DVB Work on Multi-Media Transport over IP-Based Networks

MPEG MMT Requirements Workshop

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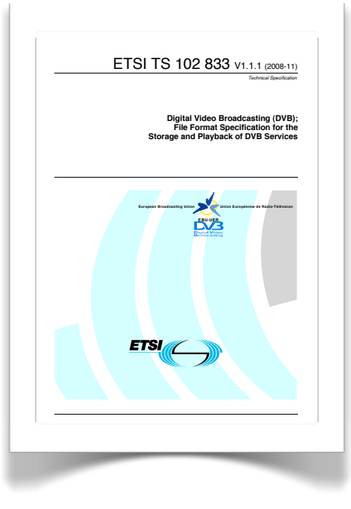
Main Areas of DVB Work Related to MMT

DVB Digital Video Broadcasting

File Format

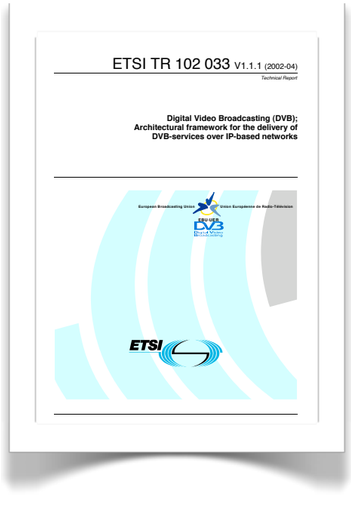
DVB FF


ETSI TS 102 833 V1.1.1 (2008-11)
Technical Specification

Digital Video Broadcasting (DVB);
File Format Specification for the
Storage and Playback of DVB Services

Managed IPTV

DVB IPTV


ETSI TR 102 033 V1.1.1 (2002-04)
Technical Report

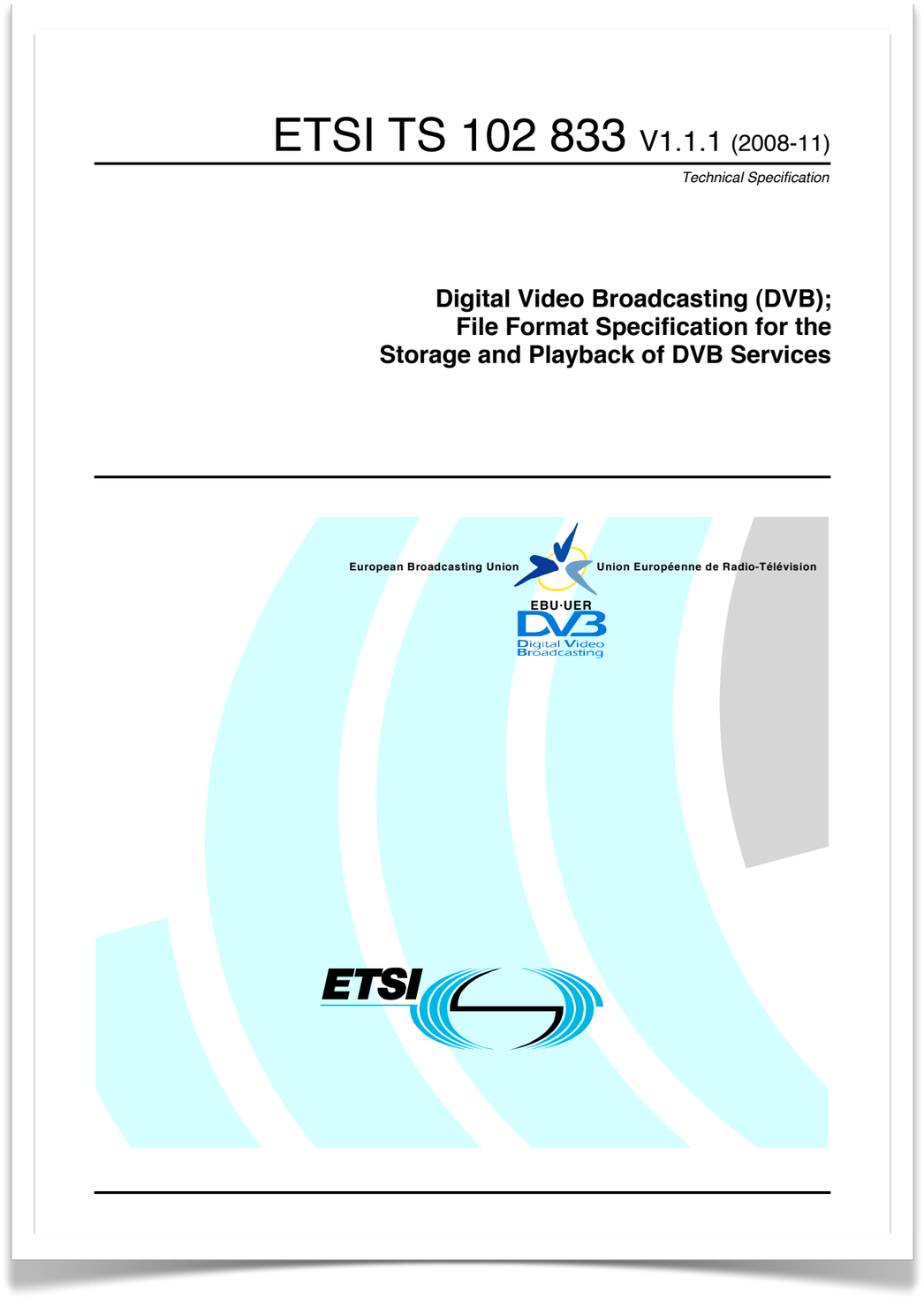
Digital Video Broadcasting (DVB);
Architectural framework for the delivery of
DVB-services over IP-based networks

