table PTW settings
};
```

Members

TsName
Name identifying this monitored Transport-Stream.

Adaptor, AdaptorPort
The adapter/port used for receiving the monitored TS.

IpRcvPars
IP setup settings to be used on *Adapter* if the monitor TS is a TSoIP stream.

RfRcvPars
RF reception parameters to be used on *Adapter* if it has a RF interface.

IpForwPars
IP settings for optional TSoIP forwarding of the monitored transport-stream.

Tr101290Id
ID of the TR 101 290 settings used.

ExtraTestsId
ID of the extra tests settings used.

TemplateId
ID of the template matching settings used

CaptConfig
Read-only field with the capture configuration.

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EvLogConfig
Read-only field with the event logging configuration.

StatLogConfig
Read-only field with the statistics logging configuration.

PcrPtws
Optional read-only field with presence-time-windows setting for the PCR. If omitted no PCR presence-time-windows have been defined for this TS.

ScramStatusPtws
Optional read-only field with presence-time-windows setting for scramble status. If scrambling status omitted no presence-time-windows have been defined for this TS.

BsPtws
Optional read-only field with presence-time-windows setting for basic-streams. If omitted no basic-stream presence-time-windows have been defined for this TS.

TablePtws
Optional read-only field with presence-time-windows setting for tables. If omitted no table presence-time-windows have been defined for this TS.

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TsNamePortInfoT

Structure containing name and port information for a Transport Stream.

```
struct TsNamePortInfoT {
   string  TsName            // Transport-Stream Identifier
   union
   {
     PortInfoAsiT  PortInfoAsi
                             // ASI port information
     PortInfoIpT   PortInfoIp
                             // IP port information - optional
     PortInfoRfT   PortInfoRf
                             // RF port information - optional
   }
};
```

Members

TsName

Name identifying this monitored Transport-Stream.

PortInfoAsi

The port information for the monitored ASI TS. This parameter is always present for an ASI stream.

PortInfoIp

The port information for the monitored IP TS. This parameter is optional for an IP stream.

PortInfoRf

The port information for the monitored RF TS. This parameter is optional for an RF stream.

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TunnelledSiDescrT

Structure containing Tunnelled (cross-carried) SI information for a service.

```
struct TunnelledSiDescrT {
   crossCarriedTable TableType    // Cross-carried table type
   int  TablePid                  // PID carrying table
};
```

Members

TableType

Tunnelled SI table type. See "Free Satellite: Requirements for Interoperability, Part 3 System Management: Implementation v1.6 (BBC 25/3/2011)" for a definition of table types.

TablePid

The PID carrying this tunnelled SI table type.

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VideoEsInfoT

Video Extra Stream info

```
struct VideoEsInfoT {
   VideoType  Type           // Type of video info
   int  HorizontalSize       //
   int  VerticalSize         //
   AspectRatio  AspectRatio  //
   double  AspectRatioX      //
   double  AspectRatioY      //
   FrameRate  FrameRate      //
   double  FrameRateVal      //
   ChromaFormat  ChromaFormat    //
   int  BitRate              //
   bool CarriesAfd           //
   int  AfdValue             //
   bool CarriesWss           //
   int  WssValue             //
   int  BitDepthLuma         //
   int  BitDepthChroma       //
   double  DarAspectRatioX   //
   double  DarAspectRatioY   //
   double  ParAspectRatioX   //
   double  ParAspectRatioY   //
   double  SarAspectRatioX   //
   double  SarAspectRatioY   //
};
```

Members

Type
Defines the encoding type of the video.

HorizontalSize
Horizontal size in pixels.

VerticalSize
Horizontal size in pixels.

ApectRatio
Defines the apect ratio of the video.

ApectRatioX
Horizontal size in minimum pixel units (e.g. 16, 4).

ApectRatioY
Vertical size in minimum pixel units (e.g. 9, 3).

FrameRate
Frame rate in FPS.

FrameRateVal
Frame rate.

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ChromaFormat
Chroma format.

Bitrate
Video ES bitrate.

CarriesAfd
TRUE if AfdValue contains a valid value.

AfdValue
4-bit AFD value.

CarriesWss
TRUE if WssValue contains a valid value.

WssValue
14-bit AFD value.

BitDepthLuma
HEVC/H265 Luma Bit Depth value.

BitDepthChroma
HEVC/H265 Chroma Bit Depth value.

DarAspectRatioX
HEVC/H265 Display Aspect Ratio horizontal resolution value.

DarAspectRatioY
HEVC/H265 Display Aspect Ratio vertical resolution value.

ParAspectRatioX
HEVC/H265 Pixel Aspect Ratio horizontal resolution value.

ParAspectRatioY
HEVC/H265 Pixel Aspect Ratio vertical resolution value.

SarAspectRatioX
HEVC/H265 Sample Aspect Ratio horizontal resolution value.

SarAspectRatioY
HEVC/H265 Sample Aspect Ratio vertical resolution value.
.

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XpectResultT

Xpect result.

```
struct XpectResultT {
   xpectResultCode  ResultCode    // Xpect result code
   string  ErrorMsg           // Optional error message
};
```

Members

ResultCode
The Xpect result code

ErrorMsg
Optional string with a human readable error message.

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CaptArmTrigger

Arm or disarm trigger for stream-capturing process.

```
XpectResultT  CaptArmTrigger (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] Bool  Arm              // Arm (true) or disarm (false) trigger
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the Transport-Stream input.

Arm

Set to true to arm the capture trigger and set to false disarm trigger.

