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Digital Video Broadcasting (DVB); DVB specification for data broadcasting

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Contents

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Foreword

This European Standard (EN) has been produced by Joint Technical Committee (JTC) Broadcast of the European Broadcasting Union (EBU), Comité Européen de Normalisation ELECtrotechnique (CENELEC) and the European Telecommunications Standards Institute (ETSI).

NOTE: The EBU/ETSI JTC Broadcast was established in 1990 to co-ordinate the drafting of standards in the specific field of broadcasting and related fields. Since 1995 the JTC Broadcast became a tripartite body by including in the Memorandum of Understanding also CENELEC, which is responsible for the standardization of radio and television receivers. The EBU is a professional association of broadcasting organizations whose work includes the co-ordination of its members' activities in the technical, legal, programme-making and programme-exchange domains. The EBU has active members in about 60 countries in the European broadcasting area; its headquarters is in Geneva.

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The DVB Project is an industry-led consortium of broadcasters, manufacturers, network operators, software developers, regulators and others from around the world committed to designing open, interoperable technical specifications for the global delivery of digital media and broadcast services. DVB specifications cover all aspects of digital television from transmission through interfacing, conditional access and interactivity for digital video, audio and data. The consortium came together in 1993.

National transposition dates	
Date of adoption of this EN:	5 August 2021
Date of latest announcement of this EN (doa):	30 November 2021
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2022
Date of withdrawal of any conflicting National Standard (dow):	31 May 2022

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

The DVB System provides a means of delivering MPEG-2 Transport Streams (TS) via a variety of transmission media. MPEG-2 TSs were primarily intended for the delivery of Video and Audio. The present document introduces data broadcasting as an extension to the MPEG-2 based DVB transmission standards.

Five different application areas with different requirements for the data transport are addressed. For each application area a data broadcasting profile is specified in the present document. The following is a short description of the application areas and the profiles.

Data piping:

- The data broadcast specification profile for data pipes (as defined in clause 4) supports data broadcast services that require a simple, asynchronous, end-to-end delivery of data through DVB compliant broadcast networks.

Data streaming:

- The data broadcast specification profile for data streaming supports data broadcast services that require a streaming-oriented, end-to-end delivery of data in either an asynchronous, synchronous or synchronized way through DVB compliant broadcast networks.
- Asynchronous data streaming is defined in clause 5 and allows the streaming of data without any timing requirements (e.g. RS-232 data).
- Synchronous data streaming is defined in clause 6 and allows the streaming of data with timing requirements in the sense that the data and clock can be regenerated at the receiver into a synchronous data stream.

Multiprotocol encapsulation:

- The data broadcast specification profile for multiprotocol encapsulation (as defined in clause 7) supports data broadcast services that require the transmission of datagrams of communication protocols via DVB compliant broadcast networks.
- Clause 8 further defines a standard mechanism for signalling IP/MAC services deployed within DVB networks and enables the implementation of DVB receivers that are completely self-tuning when accessing IP/MAC streams on one or more transport streams.
- Mechanisms for power-optimized reception and forward error correction for multiprotocol encapsulation are defined in clause 9.

Data and object carousels:

- Data broadcast services that require the periodic transmission of data are called data carousels, and are defined in clause 10.
- Object carousels (as defined in clause 11) are based on data carousels, and provide an additional hierarchical structure and further metadata, such as for example needed to build a hierarchical file system.

Higher protocols based on asynchronous data streams:

- The data broadcast specification profile for higher protocols (as defined in clause 12) is based on asynchronous data streams, and supports the transmission of protocols that require a stream-oriented delivery of asynchronous data through DVB compliant broadcast networks.

1 Scope

The present document specifies transport and encapsulation protocols, and signalling for carrying general purpose data over DVB Transport Streams. The present document is designed to be used in conjunction with ETSI EN 300 468 [2].

