

ABSTRACT

Software Defined Networking (SDN) is a new paradigm in the world of networking that separates control and forwarding functions. In its implementation, SDN network has difficulties to connect with traditional IP network. The Open Network Operating System (ONOS) controller has an application to connect SDN networks and traditional IP networks through the BGP protocol, namely SDN-IP. SDN-IP will convert the BGP route packets obtained from BGP Speakers into an intents. These intents will be processed by the ONOS controller into an openflow route which will be forwarded to the data plane. SDN-IP Reactive Routing will calculate and create traffic paths from the SDN network to the traditional IP network, so that the two networks can communicate with each other. When an SDN network and a traditional IP network run side by side, it is known as Hybrid SDN. In this study, Quality of Service testing will be carried out which includes (delay, jitter, throughput) in a Hybrid SDN network with 2 scenarios. The first scenario is testing from a traditional IP network to a traditional IP network via an SDN network. In the second scenario, testing is carried out from a traditional IP network to an SDN network. Each scenario is given variations in the addition of background traffic of 25 Mb, 50 Mb, 75 Mb, 100 Mb. The results of scenario 1 show the average value of throughput is 47.776 Mbps, delay is 0.1589 ms, jitter is 0.4859 ms. In scenario 2 shows the average value of throughput is 52.9836 Mbps, delay is 0.1510 ms, jitter is 0.0132 ms. In both scenarios, the QoS value is classified as good according to the ITU.T G.1010 standardization.

Key Words: *Software Defined Networking, ONOS, SDN – IP, Reactive routing, BGP, Hybrid SDN.*