SFrame RTP Packetization

https://www.ietf.org/archive/id/draft-ietf-avtcore-rtp-sframe-01.html

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New published version (1/2)

- Main goal
  - Support both per-frame & per-packet SFrame encryption
- One header byte
  - Start bit / End bit
- Followed by SFrame payload

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|V=2|P|X|  CC   |M|     PT      |       sequence number         |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                           timestamp                           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|           synchronization source (SSRC) identifier            |
+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+
|            contributing source (CSRC) identifiers             |
|                             ....                              |
+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+=+
|S E x x x x x x|                                               |
|                                                               |
:                         SFrame payload                        :
|                                                               |
|                               +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                               :    OPTIONAL RTP padding       |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

New published version (2/2)

- SFrame negotiation at the m-section level
- Media payload type no longer in the SFrame payload

```
m=audio 50000 RTP/SAVPF 10 11
a=sframe
a=rtpmap:10 opus/48000/2
a=rtpmap:11 CN/8000

m=video 50002 RTP/SAVPF 100 101
a=sframe
a=rtpmap:100 H264/90000
a=rtpmap:101 VP8/90000
```

New published version (3/3)

- Media payload type no longer in the SFrame payload
  - The payload type is identifying the media encoding <u>AND</u> whether SFrame is in use
- If a SDP has an m-section with SFrame and another without SFrame
  - Different payload types for the same media encoding

W3C WebRTC WG Discussions (1/2)

- Overall model validated
  - SFrame SDP negotiation is limited to the minimum
- Web Application is responsible for setting up SFrame
  - Per-packet vs. per-frame, key material
    - No need so far to do more SDP negotiation
- SFrame packetization enabled at transceiver creation time
  - Can be relaxed later if we find out it is too strict

W3C WebRTC WG discussions (2/2)

- Use case identified
  - A single connection that can enable SFrame dynamically
- Current solution
  - Use two m-sections, one with SFrame and one without
    - This doubles the payload types

Open Issues

- Interaction between RTX/FEC and SFrame packetization
- Interaction between RED and SFrame packetization
- Additional SDP flexibility
  - a=sframe at session level
- SDP negotiation rules to be further restricted in W3C WebRTC Encoded Transform spec
  - Is it the right place?

Next Steps

- Finalize document
  - Remaining questions
  - Per ssrc key derivation guidelines