A Survey Paper on Distributed Service Approaches over RSU Based VANET Communication System

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Abstract— In the Era of Wireless Communication system we knew the importance of VANET with RSU where adopt various user oriented application for different purpose , in this way one can utilize VANET for reducing accidents and crimes can be tracked through the VANET in more appropriate way with more accuracy , other the other hand one can also make vehicle communication more easier , proper and fair for all the time and everywhere , the introduction of VANET can provide much better solution for the challenges raised behind complex vehicle communication system , in order to get analyses different aspect of VANET system which has been proposed over last long decades need to be get investigate for more proper solution with less complex communication , this paper present an investigation survey to present a report for the implementation and ingestion of new trends and techniques.

Key words: WSN, RSU, VANET, Accuracy Vehicle Communication System

I. INTRODUCTION

Wireless communication is one of the fastest growing technologies. The demand for connecting devices without the use of cables is increasing everywhere. Wireless LANs can be found on college campuses, in the office buildings, on the roads and in many public areas. The increasing demand of wireless communication and the needs of new wireless devices have tend to research on self organizing healing networks without the interference of centralized or reestablished infrastructure/authority. The networks with the absence of any centralized infrastructure are called Ad.hoc networks. Ad.hoc networks are collection of self governing mobile nodes. By considering above discussion, it has been observed that VANET is a new approach to provide safety on road, improve traffic control, reducing road accident and providing information about weather and unnatural or natural events. VANET basically deploy in urban area where vehicle to vehicle communication possible because vehicle density in urban area is high, but in rural or highway environment vehicle density varies lot. In 1998 the Intelligent Transportation Society of America adopted a definition of Intelligent Transportation Systems (ITS). It reads people using technology in transportation to save lives, time and money. To improve safety and travel times on the transportation system, ITS exploits all the new technologies in term of electronics, telecommunications and information technology. Examples of systems concerned by ITS, traffic management, public transportation management, emergency management, traveler information, and advance vehicle control and safety, commercial vehicle operations, electronic payment and railroad grade crossing safety. VANETs are dedicated to offer multiple applications, we can separate them into two main categories, safety and non -safety applications.

The first category is the main goal of VANETs, which aims to improve safety in the road by dissemination of critical alerts to vehicles. In this category, we can find accident prevention applications, collision alert, merge assistance, etc. In the second category, we find all other applications like real-time traffic congestion, high-speed tolling, mobile infotainment, online games between passengers in the road, etc. In order to implement all these applications, it is necessary to overcome the challenges related to the unique characteristics of VANETs networks. Some challenges are:

1) Mobility and environment conditions: The high speed and mobility of vehicles represent a challenge to most optimization algorithms aimed to predefine routes to forward packets.
2) Inherent characteristics of the radio channel: The presence of objects in the road can degrade the quality of the received signal. In addition, the problem of the fading effects, which due to the mobility and the surrounding objects.
3) Security and privacy: The users of this technology want to make sure that they can trust the source of information. Also, the privacy requirements of senders must be respected.

VANET communication has led to the ubiquity of wireless networks for personal, commercial, industrial, and military use. In many applications, device location plays a critical role in network operations and services. Advances in distributed systems with increasingly growing capabilities for efficient file transport and their immediate consequence, i.e. the ability to rapidly replicate content over a network, have made sharing of electronic files become a revolution in business and domestic environments. The high level of decentralization, dynamism network management, and self-management of a number of emerging communication environments, including teamwork, pure VANET and mobile ad hoc networks , in this way no of clients are participated in the process of communication or collaboration without relying on central authorities, enforce cooperation to play an essential role in the overall network functioning. Particularly, ad hoc networks rely upon the cooperation among individual nodes to carry out essential tasks such as packet forwarding VANET file sharing systems face a similar situation. File sharing has become a common practice for Internet users to obtain, for example, software updates from public sites. However, such a practice still provokes mistrust. File corruption may occur easily through dishonest and malicious actions or even by mistake. Similarly, an impostor could masquerade himself as the originator of a certain file, publishing a corrupted version of the file. In fact, users of currently deployed file sharing systems are unable to verify that files they retrieve are uncorrupted, or whether the content has been truly created by the presumed owner. Providing higher level of security in VANET or ad hoc networks is an

