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RECENTING ADVANCE REPORT IN TCP COGESTION CONTROL USING AIMD

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Abstract- In this paper introduced a common report of TCP congestion control and using the fast transmit over sending packets of Using AIMD Additive increase and multiplicative decrease. The host receives implicit packet loss or explicit packet mark indicate internal congestion. Concept implements AIMD to prevent from the traffic over TCP network. The acknowledgment of PACKET SENDING implements faster over TCP network using AIMD. Recent the report using Active queue management AQM has the pathological packet-dropping pattern.

Keywords— *AIMD; AQM; Congestion Control; Pathological Packet*

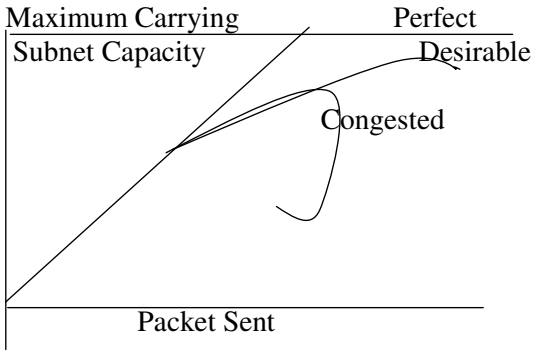
I. INTRODUCTION

The basis of TCP congestion control lies in Additive Increase Multiplicative Decrease (AIMD), halving the congestion window for every window containing a packet loss, and increasing the congestion window by roughly one segment per RTT otherwise.This network control best known for its use, in TCP Congestion Avoidance. AIMD combines linear growth of the congestion window with an exponential reduction when a congestion takes place.Multiple flows using AIMD congestion control will eventually converge to use equal amounts of a contended link.A second component of TCP congestion control of fundamental importance in highly-congested regimes is the Retransmit Timer,including the exponential back -off of the retransmit timer when a retransmitted packet is itself dropped.A third fundamental component is the Slow-Start mechanism for the initial probing for available bandwidth, instead of initially sending at a high rate that might not be supported by the network.

The fourth TCP congestion control mechanism is ACK-clocking, where the arrival of Acknowledgements at the sender is used to clock out the Transmission of new data.Within this general congestion control framework of Slow-Start,"AIMD",Retransmit Timers, and ACK-clocking, there is a wide range of possible behavior.These include the response when multiple packets are dropped within a roundtrip time; the precise AIMD for setting the retransmit timeout.The design of TCP was heavily influenced by what has come to be known as the end-to-end argument [9].The key component of the end-to-end argument for our purposes is in its method of handling congestion and network overload.The premise of the argument and fundamental to TCP's design is that the end stations are responsible for controlling the rate of data flow. In this model, there are no explicit signaling mechanisms in the network which tell the end stations how fast to transmit, when to transmit, when to speed Up or when to "slow down". The TCP software in each of the end stations is responsible for answering these questions from implicit knowledge it obtains from the network or the explicit knowledge it receives from the other TCP host.

II. DEFINITION OF NETWORK CONGESTION CONTROL

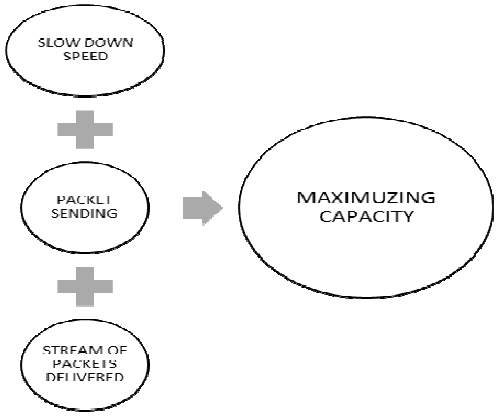
There some factors that can contribute to packet loss in TCP when sent through network.This congestion leads to indiscriminate dropping of data, i.e. data of high importance might be dropped while others of less importance are delivered [9]. A much packets access a part of subnet to performance degrades, this access is called *CONGESTION*.Number of packets dump into an subnet by the host with in carrying few afflicted with transmission error and the number of delivered proportional is not sent. So the traffic is increases too far, router are no longer to cope and they start losing packets.When heavy traffic collapses completely stop the process of delivering packets on networks.Congestion can brought several factors to increases the memory to prevent the packets.



Fg.2.1 When too much traffic is occurred, the congestion sets in and performance degrades sharply.

Introducing N flow to control sending packets P through network links using maximum M capacity. The stream of

packets being arriving on three or four input line and needs same output link a queue will building.



Fg.2.2 Using "SLOW DOWN" process to MAX-capacity and control traffic on TCP network to send and stores packets.