Open Internet TV

DVB Digital Video Broadcasting

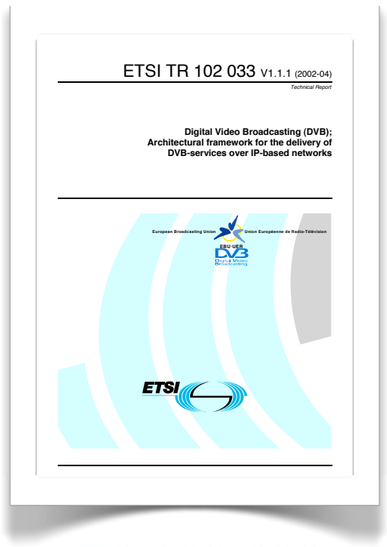
Study Mission

DVB File Format

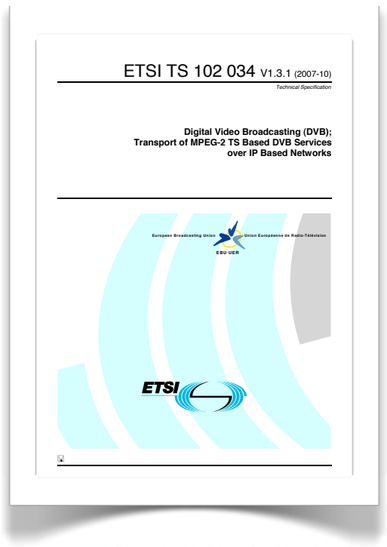


- "`.dvb`" files are based on the **ISO base media file format [ISO/IEC 14496-12]**; much commonality with MP4 file format [ISO/IEC 14496-14], the 3GPP file format [ETSI TS 126 244] or QuickTime.
- Allows the **storage of audio, video and other** content in any of **three main ways:**
  - encapsulated in a **MPEG-2 Systems Transport Stream**, stored as a reception hint track;
  - encapsulated in an **RTP stream**, stored as a reception hint track; and
  - stored **directly as media tracks**.
- Conversion of content between reception hint tracks and media tracks is defined.
- A small amount of mandatory descriptive metadata (**TV-Anytime** compatible) is included in the file. Any device can get a description of the content, even if it is not able to display the content. Additional metadata can be provided either in the extensible mandatory format, or in formats specific to certain DVB specifications or 3GPP Timed Text.
- Content may be protected by **CPCM**. Allows the DVB File Format to be used for the storage and retrieval of CPCM protected content.

