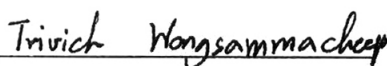


Trivich Wongsammacheep 2007: Redundancy Reduction Broadcast in Mobile Ad Hoc Networks by Selective Pruning. Master of Science (Computer Science),  
Major Field: Computer Science, Department of Computer Science. Thesis Advisor:  
Mr. Chavalit Srisathapornphat, Ph.D. 101 pages.

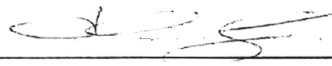
Broadcast is a fundamental communication operation in ad hoc networks. As an example, on-demand ad hoc routing protocols rely on route request broadcasts to discover routes. Flooding, a common broadcast protocol used in ad hoc networks where each node rebroadcasts once after hearing a broadcast packet, causes redundant rebroadcasts, network-wide congestions and packet collisions. Several algorithms have been introduced to alleviate the problems.

First, we propose the new algorithm: Redundancy Reduction Algorithm (RRA), which is an improvement of Greedy Algorithm for selecting the rebroadcast nodes. RRA can reduce the number of rebroadcast nodes to lower than Greedy Algorithm. Second, we propose two novel algorithms: Redundancy Reduction Broadcast (RRB), which utilizes two-hop neighbor information in order to reduce the number of nodes involved in rebroadcast and Redundancy Reduction Broadcast with Scalable Broadcast (RRB-SB), which incorporates delay mechanism from Scalable Broadcast Algorithm (SBA) to further improve broadcast efficiency in mobile networks.

Moreover, we implement RRA to replace Multipoint Relaying (MPR) in Optimized Link State Routing Protocol (OLSR) and serve as its selection algorithm. The new routing algorithm, which is called OLSR with Redundancy Reduction Algorithm (OLSR-RRA), indicates routing overhead reduction in comparison to the original OLSR. GloMoSim is used in performance evaluation with the variations on node density, node mobility and traffic congestion.



Student's signature



Thesis Advisor's signature

29 / 05 / 2007