Special Signaling approach for Congestion Detection and Avoidance in Heterogeneous Networks

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Abstract: **There are various solutions are proposed for detecting and overcoming the congestion in the network. Due congestion most of the packets are lost, overall efficiency will be reduced and retransmission required for lost packets finally result is wastage of the bandwidth. In this paper introduced congestion detection through signally, here problems are detected not only after occurrence of the problem and also find out the congestion before occurrence. Using special signaling alert all nodes are go offline at certain period of time means until clear the congestion problem .for following two cases signal are generated. First case if the router buffer length is cross its limitation, second case if the routers are going to be congested.**

Keywords**: Congestion, signaling, router buffer, bandwidth**.

I. Introduction

In dynamic Networks don't have a fixed infrastructure; it is a collection of notes and transmission lines. In a network each node acts as a router, which helps forwarding the packets from source to destination. In OSI reference model congestion control is the responsibility of the transport layer. However recent research has found that the users" access speed has increase and thus affects the efficiency of the network. New techniques are required to improve the efficiency of network traffic. The current assumption the networking research effects on individual network flow quality of service. Including loss of the packet, variation of delay time and wastage of the bandwidth. One way to reduce the load on the router is to increase the Maximum Transmission Unit (MTU) of the network. The data packet length exceeds the MTU then applies fragmentation method and divided into equal length of packets and inject to the network. The major problem is to find the appropriate route path to respective destinations and a network or geographical areas with more overhead for add on responsibility. If any drop of data, warning bit used to create the traces for data and will complete the duplicity of data. This mechanism will avoid big overhead which is introduced due to complete duplicate copy of data with each vehicular node agent so to decrease the congestion. The main objective is control the congestion by monitoring the network, if any problem in the network passes the Information and solve the problem. This paper we introduce FLS Signal to detect the congestion and control the congestion. We are considering best-effort connectionless packet-switched networks where link capacity is typically fixed. Given that link bandwidth (and hence overall bit rate) is fixed, network operations which deal with bit rates may be useful. For example, if routers can feed back rate information to sources of traffic flows, then the routers can participate in the fair allocation of link capacity. Transport protocols which are rate-based can admit packets into the network uniformly spaced: this helps to prevent short-term congestion. Combined, these techniques can be used as a form of congestion control, by allocating rates to traffic flows which keep network operation at the knee-point of peak power

II. Related work

1. Congestion Detection: Set the minimum and maximum threshold value of queue length.
2. Signal will be generated, if router buffer cross the threshold value.
3. Signal will be generated if the network becomes a congested.

Normal Case:

If the queue status is < minimum threshold.
The incoming traffic is low and queue is in safe Zone.

Signal generated cases:

Case1: The queue status < Threshold value.
The incoming traffic is normal and queue is in congested zone.

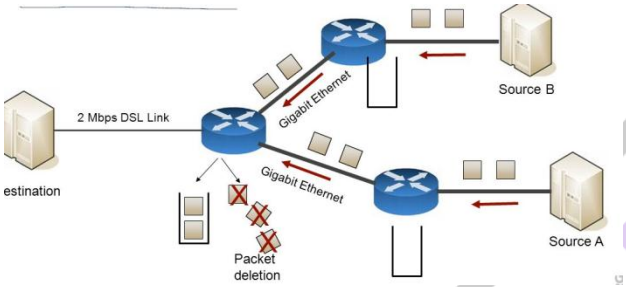
Case2: Inst_queue > maximum threshold.
The incoming traffic is heavy and queue is going to congested zone.

III. Signal Generation:

Network is a telecommunications network that allows computers to exchange data. Networked computing devices pass data to each other along data connections. Data is transferred in the form of packets. Before send the packet calculate distance between the neighbors based on this distance measure life time. Signal generation process is like CSMA/CD. Here also send the Carrier sense signal before send actual data, if channel is free transmission is done otherwise wait some random amount time. but in network layer if router congested instead of waiting check other

alternative router to send packets. A packet consists of two kinds of data: control information and user data. The control information provides data the network needs to deliver the user data, for example: source and destination network addresses, error detection codes, and sequencing information. Typically, control information is found in packet headers and trailers, with payload data in between. If the router buffer is before reached the threshold value and the network before going to congested these are the special reasons to get the signal from network.

