Public Review for

LTCP: Improving the Performance of TCP in Highspeed Networks

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LTCP is a new modification to TCP's congestion control to enable it to scale to high-speed networks. In comparison with prior work on high-speed congestion control, the paper explores an interesting design space: what if a single flow acts similarly to K virtual TCPs, where K is dynamically adjusted according to the network's congestion state; K increases in times of under-load to aggressively grab the available bandwidth and decreases in times of congestion to quickly release the bandwidth. The paper elaborates on how to design such a protocol and particularly how to make it fair when multiple flows with a different initial K share the same bottleneck.

Though I find it interesting to explore such a design, with much prior work on high-speed congestion control, it is unclear what LTCP can add. The paper claims that one of the contributions of LTCP is that "it retains the time-tested AIMD behavior of TCP." Yet, because of the dynamic value of K, LTCP does not really do AIMD. Besides, why is maintaining AIMD important? The paper does not elaborate on this issue; neither does it show that the use of different increase-decrease rule has hurt other high-speed congestion control protocols.

Overall, LTCP is a nice piece of research but I would encourage the authors to argue more why their design is important given all prior work on the topic. Further, they should run more extensive simulations that explore multiple bottleneck links, and provide at least a simple analysis that supports the convergence claim.

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