Faster Restart

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TFRC for variable application demand

* Application scenario: Interactive communication
  - When a party is active, endpoint application sends *A* bits/sec
  - When inactive, endpoint application sends next to nothing (comfort noise)
* What should TFRC/DCCP CCID 3 do on inactive → active transition?
  - Application wants to instantly return to former rate
  - TFRC wants to slow start (lost info on network congestion)
  - Middle ground?

Faster restart: basic idea

* TFRC
  - Each nofeedback timer (= 4 idle RTTs) reduces rate by $1/2$
  - Down to minimum of initial sending rate (2 packets/RTT)
* Faster Restart
  - Nofeedback timer mechanism same
  - Down to minimum of *higher* initial rate (4 pkt/RTT, or 8 small pkt/RTT)
  - Speed up slow start process: speed up $4\times/\text{RTT}$, not $2\times/\text{RTT}$, up to previously achieved rate

Issues (Vlad Balan, Arjuna Sathiaseelan)

* What if application goes idle during slow start?

  Solution: Apply faster restart during slow start periods as well as congestion avoidance periods

* What about feedback packets after idle?

  First packet after idle period reports a low receive rate, since that receive rate includes idle period and a partial window

  Would misinterpret this receive rate as ending faster restart

  Solution 1 (TFRC): Ignore first feedback packet after idle

    Is this sufficient? Comfort noise packets, sub-RTT idle periods, . . . ?

Issues continued

* Solution 2 (faster restart): Receiver reports length of time over which Receive Rate was calculated; sender may inflate this rate to account for idle periods

  Example: Receive rate covers time interval $[T1, T2]$

  Say sender was idle for a total of I time over that interval

  Sender uses altered receive rate $X'_{\text{recv}} = X_{\text{recv}} \times \dfrac{T2 - T1 + I}{T2 - T1}$

* Question (Arjuna): What about transmit buffering?

  "Idle" means *transport* is idle (has nothing to send), not application is idle

* More to come. For example, Sally disagrees

Next steps

* Further implementation experience