ABSTRACT

The wireless network continues to grow to meet various needs, IEEE 802.11ah is a development of IEEE 802.11 designed for Wireless Sensor Network and Machine to Machine communication with various limitations such as range, number of nodes, and energy consumption. The performance of a network can be affected by the condition of the network.

High packet loss, limited access point range, energy consumption and bandwidth limitations, link capacity, and frequent topology adjustment from wireless mobile properties can cause a not optimized network performance. The large number of nodes and limitations of AP capability make network performance decrease. One of the causes is the occurrence of collisions on packets from multiple stations that access the Access Point simultaneously and can also be due to hidden nodes on the network. In this research, 802.11ah, we conduct the network performance analysis caused by hidden node with ns 3 simulator with four parameters measured is throughput, delay, PDR, and energy consumption. There are two scenarios of this research, which is MCS index change scenario and RAW parameter change entirely done by existence of hidden node.

The simulation results show that network performance will improve with MCS index and RAW parameters adjusted to network requirements. In the MCS index change scenario accompanied by changes in the number of stations obtains an average throughput value of 0.14662 Mbit / s, delay of 1.717667 s, 86% PDR, and energy consumption of 25.2249 joules. While for RAW group change scenario and slot with constant node number 100 station got average throughput 0,09551 Mbit / s, delay 4,421226 s, PDR 54%, and energy consumption 52,84938 joule.

Keywords : Hidden node,   IEEE 802.11ah, Network simulator 3, RAW, MC