Result

XpectResult	Meaning
Ok	Trigger condition has been armed/disarmed.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

This function should be used to arm the capture trigger for first us or rearm the trigger condition after a capture was triggered.
NOTE: if no trigger condition was set via the **CaptSetTriggerCondition** method, Xpect will default to triggering on any TR101290 violation (i.e. **tr101290Overall**)

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CaptDeleteFile

Config-Mode Only

Delete a capture file. The Transport-Stream data (.ts file), timing data (.tstim file) and stream-capture status information are deleted.

```
XpectResultT  CaptDeleteFile (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] string  TsUrl          // Url of capture file to be deleted
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the Transport-Stream input.

TsUrl

URL identifying the capture that is to be deleted. The capture consists of a data file (.ts), a timing file (.tstim) and status info.

Result

XpectResult	Meaning
Ok	Monitoring State has been returned successfully.
noSuchCapture	Capture file does not exist.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.
notConfigMode	This is not a configuration-mode session.

Remarks

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CaptGetInfo

Get a directory of stream captures available for a given monitored Transport Stream.

```
XpectResultT  CaptGetInfo (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
 [out] CaptInfoT[]  CaptInfo // Info per stream capture
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the Transport-Stream input.

CaptInfo
List with Capture Info items.

Result

XpectResult	Meaning
Ok	Monitoring State has been returned successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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CaptGetTriggerCondition

Get the current trigger condition and arm status for stream-capturing process.

```
XpectResultT  CaptGetTriggerCondition (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [out] EventIdT  TriggerEv    // ID of event that acts as trigger
 [out] Bool  Armed            // Trigger is armed yes or no
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the Transport-Stream input.

TriggerEv

ID of the event set as trigger condition.

Armed

True if the trigger is armed and false if trigger is disarmed.

Result

XpectResult	Meaning
Ok	Active trigger condition is returned.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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CaptGetState

Get the state of the stream-capturing process.

```
XpectResultT  CaptGetState (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
 [out] captStatus  CaptState // Capturing state
 [out] string  Filename      // Filename of capture file
 [out] captTrigger  CaptTrigger // Trigger type
 [out] EvInfoT  EventInfo    // Event info
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the Transport-Stream input.

CaptState
Capturing state.

Value	Meaning
diskFull	Capture files could not be saved to disk because of a disk-full condition.
Stopped	The capturing process is idle.
Flushing	Capturing is complete and the capture buffer is being flushed to disk.
Success	Capturing was completed successfully.
timeout	Capture time out has fired: the size of the Transport-Stream capture file is less than the configured size of the capture buffer.
Triggered	A stream-capture event has occurred and the capture buffer is being filled.
captureError	The capture failed due to a system error (e.g. disk write error, (USB) disk removal, etc).

Filename
Filename of capture file that will be created or to which data currently is being flushed. If the capturing state is **idle**, *Filename* is empty.

CaptTrigger
Type of trigger event that initiated the capture. See **CaptInfoT** for a full description of enumeration values

EventInfo
If capturing state is not **idle**: Info about the event that caused the Transport-Stream capture.

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Result

XpectResult	Meaning
Ok	Monitoring State has been returned successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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CaptSetTriggerCondition

Set trigger condition for stream-capturing process.

```
XpectResultT  CaptSetTriggerCondition (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
  [in] EventIdT  TriggerEv   // ID of event that acts as trigger
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the Transport-Stream input.

TriggerEv
ID of the event that should act as trigger condition.

Result

XpectResult	Meaning
Ok	Trigger condition has been set.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.
unknownEventId	The event ID specified in *TriggerEv* cannot be found.

Remarks

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CaptTrigger

Force a Transport-Stream capture.

```
XpectResultT  CaptTrigger (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [out] string  Filename       // Filename of capture file
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the Transport-Stream input.

Filename
Filename of capture file that will be created to store the stream capture.

Result

XpectResult	Meaning
Ok	Monitoring State has been returned successfully.
captureBusy	The Transport-Stream capture cannot be started because another capture is in progress.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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ConfGetAvailableMosaicScreens

Get an array of screens available for Mosaic.

```
XpectResultT  ConfGetAvailableMosaicScreens (
  [in] int  SessionId         // Session identifier
 [out]AvailableMosaicScreenT[]  AvailableScreens
                             // array of screens
);
```

Parameters

SessionId

Session identifier.

AvailableScreens

An array of AvailableMosaicScreenT structures describing the Mosaic screens.

Result

XpectResult	Meaning
Ok	Monitoring State has been returned successfully.
noSuchSession	Session does not exist or session has timed out.

Remarks

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ConfGetAvailablePorts

Get an array of available input ports.

```
XpectResultT  ConfGetAvailablePorts (
  [in] int  SessionId         // Session identifier
 [out]AvailablePortsT[]  AvailablePorts
                             // array of available ports
);
```

Parameters

SessionId

Session identifier.

AvailablePorts

An array of AvailablePortsT structures describing the input ports available.

Result

XpectResult	Meaning
Ok	Monitoring State has been returned successfully.
noSuchSession	Session does not exist or session has timed out.

Remarks

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ConfGetMonitoringState

Get Monitoring State (idle / active) of a Transport Stream input.

```
XpectResultT  ConfGetMonitoringState (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [out] monState  MonState     // Idle / Monitoring
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the Transport-Stream input.

MonState

Current monitoring state.

Value	Meaning
active	Xpect is actively monitoring the Transport Stream.
idle	The monitoring process is idle.
Idle_not_configured	The monitoring process is idle and not configured.

Result

XpectResult	Meaning
Ok	Monitoring State has been returned successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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ConfGetOttServices

Get a list of OTT services and information of monitored Transport Streams.

```
XpectResultT  ConfGetOttServices (
  [in] int  SessionId              // Session identifier
 [out] OttServiceT[] OttServices   // Transport-Stream names
);
```

Parameters

SessionId

Session identifier.

OttServices

List that receives the OttServices monitored by this instance of Xpect.

Result

XpectResult	Meaning
Ok	List of OTT services has been returned successfully.
noSuchSession	Session does not exist or session has timed out.

Remarks

Transport-Stream names are used to identify a monitored Transport Stream in many of the other SOAP interface calls.
The Transport-Stream names are configured by the system integrator through the General Settings file. The Transport-Stream names cannot be changed through the SOAP interface.

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ConfGetTsConfig

Get configured parameters of a monitored Transport Stream.

