

NETWORK TRAFFIC CONGESTION CONTROL USING JAVA

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Abstract - In order to make internet robust and scalable we need the internet to be secure, fast and congestion free. Although there are many congestion control algorithms available, but they are not able to prevent the congestion, bottleneck sit and therefore overcome such problems, I propose a mechanism that will make the system congestion free. This is called Congestion Free Router(CFR). It includes feedback exchange mechanism between different routers at network borders, and this way detects and restricts the unresponsive network traffic flow, even before these entering the network. This relieves congestion within a network. The Internet can be made scalable by end-to-end scalability arrangements. This software fragments the packets into small size and circulates these packets as responsive and congestion free packets. This project also uses a load balancer which also helps in handling congestion free network traffic.

Keywords – Traffic, Congestion, Fragmentation, Bottleneck, Feedback Exchange, Load Balancer

I. INTRODUCTION

Network Traffic congestion system is a system which monitors problems associated with network traffic. It helps in transferring packets or important data from sender to the receiver. It uses Java language as its source. It is similar to the client-server architecture.

Network Traffic represents

- Density of data present in the network.
- Communication devices access resources and also get requests to carry out some work.
- So a lot of request, response and control data.
- Load on the network.
- Other devices may get delayed in their requirements.

Traffic Management

Controlling network traffic requires limiting bandwidth to certain applications, guarantying minimum bandwidth to others, and marking traffic with high or low priorities. This exercise is called traffic management.

Load Balancer

This is used to identify the running servers, makes a priority queue of requests and sends requests of

higher priority to one of the servers having lesser load. However, if a user session has abruptly expired, then the user is again assigned the same server.

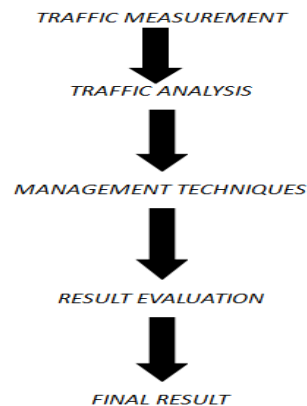


Fig. 1.

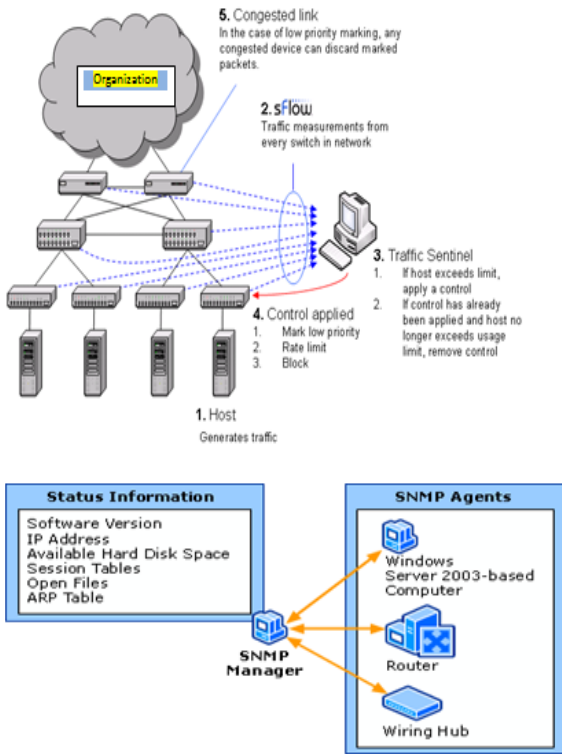


Fig. 2.

II. FEATURES OF NETWORK TRAFFIC CONTROL AND MONITORING SYSTEM

Internet surfing and ftp downloads can be monitored for each node in the LAN. This will in turn control network traffic across the LAN very effectively. All the possible network bottlenecks can be detected at an early stage. Applications using a lot of bandwidth traffic can be switched off, when other resources are needed for other applications. The bandwidth available for each PC can be limited by this system. This system will tell about the sufficiency or insufficiency of the current bandwidth available. By this control and monitoring, the requirement of purchasing additional bandwidth can also be known. This software will also be crucial for the decision making process regarding the requirements for future expansions of the network. Following technologies are used to develop Network Traffic Control and monitoring software –

A. Simple Network Management Protocol (SNMP) – It is a protocol which collects information from servers, printers, hubs, switches and routers and configures such network devices on an Internet Protocol(IP) network.

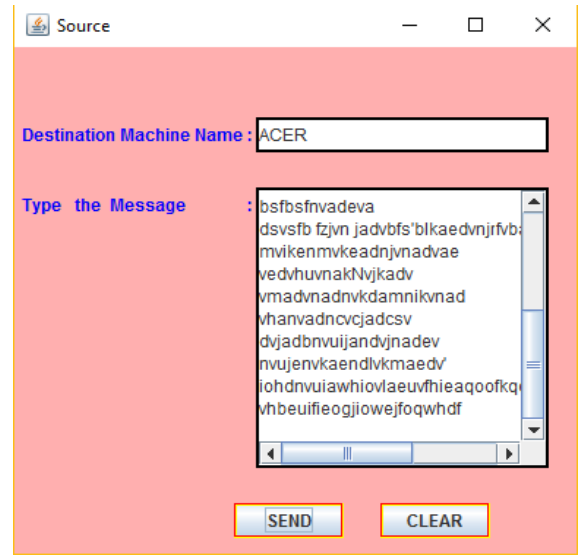


Fig. 3.

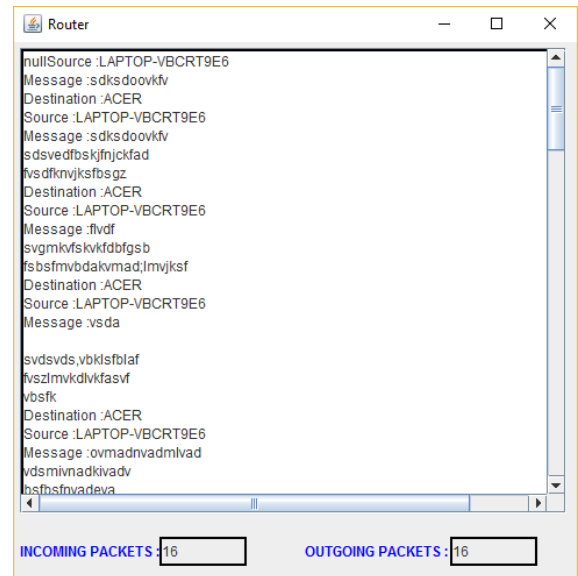


Fig. 4.

B. Packet sniffing – This helps in detailed traffic classification of the traffic.

C. Net Flow – It is used to measure network traffic. These methods also enable network controller to watch network traffic within a LAN broken down by IP address or protocol, and to generate toplists.

III. FUTURE PROSPECTS

In the age of globalization, each person is required to be connected to the network. Even in the organizations, most of the work is done on computers through internet.

Due to heavy data exchanges within the system, the organization needs to tackle the problems of data loss, latency, data congestion and deadlock situations. Therefore, this project will be really beneficial for all the organizations in future.

Load balancing feature will handle all the requests of the server in the network.

IV. CONCLUSION

In today's world every organization has a number of computers interconnected by LAN. Huge amounts of data are exchanged within the system. Similarly lot of internet data is also exchanged through this system. This gives rise to a bottleneck situation. This problem can be resolved by using network traffic control and monitoring system. This will help in reducing data loss, latency and congestion. If

one of the server gets overloaded with user requests, then incoming requests can be sent to other servers which are comparatively less busy. In this way, the network congestion problem is solved and user's request gets a quicker response than normal.

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