Analysis and Performance of Aodv, DSDV, DSR Routing Protocol using Manet

[1.] Poonguzhali.E
Dept. of CSE
AMCEC Bangalore

[2.] Shalini.Y
Dept. of CSE
AMCEC Bangalore

[3.] Shwetha. S
Dept. of CSE
AMCEC Bangalore

[4.] Vasavi D.P
Dept. of CSE
AMCEC Bangalore

Abstarct - A (MANET) Mobile Ad Hoc Network is decentralised and infrastructureless networks which can't be done with the required for pre-existing infrastructure where a router act as node without centralised network management. To improve the Quality of Service(QoS) by using routing protocol with route caching plays significant role. Quality of Service (QoS) is used in various application of MANET. MANET networks are dynamic, open and share self organised network.

1. INTRODUCTION

The major function of MANET is maintainingad hoc network by using routing protocols. Also there exist many routing protocols where there in this paper we mainly concentrate on 3 protocols (AODV, DSDV, and DSR). The performance of these three routing protocols are analysed based on the few metrics such as packet delivery ratio ,throughput, control overhead, packet delivery ratio, and presented by simulation result obtained from using ns2 simulaton. The nodes in the network not only act as hosts but also as routers that discover and maintain routes to other nodes in the network.
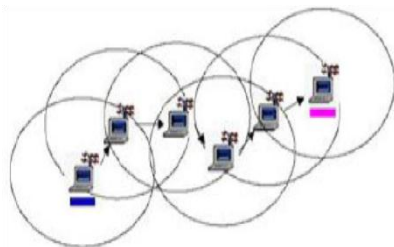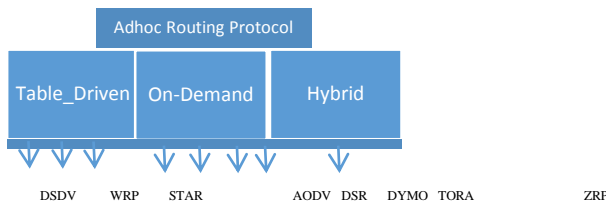
Mobile Ad hoc Network

Figure2. Categorization of ad-hoc routing Protocol

In this we are going to discuss about brief overview of 3 protocols, the simulation results and performance comparison of the above 3 routing protocol and the conclusion which protocol is best among all 3 routing protocols.

2. OVER VIEW OF ROUTING PROTOCOLS

2.1. Destination-Sequenced Distance-Vector (DSDV) Protocol

Each and every node has a table which consists of the shortest distance and the initial node on the shortest path to each and every other node in the network. It also incorporates the table, that table updates with increasing sequence number tags to search for stale routes to avoid routing loops. Routing information has propagated to maintain and update routing table periodically. This protocol has the major advantage of lower route request latency, but the demerit is it leads to higher overhead.

2.2. Ad Hoc on-demand Distance Vector Routing (AODV) Protocol

Router maintains all the information about that where next node it has to be reached. It is maintains the routing information for the active paths. When a packet is reaches to source node, than it is perform some request operation. The source node and destination node identification numbers, source node and destination node sequence numbers, the broadcast identification number is present in Route Request (RREQ) packets.The RREQ get the message that is "packet is created by router and send these packet return to source node" when destination node sequence number is either greater than or equal to RREQ. The intermediate node is generates the RREQ message. Then these messages sent to the affected source. Then reinitiates the route by discovery the source node, if the route is still desired. Advantage is routes that establishes on demand.

2.3. Dynamic Source Routing (DSR) Protocol

These protocols are used for source caching and source routing. Each node upon receiving a RREQ packet rebroadcasts the packet to its neighbours. When a node has packets to send it makes RREQ repeat request by source node using sequence number. After receiving the RREQ packet by destination node, the source node returns the Route Reply protocol (RREP) to the source node. The RREQ packet established the traverse path return to the source node for RREP packets. Intermediate nodes are stores in cache due some problems exist for future use. To reduce the control overhead information by use route cache with intermediate nodes.

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Metrics Performance:

The metrics performance are shown in below table:

Protocol Property	DSDV	AODV	DSR
Reactive	No	Yes	Yes
Routes maintained in	Route Table	Route Table	No
Periodic Broadcast	Yes	Yes	No
Loop Free	Yes	Yes	Yes
Multicast Routes	No	No	Yes
Unidirectional Link Support	No	No	Yes
Multicast	No	Yes	No
Distributed	Yes	Yes	Yes
QoS Support	No	No	No
Route Cache/Table Timer	Yes	Yes	Yes

Delivery ratio for packet: It represents the achieved network with maximum throughput.

