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TCP dynamics and congestion control on asymmetric lines*

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Abstract

The number of computers that are connected to the Internet through asymmetric connections such as ADSL and other broadband solutions are dynamically growing. However, the asymmetric nature of these connections may have significant impact on the performance of TCP transmission as the low bandwidth upstream link can be easily overloaded. In this case TCP's self-clocking mechanism may be misled when TCP ACK packets are delayed due to the congested upstream link which will produce degradation in TCP downstream throughput.

The purpose of the present paper is to show the effect of asymmetric physical lines on TCP dynamics. Therefore, we focused on the evaluation of alternative congestion control mechanisms as well.

Keywords: TCP, congestion control, ACK, asymmetric line, bandwidth, traffic dynamics

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