QUIC Time Stamps, Work on it?

Christian Huitema

IETF 114, Philadelphia, Thursday, July 28, 2022

Use Case 1, Congested Return Path

- Queue of ACKS on return path
- Increased RTT
- Mess up congestion control
- Mess up retransmissions

• Time stamps fix that
  - Measure One Way Delay
  - Distinguish between forward and return congestion
Use Case 2, Multipath

- Sending ACK on Short Path
  - Improves responsiveness
  - Better Congestion Control
  - Better Loss Recovery
  - …
  - But “requires a PhD” for RTT Measurement

- Time stamps fix that:
  - Measure 1 Way Delay for forward and return paths
Draft QUIC TS

TIME_STAMP Frame {
  Type (i) = TBD,
  TimeStamp (i),
}

• Time stamp in microseconds, as defined by sender
  • Typically, 0 = start of connection

• enable_timestamp (TBD)

1. I would like to receive TIMESTAMP frames
2. I am able to generate TIMESTAMP frames
3. I am able to generate TIMESTAMP frames and I would like to receive them
What next?

• More windmills?
• Or more sunsets?
Next Step

• Adopt the draft?
• Discuss?
  • Either simple Time Stamp (as is)
  • Or something more complex (change ACK format, on delay per packet)
  • Or something more like NTP
    • Sender Time Stamp
    • Last Received Time Stamp
    • Delay since last received
• Or ?