Abstract

Congestion is one of the major problems that affects on throughput, delay, losses and other performance metrics of the network. During the last decade, several congestion control protocols have been proposed to overcome this problem. The most widely protocols are TCP Tahoe, Reno, New Reno, Vegas and SACK. In this paper, a new approach is developed to enhance most of the existing host-to-host congestion control protocols. The main idea is to adjust the congestion window size (cwnd) dynamically according to the available bandwidth of the network. In the proposed strategy, instead of increasing the cwnd size linearly by the AIMD, the cwnd is increased according to the available bandwidth of the network. Also, instead of decreasing the cwnd to half of its size as congestion happens, the cwnd is decreased to latest value that was used effectively without losses. The proposed approach is implemented in the TCP Tahoe, Reno, Newreno, Vegas and SACK and the performance is evaluated by using the network simulator NS-2 considering a realistic network topology generated by the GT-ITM.
Improving Host-to-Host Congestion Control Protocols by Dynamic Bandwidth Estimation of the Network

- Tharwat Ibrahim, Gamal Attiya and Ahmed Hamad, "Fuzzy Based Tuning Congestion Window for Improving End-to-End Congestion Control Protocols,"


**Index Terms**

Computer Science  
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**Keywords**

TCP  Congestion Control  Congestion Avoidance  Dynamic Bandwidth Estimation.