ABSTRACT

In this day, the demand for network services is increasing, then indirectly increasing also the need for service providers starting in terms of bandwidth / additional devices and that will make the network complexity increase and the configuration aspect increasingly takes a long time, not only that with the existence of Software Defined technology Network (SDN) that relies on a centralized controller and if the controller is full network traffic it will cripple all networks connected to the SDN network.

In this Final Project, discuss SDN network technology using the Open Network Operating System (ONOS) which is able to separate the control plane from the data plane that is usually contained in a network device, now the control plane can be moved to the core network. ONOS also supports virtualization of devices such as routers and switches using Quagga, Mininet, Docker or OpenStack so as to reduce device usage. To realize the SDN network on a WAN network, ONOS has an ONOS Cluster feature that makes it possible to easily distribute traffic loads to other controllers. To ensure all devices on the SDN network are well connected, ONOS has an ONOS Intents feature that makes it easy for network technicians to manage networks from high level.

In this final project the SDN-IP network consists of 4 OpenFlow switches and 4 routers which are all connected to the ONOS controller, there are 2 ways of testing in this Final Project, namely by using FTP and VoIP services. For FTP QoS obtained is 6.367 MB / s (throughput) 0.152 ms (Delay) and 0.01 ms (Jitter). For VoIP, which is 32 KB / s (throughput) 6.66 ms (Delay) and 1.14 ms (Jitter)

Keyword : Software Defined Network, WAN, Onos Controler, ONOS Cluster, ONOS intent, OpenFlow