RTP Payload Format for MPEG2-TS Preamble

draft-begen-avt-rtp-mpeg2ts-preamble-03

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Recap

- A decoder needs “MPEG2-TS Preamble” to process and decode an incoming MPEG2-TS.
  
  This information resides in the transport stream but it is here and there, and not readily available.

- This document defines a new RTP payload format to carry the MPEG2-TS Preamble.
Major Changes since Version -01

- TLV elements are now TLOV elements
- Type values for TLOV elements have been assigned
- RAMS-specific reqs:
  - Preamble packets are PT-muxed with the retransmission (burst) packets
  - Preamble packets and retransmission (burst) packets share
    - The same SSRC
    - The same sequence number and timestamp space
- SDP example has been added
- Security considerations section has been completed
RTP Header

- M bit: When set, it indicates the last packet carrying the Preamble information
- PT: Dynamic
- Sequence number: One higher for each subsequent packet
- Timestamp: Set to the time corresponding to the transmission time (TBD)
- SSRC: Must be equal to the SSRC of the retransmission session in RAMS. Ow, it is randomly assigned per RFC 3550
RTP Payload

- **Vendor-Neutral Extensions**
  These extend the report block in a vendor-neutral manner
  Registry will be maintained by IANA (Specification Required)

- **Private Extensions**
  These MUST NOT collide with each other
  A certain range of TLOV Types ([128-255]) is reserved for private extensions
Vendor-Neutral Extensions

- We have defined the following TLOVs so far:
  - PAT TLOV
  - PMT TLOV
  - PCR TLOV
  - PID_LIST TLOV
  - SEQ TLOV
  - SPS TLOV
  - PPS TLOV
  - SEI TLOV
  - ECM TLOV
  - EMM TLOV
  - CAT TLOV
  - PTS TLOV

- Some of these TLOVs contain variable-length data
- Some of these TLOVs apply to only MPEG2 video, while some apply to only AVC (H.264) video
Post-Processing of the Preamble

- RTP packet(s) carrying the Preamble cannot be fed directly to the MPEG transport demux and decoder.
- The TLOVs need to be transformed into TS packets, and these need to form a demux/decoder-friendly stream.
- The stream MUST pass the TS packets to the demux in this order:
  - PAT
  - PMT
  - PCR
  - EMM
  - ECM
  - {Elementary Stream Data}
Why Use TLOVs and Post-Processing?

- This provides many benefits over sending raw MPEG2-TS packets or the RTP packets containing them.

- Different receivers require different Preamble structures.
  Receivers can easily change the order and quantity during post-processing.
  Servers cannot and should not be dealing with individual requirements.

- TLOV encoding packs everything often into a single RTP packet.
  This keeps the chances of failure minimal.

- TLOV encoding is more bandwidth efficient.
  Most bytes in TS packets are padding.
  Not every TS packet in an RTP packet carries Preamble data.

- Receivers may benefit from raw access to Preamble data.
  E.g., direct access to PCR (among others) can result in improved RAMS performance.
Next Steps

- The draft is complete
- WG adoption and last call?