```
XpectResultT  ConfGetTsConfig (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
 [out] TsConfigT  TsConfig   // Transport-Stream configuration
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the Transport-Stream input.

TsConfig

This parameter receives the configured parameters of the monitored Transport Stream.

Result

XpectResult	Meaning
Ok	Transport-Stream configuration parameters have been returned successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

The Transport-Stream configuration parameters are configured by the system integrator through the General Settings file. These parameters cannot be updated through the SOAP interface, except for the settings-file IDs (using **ConfSetSettingsId**) and IP-forwarding parameters (using **ConfSetIpForwardingPars**).

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ConfGetTsNames

Get a list of names of monitored Transport Streams.

```
XpectResultT  ConfGetTsNames (
  [in] int  SessionId         // Session identifier
 [out] string[] TsNames       // Transport-Stream names
);
```

Parameters

SessionId

Session identifier.

TsNames

List that receives the names of the Transport Streams monitored by this instance of Xpect.

Result

XpectResult	Meaning
Ok	List of Transport-Stream names has been returned successfully.
noSuchSession	Session does not exist or session has timed out.

Remarks

Transport-Stream names are used to identify a monitored Transport Stream in many of the other SOAP interface calls.
The Transport-Stream names are configured by the system integrator through the General Settings file. The Transport-Stream names cannot be changed through the SOAP interface.

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ConfGetTsNamesPortInfo

Get a list of names of monitored Transport Streams and information about the port source.

```
XpectResultT  ConfGetTsNamesPortInfo (
  [in] int  SessionId         // Session identifier
 [out] TsNamePortInfoT[] TsNamesPortInfo
                             // Array of Transport-Stream names and info
);
```

Parameters

SessionId

Session identifier.

TsNamesPortInfo

List that receives the names and port information of the Transport Streams monitored by this instance of Xpect.

Result

XpectResult	Meaning
Ok	List of Transport-Stream names has been returned successfully.
noSuchSession	Session does not exist or session has timed out.

Remarks

Transport-Stream names are used to identify a monitored Transport Stream in many of the other SOAP interface calls.
The Transport-Stream names are configured by the system integrator through the General Settings file. The Transport-Stream names cannot be changed through the SOAP interface.

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ConfGetSettings

Read back Settings. This method can be used to retrieve both standard Settings and user-configured Settings.

```
XpectResultT  ConfGetSettings (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] settingsType  Type     // TR 101 290 / Template / Extra Tests
  [in] string  SettingsId     // Settings identifier
 [out] string  Settings       // Settings in XML
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

Type
Indicates which settings are to be read.

SettingsId
Identifies the Settings document to be read.

Settings
XML document representing the Settings, contained in a string.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchSettingsId	A Settings document with *SettingsId* cannot be found.
noSuchTs	Transport-Stream input does not exist.

Remarks

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ConfGetSettingsIds

Read available standard and user-supplied Settings identifiers.

```
XpectResultT  ConfGetSettingsIds (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
[out] SettingsInfoT[]  SettingsInfo
                              // Settings info
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

SettingsInfo
List that receives the Settings identifiers, along with Settings type and description string for each *SettingsId*.

Result

XpectResult	Meaning
ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

The actual Settings can be read using **ConfGetSettings**.

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ConfSetAttribute

Config-Mode Only

Upload a partial Settings document and save. Invoking this method will succeed only if the Monitoring State is **idle**, with the exception of a Mosaic config update, which can update whilst Monitoring State is **active**.

```
XpectResultT  ConfSetAttribute (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] settingsType  Type     // General / Mosaic / TR101_290 / Template /
Extra_Tests
  [in] string  Settings       // Settings in XML
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

Type

Indicates whether Settings are to be interpreted as General settings, Mosaic settings, TR 101 290 settings, a Template or Extra Test settings. Note: in this version, only Mosaic settings may be updated using this API.

Settings

XML document representing the settings, contained in a string. In the body of the document, only amended configuration lines, containing:

- the element tag
- any amended element attributes
- the "ueid" attribute from the original, full XML document definition

need be present.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchSettingsId	A Settings document with the given SettingsId cannot be found.
noSuchTs	Transport-Stream input does not exist.
notConfigMode	This is not a configuration-mode session.
notIdle	The Monitoring State is not idle.
invalidXml	The *Settings* string passed was is not correctly formatted (e.g. incorrect formatted XML or empty string)

Remarks

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ConfSetConfigPassword

Config-Mode Only

Set the configuration-mode password.

```
XpectResultT  ConfSetConfigPassword (
  [in] int  SessionId         // Session identifier
  [in] string  Password       // Configuration-mode password
);
```

Parameters

SessionId

Session identifier.

Password

New configuration-mode password.

Result

XpectResult	Meaning
Ok	New configuration-mode password has been set.
noSuchSession	Session does not exist or session has timed out.
notConfigMode	This is not a configuration-mode session.

Remarks

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ConfSetIpForwPars

Config-Mode Only

Set the IP-forwarding parameters.

```
XpectResultT  ConfSetIpForwPars (
  [in] int  SessionId              // Session identifier
  [in] string  TsName              // Transport-Stream identifier
  [in] IpForwParsT  IpForwPars     // IP forwarding parameters
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

IpForwPars
IP forwarding parameters.

Result

XpectResult	Meaning
Ok	New configuration-mode password has been set.
invalidIpPars	IP forwarding parameters are invalid.
noSuchSession	Session does not exist or session has timed out.
notConfigMode	This is not a configuration-mode session.

Remarks

If the Xpect monitoring state is **Monitoring** and the IP forwarding parameters specify that IP forwarding is turned on, IP forwarding is started right away.
IP forwarding parameters can be updated while the Monitoring State is **Monitoring**.

