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# Broadcasting protocols in Mobile Adhoc Networks: A Survey

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***Abstract:*** ***Mobile Adhoc Network is an wireless adhoc network where it possess the dramatic characteristics of node mobility. Here routing of information from source to destination through various intermediate nodes is a tedious task where it results in hip-hop. To avoid loss of information broadcasting of data through proper channel is essential. Various protocols are designed to avoid the loss of data. In this paper an overview of different transmitting(broadcast) protocols are discussed.***

***Keywords: Mobile Adhoc Network, routing, transmitting (broadcast), protocols.***

## I. INTRODUCTION

Wireless network plays an important role in recent times. Manet is one such network which dominates the society in real world. It is a wireless, self -configuring, infrastructureless network and it is applied in many areas like cellphone, laptop, military, civilian network, emergency situation etc. It has some special features like host movement is frequent, topology changes frequently, data transmission takes place through intermediate nodes. Manet has certain limitations though its benefits are innumerable. Some limitations are packet loss due to transmission errors, variable capacity links, frequent dissconnections/partitions, limited communication bandwidth ,Broadcast nature of the communications. One such limitation is broadcast or transmitting of data. Hence the paper discussess in detail about broadcasting of data through various protocol. Broadcast is sending the data from source to destination. It can be of unicast or multicast protocol transmission.

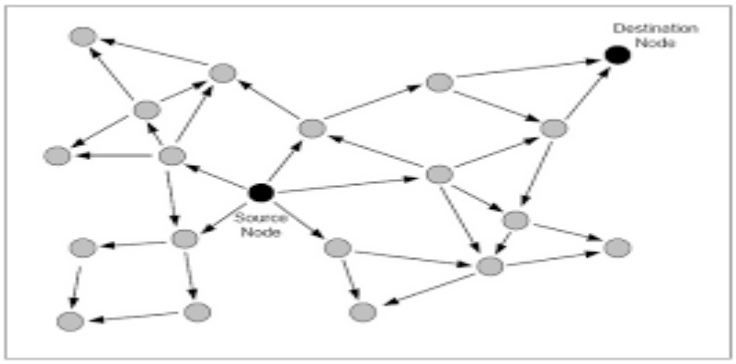


***Fig 1:scenario of Broadcasting Protocol***

***Different routing protocols are illustrated in the following section to describe about the strategies of transmission in the network.***

The protocols that are designed and developed for mobile ad hoc networks can be classified into three major divisions such as proactive or table-driven, reactive or on-demand and hybrid. In proactive routing protocols[5] the routes to all the destination nodes are determined at the start up, and maintained by using a periodic route update process. The proactive routing protocols are DSDV, WRP , GSR, FSR , STAR**,** DREAM, MMWN, CGSR, HSR , OLSR , TBRPF. In reactive protocols, routes are determined when they are required by the source using a route discovery process. The reactive routing protocols[5] are AODV,

 

DSR , ROAM , LMR, TORA , ABR , SSA , LAR , RDMAR , ARA , FORP , CBRP . Hybrid routing protocols combines the properties of the first two classes of protocols into one. Hybrid routing protocols are ZRP , ZHLS , SLURP, DST , DDR. That is, they are both reactive and proactive in nature. Each protocol has an unique characteristics.

## II. LITERATURE SURVEY

This section defines the various transmitting protocol employed in mobile adhoc networks and their issues during routing of data from one end to another end.

### *a) An Efficient Counter-Based Broadcast Scheme for Mobile Ad Hoc Networks*

Aminu Mohammed, Mohamed Ould-Khaoua et.al Proposed a probabilistic approach to mitigate the problem of brain storm which is the occurance of heavy contention and collision in the network.He combined the probabilistic approach with the flooding protocol approach to reduce the number of rebroadcasting of information to reach the destination with the exact data.This approach mainly focus on the factor of reachability and also on the counter based approaches which deals with the number of packets received with random access delay time. By, this scheme throughput and scalability is improved but it suffers from long delays.

