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Performance and analysis of congestion control in MANET

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Abstract— In MANET nodes are mobile and disseminate with other nodes buttoned on wireless connection. The nature of MANET is progressive so route discovery is quite challenging task. In MANET congestion will be occur at diversal nodes and it is not an easy bother to control the congestion. The prime aim of the congestion control is to assure the system is running at its estimated capacity even in worst condition. The congestion less based routing is entrenched to reduce the packet loss, number of nodes, uncertain topologies, varying no. of senders , changing the location of sink in the network. The main objective of this problem is divided into three parts. First it implement a mechanism to count active flows. Second it have the choice of target queue length and drop rate based on the flow count. Third implementation of mechanism to enforce the targets on a FIFO queue and interpretation of existing congestion control techniques.

Index Terms— **MANET, Quality of service , throughput, delivery ratio, AODV**

I. INTRODUCTION

Mobile Ad-Hoc Network

A MANET is self-assured of the mobile nodes without any framework. The goal of MANET to prolong mobility into the field of the self-governing, mobile and wireless domains, where as set of nodes form the network routing footing of an ad-hoc network. The superiority applications of MANET are used where express development and dynamic reconfiguration are more significant and wired network is not available. The MANET include military armageddon, army operations, emergency search, delivery sites, classrooms and conventions etc where participants share their information intensely with advice of their mobile devices. These applications help in operating various multicast operations. Due to mobility of nodes in MANET, it is not possible for establish proper paths for message deliver and packets through the network. Hence congestion takes place and it is the key problem for MANET.

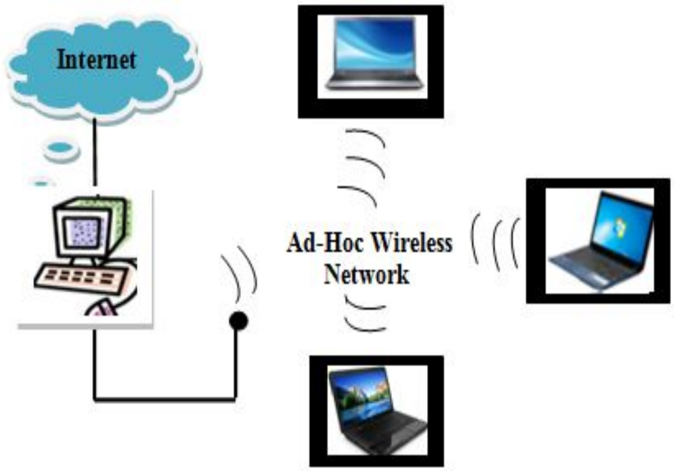

Figure 1: The General Representation of Mobile-Ad-Hoc Network

II Congestion in MANET

Congestion is a problem that occurs in a communication network when too much traffic is found and the Congestion occur on MANET conduct to delay, packet losses, bandwidth degradation, wasting of time, high overhead. So many routing protocols have been established to proposed and to overcome the congestion in MANET.

III Congestion Control in MANET

Packet failure in MANET is basically caused due to obstruction. Congestion control over a mobility and failure of flexible routing protocol at the network layer can coagulate the packet loss. The congestion of non-adaptive routing protocols conduct to the following difficulties:

(a)Extensive delay: Most of the congestion control technique takes too much time for identify congestion. Sometimes the operation of new routes is more critical situations. The main problem occur delay existing for route observant in on-demand routing protocol.

(b)More Overhead: Congestion control mechanism takes more attempt for processing and communication in new routes. It also takes more and more endeavour in maintaining the multipath routing protocol.

(c)Heavy packet losses: Once the congestion is detected and packets may be stray. Now congestion control is perpetuate by decreasing the sending rate towards the sender or collapsed packets at the intermediate nodes. There is further methods is to decrease the traffic load. Due to high packet loss on congestion control slight throughput may be occurred

IV Routing Protocols in MANET

One of the popular routing protocol is AODV which is used to dispatch the messages and packets over MANET and also is used to remove the problem of congestion in MANET. But it depends on the different receivers to detect congestion control their receiving rates. In this paper the investigation the performance of horizontal routing protocol AODV, AOMDV, and DSR which are frequently used in mobile ad hoc network. Routing is a purpose of the network layer to determine the route from the source to the destination node. In wired networks route failures are infrequent whereas in mobile ad hoc networks often occur. When a new route has been assembled and longer or shorter than the old route .The congestion control will profile the fluctuations in the round trip time . Routing protocols that frequently used in ad hoc networks are AODV (Ad hoc On-Demand Distance Vector), DSR (Dynamic Source Routing) and AOMDV (Ad hoc Modified Demand Distance Vector). AODV and DSR represent reactive routing protocol, while AOMDV is a proactive routing protocol .

