RESEARCH SURVEY ON VANET ISSUES IN TABLE DRIVEN AND ON DEMAND ROUTING PROTOCOLS

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Abstract: vehicular Ad Hoc Networks (VANET) is derived from Mobile ad hoc networks (MANET) which provide a communications as on unstructured creation of a wireless network for data exchange to the domain of vehicles. The comparative survey of routing protocols in VANET is making main role in wireless network, important and required for Intelligent Transport System (ITS) ITS. This paper we discuss the nature work of various protocols and flaws different routing protocols for vehicular ad hoc networks. It explores the motivation behind the designed, and traces the development of these routing protocols. This paper discusses the table driven and on demand mechanisms. Through this paper we discussed working behaviour of wireless network protocols and disadvantages of existing protocols

Keywords: VANET; MANET; FSR; AODV; Table Driven; On Demand

I. INTRODUCTION

VANET is an individual kind of MANET which is a vehicle to vehicle or vehicle roadside connection point wireless communication network. It is self establish automated or autonomous wireless communication network, where vehicle are consider as nodes in VANET, which adapted themselves to create own wireless network and act as a server and/or clients for sharing data from node to node . Most Recent advances in wireless communication network technologies and auto mobile industry have combined a major research interest in the field of VANETs over the past decade. VANET consists of vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications supported by wireless network technologies such as IEEE 802.11p. This innovation in wireless communication has been improved transport safety and transport traffic efficiency in near future through the development of Intelligent Transport Systems (ITS). Hence, government, auto-mobile industries and academia are highly partnering through n number of ongoing research projects to establish standards for VANETs. The typical set of VANET application areas, such as vehicle collision warning and traffic information broadcasting have made VANET an interested field of wireless communication.

II. APPLICATIONS

There are several VANET applications such as Vehicle collision warning, Security distance warning, Driver assistance, Cooperative driving, and Cooperative cruise control, Dissemination of road information, Internet access, Map location, Automatic parking, and Driverless vehicles[1].

III. ROUTING PROTOCOL

A network communication routing protocol is the master of network it denotes how nodes are communicate with each other, sharing information that enables them to select node between any two nodes on a wireless network. The family of wireless network protocols that enable nodes to communicate

with each other and in turn to intelligently in data packet transmission. In VANET, the routing protocols working technologies are classified into two categories:

Table driven method and on demand protocols both are inherited from Ad Hoc. These protocols always support VANET. Based on characterized and basis of nature of application or area where they are most suitable. In this fig. 1 represents ad hoc routing protocol types [2].
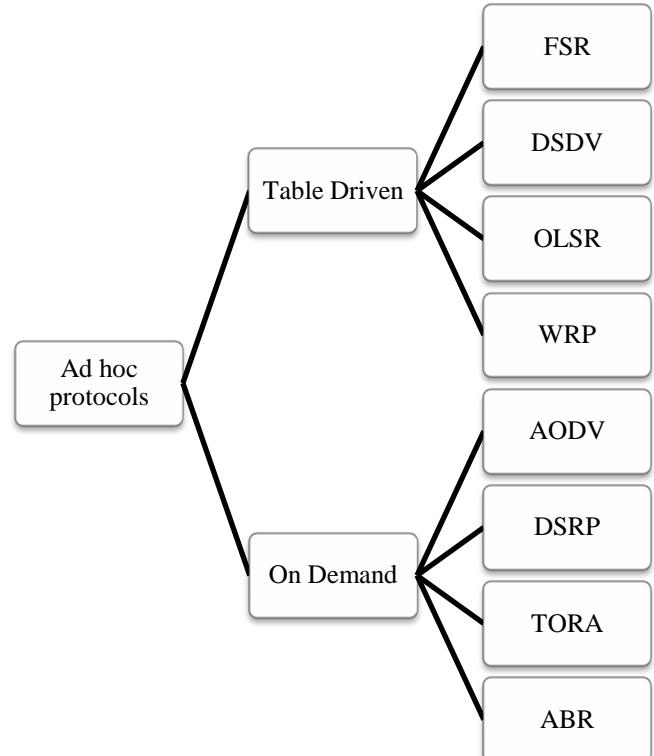

Fig. 1 Ad hoc Routing Protocol Types

IV. TABLE DRIVEN MECHANISM

The proactive routing maintains all nodes in one or more tables representing the complete topology of the wireless network. Those tables are keeps regular update in order to maintain live routing information from each node to every other node. To maintain the live routing information, topology data needs to be communicating between the nodes on a live basis, routes will be always available on pre request. The working mechanism of proactive routing is like next forwarding hop is maintained in the background irrespective of communication requests.

