MODIFIED AND IMPROVED MECHANISM OF SENDING RATE FOR VEHICULAR AD-HOC NETWORK

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Abstract— *The performance of transport layer protocols degrades significantly when used over Vehicular Ad hoc networks which has a large bandwidth–delay product. This is primarily due to the exponential window growth algorithm in slow start phase and linear window growth algorithm in congestion control phase, employed by Jacobson based TCP variants. In this project, a non linear window growth algorithm that is based on different between current sending window size and maximum advertised window size which allows the transport layer protocol to perform well regardless of the network bandwidth delay product. The proposed window growth mechanism increased wisely that is high growth in slow sending window and slow growth in high sending window. The proposed algorithm is implemented and compared with existing transport layer protocols using network simulator (NS-2).The results shows that proposed algorithm performs well compared to others.*

1. INTRODUCTION

In this generation internet plays a vital role in our life.The people have various advantages in internet.The main purpose is transmission. Since we have exponential window growth algorithm in slow start phase and linear growth window algorithm in congestion control phase.We consider the Open System Interface (OSI) architecture. The OSI architecture have seven layers , we focusing on transport layer for source to destination port transmission. There are various types of protocols are used in this transport layer.but we focusing on newreno, compound and cubic protocols. Because the newreno is used in most of the systems, the cubic is the linux OS. In this newreno window growth technique, the slow start phase in exponential window growth algorithm and congestion control phase in linear window growth algorithm.

To overcome this slow starts we use non linearalgorithm.In order to improve the exponential window growth. Also increases the throughput and good put, at the same time reduces the packet loss and end to end delay.

2. LITERATURE SURVEY

[1] Lein Zhang,

Existing secure and privacy-preserving vehicular communication protocols in vehicular ad hoc networks face the challenges of being fast and not depending on ideal tamper-proof devices(TPDs)embedded in vehicles. We propose a vehicular authentication protocol referred to as distributed aggregate privacy-preserving authentication. Then vehicle can verify many messages simultaneously and reduce the storage needed by a vehicle. The existing secure algorithm algorithm used in process. When a vechicle enters the management area of an road side units(RSU) with the secrets, the vehicles can broadcast signed messages to nearby vehicles and RSUs. And high secure algorithm(HSA) is also used as a these protocol. And this is a trustworthy in all nodes.

[2] HanaaTorkey,

Congestion control is required not only to prevent congestion collapse in the network, but also to improve network utilization. Without congestion control, a sending node may continue transmitting packets that may be dropped later due to congestion collapse. Theproblem with NewReno is that when there are no packets lost but packets are reordered by more than three duplicate acknowledgments, the process of setting the congestion window to half of its value make the TCP NewReno inefficient in terms of utilization of link capacity. The EnewReno provides higher throughput than both Reno and NewReno in the Fast Retransmit and Fast Recovery phases. In case of packet loss, the throughput of Reno decreases because it reduces its window size to half of its value and with the first fresh acknowledge it gets out of Fast Recovery without recovering the multiple packet losses. The Fast Recovery algorithm improve the performance, the proposed mechanism, EnewReno is inefficient in terms of packet losses. So the packet loss is not controlled.

[3] SarikaAgarwal,

CUBIC enables the window size to be increased aggressively when the window is far enough from the saturation point, and lets it to become slower when the window is close to the saturation point. The initial implementation of CUBIC in Linux uses the bisection method. But the Linux developer community worked together to replace it with the Newton-Rhaphson method which improves the running time by more than 10 times on average (1032 clocks vs. 79 clocks) and reduces the variance in running times. CUBIC also went through several algorithmic changes to have its current form to enhance its scalability, fairness and convergence

speed.Through extensive testing, we confirm that CUBIC tackles the shortcomings of BIC-TCP and achieves fairly good Intra-protocol fairness, RTT-fairness and TCP-friendliness.

[4] Kun Tan Jingmin Song,

Standard TCP fails to fully utilize the network capacity due to the limitation in its conservative congestion control (CC) algorithm.we propose a novel Compound TCP (CTCP) approach, which is a synergy of delay-based and loss-based approach. We develop our analytic model based on a simple network topology which contains one bottleneck.We use a DELL WS450 workstation as a router that connects two DLink DGS-1008T gigabit switches. Further, delay based schemes allocate network resource without RTT bias. Our goal is to detect early congestion with constant buffer requirement independent of the number of CTCP flows. We are currently investigating several ways to achieve this goal. Only used in the these type of networks.

[5] PreetidaVinayakray-Janil,

We present comparative analysis of MANET (Mobile Ad-Hoc Network) and VANET (Vehicular Ad-Hoc Network) routing protocols. This particular routing mechanism uses Dijkstra"s shortest path algorithm to find shortest path between source and destination.The position based routing approach was designed for MANET routing protocol called Greedy Perimeter Stateless Routing (GPSR).In MANET, Weighted Clustering Algorithm (WCA) based on the use of weight metric that include several system parameters like the node- degree, distance with all its neighbours, node speed and time spent as a CH.VANET routing algorithm called Clustering for Open IVC Networks (COIN) where CH is based on vehicular dynamics and driver intensions. Performance shows that COIN represents more stable clustering structure of VANET, at the cost of little overhead. As a result VANET uses Geographic Source Routing (GSR).The performance of routing protocols MANET and VANET depends significantly on the mobility models and the density of nodes. Therefore it is essential to design routing protocols specific to given mobility models. But the recently more algorithms used in new protocols.

