Performance Enhancement of IEEE 802.11e WLAN by Dynamic Adaptive Contention Window

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Abstract: **The service differentiation and adaptation are the important mechanisms for enhancing the performance of IEEE 802.11wireless local area networks (WLANs). However, all these mechanisms will have limitations for dealing high bandwidth streaming applications. The service differentiation technique proposed in IEEE 802.11e [4] mainly considers the signal with higher priority values to access the wireless channel. Signals with lower priority values have to wait in the queue for a longer time to get an access to the channel. Also as the number of high priority frames in the access categories (ACs) increases results internal collisions. This degrades the performance of 802.11 WLAN. In this research paper we developed an approach to improve the quality of service (QoS) of WLAN by maximizing the channel throughput and minimizing the internal collision, by adaptively changing the contention window (CW) size based on their priority values and the service requirements of the signals in the queue. The proposed algorithm enables the ACs to share the channel and maximize the channel performance and minimize the collision.**

Keywords **- Service differentiation, Contention window, EDCA, HCCA, ADDTS, TSPEC**

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