A. FSR: Fisheye state routing

Fisheye State Routing (FSR) is a link state type protocol which maintains a topology map with table at each node. Each node handles neighbor list, Topology table, next hop table and distance table for data transfer. It's maintained accurate routing information for very closer node and if distance increases gradually it maintain less data [3]. This method having two major unsolved issues

- The routing table will grow linearly
- Out of date routes to remote destination

B. DSDV: Destination-Sequenced Distance-Vector Routing

All node maintain a view of the network topology, and each node have maintains the distance of every target, Bellman–Ford algorithm implemented main objective of this algorithm is to avoid route looping problem [4], this routing technique has following major issues

- Require more power backup because of regular updates require on routing table
- Always not using all routing information
- No idle nodes unavoidable.

C. OLSR: Optimized Link State Routing Protocol

This routing protocol derived from stability of link sate algorithm using multipoint relays every node in the network selects set of nodes in its neighbor and find its routes to all known destinations through these nodes. In OLSR, link state information is generated only by nodes has changed as MPRs [4]. This protocol has following issues:

- Protocols require that it continuously have some bandwidth in order to receive the topology updates messages.
- Scalability is restricted
- The security of the protocols is not defined in standard format unavoidable.

D. CGSR: Clusterhead Gateway Switch Routing

The data packet transmits to its cluster-head; every node maintains a cluster member table that has mapping from each node to its respective cluster-head. On receiver side a node finds the nearby cluster-head as per order of cluster member table and the routing table [5]. Then packets reach the destination. The issues of CGSR:

- Table maintained by each node.
- Periodically frequency of update transmissions
- Routing is performed over CH not in each node.

E. WRP: The Wireless Routing Protocol

It also table drive driven mechanism, same as DSDV and using Bellman-Ford algorithm, the nodes are maintain four tables (Distance, Routing, Link-cost and Message retransmission). WRP is path-finding algorithm with the exception of avoiding the count-to infinity problem by forcing each node to perform consistency checks of predecessor information reported by all its neighbors [6]. Its issues are:

- Should maintain four tables
- A node must reach a specified time
- More Consume need for power and bandwidth
- A highly dynamic and unstable nature unavoidable.

V. ON-DEMAND DRIVEN MECHANISM

The name itself we can easily understand work nature of this protocol. This protocols are discovers routes only when required, the sources initiate route discovery and find the path for packet transfer at the same time it might take long time for finding the destination and always should be active [7].

A. AODV: Ad hoc On Demand Distance Vector

It provides on demand services in network, if a destination node is not available in the range the packets will be transferred to nearest node and then nearest node will retransfer to the destination node by using Route Request messages (RREQ) and Route Reply Messages (RREP) [4]. These method major issues:

- Potential collision occur
- Route discovery latency is very high.

B. DSRP: Dynamic Source Routing Protocols

DSR is an on-demand method; it allows self configuration and self organizing network no need of existing network infrastructure or administration to configuration. this protocol have two main mechanisms "Route Discovery" and "Route Maintenance" which works together for transferring data from source to destination on arbitrary mode [8]. Routes maintain only demand node details not for all, the issue of this protocol:

- The connection establish time delay is too high
- Does not self repair for local broken link
- Performance well in small size network setup.

C. TORA: Temporally Ordered Routing Algorithm

TORA implemented with Directed Acyclic Graph (DAG) data can transfer from nodes with higher heights to nodes with lower heights. TORA achieves loop-free multipath routing, the basic functions of this method Route creation, Route maintenance and Route erasure each node maintains a table containing the height of the nearest nodes. Initial time node value NULL in height to all nodes. If the link fails it might re-compute a DAG to find a route for this Link Reversal algorithms also used [8] . Issues of this method:

- Not scalable
- Height metric is dependent on the logical time of the link failure
- Link fails then re-compute the algorithm.

D. ABR: Associativity Based Routing

The Over the network it has three phases named as Route discovery Route reconstruction and Route deletion at the first phase the packets transferred on the corresponding path if the request reaches the destination up to a period of time to receive more request through different paths, after this creates stable link and select the shortest path. The route discovery accomplished by (BQ) broadcast query and (REPLY) await-reply cycle [9]. Issues of this method:

- More than one shortest path available, random path is selected

- Selected path is longer than the shortest path between the source and destination because of the preference given to stable paths
- The result from the Local query (LQ) broadcast may in high delays during route repairs.

VI. CONCLUSION

A comparison between table driven protocol and on-demand driven protocol of VANETs has been made in this paper. We need to undertake much depth analysis and survey study of all these routing protocols which could prove beneficial to make enhancements in performance of these protocols. In this paper we strongly recommended that the basic work nature issues in each of these protocols to lead to increase in performance differentials.

Routing is a major component in vehicle-to-vehicle (V2V) and infrastructure-to-vehicle (I2V) communication. Designing of effective routing for all VANET applications is too difficult .Hence a survey of different VANET protocols, comparing basic issues of VANET, in upcoming new proposals for VANET the performance of VANET routing protocols depend on various parameters like mobility model, driving environment and many more. When we are moving to new upcoming protocol we must keep these issues in our mind and give the better and reliable for most of the applications in VANET.

VII. REFERENCES

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