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PTP Approach in Network Security for Misbehaviour Detection

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Abstract*: A PTP approach in network security for misbehaviour detection system present a method for detecting malicious misbehaviour activity within networks. Along with the detection, it also blocks the malicious system within the network and adds it to Blacklist. Malicious node is defined as a compromised machine within the network that performs the task provided by i.e. it does not forward the legitimate message to another node in the network or sends some other message to a neighbour node. This system is based on Probabilistic threat propagation. This scheme is used in graph analysis for community detection. The proposed system enhances the prior community detection work by propagating threat probabilities across graph nodes. To demonstrate Probabilistic Threat Propagation (PTP) considers the task of detecting malicious node in the network. Proposed System also shows the relationship between PTP and loopy belief propagation.
Keywords — PTP, Malicious, Graph, Node Network, Probabilistic Threat.

I. INTRODUCTION

A PTP approach in network security for misbehaviour detection system present a method for detecting malicious misbehavior activity within networks. Along with the detection, it also blocks the malicious system within the network and adds it to Blacklist. Malicious node defined as a compromised machine within the network that performs the task provided by server i.e. it does not forward the legitimate message to another node in the network or send some other message to a neighbour node. This system is based on Probabilistic threat propagation. This scheme is used in graph analysis for community detection. The proposed system enhances the prior community detection work by propagating threat probabilities across nodes. To demonstrate Probabilistic Threat Propagation (PTP) considers the task of detecting malicious node in the network. Proposed System also shows the relationship between PTP and loopy belief propagation. Intrusion Detection Systems Nevertheless, none of the above solutions offer protection from both inside and outside intruders. Intrusion detection systems, on the other hand, can do this. Those intrusion detection systems are necessary because simple security mechanisms, such as cryptography, cannot offer the needed security. For example cryptographic mechanisms provide protection against some types of attacks from external nodes, but it will not protect against malicious inside nodes, which already have the required cryptographic keys. Therefore, intrusion detection mechanisms are necessary to detect these nodes. In this section we describe IDS architectures for widely known networks.

II. LITERATURE SURVEY

An Overview on Security Issues in computing Level Agreement or any trust third party that can control the processing over Computing. They are offering an adequate level of security and privacy for the information that is already we have studied. In this paper we have studied how security and compliance integrity can be maintained in new environment. The prosperity in computing literature is to be coming after security and privacy issues are resolved. Environment is to achieve the 5 goals i.e. availability, confidentiality, data integrity, control and audit. Administration security issues in computing in this paper we have studied most administration security issues and concept of the service level agreement. The solution to get more secure computing environment is to have a strong service in the NICE: Network Intrusion Detection and Countermeasure SelectionVirtual Network Systems. In this paper we have studied the system and security evaluations demonstrate the efficiency and effectiveness of the proposed solution. NICE, which is proposed to detect and mitigate collaborative zombies in the virtual networking environment. Efficient Detection of DDos Zombies by Entropy Variation. In this we studied entropy method is used to identify the zombiers efficiently and supports a large scalability. An effective and efficient IP Trackback scheme against DDOS zombies based on entropy variations. The entropy algorithms are independent from the current routing software; they can work as independent modules at routers. Entropy Based Detection of DDOS Zombies In this we studied entropy based detection of DDos zombies. Interesting feature of this method is that source of zombie can easily trace back by calculating the packet size, which shows the variation between normal and DDOS zombie traffic, which is fundamentally different from commonly used packet marking techniques Network Intrusion Detection using

Feature Selection and Decision tree classifier In this paper we have studied three different approaches for feature selection such as chi square, information gain and relief which is based on filter approach Intrusion Detection with feature selection was able to outperform the decision tree algorithm without feature selection Intrusion Detection approach is very useful for counter measure.

A System Introspection Based Architecture for Intrusion Detection. In this we studied an architecture that retains the visibility of host-based IDS, but drag the IDS outside of the host for greater zombie resistance. The pattern recognition technique to intrusion detection and proposes a network intrusion detection approach based on multiple classifier selection, called CDS. This method is very useful intrusion detection. Approach for intrusion detection which co-locates IDS on the same machine as the host it is monitoring and leverages a system monitor to isolate the IDS from the monitored host. Secure Model for Virtualization Layer in Cloud Infrastructure. In this paper we have studied to propose a model to secure and proper mechanism to react reasonable against the detected zombie by intrusion detection system. With the secured model (SNODE) against the zombie SVL model, (Secure Model for Virtualization layer) which combines virtualization and intrusion detection system, can increase the detection rate and provide protection against zombies targeting virtualization, and consequently will result in reliable cloud security the proposed model and framework will be implemented in order to compare and evaluate it. Detecting Malware Intrusion in Network Environment In this is model we have studied three model intrusion detection Threat model, zombie graph model, existing model NICE utilizes the zombie graph model to conduct zombie detection and prediction. NICE only investigates the network IDS approach to counter zombie explorative zombies.

