An Algorithm for Preventing Denial of Service Attacks on Server Computers Using a Low Bandwidth in a Local Area Network

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In the present cyber world, Denial of Service (DoS) attack is a major threat for server computers. When the bandwidth of servers gets low, the damage that can be made by DoS attacks is very high. Even though there are enormous solutions to prevent DoS attacks, since the cost is high, most organisations cannot afford them and other cheapest solutions have a high computational cost, which affects the performance of the servers. This paper introduces an algorithm to prevent DoS attacks on server computers (which use a low bandwidth) in a local area network (LAN) without affecting the overall performance of the server and its legal clients. The algorithm is implemented to take counts of the requests and identify the MAC address of those request sources. Afterwards, the algorithm checks whether the same request arrives from the same MAC address repeatedly. If the result of that is true, then the algorithm attempts to block the request from that MAC address. The developed algorithm was tested in a server which uses a cent OS 7 server operating system and proved the algorithm can prevent one DoS attack at a time. It is cost effective to use and does not affect server performance and its clients unlike other methods because it does not use any kind of high-cost data storing mechanisms. This paper describes the algorithm development in detail and proves its effectiveness using an experiment.

Keywords: *bandwidth, denial of service, local area network, MAC address, packets, request, server*