International Journal of Educational Research and Technology
ISSN 0976-4089
IJERT: Volume 3 [4] December 2012: 46 -49

ISO 9001: 2008 Certified Organization
Website: www.soeagra.com/ijert/ijert.htm

Original Article

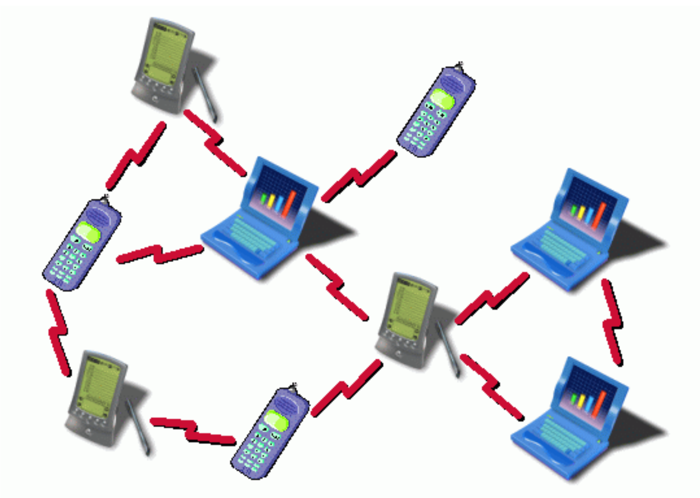
Reducing Number of Nodes Transmissions in Wireless Adhoc Networks

A. Ashok Kumar[1] and Deviselvam[2]
II M.E CSE Department of Computer Science Engineering, Sri Shakthi Institute of Engineering technology.
Assistant professor ,Department of Computer Science Engineering, Sri Shakthi Institute of Engineering technology.
Email: ashokila589@gmail.com, deviselvam27@gmail.com

ABSTRACT
There are two main techniques, static and dynamic, to broadcast algorithms in wireless ad hoc networks. In the static technique, local algorithms determine the status of each node proactively based on local topology information. we show that a constant approximation factor is achievable if position information is available. In the dynamic technique, local algorithms determine the status of each node "on-the-fly" based on local topology information. Constant approximation factor compute minimum spanning tree of H and add the disks corresponding to its edges to D. The status of each node is determined "on-the-fly" during broadcast progress. "on-the-fly" improve the status of wireless links. The proposed algorithm based on dynamic approach can be extended to the case where nodes have different transmission ranges. Then by varying the number of nodes, speed and traffics patterns the performance comparison is done.
KeyWords: *wireless networks, broadcasting, localized algorithms, ns-2 simulation, self-pruning.*

INTRODUCTION

Broadcasting task, source node wants to send the same message to all the other nodes in the network. Existing protocols for all scenarios are based on some threshold parameters to locally select between these three solution approaches. Flooding can impose a large number of redundant transmissions. Here, we describe a new seamless broadcasting from static to mobile protocol, which adjusts itself to any mobility scenario without using any mobility or density-related parameter the primary goal of a broadcasting task is to deliver the message to all nodes in a network to achieve high packet delivery ratio while minimizing the total number of retransmissions. There exists a body of knowledge about centralized broadcasting, in which source



node knows the hole network topology and can determine the whole broadcasting. One extreme is lack of any awareness of neighbors. That is, nodes do not send control 'hello' or beacon messages to inform neighbors about their presence. If each node periodically transmits beacon message, then one-hop knowledge can be gained. Our proposed algorithm is based on two-hop topological or one-hop positional knowledge, depending on whether or not nodes are aware of their own positions. Adding own position to beacon message suffices for our protocol.

This is a traditional broadcasting protocol that does not require neighbor knowledge. Improved solutions aiming at full network coverage require two-hop neighbor topological knowledge and neighbor elimination.

However, the mobility makes the maintenance of such knowledge expensive and therefore, Hyper-flooding was proposed for such scenario in which additional retransmissions occur whenever a node discovers a new neighbor. Reliability could be increased at the cost of high message overhead. The protocol is based on applying high and low threshold. Each node calculates its low and high threshold value based on past relative movements in its neighborhood.

