

## ABSTRACT

Explicit separation between the control and forwarding plane On the network SDN (Software Define Network) has been in the spotlight in the last six years, the emergence of a new paradigm in the world bring their network protocols to support communication between the controller and the node on the SDN network such as OpenFlow.

Routing is a part of the third layer in the ISO / OSI layer model and a charge of determining the route where packets are sent, routing is done by the router using a routing protocol, that implements the shortest path algorithms such as Bellman-Ford algorithm, Dijkstra, Floyd warshal etc.

Bellman-Ford algorithm calculates the shortest path (from one source) at a weighted digraph. The point of the source is that it calculates the shortest path which all originated from one point node [1] and is a kind of single-source shortest path algorithm and also could calculate weighted graph with negative edges. In this research it simulated implement of shortest path algorithm to determine and calculate the best route to delivered a packet in SDN (software define network) networking concept. with the separation between the functions of the control plane and the data plane on SDN network then this study simulating, ryu controller is used as the control plane and mininet emulator is used to perform the function of data plane and analyzing the performance of the bellman-ford algorithm to calculate of the best path with testing parameters is convergence time, traffic resource overhead utilities as well as quality of service (QoS) in the form of delay and packet loss. Results of the study were obtained from the bellman-ford algorithm implemented in this study for the QoS parameters still showing the values that required by the standards specified by ITU-T G.1010.

Keyword: *Software-Defined Network, Bellman-ford, QoS, Konvergensi*