A Novel SCMAC Protocol for Vehicular Network to Access Control Channel

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Abstract

A multiple number of queries from the user are processed by the server nowadays. A secure query processing in data sharing is a major issue. It is necessary to secure the data sharing scheme. There are several techniques that are implemented to overcome this issue. Thus the traditional system implemented is a data sharing by third party. The third party channel is used to transmit the data from the data owner is used to ask the information from the user. Here the privacy is not preserved and the data user must provide the secrecy information the information stored in the third party channel. This leads to lots of misbehaving activities. This should be concern and then overcome in the proposed system. The proposed model consists of different techniques to design the model to overcome the issue. The propose model is designed with server which is referred as data owner. Data owner is supposed to store lots of data in the server. Generate lots of user to fetch the data from the data owner and then the party channel client is implemented as the intermediate between the server and the user. Data owner provides a Secure ID to the registered user. Now the registered user information is only view to the data owner. The client login is not possible in this mechanism. User gives the ID to the client, and then the query is stored with the basic mechanism. After that client side do the formation of Count, Sum and maximum. This is used to find the same query and grouped as one. Then the aggregate query is then sending to the server. The server is then used to transmit the response regarding with the same ID is masked and transmitted to the client. The clients view the response and then processed with query request. Thus the user information and their privacy details are protected using the proposed mechanism.

I. INTRODUCTION

A communication network is a group of lumps which connectbybothextra through different types of communication relations such as cables, satellites, radio frequency waves, and infrared waves. Based on communication link types, a communication network can be categorized as wired networks and wireless networks. Wireless Links container is further divided into infrastructure created besides ad hoc based nets. In infrastructure based networks, there are no direct communications between wireless nodes. Instead, nodes communicate with each other through access points. These access points control medium access making the topology of the network very simple. Moreover, these access points act as gateways if there is a necessity for nodes in one network to communicate with nodes in other networks. On the other hand, ad hoc wireless networks do not need access points. Bulgesnowthis net category connects with bothothersright and maintain connectivity in a decentralized manner. As a result, each node has to implement a medium access control algorithm.

A technique used in wireless protocol is contention method beaconing. This method used on token passing network that is to monitor the entire network by passing the token. In VANET network, the nonstop broadcast of minor sachets that present the existence of the improper station.

The co-operative beacon scheme is the fast alert mechanism when the data is going to be transmitted. This mechanism will further provide a data transmission alert. The data Transmission alert is used to carry out the rely process. Each and every node in the network will provided with the continuous option scheme of which it could be provided. The provided mechanism will forward through the data by which it could be applied and co-operative data will announce to each and every sensor node in the transmission.

Collisions happen when more than one transmitted packets are received by a receiver at overlapping times. As a result, the receiver cannot decode the packets. The keyreasons of collision occurring stands the unseen terminal tricky and the propagation delay (time required for the first bit of a packet to reach since the dispatcher to the receiver) of packs. The collision forces the senders to send the packet again thus increases the delay.

II. RELATED WORK

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III. PROBLEM IDENTIFICATION

This sole stands fairly exciting on the road to project a average admission switch (MAC) procedure that container attain the box of VANETs. Crashes stay answerable towards happen in VANETs, which is not at all bulge container properly obtain the program ideals. Seeing the overhead topics, a climbable then obliging average admission regulator (MAC) way, stated via method of SCMAC. It breaks intended nearby comprehend the dependable besides climbable episodic beaconing aimed at VANETs.

DISADVANTAGE

IV. PROPOSED MODELING

In SCMAC, the control channel stays common by TDMA. This protocol is a dual transceiver created MAC protocol.

1.Toward continuously effort on CCH aimed at inspiration supply

2.To freely switch among SCH

These two transceivers are application oriented data transmissions. The periodic beaconing is handling in dedicated SCMAC. There is no condition to access the SCH process. Every hole covers a spread Inter Frame Interstellar (DIFS), a argument Space (CW), and a facts edge (payload). The DIFS is earmarked aimed at the DCF. The facts edge is achieved giving toward the MAC layer. The one hop neighbor denotes the neighbors in short range when the beacon is broadcast. Two hop neighbors denote each knob container spread some extra bulge in inside dual flights. Nope bulge stays likely to properly decipher the conventional signals, the collision occurs trendy the area. The collision is identified by the reliable communication.

The main contribution of SCMAC is message consistency and procedure scalability.

- The message dependability is achieved through cooperative beaconing
- The procedure scalability stays understood through hole admission way and positive hole booking.