Network Intrusion Detection is using Feature Selection and Decision tree classifier. In this paper we have studied three different approaches for feature selection such as chi square, information gain and relief which is based on filter approach Intrusion Detection with feature selection was able to outperform the decision tree algorithm without feature selection Intrusion Detection approach is very useful for counter measure.

This shows that by using a single peer to peer method if a bot is detected, then it is possible to detect another member of the same network. In a paper, a simple method is presented to identify member host from known peer nodes, of an unstructured P2P botnet in a network. Method provides a list of hosts ordered by a degree of certainty that belong to the same P2P botnet as discovered node belong. Method represents that peers of a P2P botnet communicate with other peers to receive command and update. In spite of some different bots can communicate with another peer bot. Paper shows that for P2P botnets is an unstructured topology where bots randomly select peers for communication it is rarely high probability that bots communicate with external bot though a given time window. There is a probability pair of malicious within a network has a mutual contact.

In this Paper a Botnet Sniffer method is given to detect botnet C&C problem. A proposed approach uses network based anomaly detection to identify botnet C&C channels in a local area network (LAN) without the knowledge of signature or C&C server addresses. This method can identify both the C&C servers and infected hosts or bots present in the network. This approach based the observation of the pre-programmed activities related to C&C. A bot node within the same botnet will likely show the spatial-temporal correlation and similarity. Paper [4] presents conditional random fields method to build probabilistic models to segment and label sequence data. Methods provide several advantages over Markov models and stochastic grammars for such tasks. Conditional random fields also avoid a limitation of the label biased problem present in maximum entropy Markov models (MEMMs) and other Markov models using directed graphical models. Paper used iterative estimation algorithms for conditional random fields.

The main aim of our proposed work is to develop defence mechanisms against DDos zombie in which our objective is to design a simulation environment with the used of dot net framework 3.0 where following objective is achieved.

A. Design of Dynamic network
B. Secured Date Packet
C. Intruder detection and their Countermeasure

III. PROPOSED SYSTEM

Trace back (IPT) is a method that enables the proper identification of the source of a packet on a network and may at the same time provide the full or partial path reconstruction of that packet as it traverses the network. Proposed mechanism is consists for following steps.

Module 1) Source Port and Destination Port: If source port or destination port is blank or 0 then it will treated it as zombie packets.

Module 2) Checksum: Network data transmissions often produce errors, such as toggled, missing or duplicated bits. As a result, the data received might not be identical to the data transmitted, which is obviously a bad thing. Because of these transmission errors, network protocols very often use checksums to detect such errors. If the checksum field of incoming packets is empty or contains

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invalid value then that packet will be treated as zombie.

Module 3) Time To Live: Time-to-live (TTL) is a value in an Internet Protocol (IP) packet that tells a network router whether or not the packet has been in the network too long and should be discarded. TTL is an 8-bit field so its value ranges from 0 to 255. If TTL field of incoming packets contains value outside the range then that packet will be treated as zombie packet.

Module 4) Total Length: Total length defines the entire packet (fragment) size, including header and data, in bytes. So header length must be less than that of total length.

Module 5) A SYN flood is a form of denial-of-service zombie in which a zombier sends a succession of SYN requests to a target's system in an attempt to consume enough server resources to make the system unresponsive to legitimate traffic.

Detection rate (D_R): is defined as the ratio between the numbers of correctly detected anomalous measurements to the total number of anomalous measurements.

$$D_R = \frac{\text{Number of correct classified anomalous measurements}}{\text{Total number of anomalous measurements}} \times 100\%$$

DR = Number of correct classified anomalous measurements / Total number of anomalous measurements × 100%

False alarm rate (F_A): is the ratio between the numbers of normal measurements that are incorrectly misclassified as anomalous to the total number of abnormal measurements.