Packet lost due to buffer full:



Congestion Estimation

Congestion in a network signifies that a node at any interval became congested and started to lose packets. Several metrics are available to monitor the congestion status at node level. For instance, it could be based on the average queue length and the percentage of packets discarded for lack of buffer space. Every second, a node checks the occupancy of its link layer queue using the dynamic congestion estimation technique so as to detect congestion well in advance. The dynamic congestion

(DC) estimation technique is a queue management algorithm that makes use of a direct measurement of the congestion status.

Signal Generation and Performance

Before transmission of any data need to check either the neighboring routers are healthy or not. To check the status of it in this paper introduced one Significance of signals, the signal generates two kinds of responses.

Signal is generated for the following cases:

Case I:

Router cross its threshold value Every signal have some lifetime, calculation of the life time is depends on distance of its neighbor.

Case II:

If the network going to congested dynamically signal will be generated.

show the information about present list of the packets in the router buffer, if buffer is become overflow then sender give rating for the buffered packets, that message forward to the congested router with help of urgent pointer.

IV. Conclusion

We have proposed a signaling approach to control the congestion. Network characteristics like congestion and route failure need to be detected and remedied with a reliable mechanism. To solve the congestion problem, we have proposed a dynamic congestion estimation technique that could analyze the status of its neighbors. By having early detection of the buffer, we can initiate the process of the feedback to control the congestion. This scheme is better as compare to the waiting for congestion to happen and then to take corrective action.. This will aid the conveyance of the signal to reach up to the neighboring nodes.

References

[1] Braden, B., Clark, D., Crow croft, J., Davie, B., Eering, S., Estrin, D., Floyd, S., Jacobson, V.,Minshall, G., Partridge, C., Peterson, L., Ramakrishna, K., Shenker, S., Wroclaw ski, J., Zhang, L.,1998. Recommendations on queue management and congestion avoidance in the internet. RFC 2309, IETF.

[2] Senthilkumaran, T., Sankaranarayanan, V., 2010. Early detection congestion and control routing in MANET, In: Proceedings of the Seventh IEEE and IFIP International Conference on Wireless and Optical Communications Networks (WOCN 2010), Srilanka, pp. 1–5.

[3] Senthilkumaran, T., Sankaranarayanan, V., 2011b. Early congestion detection and optimal control routing in MANET. European Journal of Scientific Research 63 (1), 15–31.

[4] Research on Traffic Monitoring Network and its Traffic Flow Forecast and Congestion Control Model Based on Wireless Sensor Networks. Xiao Laisheng, Peng Xiaohong College of Information Technology Guangdong Ocean University Zhanjiang, P.R. China Wang Zhengxia College of Law Guangdong Ocean University Zhanjiang, P.R. China 2009 International Conference.

[5] Research on Traffic Monitoring Network and its Traffic Flow Forecast and Congestion Control Model Based on Wireless Sensor Networks. Xiao Laisheng, Peng Xiaohong College of Information Technology Guangdong Ocean University Zhanjiang, P.R. China Wang Zhengxia College of Law Guangdong Ocean University Zhanjiang, P.R. China 2009 International Conference.

[6] Chieh-Yih Wan, Shane B. Eisenman and Andrew T. Cambell, "CODA: Congestion Detection and Avoidance in Sensor", in Proc. of ACM SenSys'03.

[7] Computer network, S.Tanenbaum, fourth edition, Pearson education.

[8] D.Comer, Internetworking with TCP/IP: Principles, Protocols, and Architecture, Prentice Hall, 2006.

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