ABSTRAK

Jaringan oportunistik adalah jaringan nirkabel yang tidak memerlukan instalasi infrastruktur dalam pembentukannya, akan tetapi jaringan ini tidak selalu memiliki jalur yang tersedia antara *source* node dengan *destination* node karena pergerakan semua nodenya yang selalu acak dan selalu berpindah-pindah. Penelitian ini bertujuan untuk menganalisa perbandingan performasi protokol *routing* pada jaringan oportunistik, yaitu protokol *routing Spray and Wait* dengan protokol *routing Epidemic* menggunakan *The ONE (Opportunistic Network Environment) Simulator*. Skenario simulasi yang digunakan yaitu penambahan jumlah node pada area *(density)*, penambahan ukuran *buffer* atau ruang penyimpanan pada node, penambahan waktu hidup atau *Time-to-Live* (TTL) pada pesan, penambahan jumlah salinan pesan yang dibuat oleh *source* node (L*copies*), serta penambahan *density* dan L*copies*. Parameter performasi yang digunakan yaitu *Delivery Probability, Overhead Ratio, Average Latency, Dropped Messages,* dan *Average Buffer Occupancy*. Hasil pengujian simulasi menunjukkan protokol *routing Epidemic* memiliki rasio pengiriman yang tinggi dan waktu pengiriman pesan dari *source* node ke *destination* node yang lebih cepat dibandingkan pada protokol *routing Spray and Wait*, dengan kata lain *Delivery Probability* dan *Average Latency* pada protokol *routing Epidemic* lebih baik daripada protokol *routing Spray and Wait*. Sedangkan pada protokol *routing Spray and Wait*, jumlah rata-rata pengiriman salinan pesannya dari *source* node hingga pesan sampai pada *destination* node tidak sebanyak pada protokol *routing Epidemic* sehingga jumlah pesan yang dibuang karena kendala ruang penyimpanan yang meluap tidak sebanyak dan sebesar protokol *routing Epidemic*. Hal ini berpengaruh pada *Overhead Ratio, Dropped Messages,* dan *Average Buffer Occupancy* pada protokol *routing Spray and Wait* yang relatif lebih kecil dan lebih baik dibandingkan protokol *routing Epidemic*.

Kata Kunci: Jaringan Oportunistik, Protokol *Routing*, Skenario Simulasi Parameter Performasi.

ABSTRACT

Opportunistic network is a wireless network that does not require installation of infrastructure in their formation, but this network does not always have an available path between the source node and the destination node because the movement of all nodes is always moving randomly. This study aimed to analyse the performance comparison of routing protocols on opportunistic network, namely Spray and Wait routing protocols with Epidemic routing protocols using The ONE (Opportunistic Network Environment) Simulator. The simulation scenario is increasing the number of nodes in the area (density), increasing the buffer size or storage space on the node, increasing the life time or Time-to-Live (TTL) on messages, increasing the number of copies of messages that generated by the source node (L copies), as well as the addition of density and L copies. The performance parameters used are Delivery Probability, Overhead Ratio, Average Latency, Dropped Messages, and Average Buffer Occupancy. The simulation test results showed that the Epidemic routing protocol has a high delivery rate and a faster message time delivery from the source node to the destination node than the Spray and Wait routing protocol. In other words, the Delivery Probability and Average Latency of Epidemic routing protocol are better than Spray and Wait routing protocol. Whereas in Spray and Wait routing protocol, the average number of sending copies of messages from the source node until arrived at the destination node is not as much as in Epidemic routing protocol so that the number of messages dropped due to overflowing storage space constraint is not as much and as large as the Epidemic routing protocol. This affects the Overhead Ratio, Dropped Messages, and Average Buffer Occupancy of Spray and Wait routing protocol which is relatively smaller and better than Epidemic routing protocol.

Keywords: Opportunistic Network, Routing Protocols, Simulation Scenario, Performance Parameters