

Single Illumination System

Increased efficiency for network operators



What is DVB-SIS?

DVB-SIS, published in August 2018 as ETSI TS 103 615, allows for terrestrial retransmission of signals addressing DTH satellite receivers. SIS stands for Single Illumination System, referring to the fact that a single satellite beam can be used simultaneously for DTH and to feed terrestrial networks.

Since the standard has been designed in a generic way, the satellite/terrestrial use case is just one possibility; in the future other use cases could be realized using DVB-SIS, e.g. a cable/terrestrial combination. The common denominator for all use cases is the deployment of Transport Streams.

Background

Satellite infrastructure is heavily used for transmission of broadcast signals targeting end users' homes directly (Direct to Home, DTH), but also for feeding terrestrial transmitter networks. Until now these two use cases were realized separately, consuming a significant proportion of valuable satellite capacity.

All DTH satellite receivers work with Transport Streams (TS), whereas terrestrial transmitters need to be addressed with either DVB-T2-MI (Modulator Interface) streams or streams containing DVB-T mega-frames (TMF). Neither are directly suitable for reception by satellite receivers. Therefore, DVB aimed to develop a smart solution covering both use cases in one go. The specification developed enables the terrestrial re-transmission in a clearly defined – or deterministic – way by adding specific metadata to the conventional TS transmitted via satellite. The metadata is not visible to the satellite receiver and hence will be ignored for DTH reception.

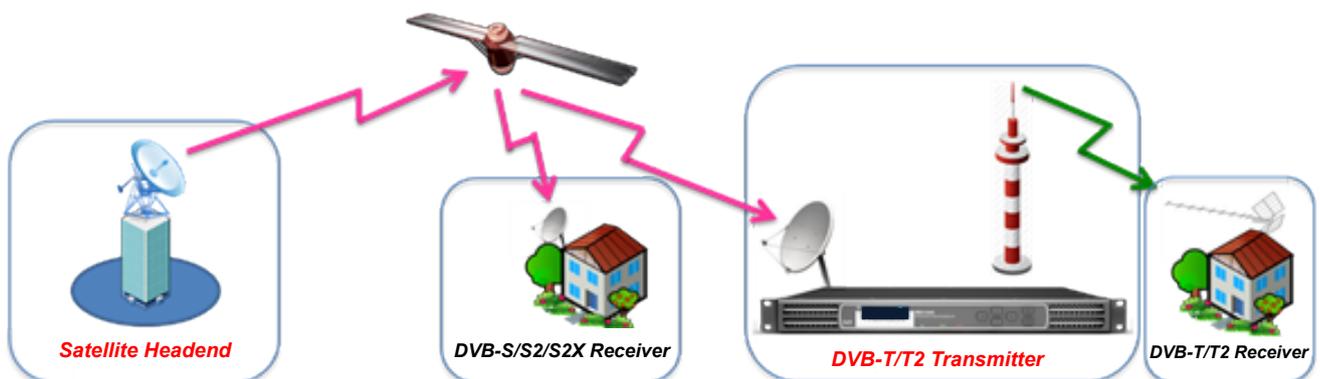


Figure 1. DVB-SIS feeding satellite receivers and terrestrial transmitters

How does it work?

The DVB-SIS concept consists of deriving content and metadata from one delivery path (e.g. satellite) for re-delivery via another path (e.g. terrestrial), also called respectively Parent and Daughter sites. The Parent network type is currently satellite, but in future could also be cable, terrestrial or any other physical layer system able to carry a TS. The concept fulfils SFN (Single Frequency Network) requirements, enabling the 'bit correct' output of the same T2-MI or TMF stream from each Daughter Site Adapter (DSA, see Figure 2 overleaf) belonging to the same SFN.

Interface H in Figure 2 is critical because the DVB-SIS standard describes only the composition of the signal at that interface. It is irrelevant how that signal is produced, i.e. the Parent Site part of figure 2 is an example of a possible approach.

Key elements of the SIS chain include the Control Signal Generator (CSG) that produces all SIS-specific metadata and the DSA that processes the metadata to generate the T2-MI or TMF stream.

How does it work? (continued)

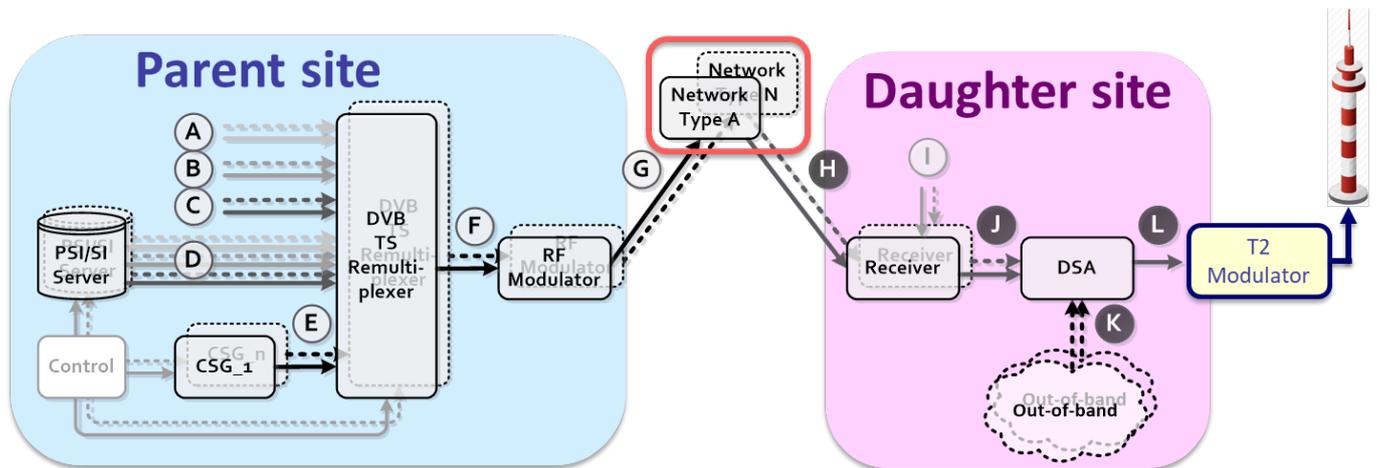


Figure 2: DVB-SIS concept

DVB-SIS metadata consists of:

- Timestamps
- Framing & Timing Information (F&TI)
- Daughter Site Adapter Configuration Information (DSACI)
- Terrestrial Service Information (PSI/SI) – as far as needed (the majority shall be derived from satellite PSI/SI)

Market Deployment

Several operators identified a need for an open specification that would enable the use of DTH signals for feeding DTT networks in parallel, for which proprietary solutions already existed. DVB thus developed SIS specification.

It is anticipated that manufacturers will provide SIS-compliant up- and downlink equipment. Already at IBC2018, interoperable DVB-SIS devices produced by different manufacturers were demonstrated. In parallel, DVB has initiated the process to foster a licensing programme for SIS.

Next Steps

The specification is stable. No updates are foreseen until such time as new market requirements are identified.

Links

www.dvb.org/standards
www.dvb.org/webinars

Link to the DVB-SIS standard
Watch the July 2018 webinar and download the slides