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Energetic Packet Erosion in Hybrid IP Sprinkling Posterior Contrivance

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ABSTRACT:

Because the Internet has been widely applied in various fields, more and more network security issues emerge and catch people's attention. However, adversaries often hide themselves by spoofing their own IP addresses and then launch attacks. Researchers have proposed a lot of trace back schemes to trace the source of these attacks. Some use only one packet in their packet logging schemes to achieve IP tracking. Others combine packet marking with packet logging and therefore create hybrid IP trace back schemes demanding less storage but requiring a longer search. In this paper, we propose a new hybrid IP trace back scheme with efficient packet logging aiming to have a fixed storage requirement for each router (under 320 KB, according to CAIDA's skitter data set) in packet logging without the need to refresh the logged tracking information and to achieve zero false positive and false negative rates in attack-path reconstruction. In addition, we use a packet's marking field to censor attack traffic on its upstream routers. Lastly, we simulate and analyze our scheme, in comparison with other related research, in the following aspects: storage requirement, computation, and accuracy.

Key Words:

RIHT, Hybrid Ip Trace back Scheme.

I.INTRODUCTION:

With the rapid growth of the Internet, various internet applications are developed for different kinds of users. Due to the decreasing cost of Internet access and its increasing availability from a plethora of devices and applications, the impact of attacks becomes more significant.

To disrupt the service of a server, the sophisticated attackers may launch a distributed denial of service (DDoS) attack. Based on the number of packets to deny the service of a server, we can categorize DDoS attacks into flooding-based attacks and software exploit attacks [10]. The major signature of flooding-based attacks is a huge amount of forged source packets to exhaust a victim's limited resources. Another type of DoS attack, software exploit attacks, attacks a host using the host's vulnerabilities with few packets (e.g., Teardrop attack and LAND attack). Since most edge routers do not check the origin's address of a packet, core routers have difficulties in recognizing the source of packets.

Most of current single packet traceback schemes tend to log packets' information on routers. Most current tracing schemes that are designed for software exploits can be categorized into three groups: single packet, packet logging and hybrid IP traceback . The basic idea of packet logging is to log a packet's information on routers. The methods used in the existing systems include Huffman Code, Modulo/ Reverse modulo Technique (MRT) and MOdulo/REverse modulo (MORE). These methods use interface numbers of routers, instead of partial IP or link information, to mark a packet's route information. Each of these methods marks routers' interface numbers on a packet's IP header along a route.

However, a packet's IP header has rather limited space for marking and therefore cannot always afford to record the full route information. So, they integrate packet logging into their marking schemes by allowing a packet's marking field temporarily logged on routers. From this, it is found that these tracing methods still require high storage on logged routers. Apart from this, also found that, exhaustive searching is quite inefficient in path reconstruction.

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Adversaries often hide themselves by spoofing their own IP addresses and then launch attacks. There is a lot of trace back schemes to trace the source of these attacks. Some use only one packet in their packet logging schemes to achieve IP tracking. Others combine packet marking with packet logging and therefore create hybrid IP trace back schemes demanding less storage but requiring a longer search.

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II. RIHT:

In this paper, we propose a new hybrid IP trace back scheme with efficient packet logging aiming to have a fixed storage requirement for each router in packet logging without the need to refresh the logged tracking information. In addition, we use a packet's marking field to censor attack traffic on its upstream routers. Like MRT and MORE, RIHT marks interface numbers of routers on packets so as to trace the path of packets. Since the marking field on each packet is limited, our packet-marking scheme may need to log the marking field into a hash table and store the table index on the packet. We repeat this marking/logging process until the packet reaches its destination. After that, we can reverse such process to trace back to the origin of attack packets.

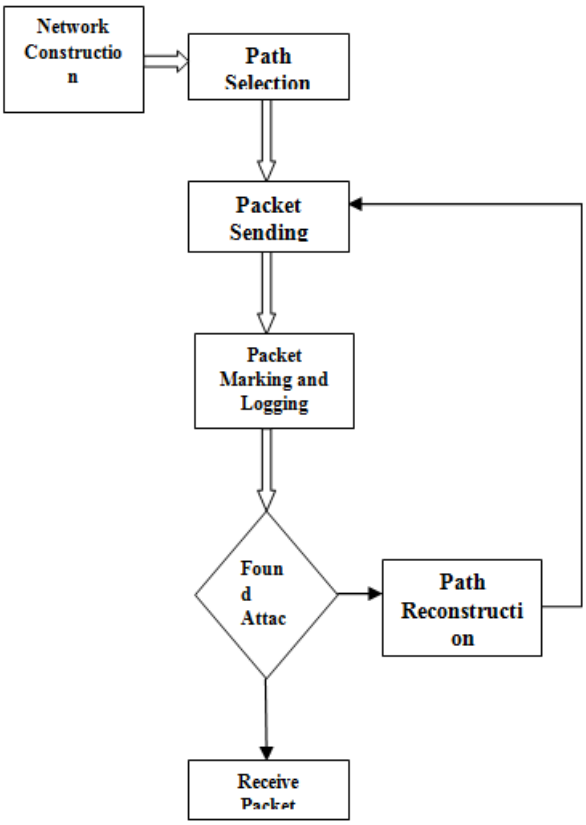
Main Advantages:

- Efficient Packet Marking
- Requires Fixed Storage Space
- No need to refresh often

A.NETWORK TOPOLOGY CONSTRUCTION:

A Network Topology may consist of the no.of routers that are connected with local area networks. Thus, a router can either receive data from the nearer router or from the local area network.

A border router receives packets from its local network. A core router receives packets from other routers. The no.of routers



Connected to a single router is called as the degree of a router. This is calculated and stored in a table. The Upstream interfaces of each router also have to be found and stored in the interface table.

B.PATH SELECTION:

The path is said to be the way in which the selected packet or file has to be sent from the source to the destination. The Upstream interfaces of each router have to be found and it is stored in the interface table. With the help of that interface table, the desired path between the selected source and destination can be defined.

C.PACKET SENDING:

One of the Packet or file is to be selected for the transformation process. The packet is sent along the defined path from the source LAN to destination LAN. The destination LAN receives the packet and checks whether that it has been sent along the defined path or not.

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D.PACKET MARKING AND LOGGING:

Packet Marking is the phase, where the efficient Packet Marking algorithm is applied at each router along the defined path. It calculates the Pmark value and stores in the hash table. If the Pmark is not overflow than the capacity of the router, then it is sent to the next router. Otherwise it refers the hash table and again applies the algorithm.

E.PATH RECONSTRUCTION:

Once the Packet has reached the destination after applying the Algorithm, there it checks whether it has sent from the correct upstream interfaces. If any of the attack is found, it request for the Path Reconstruction. Path Reconstruction is the Process of finding the new path for the same source and the destination in which no attack can be made.

III. APPLICATION:

This application was mainly used in an networks that would be displayed in an very updated information where all the data would be updated in an networks and will get and upgraded information.

IV. CONCLUSION:

In this paper, we propose a new hybrid IP traceback scheme (RIHT) for efficient packet logging aiming to have a fixed storage requirement in packet logging without the need to refresh the logged tracking information. Also, the proposed scheme has zero false positive and false negative rates in an attack-path reconstruction. Apart from these properties, our scheme can also deploy a marking field as a packet identity to filter malicious traffic and secure against DoS/DDoS attacks. Consequently, with high accuracy, a low storage requirement, and fast computation, RIHT can serve as an efficient and secure scheme for hybrid IP traceback.

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