FA = Number of misclassified normal measurements / Total number of anomalous measurements × 100%

False positive rate (F_P): is the ratio between the numbers of abnormal measurements that are incorrectly misclassified as normal to the total number of normal measurements.

$$F_P = \frac{\text{Number of misclassified abnormal measurements}}{\text{Total Number of normal measurements}} \times 100\%$$

The proposed system is useful in Network intrusion Detection System and Host-based Intrusion Detection, which exactly finds the source of zombie by studying the variation of packed size in travelled path. Our solution will also be applicable on decentralized network because we have included verification methodology at each hop. Verification methodology provides detection accuracy in host based solution to cover whole network segment. Is countermeasure before zombie happened?

Attacker knows all three except the keys. Once they have all three components, they can attack on the keys:

A. An attacker tries every possible key until he finds a match.

B. Given that he knows cipher text and cipher (algorithm), he can decrypt the message and see whether it matches the plaintext

C. The time taken for a brute force attack depends on the key size

IV. SYSTEM DESIGN

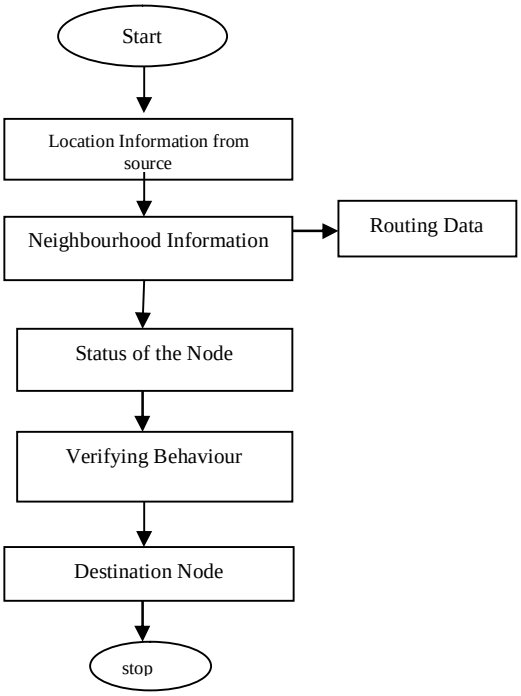

Figure1. Data-Flow of Project Work

A. During a malicious detection using PTP system the following steps follows,

1) Initially sender sends a packet to the receiver.
2) Shortest path select between sources to a receiver.
3) IF (receiver != receive packet)
4) PTP detects the malicious node present in the path between sources to the receiver.
5) IF (malicious node = present) then
6) This system Block that node and add to it in Blacklist.
7) Select another short path and forward packet from this new path to the receiver.
8) Receiver receives the packet.

V. CONCLUSIONS

The system has program that verifies the packet and its behaviour, which will be verified at each pass of packet in the network if any anomalies are found the packet will be block from entering into the network. For this purpose the packets are protected by encryption and provided with the security key pass by chipper. Md5 is provided for to enhance the protection layer for the packet which will be protected.

REFERENCES

[1] Dr.Balachandra, D.N.Karthek, "An Overview on Security Issues in Cloud Computing" IOSR Journal of Computer Engineering, Volume 3, Issue 1, 2012.
[2] Hamoud Alshammari and Christian Bach, "Administration Security Issues in Cloud Computing" International Journal of Information Technology Convergence and Services, Volume.3, No.3, August 2013.
[3] Manavi, Sadra Mohammadalian, Nur Izura Udzir, Azizol Abdullah, "Secure Model for Virtualization Layer in Cloud Infrastructure" International Journal of Cyber-Security and Digital Forensics. The Society of Digital Information and Wireless Communications, 2012.
[4] Mr.V.V.Prathap, Mrs.D.Saveetha," Detecting Malware Intrusion in Network Environment" Mr.V.V.Prathap, International Journal of Engineering Research and Applications, Volume. 3, Issue 3, Version 5, pp.75-80, March 2013.
[5] Chung, Tianyi Xing, Dijiang Huang," NICE: Network Intrusion Detection and Countermeasure Selection in Virtual Network Systems" IEEE Transaction on Dependable and Secure Computing, Volume. 10, No. 3, JULY/AUGUST 2013.
[6] Shina Sheen, R Rajesh," Network Intrusion Detection using Feature Selection and Decision tree classifier" IEEE Region 10 Conference, 2008.