Abstract

Intermittently connected mobile ad-hoc networks are kind of wireless networks where end to end connectivity unlikely exists. Routing in such environment is carried out through the store-carry-forward mechanism. Thus, message delivery relies on node’s mobility, their contact opportunities and contact patterns. Intermittently connected mobile ad-hoc networks can be viewed as dynamic graph, where mobile nodes are vertices and contact between nodes are edges. Such graph constantly evolves as node’s connection, disconnection and reconnection and reveals the dynamic behaviour of the network. Detecting and dealing with congestion in delay tolerant networks is an important and challenging problem. Current DTN forwarding algorithms typically direct traffic towards particular nodes in order to maximize delivery ratios and minimize delays, but as traffic demands increase these nodes may become unusable.

In this thesis we attempted to improve BUBBLE RAP algorithm performance by using congestion control, forwarded message exchange and message priority update mechanism. We proposed Congestion Control algorithm (CCA) to reduce the congestion occurring on highly
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social nodes and to improve the forwarding efficiency significantly compared to oblivious forwarding schemes. In CCA algorithm, the congestion level of node and message priority are utilized to construct a Congestion Metric (CM). In the forwarding process, the concept of message forwarding to lower CM valued nodes is added together with the BUBBLE RAP strategy to improve the delivery probability as well as together with that a try to reduce the congestion by dropping the messages over nodes having low centrality links with destination is also made.

References

5. Z. Zhang, “Routing in intermittently connected mobile ad hoc networks and delay tolerant networks: overview and challenges,” IEEE Communications Surveys &

Index Terms

Computer Science

Networks

Keywords
Quality of Node, Bubble Rap, Delay Tolerant Network, Conjection Level.