RTP Splicing Notificaiton
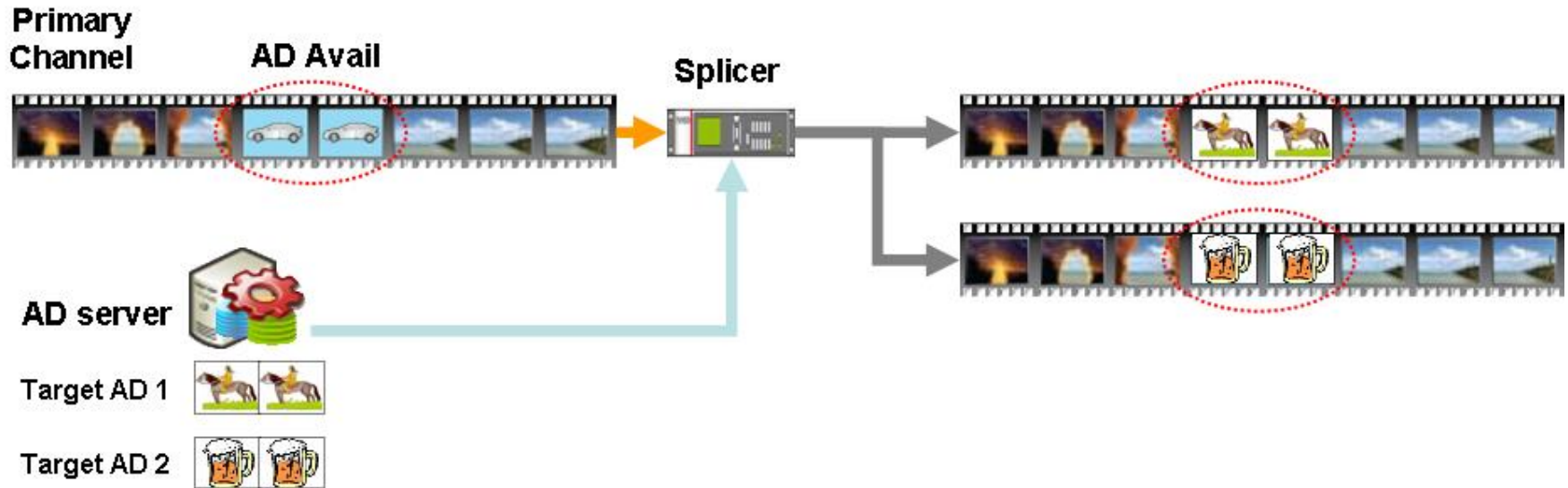
draft-xia-avtext-rtp-notification-02

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Recap: RTP Splicing

- [RFC6828] defines to use Mixer as RTP splicer, but doesn't define any mechanisms to convey Splicing Interval(when to start and end the splicing) from Main RTP Sender to Mixer.

- [SCTE35] provides a method that encapsulates the Splicing Interval inside the MPEG2-TS layer.

    - But MPEG2-TS is not always support in all RTP sessions

    - The mixer has to decode RTP packets to get the Splicing Interval insides the payloads, this behavior enhances the workload on the Mixer

RTP Splicing Notification

- Extending RTP to contain RTP splicing metadata
    - Splicing In NTP timestamps
    - Splicing Out NTP timestamps

- Two extensions are introduced
    - RTP header extension
    - RTCP Splicing Notification Message

