transport-wide-cc-extensions-01

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Problem

- All RMCAT drafts propose different specialized RTCP messages. Interop will be difficult.

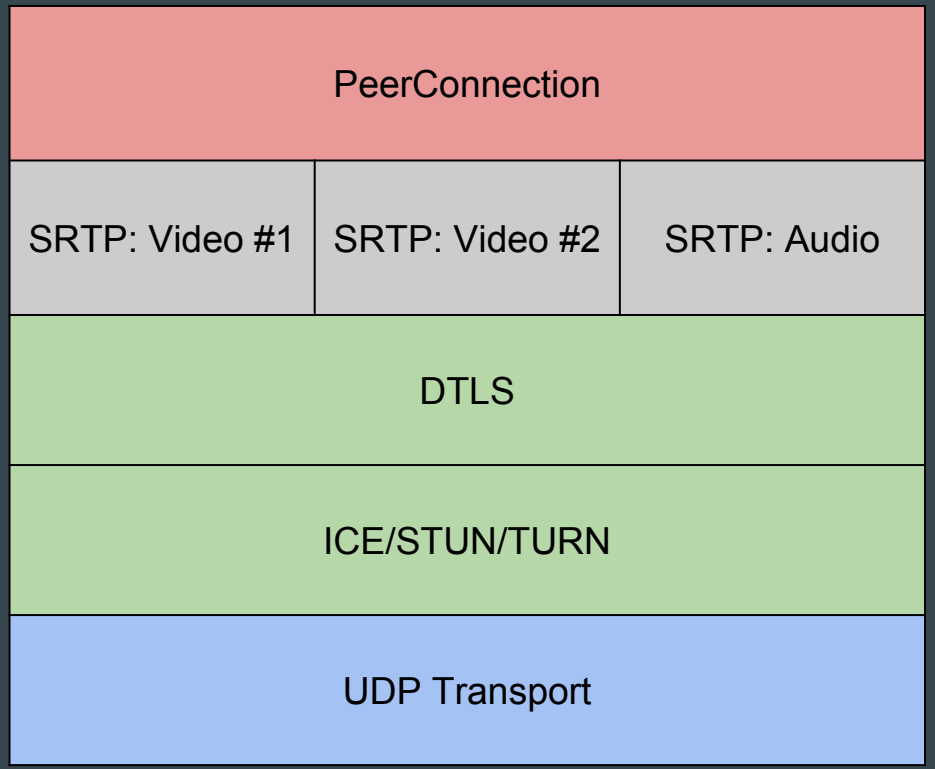
- Splitting logic between sender and receiver.
  - Makes interop even more difficult.
  - May require synchronized roll-outs of improvements.
  - Running experiments will be simpler.

Proposal

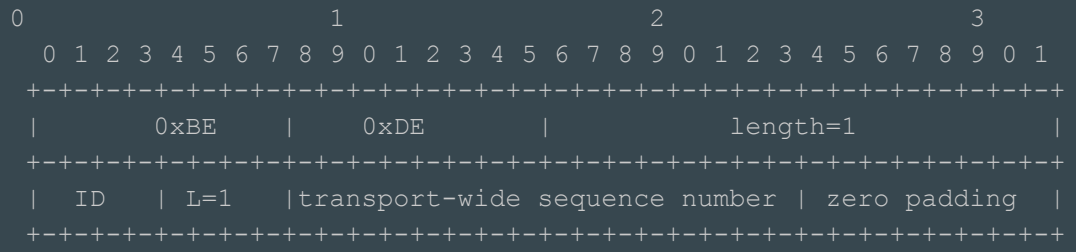
- Standardize on a single, flexible RTCP message for CC.
- Standardize on running the algorithm logic on the send-side.
- Two components:
  - RTP header extension: transport-wide packet sequence number.
  - RTCP message: arrival-time for every received packet.

Where does RMCAT operate?

- Per stream or per transport?
- Media/streams doesn't really matter. Mostly interested in packets.
- Packets transmitted over the same path