Data broadcasting is an important extension of the MPEG-2 based DVB transmission standards. Examples are the download of software over satellite, cable or terrestrial links, the delivery of Internet services over broadcast channels (IP tunnelling), interactive TV, etc.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference/.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ISO/IEC 13818-1: "Information technology - Generic coding of moving pictures and associated audio information - Systems".

[2] ETSI EN 300 468: "Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems".

[3] ETSI TS 101 162: "Digital Video Broadcasting (DVB); Allocation of identifiers and codes for Digital Video Broadcasting (DVB) systems".

[4] ISO/IEC 13818-6: "Information technology - Generic coding of moving pictures and associated audio information - Part 6: Extensions for DSM-CC".

[5] ETSI EN 300 472: "Digital Video Broadcasting (DVB); Specification for conveying ITU-R System B Teletext in DVB bitstreams".

[6] IETF RFC 1112 (August 1989): "Host extensions for IP multicasting".

[7] IETF RFC 2045 (November 1996): "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", N. Freed, N. Borenstein.

[8] IETF RFC 2046 (November 1996): "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types", N. Freed, N. Borenstein.

[9] ETSI ETS 300 802: "Digital Video Broadcasting (DVB); Network-independent protocols for DVB interactive services".

[10] ISO/IEC 8802-1: "Information technology; Telecommunications and information exchange between systems; Local and metropolitan area networks; Specific requirements; Part 1: Overview of Local Area Network Standards".

[11] ISO/IEC 8802-2: "Information technology; Telecommunications and information exchange between systems; Local and metropolitan area networks; Specific requirements; Part 2: Logical link control".

[12] ETSI EN 300 743: "Digital Video Broadcasting (DVB); subtitling systems".

[13] ISO/IEC 8859-1: "Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1".

[14] ISO 639-2:1998: "Code for the representation of names of languages - Part 2: Alpha-3 code".

[15] IETF RFC 1950 (May 1996): "ZLIB Compressed Data Format Specification version 3.3".

[16] "RTCM Recommended Standards for Differential GNSS (Global Navigation Satellite Systems) Service", Version 2.2, Radio Technical Commission For Maritime Services, January 1998.

[17] CEN ISO/TS 18234: "Traffic and Travel Information (TTI) -- TTI via Transport Protocol Expert Group (TPEG) data-streams".

[18] ETSI TS 102 006: "Digital Video Broadcasting (DVB); Specification for System Software Update in DVB Systems".

[19] IETF RFC 2464 (1998): "Transmission of IPv6 Packets over Ethernet Networks".

[20] IETF RFC 1661 (1994): "The Point-to-Point Protocol (PPP)".

[21] ETSI TS 103 197: "Digital Video Broadcasting (DVB); Head-end implementation of DVB SimulCrypt".

[22] ETSI EN 302 307-1: "Digital Video Broadcasting (DVB); Second generation framing structure, channel coding and modulation systems for Broadcasting, Interactive Services, News Gathering and other broadband satellite applications; Part 1: DVB-S2".

[23] ETSI EN 302 755: "Digital Video Broadcasting (DVB); Frame structure channel coding and modulation for a second generation digital terrestrial television broadcasting system (DVB-T2)".

[24] ETSI EN 302 769: "Digital Video Broadcasting (DVB); Frame structure channel coding and modulation for a second generation digital transmission system for cable systems (DVB-C2)".

[25] DVB BlueBook A160: "Next Generation broadcasting system to Handheld, physical layer specification (DVB-NGH)".

[26] ETSI EN 302 307-2: "Digital Video Broadcasting (DVB); Second generation framing structure, channel coding and modulation systems for Broadcasting, Interactive Services, News Gathering and other broadband satellite applications; Part 2: DVB-S2 Extensions (DVB-S2X)".

[27] ETSI TS 102 606-2: "Digital Video Broadcasting (DVB); Generic Stream Encapsulation (GSE); Part 2: Logical Link Control (LLC)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] Void.

[i.2] IEEE 802-2001™: "Standard for Local and Metropolitan Area Networks: Overview and Architecture".