

A Survey On DSR Routing Protocol

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Abstract: MANET is a Wireless and Infrastructure less relay network. MANET sends data through nearly intermediate nodes. It's a device to device communication in which each device acts as a client and server. Routing plays as important role in all networks. In this paper the flooding attack in DSR based network is explained. The DSR network determines of Route Discovery and Route Maintenance. The survey of the network nodes is observed.

Keywords: DSR, MANET, routing protocols.

1. Introduction

MANET is a mobile ad-hoc network in which it is connected with mobile devices and it act as both server and client because it does not have proper infrastructure and it is de-centralized network. One of the main applications is the vehicular ad-hoc network which is used for wireless data transfer for vehicles.

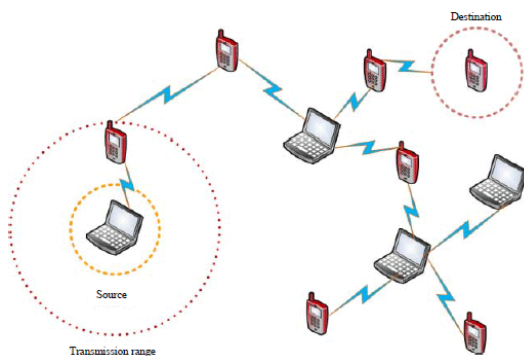


Fig. 1. MANET network

In the windows OS ad-hoc network is a communication mode that allows computer to directly communicate with each other without a router. Wireless mobile ad-hoc networks are self-framing, it is a vital network in which nodes are free to move.

The nodes move liberally which leads to frequent topology changes. So data transfer becomes more challenging task. Therefore, several routing protocols are introduced. These protocols are classified into 3 types they are; proactive, reactive and hybrid.

2. MANET Routing Protocol

A. Proactive Protocols

The proactive routing protocols in which each nodes maintains one or more range routing tables that are updated regularly

and it sends a broadcast message to the whole network if there is any change in the topology. Wireless Routing protocol Fisheye State Routing (FSR) protocol is the example of Proactive protocols.

B. Reactive Protocols

In reactive protocols every nodes keeps a route dependent on request. The principle advantage is that it produces immense control packets because of route revelation during topology changes which happens. The instances of this sort of protocols are Dynamic Source Routing (DSR), Ad-hoc On Demand Routing (AODV) and Associativity Based Routing (ABR) conventions.

C. Hybrid Protocols

The hybrid protocols are the mix of proactive and reactive protocols taking the most desirable characteristics of the both the protocols. The routing is created with some proactive routes.

3. AODV Routing Protocols

The AODV network (Ad-hoc On-Demand Distance Vector) is a routing protocol mainly structured for implementing in the AODV mobile networks.

This is a reactive protocol in MANET where the AODV routes are created when there arises a demand of routes. In this AODV protocol the recently used nodes will get terminated and also the neighbour nodes will be notified if any of the routes get broken. But determining the ideal time of expiration is difficult.

This protocol uses a classical procedure to determine if it updates the routing information to prevent loops.

The AODV is adapted to work in a mobile environment. When the node needs to send packets to destination, AODV checks whether the route has reached its destination. The routes are maintained until there raises no demand by the source.

A. DSR Routing Protocols

The Dynamic Source Protocol (DSR) could be a straight forward and organized routing protocol intended to be utilized in multi-hop wireless ad-hoc networks for mobile nodes. DSR could be a routing protocol for wireless mesh networks to be completely self-sorting out and self-arranging, while not the requirement for any current network base or organization. Network utilizes the DSR protocols which are associated with

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the internet.

DSR will interoperate with Mobile IP, and nodes utilizing Mobile IP and DSR which are consistently moved between WLANs, mobile information services, and DSR mobile accidental networks. The protocol comprises of the 2 principle systems which are "Route Discovery "and "Route Maintenance". These 2 mechanisms help in permitting the nodes to discover and maintain routes to arbitrary destinations within the accidental network.

All parts of the protocol work altogether on-request, allowing the routing packet overhead of DSR (the scale mechanically to particularly) that needed to respond to changes inside the routes as of now being used. At the point when node S needs to send a packet to node D, anyway doesn't figure out a route to D, node S starts route detection.

Source node S floods Route Request (RREQ) to each RREQ, which has sender's location, terminal address, and an individual request ID dictated by the sender. Each and every node adds its own symbol when sending RREQ.