V MANET Performance Analysis

Performance of expected protocol is evaluated using the following metrics:

(a)Packet delivery ratio

Packet delivery ratio defines it is the ratio of number of packets commenced by the CBR sources to the no. of packets received by the CBR sinks to the hindmost destinations.

(b)Average delay of data packets

This includes dawdling caused by buffering of data packets during route discovery, concatenation occur at the interface queue, retransmission lag at the MAC.

(c) Normalized routing load (NRL)

NRL is the number of routing packets translate at data packet delivered to the destination. This system inquiry is made from the graph sources. In this analyze various parameters of NRL with respect to flexible time .

VI PROPOSED WORK

If the number of series a router would have to handle is fixed at the branch, routers could be carried with parameters set to achieve a objective tradeoff between loss rate and queuing delay. An ideal router would automatically prepare its queuing configuration to the load. This problem divides into three parts. First a innards to count active flows. Second a choice of object queue length and drop rate based on the flow count. Third a mechanism to compel the targets on a FIFO queue. The evaluation will be done through duplication on various network parameter such as changing topology, increased usage, speed divergence and number of sender increased

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VII RESULTS & DISCUSSION

The objective of our discourse is to design a set of congestion control mechanisms in wireless network. This appraisal will be done through mirroring on various network parameter such as alternating queue length and number of sender increased. Check the achievement of congestion control mechanisms and how mechanism operate when we increase number of sender and usages.

Performance Metrics

In appraise a MANET routing protocol different census or performance metrics are used. In this chapter we discuss the essential metrics required to appraise performance.

a) Packet send
b) Packet drop
c)Packet request

Packet send

Packet Send is an open source expediency to allow sending and receiving TCP and UDP . It is accessible for Windows ,Mac, and Linux. It is licensed General Public License versus and is unpaid software .Packet.

Ideal applications of Packet Sender include:

- Trouble blasting network devices that use network servers such as it send a packet and then analyze the respond.
- Trouble blasting network devices that use network applicant devices that "phone home" via UDP or TCP—Packet Sender can abduction these requests.
- Verfication and development of new network protocols such as it send a packet, see if device behaves appropriate.

Packet Sender comes with a made-in TCP and UDP server on a harbor number a user specifies. This remnants running listening for packets during sending other packets.

Packet Drop

Packet drop is the time lag it takes a network source to handover a packet to its destination. Thus the end-to-end delay of packets is the total amount of delays rendezvous in the whole network at every hurdle going to its destination. In MANET this kind of delay is regularly caused by certain connection frazzle or/and the signal strength among nodes have become low or congestion occur. The accuracy of a routing protocol can be determined by its end-to-end lag on a network.

Packet request

This assign to the ratio of the total number of data wrapping that scope the receiver at destination node .Here number of packets per sender is 70 parcels and maximum confess senders are 4. The maximum number of packets that can be buffer in queue is 280. It shows the duplication results. Here red line shows buffering request from 50 senders is impending to maximum size of approximately 420 packets. This is because of no congestion control appliance is applied. Green line shows buffering request from 4 senders is accessing to maximum size of approximately 220 packets which is less correlated to buffering capacity of queue 280 packets in our case. The result shows a mechanism to toll active flows target queue length and drop relation to compel the targets on a FIFO queue.

