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CONTROLLING PACKET LOSS AT NETWORK EDGE USING TOKENS

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ABSTRACT

At present the Internet accommodates simultaneous data transmission such as audio, video, and data traffic. It is essential to provide data without the packet loss which is depends upon congestion control. Numbers of protocols have been introduced to control congestion. In data communication network congestion plays a essential role. The performance of the network [13] will be improved by controlling the congestion .Different congestion control algorithms are used to control packet loss. When the data packets are transmitted in network from source to destination without intermediate station then packet loss occur which is responsible for re transmission of data packets. It is very difficult, takes more time to retransmit and also increases load on network.

A newly protocol STLCC (Stable Token Limited Congestion Control) is introduced to control packet loss. STLCC combines both TLCC and XCP algorithms. TLCC is iterative algorithm used to estimate the congestion level of its output, output rate of the sender is controlled by XCP algorithm. So there is no packet loss occurred at congested link. Hence STLCC can measure the congestion level analytically, allocate network resources accordingly, and keep the congestion control system stable.

Keywords: congestion control, congestion, token, TLCC, XCP, STLCC

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INTRODUCTION

Presently IP network services provide for the simultaneous digital transmission of voice, video and data traffic. It is possible only when the Internet guarantees the packet loss, which depends on congestion control mechanism. Numbers of protocols were implemented to control the network congestion. These require congestion control algorithms and protocols to solve the packet loss parameter can be kept under control. It should prevent congestion, provide fairness to competing flows and optimize transport performance indexes like throughput, loss and delay.

CHALLENGES

The sender sends the packets without intermediate station between sender and receiver. The data packets may loss when congestion occurs and time is wasted. It is difficult to Retransmission of data packets because which takes more time and increases load on Network. The aim is to control packet loss in the network.

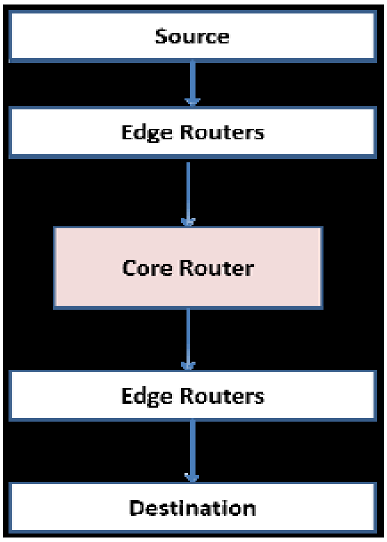
PROPOSED WORK

This paper proposes a new protocol called STLCC (Stable Token Limited Congestion Control) which is best solution for congestion control. It integrates both the algorithms of TLCC and XCP together. In this method the core and the edge routers will write a measure of the quality of service by writing a digital number in the Option Field of the datagram of the packet which is called a token. The token read by the path routers and interpreted as its value will give a measure of the congestion at edge routers. The edge router at the source reduces the congestion on the path based on the token number. The output rate of the sender is controlled by XCP algorithm. XCP allows the routers to continuously adjust the sending speed of any participating hosts in the computer network. These adjustments are done by changing the contents of the packets (XCP header) which are transferred between the sender and receiver. The acknowledgements from routers are used by the sender to adjust the transfer speed to fit the routers current load. So, there is no packet loss at the congested link. The STLCC evaluate the congestion level analytically and allocate the resources according to the access link which further maintain the congestion control system stable.

IMPLEMENTATION

This logic to control congestion can be implemented by assuming transmission of data between source and destination. Consider a network with source, destination and routers. When source sends data, which can be transmitted in the form of packets over the network. A packet is a small piece of data sent over a network and having an option field of the datagram. the data transmitted among the routers, the router either may be Edge or Core router.

An Edge router is a device which routes data packets between one or more local area networks (LANs). A core router is a router that forwards packets to hosts within a network. With help of edge router the set of packets transmitted by the sender are forwarded to remaining routers in the network. The edge router evaluates quality of service by writing this as value in the Option Field of the datagram of the packet and forwards it to core routers. This value is named as token.



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System Architecture of Controlling Packet loss at the network edge using token

The path routers read the token value in the network and interpreted as its value. The edge router at the source minimizes the congestion on the path based on the token number. The outgoing packet rate of the sender is controlled by using the XCP algorithm .This allows the routers to continuously adjust the sending speed of any participating hosts in the network. These adjustments are done by changing the contents of the packets (XCP header) which are transferred between the sender and receiver. The feedbacks from routers are used to adjust the transfer speed to fit the routers current load. By using this method the congestion in the network is stable.

RESULTS

These results can be shown by creating classes to nodes, edge router and core router. Initially source node selects the file and transmits it in the form packets to another node through routers. Initially packets are forwarded to the edge router which is connected to the source. When first packet is receiving then source data rate overwrites with its current data rate by the edge router in the option field of the datagram and gives the feedback to the source and forwards packet to other routers. Whenever limited number of resource packets are transmitted with then it is kept in waiting state which gives the result as negative feedback to the source. After receiving negative feedback from the edge router, source must adjust its current data rate. So, there is no packet loss . This type of transmission will be done at each and every router and finally packets will be received by destination without any loss.

CONCLUSION

The simple version of STLCC protocol is proposed, which can be deployed on the Internet. The STLCC evaluate congestion level analytically and allocate network resources according to the access link which leads to stable congestion control system. The network with stable congestion control leads to the good performance with limited number of resources having fast transmission of data with accuracy and no delay.

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