

ABSTRACT

The need for a stable internet connection makes load balancing a solution. One of the methods built for the load balancing method is ECMP, the advantage of this algorithm is that each route taken at the time of delivery has the same value. This research will use FRRouting which is a high performance open source IP routing suite that can implement all dynamic protocols such as RIP, OSPF and BGP. This research will analyze the performance of ECMP load balancing using BGP routing on open network FRRouting by analyzing QoS parameters (throughput, delay and packet loss). The research was conducted using 4 data size samples on a network that uses load balancing and does not use load balancing. The results of the test show that the delay parameter with a data size of 100 MB shows a value of 0.163 ms with load balancing and 0.124 ms without load balancing. In the scenario with the highest data size of 1 GB, the delay value is 0.127 ms with load balancing and 0.145 ms without load balancing. On the throughput parameter testing with a data volume of 100 MB, the results are 6.486 Mb/s with load balancing and 7.040 Mb/s without load balancing. The data volume of 1 GB obtains a throughput value of 5.443 Mb/s with load balancing and 5.609 Mb/s without load balancing. The packet loss parameter with a data size of 100 MB obtains a packet loss value of 9.369% with load balancing and 10.031% without load balancing. At a data rate of 1 GB, the packet loss value is 10.235% with load balancing and 11.063% without load balancing. The test results for all delay and throughput scenarios are "very good" and packet loss is in the "good" category.

Keywords: *FRRouting, Load Balancing, ECMP, EBGp*