



Vehicular ADHOC Networks Routing Protocols

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Abstract:

Vehicular ad-hoc networks (VANET) are a set of Mobile Ad-hoc Networks that have acknowledged extensive responsiveness in several vehicular developments and producing clusters. during this paper, we've got been simulated the TAODV and Destination source Distance Vector routing protocol (DSDV) over ad hoc on Demand Distance Routing protocol (AODV). These performances are evaluated during a vehicular atmosphere exploitation Network simulator 2 (NS2).

Keywords: Vehicular Ad hoc Networks (VANET); Routing Protocols; Network Simulator.

I. INTRODUCTION

Vehicular Ad-Hoc Networks (VANETs) are special case of MANETs [3]. Self Organized and distributed network, wherever fast moving vehicles have fastened movement on some path. [4] VANETs have salient features (high speed, no battery constraints, restricted movement, responsibility and security problems) that discriminate it from different adhoc network. [5]. In wireless network, broadcasting is often used operation as compared to wired network. they're lots problems and issues in wireless adhoc network as a result of node quality and scattered resources. [6] VANETs are promising network for intelligent systems having short communication range between the vehicles [7]. Mostly in vehicular adhoc network (VANETs), vehicles have an interest within the same kind of data as an example data concerning any accident, road block, parking, and fuel station or weather scenario of specific route. therefore the broadcast is often utilized in vehicular adhoc network for data sharing.

CHARACTERISTICS OF VEHICULAR ADHOC NETWORKS

Vehicular Ad-Hoc Networks (VANETs) are special case of MANETs during which fast-paced vehicles kind a brief network. VANETs don't want any infrastructure. Vehicle to vehicle communication in VANETs enable to share data with none infrastructure as in Intelligent Transportation Systems[3]. Self Organized and distributed network, wherever fast moving vehicles have fastened movement on some traffic path. [4]

II. USES OF VANETS:

The purpose of VANET is to produce comfort and safety for passengers.

Comfort Applications: It improves the traffic efficiency and traveler comfort. Traffic information system, gas station and weather data are example of comfort application. [15] **Safety Applications:** Sharing emergency and safety information among vehicles improves the security of passengers. Safety application are Emergency warning system, road condition and traffic sign violation warning. [15]

III. LITERATURE SURVEY

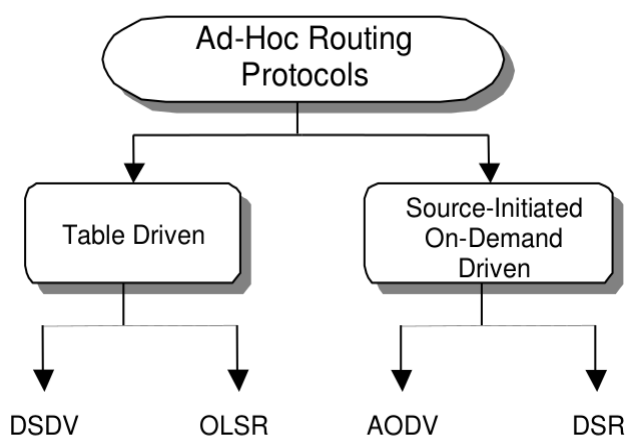
Yasser Kamal Hassan et al[1] states a variety of routing protocol were targeted specifically at this environment.

Performance evaluation of protocol for MANETs, the realistic conditions was tested. Comparing the performance of protocols for routing between wireless mobile host in an ad-hoc network. Observation made from this simulation is that AODV based on Standard Distance Vector Algorithm maintains the route cache. Route discovery mechanism is initiated when a route to new destination is needed by broadcasting a Route request Packet(RREQ). Samir et al[2] stated On demand routing protocols use much lower routing load, especially with small number of peer -to- peer conversations. The traditional link state and distance vector protocols provide better packet delivery and end to end delay. Computing nodes deployed in a mobile ad hoc environment can be low power and small size devices. Vaishali D.Khairnar et al[3] compared the ad hoc routing performance for vehicular nodes using MOVE, which is using random waypoint models. The results have been obtained from moving random waypoint model. Movements of vehicles depend upon static configuration which is derived in the Vehicle Movement Editor. Mobility model is generated off-line and it is used by Network Simulator. Mohamed Abbas et al[4] have been compared, analyzed and examined with various mobility models. Evaluation was done by the metric which is a packet delivery. This paper has been used for the development of various mobility models. Several other mobility models are compared with DTMM. Simulation results shows better packet delivery ratio. Mitul.K.Patel[5] mentioned the various mobility models available for VANET and comparison of network and traffic simulators. Many VANET simulators are consists of both mobility component and networking component .Only VANET simulator support hybrid simulation.