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ConfSetMonitoringState

Config-Mode Only

Start or stop monitoring of a Transport Stream input.

```
XpectResultT  ConfSetMonitoringState (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] monState  MonState     // Target state: MON_IDLE / MON_ACTIVE
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

MonState

Target Monitoring State, see **ConfGetMonitoringState**. If *MonState* is **active**, the monitoring process for the Transport Stream is started. If *MonState* is **idle**, the monitoring process is stopped. If the Monitoring State was already **active** / **idle**, then this method has no effect.

Result

XpectResult	Meaning
Ok	Monitoring state has been returned successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.
notConfigMode	This is not a configuration-mode session.

Remarks

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ConfSetSettings

Config-Mode Only

Upload a Settings document and save. Invoking this method will succeed only if the Monitoring State is **idle**, with the exception of a Mosaic config, which can update whilst Monitoring State is **active**.

```
XpectResultT  ConfSetSettings (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] settingsType  Type     // TR101_290 / Template / Extra_Tests
  [in] string  Settings       // Settings in XML
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

Type

Indicates whether Settings are to be interpreted as TR 101 290 settings, a Template or Extra Test settings.

Settings

XML document representing the settings, contained in a string.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchSettingsId	A Settings document with the given SettingsId cannot be found.
noSuchTs	Transport-Stream input does not exist.
notConfigMode	This is not a configuration-mode session.
notIdle	The Monitoring State is not idle.
invalidXml	The *Settings* string passed was is not correctly formatted (e.g. incorrect formatted XML or empty string)

Remarks

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ConfSetSettingsId

Config-Mode Only

Select a Settings document in order to change the monitoring configuration for a monitored Transport Stream. Invoking this method will succeed only if the Monitoring State is **Idle**.

```
XpectResultT  ConfSetSettingsId (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] settingsType  Type     // TR101290 / Template / Extra_Tests
  [in] string  SettingsId     // Settings identifier
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

Type

Indicates whether the Settings ID to be configured applies to TR 101 290 settings, to a Template or to the Extra Tests.

SettingsId

Identifies the XML document containing the settings.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchSettingsId	A Settings document with the given SettingsId cannot be found.
noSuchTs	Transport-Stream input does not exist.
notConfigMode	This is not a configuration-mode session.
notIdle	The Monitoring State is not idle.

Remarks

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EvCreateComposite

Create a composite event.

```
XpectResultT  EvCreateComposite (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] EventIdT[] EventIds    // Event IDs making up the composite event
  [in] EventIdT  CompEventId // ID assigned to the composite event
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

EventIds
List with event identifiers. The composite event fires when one of the events in *EventIds* fires.

CompEventId
Event identifier assigned to the composite event.

Result

XpectResult	Meaning
alreadyExists	An event with the name specified by *CompEventId* already exists
invalidEventId	An invalid event ID has been used for *CompEventId*. I.e. not a string.
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.
outOfResources	The maximum number of composite events for this Transport Stream has been reached and a new composite event cannot be created.
unknownEventId	One or more of the event identifiers in *EventIds* cannot be found. The unknown event identifiers are listed in *ErrorMsg* field of the return value. NOTE: The composite event is not created.

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EvDeleteComposite

Delete a composite event.

```
XpectResultT  EvDeleteComposite (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
  [in] EventIdT  CompEventId // Composite event ID to be deleted
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

CompEventId

Event identifier of composite event to be deleted.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchEvent	The composite event cannot be found.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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EvGetStringResources

This function should be used at start up to initialize the default (English) descriptions of all possible Events.

```
XpectResultT  EvGetStringResources (
  [in] int  SessionId         // Session identifier
 [out] EventResourcesT[]  EvResources  // Resource strings to be filled in
);
```

Parameters

SessionId

Session identifier.

EvResources

Array of all possible Event string descriptions including used attributes.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.

Remarks

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EvListComposite

List composite events defined for a monitored Transport Stream.

```
XpectResultT  EvListComposite (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [out] EventIdT[] CompEventIds     // List of composite event IDs
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

CompEventIds

List of identifiers of the composite events defined for this Transport Stream.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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EvLogGetActiveEntries

Get list of currently-active event-log entries. Active entries are those which report a current error event.

```
XpectResultT  EvLogGetActiveEntries (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [out] EvInfoT[]  EvEntries   // Active (in-error) Log entries
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

EvEntries

Receives the current in-error log entries.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

The maximum number of events returned by this call is limited to 250.
If an event is returned with its MaxEventsExceeded flag set to True, then other events of the same type may be missing from the returned event list due to Log Storm Filtering.

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EvLogGetEntriesByIndex

Get event-log entries by index number.

```
XpectResultT  EvLogGetEntriesByIndex (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
  [in] eventType  EvType     // Type of event log
  [in]EventIdT[] EvFilter    // List of Event IDs which should be returned
  [in] int  IndexFirst       // Index number of first log entry
  [in] int  IndexLast        // Index number of last log entry
 [out] EvInfoT[]  Entries    // Log entries that match the filter criteria
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

EvType
Type of event log entry to get.

EvFilter
List of Event IDs which should be returned, in case EvFilterType list is empty all events are returned.

IndexFirst, IndexLast
Range of log/notification index numbers to be retrieved.
IndexFirst>IndexLast entries returned in descending order,
IndexFirst<IndexLast entries returned in ascending order.

Entries
Receives the log entries that match the filter criteria.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.
seqnrError	The range of log sequence numbers, or a part thereof, does not exist in the event log.

Remarks

The maximum number of events returned by this call is limited to 250.

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EvLogGetEntriesBySeqNr

Get event-log entries by log sequence number.

```
XpectResultT  EvLogGetEntriesBySeqNr (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
  [in] eventType  EvType     // Type of event log
  [in] EventIdT[] EvFilter   // List of Event IDs which should be returned
  [in] int  SeqNrFirst       // Sequence number of first log entry
  [in] int  SeqNrLast        // Sequence number of last log entry
 [out] EvInfoT[]  Entries    // Log entries that match the filter criteria
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

EvType
Type of event log entry to get.

EvFilter
List of Event IDs which should be returned, in case EvFilterType list is empty all events are returned.

SeqNrFirst, SeqNrLast
Range of log/notification sequence numbers to be retrieved.
SeqNrFirst>SeqNrLast entries returned in descending order,
SeqNrFirst<SeqNrLast entries returned in ascending order.

Entries
Receives the log entries that match the filter criteria.

Result

XpectResult	Meaning
ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.
seqnrError	The range of log sequence numbers, or a part thereof, does not exist in the event log.

Remarks

The maximum number of events returned by this call is limited to 250.

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EvLogGetEntriesByTime

Get event-log entries in a time range.

