Issues related to RID and Simulcast

draft-ietf-mmusic-sdp-simulcast-10

draft-ietf-mmusic-rid-12

Outline

- Issues
  - Handling in RID and Simulcast of associated payload types – such as Comfort Noise and DTMF
  - How to signal RED
  - Use of RepairedRtpStreamId
  - Synchronization issues for RRID with changing SSRCs
  - Improving SDP examples in Simulcast
  - Use of a=SSRC with a=RID
  - Use of a=SSRC to pre-bind RID value

1. Handling of related formats in RID and Simulcast

- There exist some related formats
  - Example: Comfort noise and Telephone Events
- Current Simulcast draft says in Section 5.2:

  In those cases, such "related" formats MUST NOT be defined as having their own rid-id listed explicitly in the attribute parameters, since they are not strictly simulcast streams of the media source, but rather a specific way of generating the RTP stream of a single simulcast stream with varying RTP payload type.

- Flemming noted this as problematic

1. Handling of related formats in RID and Simulcast

- Should be defined in MMUSIC RID document
- In addition these are alternative representation of the media source, thus could be simple specified as alternative PT for a particular RID
  - a=rid:1 send pt=97,98
- Proposal:
  - Modify this sentence in Section 4 of MMUSIC RID:
    - OLD: The optional "pt=<fmt-list>" lists one or more PT values that can be used in the associated RTP Stream. If the "a=rid" attribute contains no "pt", then any of the PT values specified in the corresponding "m=" line may be used.
    - NEW: The optional "pt=<fmt-list>" lists one or more PT values that can be used in the associated RTP Stream. **If 'pt=<fmt-list>' is present, then the RTP sender MUST NOT send any unlisted payload type in the associated RTP Stream.** If the "a=rid" attribute contains no "pt", then any of the PT values specified in the corresponding "m=" line may be used.
  - Remove the sentence from simulcast.

2. How to signal RED?

- RED = Redundancy Payload Format (RFC 2198)
- PTs: 97 = RED, 98=G.711, 99=G.729
- a=fmtp:97 98/99
- There is a difference between these:
    1. a=rid:1 send pt=97
       Only RED format can be sent
    2. a=rid:2 send pt=97,98,99
       RED, G.711 or G.729 might be sent
- Proposal: Example of RED as clarification in MMUSIC RID

3. Use of RepairedRtpStreamId

- draft-ietf-mmusic-rid-12 Section 4:
  - Implementations that use the "a=rid" parameter in SDP and that make use of redundancy RTP streams [RFC7656], e.g. RTP RTX [RFC4588] or FEC [RFC5109] [I-D.ietf-payload-flexible-fec-scheme], for any of the source RTP streams that have "a=rid" lines remaining after applying the rules in Section 6 and its subsections, MUST support and use RepairedRtpStreamId SDES item described in [I-D.ietf-avtext-rid] for those redundancy RTP streams.
- MUST USE does not work for Flex Fec (draft-ietf-payload-flexible-fec-scheme)
- Flex FEC can included multiple SSRCs and thus multiple RIDs may be repaired. That is not supported by RepairedRtpStreamId.

3. Use of RepairedRtpStreamId

- Proposal: Change wording to say when applicable for the used redundancy format and be explicit that FLEX FEC is not using RepairedRtpStreamId:
  - Implementations that use the "a=rid" parameter in SDP and that make use of redundancy RTP streams [RFC7656], e.g. RTP RTX [RFC4588] or FEC [RFC5109], for any of the source RTP streams that have "a=rid" lines remaining after applying the rules in Section 6 and its subsections, MUST support and use RepairedRtpStreamId SDES item described in [I-D.ietf-avtext-rid] for those redundancy RTP streams **when applicable**. **Use is not applicable for redundancy formats that directly associate RTP streams using SSRCs within RTP, an example of such a mechanism is [I-D.ietf-payload-flexible-fec-scheme] or cases other that RepairedRtpSteamId can't support.**

4. Dynamic Bindings and Redundancy

- Redundancy using RTX (RFC4588) or ULPFEC (RFC5109)

- If the SSRC fulfilling a particular RID changes
  - Error in association may occur during the change.
  - The Redundancy mechanism may attempt to use the wrong SSRC when repairing

- Reason in the Indirection that RID and RepairedRtpStreamId provides.