Two threshold types were considered: mobility and traffic based. The protocol has a number of problems. First, the requested parameter value may be difficult or impossible together. For instance, the protocol uses speed and direction of movement, which adds some hardware to nodes and overhead to hello message exchanges. Traffic parameters are based on measuring collisions but they reduce reliability in high volume traffic and increase unnecessary overhead in low volume traffic. Wu's concepts require either one-hop knowledge of neighbors with their positions, or two-hop neighbor topology information.

NETWORK MODEL

All network nodes apply the random waypoint model, generated by NS2.Once reaching the destination, a node stays with a random period ranged from 0 to T rest, max, and then selects a new destination for next travel. Source nodes in the network use Constant Bit Rate (CBR) traffic type, generating five data packets per second. Each packet is composed of the data payload and its header with size P payload and P header respectively. Multicast scenario are used herewith ODMRP Implementation. A MANET network enables wireless communications between participating mobile nodes without the assistance of any base station.

BROADCASTING IN STATIC APPROACH

They propose an adaptive broadcasting protocol that does not require nodes to monitor Thus, two nodes do not transmit every time they discover each other as new neighbors. The proposed SBSM protocol does not rely on any threshold and provides smooth transition of protocol behavior based on network dynamic. The other change is not to always rebroadcast the first time message is received. Local broadcast algorithms based on the static approach, the status of each node u, Stat(u), is a function of id(u), G h(u) and Pr(id(v),G h_ (v)),where v ∈ G h(u). Note that the status of each node does not depend on that of other nodes. Therefore, any local topology change can only affect the status of the nodes in the vicinity.

In designing local broadcast algorithms, we are looking for status functions that not only guarantee constructing a CDS but also ensure that the constructed CDS. Our approach is to construct a graph with a large number of nodes for which both the local topology, G h(.),and the relative priority of the nodes in G h(.) are the same. Without loss of generality, we can assume R = 1

BROADCASTING USING DYNAMIC APPROACH

Using the dynamic approach, the status of each node is determined "on-the-fly" as the broadcasting message propagates in the network. In particular, in neighbor-designating broadcast algorithms, each forwarding node selects a subset of its neighbors to forward the packet and in self-pruning algorithms each node determines its own status based on a self-pruning condition after receiving the first or several copies of the message. It was recently proved that self-pruning broadcast algorithms are able to guarantee both full delivery and a constant approximation factor to the optimum solution. However, the proposed algorithm in uses position information in order to design a strong self-pruning condition. In the previous section, we observed that position information can simplify the problem of reducing the total number of nodes. In this section, we design a hybrid(i.e., both neighbor-designating and self pruning) broadcast algorithm and show that the algorithm can achieve both full delivery and constant approximation only using connectivity.

BROADCASTING THROUGH SELF-PRUNING

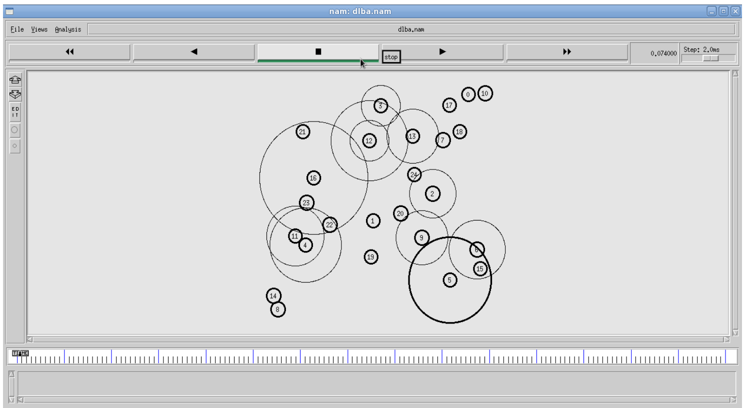
For broadcasting based on self-pruning, each node may determine its own status as a forward node or non-forward node before a broadcast packet is received after the first copy of a broadcast packet is received or after several copies of a broadcast packet are received. In the following discussion, we assume that each node can determine its own status at any time.

REDUCING BROADCAST REDUNDANCY IN AD HOC WIRELESS NETWORKS

An ad hoc wireless network is a collection of wireless mobile hosts forming a temporary network without the aid of any centralized administration or standard support services. The way that packets are transmitted in ad hoc wireless networks is quite different than the way that those are transmitted in wired networks.