```
XpectResultT  EvLogGetEntriesByTime (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] eventType  EvType      // Type of event log
  [in]EventIdT[] EvFilter     // List of Event IDs which should be returned
  [in] time  TimeStart        // Starting time
  [in] time  TimeEnd          // Ending time
  [in] int  MaxEntries        // Maximum number of entries to retrieve
 [out] int  SeqNrFirst        // Sequence number of first log entry
 [out] int  SeqNrLast         // Sequence number of last log entry
 [out] EvInfoT[]  Entries     // Log entries that match the filter criteria
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

EvType
Type of event log entry to get.

EvFilter
List of Event IDs which should be returned, in case EvFilterType list is empty all events are returned.

TimeStart, TimeEnd
Time range for which to retrieve event-log entries.
TimeStart > TimeEnd entries returned in descending order,
TimeStart < TimeEnd entries returned in ascending order.

MaxEntries
Maximum number of log entries to retrieve.

SeqNrFirst, SeqNrLast
These parameters are set to the log/notification sequence number of the first and last log entry within the specified time range. If there are no log/notification entries for the specified time range a value of -1 will be returned.

Entries
Receives the log entries within the specified time range that match the filter criteria. The number of entries returned is limited by *MaxEntries*. The log/notification sequence number of the last element in Entries is *SeqNrLast/SeqNrFirst (depending on the order)*, unless the number of log entries in the time range is greater than *MaxEntries*.

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Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

The maximum number of events returned by this call is limited to 250.

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EvLogGetEntryRange

Get sequence number range of available entries.

```
XpectResultT  EvLogGetEntryRange (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] eventType  EvType      // Type of event log
  [in] EventIdT[] EvFilter    // List of Event IDs needed
 [out] int  SeqNrFirst        // Sequence number of first log entry
 [out] int  SeqNrLast         // Sequence number of last log entry
 [out] int  EventCount        // # entries that match the filter criteria
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

EvType
Type of event log entry to get.

EvFilter
List of Event IDs needed, in case EvFilterType list is empty all events are searched.

SeqNrFirst, SeqNrLast
Range of log/notification sequence numbers that match the filter criteria

EventCount
Number of entries that match the filter criteria.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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EvLogGetEntryRangeByTime

Get sequence number range of available entries in a time range.

```
XpectResultT  EvLogGetEntryRangeByTime (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] eventType  EvType      // Type of event log
  [in] EventIdT[] EvFilter    // List of Event IDs needed
  [in] time  TimeStart        // Starting time
  [in] time  TimeEnd          // Ending time
 [out] int  SeqNrFirst        // Sequence number of first log entry
 [out] int  SeqNrLast         // Sequence number of last log entry
 [out] int  EventCount        // # entries that match the filter criteria
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

EvType
Type of event log entry to get.

EvFilter
List of Event IDs needed, in case EvFilterType list is empty all events are searched.

TimeStart, TimeEnd
Time range for which to search for event-log entries.

SeqNrFirst, SeqNrLast
Range of log/notification sequence numbers that match the filter criteria

EventCount
Number of entries that match the filter criteria.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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EvSubscribe

Subscribe to an event, or to a list of events.

```
XpectResultT  EvSubscribe (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
  [in] IpV4AddrPairT  IpAddr // Notification IP address and port
  [in] EventIdT[]  EventIds  // List of event IDs
 [out] int  SubscrId         // Subscription ID
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

IpAddr
IP address and port number to send notifications to.

EventIds
Identifies the events for which notifications have to be sent to *IpAddress*, *Port*.

SubscrId
Subscription ID assigned to this subscription.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.
unknownEventId	Subscription failed because one or more of the event identifiers in *EventIds* cannot be found. The unknown event identifiers are listed in *ErrorMsg* field of the return value.
noSuchTs	Transport-Stream input does not exist.

Remarks

When one of the events fires, a UDP packet is sent to *IpAddress*, *Port*.

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EvUnsubscribe

Unsubscribe from an event, or from a list of events.

```
XpectResultT  EvUnsubscribe (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] int[]  SubscrIds       // Subscription IDs
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

SubscrIds

Identifies the subscriptions to be deleted.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.
unknownSubscrId	Failed to unsubscribe from one or more subscriptions, because of unknown subscription identifiers. The unknown subscription identifiers are listed in *ErrorMsg* field of the return value. NOTE: The subscription for the known identifiers will have dropped.

Remarks

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GlobalGetLastError

Get the last SOAP error result and reason.

```
XpectResult  GlobalGetLastError (
  [in] int  SessionId         // Session identifier
 [out] string  LastResult     // String with last result
 [out] string  LastReason     // String with last error reason
);
```

Parameters

SessionId

Session identifier.

LastResult

String containing the last SOAP error result.

LastReason

String containing the last SOAP error reason.

Result

XpectResult	Meaning
Ok	Version was retrieved successfully.
noSuchSession	Session does not exist or session has timed out.

Remarks

Although this is a 'Global' function, it still needs a SessionId.

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GlobalGetVersion

Get SOAP interface version.

```
XpectResult  GlobalGetVersion (
 [out] int  VersionMaj        // Major version number
 [out] int  VersionMin        // Minor version number
);
```

Parameters

VersionMaj

Major version number.

VersionMin

Minor version number.

Result

XpectResult	Meaning
Ok	Version was retrieved successfully.

