Securing Cloud, SDN and Large Data Network Environments from Emerging DDos Attacks

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Abstract: Many systems use servers to manage and store their data,sometimes the servers are slowed down because of multiple user requests. Most of which are attackers or unauthorized users and some are genuine users. In computing, a denialof- service (DoS) attack is an attempt to make a machine or network resource unavailable to its intended users. A distributed denial-of-service (DDoS) is where the attack source is more than one, often thousands of unique IP addresses. Flooding is one of the typical DDoS attacks that exploit normal TCP connections between a client and a target web server. In this project we are trying to devise a DDoS anomaly detection method on Hadoop that implements a MapReduce-based detection algorithm against the Flooding attacks.

I.INTRODUCTION

As we covers the mainly few important topics related the cyber security, A Distributed Denial of Service attack is an attack on a server where a massive number of packets are sent to create an outage or service degradation for legitimate users or depriving the organization of necessary computer services, such as access to the Internet, email, on premise, hosted, or cloud services]. Carrier, hosting, large enterprise networks, and cloud environments are vulnerable to DDoS attacks. There was an assumption that this type of attack would not affect cloud computing due to size and distribution of resources. However, this has proven to be an erroneous assumption. DDoS attacks are a limiter to availability of virtual applications. Platform as a Service (PaaS), Infrastructure as a Service (IaaS), and Software as a Service (SaaS) are service models of cloud computing potentially impacted by resource consumption leading to degraded of availability. DDoS attacks performed using a botnet can and now do exceed 300 Gb regularly. The Mirai based botnets have proven that the Internet of Things (IoT) botnet members can create DdoS attacks that can exceed 100 to 300 Gb in volume. Organizations that depend on cloud computing can be greatly impacted by the effects of DDoS attacks. Obtaining the best of breed protections against DDoS attacks is essential to maintaining the availability of the service environment.

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II. LITERATURESURVEY

D.L. Meena1 and Dr. J. S. Jadon[1] , divided DDoS into two categories: (i) General techniques, which are some common preventive measures i.e. system protection, replication of resources etc. that individual servers and ISPs should follow so they do not become part of DDoS attack process. (ii) Filtering techniques, which include ingress filtering, egress filtering, router based packet filtering, history based IP filtering, SAVE protocol etc.

S. Gallangher[2], Use a modified count-min sketch (MCS) for fast detection, and in the fine level, we propose a bidirectional count sketch (BCS) to achieve better accuracy. Main advantage of our approach is that it can track the victims of attacks without recording every IP address found in the traffic with high level of accuracy.

Rashmi V. Deshmukh, Kailas K. Devadkar[3], describes DDoS defense mechanism named Co Fence which facilitates “domain-helps-domain” collaboration network among NFV-based domain networks. Design a dynamic resourceallocationmechanismfordomains.Propos eaPrincipalComponentsAnalysis (PCA)-based DDoS defense system, which extracts nominal traffic characteristics by analyzing intrinsic dependency across multiple attribute values.

