

ABSTRACT

Entering the information era, the current needs of the global community is increasing very rapidly. Things that are practical and easy are always being wanted by people. The wireless network is constantly evolving to meet the variety of needs. IEEE 802.11 ah standard is development of IEEE 802.11 standard. A node in a wireless network is a telecommunications device that is very limited in resource such as the extent of the transmission range, battery power, and bandwidth. IEEE 802.11 ah is created to resolve the issue because it supports wireless network scenarios such as arranging the large number of device, extensive large coverage and the mechanisms of power consumption on a finite energy.

In this final project, the influence of density of nodes and RAW slot against MAC layer in the IEEE 802.11ah standard, especially in available RAW (Restricted Access Window) are analyzed. Design of a simulation system is done with two scenarios, which are the changing of nodes density on each RAW group and changing of RAW slot. Then, network performance is measured using the results of the simulations generated by the Network Simulator3 with focus on VoIP (Voice over IP) service. The output of the simulation is QoS parameters, such as throughput, delay, as well as packet delivery ratio.

It can be concluded that the overall performance of the network using is getting better along with increasing RAW station number and adjusting another RAW parameter with the network condition. In the node density scenario RAW accompanied by the changing of RAW station and RAW group, utilizing MCS 5 gain average delay value is about 0,241761 s, gain average throughput value is about 0,5648 Mbps, and gain average PDR value is about 19,84 %. As for the RAW slot changing scenario, 0,001 s slot duration resulting better performance which gain average delay value is about 0,182102 s, gain average throughput value is about 0,4918 Mbps, and gain average PDR value is about 23,07 %.

Keywords : IEEE 802.11ah, RAW, Network Simulator 3, VoIP