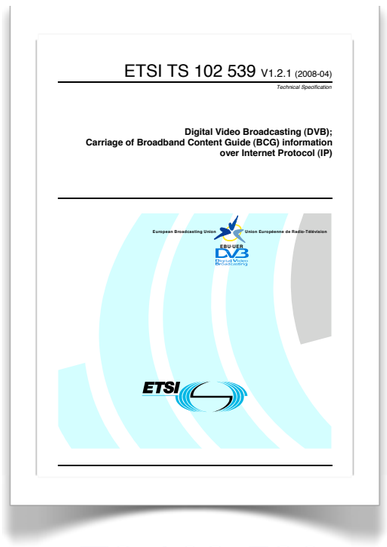
DVB IPTV



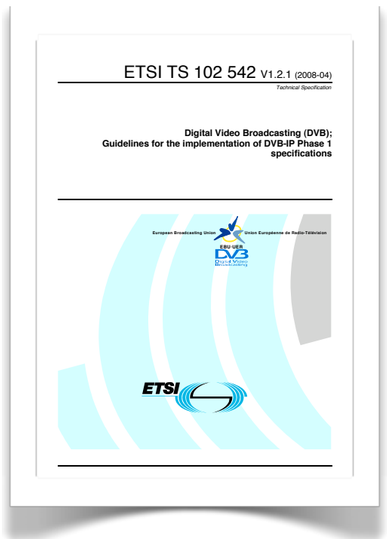
TS 102 033



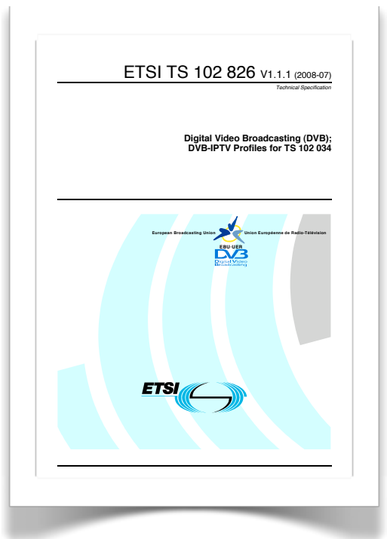
TS 102 034



TS 102 539



TS 102 542

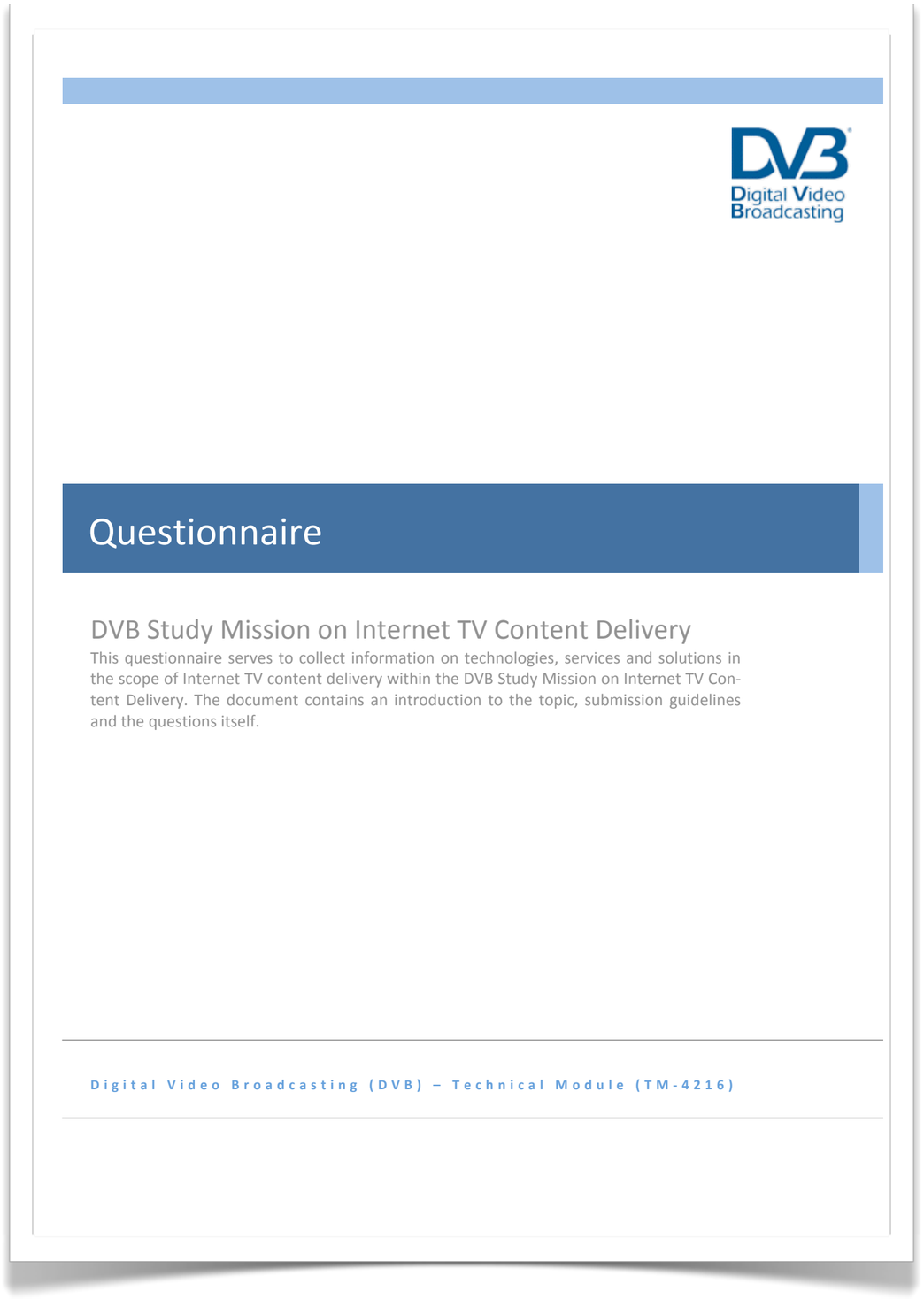


TS 102 826

TS 102 824

- **SD&S** (service discovery and selection): multicast (DVB-specific protocol **DVBSTP**) or unicast (**HTTP**) delivery of **XML**-based metadata, uses **MPEG-B** (aka. BiM)
- Three **delivery** modes using DiffServ and DSCP:
  - **LMB** (live media broadcast) using RTSP, optionally with trick-modes
  - **CoD** (content on demand) using RTSP
  - **CDS** (content download service): user (pull) or service provider (push) initiated using HTTP, FLUTE and reception reporting