B. Advantages

This protocol uses a reactive approach which does not need to flood the network with table update messages periodically, so extra work is not required in this approach, opposed to table-driven approach. In this protocol, a route is established as per requirement, so the need to find routes to all other nodes in the network is eliminated.

C. Disadvantages

In this protocol the route maintenance is not useful to fix a wrecked connection. The old data in route cache could likewise bring about irregularities while recreating the route.

Therefore, association arrangement delay is higher than in table-driven protocols.

Despite the fact that the protocol is appropriate in static and low-mobility conditions, the performance degrades rapidly as mobility increments.

As DSR, utilizes source routing mechanism, substantial routing overhead is included. This routing overhead is relative to the path length. Rebroadcasting of route request may lead to collisions.

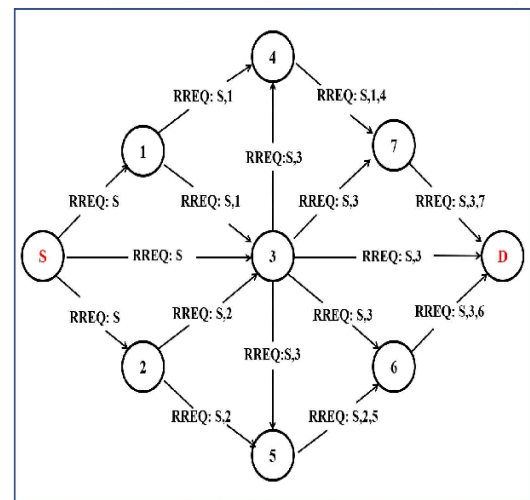
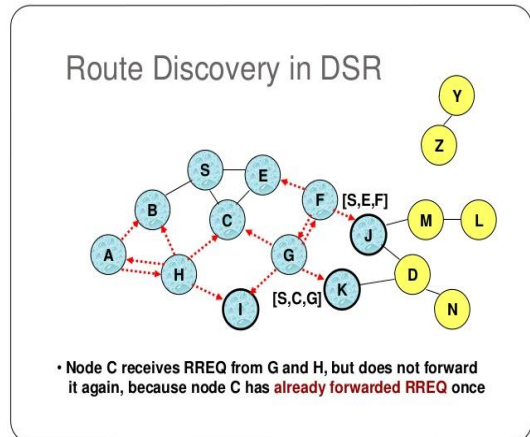


Fig. 2. Route discovery in DSR

Table 1

S. No.	Title	Year	Author	Algorithm	Advantages	Disadvantages
1.	A New DSR Routing Protocol For MANET	2009	Maman Husein Mamoun	Dynamic Source Routing on Mobility prediction (MDSR).	Reduces end-to-end delay, enhanced data transmission rate.	Decrease in packet delivery ratio.
2.	Enhanced Dynamic Source Routing (DSR) in MANET	2015	Anjesh Kumar Er.Lalit Himral	Dynamic Source Routing (DSR) with reputation.	Packet loss is minimized selfish nodes are ignored.	There is no route maintenance since the broken down link will not be repaired locally.
3.	A Multipath Energy DSR Routing Protocols for MANET	2015	SulaimanGhaleb Salem Ba Hmaid Gameil Ali Dr.V.Vasanthi	Multipath Dynamic Source Routing (DSR).	Trust worthy paths for routing.	Need to improve in cost metrics.
4.	Analysis of Selfish and Malicious Nodes on DSR Based Ocean Protocol in MANET	2010	Amit Saxena J.L.Rana	Observation Based Cooperation Enforcement in Mobile Adhoc (OCEAN).	Reduce end-to-end time delay.	Lengthy process of scrutinizing the misbehaving nodes to ensure safe packet delivery.
5.	Route Cache Update Mechanisms in DSR Protocol-A Survey	2011	Naseer Ali Husieen Osman B Ghazali Suhaidi Hassan Mohammed M.Kadhum	Route cache in Dynamic Source Routing (DSR) Protocol.	To avoid unnecessary route discovery process.	Increased packet loss, reduce in the efficiency.

4. Literature Survey

Mamoun Hussein Mamoun [1] proposed "A New DSR Routing Protocol for MANET" to determine the mobility prediction by using the algorithm of MDSR. This protocol is implemented by using a modified NS2. Routing is normally made up of two processes called as routing set up and routing maintain. When nodes transmit information they will broadcast routing packets and search for the excellent path without storing the routing information. With this algorithm we can control the route of the node by judging the neighbor node's distance and by envisioning the neighbor node's mobility to fit the fast changed network topology and scale down the end-to-end delay effectively. Thus this protocol enhances the communication in the real world, which is very much important in voice and video communication. Meanwhile, the MDSR protocol reduces the ratio of packet delivery.

