

System Modeling of the RBT-based Trigger-RAW Channel-Access Method for IEEE 802.11ah IoT Network

Prof. Dr. Chung-Ming Huang, National Cheng Kung University, Taiwan

The Restrict Access Window (RAW) mechanism of IEEE 802.11ah is used for reducing collision. Nevertheless, collision may still happen when there are two or more Stations (STAs) that access channel at the same time. In this talk, the Registered Backoff Time (RBT) -based Trigger-RAW-Channel- Access (RBT-TRCA) method is presented. The RBT mechanism means that each STA would randomly select a RBT value and register its RBT value to AP. Then AP can schedule STAs to access channel according to their RBT values in the future. Using the proposed RBT-TRCA method, STAs that have uplinked data can send their claim frames to AP in the Claim RAWs/slots, i.e., the triggered RAW mechanism is adopted. In this way, AP can schedule those STAs that have uplinked data to access channel according to their RBT values. A model to analyze the performance of the proposed RBT-TRCA method is also devised and presented. Using the devised model, the throughput of a RAW slot can be estimated. The simulation results shown that the devised model's results, which are derived using MATLAB, is similar to NS-3 -based simulation results.

Key Words: IEEE 802.11ah; Restrict Access Window (RAW); Registered Backoff Time (RBT); Trigger RAW; Throughput