- Both of extensions are sent to provide robustness

Major Changes since version -01

- Add Lingli Deng (from China Mobile) as co-author.
- Change the format of RTP Header Extension as following figure

```
 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
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|      0xBE     |     0xDE      |            length=4            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+E
|   ID  | L=15  | OUT NTP timestamp format - Seconds (bit 8-31) |x
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+t
|       OUT NTP timestamp format - Fraction (bit 0-31)          |e
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+n
|        IN  NTP timestamp format - Seconds (bit 0-31)          |s
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+i
|        IN  NTP timestamp format - Fraction (bit 0-31)         |o
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+n
```
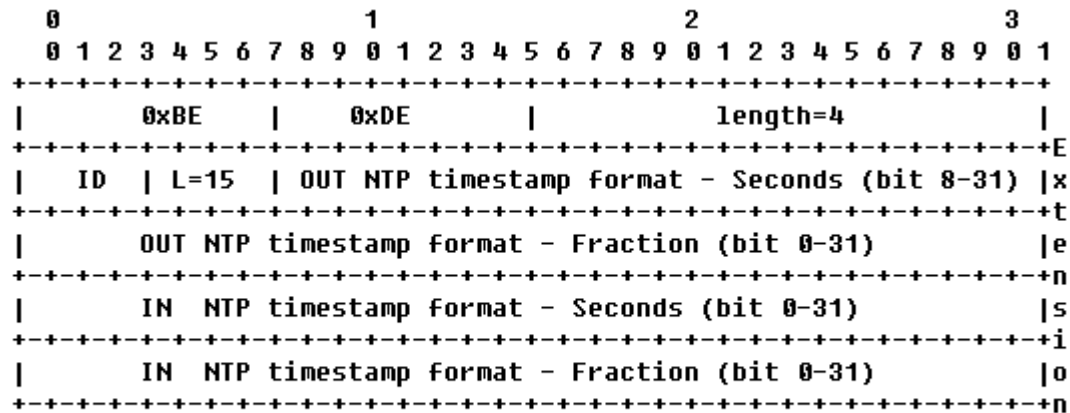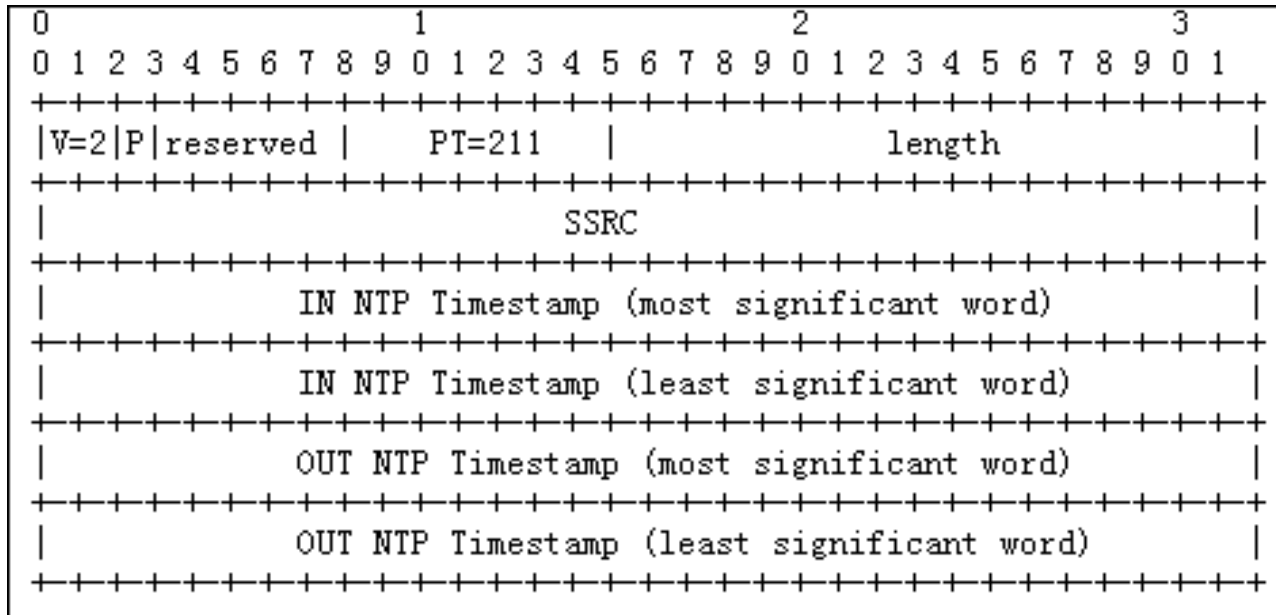
Figure 1: Sample hybrid NTP Encoding Using
the One-Byte Header Format

This order allows full resolution for splicing-in NTP timestamp while keeping 4 octets alignment.

RTCP Extension Message

```
 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|reserved |     PT=211     |              length           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                              SSRC                              |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              IN NTP Timestamp (most significant word)         |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              IN NTP Timestamp (least significant word)        |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              OUT NTP Timestamp (most significant word)        |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              OUT NTP Timestamp (least significant word)       |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- RTCP Extension message is kept intact
- RTCP SNM could be sent in compound RTCP packets and follow the regular RTCP timing rules, or non-compound RTCP if RFC5506 is supported

Next Step

- Is there any open issues?

- Interesting enough to be adopted as a new work item?