active research area which prompts many challenges. Most of the business are doing through the networking devices and technology such storage devices are good for digitalization but it comes hard when volume of request and response gets higher due to heavy traffic load , users producing heavy traffic , which need to be manage by network technology , Now are days internetworking is growing across the country it does affect quality of services factors that put stress over the centralized server of network in this duration data loss , frame delay and lower throughput has been monitor by the system in this case so many time user having reliability issues degrades the quality of data communication , all the intermediate devices is not performing good due to heavy traffic during transmission such problem issues motivates so many researchers from long time to resolve and maintain traffic in VANET network error controls so many papers and technology has been proposed for solution but the previous technology and protocol is not sufficient for this purpose , therefore we need to create and develop such type of mechanism that not only improve quality of service factors but also resolve data loss issues so that reliability and accountability can be achieve at some extent.

In wireless distributed VANET network an essential issue is the reliable routing policy. In VANET an essential issue is the reliable routing policy The Secure Node Management (SNM) routing protocol is based on four respects, i.e.-resources distance, resources angle, the energy levels of resources and bandwidth link. The Secure Node Management (SNM) protocol can improve the reliability and stability of the existing routing mechanisms with less energy consumption.

II. VANET DISTRIBUTED COMMUNICATION

It is a matter for research to protect our network from the effect of congestion in wireless network, to overcome from this issues there are many researches has proposed and continuously working on them to make network error free as possible. In[1], author proposed Proportional Integral Derivative Model for resolve peer to peer network error control arises at fluid algorithm in wireless distributed network, in the proposed design one experimenting primal dual method in order to improve performance at throughput level rather than stability , algorithm has PID frame that takes the responsibility for performing controlled action along with distributed design scenario, it is good at some extent level but simulation study define variation at performance level has been introduced as traffic get heavy. Static Load Balancing can be effective solution based on topological aspect describe in [2] to define traffic engineering that focus on the capacity of link at run time dynamic to control and manage the load, the aim was to represent MPLS application to manage load, here one define when algorithm found in shortest path in VANET then protocols instruction takes the role to get select low load shortest path instead of previous one, based on the bandwidth optimization and computation .congestion in VANET can be the stronger barrier for wireless and wired communication if one talk about 3g void communication technology like in[3], network offer high speed data transfer but still there is many issues are happing at the time of communication due to heavier load of data to resolve these

issues author proposed new design that expanding the network with parameter support. In[4], Genetic algorithm has been introduced for balance load at link level it can the solution for peer to peer network in modern network that manage non directed distributed traffic , experiment show it can be the better solution than other even it can be implemented at higher traffic area. Next hop routing is very common in routing algorithm to choose best interface among all. This techniques is dealing with big risk of getting failure of network , provides loss of information, in[5] one present a routing protocols named as multi next hop routing information protocol, the proposed techniques is the extension of RIP technique.

III. LITERATURE SURVEY

A Vehicular Ad hoc Networks (VANETs) is a collection of wireless nodes that can dynamically be set up anywhere and anytime without using any pre existing network infrastructure. It is an autonomous system in which mobile hosts connected by wireless links are free to move in fixed road pattern and often act as routers at the same time. The topology of such networks is likely highly dynamic because each network node can freely move and no pre installed base stations exist. Due to the limited wireless transmission range of each node, and improved connectivity of mobile nodes, data packets then may be forwarded along multihop. Route construction should be done with a minimum of overhead and bandwidth consumption. These are the major category which are need to be analysis through this literature survey , reliable distributed services is the important factor which always need to be maintain during communication at run time . Problems of communication raised in many areas like wireless network infrastructure, network intermediate node topology, low efficiency due to inefficient routing strategy, lack of bandwidth efficient schemes and heavy traffic load with week traffic distribution policy etc, such challenges need to be discussed with the help of literatures and reliable research resources directories. In [1] author describes that the information distributed management systems share information from multiple communicating nodes in the network and during process it may be possible problems in getting consistency due to node failures or system failure, data fragmentation in different locations. In this research work we discuss architecture for a load balance, as well as distribution and reliable storage system for information distributed over a Wireless Distributed network. , if one talk about the resource planning for the best network design they first need to manage bandwidth of channel, buffer optimization and management for buffer space computation, functioning of difference processing functions to help node to participate in successful data transmission in highly congested area [7,11]. Anytime network can cause failure due to unrelevant design of network that affect overall communication therefore network design need to be excellent, it is always possible to get increase the capacity of resource at higher level but it is not sufficient to control congestion error , they need to implement with required specification of network and planning even at low traffic since when such traffic get increased the problem of congestion takes important for the point of view of fairness

