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TCP VEGAS PERFORMANCE IN WIRELESS ADHOC NETWORKS

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ABSTRACT:

Ad-hoc social network is a mix of social network and ad-hoc network. Today most of mobile phones are provided with Bluetooth, Wi-Fi, and cellular radio and Communications between nodes in ad-hoc social networks based on the nodes' social features such as social graph, human mobility pattern, and similarity, centrality, community, and tie strength. However, with increasing growth of social networks, reliable and congestion-free communication becomes difficult due to its complexity and dynamic nature of user movement. The existing system control overhead and provide reliable transmission for popular packets in ad-hoc social networks by assigning bandwidth to user based on their popularity levels and it avoid packet loss by delaying acknowledgement thus increases buffer size. In order to make efficient use of bandwidth a newest version of Transmission Control Protocol named TCP Vegas is used to estimate the available bandwidth using bandwidth estimation scheme. This scheme improves transmission reliability by assigning bandwidth to users based on their popularity levels.

I. INTRODUCTION

A wireless ad-hoc network is a collection of nodes which are self-organizing and self-administering in nature. All nodes are connected by wireless links and are free to move randomly). In this networking paradigm, transmission unreliability could be caused by multiple social applications running on a single node. This leads to contentions among nodes and connection paths. In addition, congestions can be the result of multiple senders transmitting data to a single receiver and every sender waiting for a positive acknowledgment to move on.

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Therefore, we used TCP Vegas to solve this problem

II. EXISTING SYSYEM

Overhead Control with Reliable Transmission of Popular Packets in Ad-Hoc Social Networks (RTPS), which improves transmission reliability by assigning bandwidth to users based on their popularity levels extra bandwidth is assigned to the nodes with higher popularity and their acknowledgments are sent with higher priority.

Disadvantage of Existing System

The reliability of sender data packet transmissions is affected by two main aspects:

- When multiple senders are sending data on multi hop ad-hoc networks and only a single receiver is receiving data, some of these packets are dropped close to the receiver
- The acknowledgment packets might be lost when data and acknowledgment packets use the same path (the sender of the acknowledgment packets)
- It increases the buffer size by avoiding duplicate acknowledgement.

III. PROPOSED SYSTEM

TCP Vegas is a congestion avoidance algorithm that delays Packet to some extent than packet loss. It detects congestion at initial stage based on increasing Round (RTT) values of the packets. The algorithm depends only on accurate calculation of the Base RTT value. If Base RTT Value is too small then throughput of the connection of the network will be less than the available bandwidth while if the Base RTT value is too large then it will overrun the connection

TCP-VEGAS calculate the time difference for every packet sent and calculate round trip time on each acknowledgment received .if the difference between current and last packet time is large then it retransmits the packet by avoiding duplicate acknowledgement.

Vegas are a TCP implementation which is a modification of Reno. It builds on the fact that proactive measure to encounter congestion is much more efficient than

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reactive ones. It tried to get around the problem of coarse grain timeouts by suggesting an algorithm which checks for timeouts at a very efficient schedule. Also it overcomes the problem of requiring enough duplicate acknowledgements to detect a packet loss, and it also suggests a modified slow start algorithm which prevents it from congesting the network. It does not depend solely on packet loss as a sign of congestion. It detects congestion before the packet losses occur. However it still retains the other mechanism of Reno and Tahoe, and a packet loss can still be detected by the coarse grain timeout of the other mechanisms fail.

IV. SYSTEM ARCHITECTURE

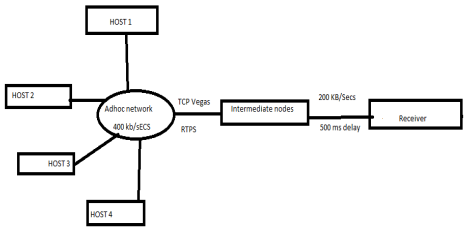

Fig: 1.1 System Architecture

(Congestion Avoidance Using TCP Vegas)

Fig describes the system architecture of the proposed method When multiple senders are sending data on multi hop ad-hoc networks and only a single receiver is receiving data, some of these packets are dropped close to the receiver The acknowledgment packets might be lost when data and acknowledgment packets use the same path (the sender of the acknowledgment packets so TCP Vegas is used to estimate the available bandwidth using bandwidth estimation scheme.This scheme improves transmission reliability by assigning bandwidth to users based on their popularity levels.

TCP Vegas is different from all the other implementation in its behavior. It determines congestion by decrease in sending rate as compared to the expected rate; it uses a variation of Wang and Crow crofts Tri-S scheme. Thus whenever the calculated rate is too far away from the expected rate it increases transmissions to make use of the available bandwidth, whenever the calculated rate comes too close to the expected value it decreases its transmission to prevent over

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V. PERFORMANCE ANALYSIS:

Throughput:

It measures the total rate of data sent over the network, including the rate of data sent from source to router and data sent from node to destination

Congestion control:

In stack data Structure every element has a priority associated with it an element with high priority is served before an element with low priority hence it reduce traffic congestion

Delay:

The delay of a network specifies how long it takes for a bit of data to travel across the network from one node or endpoint to another. It is typically measured in multiples or fractions of seconds.