This is insufficient memory to hold all packets will be lost. Adding more memory it help to point, but Nagle 1987 discovered that if routers have an infinite amount of memory.The process not better because the time packets are get front of queue they have already time out duplicate to forwarded to next router increasing the load all destination.Congestion control has do with sure the subnet is able to carry the offered traffic. The global issue involving behavior of all router store and forwarding processing with the routers.

I. Sender continually sending the data's faster through network.
II. Receiver is able to absorb it, when using the flow control.

When sending packets (data's) through network site should wait for some time to send "*SLOW DOWN*" the speed of sending packets. It prevent from network traffic or other trouble caused by various sources.

III. TCP NETWORK CONGESTION CONTROL

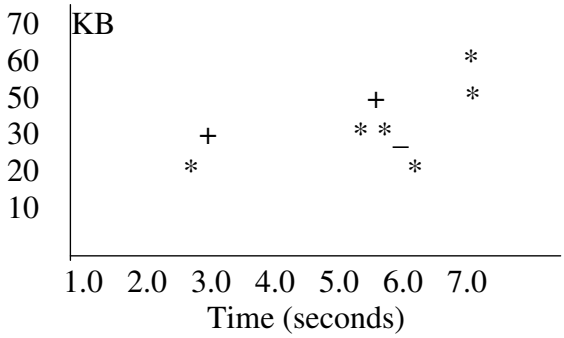
In networks congestion control step introduce for the TCP host sends the packet into the networks without any reservation and the host react to observe events called ESSENTIAL STRATEGY. The TCP assume FIFO queuing. Each source determiners how much capacity of space is available to given flow in networks.Using the 'pace' transmission of packets such that TCP is using "self-clocking".Additive increase and multiplicative decreases AIMD.Additive is a reaction to perceived available certain capacity.To introducing basic linear increases separate for each adding one packets for each routers send.In multiplicative decreases the assumption key that dropped packets and the resultant timeout are due to congestion at router or congestion.

[a].CHARACTERISTICS OF AIMD THROUGH TCP CONGESTION CONTROLE

Network TCP sends the packets through same IP packets through network routers Characteristics shown that AIMD is necessary condition for TCP congestion control to be statically stable.Because the mechanism including timeout causes retransmission, it important because that have clear timeout managing.

$$TIMEOUT\ SET = \frac{FUNCTION\ OF\ \ AVERAGE\ RTT}{STANDARD\ DEVIATION\ OF\ RTT.}$$

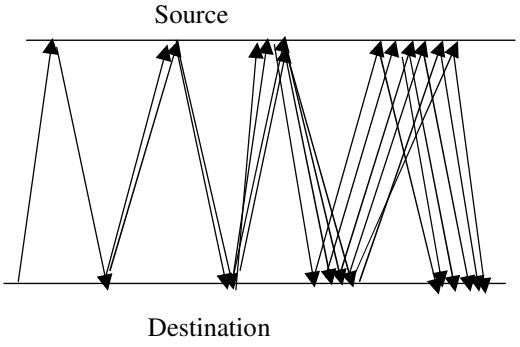
The TCP hosts have sample for round trip time once per RTT grained clocks.



Fg.3.1 Path of the TCP pattern using to send packets without traffic using timeout AIMD pattern.

[b].SLOW START IN TCP

The case of slow starting in TCP used to start without streaming packet connection.It control the more traffic over the TCP path connection. Acknowledgment of source and the destination is perfect to sends packets.Then increasing the transmission speed without any timeout

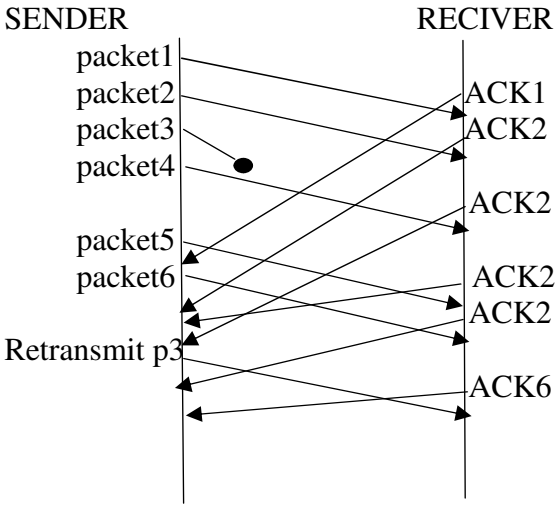


Fg.3.2.Slow start process in TCP and additive increasing acknowledgement in source and destination.

