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 RepairedRtpStreamId 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