Nagravision

Taiwan Broadband Communications

(P)SI STREAM SPECIFICATION

1.2

NAGRAVISION S.A.
KUDELSKI GROUP

Contents

1. Introduction

1.1 Objective

The present document details the standard MPEG-DVB (P)SI stream proposed by Nagravision, in compliance with DVB-EN 300-468 and ISO-IEC 13818-1. This document can be used to supplement the STB specification which is supplied by STB or middleware vendors.

This document is written for Phase 1 and needs to be updated for future phases if needed.

1.2 Audience

The intended audience of this document is:

- Nagravision, to implement the (P)SI stream and for validation purpose
- Manufacturers, to implement all the documented features
- Customers, to understand the behavior of the system
- All persons allowed to read Nagravision document marked as Confidential for information purpose

1.3 Document Organization

The end of the current chapter contains references for the document.

Chapter 2 gives an overview of the coverage of the specification.

Chapter 3 gives an overview of the content of the EMM stream.

Chapter 4 gives an overview of the content of the (P)SI stream.

Chapter 5 gives the descriptions of the descriptors, their usage and content.

1.4 Document History

Date	Version	Author	Description
2008-05-29	0.1	Alex Qian	Initial document
2008-06-16	0.2	Alex Qian	Added BAT & IRD commands
2008-07-02	1.0	Alex Qian	Modifications based on David Cobut's feedback
2009-04-07	1.1	Alex Qian	Added series linking private descriptor
209-04-27	1.2	Mars Lin	Add new IRD commands Revised series linking private descriptor format

1.5 References

Doc #	Document Title	Version	Date
[1]	ISO/IEC 13818-1: Information technology - Generic coding of moving pictures and associated audio information – part 1: Systems. November 13, 1994, and future version.		
[2]	ETS 300-468: Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems.	1.3.1	Feb 1998, and future version

[3]	ETR-211: Digital Video Broadcasting (DVB); Guidelines on implementation an usage of DVB service information.	Final draft	May 23, 1996, and future version
[4]	Nagravision, IMS-SI, DVB private descriptors, Specification.	1.0Draft4	
[5]	Nagravision, Digital Terminal Division, Conditional Access Kernel, IRD Command Specification.	1.3.2	
[6]	Nagravision, Digital Terminal Division, Conditional Access Kernel, Application Programming Interface.	3.4.3	

2. Overview

This chapter will describe all part of the (P)SI stream that are necessary to manage standard Nagravision STBs. The stream is divided in three distinct flows:

- ECM streams
- EMM stream
- (P)SI stream

2.1 ECM Streams

The treatment of the ECM stream is managed by the CAK. No special manipulation must be done except what is defined in [6]. This is part of the STB integration procedure.

2.2 EMM Stream

The EMMs used by the CA system are managed by the CAK. The only EMM that has an impact on the STB is the IRD command (command to the STB encrypted in an EMM). The structure of the command is defined in [5] and the interface with the CAK is defined in [6].

The IRD command is broadcast, like all EMMs, during a period of time. During that period, the box receives the EMM several times (typically every 20-30 seconds), but it must process the same EMM only once. The smartcard has no way to identify an IRD command that was already received. For that reason, every IRD command is transmitted to the STB each time the EMM is received by the smartcard.

One of the two following mechanisms must be implemented by the STB to handle this case. Both are based on the fact that an IRD command has a unique identifier: the sequence_number.

The first one is applicable to all IRD commands without exception:

- Once the command is treated, the last sequence_numbers must be stored in a FIFO located in non-volatile memory (ten sequence_number per kind of IRD command is a good value).
- When a command is received again (and was stored in the non-volatile memory), the STB must ignore it.

The second solution is based on a per IRD command bases:

- For each kind of IRD commands, once the command is treated, the last sequence_number must be stored in the non-volatile memory.
- If a command with a sequence_number less or equal to the stored sequence_number is received, the command must be ignored.
- With this solution a way to restart the counters in the STB must be implemented. The proposed solution from Nagra is to authorize a sequence number less that the stored one only if the stored number is greater that 0xFF000000 and the sequence_number of the current IRD command is less that 0x01000000. Normally this case will never occur.

2.3 (P)SI Stream

In the (P)SI streams, the following tables are generated according to their standards.