[c].FAST TRANSMISSION

When fast transmission occurred receipt of duplicate acknowledgment, the TCP sender retransmit the loss of packets in network links.A timeouts remained problem with

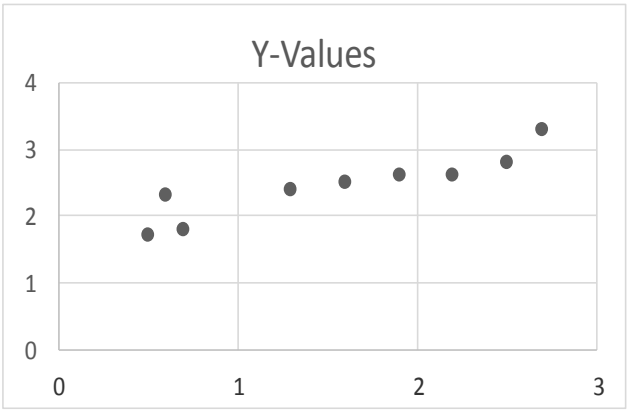
sending the packets for that added a TCP Tahoe.So the receiver response when every time packets arrives. It implies the sender View the duplicate ACKS. The fast retransmit avoid half of coarse gain timeout. Fast retransmit does not avoid all the timeout session due to the small window size at the source.



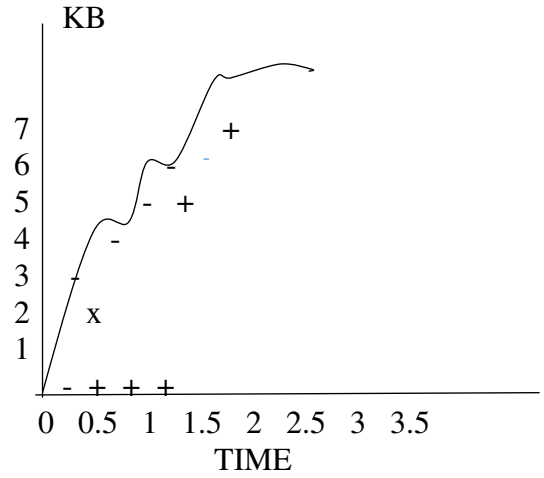
Fg.3.3.Fast Retransmit

IV. IMPLIMENTING AIMD IN TCP CONGESTION CONTROL

Congestion Control in Data Transmission Networks: Congestion Control in Data Transmission Networks details the modelling and control of data traffic in communication networks [7].When sending the packets through TCP want to avoid the re-sending unnecessary when timeout. Estimating retransmit timeout mechanism in necessary when TCP flow control send there is no method determining.



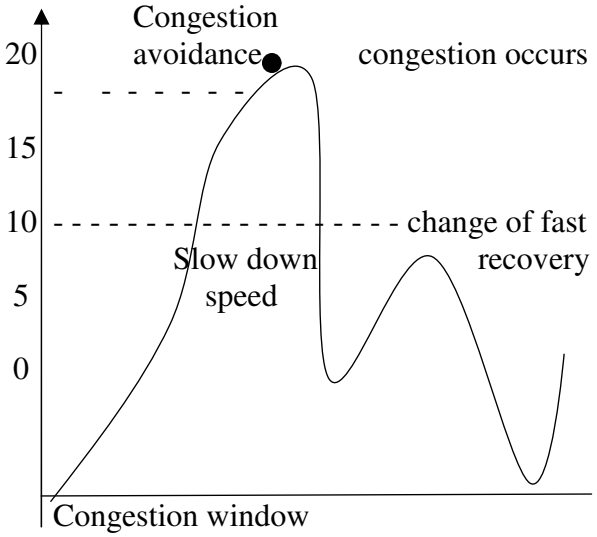
Fg.4.1.Single packet drop without using limited transmit.



Fg.4.2.The packets are refer to (-), Packet drops(x), Acknowledge of TCP packet (+).

V. CHANGES IN NETWORK

The main objective is changes in network, when TCP congestion control behavior has any affected in network to implementing the changes to end-to-end host and the routers.In the section implement the AIMD process to TCP congestion control.Then AQM using the behavior of congestion control on TCP.The network routers has mechanisms to scheduling congestion control dynamics.It is one of the FIFO typical scheduling of the current internet Active queue management has the pathological packet-dropping pattern.Particularly in simple case the long connections have fixed the packets size has an one way connections It is in [7].The objective of AQM is to control the rate of queuing delay while the same time preventing the queue size from causing unnecessary packet loss.



Fg.5.1. CONGESTION CONTROL

To avoid the traffic over TCP using slow down process include. To prevent congestion using slow-start through TCP network. For speed transmit using AIMDS .

VI. CONCLUSION

The summarized of this study was understand how to control the congestion control on TCP network. Using the FIFO system to delivered the packet loss. Implemented AIMD congestion control to prevent loss of packet from TCP networks traffic. Then the behavior of "slow-start" process using controlling of traffic over TCP.Then using fast transmission to sending acknowledgements over network.

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