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Analysis Of Vehicular Ad- Hod Networking And Its Feature Benefits

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Abstract: VANET have become a big research area with contributions split between government and industrial consortia, as well as the academic community. VANET is the special case of Mobile Ad Hoc Networks (MANET) [2]. VANET is mobile ad-hoc networking technologies which provide the facilities such as vehicle-to-vehicle and vehicle-to-roadside communication. A vehicle is assumed to be an intelligent mobile node in VANET which can communicates with its neighbor's node and other vehicles in the network. As in MANET, it is necessary to identify each vehicle in the VANET with a unique reference [3].Vehicular Ad Hoc Network is the new kind of ad-hoc networks that is implemented between vehicles on a road [1]. VANET is self-organizing communities of moving mobile nodes having large numbers of traffic such as trucks, buses, cars and small number of fixed infrastructure nodes such as highway rail grade crossings, traffic lights, and informational signals within radio broadcasting range. VANET is an emerging new technology that uses moving vehicles as nodes for creating a mobile network. In a network, VANET change every vehicle into a wireless node and permitting vehicles approximately 100 to 300 meters distance of each other to connect and, successively create a network of high range. As vehicles come out of the signal range and leave the network, other vehicles can link and consolidating vehicles to each other so that a mobile network is created. It is estimated that fire and police vehicles are first systems that will incorporate this technology to communicate with each other for safety purposes [4]. Content contribution using collective peer-to-peer model has become more popular in a Vehicular Ad Hoc Network. VANET is a good approach for providing road safety, traffic management, and documentary broadcasting for drivers and passengers. Vehicular Ad Hoc Networks are subclass of Mobile Ad Hoc Networks. They are usually made by vehicles as nodes communicate between them.

Keywords: Vehicular , Feature Benefits , Analysis , academic community.

INTRODUCTION:

A VANET is a shared and self-organized network; it is represented by high mobility defined by a mobility model [5]. There are two types of communications in VANET. First is the infrastructure-vehicle and second is inter-vehicle. These communications provides a large no. of applications for road safety, driver assistance, traffic efficiency and commercial on the roads. This role is more important when traffic accidents or natural tragedy happened in our absence, weakness of network infrastructure. The routing protocol is very important in providing a good communications between vehicles and to ensure that data has delivered to their desired destinations or not. VANET and MANET have many common characteristics such as movement and self-organization [6], but still VANET differ to some characteristics associated to the proprieties of vehicles such as mobility, speed, road traffic, and topology restriction [7], all these features make the routing protocols more difficult.

VANET offers infinite gains to all types of organizations. Automobile high speed Internet access would convert the vehicle's on-board computer from a nifty gadget to an essential productivity tool, making almost any web technology usable in the car. While such a network does pose certain safety concerns (for example, one can't properly type an email while driving), this does not limit VANET potential as a productivity tool. It allows for “dead time”—time that is being consumed while waiting for someone—to be changed into “live time”—time that is being used to complete a tasks. A computer can change a traffic jam into a profitable work time by having his email downloaded and read these email by the on-board computer, or if traffic stop then read it himself. While waiting in the car to pick up someone, one can browse the Internet. Even GPS systems can benefit, as they can computed with traffic reports for providing the fastest route to work. It would allow for free, VoIP services such as Google Talk or Skype between employees, reducing telecommunications costs [8]. While the Internet can be a effectively productive tool, it can also prove to be quite confusing, resulting in safety and actually time-wasting concerns. Like cellular phones, the Internet can be stimulated and can disturb users from the road. Checking emails, browsing the web or even watching videos on YouTube can engage drivers and lead to accidents.

Similarly, drivers may have the opportunity to do work while driving on the road, they also may use this opportunity to engage in other comfortable tasks, such as VoIP with family, watch news highlights or listen to broadcasts [8].

Vehicular Ad Hoc Networks have a few different characteristics from Mobile Ad Hoc Networks [8].
Highly dynamic communication network configuration
Patterned Mobility.
Propagation Model.
Unlimited Battery Power and Storage.
On-board Sensors.

