On the Treatment of Application-Limited Streams

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Application-limited streams

- Send rate is limited by the application rather than by congestion control
  - E.g. Massively multi-player on-line games (MMORPG)
- Latency is the key performance metric and the delay of each individual message is important
- When reliable transport is used, loss recovery may contribute significantly to latency
- Redundancy and more aggressive retransmissions can help
  - Perform fast retransmit on the first dupACK (mFR)
  - Up to 6 retransmissions without RTO backoff (LT)
Gain from more aggressive retransmissions

Live game server evaluation of recovery optimizations
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- Proposals that advocate more aggressive behaviors are often met with skepticism based on fairness arguments
So are they really unfair?
Conclusions and open issues

• Need for latency is application dependent
  + All streams are not the same
• Redundancy and more aggressive retransmissions is a viable option for application-limited streams
  + Use of push anticipation
• Unfairness is not an argument (even if fairness was a valid metric)
  + Application-limited streams are at a disadvantage when sharing resources with greedy streams

• How much redundancy / aggression should we use?
• How much knowledge of application semantics is needed?