From MPEG-2 specification, no private Nagravision descriptors are generated. In TBC the PSI streams are generated by the MUX. The MPEG-2 tables are:

- PAT
- CAT
- PMT

From DVB specification, the following tables are generated by the CAS:

- NIT
- SDT
- EIT p/f and schedule
- TDT / TOT
- BAT

3. EMM Content

As described in the overview, the EMM stream is fully managed by the CA kernel and the smartcard. The only features that are intended for the STB are the IRD commands. These commands are encapsulated in EMMs, therefore encrypted, and contain a buffer for the STB usage.

3.1 IRD Commands

The general IRD command format is given below.

Field	No. of bits	Syntax
IRD_command(){		
ird_identifier	8	uimsbf value 0x64
length	8	uimsbf maximum value = 0x37
command_body {		
sequence_number	32	uimsbf
command_id	8	uimsbf
operation	8	uimsbf
for (i=0;i<N;i++) {		
data	8	bslbf
}		
checksum	8	bslbf
}		
}		

The parameters are described below:

- ird_identifier: This 8-bit field identifiers the data as an IRD command and shall have a value of 0x64.
- length: This 8-bit field gives the length of the IRD command, beginning with the next field.
- sequence_no: This is 32-bit field carries the version number of the instance of the command. This filed enables the STB to identify when instances of commands already acted upon are repeated.
- command_id: This 8-bit field carries the individual command type.
- operation: This is 8-bit field is used in conjunction with command_id.
- checksum: This is 8-bit field contains the checksum calculated over the IRD command from command_id to the last data byte.

3.2 Implemented IRD Commands

The STB understands and will act upon several IRD commands. These are listed below.

Command	Operation	Description	Syntax	No. of bits	Identifier	Description
0xC2	0x01	New Network ID, with immediate reboot	network_id	16	uimsbf	16-bit field carrying the new network ID

0xC3	0x01	New Network ID, with immediate reboot after timeout specified in seconds	network_id timeout	16 16	uimsbf uimsbf	16-bit field carrying the new network ID, 16-bit field carrying reboot timeout
0xC5	0x01	New Bouquet ID, with immediate reboot	bouquet_id	16	uimsbf	16-bit field carrying the new bouquet ID
0xC6	0x01	New Bouquet ID, with immediate reboot after timeout specified in seconds	bouquetId timeout	16 16	uimsbf uimsbf	16-bit field carrying the new bouquet ID, 16-bit field carrying reboot timeout
0x12	0x01	New PIN	PIN	32	uimsbf	New PIN carried as four ASCII numeric characters
0xCC	0x01	Restore factory setting				STB reset to factory setting upon receiving this command
0xD2	0x00	Force software download				STB will start OTA upon receiving this command
0xD2	0x01	Force software download interactive				STB will interactive with customer to decide if an OTA should start or not
0xC5	0x0A	Pair STB with HDD S/N no.	config pattern	16 N*8	uimsbf uimsbf	Config reserved for future usage. Set 0x00 as default. HDD S/N value is stored in pattern.
0xC5	0x0B	Set DVR quota value	size	16	uimsbf	Size is measured in

						GB. Ex. 0x14 for 30GB

4. (P)SI Stream Content

The following chapter contains a list of the different tables and the possible location of the descriptors in it.

4.1 PSI Tables

All the PSI tables are standard as defined in [1]. At TBC they are generated by the MUX. More details should be provided by the MUX vendor.

4.1.1 Program Association Table

The Program Association Table (PAT) provides a correspondence between a program_number and the PID value of the TS packets that carry the program definition. The program definition is carried in the Program Map Table (PMT). For the special case where program_number is equal to zero, the PID is the value of the TS packets that carry the Network Information Table. As DVB specifies this value anyway, this information is ignored.

The PAT is acquired whenever tuning of TS is complete. Once a complete PAT has been constructed, sections carrying the same value for the version field are discarded. If a section carrying a new value for the version field is detected, the Pat is reacquired.

The PAT may be delivered in multiple sections.

4.1.2 Conditional Access Table

The Conditional Access Table (CAT) provides the association between the CA system and the EMM stream. The STB matches the value of the CA_system_ID field, found in the ca_descriptor, against a value provided by the CA kernel. The STB discards CAT sections until the value of CA_system_ID required, has been provided by the CA kernel. The CA_system_ID used at TBC is 0x1806.

Once a complete CAT has been processed, repeated sections with the same value of version field are discarded. If a change in version is detected, the CAT is reacquired.

The STB requires the following descriptors to be present in the CAT.

Descriptor	Usage
ca_descriptor	The value of the CA_PID field carries the location of the EMM stream, and is passed to the CA kernel.