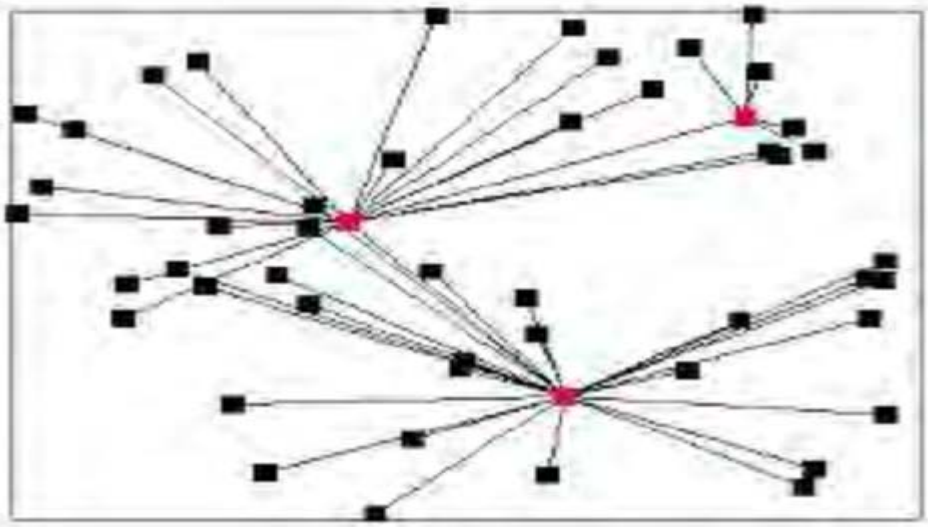

***Fig 2:Rebroadcasting during route discovery***

Here, rebroadcast probability and thrushhold value is set at each node and if the thrushold value is greater than packet counter than the rebroadcasting the message automatically will take place otherwise the packet gets dropped. By comparing with the flooding scheme this combination of probalistic and counter based scheme proves to be more efficient and performable. Hence the performance is improved and it has been proved through various experimental results.

### *b) Gossip-Based Ad Hoc Routing*

Zygmunt Haas Joseph Y. Halpern Li Li designed a gossip based approach to reduce the overhead problem.Gossip protocol is an communication protocol to overcome the unreliable communication,redundancy of information,unbounded information and overhead problem.In this method part of the node receives the message frequently but some don't receive the message due to gossip message dies out during transmission.They bypassed this problem by setting a gossiping probability between 0.6 and 0.8 during every execution in large scale network.Gossiping combined with flooding yields a better results and simulations on AODV . Found to be good.Results shows that 35% of message overhead is reduced in terms of throughput and latency.

Through various experiments on gossiping probability of each node according to the success and failure of each nodes.It is found that the probability rate is increases if it is success and decreases to 0 if it is a failure they come to an conclusion that each intermediate nodereceiving the packet will gossip with the probability carried in the route request packet.Since, gossiping is simple to execute to reduce the traffic and overhead in the network.It is combined with AODV to enhance the performance and

 

also combined with ZRP by sending route request to some nodes rather than all nodes.Gossiping is still be useful even when non local messages are sent.

***c) RBP: Robust Broadcast Propagation in Wireless Networks***

Fred Stann John Heidemann Rajesh Shroff Muhammad Zaki Murtaza proposed a protocol called RBP for reliable transmission tn the network.This protocol provides a service between MAC and network layer by simultaneous maintaining of energy efficiency RBP is based on two principles:One is to exploit network density to achieve near-perfect flooding reliability by requiring moderate (50-70%) broadcast reliability when nodes have many neighbors.Next is to identify areas of sparse connectivity where important links bridge dense clusters of nodes, and strive for guaranteed reliability over those links. In this they discussed about the state of the nodes.A global state of the node is mentioned inorder to make decisions on retransmitting of data and they observed that reliability depends on the local network density.After imperfect propagation lower density requires a higher likelihood of retransmission on the oherside denser regions will likely compensate for loss and also observed that network topologies sometimes consist of well-connected components joined by important links; identifying and increasing the reliability of these links is essential to provide both high reliability and efficiency. For observing the performance in experiments they used random node placements.Every data point presented in this section represents anaverage over ten randomly generated topologies. Through both testbed experiments and controlled simulations it is seen that this hybrid approach is advantageous to providing nearperfect reliability for flooding with good efficiency.