Remarks

The Xpect interface uses a version number with the following format “X.Y”, where X is the major and Y is the minor version number. The minor version number of the interface will be increased whenever a backwards compatible change has been made to the interface (i.e. a new function was added without changing the existing functions). The major version will be increased whenever a breaking change has been made to the interface (i.e. one of the existing functions was changed). Before using the Xpect soap interface a client should call this function to verify that the interface version is supported by the client (i.e. major version is equal to the version the client expected and the minor version number is equal or higher than the expected). For example if the client supports version “1.1” then it will also support version “1.2” and “1.3” of the interface, but not version “1.0” or “2.1”.

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GlobalGetServerInfo

Get Xpect server version and license information.

```
XpectResult  GlobalGetServerInfo(
 [out] int  VersionMaj        // Major version number
 [out] int  VersionMin        // Minor version number
 [out] int  VersionBugfix     // Bugfix version number
 [out] int  VersionBuild      // Build version number
 [out] int  VersionBit        // 32 or 64 bit build
 [out] bool IsValidLic        // A valid license has been found
 [out] bool IsEvalLic         // Current license is an evaluation license
 [out] time LicEndDate        // Maintenance or evalution end date
 [out] int  AvailLicPoints    // # of license points available
 [out] int  UsedLicPoints     // # of license points in use
 [out] int  NumSpts_tv        // # of TV SPTS streams in configuration
 [out] int  NumSpts_radio     // # of radio SPTS streams in configuration
 [out] int  NumMpts           // # of MPTS streams in configuration
 [out] int  NumRoundRobin     // # of Round-robin streams in configuration
 [out] bool IsStreamingConfigured
                              // Is streaming in configuration
 [out] time XpectServerStartTime
                              // When did server start runnung
);
```

Parameters

VersionMaj
Xpect server major version number.

VersionMin
Xpect server minor version number.

VersionBugfix
Xpect server bugfix version number.

VersionBuild
Xpect server build version number.

VersionBit
Either 32 or 64 to show 32 bit or 64 bit Xpect server build.

IsValidLic
Boolean flag which is set to true if a valid license has been detected by Xpect.

IsEvalLic
Boolean flag which is set to true if the current license is an evaluation license, otherwise a permanent license has been found.

LicEndDate
In case the *IsEvalLic* flag has been set this field indicated the date when the evaluation license will expire. If the *IsEvalLic* flag has been cleared, this field indicates the date until which you can freely update Xpect (i.e. the end date for free maintenance upgrades).

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AvailLicPoints
Number of valid license points detected.

UsedLicPoints
Number of license points used/required by the current configuration.

NumSpts_tv
Number of single-program TV transport-streams in the current configuration.

NumSpts_radio
Number of single-program radio transport-streams in the current configuration.

NumMpts
Number of multi-program transport-streams in the current configuration.

NumRoundRobin
Number of round-robin-mode transport-streams in the current configuration.

IsStreamingConfigured
Boolean flag which is set to true if streaming is in the current configuration.

XpectServerStartTime
Reports the date and time when this Xpect server was started.

Result

XpectResult	Meaning
Ok	Server info was retrieved successfully.

Remarks

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SessionClose

Close a session.

```
XpectResultT  SessionClose (
  [in] int  SessionId         // Session identifier);
```

Parameters

SessionId

Session identifier of session that is to be closed.

Result

XpectResult	Meaning
Ok	Session has been closed successfully.
noSuchSession	Session does not exist or session has timed out.

Remarks

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SessionConfigOpen

Open a configuration session on an Xpect server.

```
XpectResultT  SessionConfigOpen (
  [in] string  Password      // Configuration password
  [in] int  Timeout          // Session timeout in seconds
 [out] int  SessionId        // Session identifier
);
```

Parameters

Password

Password to enter configuration mode. Provides some level of protection against accidental configuration. Password string must be SHA1 encrypted and Base64 encoded.

Timeout

Specifies the timeout for the session in seconds. A value of 0 indicates the default timeout (10 min) should be used. The maximum allowed timeout period is 15 minutes (i.e. 900 seconds)

SessionId

Session identifier. To be used in all subsequent calls in the session.

Result

XpectResult	Meaning
Ok	A configuration session has been created successfully.
invalidTimeout	Invalid timeout value specified (valid range: 0 .. 900)
maxNumSessions	Maximum number of configuration sessions (=1) has been reached. In other words: A configuration session is already open.

Remarks

For a read-only monitoring session, **SessionOpen** should be used.
A configuration session will automatically be closed if the idle time exceeds the specified *Timeout*.

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SessionOpen

Open a monitoring session on an Xpect server.

```
XpectResultT  SessionOpen (
  [in] int  Timeout           // Session timeout in seconds
 [out] int  SessionId
);
```

Parameters

Timeout

Specifies the timeout for the session in seconds. A value of 0 indicates the default timeout (10 min) should be used. The maximum allowed timeout period is 15 minutes (i.e. 900 seconds)

SessionId

Session identifier. To be used in all subsequent calls in the session.

Result

XpectResult	Meaning
Ok	A monitoring session has been created successfully.
invalidTimeout	Invalid timeout value specified (valid range: 0 .. 900)
maxNumSessions	Maximum number of sessions has been reached.

Remarks

For a configuration session, **SessionConfigOpen** should be used.
A monitoring session will automatically be closed if the idle time exceeds the specified *Timeout*.

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StatCreateSnapshot

Create a snapshot of the Transport-Stream status information, for subsequent querying through the **StatXXX** methods. The snapshot contains information about basic streams, services, tables and general information about the Transport Stream. The snapshot also holds the status of the TR 101 290 status indicators, extra-tests information and the template status.

```
XpectResultT  StatCreateSnapshot (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [out] time  UtcTime          // Time at which snapshot is taken
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

UtcTime

Time instance at which the snapshot was taken.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

In each session only one snapshot can exist. A new snapshot overwrites the previous one.

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StatGetBasicStreamInfo

Get basic-stream information for a list of PIDs. The information is read from the session's snapshot of the monitored Transport Stream.

```
XpectResultT  StatGetBasicStreamInfo (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] int[]  Pids            // List of PIDs
 [out] BsInfoT[] BsInfo       // Basic-stream information
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

Pids

List of PIDs of basic streams for which information is to be retrieved. A list of PIDs available in the snapshot can be obtained using **StatGetPids**.
In case *Pids* list is empty all basic streams are returned.

