

## **Abstract**

Dynamic Multipoint Virtual Private Network (DMVPN) is a combination of mGRE, NHRP and IPsec Encryption technologies that can maintain network security in companies, especially aspects of confidentiality, data integrity and authentication. However, companies also require a consistently available network to ensure uninterrupted business processes, so First Hop Redundancy Protocol (FHRP) can be used as a solution for the availability aspect of the network. In previous research, the implementation of the DMVPN network used one of the FHRP protocols, namely HSRP, so this research was conducted to test the DMVPN network using other FHRP protocols, namely VRRP and GLBP using a star topology with a variation of Dual HUB to test network redundancy using evaluation metrics of network convergence time and Quality of Service (QoS) in the form of throughput, delay and packet loss. The results of QoS testing on sending TCP packets using GLBP on the DMVPN network are better based on throughput, delay, and packet loss. This is due to the load-balancing feature in GLBP. However, in UDP packet transmission, it was found that the use of VRRP on the DMVPN network was better than using GLBP based on the results of throughput, delay, packet loss and network convergence time. This happens because the load-balancing feature on GLBP does not work on UDP packet transmission and network convergence time when the primary router has a problem, VRRP is faster with 3.58 seconds compared to GLBP which takes 9.56 seconds.