ABSTRACT

The Internet of Things (IoT) is currently growing rapidly, spreading in almost every area of life. This has led to an increase in the number of IoT devices and data varieties, so that a more efficient and effective management of network systems is needed. Software Defined Network (SDN) has an explicit separation concept between the control plane and the data plane. SDN has an efficient network architecture to manage the dense traffic of IoT network. Network configuration including the implementation of path selection according to IoT characteristics can be carried out by SDN controllers. In this final project, the Bellman-Ford algorithm is applied for controlling IoT network data on ONOS controller. By using the Open Networking Operating System (ONOS) as a controller and OpenvSwitch (OVS) as a switch, performance testing is carried out with parameters of delay, jitter, throughput, packet loss, convergence time and CPU & RAM usage. Based on the tests that have been carried out, it is known that the simulation of the Bellman-Ford algorithm on ONOS controller to IoT network data has been successful. The QoS performance results with the throughput parameter decreased when background traffic was added. The addition of 100MB of background traffic causes packet loss of 13.10%. The delay parameter is in a good category for the TIPHON & ITU-T G.1010 standard. The results obtained when testing the convergence time amounted to 1.73 s. The percentage value of CPU usage on OVS 1 and OVS 2 is 1.4% - 5.5%, while in OVS 3 is 0.5%. Meanwhile, RAM usage results in a value of 22.2% - 38.7%.

Kata Kunci: *Sofware Defined Network*, *Internet of Things*, *Bellman-Ford Algorithm*, *ONOS*