RTP Payload Format for SVC Video – draft-ietf-avt-rtp-svc-03

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Status of SVC standardization

- Liaison statement sent to IETF on spec finalization
- Standard approved by ITU-T on 22-Nov-2007, approved text in JVT-X201, formal reference most likely will be
  

- SVC includes the following new scalable profiles:
  - Scalable Baseline
  - Scalable High
  - Scalable High Intra

- Payload format (and layered signaling in MMUSIC) are now the missing links to make the technology accessible to second-tier SDOs (DVB, 3GPP, …)
-02: Changes

• Alignment with JVT final draft
• Changes to PACSI (see also comments/open issues):
  • TL0IDX and IDRIDX (new) are optional
  • Flags set is optional, to be used with above param.
  • Added optional CL-DON field
• Clarified packetization rules, among others to resolve "single NAL unit mode deprecation"
• Added semantics of the media type parameters inherited from RFC 3984, and added a couple of new parameters for negotiation (sprop-layer-id, sprop-parameter-layer-range) of operation points. (see open issues)
-02: Changes (cont.)

- Added the usages of the media type parameters, including SDP usage with offer/answer model, declarative usage, and examples.
- Updated the congestion control part according to Colin’s comment.
- Checked the parameter set considerations and confirmed that the text in RFC 3984 is OK.
- Updated the security considerations part.
- Added justifications for some fields in the PACSI NAL units.
-02: Changes (cont.)

• Added following two processes to allow for layered multicast without requiring the interleaved packetization mode:

  – NAL unit order recovery process for layered multicast using CL-DON in the PACSI NAL unit, therefore extended sprop-parameters for DON to be used with H264-SVC (see also comments/open issues)

  – NAL unit order recovery process for layered multicast without using CL-DON
    (This point has not been agreed by the authors, see: comments/open issues)
NAL unit reordering w/ CL-DON

- By 1. CL-DON in PACSI (for packetization mode 1)
  2. extending the DON semantics already present to CL-DON semantics (for packetization mode 2)
- De-packetization process for multiple sessions same as for single session using mode 2
  - No need to perform de-packetization for each session separately beforehand
  - No need to discard received NAL units in some cases of packet loss
  - No need of dummy NAL units
  - Does not support packetization mode 0 for layered multicast

AVT IETF70 - Wenger, Wang, Schierl - draft-ietf-avt-rtp-svc-03
NAL unit reordering w/o CL-DON

• By
  • Timestamps (change according to Colin’s comment)
    • RTP sequence #
    • Session dependency grouping
    • Can be used with any packetization mode

• Problem:
  – Out-of-order presentation Timestamps in video

• Idea:
  – Re-order according to matching timestamps in sessions, decoding order is given by RTP sequence #
  – Rely on knowledge, that there is always a NAL unit in a higher session, i.e. highest session gives order (insert dummy NAL units)
  – Follow the dependency grouping
  – For Temporal scalability: optimize dummy NAL units by MTAPs in higher sessions (non H264 Base Layer)
Comments received from Colin
• When sync. RTP sessions by RTP mechanism: If initial synchronization delay due to the RTCP timing rules is an issue, then it should be fixed in a payload format independent manner, not as part of SVC. Means find sync between sessions after RTCP media sync. Will rewrite text (§7) for non CL-DON mode. (see open issues)

Comment received from Roni
• Support for common RFC3984 modes (e.g. baseline level 1.2 is the same with H264 and H264-SVC): The same text as in RFC3984 is there. No action needed

Comments received from Jonathan Lennox:
• Confusion about extended sprop-parameters for CL-DON like sprop-deint-buf-req for H264-SVC: May define new parameters for CL-DON Needs clarification by AVT
Mailing list traffic, a selective list (cont.)

Comments received from Jonathan Lennox (cont.):

- Why is useful TL0PICIDX now optional, although differently decided by AVT before/during Prague meeting and why removing flags, although flag byte is anyway present? 
  Previously these were optional in semantics 
  Idea was to save bits: because of additional IDR PICIDX and new CL-DON field 
  Needs clarification by AVT

- Relax constraints on “non CL-DON” mode, especially 1-D constraint on session dependency 
  Constraints should be relaxed 
  If this process is supported

- “Non CL-DON” reordering spec. needs cleanup, process does not need normative text 
  Authors have different positions 
  If “non CL-DON” reordering is accepted by AVT, cleanup will follow
Mailing list traffic, a selective list (cont.)

Comments received from Thomas Wiegand:

- Remove CL-DON from spec, hence there is no justification for the additional mode:
  - packet.mode==0 in base layer (BL) does not work with CL-DON
  - packet.mode==2 in BL works with packet.mode==2 in higher sessions
  - remaining use-case:
    - packet.mode==1 in BL, can be covered by “non CL-DON mode”

Authors have different positions
Needs clarification by AVT
Our to-do list

• Extend / add Offer/Answer examples
• Correct formatting in the draft
• Collect and report potential bugs found in RFC 3984
  – Start to draft 3984bis?
Open issue and question to WG

- How to proceed with non CL-DON mode?
- How to proceed with CL-DON mode?
- Redefining sprop- parameters for DON with H264-SVC ok, or new parameters?
- PACSNI NAL unit parameters: TL0PICIDX, IDRPICDX and flags to stay optional or move them back to mandatory (but optional in semantics)?
- Should the draft support SDP offer/answer using "sprop-scalability-information" and "sprop-layer-id"?