Delay between end to end nodes: It is the total amount of time required to make packet move to destination node from source node.

Throughput: Throughput is the total number of packets delivered at given time interval.

Routing Normalization:

Number of routing packets "transmitted" per data packet "delivered" at destination. If the overhead of routing is low then performance of the routing is well.

3. SIMULATION:

Simulations is done by varying number of nodes and varying speed.

4 .SIMULATIONRESULTS

The difference between protocols is explained below:

Packet Delivery Ratio (PDR)

In fig AODV and DSR have almost the same packet delivery ratio while DSDV packet delivery ratio is quite low as compared to reactive protocols because in DSDV, a node maintains route for all the nodes available in the network. When the numbers of nodes are increased, DSDV node overhead will also increase. It increases processing delay. Due to this increased processing delay and nodes are dropped. It also happens that DSDV maintains route with more hop count than AODV and DSR because it maintains route in proactive manner.
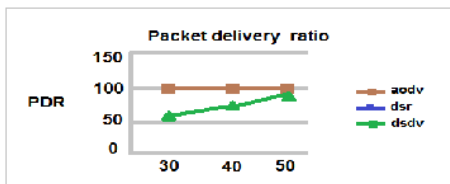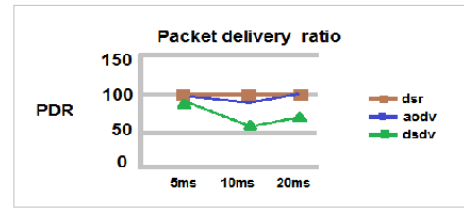

Fig.2. By varying number of ratio

Fig.3 By varying number of nodes

Average End to End Delay

In fig, DSDV has higher end to end delay due to its proactive features. The route maintenance stage, due to which it shows the better delay characteristics.
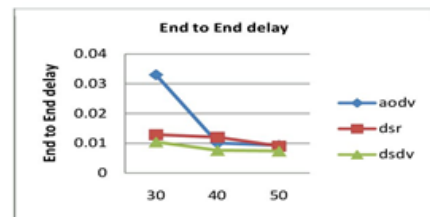
Throughput

Fig.8. By varying number of nodes

Below shown fig of DSR and AODV and DSR were throughput is almost equal and thethrouput is better than DSDV because they have higher packet delivery ratio than DSDV.
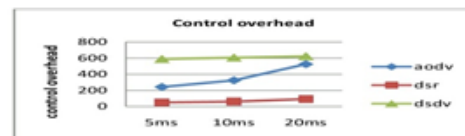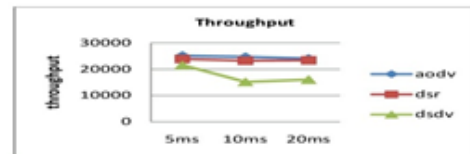

Fig.5.By varying speed of the nodes

Fig.7.By varying speed of the nodes

Normalized Routing Overhead

From the above figure we known the DSR doesn't has the highest normalized routing load. The DSR will search in the cache for the route. The route is established then the packets are transmitted. During the transmission the some packets are dropped.
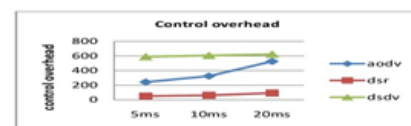

Fig.5.By varying speed of the nodes

5. CONCLUSIONS AND FUTURE WORK

As we discussed the three protocols AODV, DSDV, DSR. As we compared three protocols AODV has the best routing protocol. The protocol has based on their QOS parameters. But the Simulation results which shows that DSDV is best for only limited no. of nodes with the low mobility, and DSR is choosen for low traffic with low mobility. For robust process where mobility is high, and nodes are dense,in which the traffic amount is high, and the AODV give s the best performance other than two compared with protocols. Hence AODV was performance well and our future work will make modifications.

REFERENCES

[1] J.Broch, D.Maltz, D.B.Johnson,Y-C.HuandJ.Jetcheva,"A performance comparison of multi- hop wireless adhoc network routing protocols,"

[2] S.R.Das, C.E.Perkins and E.M.Royer, "Performance comparison oftwoon-demand routing protocols for ad hoc networks," Conference on Computer Communications(INFOCOM)

[3] A.boukerche,"A performance comparison ofroutingprotocolsforad-hocnetworks"