draft-alvestrand-rmcat-congestion-02

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Known issues

● Poor self-fairness.
  ○ Due to having an adaptive jitter model.

● Starved by loss-based flows.
  ○ Delay-based CC sees congestion all the time.
  ○ No transition between delay-based and loss-based.
Solution?

- More jitter, more filtering, less sensitive.
  - Takes more bandwidth, due to static threshold.

- Make the delay threshold (gamma) adaptive.
  - Increase the threshold when detecting often.
  - Reduce when not detecting.

\[
\gamma(t_i) = \gamma(t_{i-1}) + \Delta T \cdot \begin{cases} 
  k_d(|m(t_i)| - \gamma(t_{i-1})) & |m(t_i)| < \gamma(t_{i-1}) \\
  k_u(|m(t_i)| - \gamma(t_{i-1})) & \text{otherwise}
\end{cases}
\]
Two GCC Flows
TCP vs GCC
TCP vs GCC

(a) $q_i = 150\text{ms}$

(b) $q_i = 350\text{ms}$

(c) $q_i = 700\text{ms}$
Conclusions

- An adaptive-threshold mechanism has been proposed.

- Evaluation in Chromium showed:
  - TCP starvation is avoided.
  - Self-fairness is improved.
  - In the case of a single flow queuing delay and losses are reduced.