ABSTRACT

The number of studies on Software Defined Network (SDN) has resulted in innovation made to meet the demands of increasingly complex network needs. SDN is a promising network technology to develop network architecture in the data processing. Simplification of the architectural form in the data center is an innovation to improve network efficiency. In this study, the simplefabric application performance analysis on the SDN network was performed using an ONOS controller. The Simplefabric application is a network application on the ONOS controller which is a form of spine-leaf architecture developed to replace the previous architecture because the said architecture has not been able to provide better quality in packet data delivery along with the increasing topology scale. In this study, the mininet network emulator is used to configure the spine-leaf topology. The parameters tested in this study are Quality of Service (QoS) parameters such as delay, jitter, throughput, and packet loss as well as resource utilization parameter to determine CPU and RAM work utility.

The results of QoS testing using simplefabric application belongs to the good category. The lowest average QoS value is found in the spine-leaf 8 switch topology test with a background traffic value of 75 Mbps. However, that QoS value still belongs to the good category based on the standardized QoS ITU-T G version with a delay value of 0.07816 s, a jitter value of 0.01574 s, a throughput value of 4839.3022 Kbps, and a packet loss value of 3.01%. The resource utilization test results using a simplefabric application on each spine-leaf topology with 4 switches, 6 switches, and 8 switches show that the CPU and RAM work utility is quite large when compared to the topology without using the simplefabric application. The CPU shows work utilities of 26.70%, 38.49%, and 48.99% also RAM work utilities are 27.20%, 32.80%, and 33.10%.

Keywords: Software Defined Network, Simplefabric Application, ONOS, mininet, Quality of Service