RTP Considerations for Endpoints sending Multiple Media Streams

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RTP Multi-source: Motivation

• Clarify usage of RTP/RTCP with multiple sources per session
• A number of use cases emerging where this is used
  – BUNDLE (or MMT)
  – CLUE
  – Multi-source Mixers
Changes from previous version

• Added explicit RTCP SDES item to describe RTCP reporting groups.
• Added calculations motivating use of reporting groups.
• Several additional open issues.
Reporting Groups

• A “Reporting Group” is a group of sources that all originate at the same interface of an endpoint, and so have the same view of an RTP session.

• Within a reporting group, only one SSRC sends reception reports about any given remote source.
  – That source also sends any XR or AVPF feedback about that remote source.

• No reception reports (or other feedback) are sent about sources within the same reporting group.
Reporting Group: motivation

• Semantic: sources are actually received by endpoints, not SSRCs, so gives better transparency about what’s going on.
  – E.g., if one endpoint with 50 streams receives you fine, but 10 others with one stream each doesn’t.

• Efficiency: use much less of your RTCP bandwidth sending redundant reception reports, meaning useful data is more timely.
  – See draft for example numbers.
Reporting group: details (1)

• New RTCP SDES item: RGRP, same syntax as CNAME (RFC6222/bis).
• All sources within a reporting group have the same RGRP.
• Only one reporting source within a group sends feedback about any given remote source.
  – The same reporting source can be used for all remote sources, or different local ones can be used for different remote ones.
  – Using different remote sources could be useful when the number of reports exceed an MTU.
• Other sources within the group send RTCP SR/RR packets without reception reports for that remote source.
• For AVPF, a reporting source gets to use other group members’ immediate or early feedback slots.
• The RGRP SDES item is included in any compound RTCP containing that source’s SR or RR.
• Sources with the same RGRP need not have the same CNAME.
  – E.g. multiple synchronization contexts, or a source-projecting mixer.
• Sources with the same CNAME need not have the same RGRP.
  – E.g., a distributed endpoint.
• Open issue: how to signal/negotiate in SDP.
Multi-source open issue: avg_rtcp_size

• In RFC 3550, a source’s transmission interval is proportional to (session size) * avg_rtcp_size / rtcp_bw.
• This calculation works if avg_rtcp_size measures compound RTCP packets sent by a single session member.
• However, the draft recommends aggregating several sources’ RTCP into a single compound.
  – Also in 3550, and this is a good idea for bandwidth use.
• Do we need to change how avg_rtcp_size and/or the transmission interval is calculated?
Next steps

• Address open issues
• Does the WG want the multi-source clarifications for a WG item?
• Does the group think RGRP semantics is a reasonable approach?