

## ABSTRACT

VANET (Vehicular Ad Hoc Network) is a challenging network with problems of large delays on the network. Delay resulted from the speed of vehicle movement, high mobility, and network configuration is always changing. VDTN is a development of VANET where a message must be sent to its destination even though connectivity and network coverage are not always maintained, low node density, and vehicle movement speeds tend to be high. Overall VDTN performance depends on the routing protocol. VDTN has several routing protocols, including ProPHET and Spray and Wait.

In this research both routing protocols are integrated in order to decrease the delay in VANET. The spray and wait stages are added to the ProPHET mechanism to keep the number of messages on the network fixed. The simulation uses The ONE application by running the scenario against changing the number of nodes, buffer size, and message size. Node moves with map-based movement mobility on buah batu-cileunyi toll route. The performance was analyzed based on latency average, delivery probability, and message overhead.

Based on the simulation data processing on the change of node volume, the combined routing protocol has 16.46% latency average lower than ProPHET and 40.14% lower than Spray and Wait. In the buffer size change, the combined algorithm has a lower latency value 7.59% than the ProPHET and 53.35% lower than spray and wait. On message size changes, the combination latency average algorithm is 9.94% lower than ProPHET and 26.84% lower than Spray and wait. Spray and wait has the highest delivery probability compared to ProPHET and Combination algorithms. Spray and wait overhead is very small compared to ProPHET and combination.

**Keywords :** Routing protocol, VANET, VDTN, ProPHET, Spray and wait, Delay