

ABSTRACT

The reliability of the communication system is needed, especially in terms of scalability, mobility and high data rates. But what happens if the communication system occurs in less than ideal conditions such as in areas with natural conditions and poor communication infrastructure. MANET is a technology that can be applied in ideal conditions in which these networks operate and organize themselves without centralization.

In this research, the integration between MANET network and the LTE network to improve network coverage and availability. In this designed topology, there is a *node* UE acting as a gateway to the MANET network so that *nodes* all in the MANET network can connect to the LTE network. The UE node has 2 interface that connected to the MANET network and the LTE network whereas using proactive ad hoc routing DSDV and OLSR on MANET network and using static routing on LTE network.

From this research showed that the design of MANET-LTE network integrated successfully done by utilizing the UE as a *double interface* that can serve as its thing eNode-B. Based on changes in the number of nodes, the average throughput for DSDV routing is 336.10 kbps and OLSR routing is 333.13 kbps. The average delay for DSDV routing is 358.48 ms and OLSR routing is 367.35 ms. The average PDR for routing DSDV is 32.18% and OLSR routing is 31.92%. The average Jitter for DSDV routing is 52.09 ms and OLSR routing is 52.64 ms. Based on the change of background traffic, the average throughgput for DSDV routing is 132.6 kbps and OLSR routing is 131.61 kbps. The average Delay for DSDV routing is 271.77 ms and OLSR routing is 279.98 ms. The average PDR for DSDV routing is 12.51% and OLSR routing is 12.4%. The average Jitter for DSDV routing is 23.62 ms and OLSR routing 22.2 ms.

Keywords : MANET, LTE, Parameters, Routing Protocol, QoS