4.1.3 Program Map Table

The Program Map Table (PMT) provides the mapping between program numbers and the program elements that comprise them. The STB imposes a limit that each PMT section must contain a complete program definition. A single program definition may not be transmitted across multiple sections.

The PMT is acquired on channel change for the program (service) that carries the programming for a given channel. If the channel change is across TS, the PMT is not acquired until the PAT for the new TS has been acquired. Once a PMT section for a program has been processed with a particular value of version field, subsequent sections for that program, with the same version, are discarded. If a PMT section for that program with a different version is detected, the PMT section is reacquired.

The STB expects to find the following descriptors in the PMT.

Descriptor	Location	Usage
ca_descriptor	Program info descriptor loop.	In this location the *CA_PID* field carries the value of PID for the TS packets that carry the ECM stream that applies to the whole program stream.
ca_descriptor	Elementary stream info descriptor loop.	In this location the *CA_PID* field carries the value of PID for the TS packets that carry the ECM stream that applies to the associated program element stream.
stream_identifier_descriptor	Elementary stream info descriptor loop.	This descriptor is used to label component streams of a service in order to be differentiated.
iso_639_language_descriptor	Elementary stream info descriptor loop.	Used to distinguish between audio components.
subtitling_descriptor	Elementary stream info descriptor loop.	Identifies a component stream as carrying subtitles.
teletext_descriptor	Elementary stream info descriptor loop.	Identifies a component stream as carrying Teletext.

4.2 DVB SI Tables

In this chapter we will describe all the DVB tables and the way they are used at TBC. The tables are:

- NIT
- SDT
- EIT p/f and schedule
- TDT/TOT
- BAT

Two types of headend are used in the implementation of TBC architecture, namely Central Headend (CHE) and Remote Headend (RHE).

The CHE will generate all common services, while RHE will rebroadcast all these common services plus locally inserted services.

- NIT will carry several sub tables
- NIT will be generated per RHE and CHE; and will exist on every TS
- SDT actual and other will exist on every TS
- EIT present/following will exist on every TS
- EIT schedule actual and other will exist on HOME TS only
- TDT/TOT will exist on every TS
- BAT will exist on every TS

- No discussion on private descriptors so far

4.2.1 Network Information Table

The NITs are broadcast according to DVB, with a repetition of 1.25 [s] maximum.

The Network Information Table (NIT) contains information relating to the transport streams (TS) carried on the network. There are two types of NIT, NIT actual and NIT other. The STB has no requirement for transmission of the NIT other. The STB uses the data from the NIT to construct the Channel Table.

NITs actual will be generated according to each region on all TS from CHE on specific PID, these NITs will be then filtered to drop NITs that does not represent the region and remaps on the correct DVB NIT PID on all the TS within the related network.

Each sub-table of the NIT carries a list of TS that contain the services belonging to the region defined by that sub-table. The service_list_descriptor defines the subset of services from the TS that can potentially be presented to the subscribers of that region.

Once a NIT sub-table for the correct region has been processed, repeated sections of the same version are discarded. If a section of the NIT sub-table for the current region is encountered with a version other than that stored, creation of a new Channel Table is triggered.

There are two descriptor loops in the NIT, the network descriptor loop, and the transport descriptor loop. The descriptors of the network descriptor loop pertain to the region specified by the NIT sub-table in which they appear. The descriptors of the transport descriptor loop pertain to the TS described by the entry in the transport stream loop that they appear. The STB requires the following descriptors to be present in the NIT.

Descriptor	Location	Usage
network_name_descriptor	Network descriptor loop.	The name carried in this descriptor is the name of the region described by the NIT sub-table in which the descriptor appears.
linkage_descriptor (type 0x4)	Network descriptor loop.	Several types of linkage descriptor are supported by the STB, although only two are expected in this loop of the NIT. These are descriptors of *linkage_type* 0x4 (Specified by DVB) describing the location of a TS carrying complete SI for the network.
cable_delivery_system_descriptor	Transport descriptor loop.	This descriptor describes the tuning parameters for the TS described by the entry in the transport descriptor loop in which it appears.
service_list_descriptor	Transport descriptor loop.	This descriptor specifies the subset of service from the SDT that should be used to construct the Channel Table.
channel_descriptor	Transport descriptor loop.	This descriptor associates a channel_number with a DVB service_id. The channel_number is the "channel ID" that the STB displays to the viewer
stuffing_descriptor		The STB correctly ignores information contained in this descriptor

4.2.2 Service Description Table

The SDT are compliant with DVB. Their repetition rate are lower that 2 [s].