4. Dynamic Bindings and Redundancy

SSRC-A

SSRC-B

RID=1

SSRC-R

RepairedRtpStreamId=1
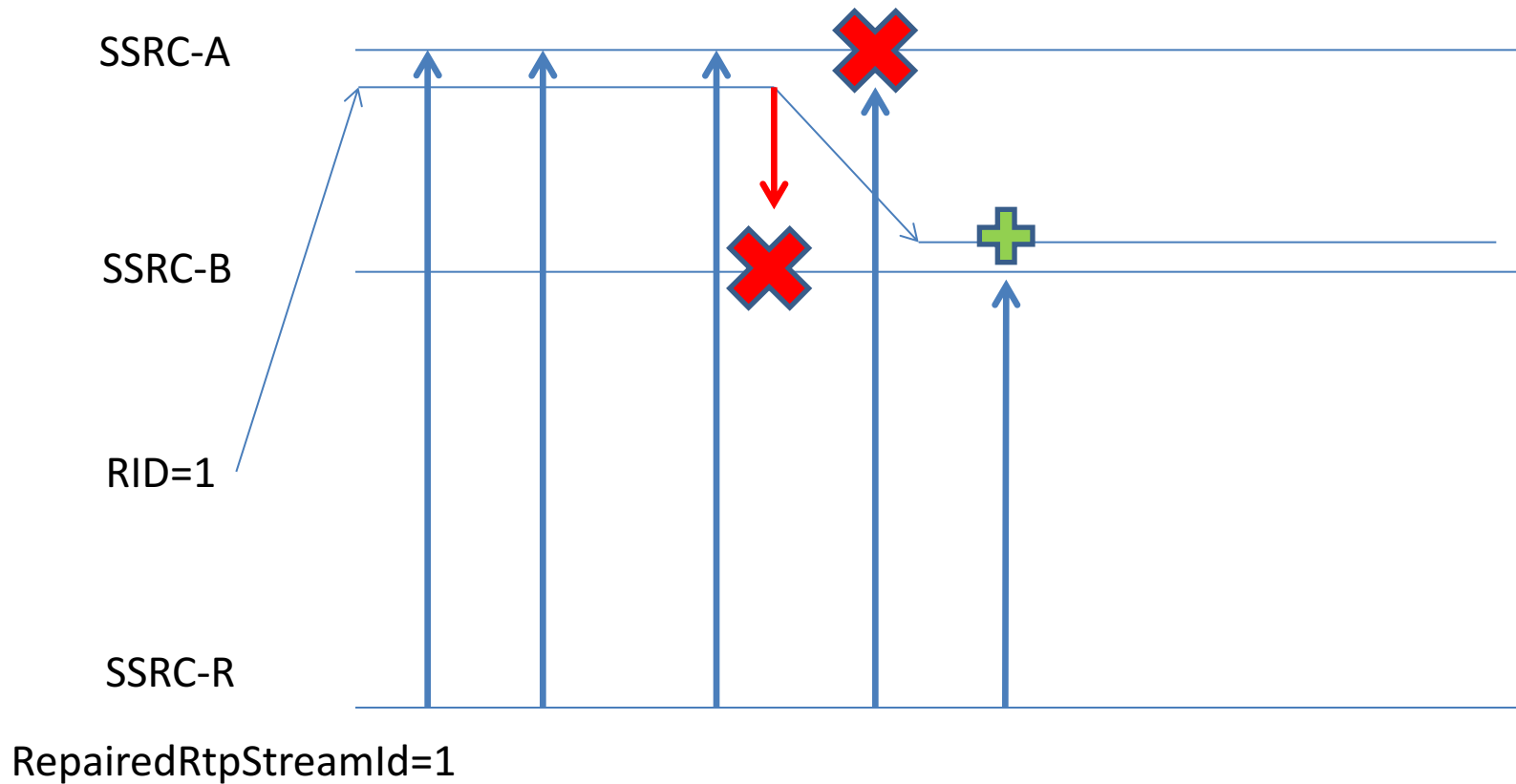
4.Dynamic Bindings and Redundancy

- Also true for MID in context of conceptual sources in RTP Middleboxes
(Any notes on this would affect BUNDLE)

- Proposal: Document Issue in MMUSIC RID, and Recommend Flex FEC

  - Text Proposal need to be written

5. Improving SDP examples in Simulcast

- The current Simulcast Draft lacks an SDP Example that contains other RID restrictions as well as redundancy and related formats.

- Authors intend to add examples.

  - May actually take examples from draft-ietf-rtcweb-sdp?

6. Use of a=SSRC and a= rid

- Jonathan Lennox commented on this paragraph in Section 5.1 of Simulcast draft:
  - *It is possible to use source-specific signaling [RFC5576] with "a=simulcast", but it is only in certain cases possible to learn from that signaling which SSRC will belong to a particular simulcast stream.*
- In general a=SSRC and a=rid are independent
- Potentially the a=rid and a=ssrc:xxxx fmtp:<foo> could reference the same payload type
- However, a=ssrc with fmtp requires a payload format specification that define source level parameters, the only in existence is H.265
- Proposal:
  - Remove a=ssrc text in Simulcast
  - Text clarification in MMUSIC RID or do nothing?

7. Use of a=SSRC to pre-bind RID value

- Currently MID values are given for any SSRC in a=ssrc attributes as they are within a given media description (m=)
- So are there any need for feature parity for RID?
- Use it for signaling stage binding of RID to SSRC for simulcast
  - Still need RTP/RTCP level to handle:
    - Dynamic changes of association
    - Signaling race conditions
- Strawman:

  a=ssrc:xxxx rid:1

  Restrictions on changes of the RID to SSRC binding will be required

7. Use of a=SSRC to pre-bind RID value

- Discussion:
  - Is this motivated?
  - If so, where to specify:
    - In MMUSIC RID
      - Allows to mandate or make it option
    - Separate Document
      - By default an optional mechanism, unless users like WebRTC require it to be supported.

Next Steps

- Will work on providing the text not yet written in near time:
  - Next 2-3 weeks
- Publish new versions of
  - draft-ietf-mmusic-simulcast
  - draft-ietf-mmusic-rid
- Unfortunately these changes needs targeted last calls before publication requests of the documents