ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Volume 4, Issue 4, April 2017

Honeypot-A Secure Network System

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Abstract :- **A honeypot is a decoy computer system for trapping hackers or tracking unconventional or new hacking methods. Generally as the number of users for a web service increases , the issues related to security arise too. So does the need arise to secure these systems for reliable and efficient working-One such tool is-Honeypot. As the flow of data increases, the probability of gaining access to confidential data is also high. So detecting vulnerability becomes a preliminary task in order to overcome such malicious activities. In this study, the simulated computers on network are been secured using Honeypot's design and Framework which helps in many fields such as detection of worms, adversaries, illegitimate traffic, spread of spam email. The honeypots deployed on the network monitors the traffic for any anonymous users and track him to prevent further attacks.**

Keywords: **- Illegitimate, Honeypot, Adversaries**

I. INTRODUCTION

Recently with the increased number of wired users, the attacks against the web services are increasing rapidly. The diversified services and its varying contents make it strenuous to prevent these attacks. To address these concerns, proposed a system of Honeypot. There are currently two honeypot technologies to respond to attacks against web applications. These include the "Google Hack" honeypot and PHPHop (PHP Honeypot). For the study of web application attacks, these offer advantages over traditional honeypots due to the fact that their existence is advertised. The PHPShell honeypot emulated PHPShell, by offering the appearance of access to the underlying operating system shell. All commands that the attacker executes are logged, together with details of the HTTP session in progress. If the attacker attempts to download any binaries we obtain a copy of these as well. [6]

Honeypots are an isolated collection of systems, the primary purpose of which is to elicit exploitation from attackers either by the use of real or simulated vulnerabilities or by weaknesses in system configurations, like easily guessed passwords. They attract attackers and log their activity in order to be able to better understand their attacks. Honeypots are generally categorized into two types: high-interaction and low-interaction honeypots. High-interaction honeypots are systems with a real operating system (OS) (not emulated) that can be fully compromised. The attacker is interacting with a real system with a complete service stack. This system is designed to capture exhaustive details on an attacker's activity on the system. Low-interaction honeypots only simulate portions of a real OS (e.g., the network stack, processes and services), such as emulating an FTP service advertising a vulnerable version of code. This could attract a worm looking to exploit that particular vulnerable version of the service, thereby giving insight into the worm's behavior.

On the other hand, advantage of deploying honeypot is the ease with which they are employed. Although honeypots seek small amount of hacker information, the information is considered highly valuable for studying and uncovering trackers motivations. Honeypots are not always designed to identify hackers. Honeypot developers are often more interested in getting into the minds of hackers, which then permits to design more secure system, as well as to educate other professional. Overall Honeypots are considered as an effective method to track hacker behaviour and heighten the effectiveness of computer security tools.

II. LITERATUE SURVEY

[1] Ram Kumar Singh, "Intrusion detection system using advanced Honeypots", in this paper the number and size of the Network and Internet traffic increase and the need for the intrusion detection grows in step to reduce the overhead required for the intrusion detection and diagnosis it has made public servers increasingly vulnerable to unauthorized accesses and incursion of intrusions. In addition to maintaining low latency and poor performance for the client, filtering unauthorized accesses has become one of the major concerns of a server administrator.

ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
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[2] Renuka Prasad,DrAnnamma Abraham and AbhasAbhinav,"Design and efficient deployment of Honeypot and Dynamic rule based live Network Intrusion collaborative system.", A Honeypot based Network Intrusion Collaboration System which is capable of generating dynamic rules during any anomalous behavior in the network or a possible intrusion is presented. The NICS designed is a collection of several existing Free and Open SourceSoftware's customized for the specific need that helps in implementing both preventive and detective mechanisms of network security.

[3] "Extended honeypot framework to detect old/new "To propose an to detect the new malicious objects with an optimal cost. Honeypots are generally used to detect the new malicious objects. The available honeypot frameworks are too costly to be afforded by an average organization. Therefore, we are proposing a low cost honeypot framework to detect malicious objects named extended honeypot. The approach is not only cost effective but also better than other approaches in some situations such as in the Intranet which is having more than one LANs and every LAN is having double honeypot.

[4] Atinder Pal Singh, Birinder Singh, "Design and implementation of Linux based hybrid client honeypot incorporating multilayer detection.", In current global internet cyber space, the number of targeted client side attacks are increasing that lead users to adversaries' web sites and exploit web browser vulnerabilities is increasing, therefore there is requirement of strong mechanisms to fight against these kinds of attacks. In this paper, we present the design and implementation of a client honeypot which incorporate the functionality of both low and high interaction honey client solution and incorporate the multilayer detection mechanisms to fight against client side targeted attacks.