The Service Description Table (SDT) describes the services that are contained within the transport streams (TS) that make up the network. Each sub-table of the SDT describes services that are contained within a particular TS. There are two types of SDT, SDT actual and SDT other. The SDT actual describes the services contained within the TS on which the SDT actual is carried. The SDT other describes the services of TS other than the TS on which the SDT other is carried. The STB uses the contents of the SDT to construct the Channel Table.

Contrary to the requirements of DVB both SDT actual and SDT other are required by the STB on each TS that makes up the network. The STB does not process any SDT sub-tables until the NIT for the specified region has been processed. This means that the STB only has to process the SDT sub-tables that are relevant for the region.

Once an SDT sub-table for the correct region has been processed, repeated sections with the same value of version are discarded. If a section of the SDT sub-table for the current region is encountered with a version other than that stored, creation of a new Channel Table is triggered.

The STB requires the following descriptors to be present in the SDT (all of them contained in the service descriptor loop).

Descriptor	Usage
service_descriptor	This descriptor describes the type and name of a service. The *service_provider_name* field is ignored.
linkage_descriptor (type 0x2)	This descriptor is used to redirect the user to other services when the required service is not available
private_data_specifier_descriptor	This descriptor is used to identify the specifier of the private descriptors or fields within descriptors.
nasp_ca_descriptor	Optional Nagra private descriptor, see Nagra documentation.

For TBC, the following 2 service types are used:

Service_type	Description
0x01	Digital television service
0x8D	user defined

The user defined service is a special service used by Nagravision to create a linkage descriptor specified by DVB to signal the home transport.

4.2.3 Event Information Table

Their repetition rate is less than 2 [s] for EIT p/f and 10 [s] for EIT schedule. In TBC, the EIT schedule tables are generated for 3 days.

The Event Information Table (EIT) provides information regarding to the events contained within each service. There are four types of EIT, *present/following (p/f) actual, present/following other, schedule actual and schedule other*.

The EIT schedule actual and other are only required for the DTV Navigator and it is responsible of their acquirement and processing. When DTV Navigator is running it is responsible for acquisition and management of all required EIT sections.

Once an EIT sub-table for a particular service has been processed, repeated sections with the same value of version are discarded. When a section of the EIT p/f sub-table is encountered with a version other than that stored, the section is processed and stored.

The STB expects the following descriptors to be present in the EIT p/f.

Descriptor	**Usage**
short_event_descriptor	This descriptor carries the name of and information about a specific event.
extended_event_descriptor	This descriptor carries extended information about a given event. The STB concatenates the *item_description_char*, *item_char* and *text_char* fields into a single string.
private_data_specifier_descriptor	This descriptor is used to identify the specifier of the private descriptors or fields within descriptors (Nagra or broadcaster)
stuffing_descriptor	The STB ignores correctly information contained in this descriptor
nasp_ca_descriptor	Optional Nagra private descriptor, see Nagra documentation.
parental_rating_descriptor	This descriptor gives a parental rating for the event.
series_linking_descriptor	This descriptor is used by the STB SW to automatically record entire series

The STB expects the following descriptors to be present in the schedule EIT.

Descriptor	**Usage**
short_event_descriptor	This descriptor carries the name of and information about a specific event.
extended_event_descriptor	This descriptor carries extended information about a given event. The STB concatenates the *item_description_char*, *item_char* and *text_char* fields into a single string.
private_data_specifier_descriptor	This descriptor is used to identify the specifier of the private descriptors or fields within descriptors (Nagra or broadcaster)
stuffing_descriptor	The STB ignores correctly information contained in this descriptor
nasp_ca_descriptor	Optional Nagra private descriptor, see Nagra documentation.
parental_rating_descriptor	This descriptor gives a parental rating for the event.
series_linking_descriptor	This descriptor is used by the STB SW to automatically record entire series

4.2.4 Time & Data Table

The Time and Date Table (TDT) carries the UTC time and date information. This table is required by the STB. The contents of the TDT are used to set the Real Time Clock (RTC) of the STB. The RTC always represents UTC regardless of the geographical time zone or any applied daylight saving regime.

4.2.5 Time Offset Table

The Time Offset Table (TOT) carries the UTC time and date information and local time offset. This table is optionally required for the STB, if located outside of the GMT time zone.

The STB expects the following descriptors to be present in the TOT.

