

## AN EXTENSIVE SURVEY ON DIFFERENT ROUTING PROTOCOLS AND ISSUE IN VANETS

<sup>1</sup>B.Sundarraaj, <sup>2</sup>M.Sriram<sup>1,2</sup>Asst. Professor Dept.of CSE,BIST,BIHER,Bharath University, Chennai.<sup>1</sup>sundarraaj.cse@bharathuniv.ac.in, <sup>2</sup>sriramm.cse@bharathuniv.ac.in

**Abstract:** Vehicular Ad-Hoc Networks may be a category of mobile Ad-Hoc Network. Vehicular Ad-Hoc Networks (VANET) and mobile Ad-Hoc Network (MANET) area unit wireless networks that area unit points as automatic organized and self-governing wireless Ad- Hoc networks. In VANET some terms of dynamic and high quality area unit outlined. Information of routing in vehicular Ad-Hoc Networks become arduous and difficult because of changeable property, division quality and network Distribution. The review paper tries to explain VANET and its routing protocols that concentrate on vehicle to vehicle (V2V) and vehicle to infrastructure (V2I). The target of this study is to categorise protocols on the idea of routing data and examination them victimisation following parameters particularly methodology used, advantage/power and limitations. The survey paper is found on routing protocols that area unit categorised as topology and position based mostly routing protocols. This paper prescribes the comparison of reactive and proactive routing protocols supported their deserves and demerits.

**Keywords:** VANET, Routing Protocols types, Reactive, Proactive

### 1. Introduction

VANET may be a specific category of painter. VANET has 2 types: V2R (vehicles to wayside infrastructure) and V2V (vehicles to vehicles). In VANET vehicles give services same as mobile nodes. Road aspect infrastructures work as a distribution signal for the vehicles. There square measure 2 styles of wireless communications VANET. V2V and V2R as expressed in fig one. VANET distinguishes painter in terms of the subsequent features: - high level quality, quality topology, oneself organized design, distributed communication, path reduction and components network size. These options create the VANET setting tough for evaluating dominant routing protocols. a colossal range of applications exist in VANET particularly traffic capability, management, movie applications, however the 2 major applications are: traveller comfort and safety applications. VANET system designed and is enforced underneath the subsequent tightness:

security, solitude, property and attribute of services. Rather like MANET's cars square measure utilized by VANET as mobile nodes for making a mobile network. With the assistance of VANET, a distance of approx. one hundred to three hundred meters between them is needed to attach and making a network in this vary. The automobile that enters in this network is named as wireless router node. Once one automobile goes out of the signal vary and exploit the network then different cars will enter into the network in order that a mobile net is formed by connecting vehicles with one another. For safety purpose fireplace vehicles and Police integrate this technology 1st for communication .VANET is employed by cars so, automotive firms like Toyota, BMW, Nissan, General Motors, Gottlieb Daimler Chrysler square measure promoting this term. For finding the best ways between network nodes, routing protocols area unit utilized by method of minimum overhead. For VANETs surroundings variety of routing protocols are developed[1,2]. These protocols area unit divided into differing kinds by their completely different aspects: - a) protocols characteristics, b) quality of services, c) routing info, d) network structures, e) techniques used, f) routing algorithms, etc. On the premise of characteristics and techniques routing protocols of VANETs area unit divided into 5 completely different categories: - a) position-based, b) recast - based mostly, c) topology-based, d) cluster-based, e) broadcast routing protocols. On the premise of network structure, VANETs routing protocols area unit classified into 3 sorts by another researchers: - a) graded routing, b) flat routing, and c) position-based routing. Alternative researchers categorise these protocols into 2 sorts as proactive and reactive. Another routing ways applied on device networks might applied here however secure routing ought to of concern[3].

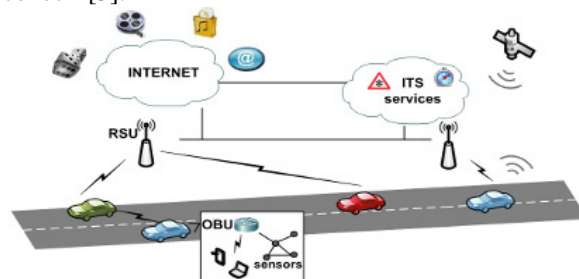


Figure 1. VANET

## 2. Literature Review

Routing in ad-hoc networks is a critical issue. Routing is a procedure of sending data packets from source node to destination node. This paper focuses on the routing protocols of VANET between V2V and V2I[4]. Today the routing protocol taxonomy and the related research in VANET routing are the foundation of various aspects such as characteristics, trait of services, techniques applied, routing algorithms, routing information network architecture etc. VANET routing is extensively classified into the following categories: multicast, broadcast, unicast topology and position based routing protocols. This paper discusses only the topology and the position based upon the routing protocols [2].