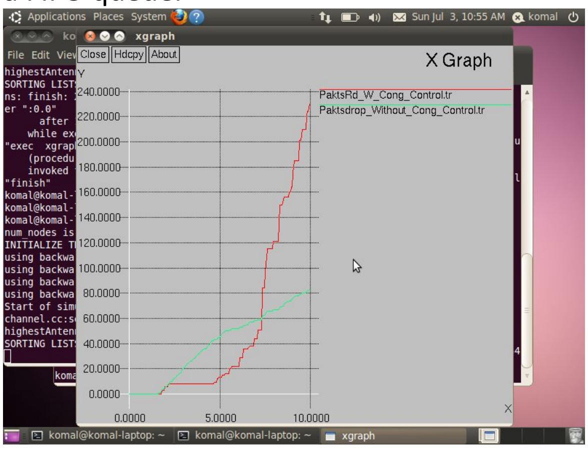

Fig 1: Packet receive for AODV when queue length is 65

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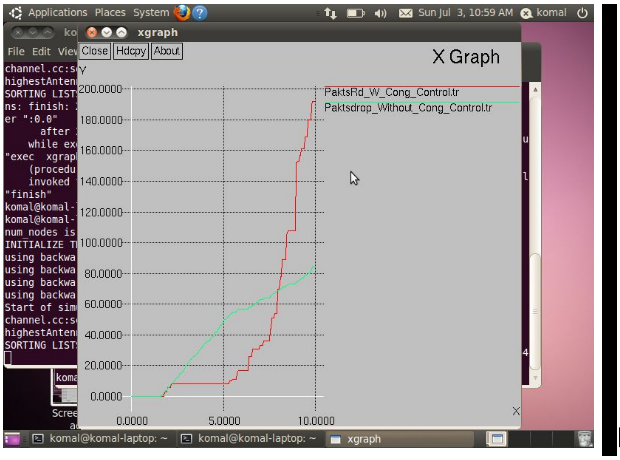


Fig (2): Packet receive for AODV when queue length is 70

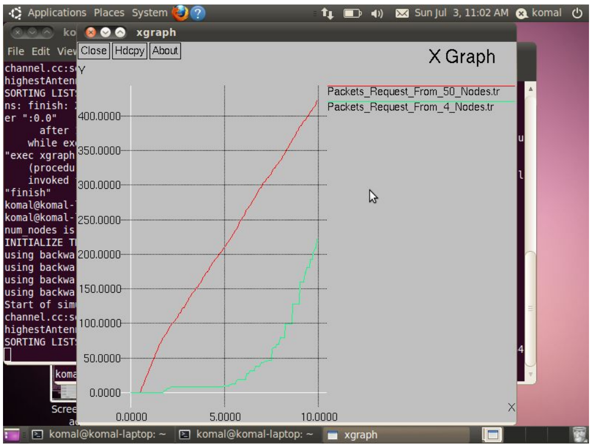


Fig (3): Packet request for AODV when queue length is (75)

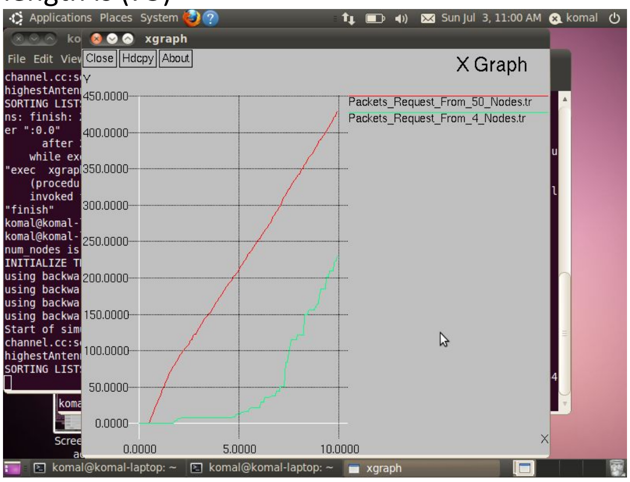
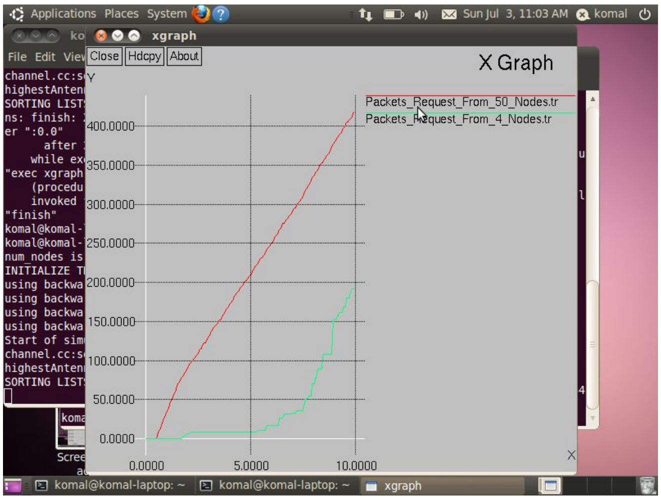