- **AL-FEC** (application layer FEC) using packet-based, interleaved parity and a Raptor code
- RTP **retransmission** using RTCP and a DVB-RET server
- **RMS-FUS** (remote management and firmware update services)
- **BCG** (broadband content guide) using **TV-Anytime** descriptive metadata

DVB Open Internet TV


Questionnaire

DVB Study Mission on Internet TV Content Delivery

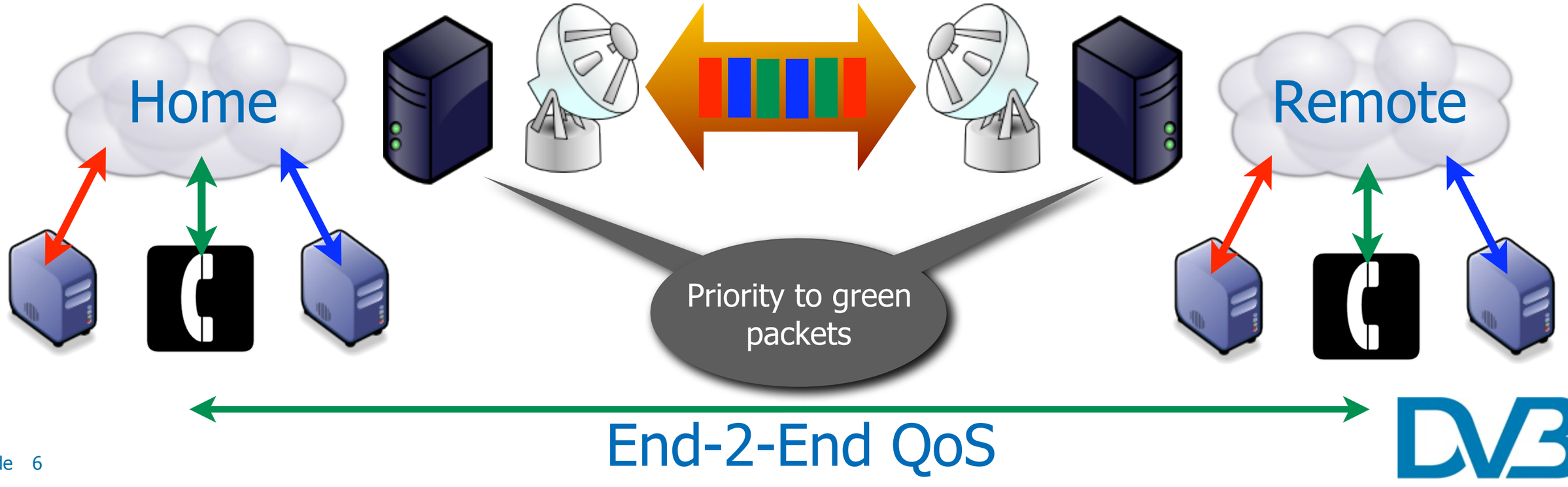
This questionnaire serves to collect information on technologies, services and solutions in the scope of Internet TV content delivery within the DVB Study Mission on Internet TV Content Delivery. The document contains an introduction to the topic, submission guidelines and the questions itself.

