

ABSTRACT

At the present time the need for communication services quickly, accurately and safely increased to create a private network while the cost is expensive. To overcome this problem there are several possible solutions, which is Virtual Private LAN Services (VPLS). VPLS is a VPN technology that offers delivery of data packets with routing by looking at destination MAC address to get faster data speeds than conventional networks. MPLS and VPLS technology is combining the concept of LAN on the WAN network. In addition to a fast and secure communication, it currently required for real-time communication and stable. Virtual Router Redundancy (VRRP) is one of the solutions to those needs. VRRP can be maintained with the stability of communication because of the back-up system on the master router, thus increasing the value of QOS.

In this final project carried out 2 scenarios. The first scenario is testing VoIP QOS on the network without VPLS, VPLS with VRRP, and VRRP. The second scenario is testing QOS of VoIP service in the network when link was failure occurs. Testing will be measured based on the parameters availability, reliability, downtime, delay, jitter, throughput, and packet loss.

From the results of measurement and analysis can be concluded that the VPLS network without VRRP has better QOS value, delay 20.843083ms, jitter 3.0288762ms, throughput 84.270013kbps, packet loss 0.2% this is due to the VPLS with VRRP network, VRRP contained an advertisement packet every 1 second causing increasingly dense traffic. When there is link failure from the result of measurement in VPLS VRRP has downtime value 3.61s, in VPLS without VRRP has downtime value 9.98s. VRRP can keep the Quality of Service and can increased value of availability and reliability..

Keyword: *VPLS, LDP-VPLS, VRRP, VoIP, Jitter, Delay, Throughput, Packet Loss, Downtime, availability, reliability*