RTP Profile for TCP Friendly Rate Control

draft-ietf-avt-tfrc-profile-01.txt

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Changes

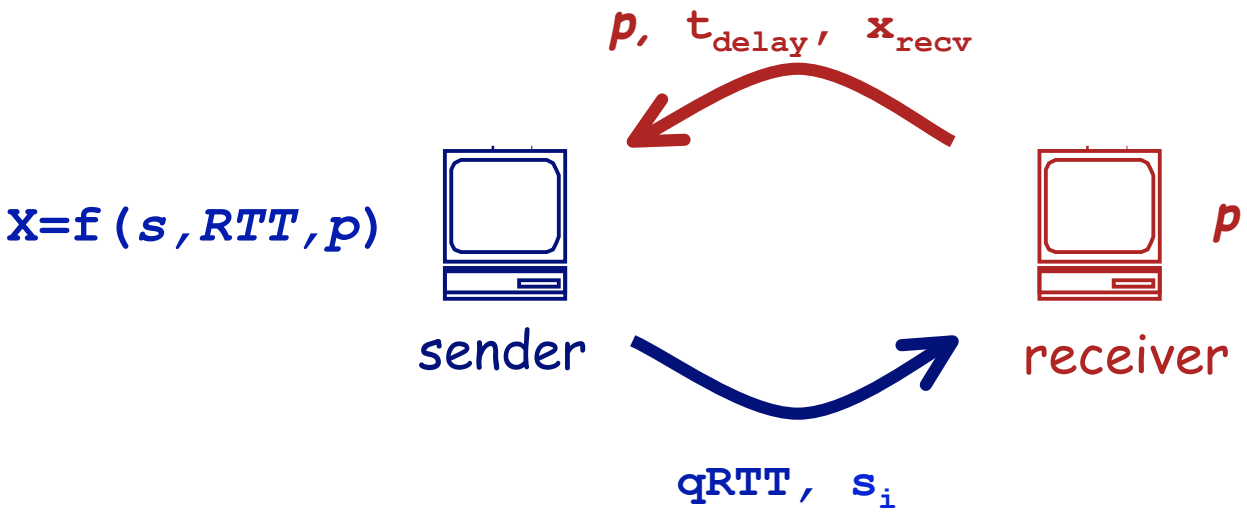
- **Added section on relation to DCCP (section 2).**

- **Use of a quad-RTT-counter:**
  - Data packets include a quad-RTT-counter instead of RTT and send time timestamp (2bytes vs. 8bytes)
  - Receiver uses the quad-RTT-counter to estimate the RTT and compute loss intervals

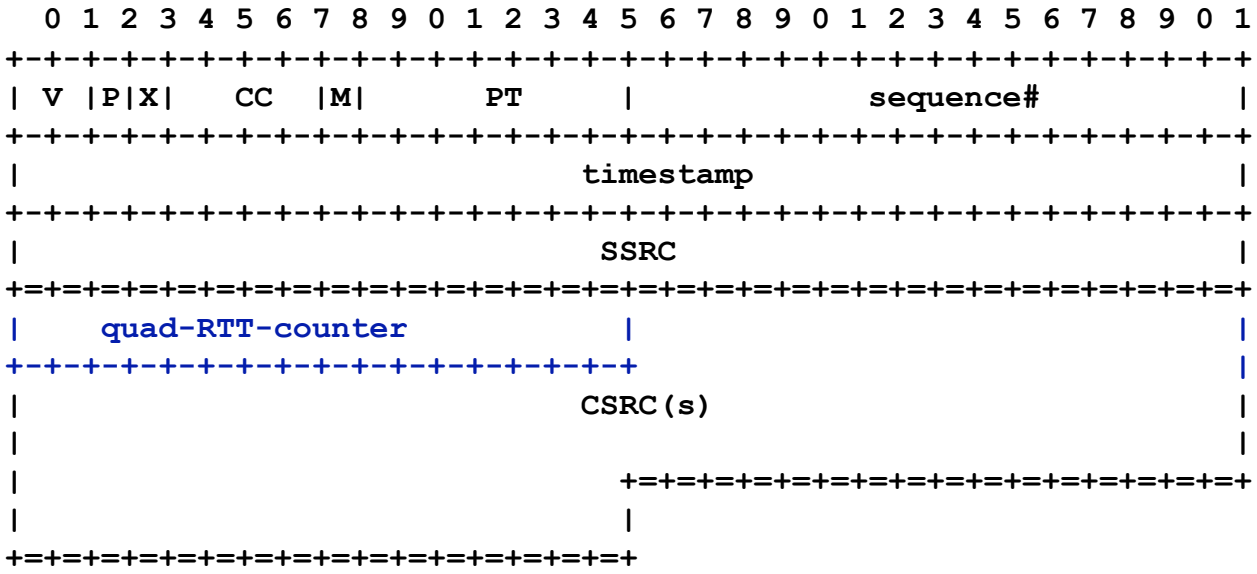
- **Sender saves timestamps for RTT calculations - is no longer part of RTCP feedback.**

TCP Friendly Rate Control

- TFRC is a equation based congestion control scheme, RFC 3448
- AVPCC defines using RTP/RTCP to support TFRC.