Fig (4): Packet drop for AODV when queue length is 65



Fig(5): Packet drop for AODV when queue length is 70

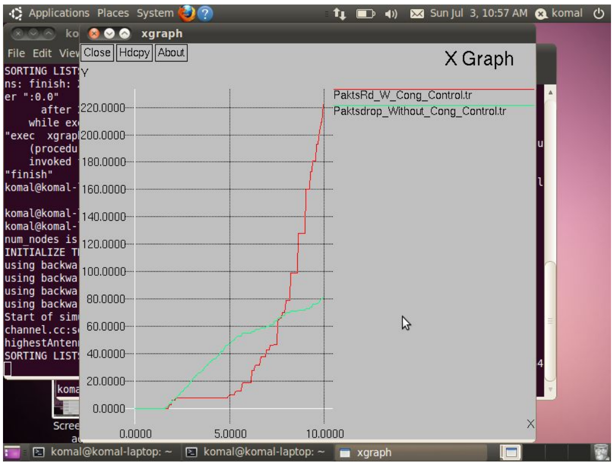
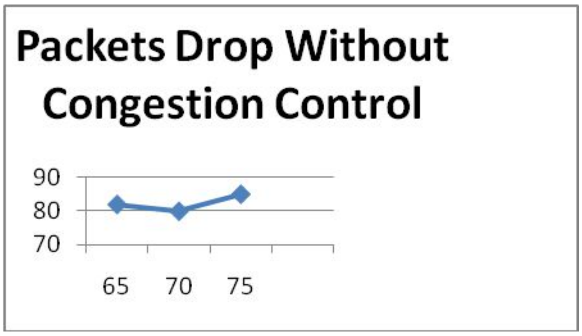
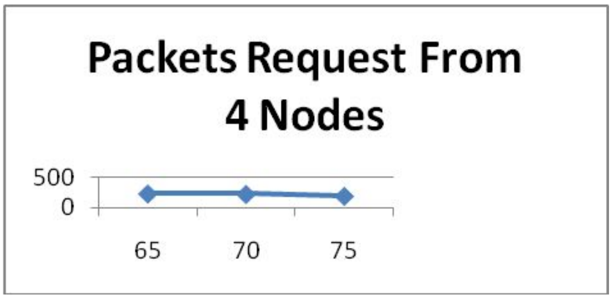


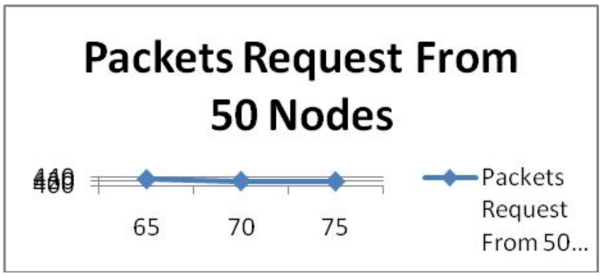
Fig (6): Packet drop for AODV when queue length is 75



Fig(7) : Packet drop without congestion control



Fig(8) :Packet Request from 4 Nodes



Fig(9) :Packet Request from 50 Nodes

VIII CONCLUSION

Congestion loss in breast networks depends on the number of alive flows and the total storage in the network. Total cache included both router buffer memory and packets in shuttle on long links. In this thesis a simple flow counting principle is presented. This method takes a few instructions per sender and uses one bit of case per flow. The algorithm provides congestion feedback by flexible the number of packets per sender in breadth to the queue length. This approach has the adorable effect of reducing queuing delay however it yield high loss rate as the number of flows increases, effect long and unfair timeout delays.

IX FUTURE SCOPE

The proposed joint augmentation model will be simulated and implemented for various TCP spinoff and analyzed in terms of performance criterion. Synchronize of the two protocols in the future should better correlative. Cross-layer method is one of the satisfy coordination models to solve the problems. For better certainty this method should have skill to read the conditions of the network from the physical layer.

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