Abstract

Much research is going on to enhance the distributed coordination function (DCF) of the IEEE 802.11 as to support quality of service (QoS) requirements needed by real time services. This is achieved by enhancing the throughput and delay characteristics of the DCF. The throughput of DCF degrades in high loaded situations. Most analyses study the network in a saturation state where each station is always transmitting. In this paper, we propose and evaluate a novel and simple algorithm to enhance the backoff procedure of DCF and provide QoS differentiation. The new algorithm attempts to adoptively control the DCF contention window in order to alleviate congestion through an easy to set parameter referred to as q. In our study, we evaluate the DCF and the new under non saturation condition where each station receives frames from upper layers according to a Poisson process. Simulation results indicate that better throughput and delay figures are obtained using the proposed algorithm. Moreover, the proposed algorithm shows less sensitivity to the number of active nodes especially for low number of active nodes. This feature is very important for WLAN service provider.