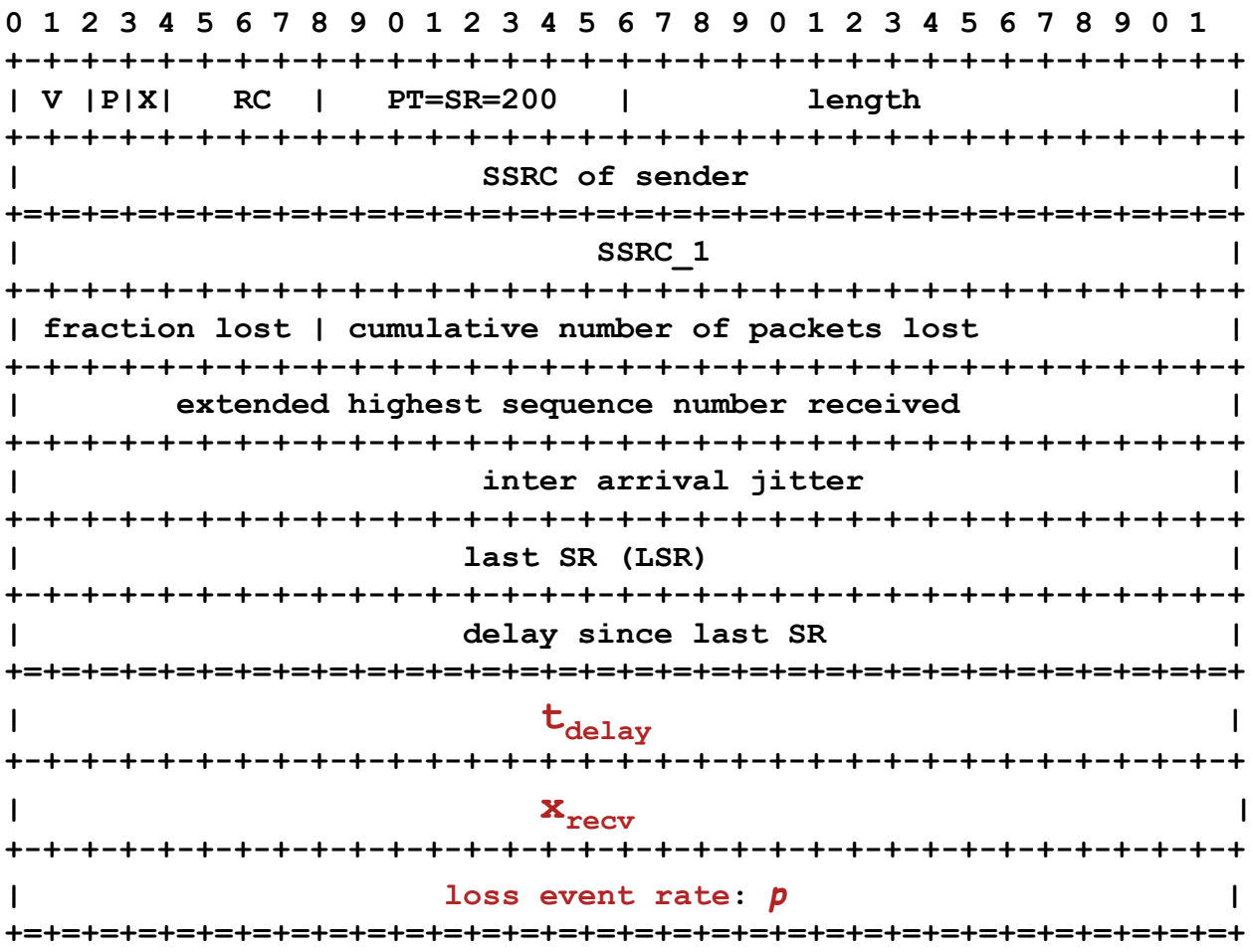


RTP Data Header Additions



- **Use quad-RTT-counter -or- RTT and send timestamps?**
  - quad-RTT-counter:
    - Less overhead
  - RTT and send timestamps:
    - Send timestamps can be used for jitter calculations

Receiver Report Extension



IP/UDP(28) + RTCP header(8) + RR(24) + extensions(12) + SDES(12) = 84 bytes

RTCP compound packets

- Each RTCP compound packet MUST include:
  - A RR packet
  - The SDES CNAME
- TFRC requires feedback at least once per RTT or per packet (for flows sending less than 1 packet per RTT).
- Are the Receiver Report and SDES information really needed at the same rate as the TFRC feedback?

