

ABSTRACT

The deployment of technology and data communication are rapidly increasing, especially in wireless technology. In infrastructure and service also progressed significantly. One of that development is *Wireless Mesh Network* that created from ad-hoc WLAN concept. One of characteristics of *Wireless Ad-hoc* is limited coverage because each node in a wireless card (wireless) must communicate with the first node and the neighboring nodes in one range and same channels. It shows that ad hoc wireless's coverage is limited. Many solutions can be offered. One of them is using a Hybrid Wireless Mesh Network.

In this research, it's focused on some problems found in wireless communications networks (wireless-based) networks, especially for Hybrid Wireless Network. It is network conditions and topology are always changed rapidly (dynamic) on a specific scope and some fluence from a crowded network traffic is packet collisions occurred. The optimal path routing is needed to make communication between nodes. Dynamic conditions can be seen from speed and number of node stations. The kinds of routing protocol that simulated on this research are the ZRP (Zone Routing Protocol) and HWMP (Hybrid Wireless Mesh Protocol). It will be simulated and analyzed by the metric parameters such as Packet Delivery Ratio (PDR), Packet Loss Ratio (PLR), Routing Overhead (RO), Throughput and Average end-to-end delay using a network simulator 2 (NS-2.33).

The results is the ZRP is the most efficient routing protocol in this research because ZRP gives 0.69% - 9.077% better than HWMP for PDR dan PLR, ± 0.031 Mbps - 3.237Mbps for throughput dan ± 18.824 ms - ± 1187.79 ms for average end-to-end delay but for routing overhead HWMP gives ± 0.96 better than ZRP. Overall ZRP is the best for routing protocol in all scenarios in this research.

Keyword: *Hybrid Wireless Mesh Network, ZRP, HWMP, optimal path, NS-2*