III. DESIGN

The design of the honeypot framework consistes of following Data flow diagrams explained in two levels as given.

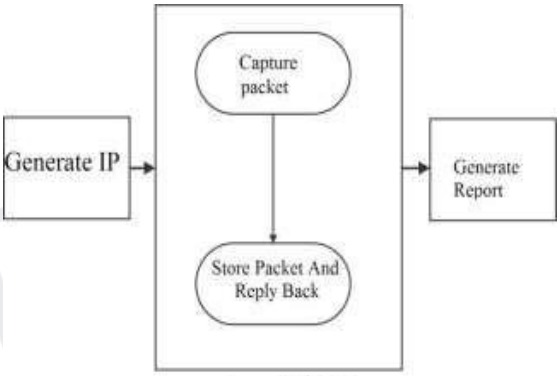
A. Level 0

The time period "degree of interplay" defines the shape of attack possibilities that a honeypot lets in an attacker to have.

In diploma 0 DFD to begin with IP deal with is generated then that IP is ahead via packets and this packet sends information to database for storage motive. Every time that information is crucial it takes or get proper of entry to from database through using respond decrease returned approach. After this method one document is generated.[2]

B. Level 1

In degree 1 virtual IP can be generated, after that packet is created for this IP and that packet is saved in database. After that one response packet is created to offer reaction to purchaser from server and ship that through the honeypot layer. At some point of this transmission one log record is generated for all of the approach. The log document contain all the information it truly is ship and get keep of with the id of the customer and server.[2]



Level 0 DFD

IV. PROPOSED SYSTEM

The precept desires are the distraction of an attacker and the benefit of statistics about an attack and the attacker they do entice intruders and can consequently lure a few hobby from the black hat community on the network, wherein the honeypot is located. There are classes of honeypots - production honeypots and research honeypots. The motive of a production honeypot is to help mitigate risk in an employer. The honeypot offers price to the safety measures of an enterprise. Consider them as 'law enforcement', their task is to discover a n d cope with horrible guys. Traditionally, business corporations use production honeypots to assist protect their networks.

The second class, research, is honeypots designed to advantage records on the black hat community. Those honeypots do no longer upload direct price to a selected business agency. Instead they may be used to analyzed the threats agencies face, and how to higher shield toward the ones threats. Remember them as 'counter-intelligence, their system is to gain statistics on the horrible men. This statistics

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is then used to protect in opposition to those threats. Traditionally, enterprise businesses do not use studies honeypots. As an opportunity, agencies which includes universities, authorities, military, or protection research companies use them.

User Interface: In this product Administrator must give the range of the network and also provide the plug-in which will different for different honeypot.

Log Report: Honey-pot create log which will tells the following,

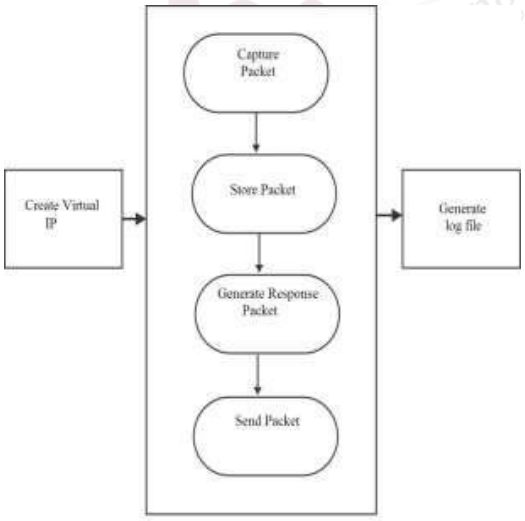
1) IP Addresses
2) Packet Received By that particular IP
3) Packet send to the that particular IP
4) Route of that IP

Note:

Network Administrator will take that Log and tells Which IP is an Attackers IP . By using that logs he also knows the attackers way to attack, so he will provide patches for that particular attack. In this product no human interface is required for generating the logs.