Vehicular ad-hoc networks can be assumed as a special case of Mobile ad-hoc networks. However, there are many important factors, which make this type of networks unique and which allow them in a separate category. Here are the significant VANET characteristics:

1 Very high kinetics of nodes resulting in fast communication network configuration changes. As the communication devices are installed inside vehicles, the network nodes move with much higher speeds. Vehicles are restricted to move using roads and allow by the traffic rules, so some mobility patterns can be notice and some statistical mobility models for VANET have been designed.

2 Information about the current position, current speed, city map, movement direction, and planned movement trajectory of Vehicular ad-hoc network nodes is available, as mostly vehicles are equipped with GPS devices and navigation systems.
3 VANET enforce deficiency of energy devices, higher computational power and unlimited memory capability, in comparison to some other ad hoc networks (especially to sensor networks).
4 Vehicle ad-hoc networks are ordinarily of very larger size (case of traffic jams) but also may exist in a form of very small, neighboring networks with a high probability of splitting and joining.
5 There is a big variety of VANET services and applications, and one-to-one communication is less important because some intelligent broadcast (for example geocast) required by most safety related applications

METHODS AND METERIALS:-

Vehicular network applications require wireless mobile communications. Currently, there are several possible model for wireless mobile communication, for example cellular, ad hoc, wireless LAN, and Info stations etc. Clearly, the choice of technology mainly depends on the application that the network is specifying to support. For this reason we need to have a clear understanding into these applications and their requirements. While incorporating a network interface, GPS receiver, different sensors and on-board computer gives a chance to build a powerful car-safety system, capable of assembling, processing and distributing information. Many applications can be deployed in a network established with such equipped vehicles and proper infrastructure. From the connectivity point of view, these applications could be divided into four main groups: car-to-car traffic, car-to-infrastructure, car-to-home and routing based applications. These are either safety-related applications or comfort-related (commercial) applications.

SAFETY-RELATED APPLICATIONS

Safety-related applications may be categorized in three main classes:assistance (navigation, cooperative collision avoidance, and lane-changing), information (speed limit or work zone info) and warning (post crash, obstacle or road condition warnings). Safety related applications demand for direct communication due to their delay-critical nature. Such type of application would be emergency notifications, for example: Emergency braking alarms. In case of an accident (the airbag trigger event) or sudden hard breaking, information is sent to the followers. That information could also be propagated by cars driving in the opposite direction and, thereby, informing to the vehicles that might run into the accident area [9].

Another, more advanced example is cooperative driver assistance system, which efforts the exchange of sensor data or other status information among cars. The basic idea is to increase the knowledge of the driver outside his field of vision and further on to assist the driver with independent assistance applications. When this data is transmitting to cars which are following on the same road, the drivers get information about hazards, obstacles or traffic flow ahead, which may result in more efficient and safe driving. This kind of applications are only applicable if the entrance of VANET enabled cars is high enough [9].

COMFORT (COMMERCIAL) APPLICATIONS

The aim of these applications is to make better for passenger comfort, traffic efficiency and reduce traffic overhead. That could include nearest Points of Interest (POI) localization, weather information, current traffic and interactive communication. All such kind of applications, which can run on top of TCP/IP stack, might be applied here, for example, on-line games or instant messaging. Another application is getting data from commercial vehicles and roadside infrastructure about their businesses ('wireless advertising'). Enterprises (shopping malls, fast foods, gas stations, hotels) can set up stationary gateways for transmitting marketing data to the potential customers passing by. Moreover, these services could be merged with electronic payments. The important feature of comfort/commercial applications is that they should not interact with safety applications. In this context traffic order and use of separate physical channels is a feasible solution [9].

RESULTS AND DISCUSSION:-

A user wants to enter in a VANET (the user not required to have a manufacturer's issued certificate for his vehicle), then he get a payment-processing-device (similar to automatic toll payment devices - sold for tens of dollars). Each device will have its own identification and an associated certificate [10].