Descriptor	Usage
local_time_offset_descriptor	This descriptor gives the current local time offset, the next local time offset to be applied and the time at which to apply it. The STB expects to find only one descriptor defining no more than one local offset. This descriptor is optional. If this descriptor is not present, it is assumed that the time zone is UTC (GMT), and default daylight saving will be applied following the rules laid out by EU. For TBC the time zone will be set to UTC+8.

4.2.6 Bouquet Association Table

The BAT provides information regarding bouquets. A bouquet is a collection of services, which may traverse the boundary of a network.

The BAT shall be segmented into bouquet_association_sections.

The Bouquet Association Table (BAT) contains information relating to the transport streams (TS) belonging to the bouquet. The STB uses the data from the BAT to construct the Channel Table, in combination with the NIT. The services inside the BAT is strictly a subset of those of the NIT.

Multiple BAT will be generated per network, and the STB application shall select the appropriate one according to its bouquet ID (set by IRD command).

Each sub-table of the BAT carries a list of TS that contain the services belonging to the bouquet defined by that sub-table. The service_list_descriptor defines the subset of services from the TS that can potentially be presented to the subscribers of that bouquet.

Once a BAT sub-table for the correct region has been processed, repeated sections of the same version are discarded. If a section of the BAT sub-table for the current region is encountered with a version other than that stored, creation of a new Channel Table is triggered.

There are two descriptor loops in the BAT, the bouquet descriptor loop, and the transport descriptor loop. The descriptors of the bouquet descriptor loop pertain to the bouquet specified by the BAT sub-table in which they appear. The descriptors of the transport descriptor loop pertain to the TS described by the entry in the transport stream loop that they appear. The STB requires the following descriptors to be present in the BAT.

Descriptor	Location	Usage

bouquet_name_descriptor	Bouquet descriptor loop.	The name carried in this descriptor is the name of the region described by the NIT sub-table in which the descriptor appears.
service_list_descriptor	Transport descriptor loop.	This descriptor specifies the subset of service from the SDT that should be used to construct the Channel Table.
stuffing_descriptor		The STB correctly ignores information contained in this descriptor

5. Private Descriptors Content

5.1 Nagravision Private Descriptors

NagraVision private descriptors are always placed after a DVB private_data_specifier_descriptor() with a DVB-assigned value of 0x00000009.

5.1.1 nasp_ca_descriptor

private_data_specifier_descriptor(): yes value: 0x00000009

Syntax	No. of bits	Content
nasp_ca_descriptor{		
descriptor_tag	8	0x86
descriptor_length	8	
for(i=0; i<N; i++) {		
private_data_bytes }	8	Private data
}		

This descriptor must be passed as parameter in some CAK functions. No interpretation of it must be done by the STB. The descriptor is only present in the EIT if the event's access condition differs from the access conditions of the service.

5.2 TBC Specific Private Descriptors

The following tables define the expected formats of TBC defined private descriptors.

5.2.1 channel_descriptor

private_data_specifier_descriptor(): none value: n/a

Syntax	No. of bits	Content
channel_descriptor{		
descriptor_tag	8	0x82
descriptor_length	8	
for(i=0; i<N; i++) {		
service_id	16	
channel_number }	16	
}		

5.2.2 series_linking_descriptor

private_data_specifier_descriptor(): none value: n/a

Syntax	No. of bits	Content
channel_descriptor{		
descriptor_tag	8	0xD0
descriptor_length	8	
series_key	640	identify a unique series
episode_key	12	identify a unique episode
episode_status	4	0=normal 1=premier 2=finale
}		

