

A new delayed ACK strategy for TCP in multi-hop wireless networks

ABSTRACT

In multi-hop wireless networks, TCP suffers from performance deterioration due to poor wireless channel characteristics. Earlier studies have shown that the small TCP ACK packets consume wireless resources as much as the long data packets. Moreover, generating acknowledgment for each data packet reduces TCP throughput. The main factor affecting the TCP performance in multi-hop wireless networks is the contention and collision between ACK and data packets caused by taking the same path. Due to this, lowering the number of ACKs using the delayed acknowledgment option defined in IETF RFC 1122 will improve TCP throughput. On the other hand, the large cumulative ACKs will induce packet loss. Motivated by this understanding, we propose an adaptive delay ACK algorithm for multi-hop wireless networks. The simulation results show that our strategy can improve TCP throughput up to 233% compared to the regular TCP.

Keyword: TCP throughput; Multi-hop wireless network; Delay ACK