

ABSTRAK

Routing yang berbasis replikasi atau copy pesan di jaringan *Delay Tolerant Network* akan bekerja dengan efektif dan efisien jika setiap node di jaringan mengetahui *global knowledge* salah satu yang termasuk *global knowledge* adalah jumlah node di jaringan. Routing protokol di jaringan *Delay Tolerant Network* yang berbasis replikasi salah satunya adalah routing *Spray and Wait*. Protokol *Spray and Wait* membutuhkan pengetahuan tentang jumlah node di jaringan untuk menentukan L copy pesan. *Spray and Wait* yang konvensional mengeset L copy pesan secara manual tanpa mengetahui berapa jumlah node di jaringan, sehingga kurang bekerja dengan efektif.

Pada penelitian ini diteliti unjuk kerja protokol populasi dalam menghitung jumlah total di jaringan node, sehingga hasil dari counting protokol populasi dapat digunakan untuk protokol routing *Spray and Wait* dalam menentukan L copy pesan setiap node secara adaptif. Penelitian ini akan dianalisis dan evaluasi menggunakan matrik *Average Convergence Counting* untuk protokol populasinya dan *Delivery Probability*, *Overhead Ratio* dan *Latency Average* untuk evaluasi routing *Spray and Wait*. Penelitian ini menggunakan algoritma *token based counting* dan *token based counting with degree collector*. Dari hasil penelitian yang didapat *token based counting with degree collector* lebih cepat dari pada *token based counting* dalam hal *convergence time* pada pergerakan manusia dan jaringan yang memiliki *hub node* lebih banyak.

ABSTRACT

Routing based replication in Delay Tolerant Network will work effectively and Efficiently if each node in network have the same global knowledges, one of them is the knowledge about the number of node in the network. Spray and wait routing, one of he delay tolerant network routing protocol. Spray and Wait routing requires knowledge about the number of networked nodes to specify the L copy of the message manually without knowing how many nodes are networked, making it less effective to work.

In this research, we use population protocol to calculate the total number of nodes in delay tolerant network. This result can be used for the spray and wait routing protocol to determine the optimal number of L copy message adaptively. This research aim to analyzed and evaluated with four matrices; Average Convergence Counting for the evaluate of population protocol performance; Delivery Probability, Overhead Ratio dan Latency Average to assess the spray and wait performance. This research utilize two algorithm; token based counting and token based counting with degree collector. The result show that token based counting with degree collector out performs token based counting in terms of convegence time on the human movement and networks which have a lot of hub nodes.

