Vehicular Data Cloud Services

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Abstract

The advance cloud computing has provided an opportunity to resolve the challenges which effects by increasing transportation issues. Two methods of cloud services are available these are parking and mining. Mobile cloud computing has improved the storage capacity, stand by time of mobile terminals by migrating data processing to the remote cloud. The introduction of smart phones, cloud computing the automotive system is shifting toward the internet of vehicles.

1. INTRODUCTION

Cloud computing is the process in which hardware and software will deliver a service through internet. The user can access any files of the computer through internet. Cloud services has projected a frame work to start cloud services computing which will declare a policy for a group which is based on information such as traffic restriction and controlling. A band of vehicles with corporate exchange information and practical work will be allocated by authorized users. Vehicular data cloud is used for the particular purpose with the large amount of Mobile devices and GPS devices. Vehicular data is used for networking, communication to the other vehicles and exchanged information with the other environment such as Internet protocol. The advancement in IOT has received a lot of focused which will facilitate transport industry. Location tracking and monitoring will be available to drivers. In past vehicular ad hoc networks is used for wireless communication in vehicular transportation system for security purposes.V2V is used to exchanging information for neighboring vehicles in roadside safety. I2V and V2I is used to transferring data through signals. Wireless Networking, Mobile Computing and Cloud Computing are key Technologies that enables for application that will support traditional cities to smart. Smart

Transportation safety in smart cities is used in attracting attention in industry research because of incident involving vehicular theft as well as violent crimes on urban buses. Crime Details are usually obtained in video-feeds and camera. Smart transportation safety is based on Processing, storage, multiple media transportation for storing data through vehicles.

KEYWORDS

PAAS,SAAS,IAAS,VANETS, IOT, V21/12V,V2V.

2. LITERATURE REVIEW

In past decades wireless technology is used for the development of vehicular network. The idea was found to communicate roadside infrastructure & is used by wireless network. If you build network operation for routing intended result have developed a vehicular network called vehicular ad hoc network[2].
The structure of VANET is hybrid architecture. The focus on VANET application is to improved driver security and function which is based on traffic control. The domain of cloud which has framework to vehicular services. Cloud computing is to create vehicular cloud such as various sensors.

A modular approach is applied to vehicular cloud computing to divide a not understandable systems into small sub system. A modular approach is used to build vehicular Cloud services. We can divide a module cloud services by traffic administration, Information processing and mining[1]. Cloud computing includes three services Such as

- SAAS
- PAAS
- IAAS

These are used to build cloud services. Cloud services are subdivided into parts such as private, public and hybrid cloud. User information query are public cloud; traffic administrator should be hosted by private cloud. Vehicular cloud and hybrid cloud are developed by taxonomy method.

There are three layers of V-Cloud to combine vehicular cyber security system.
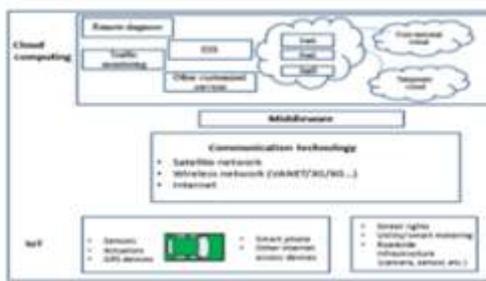
Figure 1: Achievement for Iot based Vehicular data cloud

In present, Vehicular cloud was made to interlinked automobiles network into architecture.

SERVICES OF IOT BASED VEHICULAR DATA CLOUD:

SERVICES	DESCRIPTION
IAAS	Vehicles provide their networking to other Vehicles through the cloud
SAAS	Some vehicles need specific applications that Require large amount of save space
PAAS	Vehicles services offers a many services Such as Cooperative information services such As traffic information, location warning Parking availability

In the data especially information for VANET explained into two things of Vehicular to vehicular and V21/12V exchanging information. Investigate systematically of V2V communication focus on how to achieve timely data delivery through mobile vehicular on roads over signal. The data result framework with interlinked buffering.