Overhead:

Overhead is any combination of excess or indirect computation, time, memory, bandwidth or other resources that are required to attain a particular goal

OUTPUT

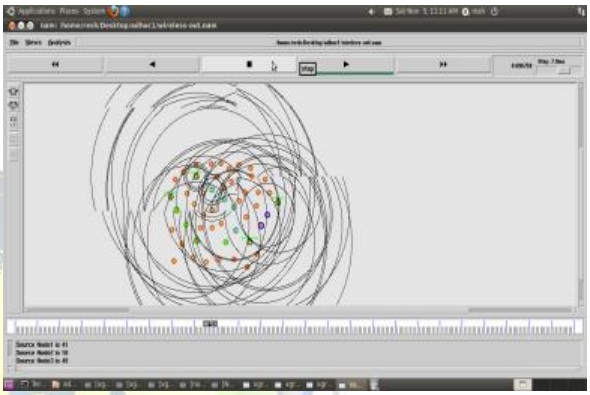

Fig 1.2 Selection of source node based on priority

Fig1.2 the source node is selected based on their priority. Bandwidth assigned to each node based on priority. and it involves priority assignment to every process and process with higher priorities are carried out first and whereas task with equal priorities are carried out on a first come first served or Round robin basis here based on priority 41 is the first source node, 18 is the second source node, 49 is the third source node and each node send HELLO

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messages to its neighbor node and are not forwarded to other nodes.

Packet dropping due to congestion

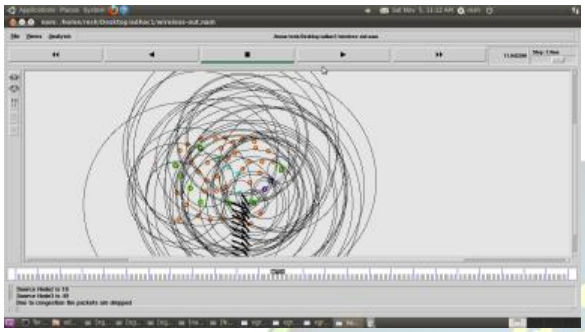

Fig: 1.3 Packet dropping due to Congestion

Fig 1.3 illustrates packet dropping due to congestion When multiple senders are sending data on multi hop ad-hoc networks and only a single receiver is receiving data, some of these packets are dropped close to the receiver. The acknowledgment packets might be lost when data and acknowledgment packets use the same path (the sender of the acknowledgment packets). Each node periodically forwards routing table to its neighbors to select route to reach destination. When the route request is reached to destination it selects the route as best to communication. And it maintains the route for source to destination communication.

Packet Transmission Based On Priority

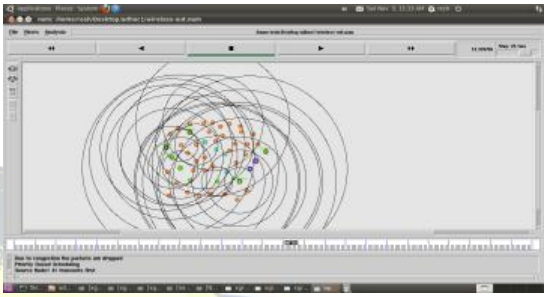

Fig 1.4 Packet transmission based on priority

Fig 1.4 illustrates data transmission based on priority based scheduling. TCP Vegas is used to estimate the available bandwidth using bandwidth estimation scheme. This scheme improves transmission reliability by assigning bandwidth to users based on their popularity levels. TCP-VEGAS calculate the time difference for every packet sent and calculate round trip time on each acknowledgment received .if the difference between current and last packet time is large then it retransmits the packet by avoiding dup ACK data are transmitted to the receiver based on their

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priorities to avoid congestion source node 41 transmit their data first then source node 39 transmit their data.

IV. CONCLUSION AND FUTURE WORK: -

TCP Vegas is a source algorithm that offers relatively rich performance in the Internet congestion control. In order to make efficient use of bandwidth a newest version of TCP named TCP Vegas is used to estimate the available bandwidth using bandwidth estimation scheme. This scheme improves transmission reliability by assigning bandwidth to users based nodes on their popularity levels But Vegas have some problems which have serious impacts on its performance. Rerouting is one of these problems. When route of a connection changes and round trip time increases, Vegas misinterprets it as the result of the network congestion and consequently decreases its own sending rate.

As another important problem, so proposed a novel algorithm, named Pegas, in which particle swarm optimization technique is used to dynamic estimation of TCP Vegas – Vegas estimates the queuing delay, and linearly increases or decreases the window so that a constant number of packets per flow are queued in the network. Vegas implements proportional fairness. Pegas solves the rerouting and unfairness problems and remarkably enhances Vegas performance in terms of dropped packets, bottleneck utilization and fairness

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