Increase of the Congestion Window when the Sender is Rate-Limited

draft-ietf-ccwg-ratelimited-increase-01

Michael Welzl, Tom Henderson, Gorry Fairhurst, M. P. Tahiliani

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- Two quite minor things
  - In the example, more often refer to initcwnd and RFCs 6928 (TCP) and 9002 (QUIC) instead of just saying "10"
  - Define what we mean by RTT: "The RTT includes the minimum path propagation delay plus any delay accumulated by queing in the stack, at the interface and in network elements along the path."

- ... and a bigger thing:
  From 3 to 2 rules, as our approach to address Martin Duke's comment: *"MUST constrain the growth of cwnd" is too vague.*
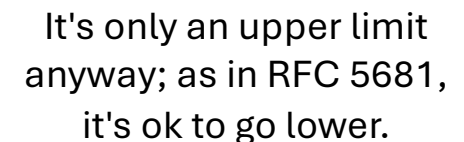
Rules: from 3 to 2

When FlightSize < cwnd, regardless of the current state of a congestion control algorithm, senders using a congestion controlled transport protocol:

Before:
- **MUST** constrain the growth of cwnd.
- **SHOULD** cap cwnd to be no larger than limit(maxFS).
- **MAY** restrict maxFS as min(maxFS, pipeACK), using "pipeACK" as defined in [RFC7661].

After:
- **MUST** cap cwnd to be no larger than limit(maxFS).
- **MAY** restrict maxFS as min(maxFS, pipeACK), using "pipeACK" as defined in [RFC7661].

It's only an upper limit anyway; as in RFC 5681, it's ok to go lower.

Pacing

- Has been brought up a few times. We believe our text is good enough:

  3.2.2. Pacing

  Pacing mechanisms seek to avoid the negative impacts associated with "bursts" (flights of packets transmitted back-to-back). This is usually without limiting the number of packets that are sent per RTT. The present specification introduces a limitation using "maxFS", which is measured over an RTT; thus, as long as the number of packets per RTT is unaffected by pacing, the rules in Section 3 also do not constrain the use of pacing mechanisms.

- Thoughts, comments?

Thank you!

Your feedback is very welcome:
https://github.com/mwelzl/draft-ccwg-ratelimited-increase

Questions?