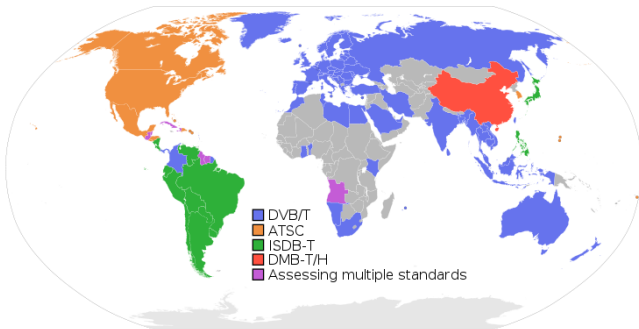




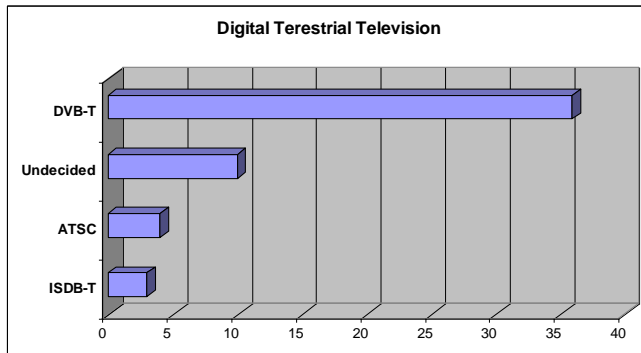
**Advantech Wireless – your partner for DTT content distribution**

DVB-T is the most widely deployed DTT (Digital Terrestrial Television) system worldwide, with services on air in over thirty five countries and more than 60 million receivers deployed. Significant number of countries, in Europe, Southeast Asia, Africa, the Middle East and Latin America, are planning for the launch of DVB-T services in the next 2-3 years. These countries will benefit from the use of a mature technology that is flexible enough to meet their individual market requirements. Additionally, dozens of other countries are opting for other DTT systems, such as ATSC: Advanced Television System Committee (Americas), ISDB-T/SBTVD-T: Association of Radio Industries and Businesses (Japan/Brazil) and DMB-T/H: Digital Media Broadcast (China/Hong Kong).

Each of the DTT offerings specify the framing structure, channel coding and modulation for terrestrial channel adaptation. Broadcasters can opt for different deployment considerations such as Multiple Frequency Network (MFN) vs Single Frequency Networks (SFN) in order to save frequencies and deliver more services. Whereas these broadcast considerations are specific to the DTT offering, the common aspect among all DTT offerings is the selection of MPEG framing structure.



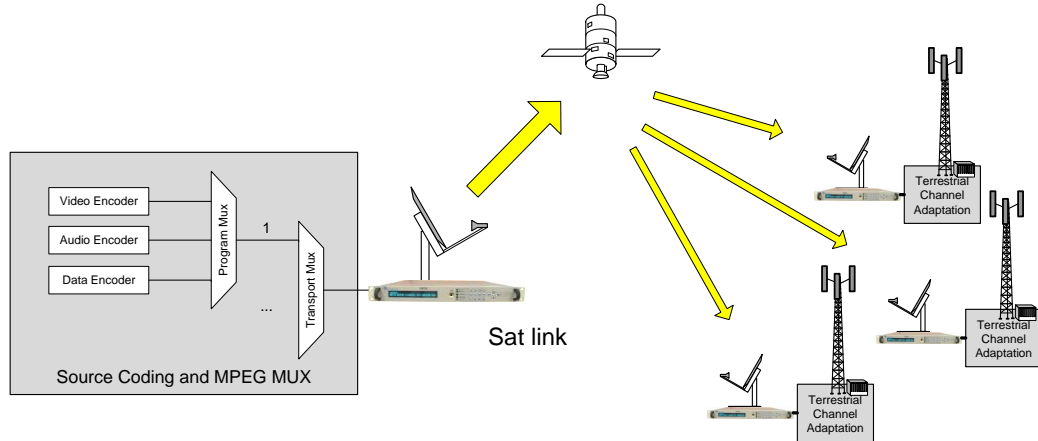
Satellite has long been an effective means to distributing television content to home as demonstrated from the overwhelming success of Direct to Home (DTH) services worldwide. Satellites ubiquitous coverage, reach and quick deployment, which make it ideal for DTH, are also the same capabilities which make it an ideal alternative to fixed terrestrial infrastructure for DTT content distribution to DTT towers.



DTH has traditionally been deployed via DVB-S and will migrate to enhanced DVB-S2 in the years to come. Why DVB-S2? DVB-S2 is the latest wireless communication technology to push channel capacity to the Shannon limit. By combining the most advanced information coding schemes with higher-order modulations, DVB-S2 can deliver channel performance close to the Shannon limit when properly characterized. What does this mean? DVB-S2 is at least 30% more efficient under similar channel conditions, than DVB-S. This implies, lower roll-out CAPEX through lower power requirements and smaller dishes or lower OPEX through increased channel capacity for equivalent power to traditional DVB-S.

Advantech Wireless offers mature DVB-S/S2 solutions, with advanced capabilities, making it possible to cost effectively distribute DTT transport streams over satellite. Solutions range from advanced DVB-S/S2 modulators with integral 4 port ASI interfaces and 10/100/1000BaseT Ethernet capability, to DVB-S/S2 demodulator solutions supporting the same interfaces. Additional value added capabilities include Variable Coding Modulator (VCM), high order modulations (from QPSK to 32APSK), ISI broadband multiplexing, ISSY time stamping, and BISS encryption.

## Deploying DTT over Satellite:



Example: Broadcast DTT network over satellite

### Benefit of DVB-S2 VCM Stream Multiplexing:

Variable Coding and Modulation can be used to apply different modulation and coding combinations to separate streams in a multiple ASI/Transport stream (TS) environment. Bandwidth savings can be made by applying higher order modulation combinations to streams that require less protection. An example of this would be that National television content would occupy one TS and Local television content would occupy another TS. The Local television content could be deployed with a higher order modulation and coding combination to minimize the occupied satellite bandwidth but would be more subject to downlink deterioration. National television content would require a lower order combination of modulation and coding providing greater protection to downlink deterioration. Power savings can also be made using only one DVB-S2 VCM carrier for multiple streams as opposed to using DVB-S or DVB-S2 CCM. Using a single carrier for the transmission of multiple transport streams means that the amplifier can be operated at power nearer to the saturation point without compromising inter-modulation distortion performance. Bandwidth savings are also achieved by operating a single carrier environment.

### ISI Broadband Multiplexing:

When operating in a multiple ASI environment each transport stream (TS) can be accurately reproduced by the Input Stream Identifier (ISI) feature of the DVB-S2 technology. The ISI label allows the demodulator to extract individual or multiple TS from a multiplex of TS in a given VCM carrier. The benefit of this is that the demodulator has the flexibility to output individual TS, multiple individual TS, or even multiply TS so that identical TS are pushed out up to 4 ASI simultaneously.

### Basic Interoperable Scrambling System (BISS) Encryption:

Advantech provides BISS ensuring interoperable security and scrambling to TS broadcasts. BISS, developed by the European Broadcasting Union and a consortium of hardware manufacturers, was designed based on Common Scrambling Algorithm (CSA), and uses shared "session word" or "encrypted session word" which must be matched at both the modulator and demodulator to allow for the reception of the broadcast. BISS may be applied on selected TS packets or across all TS packets, meeting broadcaster conditional access requirements.

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