TURNING LEGAL WEBSITE INTO

DISTRIBUTED DENIAL OF SERVICE TOOLS

By

Kalpin Erlangga Silaen

22014209

MASTER'S DEGREE

in

MASTER OF INFORMATION TECHNOLOGY

FACULTY OF ENGINEERING AND INFORMATION TECHNOLOGY

SWISS GERMAN UNIVERSITY
EduTown BSD City
Tangerang 15339
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Revision after the Thesis Defense on February 01, 2016

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in this thesis.

Kalpin Erlangga Silaen

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Revision after the Thesis Defense on February 01, 2016

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ABSTRACT

Turning Legal Websites Into Distributed Denial of Service Tools

By
Kalpin Erlangga Silaen

SWISS GERMAN UNIVERSITY

Benfano Soewito, Bsc, Msc, PhD, CEH., Advisor
Charles Lim, MSc., ECSA, ECSP, ECIH, CEH, CEI, Co-Advisor

Fast-growing numbers of web applications and users in the Internet not only provide positive benefits such as bigger marketplace for trading and more robust information exchange, but also negative impacts such as the number of DDoS attacks having increased in terms of size and frequency. An attacker can use a legitimate website in the Internet to become their tool to launch attacks to other targeted websites by sending many requests to retrieve content from the victim through this legitimate website. In this thesis, we present the vulnerabilities of legitimate websites such as Social Media, Online Web Translator, and CMS Wordpress that can be used by an attacker to launch DDoS attacks toward other sites using HTTP-GET Flood type attack. Our threat analysis shows that applications from the legitimate websites above have a vulnerability which allows us to utilize them as our attack vector. Two different attack simulations, i.e. real world attack simulation and lab experimental simulation, were performed. The results showed that Facebook can attack the victim with a Traffic Bandwidth of almost 5 Mbps with a single request; that Google Translator can attack the victim with an average Traffic Bandwidth of 377 Kbps; and that Bing Translator and CMS Wordpress can attack the victim with average Traffic Bandwidth of around 68 Kbps with a single request. Attacks from those applications are done using HTTP-GET type attacks toward the victim. Our proposed countermeasures for those legitimate websites, as applied in our lab experiments, demonstrated that our countermeasure could successfully prevent HTTP-GET attacks at the source.

Keywords: Distributed Denial of Service, Web Application, HTTP-GET Attack, Legal Website

DEDICATION

I would like to dedicate this research project to my beloved wife, Nova Kristiana Sinaga and my lovely kids Joshua Hamonangan Silaen and Godgift De Venita Silaen.

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