Module:

Attack Module (user):
Login
Registration
Attacking server
Send packet



Level 1 DFD

System (admin) :log maintain

Network admin:

Send request
Generate IP
Send packet
Receive packet
Maintain log

ARCHITECTURE

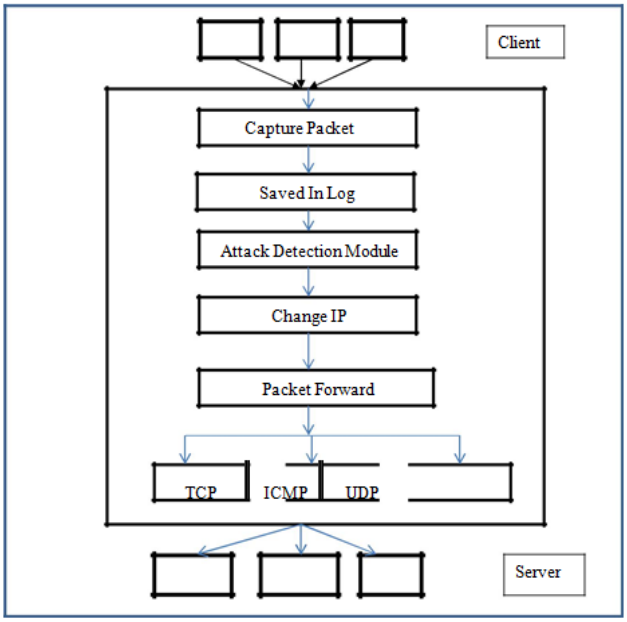


Figure 3:Architecture of Honeypot

The motive of a production honeypot is to help alleviate hazard in an agency. The honeypot adds charge to the safety measures of an enterprise. Recollect them as „regulation enforcement", their pastime is to find and deal with intruders. Historically, enterprise agencies use production honeypots to assist defend their networks. The second one class, research, is honeypots designed to gain data at the black hat network. The ones honeypots do not add direct rate to a selected corporation. As a substitute they are used to analyze the threats organizations face, and the manner to higher protect in competition to the ones threats.

It also allows the simulation of virtual network topologies the use of a routing mechanism that mimics diverse network parameters together with put off, latency and ICMP error messages. The primary architecture includes a routing mechanism, a persona engine, a packet dispatcher and the provider simulators.

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Algorithms:-

- MIMA(Man In Middle Attack) Algorithms

Man-in-the-Middle (MIM) attacks make the task of keeping data secure and private particularly challenging since attacks can be mounted from remote computers with fake addresses.

Password Guessing Algorithm
Password Guessing Attacks are the most wide spread and frightening attacks on every browser login and peer to peer systems.

Session High Jacking Algorithm
Session Hijacking is achieved because of many reasons like insecure handling, no provision of account Lockout for invalid session IDs, indefinite expiration time as well as weak session ID generation code.

SQL Injection Attack
SQL injection is a technique where the attacker injects an input in the query in order to change the structure of the query intended by the programmer and gaining the access of the database which results modification or deletion of the user's data.

V. ADVANTAGES

1. Correct analysis.
2. Get from multiple users activityand quickly get analysis result

VI. APPLICATION

1. Network Decoys: The traditional role of a honeypot is that of a network decoy. Our framework can be used to instrument the unallocated addresses of a production network with virtual honeypots. Adversaries that scan the production network can potentially be confused and deterred by the virtual honeypots. In conjunction with a NIDS, the resulting network traffic may help in getting early warning of attacks.
2. Security for Control Network in Company System: Our system can be used in a company's network for security purposes and improvement of network security.
3. Military: In Government projects, especially military networks which are always on enemy radar for attacks and spying purposes. Our system can be of use since intrusions are well detected and prevented.
4. In the research field: Knowing trends in the attacks domain & knowing one's enemies is involved here and so our system can do it efficiently.

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VII. FUTURE SCOPE

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VIII. ACKNOWLEDGEMENT

We would like to acknowledge our heartfelt gratitude to our guide Prof. Manisha Singh of Dhole Patil College of Engineering, Wagholi, Pune. for her guidance and motivation.

IX. CONCLUSION

Safety is a very difficult problem remembers. The critical element for constructing a relaxed community is to outline what protection technique to your organization. A honeypot is best a tool. We have were given categorized varieties of honeypots, production and studies. Productions honeypots assist reduce threat in an organization. Regardless of what form of honeypot you operate, keep in thoughts the level of interaction. Which means the extra your honeypot can do and the greater you can research from it, the more chance that in all likelihood exists. Honeypots will not treatment groups security troubles. Only best practices can do that. But, honeypots may additionally be a tool to assist contribute to those outstanding practices.

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