ABSTRACT

Software Defined Network (SDN) is currently still growing rapidly. Its flexible design and centralized configuration make it easier for network administrators to configure computer networks. The SDN architecture separates the data plane and control plane, allowing network administrators to manage the network automatically by only accessing an SDN controller. The greater the load controller handles a network, the greater the network performance. If the controller malfunctions, the underlying network will be disrupted. To maintain and improve network performance can be by optimizing the performance of the controller.

In this final project, the author applies a clustering controller which consists of 3 controllers. The author builds a clustering controller system using ONOS with the aim of being able to stabilize and improve network performance and compare network performance without a clustering controller with a clustering controller. Parameters measured are throughput, delay, jitter, and packet loss. Performance testing and traffic generator using D-ITG (Distributed Internet Traffic Generator) software.

After being tested and analyzed, the performance of the clustering controller has the most superior QoS with an average delay in data services of 0.047026667 ms, jitter of 0.015414943 ms, throughput of 37.56360736 kbit/s. In the voice service, the delay value is 0.03909 ms, the jitter is 0.01828 ms, the throughput is 72.79049 kbit/s. In the video service, the delay value is 0,12072 ms, the jitter is 0,095513 ms, and the throughput is 5314,059 kbit/s. Packet Loss on each architecture yields 0%. While in single and multi controller the average value obtained is not much different from the clustering controller. This is because in a single controller architecture, the network control center is only centered on 1 controller, as well as multi controllers, so that it affects the performance of service distribution.

Keywords : *Software Defined Network, ONOS, clustering controller, QoS.*