World Academy of Science, Engineering and Technology
International Journal of Electronics and Communication Engineering
Vol:9, No:10, 2015

Impact of Capture Effect on Receiver Initiated Collision Detection with Sequential Resolution in WLAN

Authors : Sethu Lekshmi, Shahanas, Prettha P.

Abstract : All existing protocols in wireless networks are mainly based on Carrier Sense Multiple Access with Collision avoidance. By applying collision detection in wireless networks, the time spent on collision can be reduced and thus improves system throughput. However in a real WLAN scenario due to the use of nonlinear modulation techniques only receiver can decided whether a packet loss take place, even there are multiple transmissions. In this proposed method, the receiver or Access Point detects the collision when multiple data packets are transmitted from different wireless stations. Whenever the receiver detects a collision, it transmits a jamming signal to all the transmitting stations so that they can immediately stop their on-going transmissions. We also provide preferential access to all collided packet to reduce unfairness and to increase system throughput by reducing contention. However, this preferential access will not block the channel for the long time. Here, an in-band transmission is considered in which both the data frames and control frames are transmitted in the same channel. We also provide a simple mathematical model for the proposed protocol and give the simulation result of WLAN scenario under various capture thresholds.

Keywords : 802.11, WLAN, capture effect, collision detection, collision resolution, receiver initiated
Conference Title : ICCNT 2015 : International Conference on Communications and Network Theory
Conference Location : Bali, Indonesia
Conference Dates : October 11-12, 2015