Study of improving TCP performance over wireless local area networks

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ABSTRACT

To improve the transmission performance of the traditional TCP in the wireless communication is an important research field. In the wire-wireless-mixed network, the reason of TCP performance decreases due to it doesn?t have the ability to distinguish the packet lost is resulted from the network congestion or the link errors. Among the TCP versions, TCP Vegas can predict the network congestion, successfully prevent the period of the packet lost and, therefore, performs better than TCP Reno which is the most popular version of TCP. However, TCP Vegas still doesn't distinguish the packet lost is resulted from the network congestion or the bit errors and suffers serious performance degradation in the wire-wireless-mixed network. This thesis proposes a novel classification algorithm which classifies the packet loss by the tendency of the queuing delay. The classification algorithm is integrated with the Fast Recovery algorithm of the TCP Vegas. The new TCP is termed as TCP Vegas-FRM. We use NS2 to simulate the operation of TCP Vegas-FRM. According to simulation results, TCP Vegas-FRM classifies the packet loss correctly at a rate of high than 80% and performs better than TCP Vegas.

Keywords : TCP Vegas ; Fast Recovery ; cwnd ; Duplicate ACK

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