DVB SI BASICS

Simple "SI" tables

A bouquet may comprise many transport streams across many satellite/cable/terrestrial frequencies. DVB Service Information or SI forms the "Table of Contents" and the "Electronic Program Guide" which binds all the different Elementary Streams of a Transport Stream together. Errors in the SI may prevent a decoder from starting to decode a stream.

(A real example we have seen, caused a set top box to re-tune its input from its default frequency to a new frequency where it expected to find a new Transport Stream. The frequency it was told to tune to was wrong. It waited 30 seconds and timed out - went back to its old default frequency, acquired the transport stream and then attempted to re-tune again.) There are two types of table within the SI:
i) those specified by MPEG - the PSI (Program Specific Information)
ii) those specified by DVB - the SI (Service Information)

Note that the ATSC specified the PSIP tables (not covered here) but still uses the PSI.

The PSI is intended to bind all the elements of a transport stream together whereas the SI is intended to bind a number of services and transport streams together in order to provide a multi-channel broadcasting environment.

The PSI tables have the following function:

PAT   Program Association Table
This table lists all the services found in this Transport Stream. Each service is identified by a PMT.
The PAT is always on PID 0.

PMT   Program Map Table
This table identifies all the Elementary Streams within a service. There is one PMT per service, but there may be more that one PMT on the same PID.

NIT   Network Information
Table Although the existence of this table is specified in MPEG, its contents and use are specified by the DVB below.

CAT   Conditional Access Table
This table controls the scrambling of a service. It associates one or more CA systems with their EMM (Entitlement Management Message) stream and any other extra data that may be required.

"SI" tables

The SI tables extend the binding information to allow services to have names, allow service delivery information to be provided and Electronic Program Guide information to be transmitted. The SI tables have the following functions:

NIT   Network Information Table
The Network Information Table groups a number of Transport Streams together providing tuning information for an IRD (Integrated Receiver Decoder). If a user can view a service via two different delivery mechanisms (e.g. terrestrial and satellite) then each mechanism will have a different Network ID.

BAT   Bouquet Association Table
A Bouquet is a group of services which are presented to the user as though they were on the same Transport Stream. The user may select different services within the bouquet, but be unaware that the IRD is in fact re tuning its input to pick up a new transport stream within the network.

SDT   Service Description Table
A description of a service provides a name and optionally other related information such as language codes, running status and country availability. There may be several sub tables providing information for this Transport Stream and other Transport Streams within the bouquet /network.

EIT   Event Information Table
This forms the basis of a database upon which an lectronic Program Guide may be based.
Present/Following information allows events on a service to be classified as "running", "not running", "paused", "starts in a few seconds". Schedule information is arranged by table, sub-table, segment and section into 3 hours blocks within which the program guide information can be transmitted. In general, the EIT information may be scrambled, although different countries may provide regulations which restrict this practise.

TDT Time and Date Table
Provides UTC (Universal Time) coded as MJD (Modified Julian Date)

TOT Time Offset Table
Is used to provide time offsets to give local time.

RST Running Status Table
These are sent out only once to update the status of an event.

ST Stuffing Table
Used to replace or invalidate tables.

DIT Discontinuity Information Table
Used to inform a downstream device that transport stream information has been removed and the stream may be a partial stream missing some SI tables.

SIT Selection Informative
Table Used to inform a downstream device that Transport Stream information has been removed and the stream may be a partial stream missing some SI tables.

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