

Packet Routing Delay Analysis in MANET

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Abstract— DSDV and DSR are routing protocols of mobile ad hoc networks. DSDV is a proactive type routing protocol whereas DSR is a reactive type of routing protocol. Both DSDV and DSR are very well known MANET protocols. A Mobile Ad hoc network is a collection of mobile nodes connecting in decentralized mode. This type of network has no need of any central administration support and don't have any physical links. They do not follow any particular topology due to the mobility nature of nodes. This network consists of various protocol suites which are specifically designed for mobile nodes. This paper presents a simulation analysis of end to end node delay in DSDV (proactive) and DSR (reactive protocols) using the NS-2 simulator as a simulation environment.

Keywords- DSDV, DSR, Routing, Node Delay, Protocols, MANET Protocols, NS-2, Simulation.

INTRODUCTION

An MANET is a wireless network made by peer to peer networking of devices using wireless communication within nodes. It does not need any device to working as Wireless Access Point [3]. It is a convention, or standard, that controls the way how a node can decide the way to transmit packets in network between computing devices. The actual and true goal of any mobile ad-hoc network routing protocol is to overcome from challenges of the dynamically changing topology and maintain an efficient route between any two nodes with minimum routing overhead and bandwidth consumption

In Mobile ad-hoc networks, nodes have to discover the topology. In this type of network the topology is not predetermined or established at network start-up. The main goal is that a new node may advertise its presence in network and each node should listen for broadcast by its neighbor's nodes. Each node should aware about nodes nearby and how to reach them, and may announce that it, too, can reach them.

MANET ROUTING

Determining optimal routing paths and, transferring the information between the various sets have two process which involves in the process of routing through an internetwork in simulation. As the network topology constantly changing, so the issue of routing packets between the source and destination pairs of nodes

Becomes a challenging task [1], mostly protocols based on reactive technique of routing instead of proactive routing technique. The multi cast type of routing is a typical task because of multi cast tree which is not static due to the nodes move randomly in the network of simulated scenario [5]. The Routes that are in between various nodes could be consisting of multiple network nodes, which are much more complex from a single hop communication.

ROUTING PROTOCOLS

DSDV Protocol (Proactive Protocol)

DSDV is a Proactive protocol so, each and every node should maintain a routing table on regular basis specify updated route for packet transfer. In DSDV protocol the routes of the data transmission generally maintained on the basis of the constant control traffic. These routes are available all the time during transmission. Nodes frequently have to update the tables to provide fresh view of whole network. Updates are so frequent so that the broadcast must be made on regular basis to make sure that every node can almost always find every other node in the network.

This technique is good performer but time consuming. The routing overhead of this technique is more due to routes has to be defined before packet transferring, also this protocols have less latency due to all the routes should be maintain frequently basis[5].

This protocol attempts to maintain routing table details and up-to-date routing details from all the network nodes. Route details are stored in various tables for utilize to forward a packet when needed. The routing tables frequently updated as the network topology changes.

B. DSR Protocol (Reactive protocol)

The DSR Protocol discovered route whenever transmission is needed, no need for frequent updating of routes in table for every node in this type of protocol. DSR use source routing technique in which a data packet originating node and all node header address requires traversing arrives at the destination [2]. The DSR contains useful and necessary components like route discovery and route maintenance.

It is an On-demand routing protocol that is due to the data packet follow the routes which is not predefined or regular updated or in other word created on demand when needed

When routing needed source node make request to discover or prepare route for a new route for transmission, this step performs only when a transmission is has to perform. This technique is utilizing flooding algorithm. This is based on the technique in which a node performs broadcasting of the transferring packet to all of the neighbors and they also forward that packet to respective near nodes.

Repeat this technique in the way of final destination, and have a higher delay less routing overhead.

On Demand routing protocol does not maintain routes all the time, but to create a route, only when the transmission must be implemented. The agreement to perform two different operations to find and prepare the route, the first route is found and the second holding route. When it first started in the transmission network discovery route, when all routes are found, review and begin the transfer process as long as it finds topology due to mobility, a change of route maintenance process response.

SIMULATION AND EVALUATION

Instruction and NS2 statement can define the topology of the network and node movement, and to configure the service source and receiver to create a trace file statistics.

NS-2 is a discrete event simulation for network research. It provides routing and multicast protocols to simulate the strong support of wired and wireless networks. It includes two simulation tools. Network Simulator (NS) contains all the commonly used IP protocol. Web animation (NAM) is the use of visual simulation.