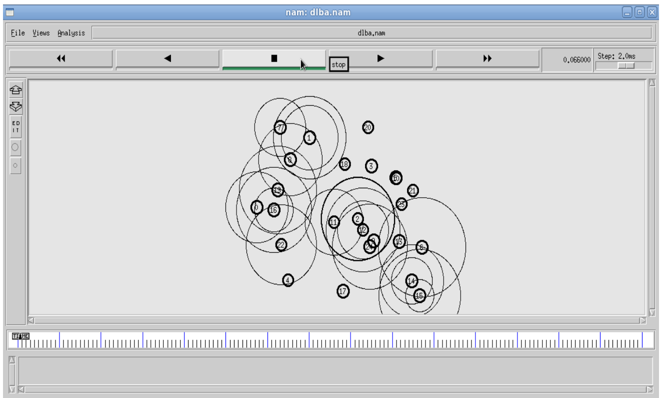
HYBRID LOCAL BROADCAST ALGORITHM

Every node that broadcasts the message may select some of its neighbors to forward the message. Hybrid local broadcast algorithm is combination of both neighbor-designating and self pruning conditions.



BROADCASTING AND TRANSMISSIONS COVERAGE

The network-wide broadcast may take from a fraction of second to a few seconds depending on the MAC layer settings, the size of the network. They do not take into consideration the overhead of the 2-hop neighbor discovery messages. However, in this setting, nodes exchange beacon messages during the whole simulation run in order to keep the list of neighbors up to-date. Otherwise, in networks with high mobility rates, cannot use the benefit of selecting nodes to forward the message.



CONCLUSIONS

Local broadcast algorithms reducing the total number of redundant transmissions that are required to achieve a full delivery. In the static approach relative position information greatly simplify the problem of reducing the total number of selected nodes. Using dynamic approach, constant approximation is possible using position information. Reducing the number of redundant transmissions using coverage conditions. Self-pruning technique is used to reduce the number of forward nodes. The proposed work is extended to the case where nodes are distributed in three dimensional space. Also, the proposed algorithm based on dynamic approach can be extended to the case where nodes have different transmission ranges. This way, our results can be representative of different real-world cases, where one type of traffic might be more dominant than other type in any given moment. It will increase the packet delivery ratio and reducing the routing overhead.

REFERENCES

1. A.Vahdatpour, F. Dabiri, M. Moazeni, and M. Sarrafzadeh, (2008).“Theoretical bound and practical analysis of connected dominating set in ad hoc andsensor networks,” DISC, pp. 481–495, 2008.
2. B. Clark, C. Colbourn, and D. Johnson,(1990). “Unit disk graphs,” Discrete Mathematics, vol. 86, pp. 165–177, 1990.
3. C. T. Zahn,(1962). “Black box maximization of circular coverage,” Journal of Research of the National Bureau of Standards B., vol. 66, pp. 181–216,1962.
4. J. Wu and F. Dai, (2003). “Broadcasting in ad hoc networks based on self pruning,”In Proc. IEEE INFOCOM, pp. 2240–2250, 2003.
5. J. Wu and W. Lou,(2003). “Forward-node-set-based broadcast in clustered mobile ad hoc networks,” Wireless Communications and Mobile Computing,vol. 3, no. 2, pp. 155–173, 2003.
6. J. Wu and F. Dai,(2004). “A generic distributed broadcast scheme in ad hoc wireless networks,” IEEE Transactions on Computers, vol. 53, no. 10,pp. 1343–1354, 2004.
7. L. Barri´ere, P. Fraigniaud, and L. Narayanan, (2001).“Robust position-based routing in wireless ad hoc networks with unstable transmission ranges,”pp. 19–27, 2001.
8. Y. Cai, K. Hua, and A. Phillips, (2205).“Leveraging 1-hop neighborhood knowledge for efficient flooding in wireless ad hoc networks,” In Proc.IEEE International Performance, Computing, and Communications Conference(IPCCC), pp. 347–354, 2005
9. Z. Haas, J. Halpern, and L. Li, (2002).“Gossip-based ad hoc routing,” In Proc.IEEE INFOCOM, pp. 1707–1716, 2002.wireless mobile ad hoc networks,” In Proc. IEEE Wireless Communications.