and higher throughput both are need to be consider as equally important , here one can conclude it as per it definition as ─without having accurate network resource design network always go down as load get heavier. VANETs are in the correct position to wireless communication networks area. VANET is the important area of MANETs in which vehicles act as the mobile nodes within the network. The basic goal of VANET is to raise safety of road drivers and soothe of passengers. VANET is the wireless network in which communication takes place through wireless links mounted on each node (vehicle) [1]. In [2], paper, AODV working is based upon the Destination-Sequence Distance Vector (DSDV) strategy worked as an algorithm. The difference from other ad hoc protocol is that AODV is reactive category of protocols, on the other hand DSDV is belongs to proactive. AODV works in the way in which it requests a route only when it is required, and it does not need any mobile nodes to gets routes to the destination. To send or get connect a message to a destination node, a source node first initiates a route discovery investigation process to locate find the destination. A Route Request process control packet is works for flooded through the network activity until it gets to accurate destination or it reaches to a required node that having the details about routing to the destination node. On its way it will through the network nodes, the RREQ packet initiates the temporary routing information for the detail regarding path at all the mobile nodes it passes. All nodes within VANET act as both, the candidate and router of the network as the nodes communicates through other intermediate node that lies within their own transmission range. VANET are self organizing network. It does not depend on any fixed network infrastructure. Although some fixed nodes act as the roadside units to facilitate the vehicular networks for serving geographical data or a gateway to internet etc [2]. In [3], VANET topology is well known for its beneficial characteristic, like good scalability high robustness. In spite of this, web browsers are still using the standard server-client topology for data download. In this paper we investigate the methods of implementing Wireless Distributed data streaming in web browsers, using only JavaScript, without the need of any third party plugin. We are using Web RTC to establish direct browser to browser connections. With its help, we are designing two efficient protocols for browser based Peer-to-Peer streaming. The first protocol is an efficient content sharing Wireless Distributed protocols. The second one a network coding enhanced Wireless Distributed protocol. In order to demonstrate the characteristics of the solution and prove the advantages of it we have established a test bed. In this test bed we run several measurements to analyze the behavior and the throughput of our protocols. Through our results, we show that modern browsers are capable of maintaining Wireless Distributed connections and carrying out complex network coding calculations. We show that employing our protocols for data streaming, average data download speed can be significantly increased and server load can be decreased up to 80%. This research can be considered as a pioneer work in the field of Wireless Distributed solutions with network coding, based purely on web technologies. In [4] Collaboration is a huge part of modern software development. Yet most tools used in software development are aimed for single user instances. To

support collaborative software practices, researchers and practitioners have presented several tools. The existing tools support collaboration either through distributed version control systems or through client/server-based concurrent text editors. Distributed version control systems do not support real-time collaboration; while the server-based concurrent editors do not support offline work. In this paper, we propose the design of a replica-based collaborative development environment (CDE) within a wireless network of users. The CDE supports both real-time collaborative editing and offline work. In addition, the CDE is scalable, resilient to the dynamic joining/leaving of collaborating users, and can be augmented into existing development environments as a plugin. We evaluate the usability of the CDE with respect to operation propagation time, and the correctness with respect to the causality, convergence and intention preservation (CCI) criteria [5, 6]. The novel contribution of this work is to demonstrate that how congestion overflows? Can be controlled at small unit of time, minimization of overflow, identical congestion less services. The other aspect to perform this analytical study to design a more accurate congestion heat map to get efficient routing at global level [07]. The objective of this analysis is also to analysis the industrial size network to reduce intranet area network complexity, High volume and complex zone network i.e. group of cell network , which follows interconnected difference structures are actual the main source for causing serious challenges regarding the congestion issues that get rout-ability complicated. Therefore congestion analysis is required rapidly to get protect from the congestion error at the very beginning so that network handle it as easier as possible with small scale of time so that round up time and throughput can be manage. Identification of the congestion point is the primary task to get design better; if design is reliable the one can fix the congestion error at primary hotspot that covers the remaining zone to be suffered from the same issue [9]. If one talk about the analysis of congestion error then it consists following factors that need to be discussed and considered to get network performance higher as much as possible even in case of highly loaded congested media also