Classification of Ad Hoc Routing Protocols

Routing protocols are divided into two categories based on how and when routes are discovered, but both find the shortest path to the destination. Proactive routing protocols are table-driven protocols; they always maintain current up-to-date routing information by sending control messages periodically between the nodes which update their routing tables. When there are changes in the structure then the updates are propagated throughout the network. Other routing protocols are on-demand routing protocols, in other words reactive, ones which create routes when they are needed by the source node and these routes are maintained while they are needed [14]. Route construction should be done with a minimum of

overhead and bandwidth consumption taking into consideration the constraint of battery lifetime. In real life systems, energy consumption is a major issue, and the routing protocols affect the energy dynamics in two ways. First, the routing overhead affects the amount of energy used for sending and receiving the routing packets, and second, the chosen routes affect which nodes will have faster decrease in energy [21]. Ad hoc routing protocols must operate in a distributed fashion allowing each node to enter and leave the network on its own, and should avoid data looping in the network. For very dynamic topologies, proactive protocols can introduce a large overhead in bandwidth and energy consumption on the network. Reactive protocols trades off this overhead with increased delay, as the route to the destination is established when it is needed based on an initial discovery between the source and the destination [21]. Following is a category of routing protocols in these protocols we are working on AODV and DSDV protocols.



Figur.1.Ad hoc Routing Protocols

Table Driven Routing Protocols

Table-driven routing protocols attempt to maintain consistent, up-to-date routing information from each node to every other node in the network. These protocols require each node to maintain one or more tables to store routing information, and they respond to changes in network topology by propagating updates throughout the network in order to maintain a consistent network view. The areas in which they differ are the number of necessary routing-related tables and the methods by which changes in network structure are broadcast. The following sections discuss some of the existing table-driven ad hoc routing protocols [22].

Source- Initiated On- Dem and Routing

A different approach from table-driven routing is source-initiated on-demand routing. This type of routing creates routes only when desired by the source node. When a node requires a route to a destination, it initiates a route discovery process within the network. This process is completed once a route is found or all possible route permutations have been examined. Once a route has been established, it is maintained by a route maintenance procedure until either the destination becomes inaccessible along every path from the source or until the route is no longer desired [22].In this work we have been chosen the performance evaluation with topology-based protocols DSR (Dynamic Source Routing Protocol)[8], DSDV (Destination Source Distance Vector)[9] over AODV (Ad hoc on Demand Distance Routing)[10].

Dynamic Source Routing

When a source node wants to send a packet to a particular destination it checks route cache. A host dynamically discovers a route only when it needs to send a packet through that route. No periodic routing message.DSR only monitors the operation of the route which is in use.

Destination Source Distance Vector

Distance Vector uses the principle of distance effect in which the location tables update frequency is determined by the distance of the registered nodes. DSDV is a Distance Vector Protocol and it triggers an update when the network is changed.

Ad hoc on Demand Vector

Whenever a source node has to communicate with a destination node such that it has no routing information in its table it first initiates route discovery process. Each host maintains a traditional routing table, one entry per destination.

Trust Ad-hoc On-demand Multipath Distance Vector (TAODV)

The routing protocols play important role in transferring data. Cryptographic mechanisms are used in routing protocols to secure data packets while transmitted in the network.

VI. CONCLUSION

In this paper the performance of three routing protocols AODV, TAODV and DSDV were evaluated for vehicular ad hoc networks in city and highway scenarios. Mobility model has significant effects on the standard performance evaluation of the ad hoc routing protocols. The three protocols were tested against node density for various metrics.

V. REFERENCES

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