Abstract

Effectively and fairly allocating resources to the competing users in a network is a major issue to meet the demand for higher performance nowadays. How to provide better congestion control for network emerges as a major issue. The problem of congestion control is reduced with the help of active queue management techniques. The main objective of this research is to simulate and analyze the effect of queuing algorithms such as DropTail, Fair Queuing (FQ), Stochastic Fair Queuing (SFQ), Deficit Round Robin (DRR) and Random Early Detection (RED) using ns-2 as a simulation environment. It is an approach in developing a comparison on congestion avoidance algorithms for router-based communication and conclude that Stochastic fair queuing give better performance among all and provides an
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effective way to insulate users from ill behaved sources and improve the drawback of the queuing algorithm. Stochastic Fair Queueing algorithm can give fair allocation of bandwidth to each source nodes and packet loss can be minimized and dropped packets can be retransmitted and network congestions can be managed in efficient way. The results also indicate that UDP type attack traffic is more powerful as compared to TCP type attack. The performance metrics of the comparison are average delay and packet drop and throughput. The algorithms are tested in terms of delay, throughput fairness, utilization and packet loss rate by applying various number of flows under TCP, and TCP/UDP traffic.

References

- Distributed Denial of Service Prevention Techniques B. B. Gupta, Student Member, IEEE, R. C. Joshi, and Manoj Misra, Member, IEEE
- A Taxonomy of DDoS Attacks and DDoS Defense Mechanism Jelena Mirkovic, Janice Martin and Peter Reiher Computer Science Department University of California, Los Angeles Technical report #020018
- Detecting Distributed Denial of Service Attacks: Methods, Tools and Future Directions Monowar H. Bhuyan1, H. J. Kashyap1, D. K. Bhattacharyya1 and J. K. Kalita2
- Denial of Service Attacks Qijun Gu, PhD. Assistant Professor Department of Computer Science Texas State University – San Marcos San Marcos, TX, 78666 Peng Liu, PhD. Associate Professor School of Information Sciences and Technology Pennsylvania State University University Park
- Stochastic Fairness Queueing; Paul E. McKenney Information and Telecommunications Sciences and Technology SRI International Menlo Park
- Queuing Algorithms Performance against Buffer Size and Attack Intensities Santosh Kumar, Abhinav Bhandari, A. L. Sangal and Krishan Kumar Saluja Computer Science and Engineering, Dr. B. R. Ambedkar NIT, Jalandhar, India
- Jain, R., &quot;A Delay based approach for congestion avoidance in interconnected heterogeneous computer networks&quot;, Computer communication review, V. 19 N. 5, october 1989, pp. 56-71.
- The Effects of Active Queue Management and Explicit Congestion Notification on Web Performance Long Le Jay Aikat Kevin Jeffay F. Donelson Smith Department of Computer Science University of North Carolina at Chapel Hill http://www.cs. unc. edu/Research/dirt
- Implementation of Deficit Round Robin Scheduling Algorithm Amir Hosain Jodar Communication Networks Laboratory http://www. ens. sfu. ca/research/cnl School of Engineering Science Simon Fraser University

Index Terms

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