IV. CONCLUSION

In the previous section we investigate that we can many techniques has been already defined and many of others are in process so that challenges are increasing in day to day life since VANET are most growing technology of science today, at the end we can conclude over investigation with the requirement to reduce information loss , to eliminate traffic complexity , to tract the accidents and to prepare a real time operational model which can produce more better results in terms of throughput, delay , packets loss and packets delivery ration need to be monitored and provide more accurate results compare to pervious techniques and models .

REFERENCES

[1] F. Stajano and R. J. Anderson. "The resurrecting duckling: Security issues for ad-hoc wireless networks" In 7th Security Protocols Workshop, volume 1796 of

Lecture Notes in Computer Science, Cambridge, United Kingdom, 1999. Springer-Verlag, Berlin Germany.

[2] Dirk Balfanz, D. K. Smetters, Paul Stewart and H. Chi Wong: "Talking To Strangers: Authentication in Ad-Hoc Wireless Networks", Symposium on Network and Distributed Systems Security (NDSS'02), Xerox Palo Alto Research Center, Palo Alto, USA, 2002.

[3] DINA S. DEIF "An Ant Colony Optimization Approach for the Deployment of Reliable Wireless Sensor Networks" Received May 15, 2017, accepted May 29, 2017, date of publication June 5, 2017, date of current version June 27, 2017.Digital Object Identifier 10.1109/ACCESS.2017.2711484.

[4] DANYANG QIN" Research on Trust Sensing Based Secure Routing Mechanism for Wireless Sensor Network" Received April 17, 2017, accepted May 16, 2017, date of publication May 23, 2017, date of current version June 28, 2017. Digital Object Identifier 10.1109/ACCESS.2017.2706973.

[5] YA GAO, "Heterogeneous Statistical QoS Provisioning Over Wireless Powered Sensor Networks" Received March 14, 2017, accepted March 31, 2017, date of publication April 13, 2017, date of current version June 7, 2017. Digital Object Identifier 10.1109/ACCESS.2017.2694046.

[6] Quality of Service of Routing Protocols in Wireless Sensor Networks: A Review" Received December 20, 2016, accepted January 7, 2017, date of publication January 17, 2017, date of current version March 13, 2017. Digital Object Identifier 10.1109/ACCESS.2017.2654356.

[7] Wang Na "Trust Model Based on Changeable Sampling Frequency for Wireless Sensor Network" 2016 IEEE ICIS 2016, June 26-29, 2016, Okayama, Japan.

[8] Quan Wang"Comparative Examination on Architecture and Protocol of Industrial Wireless Sensor Network Standards" IEEE COMMUNICATIONS SURVEYS & TUTORIALS, VOL. 18, NO. 3, THIRD QUARTER 2016.

[9] KATSUYA SUTO "An Energy-Efficient and Delay-Aware Wireless Computing System for Industrial Wireless Sensor Networks" Received April 3, 2015, accepted April 21, 2015, date of publication June 15, 2015, date of current version July 17, 2015. *Digital Object Identifier 10.1109/ACCESS.2015.2443171.*

[10] Md Nafees Rahman "Efficient Algorithm For Prolonging Network Lifetime Of Wireless Sensor Networks" Tsinghua Science And Technology Issnll1007-0214ll01/12llpp561-568 Volume 16, Number 6, December 2011.

[11] J. Kong, P. Zerfos, H. Luo, S. Lu, and L. Zhang. "Providing robust and Ubiquitous Security support for Mobile Ad Hoc Networks ", Proceedings of the 9th International conference on Network Protocols (ICNP), Riverside, California, USA, November 11-14 2001.