# **Application Firewall System**

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#### Abstract

The main idea behind implementing such a project is to develop a firewall system which is a network security system that doesn't permit the user to make any modifications on the application over the network. A firewall typically establishes a barrier between a trusted, secure internal network and another outside network, thereby protecting the system from malicious attacks that could cause damage or loss of data confidentiality. It will thereby prevent the system from attackers using several mechanisms to get access to the data stored in the system.

Keywords: firewall, network security, malicious attacks, data confidentiality.

#### I. INTRODUCTION

The developed firewall will detect and identify the attacks and block the attacks from affecting the application over the network and will make our system protected from such external threats.

Our system detects the following types of attacks:

- URL Attack
- Union SQL Injection Attack
- Santy worm introduction Attack
- XSS-Redirection Attack

It maintains a log of the attack in the log text installed over the system and determines exactly which type of attack has occurred.

#### II. SOFTWARE ARCHITECTURE THE SYSTEM

#### a. System architecture diagram

Attacks are simple in nature e.g. an attacker passes string input to an application in hopes manipulating the SQL statement to his or her advantage. The complexity of the attack involves exploiting a SQL statement that may be unknown to the attacker.

Open source applications and commercial applications delivered with source code are more vulnerable since an attacker can find potentially vulnerable statements prior to an attack.

The System architecture of our project is such that it includes a firewall in between thereby not allowing the intruder to not make any intended changes and thus prevent the system from being exploited.

Thus, the firewall provides as a security check protecting the application from not being modified, thus its database when put over a network.



# **III. REQUIREMENTS**

## A. Software Requirements

- PHP
- XAMPP.

# **B. Hardware Requirements**

Implementing the firewall just requires a computer having Windows OS. However, when the application is embedded into the application put on the real time network, this system needs to be included in its server side.

# C. Functional Requirements

Attacks are a serious threat to any Web application that receives input from users and incorporates it into SQL queries to an underlying database.

Most Web applications used on the Internet, i.e. over the network or within enterprise systems work this way and could therefore be vulnerable to attack

Firewall will be able to detect and prevent system against several types of attacks such as:

## • URL manipulation Attack -

Manipulating URL to get unauthorized access to web pages.

# **Union/SQL Injection Attack -**

Manipulating the query fired to get results as per choice or Altering or modifying the database content

# • XSS Attack -

Inject client-side script into web pages viewed by other users.

This leads to direction of the certain web pages with certain format to another URL

#### • Santy Worm Attack -

Inject client-side script into web pages viewed by other users.

## D. Non – Functional Requirement

It should be able to perform well and protect the system against mentioned attacks and thereby provide secured environment.

## • Performance Requirements

It is expected that the program to defend an attack as per the rules appended in the firewall. It should detect attack as soon as possible.

# • Safety Requirements

The firewall should not alter any system code. It should not change.

Availability

The availability of the system is easy.

• Correctness

The results of the function are pure and accurate.

• Flexibility

The operation may be flexible and one can edit or add more rule to the firewall.

• Maintainability

After the deployment of the system if any error occurs then it can be easily maintained and corrected.

• Timeliness

The time limit is very important. It will save much time and provide fast detection of the attacks occurred.

# **IV. SOFTWARE DESIGN**

# a. Use case diagram



b. Component Diagram



c. Deployment Diagram



## V. IMPLEMENTATION DETAILS SCREENSHOTS OF IMPLEMENTATION



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Santy Worm Attacks:

**XSS Attacks:** 

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11-10-2015	22:40:52	I	URL protect   IP: ::1 ]   DNS: DESKTOP-URLOOT8   Agent: Mozilla/5.0
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#### **VI. ADVANTAGES**

- 1. The firewall prevents attacks like URL Attack, SQL Injection Attack, Santy Worm Attack and XSS Attack and also records the type and time of attack in the log.
- 2. It can inspect the contents of traffic, blocking specified content, such as certain websites, viruses, or attempts to exploit known logical flaws in client software.
- 3. They can permit or deny specific applications or specific features of an application given a great degree of granular control.
- 4. Application firewalls can also authenticate users directly. This means, for example, that they can allow or deny a specific incoming telnet command from a particular user, whereas other firewalls can only control general incoming requests from a particular host.

#### **VII.FUTURE SCOPE**

The application firewall system has a lot of advantages. However, there is a lot of room for improvement too. The disadvantages of the above system that can be improved by the systems developed in the future are as follows:

- 1. The main drawbacks to Web application firewalls are cost and performance.
- 2. Performance is often an issue because these tools inspect all incoming and outgoing traffic at the application layer.
- 3. This level of examination, often referred to as deep packet inspection, examines the actual payload of a packet and provides far better content-filtering capabilities than traditional packet-filtering firewalls.

# VIII. CONCLUSION

Thus, a secure system was achieved against the considered attacks by implementing a firewall system, thereby preventing loss of data confidentiality.

# IX. ACKNOWLEDGEMENT

I would like to thank the other members in my project group Mr. Piyush Vishwakarma, Mr. Sumeet Jain, Ms. Aishwarya Walimbe and Mr. Chintan Thakkar for their hard work and timely efforts so that the project implementation could be executed in an accurate and timely manner. I would also like to thank my parents who constantly encouraged and supported me in my endeavour.

## X. REFERENCES

- [1] www.stackoverflow.com
- [2] www.wikipedia.com
- [3] www.technet/microsoft-en.aspx
- [4] www.geekstuff.com
- [5] www.geeksforgeeks.com