Aps to improve the quality of data dissemination services. At network Level network resource were managed to requirement for real time and non-real time traffic. Rate less coding technology also applied to improve the efficiency of data dissemination. The limited buffer size of Roadside wireless app and intermittent connectivity between the wireless apps Affect the data dissemination performance. When no vehicle is available can deliver the Data static nodes locates at road intersection keep data and forward routing path available. The mailing and accepting large amount of data from automobiles to signals. A wireless measurement study under different driving condition carried out Vehicle cloud considered as a cloud of vehicles which make available their underutilized with each other to provide services to authorized users. These resources needs to be analyzed dynamically.

The Intelligent transportation system (ITS) is a basic element for sustaining a smart city and IOT play an important role in intelligent transportation system. The advantage of IT'S is reducing traffic accidents. The growth of mobile applications and IOT the question arises how to deal with big transportation data is still an open problem in IOV. Mobile Support of IOV is not been considered cloud computing frameworks. The IOV is composed of vehicular cloud ad hoc networks providing solution these heterogeneous network is not considered in services data. The mobile app services to facilitate the location of vehicular at the same time which is involved central cloud services. Fog computing provides an offload computation from cloud to local fog server. A vehicular fog computing is proposed in which vehicular with resources are used in computational infrastructure and the burden of resource limited vehicles are reduced. Software defined network is composed as the fog computing which is basis of IOV[3].

Figure 1. Proposed cooperative fog architecture for the Internet of Vehicles.

Features	Weak Ties in VNGs	Strong ties in VSNs
Relationship Strength	Strangers	Acquaintances
Meeting Time	Temporary	Regular
Meeting Location	proximity	Unspecified
Contact Method	Online	Offline/Online
Contact time	Approximately 10 minutes	10 minutes
Further Development	Few	Existent
Amount of members	Large	Fixed
Meeting Frequency	High	Low

The introduction of smart phone, mobile devices, internet and cloud computing the automotive community is transfer to wards the IOV. The Auto 3.0 ecosystem show robotics vehicular a device analysis and transfer information with computing system and other vehicles. Vehicles are the source of IOT system. The core networking technology couples with computation on vehicular sensor data are the part of IOT. The sensor data as a part of smart city which is used to be traffic management System and pollution monitoring. The vehicular sensors generate multi-modal data, support different encoding formats, heterogeneous domain and communicate using different domains. Vehicular network mostly used IP version 6.6 version of internet protocol not support Mobility, not data centric. Automatic management of interlinked vehicles and their physical resources. Data servers is important for physical delivery and application found. Mobile servers are interlinked with vehicles.

The implementation on trust based management of Vehicular social network and its feedback is based on Vehicular cloud computing architecture[4]. A general trust Management targeting vehicular social network. A Vehicular cloud computing has three layer of communication Architecture for vehicular social network These work continue our work to research a long trust management to save data on vehicular social network and result a feed back plan for a management framework. The Small cell technology is a solution for an advanced growth of signal data services and requirements of signal reached[5]. Small cell base station are low power and low range. On the other hand, long cell base station are high power and high range. The 5G mobile network are the fastest network. The net work of 5G is high speed services [6].The data traveled is fastest then other network. The mobile cloud the data is stored in large amount and data traveled in vehicles is fast then other network[7]. A lot of small base station such as fem to cells are installed in spot hot areas to improve coverage and small cell users [8]. There are many multi users to worked with clouds. Mobile users are play a vital role in vehicular cloud services [9].

