Study of Different Type of Data Dissemination Strategy in VANET

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Abstract-Vehicular Ad Hoc Network (VANET) is a form of mobile ad hoc networks (MANET). VANET provides wireless communication among vehicles and vehicle to road side equipments. The communication between vehicles is used for safety and for entertainment as well. VANET enable dissemination of traffic information and road conditions as detected by moving vehicles. Data dissemination is used to convey the message from source vehicle to destination vehicles. Data dissemination is used to improve the quality of driving in term of time, distance, and safety. In this paper we discuss different types of data dissemination technique and challenges.

Keywords: **Vehicular Ad hoc Network; MANET, Data Dissemination.**

I. INTRODUCTION

Data dissemination in VANETs can be used to inform drivers or vehicles for traffic jams and to propagate emergency warning among the vehicles (incident or accidents) to avoid the collision. VANET improves the efficiency of traffic system. Node mobility, extreme network density and changing topology from urban gridlock to rural traffic [1]. In vehicular ad hoc network the delivery is not single hop but multichip, in these situations vehicles can forward their request to other vehicles and get respond in back in fraction of second. Data disseminations have been investigated in the area of wireless sensor technique. Aim of data dissemination is to maximum utilize network resource to serve the data needs of all users. In data dissemination, a single source node streams data to one or more sink nodes. [2] Many data dissemination protocols are proposed to disseminate information about obstacle information, traffic conditions and mishap on the roads. Besides these there are some problems in data dissemination like the vehicular network consists of a multitude of data sources and the data users; each vehicle is potentially a data source and the user at the same time. Diverse type of the application, such as traffic management, situational awareness, and commercial services share the same networking infrastructure (RSUs) [3]. Data broadcast from a vehicle with in the transmission range, which is done by flooding, in which each node receiving the message would simple rebroadcast the message without any regard to its current position or any other factors.

II. CHALLENGES IN DATA DISSEMINATION

A) High Mobility and Frequent Disconnect Topology

The aim challenge in VANETs the high mobility and frequently disconnected topology at different parts of metropolitan area. The traffic density is low in suburban areas and during the night, but the network node density is extremely high in downtown area during the rush hours in day time, which cause frequently network disconnection. There is no simple' one-for-all' solution for disseminating data to all recipients spreading across the metropolitan.

B) Data Delivery in Presence of Disconnection

When target vehicle move closer to the roadside unit and located in densely area, disconnection is less concern. But its major problem when different vehicles close to one another requesting the same data at the same time and sharing the wireless media then usage of bandwidth is the key issue.[3] When a vehicle moves within the one-hop range of the roadside units, data can be delivered to the vehicle at the highest throughput. Thus a vehicle passes by the roadside unit, it is most desirable to extend the connection time between the vehicle and the roadside unit so as to disseminate more data.

C) Data Distribute Over the Mesh Nodes

For more efficient data disseminate, multiple roadside unit can be wirelessly connected together to form an infrastructure mesh network and the cooperatively disseminated data to the vehicles .Hence it become very difficult how to distribute the data over the mesh nodes.

D) Data Pass through Different Structures are Difficult

Many existing structure such as, clustering, grid and tree in these data dissemination are extremely hard to set up and maintain because of network diversity in both topology and mobility. The network can be sparse at some

region. Which may result in frequent network disconnection and network partition, if node density is high, the conventional broadcast based mechanism for data dissemination may lead to broadcast storm [4].

III. DIFFERENT TYPE OF DATA DISSEMINATION

Data dissemination is a process of spreading data or information over distributed wireless networks, which is superset of VANET s. Data aggregation is used to reduce the number of data transmit ion in communication medium. Basically it is used to reduce the redundant data transmission .but data aggregation approach are unsuitable for the dissemination of safety related data in VANETs. This drawback is reduced with the help of Event Suppression for Safety message Dissemination (ESSMD).The ESSMD method is inspired by the principle of data aggregation i.e. lessening of redundant transmission this suppression scheme looks to restricting the number of sources that report the same event.[5] The data dissemination approaches in VANET network may be classified on the basis of following category:
i) V2I/I2V Dissemination (vehicle to infrastructural, RSU)
ii) V2V Dissemination
iii) Opportunistic dissemination
iv) Geographical dissemination
v) Peer-to-peer dissemination
vi) Cluster based dissemination

i) V2I/I2V Dissemination:

It consists of two type's data dissemination- push based and pull based. In push based data dissemination, the data can be efficiently delivered from the moving vehicles or fixed base station (RSU) to another vehicle, it is mostly used in the traffic conditions, e-advertisement. While in pull based data dissemination any vehicle is enabled to query information about specific location or target it is form of request and respond type model. Mainly used in enquiry about the parking lot, nearby coffee shop basically non-popular data which user specific [6].

ii) V2V Dissemination:

In vehicle to vehicle data dissemination flooding and relaying approaches are used. In flooding the data is created and received in vicinity, every node participates in the data dissemination .It goog for delay sensitive application and also very suitable for the sparse network during the low traffic condition. The relay type of data dissemination in the network, the relay node is selected where relay node forward the data to the next hop and so on .It reduces the congestion and scalable to dense networks, generally preferred for the congested networks[7].

iii) Opportunistic Dissemination:

Due to clustering in VANET, some work such as, recommend the use of opportunistic diffusion of data in which message are stored in each intermediate node and forwarded to every encountered node till the destination is reached.

iv) Geographical Dissemination:

When continuously topology change the end to end paths are not constantly present in VANET a geographic dissemination is used in by sending the message to the closest node toward the destination till it reaches. Sometimes geo-casting is also used to deliver message to several nodes in geographical area.

v) Peer-to peer Dissemination:

In P2P solution, the source node stores the data in its storage device and do not send them in the network till another node asks for them. This is proposed for delay tolerant application.

vi) Cluster based Dissemination:

For a better delivery ratio and to reduce broadcast storms, a message has to be relayed by a minimum of intermediate nodes to the destination .To do so, nodes are organized on a set of cluster in which one node or more gathers data in his cluster and send them after to the next cluster .cluster based solution provide less propagation delay and high delivery ratio with bandwidth fairness [8].

IV. CONCLUSION

Depending upon particular road situation and vehicle condition different type of data dissemination strategy is used which are having its own advantage and disadvantages. Some application needs high priority as they are providing safety message to the other vehicles .In V2V and V2I communication was done according to information priority. We have propose different data dissemination technique .In future we will work on the selection criteria that in which case the vehicle should participate in the broadcasting.

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