## 3. Discussion on Problem in VANET

Numerous problems in VANETs like transport impromptu networks in an effort to produce associate degree improvement to driver behaviour, with the aim of fatalities manufacture, by automobile accidents. Numerous problems and challenges area unit outlined as follows:

### 3.1 Dynamic Topology and High quality

The discontinuous communications in VANETs depends to network nodes is extremely quality and dynamic topology. An answer is to extend information exchange devices and a wireless sensor that is stores the info once causation information correct destination [5].

### 3.2 Bandwidth Limitations

Different problems within the VANETs don't gift the central system in communications, the authority of leading information measure and argument operation. The finite vary of information measure (10-20 MHz) is considerably applied for VANETs[6].

### 3.3 Fault Tolerance and connectivity

If throughout the info exchange a node moves through the network, a network route ought to be created by the routing protocol to the network. These problems is solved this demand of assorted update within the routing tables. This can be the massive quality and ever-changing topology that is cause a frequent disconnection in networks[7].

### 3.4 Delay Constraints and real-time Transmission

To assign aborting occurring things; drivers don't have enough time to responds. Data is allotted within the real time. If message is received in time the accidents is avoided. The routes area unit to be maintained and made for real time applications[7].

### 3.5 Security

Security and privacy area unit the most problems with future analysis space. If no protection is out there in routing protocols, a malicious node will enter the network and so causes damage. The deceptive of messages could also be employed by hijacker, to lure righteous, person as dead and tunnel[8].

## 4. Comparative Analysis of VANET

Comparative study of routing protocols as mentioned higher than within the paper. Table 1 contains the analysis of reactive and proactive routing protocols on the idea of their merits and demerits. Table 2 clearly explains the comparison of position primarily based and topology based routing protocol[9].

They are two types of protocols:

### Reactive Protocols

There are two types of Reactive protocols Ad hoc On-Demand Distance Vector or AODV and Temporary Ordering Routing Algorithm or TORA. In AODV routing protocol the node work independently and does not carry the information of nodes adjacent to it or the information of the other nodes in the network. They work only when a data is delivered to them so as to maintain the route to the destination[10-12].

### Proactive Protocols

This protocol uses Destination Sequence Distance Vector or DSDV router designed with Bellmann-Ford algorithm. In this protocol all the nodes maintain the information about the next node[13].

**Reactive and Proactive Protocols** are the routing protocols that are used in mobile Ad hoc networks to send data from the host to the destination. A packet data is sent from source to destination in an Ad hoc network through multiple nodes that are mobile[14].

**Table 1.** Merit and demerits of topological routing protocols

Topology-based Routing Protocols	Reactive Routing Protocols	Proactive routing protocols
Merits	<ol style="list-style-type: none"> <li>1. Decrease the network traffic and saves bandwidth.</li> <li>2. Route from sender to receiver is updated and maintained by routing table.</li> </ol>	<ol style="list-style-type: none"> <li>1. Route discovery is not Mandatory.</li> <li>2. The routing table of every node earns updated.</li> </ol>
Demerits	<ol style="list-style-type: none"> <li>1. Searching latency is high for route.</li> <li>2. In communication exceeding flooding of the network causes dissolution of nodes.</li> </ol>	<ol style="list-style-type: none"> <li>1. Available bandwidth is an important role in unused paths.</li> </ol>

**Table 2.** Comparison of position based and topology based routing protocols.

VANET Routing Protocols	Topology-based routing protocols	Position-based routing protocols
Method	<ol style="list-style-type: none"> <li>1. Use shortest path algorithm based on distance vector strategy.</li> <li>2. Routing table stored the data.</li> <li>3. Every node is updated timely[15-16].</li> </ol>	<ol style="list-style-type: none"> <li>1. Position/location decides service is used.</li> <li>2. Vehicle position is decided based on forward data packets.</li> <li>3. The data packets use a store, carry and forward strategy.</li> </ol>
Merits	<ol style="list-style-type: none"> <li>1. Route discovery mechanisms are required.</li> <li>2. Applicable for unicast, multicast and broadcast routing[17-18]</li> </ol>	<ol style="list-style-type: none"> <li>1. Route discovery mechanism is not required.</li> <li>2. Maintenance high mobile environment</li> </ol>
Demerits	<ol style="list-style-type: none"> <li>1. Use large overhead.</li> <li>2. Route discovery and latency restriction protection or maintains.</li> <li>3. Link failure in discovering full path due to frequent network topology changes[19].</li> </ol>	<ol style="list-style-type: none"> <li>1. Give low overhead.</li> <li>2. Position and location finding services.</li> <li>3. Stalemate may occur in location server[20].</li> </ol>

**5. Conclusion**

The paper provides an essence of VANETs. Conveyance impromptu networks that are discussing their options and a forceful with the study of VANETs routing protocols that focus on vehicle to vehicle (v2v) and vehicle to infrastructure (v2I) communication. This discipline paper has given variations into major categorization, of routing protocols. This paper provides 2 classification of VANET routing, topology primarily {based} routing protocol and position based routing protocol. This provides an outline language of the protocol operating and their vital merits and demerits at the side .of its limitations. The study on many, VANETs routing protocols, the problems and challenges, security square measure portrayed a lot of effectively.

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