Low Extra Delay Background Transport

draft-ietf-ledbat-congestion-00.txt

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WG draft out

- previously known as
  draft-shalunov-ledbat-congestion

- draft-ietf-ledbat-congestion

- addressed non-congestive constraints

Non-congestive constraint

- sender may be constrained by something other than congestion — maybe the app

- might not experience congestion for a long time

- congestion control as specified would keep climbing, reaching absurdly high values

- if non-congestive constraint is later removed, sender will burst out traffic

Non-congestive constrained (cont.)

- the burst will cause congestion

- the sender will back off to sanity

- the hiccup is unnecessary

- sender never should make assumptions far beyond probed rate

Flight size

- addresses the non-congestive constraint problem

- amount of data currently sent, but not acked

- section 4.15 + pseudocode changes

- keep the congestion window on a leash

  - cwnd ≤ ALLOWED_INCREASE + TETHER*flight_size()

Flight size (cont.)

- ALLOWED_INCREASE and TETHER are constant

- ALLOWED_INCREASE MUST be at least 1 packet

- ALLOWED_INCREASE SHOULD NOT be more than 3 packets

- TETHER MUST be greater than 1

- TETHER SHOULD be between 1.25 and 2

Flight size implementation status

- Deployed and running in all BitTorrent products that use uTP

Known doc issues

- framing is out of scope

- late comer's advantage

- fairness between LEDBAT flows

- choice of parameter values

- go over pseudocode and spec and check for loose ends — please help, everyone

Framing is out of scope

- Actual specification of any wire representation is out of scope

- Must have a timestamp and a way to carry delay back

- Might be used with a UDP-based framing, TCP (with important details), or any transport mechanism

Late comer's (non)-advantage

- Model:

    - a connection builds up target worth of queue

    - second connection comes, and not seeing that, starves new one

- Dips in queue enough to measure base delay

- Even if they were not, second connection would see the base once the first backs off

Fairness between LEDBAT flows

- Random redistribution

- Add random noise to delay measurements

- Some connections will lose, some grab

- Constrained random walk, ratio converges

Choice of parameter values

- TARGET MUST be 25 milliseconds (relax?)

- GAIN MUST be 1 MSS/RTT (relax?)

- $2 \leq$ BASE_HISTORY ≤ 10

- 1 packet $\leq$ NOISE_FILTER $\leq$ cwnd/2 (SHOULD)

- $1 \leq$ ALLOWED_INCREASE ≤ 3 (packets)

- $1.25 \leq$ TETHER ≤ 2

Careful proofreading

- Implementors read most carefully

  - Step forward

- Everyone, please read, particularly section 5

- Nits to mailing list

QUESTIONS?