3. METHODOLOGY

The methodology used Vehicular ad-hoc networks (VANET). The vehicular ad-hoc network were arranged to backing the connection mid various automobiles and the connection between automobiles and road side infrastructure. The vehicular ad hoc network basically a hybrid structure. It accommodates VANETS for intelligence transportation System. The VANETs application were developed for vehicular manufacture, government Agencies and industrial organization. The main points on Vehicular ad-hoc network is driver safety improvements and offered traffic monitoring, updates emergency warning and road assistance. The non-safety VANET application such as gaming had been developed. The Research of info dissemination

in VANETS is explained into two Categories vehicular to vehicular, vehicular to infrastructure and infrastructure to Vehicular. The focus on research of vehicular to vehicular how to achieve a data services by using signal. The focus on research of infrastructure to vehicular are the limited buffer size of road signals and Inter linked between wireless app and mobile vehicles. The data pouring algorithm proposed with intersection buffering. The vehicles at intersection sent the data by the source node in their Buffers and again rebroadcast it to other vehicles passing the interaction. The route information of vehicles which is available through GPS enable Navigation system in the vehicles apps to improve the quality of data dissemination services. At network Level network resource were managed to satisfy the quality of services Requirement for real time and non-real time traffic. At pocket level High transmission rate was proposed. Rate less coding technology also applied to improve the efficiency of data dissemination. The limited area of edge of way signal app and intermittent connectivity between the wireless apps Affect the data dissemination performance. A static node was proposed by Hybrid data dissemination. When no vehicle is available can deliver the Data static nodes locates at road intersection keep data and forward routing path available. The sending and receiving large amount of data from Vehicle to roadside app is wireless transmission. A wireless measurement Study under different driving condition carried out. The info-circulation method for vehicular cloud services has same with web caching action accept for provincial approach to internet capacity via proxy servers build upon on network topology the web caching action.

4. CONCLUSION

The framework was presented using vehicular data services which uses internet of things. The data loss is automatically stored in the cloud. During data transfer vehicular data cloud is used. It plays an important role in transferring data.

5. FUTURE WORK

Internet of things based vehicular cloud computing must be competent way, secured previous used at extensive. The vehicular cloud depends on its scalability to handle changing number of vehicles. Vehicular clouds handle a vehicular traffic, traffic hurdles caused by special situations. As new things reached made competent internet of things middleware that support integration of new things. As vehicular data cloud is often the vehicular networking is often reliable. More new Mechanism are needed to communication reliability with reduced traffic overhead. Some concerns of security and privacy in vehicular data clouds due to lack of Established infrastructure of authentication and authorities. A low security issues of Vehicular data cloud is unacceptable for vehicular services regarding transportation Safety. Global standard is compulsory to avoid conflicts between locally developed Vehicular data cloud. There are number of stakeholders also exist which have Challenges to established global standard to lower complexity and make vehicular Data cloud cost effective.

References
[1] G. Y. a. L. D. X. Wu He, Developing Vehicular Data Cloud Services in the IoT Environment, vol. 10, no. 2, p. 9, 2014.
[2] H. L. RyangsooKim, Prefetching-Based Data Dissemination in Vehicular Cloud Systems, vol. 65, no. 1, p. 15, 2016.
[3] J. h. Soumya Kanti Datta, VEHICLES AS CONNECTED RESOURCES, p. 10, 2017.
[4] A Cloud-Based Trust Management Framework for Vehicular Social Networks, vol. 5, no. 2017, p. 14, 2017.
[5] Q. W. Y. X. Ducheng Wu, QoE and Energy Aware Resource Allocation in Small Cell Networks With Power Selection, Load Management, and Channel Allocation, vol. 66, no. 8.
[6] J. J. R.-M. P. A. Jonathan Prados-Garzon, Modeling and Dimensioning of a Virtualized MME for 5G Mobile Networks, vol. 66, no. 5, p. 13, 2017.
[7] L. W. XIAO CHEN, A Cloud-Based Trust Management Framework for Vehicular Social Networks, vol. 5, p. 14, 2017.
[8] Q. W. Y. X. Ducheng Wu, QoE and Energy Aware Resource Allocation in Small Cell Networks With Power Selection, Load Management, and Channel Allocation, vol. 66, no. 8.
[9] Y. L. a. H.-H. C. Xing Liu, Wireless Resource Scheduling Based on Backoff for Multiuser Multiservice Mobile Cloud Computing, vol. 65, no. 11, p. 13, 2016.