

ABSTRACT

In today's digital era, fast and reliable network connectivity is crucial to support smooth business operations. One commonly used technology is a Virtual Private Network (VPN) to connect head offices and branches. However, challenges such as connection instability and downtime still frequently occur, especially when the primary connection is disrupted. Conventional Failover methods often fail to respond to disruptions automatically and efficiently.

This study aims to evaluate the effectiveness of an open-source SD-WAN (FlexiWAN) implementation in supporting automatic Failover mechanisms for VPN connections between users. The methods used include the installation of two virtual routers (vRouters), FlexiWAN configuration, and simulation of connection disruptions on the dual WAN. Tests were conducted on throughput, delay, jitter, and packet loss parameters, analyzed based on TIPHON network quality standards.

The test results showed that the Failover mechanism in FlexiWAN can run automatically with an average connection transfer time of 15 to 23 seconds, without disconnecting the VPN connection. During the Failover process, network quality remained within the "good" to "very good" category according to TIPHON standards. This assessment is reinforced by the results of Quality of Service (QoS) parameter measurements, where the throughput was recorded at 8.20 Mbps (index 4 is very satisfactory), jitter at 1.39 milliseconds (index 3 is satisfactory), packet loss at 17.4% (index 2 is sufficient), and delay at 22.29 milliseconds (index 4 is very satisfactory). Based on the overall index average of 3.25, the network quality is generally categorized as satisfactory. Thus, the implementation of open-source SD-WAN using FlexiWAN has been proven to increase network resilience, reduce operational costs, and provide greater flexibility in network management, especially for organizations that have high connectivity needs with demands for stable network performance. Keywords: SD-WAN, VPN, Failover, Open Source