The two states trendy SCMACs are on and off nodes. A bulge has permission toward admission the hole done contention, this node become online. The online node container transmission a inspiration that covers the header, directory hole and flag. If the online node encounters the collision, it stops to broadcast beacon and it became offline. The cooperative beaconing and proactive slot reservation is right to online nodes. The states and subsequent slot is used to inform the neighboring node by cooperative beaconing. Toward admission the station for off nodules the active hole arrangement is responsibility is toward permanently save a insufficient holes. Off node needs near randomly choose available slots for accessing the channel. The collision avoidance is achieved by random selection policy.

The online node advised near uphold the smaller beaconing ages. The future hole admission technique is used to decrease the communication delay. However aimed at tall bulge density the offline node containers join the net easily by active hole booking. Each bulge is talented toward become the chance to program encouragements, since the SCMAC is scalable.

A. Proposed Architecture Modeling

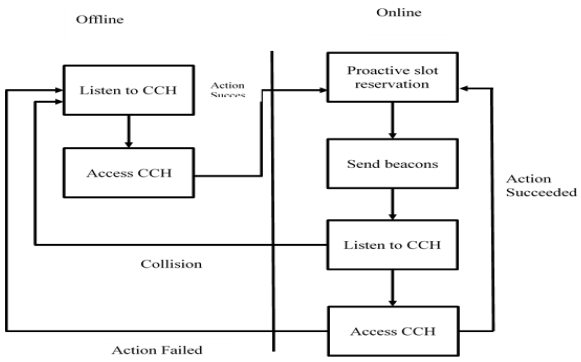

Fig 1: Architecture of Proposed Modeling

B. Modules description

1. Cooperative Beaconing: Receiver Side

The offline node is keep listen the channel condition, once a bulge is not distribution inspirations. Each message or ideal covers the header, conditions of the upcoming slits by means of fine by way of the directory of the mark slit that the inspiration dispatcher means toward usage. The SCMAC consist of five flags to indicate the slot state as shown below. Every flag includes the priority of each flag. The nodule accepts the inspiration this one updates the folder based on the flag priority. The lower priority will be modified by the highest priority.

The IDLE and RESERVED flag denotes the hole stands obtainable. The EXTEND and RESERVED ensigns stay denotes the active hole booking. The singular hole is named the edge hole. The highest priority flag stays NEIGHBOR and the lowest priority flag is IDLE. The target slot represents in the conventional encouragement, the singular standard NEIGHBOR stays clear. The default state of the slot is border slot be non-IDLE hole by the main directory. The holes afterward the edge hole stay fully IDLE. Each node tends to identify the situations of the upcoming openings hereby parsing the beacons from neighbors.

2. Slot Access

The contention window is designed in scalable and cooperative MAC to avoid collision. To improve the reliability the hole admittance device is used toward resolve the problems in collision. The hole admission remains efficiently based happening the opening formal notification achieved through cooperative beaconing. The nodes are known about the future slots states. Nodules remain limited toward admission the IDLE and RESERVED shacks which stand available. A node is limited toward admission the accessible holes that have been allocated by other nodes. By this method the channel access is efficiently improved.

For the online nodes, select the hole aimed at accessing the following network represents by way of boarding opening. If the node obtained the slot, it will broadcast the beacons to the neighbors. The holes afterward the limit hole denote completely stand IDLE. The target slot stands the one slot after the border opening. The reliability and scalability is guaranteed based on the system.

For the offline node, the node randomly selects the board hole after the *s* adjacent accessible holes. It includes the IDLE holes afterward the edge slots. The target hole at the beginning of a slot. The *s* is represents a Random Selection Window (RSW) size. Offline nodes are not allowed to broadcast the beacon because it became invisible to other nodes.

3. Proactive Slot Reservation

Aimed at connected bulges the board slit stands correct entrance the edge hole for target slot selection. This denotes the IDLE holes afterward the edge slit is not occur aimed at off nodes, holes stand unceasingly busy by on nodules. This condition the offline nodes have not chances to access the slots. Once the network nodule concentration stands tall the resource exhausted for offline nodes are liable to occur. To solve this situation the online nodes are preserve the several slots for offline nodes before the border slots.

