Abstract

In Telkom University, the topology used inter-VLAN that can make it easier for network administrator to configuration of network. But on topology Telkom University does not yet have a backup link in case of link failure. So in the delivery of data packets from the source toward the destination having obstacles. Based on the issue, proposed a new architecture that is Software Defined Network (SDN) which can resolve the link failure with the configure controller so it can be moved to a alternative link that has been provided with the help of OpenFlow. This architecture do the separation in control plane and data plane, centralized, and programmable. When there is a link failure required a shortest path algorithm to determine alternative shortest path in the delivery of data packets from the source toward the destination, in order to minimize the cost. Scenarios are performed using scenarios before and after link failure and apply Dijkstra algorithm and Bellman-Ford algorithm in search path. Some performance parameters such as delay, convergence time, and packet loss are used as parameters to performance in the implementation of the shortest path algorithm. Based on the results of tests conducted on all three parameters it is found that Dijkstra algorithm is superior to all parameters measured. Dijkstra superior algorithm is marked as having a more efficient convergence time value, and a better delay value in scenarios before and after link failure occurs with or without the use a bandwidth as metric routing on the Bellman-Ford algorithm. Based on the testing results performed on all three of these parameters is obtained that the algorithm is Dijkstra algorithm more better on the overall parameters. Dijkstra algorithm better with more efficient convergence time, and better delay on the scenarios before and after the link failure occurs with or without using bandwidth as metric routing for Bellman-Ford algorithm. But for the value of packet loss, obtained the same results on both algorithms that have 0% packet is missing. Therefore, a suitable shortest path algorithm applied in Telkom University is Dijkstra algorithm.

Kata Kunci: *Software Defined Network* (SDN), Algoritma Dijkstra, Algoritma Bellman-Ford, *Link Failure*