Advertisement for multi-source endpoint multiplexing multiple media type in the same RTP session

draft-wu-avtcore-multisrc-endpoint-adver-02

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Multi-Source endpoint advertisement

- Motivation
  - RTCWEB and CLUE applications support the endpoints with multi-source
  - The Endpoint with multi-sources may send multiple media type in the same RTP session.
  - An endpoint with multiple media sources involved in one RTP session may generate redundant reception reports about the same remote media source for each of local media sources.

- Objective
  - The objective is to suppress/reduce redundant reception reports.
  - new SDES item provides information to enable this.
    - to indicate which media source(s) in one group of media sources originating from a single endpoint is responsible for sending reception report,

Problem statement

- **Assumption**
  - Each local media source may send reception reports independently
  - The sending endpoint can not know the reception reports sent from different media source are duplicated from the same endpoint.
- **Problems:** Redundant reception report generated

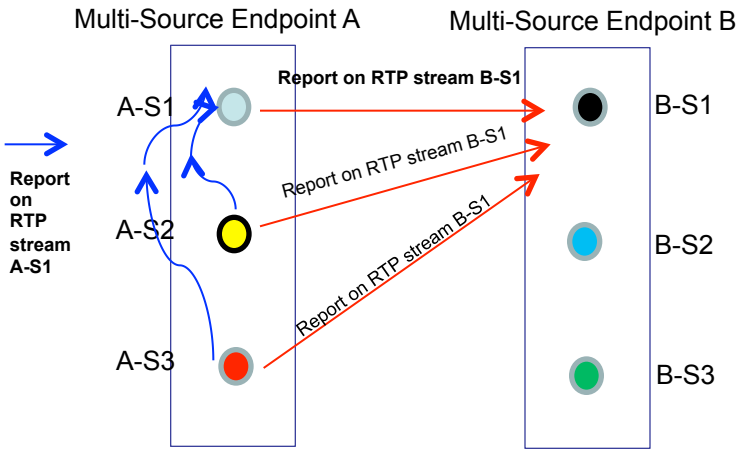


Figure 1

1. An endpoint with multiple media sources involved in one RTP session may send the reception report with duplicated information about the same remote media source from each of local media sources.

2. An endpoint with multiple media sources involved in one RTP session also may send reception reports about one of its own media sources from another of its own (This is also referred to as RTCP self-reporting).

