

ABSTRACT

The increasing of needed and kind of requested services by users to exchange and get information in real time, reliable, and flexible be the one of the problem that communication technology faced today. IEEE 802.11 is one of the wireless technology standard that can be the solution of the problem.

Limited area coverage, high energy consumption and only supported up to 2007 stations cause some system performance in the existing IEEE 802.11 standard group tasks not working maximally. IEEE 802.11ah is a new task group on the IEEE 802.11 standard designed to work on the 900 MHz frequency spectrum, with an area coverage of up to 1 kilometer, lower energy consumption and can support up to 8192 stations. With some of the advantages it has, IEEE 802.11ah is expected to also be used to provide various services required by the user. Enhanced Distributed Channel Access (EDCA) is an access mechanism used to set the Quality of Service (QoS) for the IEEE 802.11 standard through modifications to the MAC layer.

Enhanced Distributed Channel Access (EDCA) is an access mechanism used to set the Quality of Service (QoS) for the IEEE 802.11 standard through modifications to the MAC layer. At EDCA there are three parameters that can be used to improve the quality of service or QoS, namely: Windows Contention (CW), Arbitrary Interframe Space (AIFS) and Transmission Opportunity (TXOP). In this research will focus on AIFS parameter, where in previous research change of AIFSN value on AIFS parameter can increase QoS value in network. In addition, this research also focuses on the 802.11ah feature of Restricted Access Window (RAW), ie by changing the number of RAW group and RAW slot.

From the research that has been done found that the change of AIFSN value has an effect on to throughput value, average delay, PDR and energy consumption. From the results of the research, it was found that the AIFSN value in the improvement scheme (AC_BK = 2, AC_BE = 1, AC_VI = 1, AC_VO = 1) had better performance when compared to the default scheme (AC_BK = 7, AC_BE = 3, AC_VI = 2, AC_VO = 2), with an average throughput of 1.504598 Mbps, an average overall delay of 0.066242 second, an average PDR of 62% and energy consumption is 3.48999 Joule. In addition, changes in the number of RAW groups and RAW slots affect the performance of the network. This feature can increase the throughput value, average delay, PDR and energy consumption, but it depends on the evaluation metrics used, the number of stations, and the traffic load on the network.

Keywords: AIFS, EDCA, IEEE 802.11ah, QoS, RAW.