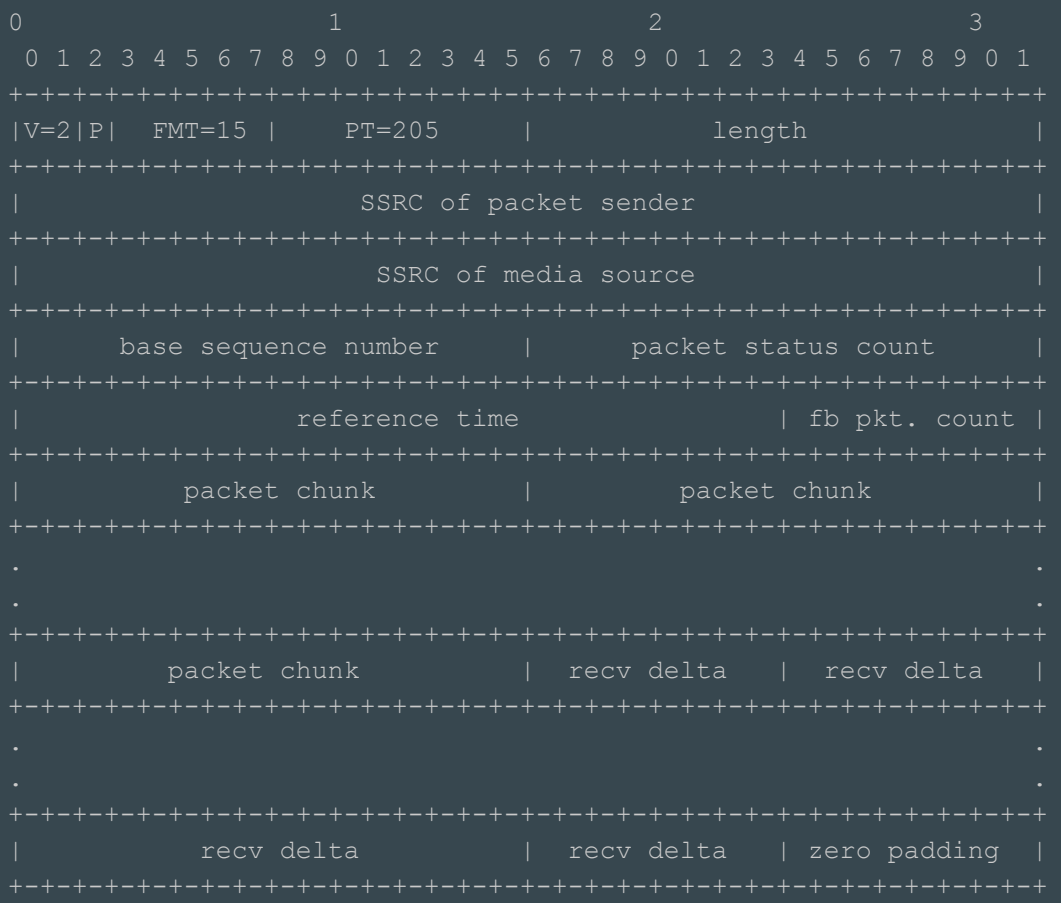
RTP Header Extension



- 16 bits sequence number.
- Incremented by one for each packet sent on the transport.

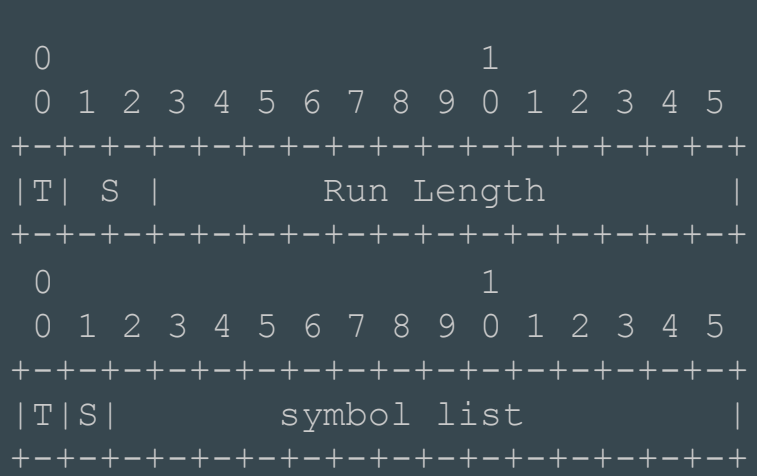
RTCP Message

- Transport-wide feedback message.
- All packets received since last message are represented.
- Sent once per RTT or once every 30-50 ms.

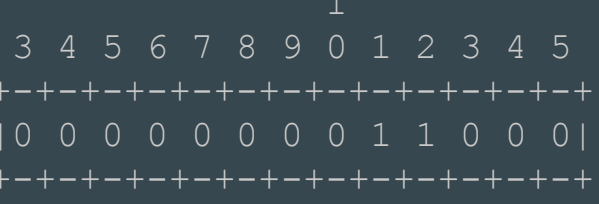


RTCP Message Details

- Packet Status Symbol -- 2 bits:
  - 00 - Not received
  - 01 - Packet received, small delta
  - 10 - Packet received, large or negative delta
- Packet Status Chunks -- 16 bits:
  - 0 - Run Length Chunk
  - 1 - Status Vector Chunk



Example - run length chunk:



RTCP Message Details

- Reference Time -- 24 bits:
  - One per RTCP Message
  - Multiples of 64 ms
  - Possibility to calculate delta to previous RTCP Messages

- Receive Deltas:
  - Small Delta: [0, 63.75] ms -- 8 bits
  - Large Delta: [-8192.0, 8191.75] ms -- 16 bits
  - The first delta is relative to Reference Time
  - Others are relative to the previous Delta