Benefit to suppress redundant reception report

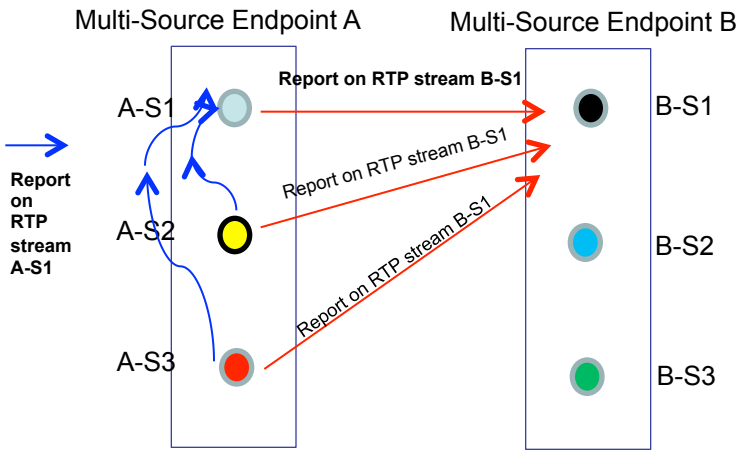
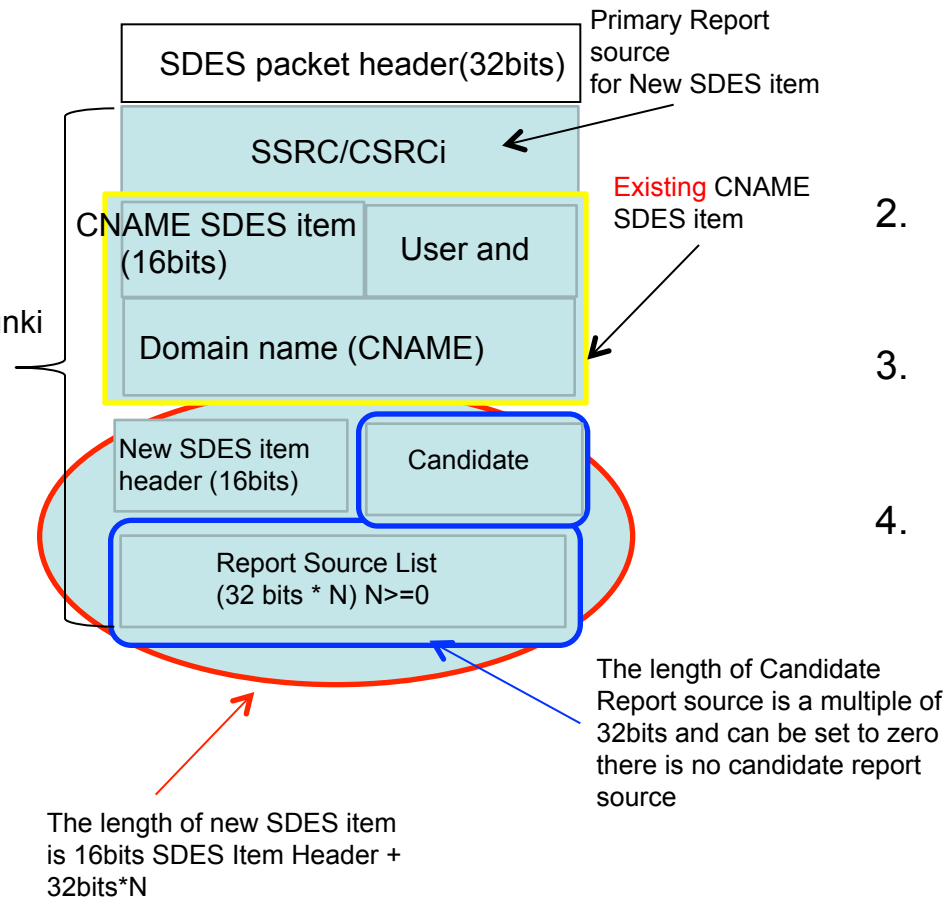


Figure 1

- Take figure 1 as example, two endpoints involved with each having 3 local media sources, if we allow redundant RR generated in each source, for each endpoint, each endpoint will send 9 *24bytes report blocks to the other end and send 6 *24bytes report blocks to itself for self reporting.
- However if we can suppress these duplicated reception reports or report blocks, we only need to send 3*24bytes report blocks to the other end and send zero *24bytes report block for self reporting.
- Take figure 1 as example, In extreme case when there is no candidate report source to be allocated, we Can save 12*24bytes report blocks overhead at the cost of 16bits new SDES item overhead.

Solution



1. Define one new SDES item message to indicate which media source(s) in one group of media sources originating from a single endpoint is responsible for sending reception report (i.e., report source)
2. The primary active Report source is indicated by SSRC/CSRC identifier included at the beginning of the chunk
3. In addition, it is allowed to carry a list of SSRC of Candidate report sources that are not active.
4. Which media source or group of media sources originate from a single endpoints is indicated by requiring this item sent together with CNAME SDES item.

Open issue

- Additional extension
  - It requires an negotiation in the offer/answer to verify that this feature is supported by the stream senders?
- Backwards compatibility
  - How this changes the RTCP timing and timeout rules, rules for compound RTCP packets
- Source projection mixer Case
  - Current draft does not discuss topologies like source projection mixer where the mixer keeps the original ssrc so even though they arrive from the mixer they have different CNAMEs.
  - It will be useful to discuss those topologies in the future version.
- Multi-Source endpoint advertisement
  - Current advertisement is only applicable to the multi-source endpoint multiplexing multiple media type in the session and does not apply to the multi-source endpoint multiplexing each media type in separate session.

Feedback?