3. EXISTING METHOD

In this existing method in order to increases the throughput and good put, by using Jacobson algorithm.

win = min (cwnd+dwnd,awnd)

cwnd=cwnd+1; Ack

cwnd=cwnd/2; packet loss

actual =win/RTT

dwnd = { dwnd(t) +(α*win(t)-1)}

Nodes	Newreno	Cubic	Compound	Proposed
50	361	349	374	392
100	380	378	393	387
150	386	408	284	385
200	378	367	407	381

where,

RTT – Round Trip Time

cwnd – congestion window

dwnd – delay window

awnd – advertised window.

4. PROPOSED METHOD

In proposed system, modify the Jacobson algorithm, the congestion window (cwnd) will be calculated. focus only on newreno protocol, because the newreno have the high performance and low end to end delay compared to compound and cubic protocol.

cwnd = (max cwnd – cwnd)/2 + cwnd

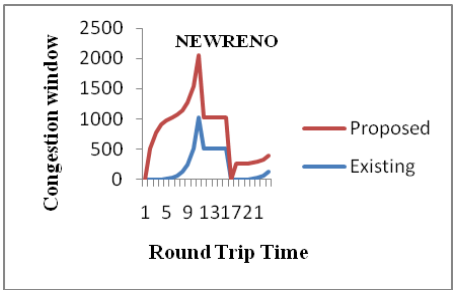

Fig.1: Congestion window comparision

The figure shows that the window growth of Existing and proposed method.

The comparision between existing and proposed method result analysis are followed by parameters,

5. SIMULATION ANALYSIS

The simulation process designed and modified by using network simulator.

Channel: Wireless channel

Propagation: Nakagami

Antenna: Omni antenna

Area x : 1010

Area y : 1010

No.of.nodes : 50,100,150,200

Queue : Drop tail/ Priqueue

Queue length : 200

Number of nodes vsperformences

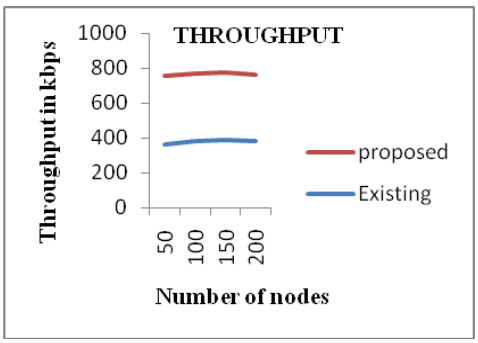

Fig.2: Throughput vs Number of nodes.

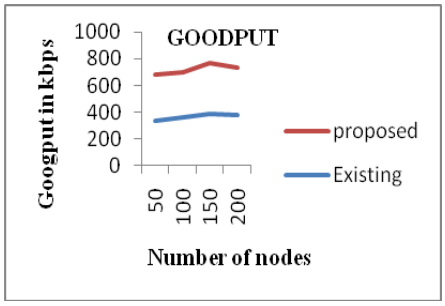

Fig.3: Goodputvs Number of nodes.

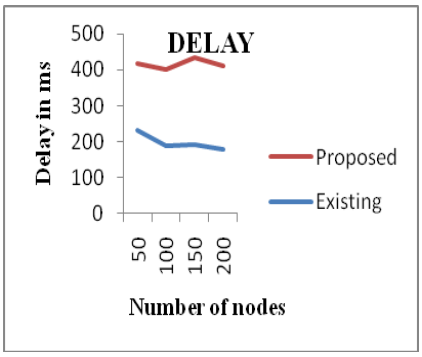

Fig.4: Delay vs number of nodes.

6. CONCLUSION

From the simulation analysis of proposed window growth mechanism over the existing mechanism ,shows that the proposed mechanism is having 40% improved in through put ,improvements in good put ,decrement in end to end packet delay .This is very much helped for fast communication of small applications like., http in VANET.In future the proposed method can be adopted to wireless Ad-hoc networks and wireless sensor networks to improve the performance.

REFERENCES

[1] LeinZhang,QianhongWu,Josep Domingo-Ferrer,Bo Qin and Chunyan Hu, 2017, "Distributed Aggregate Privacy-Preserving Authentication in VANET's" IEEE Transactions on Intelligent Transportation Systems Vol 18.NO 3.

[2] HanaaTorkey, GamalAttiya, Ibrahim Morsi.Z ,2012, "Modified Fast Recovery Algorithm for Performance Enhancement of TCP-NewReno" International Journal of Computer Applications (0975 – 8887) Volume 40– No.12.

[3] SarikaAgarwal, Aarshi Jain, Ankit Chadha,2013, "CUBIC High-Speed Algorithms Implemented In Linux-2.6.31" International journal of innovative research ISSN: 2278 – 0211 (Online), vol 2 issue 3.

[4] Kun Tan Jingmin Song,Qian Zhang, MurariSridharan, 2013, "A Compound TCP Approach for High-speed and Long Distance Networks "Improving Performance in High Speed Wide Area Networks", in First International Workshop on Protocols for Fast Long Distance Networks (PFLDnet).

[5] Preetida Vinayakray-Jani1, SugataSanya ,2006, "Routing Protocols for Mobile and Vehicular Ad Hoc Networks: A Comparative Analysis" Tata Institute of Fundamental Research,"28 pages, Version 1.1, pp. 1-28.

BIOGRAPHY

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