RTP Payload Format for SVC Video –
draft-ietf-avt-rtp-svc-15

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What has happened since last IETF

• Co-authors worked on the draft and had different editing meetings

• 2 new versions, draft is becoming stable

• We got feedback from David Singer and Peter Amon, which we incorporated

• Changes in the draft summarized on next slides
What is new - General

• Improved abstract and introduction

• New packet types via sub-types

• Signaling section completed

• Now referencing RFC3984-bis
Changes from version 13
- New Packet Types

• NI-MTAP consumed last free packet type
• Extension packet type: 31
  – For SVC and future extensions
  – 1 byte NAL header + 1 byte subtype signaling:
    5 bit sub-type and 3 bit flags
• Reserved: sub-type = 0
• NI-MTAP: sub-type = 1
  (non-interleaved multi-time aggregation packet)
• Empty NAL Unit: sub-type = 2
  (For data alignment in multi-session transport)
Changes from version 13

• Clarified usage of new NAL unit packets and usage of corresponding RTP header for Empty NAL unit and Non-Interleaved Aggregation Packet (NI-MTAP)

• Added tables on usage of packet types with respect to use of Single Session Transmission (SST) or Multi Session Transmission (MST) and packetization-mode

• Clarified PACSI usage in NI-MTAP

• Informative note for timestamp alignment with reference to informational draft: draft-schierl-avt-rtp-multi-session-transmission-00
Changes from version 13 - Signaling

• Completed signaling section
• Inline with RFC3984-bis
• Negotiation for offer/answer:
  – New sprop-operation-point-info parameter
    • Scalability SEI in plain
    • Usage of scalable-layer-id for operation point selection
  – level downgrade, only for whole stream as by RFC3984-bis (see next presentation)
  – mst-mode is used symmetrically for send and recv
Changes from version 13 - Signaling

New SDP parameters:

• sprop-operation-point-info:
  – Describes one or more operation points contained in a session: framerate, bitrate, frame-size, profile-level-idc, for association to bitstream: layer-id and TemporalID-DependencyID-QualtiyID.
  – If one operation point is described, this is the highest one in the session, if two: highest and lowest.
  – can be used as sprop-scalability-info in combination with scalable-layer-id
  – Does not allow for level-downgrading, level is given by default profile-level-id of the whole stream
  – obsoletes: sprop-layer-range, sprop-frame-size, …
  – too complicated: sprop-parameters-sets per operation point -> may use level-parameters-sets
Changes from version 13 - Signaling

• sprop-operation-point-info example

Offerer -> Answerer SDP message:

m=video 20000 RTP/AVP 97
a=rtpmap:97 H264-SVC/90000
a=fmtp:97 profile-level-id=53000c; packetization-mode=1;
sprop-operation-point-info=<1,2,0,1,4d400a,C80,B0,90,80,100>,
<2,3,1,0,53000c,1900,160,120,100,400>;scalable-layer-id=2;

Answerer -> Offerer SDP message:

m=video 40000 RTP/AVP 97
a=rtpmap:97 H264-SVC/90000
a=fmtp:97 profile-level-id=53000c; packetization-mode=1;
sprop-operation-point-info=<1,2,0,1,4d400a,C80,B0,90,80,100>,
<2,3,1,0,53000c,1900,160,120,100,400>;scalable-layer-id=1;
Changes from version 13 - Signaling (cont.)

New SDP parameters (cont.):

• **sprop-no-NAL-reordering-required**
  – If sessions are combined in session order, no reordering of NAL units is required

• **sprop-avc-ready**
  – Even though a session is announced as H264-SVC, it could be processed by a RFC3984 receiver. This is useful information for a MANE.

• **sprop-mst-csdon-always-present**
  – Indicates that a CSDON value is always present.

• **sprop-level-parameter-sets, sprop-ssrc (RFC3984bis)**
  – See next presentation
Changes from version 13 - Signaling (cont.)

Update of existing parameters:

- scalable-layer-id
- profile-level-id (RFC3984-bis)
- max-cpb (RFC3984-bis)
- sprop-parameter-sets (RFC3984-bis)
- packetization-mode (RFC3984-bis)
Changes from version 13 - Signaling (cont.)

Removed parameters:

- sprop-layer-range
- sprop-frame-size
- sprop-bit-rate
- sprop-frame-rate
Changes from version 13 - Signaling (cont.)

Signaling session dependencies for Multi Session Transmission:

• New text: In addition to I-D.ietf-mmusic-decoding-dependency, the signaled dependencies also reflect the decoding order.
  – Makes decoding order recovery process easier
Open Issues

• More SDP usage examples are needed. For declarative usage also?
• Rule on how scalable-layer-id is used in offer/answer. Additional review of scalable-layer-id operation point selection mechanism is needed, particular the rules for the different modes.
• sprop-ssrc may be unnecessary, depending on status of draft-lennox-avt-h264-source-fmtp-00.
• Section 7.4, parameter set considerations, needs to be updated.
• Section 11.4, videoconferencing description is missing.
Next Steps

• Any volunteers for review?
• Timing of draft dependencies:
  – RFC3984bis?
  – MMUSIC decoding dependency (AD Evalu.)
• Working Group Last Call with version 16: addressed open issues + integrating reviewer’s feedback?
• DVB (TS 102 005v1.4) depends on this document