***d) DRB and DCCB: Efficient and Robust Dynamic Broadcast for Ad Hoc and Sensor Networks***

Alireza Keshavarz-Haddad*y* Vinay Ribeiro*x* Rudolf Riedi*yz* implemented a broadcast schemes which provably perform a factor of the optimal efficiency. Deterministic, timer-based broadcast schemes not only guarantee full reachability but also robustness against node failure.In addition to this athey also proposed static Dominating Set (DS) and a dynamically computed set of connecting nodes which is an hybrid methodology and studied about the trade-off of timer settings against the number of rebroadcasts, as well as the robustness of the proposed algorithms. In this paper they concentrated on deterministic timerbased schemes, a class with attractive properties.They discuused that the Mac layer is assumed to be reliability with no loss of data and also considered about the the network is found to be robust since it is dynamic and adaptive to any kind of network.Hence time based schemes achieve larger latency. So,a novel approach of timer based methods are designed like Dynamic Reflector Broadcast (DRB) and Dynamic Connector-Connector Broadcast (DCCB); both possess an efficiency within a factor of the optimum, a property which other deterministic timer-based schemes do not share and which we establish both analytically and in simulation. Second, we study by simulation the effect of the settings of the random timer for existing and proposed deterministic timer-based schemes studied the simulation the effect of the settings of the random timer for existing and proposed deterministic timer-based schemes and showed that the performance is good. The simulations illustrated that DRB andDCCB have better reachability than counter-based probabilistic scheme. Also, they use a smaller number of nodes when compared to deterministic timer-based schemes and proposed simple cross-layer design which helps the timer-based schemes to work close to their maximal efficiency without sacrificing latency.

***e) Improving Route Discovery of Dynamic Probabilistic Flooding in On-Demand Routing Protocols for MANETs***

Abdalla M. Hanashi, Irfan Awan and Mike Woodward proposed a dynamic probabilistic approach based on the way point mobility .Dynamic rebroadcast probability mainly deals with the number of neighbour nodes in the network.By this rebroadcast probability is set according to the neighbour node message and the rebroadcast probability would be low when the number of neighbor nodes are high which means host is in dense area and the probability would be high when the number neighbor nodes are low which means host is in sparse area . This dynamic strategy is compared with simple flooding AODV and fixed probabilistic scheme and simulations shows that rebroadcasting is found to be very less and collisions during the transmission of message is very minimal hencethe performance found to be improved.

 

### *f) On the Reduction of broadcast redundancy in mobile adhoc networks*

Wei Peng,Xi-Cheng Lu Proposed a local topological and statistical information to reduce the redundancy in mobile adhoc networks.This approach helps in improving the network bandwidth and efficiency of nodes.It also provides the reliable transmission of data.statistical approach helps to reduce the number of rebroadcast for every execution.Here,the algorithm of scalable broadcast algorithm was introduced inorder to reduce the rebroadcast if at all neighbours covered by previous transmission.author mainly focus on the neighbour topology and the duplicate information of the data.Broadcast algorithm consists of two sections consisting of the topology information and the data broadcasting section.Simulations are done through various test experiments in the ns2 and found that the performance is increased through some metrics like Delivery ratio and the Delivery cost and come to the conclusion that it is a random way point model which reduces the broadcast redundancy efficientlyDelivery ratio of flooding decreases with the increasing of the network size and the traffic load.performance is increased when the delivery ratio remains high for all pause times in both the approaches.**Oonn the Reduction of Broadcast Redundancy in Mobile Ad Hoc NetworksOn the Reonduction of B**

## III. CONCLUSION

Broadcasting is one of the fundamental issue in all the wireless network and transmission of data through proper channel without any loss of data is a very difficult task.In this paper a review of broadcasting

Protocol was made and its effect on the network through different protocols and approaches are discussed.From all the above mentioned paper we decided that it is possible to reduce the rebroadcasting ,collision,overhead, latency time of data by using any one of the protocol.It is seen that the empirical results found to be good on different broadcasting schemes.

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