

Boldizsár BENCSÁTH
MSc in Technical Informatics

New Approaches to Mitigate Network Denial-of-Service Problems

Denial-of-Service issues take a distinguished place among the open Internet problems. The problem of DoS has close relation to many other current Internet attacks, e.g. spamming. During my research I tried to find a comprehensive solution for the problem.

The results of my research can be divided into the following three claims:

In the first claim I tried to deal with the general form of DoS problems, where I analyzed and enhanced the protection of application-level protocols against general DoS problems. My results show that the outcome of this approach is not sufficient to handle every type of the problem and it has certain limitations.

In the second claim I concentrated on the problem of Denial-of-Service attacks against Internet STMP (e-mail) servers. Not considering the very service-specific solutions, there are only a few available methods against this threat. I proposed a method to protect against DoS attacks by observing and analyzing the traffic of a particular system.

No matter how excellent a general solutions we manage to come up with, specific solutions against DoS problems utilizing special properties of the protected system or service can be more useful than general protection. The third claim contains the analysis of Directory Harvest Attacks (DHA) (a type of attack to collect e-mail addresses). I also define the optimal attack, and I also propose countermeasure which is built as a prototype and also analyzed by simulations.