ABSTRACT

Telecommunications network is the thing that is most needed by humans. The use of telecommunications networks can be used for various purposes. From 2019 to 2020 the use of telecommunication networks in Indonesia increased by around 8.9%. This causes the use of telecommunication network access is getting heavier. One way to optimize network performance is to implement Load Balance and Radius Server Software Defined Network systems.

In this final project, an implementation of Load Balancing and Radius Server systems is carried out on conventional networks and on SDN networks. The Load Balancing system method uses the PCC method by combining two traffic from ISP Telkomsel and StarNet. Radius Server is implemented on the userman feature, this system functions for login authentication and user bandwidth management on the network. QoS measurements on each type of network are carried out using the Wireshark application.

The test results show that the QoS in this final project has good results based on the Telecommunication and Internet Protocol Harmonization Over Network (TIPHON) standard with measurement of the number of packet capture starting from 2000, 4000, 6000, 8000 and 10000. The protocols measured in this study are protocols. UDP and TCP. The smallest delay value is shown by the Load Balancing and Radius Server system with an average delay of 0.112876218 ms. The average value of the smallest jitter with the system is 0.000046 ms. The packet loss value is 0.0135% and the throughput value on the same system is 56.2402 Mbps in the TCP protocol test.

Keywords: *redundancy, performance, Load Balance, traffic, Radius Server, Software Defined Network, QoS.*