Abstract

Since TCP cannot recognize bit error loss event from congestion loss event, it fails to work well in wired networks with large random error rate. In this paper, a modification in TCP Westwood congestion control algorithm is proposed by using a fuzzy controller to enhance its performance in wired networks with high error rate. The number of timeout events and the number of triple duplicate acknowledgement (also called 3dupacks) is counted to measure their ratio as the first input to a fuzzy system so that to differentiate congestion loss from bit error loss. Also the time difference between the last two timeout events is taken as the second input to the fuzzy system to check whether the timeout events are due to congestion or non-congestion event. The delay or RTT (Round Trip Time which is the time from transmitting a segment till receive an acknowledgement) also considered in the fuzzy system as the third input. The proposed TCP Fuzzy is tested using OMNET++ IDE simulator and found that it gives better performance than TCP standards in wired networks when error rate is increased.
A Fuzzy based TCP Congestion Control for Wired Networks

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Index Terms

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Keywords