



A Survey on Random Early Detection for Congestion Control in Network Trafficking

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Abstract: Network trafficking is the major research area nowadays since huge amount of data is being used in various forms. A major problem which is widely considered in network trafficking is congestion and apart from the congestion another problem is that the data is accessed without proper authorization. This paper describes the congestion control algorithm, RED which improves the latency by controlling the congestion in network trafficking. The description of the components in network trafficking is mentioned with its own advantages and disadvantages.

Keywords: Network trafficking, congestion control, latency, network shaping, integrated services, differentiated services, Random Early Detection.

I. INTRODUCTION

Network or data traffic is the amount of data which moves across a network at a given point of time [4-8]. Network data in computer networks is mostly hiding the data in the form of network packets, which provide the load in the network. The four main components present in network security are.

1. Network traffic control manages, controls and reduces the network traffic
2. Network traffic measurement measures the amount and type of traffic of any network
3. Network traffic simulation is to simulate and to calculate the efficiency of the network
4. Traffic generation model may be analyzed statistically but may not be predicted

Proper analysis of network traffic provides taking physical and software preventative measures to protect the underlying networking infrastructure from unauthorized access, modification, malfunction destruction, misuse or improper disclosure, thereby creating a secure platform for computers, the unusual amount of traffic in a network is a possible sign of an attack. Network traffic reports provide valuable insights into preventing such attacks.

Traffic volume is a measure of the total work done by a resource which is fixed, transportable structure network provided service to users or the network operating administration normally over 24 hours and is measured in units of erlang-hours. It is defined as the product of the average which is a measure of average occupancy of a resource during the specified period of time and the time period of the study.

Traffic volume = Traffic intensity \times time

A traffic volume of one erlang-hour can be caused by two circuits being occupied continuously for half an hour or by a circuit being half occupied (0.5 erlang) for a period of two hours. Telecommunication operators are vitally interested in traffic volume, as it directly dictates their revenue.

II. LITERATURE SURVEY

A. Traffic shaping

Traffic shaping is the retiming (delaying) of formatted unit of data into suitably sized blocks until they meet specified bandwidth or burstiness limits [1]. It is often confused with traffic policing, the distinct but related practice of packet dropping and packet marking. The most common type of traffic shaping is application-based traffic shaping. In application-based traffic shaping, fingerprinting tools are first used to identify applications of interest, which are then subject to shaping policies. Some controversial cases of application-based traffic shaping include slowing of internet service by service providers, end to end distribution of data sharing. Many application protocols use encryption to circumvent application-based traffic shaping. Second type of traffic shaping is route-based traffic shaping. Route-based traffic shaping is conducted based on previous-hop or next-hop information.

Traffic shaping is often used in combination with different kind of services and algorithms such as

1. Differentiated services that specify scalable and simple mechanism for managing and classifying network traffic and providing overall performance.
2. Integrated services which specifies the components to guarantee the overall performance
3. Weighted round robin scheduling
4. Random Early detection Queuing and
5. VLAN tagging

B. Differentiated vs Integrated services

Singh and kaur discussed about the congestion that is caused by the network traffic and explained the two different architectures which implements the Quality of Service. The Integrated Service Architecture has undergone Scalability problem and hence moved to Differentiated service Architecture but that suffers from low latency [2].

C. Random Early Detection

As proposed by Floyd, Random Early Detection is a disciplined technique which is suitable for congestion control [3]. Without RED, in data networking, affects in packet loss, delaying and blocking of data and also reducing the performance of the service or data. The packets which have been discarded and further if it is retransmitted, causes packet loss and it can even increase the congestion. This can be reduced by using the threshold values i.e., the average value is compared with the minimum and maximum threshold values by using tail drop algorithm then we can drop the packets with high probability

III. CONCLUSION

This paper describes about the congestion control which is the main criteria in network trafficking. The components of network trafficking are explained. The advantages and disadvantages of the Red are also discussed. The taildrop algorithm that is suitable to control the congestion which is found in RED is also explained.

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