Digital Video Broadcasting (DVB) – Technical Module (TM-4216)

- **Technical study** mission:
  - Investigate technology options to deliver DVB-type content over the Internet to a large number of CE devices (includes game consoles), PCs or mobile devices
  - **Technology Survey Questionnaire** issued (see link); **still open for replies** until July, 3rd
  - **14 replies** received **so far**; great diversity of:
    - server-based, CDN, p2p
    - standards, proprietary
    - delivery only, end-to-end
    - hybrid broadband/broadcast, standalone broadband
    - research projects, start-ups, big players
    - Europe, Asia, US, etc.
- In parallel, **commercial study** mission on providing DVB-type services over the Open Internet, e.g. Internet TV Commercial Study, P2p Open Internet Content Delivery, Metadata and Search, etc.
- In **fall 2009**, DVB will decide how these studies can be merged and which parts will be (not) covered by DVB in future specifications.

Cross-layer designs to improve the Quality of Service - **NOT**

- The challenge: extend an intranet through a DVB-S2 satellite link to a remote site and enable VoIP service between the two sites.
  - The DVB-S2 modulator re-schedules packets from its variou sinput sto best match the currently available data rate. This may lead to priority inversion or long latencies depending on the variation of transmission conditions.
- The solution: insert a traffic shaper in front of the satellite modulator.
  - A new interface was added to the modulator, bypassing the modulator's scheduler for the IP packets in question.
  - This new input is fed from a traffic shaper which rearranges the IP datagrams according to the real-time service sessions in progress.

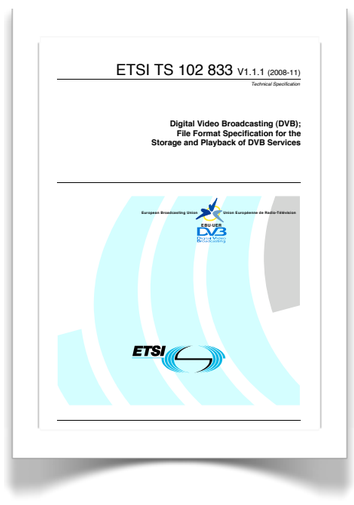


Summary

- Download and random access of MP4 files
  - The **DVB File Format** specification ETSI TS 102 833 allows for **streaming, segmented and progressive download** access to multimedia content. It also provides means to store descriptive metadata from electronic programme guides. It also supports **segmentation metadata**.
- MPEG TS Transport between heterogeneous networks
  - The **suite of DVB IPTV specifications** define a mechanism for carrying partial or full DVB-TS across IP networks.
  - By relying on **standard protocols** UDP, RTSP, RTCP, HTTP and FLUTE **interoperability** with existing network infrastructures is ensured.
  - Due to it's unique features for synchronised transport, **the MPEG-2 Transport Stream still plays a key role in the DVB File Format and DVB IPTV**.
- Cross-layer designs to improve the Quality of Service
  - DVB's baseline is that **cross-layer designs are to be avoided**. Instead higher layers should only impose QoS requirements on lower layers but be agnostic as to how these are met. Otherwise services will not be portable between networks.
- Context- and Content-Aware Networks and Quality of Service/Experience
  - **True QoS** can only be achieved by content-aware networks implementing an **IntServ architecture** on a managed network. This is the **TelCo/DSL model**.
  - **Some QoE** can be achieved on an unmanaged, un-aware network implementing a **DiffServ architecture (best effort)** by adding some robustness features at the application layer. This is the **Internet model**.

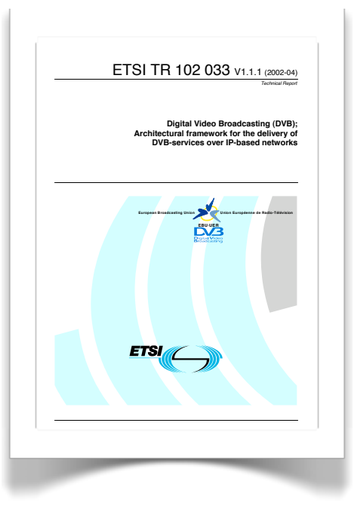
File Format

DVB FF



Managed IPTV

DVB IPTV



Open Internet TV

Thank you very much for your attention!

http://www.dvb.org/technology/standards/index.xml

DVB
Digital Video
Broadcasting