ABSTRACT

Disconnection of network devices will have a fatal impact on the performance of a company or agency. This condition requires a network with a backup system so that the network is not vulnerable to disconnection. Redundancy with the failover method is a solution because when a core router malfunctions, the other routers automatically become backups so that communication can continue. But the amount of redundancy has an impact on the number of hops skipped so that it affects the delivery time. GRE Tunnel creates a virtual path that aims to send packets between clients point to point which is able to reduce the number of hops thereby helping reduce delays in the network. In addition, GRE-based tunneling provides a security mechanism for packets sent by clients through the IPSec feature. The test parameters consist of two scenarios, the first scenario is when all routers are on and the second scenario is in a failover condition with two core routers down, two clients will be simulated that represent between sites. Testing is carried out by sending TCP packets using D-ITG software between clients via tunnel paths between edge routers. Based on the test results, the second scenario QoS parameters in the failover condition get very good throughput values, poor categorized delay values, and very good categorized jitter values based on the TIPHON standard. The test results show that the average convergence time is 32.26 seconds. The long convergence time is caused by two routers that are down simultaneously or multiple link failures, thus requiring a longer adjacency process so that all routers are in full state condition

Keyword : *GRE Tunnel, IPSec, Redundancy, Failover, VyOS, QoS, Convergence.*