

DESIGN OF CONGESTION CONTROL MECHANISM FOR STANDARADIZING THE QUEUEING DELAY

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Abstract

The growing demand of computer usage requires efficient ways of managing network traffic in order to avoid or at least limit the level of congestion in cases where increases in bandwidth are desirable or possible. Congestion control methods can be generally classified into two categories: packet marking/packet loss-based and queueing delay-based which have been largely treated with separate control strategies. Delay-based schemes have garnered much attention due to their higher network throughput than loss-based methods. Delay provides a much finer-grained measure of congestion than packet loss or packet marking feedback. However, when there are multiple bottleneck links or inadequate buffer sizes in the path between a source and destination, delay information alone is insufficient for revealing the incipient network congestion. This paper proposes an integrated congestion control strategy that reacts to both queueing delay and packet loss. In ns-2 simulation studies, the congestion measurement using the packet marking and queueing delay shows a significant improvement in achieving the high link utilization.

Keywords : Congestion control, Explicit Congestion Notification(ECN), high-speed networks, TCP, transport protocols, window flow control.