RTCP bandwidth (kbps)

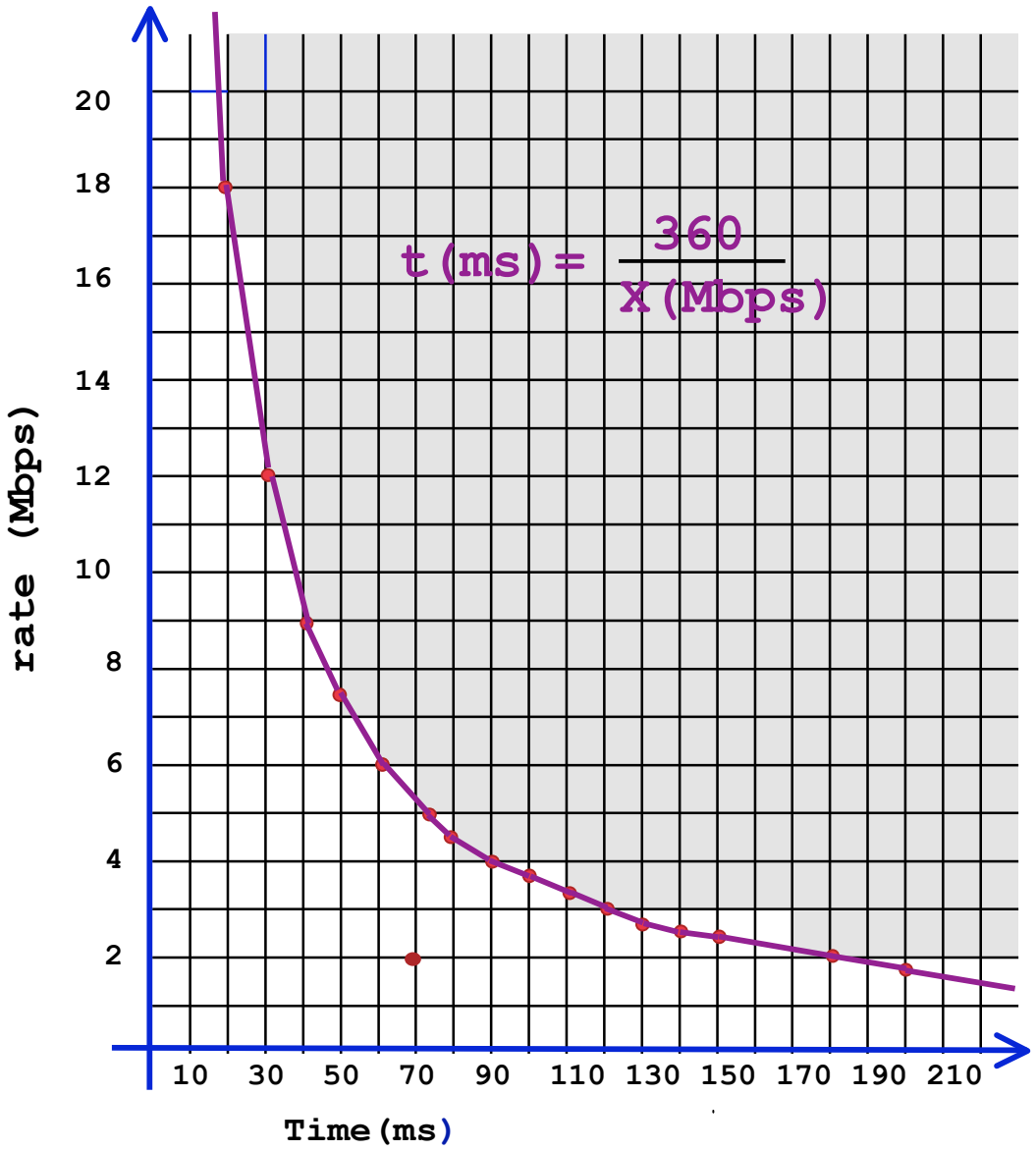
RTT (ms)	84 bytes	48 bytes
1	672.0	384.0
2	336.0	192.0
5	134.4	76.8
10	67.2	38.4
25	33.6	15.4
50	13.4	7.7
70	9.6	5.4
100	6.7	3.8
200	3.7	1.9

RTCP reduced minimum timing interval

- **RTCP**: RECOMMEND value for the reduced minimum in ms is 360 divided by the session bandwidth in Mbps.

$$t(ms) = \frac{360}{X(Mbps)}$$

- **TFRC**: send feedback at least once per RTT or per packet (for flows sending less than 1 packet per RTT).



Open Issues

- **RTCP restrictions?**
  - reduced minimum timing interval
  - size of compound packets

- **RTP Data Header Additions**
  - quad-RTT-counter or send-time timestamps?
    - 2 bytes (qRTT) vs. 8 bytes (RTT and timestamp)
    - Send timestamps will allow jitter calculations

- **RTCP feedback:**
  - Use "delay since last SR" for RTT calculations?
  - Profile mandate that sender save timestamps? -or- return data packet timestamp with RTT calculations

Open Issues

- **Payload space:**
  - share static payload type space with RTP/AVP or only use dynamic payload types

- **Security:**
  - Use Secure Real-time Transport Protocol, RFC 3711
  - Define secure AVPCC profile, RTP/SAVPCC