An Investigation of $2^n$ Direction Geographical Traceback using Direction Ratio Sampling Algorithm (DRSA) & IP Traceback Strategies

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Abstract

DoS / DDoS(Distributed Denial of Service) attacks deny regular, internet services accessed by legitimate users, either by blocking the services completely, or by disturbing it completely, so as to cause customer baulking. Several traceback schemes are available to mitigate these attacks. The simulation approach also can be used to test the performing effects of different marking schemes in large-scale DDoS attacks. Based on the simulation and evaluation results, more efficient and effective algorithms, techniques and procedures to combat these attacks may be developed. DGT8, directional geographical traceback scheme, with 8 directions is one of them. Having a limited set of 8 directions, DGT8 may not work for routers with more than 8 interfaces. In this paper, we propose M-DGT i.e DGT 16, a 16 directional geographical traceback scheme having all the advantages of DGT. The 16 directions, though not having exactly equal interface, have nearly equal measures, and are identified using a novel scheme of Segment Direction Ratios (SDR). The SDR concept and the associated marking scheme allow the victim to defend against DDoS attacks independent of its
ISP and also the generalization to DGT2n, having 2n directions (n>4).

Reference


Index Terms

Computer Science       Security

Key words

DoS

DDoS
DGT (Directed Geographical traceback)

IP traceback

SDR (Segment Direction Ratio)