Glossary, terms and acronyms

ACS	*Access Control System*; Nagravision component translating SMS commands into EMMs
ASE	*Available Server Environment*; Compaq UNIX mechanism providing redundancy between a cluster of two identical machines. Used by the main CAS machines in redundant architectures
ASI	*Asynchronous Serial Interface*; protocol to interconnect DVB equipment
CA	*Conditional Access*; equipment and techniques preventing unauthorized use of data or video streams.
CAK	*Conditional Access Kernel*; Nagravision component running on the Consumer Device (or STB) and providing an interface to the security chip
CAS	*Conditional Access System*; Nagravision product, as a whole
CC	*Call Collector*; Nagravision component handling the calls from the STB to collect IPPV usage
CMS	*Content Management System*; software to manage all aspects linked to content (acquisition, scheduling, broadcasting, payments) for a Pay TV operator
DNASP	*Digital Nagravision Advanced Security Processor*; name of the Nagravision CA technology
DVB	*Digital Video Broadcasting*; Consortium of companies establishing common international standards for digital broadcasting. <http://www.dvb.org/>
DVB-CI	DVB Common Interface; optional digital removable security devices implementing the security and CA portions of STB in the DVB standard, functionally equivalent to the US OpenCable POD standard
ECB	Nagravision hardware device combining and ECE, EMB and EME.
ECM	*Entitlement Control Message*; CA message
ECMG	*ECM Generator*; In the context of DVB SimulCrypt, generic name given to the CA specific device or software generating ECMs.
ECO	*Engineering Change Order*; In general, procedure designed to document as precisely as possible a change in a system. Specifically, procedure by which Nagravision customers can request specific modifications to their CAS.
ECS	*ECM SimulCrypt Encryptor*; Nagravision component providing ECMs to the network; acts as a DVB SimulCrypt ECMG
EIS	*Event Information Scheduler*; In the DVB SimulCrypt system architecture, functional unit in charge of holding all the schedule information, all the configurations and CA specific information required for the complete system.
EIT	*Event Information Table*; part of the DVB SI specification
EMB	*EMM Broadcaster*; Nagravision component providing EMMs to the network; acts as a DVB SimulCrypt EMMG
EME	*EMM Encryptor*; Nagravision component encrypting EMMs before diffusion by the EMB
EMM	*Entitlement Management Message*; CA message
EMMG	*EMM Generator*; In the context of DVB SimulCrypt, generic name given to the CA specific device of software generating EMMs.
EPG	*Electronic Program Guide*; depending on the context, refers either to the STB application providing a display of the channel schedule on the subscriber TV screen, or either to the whole schedule process, from its definition, its transmission on the network to its display.
FTTH	*Fiber To The Home*; Network architecture
GUI	*Graphical User Interface*; a computer program human interface that takes advantage of the computer's graphic capabilities to make the program easier to use
IMS	*Information Management System*; Nagravision component handling the topology, schedule, and subscriber offerings (products)
IP	*Internet Protocol*
ISDN	*Integrated Services Digital Network*; set of international standards for transmitting voice, data, and video simultaneously
ISO	*International Standard Organization*
MDI	*Multimedia Data Injector*; Nagravision component streaming data or video over ATM or DVB equipment
MGT	*Management Workstations*; Nagravision supplied Windows NT computers designed to run a suite of GUIs to monitor and control the CAS

MMDS	*Multipoint Microwave Distribution System*; Wireless broadband network technology
MPEG	*Moving Picture Experts Group*; ISO working group. The term also refers to the family of digital video compression standards and file formats developed by the group
MPEG-2	MPEG second video compression scheme; coding scheme for the compression of video signals
MUX	*Multiplexer*;
Nagravision	*Nagravision S.A.*; member of the Kudelski Group of Companies, provides this document and the solutions, components or APIs it describes
NIT	*Network Information Table*; part of the DVB SI specification
NVOD	*Near Video On Demand*; principle by which the same movie or event is repeated on multiple channels at short intervals like 15 minutes
PSI	*Program Specific Information*; MPEG specifications enabling auto-tuning on the STB
SC	*Smart Card*;
SCS	*SimulCrypt Synchronizer*; In the DVB SimulCrypt architecture, logical component that acquires CW, ECMs and synchronizes their play-out for all the CA systems connected
SDT	*Service Definition Table*; part of the DVB SI specifications
SI	*System Information*; DVB or ATSC defined data format used by the STB to display information about services available on the network
SIG	*SI Generator*; In the DVB SimulCrypt architecture, component responsible for generating the SI, taking its primary data from the EIS and supplementary data from the Custom SI servers supplied by the CA providers.
SMS	*Subscriber Management System*; software program managing subscribers on the network; may be supplied by Nagravision
STB	*Set Top Box*; name of the Consumer Device in DTV networks
TCP	*Transmission Control Protocol*; main protocols in IP networks; enables two computers to establish a connection and exchange streams of data; guarantees delivery of data
TDT	*Time Definition Table*; part of the DVB SI specifications
TOT	*Time Offset Table*; part of the DVB SI specifications
VOD	*Video On Demand*; umbrella term for a wide set of technologies whose common goal is to enable individuals to select video streams from a central server for viewing on a television or computer screen
XML	*eXtensible Markup Language*; a pared-down version of SGML; allows designers to create their own customized tags, enabling the definition, transmission, validation, and interpretation of data between applications and between organizations. Nagravision uses XML for most of its APIs.