The active slit booking stands toward continuously retain a scarce slits lazy aimed at off bulges to admittance the station. Off bulges lone essential toward arbitrarily choice accessible holes toward admission the station. The chance selection rule stays practical aimed at crash evasion. The slot access device is proposed toward resolve this subject aimed at dependability development. There are 5 flags stay clear near specify the slot public. The IDLE and RESERVED flags unkind the opening stays accessible. Swellings stay limited towards admission the accessible slots, which stay IDLE and RESERVED holes. The EXTEND and RESERVED flags stand intended aimed at the active hole booking.

The connected bulge chooses the opening right after the border slot. The following figure shows the board slit assortment of offline bulges. The off lumps randomly select a slot from the nearest s=5 available slots, which are {t2, t3, t5, t6, t9}. Here, slot t5 is selected.

4. Cooperative Beaconing: Sender Side

In sender side, a nodule broadcast a inspiration, a helpful memo (CM) stays fixed trendy the inspiration. The flag trendy the slot represents in the earpiece cross not in the dispatcher adjacent. The flag conversion remains presents in the sender side then only the telephone container inform the file via passing the segments.

The Neighbor and RESERVED flags stand transformed to FORBIDDEN and EXTEND flags correspondingly. In two hop neighbor, the node can't usage the similar slit aimed at beaconing because of collision. Hence the reason of this conversion of flag. The slot access and slot reservation states are used in the one hop neighbor. The IDLE slot is converted to RESERVED, this slot is only for offline node access.

The binary value of each flag is represented in the table. The NEIGHBOR flag does not have the binary value because the NEIGHBOR slot is converted to FORBIDDEN slot. Hereby the reliable beacon delivery can be guaranteed.

5. ***Collision Notification***

It is quite tough to fully eliminate collisions. Once a collision happens, the sender ought to learn of the crash then the dispatcher can't sight the crashes produced via it. Once a bulge notices out a crash this one adds the hole directory toward a announcement file. Once this nodule become the chance to program a ideal, the hole directories within the announcement file are going to stay introduced hooked on the inspiration to create a rear-ender announcement.

Upon getting the crash announcement, the bulge payments whether or not the directory of that one latter busy hole stays within the announcement. Uncertainty thus, the bulge develops off. Aimed at the remainder hole catalogs within the established accident announcement, the bulge can attempt and take away the equal ones after the situation personal announcement file toward sidestep continual distribution aimed at above discount.

V. RESULT AND DISCUSSION

A. Performance analysis

1. ***Collision***

This is analyzed with there is not some crash chances of the casual collection rule. The graph shows the probability of collision is very low when the number of packet transmitter. No collision occurs when the node density is high.

Table 4.1 Collision Probability Table

Comparison	Collision probability Value
Existing System	4.3568
Proposed System	2.50

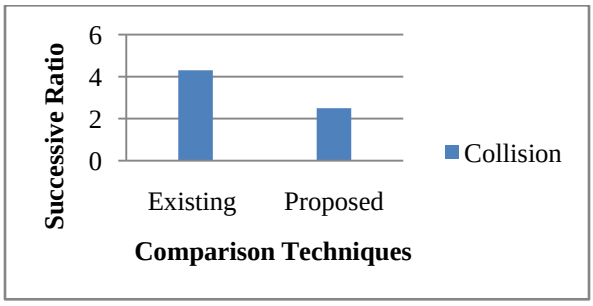

Fig 4.1: Collision Probability

2. ***Reliability***

The probability that an separate inspiration container remain properly conventional thru the situation board.

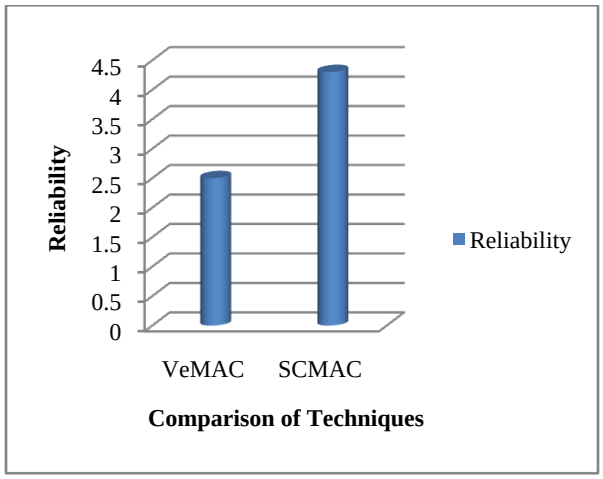

Fig 4.2: Reliability Comparison

This one container is appreciated that VeMAC somewhat outperforms than SCMAC once the bulge thickness stands lower. The aim stays that VeMAC is a edge created MAC. After the holes stay correctly owed, the plot amid bulges and holes resolve break (almost) constant. That is to roughly bulges can occasionally transmission inspirations allowed of crashes cutting-edge the next edges. Nonetheless this device remains not practical in SCMAC trendy command to enhance the procedure scalability. Congruently, SCMAC containers maintain tall dependability not at all substance the bulge thickness stays tall before low for example exposed now the symbol.