The mobility model is used as random mobility model [10] The purpose of the 500-meter field structure point \sim x500 field for 50, 75 and 100 nodes variable node count. Transfer from the position of the packet to its destination, to use a particular speed. After a transfer is complete, another transport after a certain pause time starts. The mobile node also affects the dwell time, the relative speed which can be changed. In order to get a fair result many traffic programs and protocols liquidity should not be much the same as we are accustomed.

The simulation environment taken in this analysis is Network Simulator NS2 [7], which is a powerful and simple event driven simulation tool. NS2 is very useful in examination and implementation of networks logically to save the cost and time of physical simulation and implementation. This simulator provides facility for simulation of wired and wireless networks with support of various protocols. The simulation we done is to evaluate the performance of MANET routing protocols DSDV and DSR depends on node delay Analysis.

Radio Model - Two Way Ground

Packet Size - 512 Bytes

Network Speed - 10 m/s

Area - 500X500

Number of Nodes 50, 75 & 100

MAC - Mac/802_11

Simulation Pause Time 20,40,60,80 & 100

END TO END DELAY

It is an average delay of data packets from the source to the destination. It is also called latency data. And measured the time it takes between the generation of data packets and the last part of his arrival to the destination, the packet end-to-end delay is the average time it takes to pass the packet network. It is the time for generation in the package sent to the receipt in the application layer destination and is measured in seconds. Therefore it includes all delays in the network, such as buffer queues, the transmission time of the delay caused by directing activities and exchange control MAC. Different require different levels of packet delay. Featuring the network from intruders by node mobility, re-send the package because of poor signal strength between the nodes, and tear the contact-making, and this caused a delay in the network to increase.

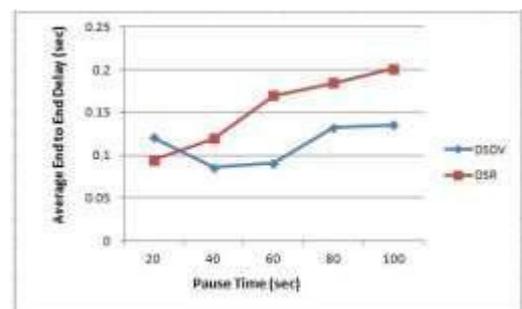


Figure 1. End to End Delay comparisons on network size 50

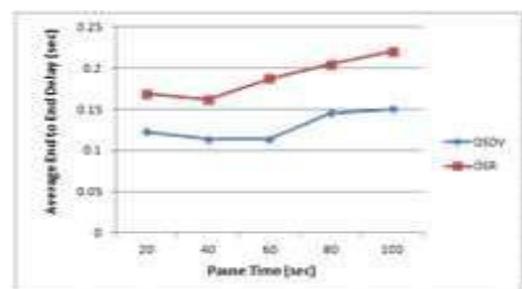


Figure 2. End to End Delay comparisons on network size 75

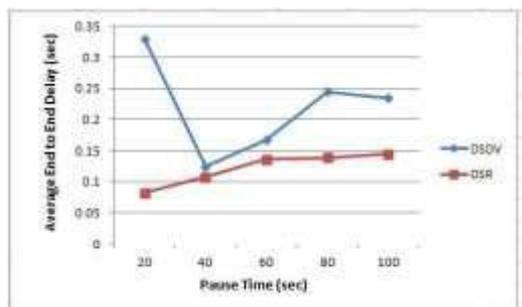


Figure 3. End to End Delay comparisons on network size 100

Figures 1, 2 and 3 shows the average delay of end-to-end traversal of packets in protocols DSDV and DSR for the number of nodes 50, 75 and 100. It is clear that DSDV has less delay than DSR end-to-end in the fewest number of hops, because DSDV is a proactive protocol which already all information is stored guidance in the table. Thus, it consumes less time so the end-to-end delay is a measure of the extent of adaptation is directed to various restrictions in the network protocol, and is relying on a routing protocol [10] [11].

CONCLUSION

After performing these tasks, it is found that characteristics of these two types of protocols are different. In this paper, some of the results calculated from the actual comparison in DSDV and DSR. Proactive and reactive performance DSDV and DSR protocols were simulated and analyzed with the NS-2 simulator. Behind this observation the main motto is to simulate the network and theoretical obtained results by comparison of facts. We found, DSR better than DSDV pattern shown in figure. DSR flow rate and speed better, due to the high mobility of nodes. DSDV is better than DSR. Thus, DSR is better implementing protocol, then DSDV

FUTURE WORK

I would like to add some new tasks to perform some complex simulation performance found in mobile Ad-hoc network routing protocols deeper analysis. Some new protocols like analog plug-ins. I not only for the comparison, but also for more new areas in the networking and communications are so many important concepts of routing protocol for such simulation. In the future try to pay more attention to all kinds of security issues of these types of networks.

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