Multi-Session and Multi-Source Transmission in the Real-Time Transport Protocol (RTP) –

draft-schierl-avt-rtp-multi-session-transmission-00

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What is it about?

• Identified problems of data and source correlation during recent work on media codecs allowing multi session transmission (session multiplexing) as SVC, MVC, G.718, MPEG Surround

• Also discusses multi source transmission (SSRC multiplexing) issues
RTP Solution

• Data Alignment:
  – Data alignment is not mentioned in RFC3550
    • implicitly based on NTP timestamp alignment?

• Source correlation:
  – All sources of the same media have the same SSRC across multiple sessions
  – SSRC collision detection is applied on the base layer
  – Defined in RFC3550
Problems – Data Alignment

- NTP based approaches typically implemented for a/v sync, not for exact numerical alignment of sample timestamps
- Delay introduced by SR
- Lost SR packets
- Clock skew
- Imprecise system clocks

*Existing implementations may not work, due to their “inaccuracy”*
Possible Solutions – Data Alignment

• RTP Timestamp Alignment

• Initial RTP timestamp / offset signaling

• New message for fast synchronization
  See: draft-perkins-avt-rapid-rtp-sync-00

• Header Extension

• Payload Specific Methods
Problems - Source Correlation

• Source Correlation based on same SSRC, with SSRC collision detection in the base layer:
  – MVC as well as SVC may have sessions without dependencies to other sessions of the same media
Possible Solutions - Source Correlation

- Exclude those sessions from multi session transmission, assign different SSRC.
  - Delayed synchronization if there are multiple senders in the sessions; problems if a single participant has multiple sources.

- Extra signaling of session to be used for SSRC collision detection
  - Have to join this session even if you don’t care about its content.

- Do collision detection on all layers, not just the base layer
  - Doesn’t work for sources in non-overlapping sets of sessions
Feedback on mailing list

• Ye-Kui:
  – Describe problems of timestamp based data alignment – We will add those
  – Use of same timescale may not be a problem for audio codecs as G.718.
  – Problem of non-dependent sessions of same SVC/MVC stream

• Ingemar: Why not using header extension?

• Randell/Colin: Header extensions may be discarded
Current suggestions

• We are in favor of RTP timestamp alignment
  – No new messages required (RTCP or signaling)
  – Implementation / updating existing code should be easy
  – Works for video and also audio? (to be checked for MPEG surround)
  – Works for uni-directional channels (as DVB)

• Keep source correlation for base layer
Open Issues

• Are the identified problems convincing reasons?

• Is there a need for an addition to the existing data alignment mechanism?

• Is there a need for an addition to the existing source alignment mechanism?