Table 4.1 Reliability Comparison Table

Comparison	Reliability probability Value
Existing System	2.3568
Proposed System	4.2691

3. ***Average Beaconing Periods (ABP)***

It delivers the ABPs of SCMAC and VeMAC. The ABPs of SCMAC remain about relative toward the bulge thickness, which designates SCMAC stands climbable. The board hole of the connected bulge stays correct afterward the edge hole. Then this stays the adjacent hole that container stay used deprived of disturbing extra protuberances. In difference, the ABPs of VeMAC stay closely continuous. They are near to

the edge distance. It suggests that numerous holes stay left-hand idle once the nodule mass stays short.

*4. **Average Access Time (AAT)***

The AAT of SCMAC stays around relative to the bulge thickness. Offline bulges container fast admissions the station unpaid near the hole registration rule of SCMAC. The AAT of VeMAC is too providing, though this comparison may be not fair. The AAT upsurges by way of the bulge thickness rises since lumps can delay lengthier toward discovery an obtainable hole. Though, once the bulge thickness tops 100, crashes happen often. Letter that the slits ended which crashes happen are preserved by way of IDLE in VeMAC since the unique bulges can't usage them usually some lengthier. By way of extended such as here stay IDLE holes, lumps resolve straight admission them rendering to VeMAC. Before, owing to the recurrent crashes, bulges container rapidly fined obtainable slits to admission the network smooth if the admission would maybe reason crashes as soon as extra. By way of a outcome, the AAT of VeMAC initiates to reduction slowly when the protuberance thickness tops 100. So, the dependability of VeMAC too droplets substantially.

Table 4.2 ABP and AAT

	ABP	AAT
VeMAC	2.4	4.3
SCMAC	2.5	4.4

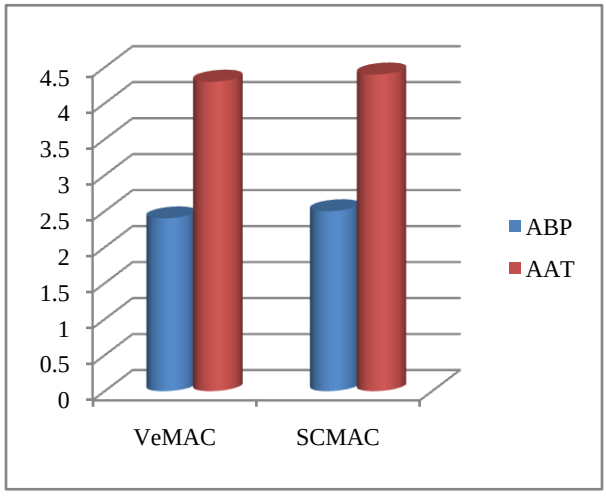

Fig 4.3 ABP and AAT

VI. CONCLUSION

The primary purpose of this thesis is to style Associate in Nursing economical routing formula in VANET surroundings to enhance the performance of existing position based mostly routing approaches in VANETs. A ascendible and cooperative MAC layer protocol (SCMAC) for the access of management channel (CCH) is planned to support the periodic beaconing in VANETs. In SCMAC, nodes have 2 states: on-line and offline. on-line nodes broadcast the states of the next slots. By parsing the received slot state info, the CCH handiness may be determined in an exceedingly cooperative manner for each node. each on-line Associate in Nursingd offline nodes will merely choose an accessible slot to access the CCH.In addition to, the random choice policy is applied for offline nodes to avoid the potential coincident channel access. At last, the reliable beaconing may be achieved. so as to create SCMAC ascendible, the web nodes area unit target-hunting by to settle on the smaller beaconing amount to scale back the common latency. whereas for offline nodes, there area unit continuously decent idle slots that area unit reserved for them so they will quickly be part of the network. As additional nodes be part of the network, the beaconing amount are going to be elongated step by step so all nodes area unit able to gain possibilities to access the CCH. The simulation results show that the periodic beaconing perform provided by SCMAC is reliable and ascendible. The network beacons won't get full once the node density is high. At identical time, the common beaconing amount decreases because the node density drops.

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