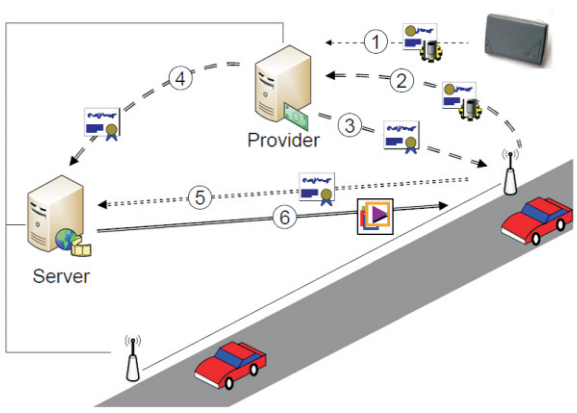

Figure 1.1: Architecture (1) User registers device with provider (2) User sends payment/service request (3) Provider issues temporary credentials (4) Provider informs server of service purchased and temporary credentials (5) User requests service using temporary credentials (6) Server delivers content.

In the initial phase, the device will be registered with the user's account; user's information will be maintained by the provider and will not be stored in the device. The basic procedure is illustrated in Figure 1. When a user move into a service region and he wants o use the service, he paid for that service using on board payment device. The payment-service request message is to be encrypted using provider's public key so that the device ID/certificate and services requested is hidden from auditor. The user is issued a name and other IDs required for the service by the provider. The concerned server is also informed of the service purchased and temporary certificates.

These temporary certificates can also be used to provide requested security attributes for VANET applications including vehicle to vehicle -V2V communications. As a baseline service, the user get only the temporary certificates and the temporary certificates will not be sent to servers Certificate, MAC address ,IP address etc , these all be issued on temporary basis and altered several times during a service time. They are encrypted for ensuring security and privacy. Initially, they can be encrypted using a random session key which is sent along the request. Later, they can be encrypted using current public key. The certificate of CA is hard coded in the device which enables other users to check validity of a certificate. Methods can be applied to protect against replay, limitations, man-in-the-middle attacks etc [10].

REFRENCES:-

I.Abedi, O. "Enhancing AODV routing protocol using mobility parameters in VANET" Computer Systems and Applications, 2008. AICCSA 2008. IEEE/ACS International Conference on March 31 2008-April 4 2008.
II.Vanet Simulator, Report for the Computer Security exam at the Politecnico di Torino Walter Dal Mut, Armand Sofack.
III.Mohandas, B.K. "IP address configuration in VANET using centralized DHCP" Local Computer Networks, 2008. LCN 2008. 33rd IEEE Conference on 14-17 Oct. 2008.
IV.http://en.wikipedia.org/wiki/Vehicular_ad-hoc_network.
V.[Haerri. J., Filali.F., and Bonnet. C "Mobility Models for Vehicular Ad Hoc Networks: A Survey and Taxonomy", Institut Eurecom, RR-06-168.2006.
VI.Z. HAAS, M. PEARLMAN and M. SAMAR, "The Zone Routing Protocol (ZRP) for Ad Hoc Networks", IETF internet draft, draft -ietf-manet-zone-zrp-04.txt, July 2002.
VII.Wu. H., Fujimoto. R., Guensler. R, and Hunter. M."MDDV: A Mobility-Centric Data Dissemination Algorithm for Vehicular Networks", ACM VANET, 2004.
VIII.http://emergingtechnology.wordpress.com/2007/10/03/vanet-the-vehicular-ad-hoc-network/.
IX.Rezwana Karim, Department of Computer Science, Rutgers University "VANET: Superior System for Content Distribution in Vehicular Network Applications" rkarim@cs.rutgers.edu.
X.Baber Aslam and Cliff C. Zou "Distributed Certificate Architecture for VANETs" {ababer, czou}@eecs.ucf.edu.