

DVB File Format

Enabling Standardised Content Interoperability in DVB Systems



What is DVB-FF?

The DVB File Format is a standardised file format for the storage and movement of DVB content - audio, video or data - between consumer devices, including fixed, removable and networked storage. As an open standard it ensures interoperability of stored content between devices from different manufacturers.

The final specification was approved by the DVB Steering Board in June 2008 and published as a formal ETSI (European Telecommunications Standards Institute) standard in November 2008. (Ref: TS 102 833 V1.1.1)

Background

The DVB File Format finds its roots in the work that eventually led to the DVB-CPCM specifications for content protection and copy management (see separate DVB-CPCM Fact Sheet). The technical group working on DVB-CPCM identified a requirement for a file format that could be used for the storage and exchange of protected content. It was recognised that the scope of such a file format would go beyond the work on content protection and thus a dedicated group was set up in DVB's Commercial Module to create a set of Commercial Requirements which the final specification should meet. These requirements identified a wide range of functionality that would be required, including the ability to store "off-air" recordings as well as supporting pre-authored content. The technical work began in September 2006.

How does it work?

In line with the DVB policy of reusing currently existing specifications where possible, the DVB File Format is derived from the ISO base media file format. This ensures commonality with other similarly derived formats such as MP4 or 3GP, and allows the reuse of existing support for these formats. DVB-FF supports the storage of A/V content and data three ways:

- encapsulated in an MPEG-2 Transport Stream, stored as a reception hint track;
- encapsulated in an RTP (Real-time Transport Protocol) stream, stored as a reception hint track;
- stored directly as media tracks.

A reception hint track contains the received data, together with information indicating their order and reception timing. These have been designed to allow a device to easily create a file containing the received information, either from a live broadcast or from its own internal proprietary format. Whilst normally a file would contain A/V stored in one of these three ways, it is perfectly possible that the file may contain more than one mechanism to improve the range of devices on which the content can be consumed, and there is also the option of converting content between reception hint tracks and media tracks.

In addition to the content itself, it is possible to store metadata that describes the content, including at least a title. This common format, which is based (in part) around TV-Anytime structures, assists devices in displaying information about the content contained in the file that is useful to a viewer. In addition, a range of non-descriptive metadata can be included in the file, predominately related to quickly finding and identifying locations within the file.

The format also provides a way, if required, of marking content contained as protected, defining the protection mechanism in an extensible fashion, and defines storage points for CPCM-related information. In addition to supporting CPCM, the standard references mechanisms that can be used to store protection information broadcast along with the content.

Files created according to the DVB-FF specification can use the ".dvv" suffix, to indicate that they are compliant with the specification. Such files also include a "brand", and DVB utilises two brands to indicate the codecs and compatibility. One brand matches with content created in accordance with ETSI TS 101 154, and the other with ETSI TS 102 005. Where appropriate, a file can be marked as compatible with both brands.

Market Deployment

Although the initial target for the DVB-FF specification was to provide a packaging mechanism that allowed the storage and interchange of DVB-CPCM protected content, there are a range of other potential areas to which it is applicable. One area is to provide an interoperation point to allow devices within a home to share files created from received broadcasts. This mechanism allows files to be stored independently of the authoring device, and be correctly accessed by any other device (that understands the DVB-FF specification) at any later date. With the increased number of devices in the home that are able to consume content, many of which already support variants of the ISO base media file format, this format has the potential to allow content to be more freely moved around and between devices.

Another area is that of mobile devices and the ability to record RTP streams - these match with formats used in such standards as DVB-H. Thus the specification allows for such devices to interchange content, potentially on removable media, created by recording received broadcasts.

Next Steps for DVB-FF

MPEG is currently updating the ISO Base Media File Format to include support for the storage of transport streams and RTP streams using the reception hint track approach. DVB-FF is working with MPEG to ensure the alignment and interoperability of these work items. Once MPEG publishes this work, the DVB-FF specification will be updated to refer to this work.

The technical working group is now developing guidelines for the use of DVB-FF, aimed at assisting interoperability, and considering the feasibility of developing some sample files. Input from early implementers is being sought.

Links

- www.dvb.org – the main website of the DVB Project
- www.etsi.org – all DVB standards are available for download directly from the ETSI website