BsInfo

Receives the requested basic-stream information per PID.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetMonStatus

Get the monitoring status of the TR 101 290 indicators, extra-tests and template rules. The status information is taken from the session's snapshot of the monitored Transport Stream.

```
XpectResultT  StatGetMonStatus (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] StatIdT[]  StatIds     // Statistic-item IDs
 [out] MonStatusT[]  Status   // Monitoring status
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

StatIds

List with statistic-item identifiers for which the status is to be retrieved. A statistics item can be a TR 101 290 indicator, an extra-tests identifier or a template-rule ID.
In case *StatIds* list is empty all monitoring status info are returned.

Status

Receives a list with status and status indicator rule; status values are: .

Value	Meaning
unknown	Status is unknown/undetermined
Disabled	Statistic item disabled
noErrors	No errors detected
error	One or more violations detected

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetOverallOttStatus

Get overall OTT status information (e.g. overall Tr101290, Extra Tests and Template status) for multiple transport-streams. This function will automatically create a new snapshot, for each OTT service, before returning the status information.

```
XpectResultT  StatGetOverallStatus (
  [in] int  SessionId              // Session identifier
  [in] string[]  OttServices       // OTT servicename(s)
 [out] OverallOttStatusT[]  Status // Monitoring status
);
```

Parameters

SessionId

Session identifier.

OttServices

List with all OTT services for which the overall status should be fetched.
If the list is empty the status for all configured OTT services will be returned.

Status

List with overall status information for the requested OTT services.

Result

XpectResult	Meaning
Ok	Overall status has been fetched successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	One or more of the Transport-Streams in *TsNames* list do not exist.

Remarks

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StatGetOverallStatus

Get overall status information (e.g. bitrate + overall Tr101290, Extra Tests and Template status) for multiple transport-streams. This function will automatically create a new snapshot, for each transport-stream, before returning the status information.

```
XpectResultT  StatGetOverallStatus (
  [in] int  SessionId         // Session identifier
  [in] string[]  TsNames      // Transport-Stream identifier(s)
 [out] OverallStatusT[]  Status    // Monitoring status
);
```

Parameters

SessionId

Session identifier.

TsNames

List with all transport-streams for which the overall status should be fetched.
If the list is empty the status for all configured transport-streams will be returned.

Status

List with overall status information for the requested transport-streams.

Result

XpectResult	Meaning
Ok	Overall status has been fetched successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	One or more of the Transport-Streams in *TsNames* list do not exist.

Remarks

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StatGetPids

Get a list of PIDs in the snapshot of the monitored Transport Stream. The list includes the PIDs defined in the PSI and SI information, as well as PIDs of unlisted basic streams with non-zero bitrate.

```
XpectResultT  StatGetPids (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
 [out] int[]  Pids           // Array of PIDs
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

Pids

Receives an array of PIDs found in the TS snapshot. This array can be used as input to the **StatGetBasicStreamInfo** method.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetServiceIds

Get a list of service IDs of services found in the snapshot of the monitored Transport Stream.

```
XpectResultT  StatGetServiceIds (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
[out] int[]  ServiceIds       // Array of service IDs
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

ServiceIds

Receives a list of service IDs found in the TS snapshot. This list can be used as input to the **StatGetServiceStats** method.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetServiceInfo

Get service information for a list of service IDs. The information is read from the session's snapshot of the monitored Transport Stream.

```
XpectResultT  StatGetServiceInfo (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] int[]  ServiceIds      // List of service IDs
 [out] SvcInfoT[]  SvcInfo    // Service information
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

ServiceIds

List of IDs of services for which information is to be retrieved. A list of service IDs available in the snapshot can be obtained using **StatGetServiceIds**.
In case *ServiceIds* list is empty all Services are returned.

SvcInfo

Receives the requested service information.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetTableIds

Get a list of table IDs of tables and subtables found in the snapshot of the monitored Transport Stream.

```
XpectResultT  StatGetTableIds (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [out] TableIdT[] TableIds    // Array of table IDs
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

TableIds

Receives a list with table IDs found in the TS snapshot. This array can be used as input to the **StatGetTableStats** method.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetStatistics

Get all configured statistic data, excluding RF information. Optionally a new snapshot will be taken first else the information is read from the last snapshot of the monitored Transport Stream. This method is provided for backwards compatibility. New implementations should use StatGetStatistics2.

```
XpectResultT  StatGetStatistics (
  [in] int  SessionId        // Session identifier
  [in] string  TsName        // Transport-Stream identifier
 [in]StatConfigT  StatConfig // Configure which statistics to be returned
 [out]time  UtcTime          // Time at which snapshot is taken
 [out] TsInfoT  TsInfo       // Transport-Stream information
 [out] BsInfoT[] BsInfo      // Basic-stream information
 [out] SvcInfoT[]  SvcInfo   // Service information
 [out] TableInfoT[] TableInfo// Table information
 [out] MonStatusT[]  Status  // Monitoring status
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

StatConfig
Configuration specifies which statistics to be returned.

UtcTime
Time instance at which the snapshot was taken.

TsInfo
Receives the Transport-Stream information.
Will be empty when *TsInfoNeeded* is disabled in *StatConfig* parameter.

BsInfo
Receives all basic-stream information per PID.
Will be empty when *BsInfoNeeded* is disabled in *StatConfig* parameter.

SvcInfo
Receives all service information.
Will be empty when *SvcInfoNeeded* is disabled in *StatConfig* parameter.

TableInfo
Receives the table information for all available tables.
Will be empty when *TableInfoNeeded* is disabled in *StatConfig* parameter.