Anjesh Kumar and Lalit Himral [2] proposed "Enhanced Dynamic Source Routing (DSR) in MANET" to propose a new reputation scheme on DSR protocol for the ad-hoc network. The new DSR scheme protocol route reliability between each nodes in the network topology. The motive of this paper is to increase the efficiency of the network, this is calculated by the reputed value of nodes in the network by using the cache data memory. The behavior of the nodes were checked, if the nodes routes is not behaving properly then less time consuming is chosen. In this research safe and secured routing is used for both send and receive communication this reduces the packet loss. Thus the reputed DSR protocol reduces the selfish nodes. This paper comes out the result that the new scheme on DSR protocol performs way more efficient compared with the normal DSR protocol.

Sulaiman Ghaleb, Salem Ba Hmaid, Gameil Ali, Dr. V. Vasanthi [3] proposed "The Multipath Energy DSR Routing Protocols for MANET" to determine the path from source node to destination node which is connected directly with each other without any centralized infrastructure. In this each packet routing to be trivially loop-free and averting demand for up-to-date routing header of each data packet other nodes sending any of these packets may also facily cache this routing information for future application. DSR are used to realize and rectify the collapsed routes, so that the process of sending and receiving information will start between the nodes to find out the optimal path. Some protocol is implementing well in some aspects, while the same protocol has deficiency in other execution issues. Multipath energy protocol improves the lifetime of network and reduces the energy consumption by correcting the existing DSR routing protocol.

Amit Saxena, J. L. Rana [4] proposed "Examination of Selfish and Malicious Nodes on DSR Based Ocean Protocol in MANET" decide the sea is a layer that dwells between the system and MAC layers of the convention stack and it assists hubs with settling on clever steering and sending choice. It keeps up the general bundle of an ad-hoc organize despite hubs that make trouble either vindictively or egotistically at the steering layer. There are two sorts of directing bad conduct.

We call deceiving, is that a hub may react emphatically to

course demands yet then neglect to advance the real bundles, misdirecting different hubs into fruitlessly sending their traffic through it. The second kind of steering rowdiness is narrow minded hub issue in which a hub may not react to course asks for yet may in any case send its own traffic through the system, unjustifiably protecting its assets while misusing others. Number of vindictive and egotistical hubs present in the DSR convention and how OCEAN when utilized over DSR discovers its utility to lessen the impact of these noxious nodes. End-to-end defer diminishes utilizing OCEAN convention however this happens to a detriment of expanded time utilization and along these lines expanded force utilization as a result of a significant complex instrument.

Naseer Ali Husieen, Osman B Ghazali, Suhaidi Hassan and Mohamed M. Kadhum [5] has proposed "Route Cache Update Mechanism in DSR Protocol-A Survey" to explain the need of the updated routing in DSR protocol in order to reduce the packet loss and enhance the efficiency in performance of the DSR protocol. The route cache process normally is used in DSR protocol is to store the route of all the nodes in the network to avoid unnecessary route discovery for transmitting packets each time. A route caching plays a major role in reducing the flooding the route discovery process as long as it is possible. If at a cost where the route may get expired then the DSR protocol might determine the fresh route in the route cache. This improves the performance of DSR protocol. Meanwhile the route cache may also contain stale routes that affect the working of the DSR protocol. The Stale routes results in packet loss, long delay. Thus route cache in DSR protocol is to avert unneeded route discovery process during packet sharing with other nodes. Therefore, efficient mechanism for route caching is needed.

5. Conclusion

In this survey we have discussed on the DSR (Dynamic Source Routing) protocol. The DSR routing protocol mainly act by using two main components which are route discovery and route maintenance allowing routes to discover and maintain arbitrarily This is specially designed for mobile ad-hoc networks for high rate of mobility while having heavy amount of nodes. We have discussed about the advantage of the DSR protocol, it is a self-organizing network thus it does not need any pre-existing network infrastructure. In the table we have shown the various algorithms which contain various advantages and disadvantages of the DSR routing protocol. The disadvantage is the route maintenance since it does not repair the local broken link by itself. So our future work is to enhance the DSR routing protocol so that the disadvantages experienced in the DSR routing protocol can be resolved.

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