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Status

Receives a list with status and status indicator rule; status values are:

Value	Meaning
unknown	Status is unknown/undetermined/rule disabled
noErrors	No errors detected
error	One or more violations detected

Will be empty when *StatusInfoNeeded* is disabled in *StatConfig* parameter.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetStatistics2

Get all configured statistic data, including RF information. Optionally a new snapshot will be taken first else the information is read from the last snapshot of the monitored Transport Stream

```
XpectResultT  StatGetStatistics2 (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [in]StatConfig2T StatConfig// Configure which statistics to be returned
 [out]time  UtcTime          // Time at which snapshot is taken
 [out] TsInfoT  TsInfo       // Transport-Stream information
 [out] BsInfoT[] BsInfo      // Basic-stream information
 [out] SvcInfoT[]  SvcInfo   // Service information
 [out] TableInfoT[] TableInfo// Table information
 [out] MonStatusT[]  Status  // Monitoring status
 [out] RfInfoT  RfInfo       // Rf status
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

StatConfig
Configuration specifies which statistics to be returned.

UtcTime
Time instance at which the snapshot was taken.

TsInfo
Receives the Transport-Stream information.
Will be empty when *TsInfoNeeded* is disabled in *StatConfig* parameter.

BsInfo
Receives all basic-stream information per PID.
Will be empty when *BsInfoNeeded* is disabled in *StatConfig* parameter.

SvcInfo
Receives all service information.
Will be empty when *SvcInfoNeeded* is disabled in *StatConfig* parameter.

TableInfo
Receives the table information for all available tables.
Will be empty when *TableInfoNeeded* is disabled in *StatConfig* parameter.

Status
Receives a list with status and status indicator rule; status values are:

Value	Meaning
unknown	Status is unknown/undetermined/rule disabled

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noErrors	No errors detected
error	One or more violations detected

Will be empty when *StatusInfoNeeded* is disabled in *StatConfig* parameter.

RfInfo

Receives all RF information.
Will be empty when *RfInfoNeeded* is disabled in *StatConfig2* parameter.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetTableInfo

Get table information for a list of table IDs. The information is read from the session's snapshot of the monitored Transport Stream.

```
XpectResultT  StatGetTableInfo (
  [in] int  SessionId              // Session identifier
  [in] string  TsName              // Transport-Stream identifier
  [in] TableIdT[]  TableIds        // List of table IDs
 [out] TableInfoT[] TableInfo      // Table information
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

TableIds

List of table IDs of private-section tables for which information is to be retrieved. A list of table IDs available in the snapshot can be obtained using **StatGetTableIds**.
In case *TableIds* list is empty all Services are returned.

TableInfo

Receives the table information for the requested tables.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetTemplateRuleIds

Get the template ID and a list of IDs of template rules of the template that was active in the session's snapshot of the monitored Transport Stream.

```
XpectResultT  StatGetTemplateRuleIds (
  [in] int  SessionId              // Session identifier
  [in] string  TsName              // Transport-Stream identifier
 [out] string  TemplateId          // Template ID
 [out] TemplRuleIdT[]  RuleIds     // List of template-rule IDs
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

TemplateId

Receives the name of the template that was active in the TS snapshot.

RuleIds

Receives a list with template-rule identifiers. This list can be used as input to the **StatGetMonStatus** method.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatGetTsInfo

Get general Transport-Stream information. The information is read from the session's snapshot of the monitored Transport Stream.

```
XpectResultT  StatGetTsInfo (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
 [out] TsInfoT  TsInfo        // Transport-Stream information
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

TsInfo

Receives the Transport-Stream information.

Result

XpectResult	Meaning
Ok	Settings have been selected successfully.
noSnapshot	No snapshot has been created in this session.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

Remarks

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StatLogGetEntriesByTime

Get statistics log entries for a given time range.

```
XpectResultT  StatLogGetEntriesByTime (
  [in] int  SessionId              // Session identifier
  [in] string  TsName              // Transport-Stream identifier
  [in] statLogType  StatLogType    // Short-/medium-/long-term selection
  [in] time  TimeStart             // Start time
  [in] time  TimeEnd               // End time
  [in] StatIdT[]  StatIds          // Statistic items
 [out] time  WindowStart           // Start time of first window
 [out] StatLogEntryT[] Entries     // Log entries
);
```

Parameters

SessionId
Session identifier.

TsName
Name identifying the monitored Transport Stream.

StatLogType
Indicates whether to read from the short-term, medium-term or long-term statistics log.

Value	Meaning
shortTerm	Short-term statistics
mediumTerm	Medium-term statistics
longTerm	Long-term statistics

TimeStart, TimeEnd
Time range for which to retrieve event-log entries.

StatIds
List of statistic-item identifiers for which statistic information is to be retrieved.

WindowStart
Start time of first window. This is *TimeStart* aligned to the statistics time grid.

Entries
Receives a list with statistics log entries for requested *StatIds*.

Result

XpectResult	Meaning
Ok	Settings identifiers have been read successfully.
noSuchSession	Session does not exist or session has timed out.
noSuchTs	Transport-Stream input does not exist.

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PreviewSelectService

Start streaming a preview of the selected service from the given TS. The port number of the streamed output is returned if successful.

```
StreamingResultCode  PreviewSelectService (
  [in] int  SessionId         // Session identifier
  [in] string  TsName         // Transport-Stream identifier
  [in] int  SvcID             // Service ID
 [out] int  PortNumber        // Port number
);
```

Parameters

SessionId

Session identifier.

TsName

Name identifying the monitored Transport Stream.

SvcID

Time instance at which the snapshot was taken.

PortNumber

Port Number.

Result

xpectStreamingResultCode	Meaning
streamingAudioVideoSuccess	Audio and Video successfully streaming.
streamingVideoSuccess	Video successfully streaming.
streamingAudioSuccess	Audio successfully streaming.
errorStreamingDisabled	Streaming is not enabled in this configuration.
errorMaxSessions	The maximum number of sessions has been reached.
errorNoAudioPids	No audio PIDs found.
errorServiceScrambled	Service is scrambled and cannot be streamed.
errorNoSync	No Sync found.
errorStartFailed	Streaming failed to start.
errorInitFailed	Streaming failed to initialize.
errorNoFreePort	No available port to stream on.

Remarks

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