III. STSTEM ARCHITECTURE

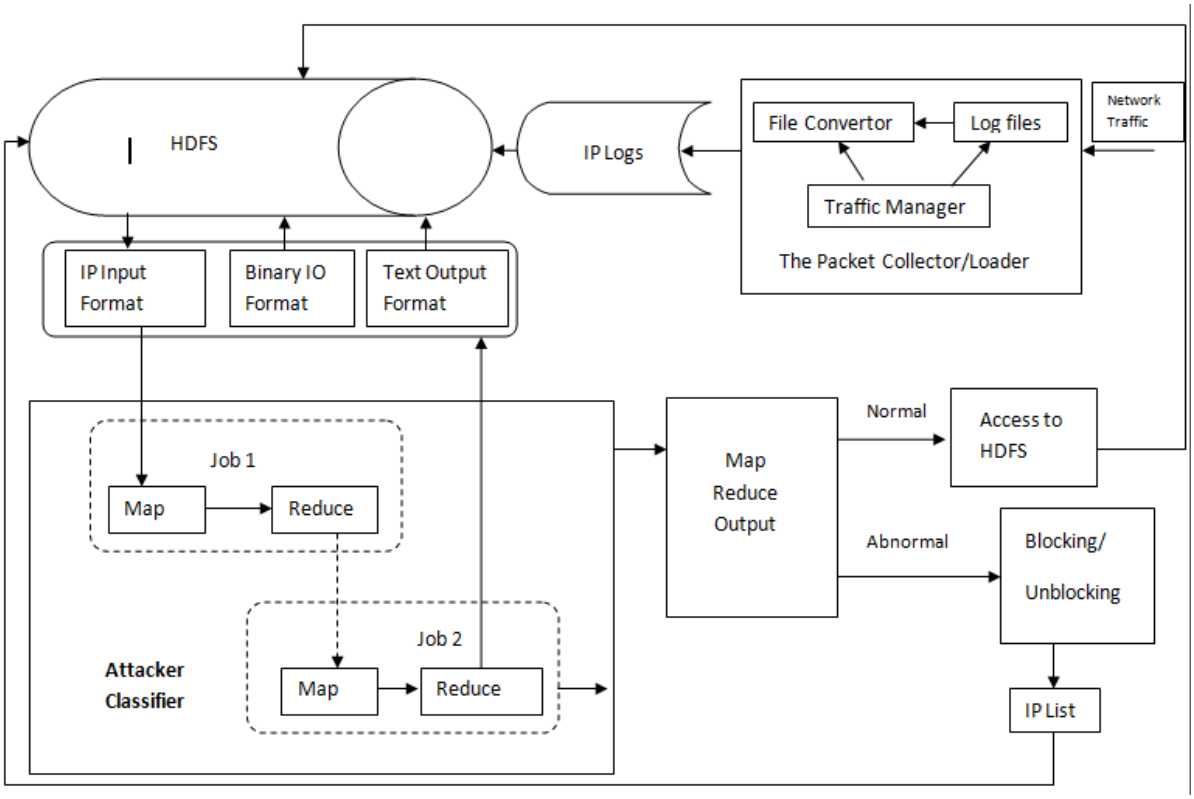


Fig : System Architecture

IV. METHODOLOGY / ALGORITHM

MapReduce-based pattern finding (MRPF) framework aims to implement frequent pattern

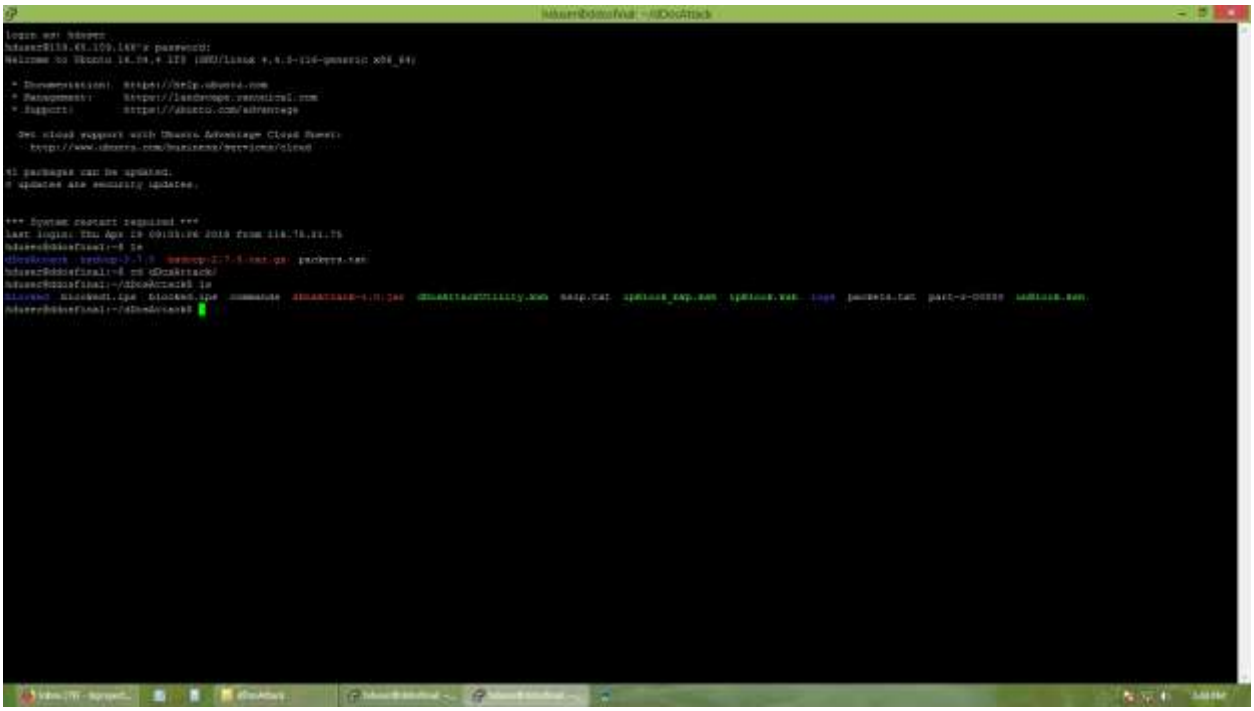
finding on complex graphs based on Hadoop. Although it also works well on undirected graphs, here we still focus on introducing its application on directed graphs. It's more interesting and representative to apply this framework on directed graphs.

Data: Dataset of Graph G, target pattern size s, minimum support (f_min)

Result: Set P of pattern of target size

```
begin
P i {all pattern of size 2};
Size ← 2;  /* initial size */
MATCHp2 ← all matches of p2;
TPS ← R;  /* TPS: target pattern size */
while size < target size do
        foreach pattern p € P do
                foreach match m €  MATCHp
        do
                foreach incident  vertex v of m
        do
                m'← i m {v };
                p ←  pattern of {m'};
                TPS ← TPS {p};
                MATCHp' ← MATCHp' {
        m'};
                end
            end
 end
P ← R;
foreach  p  € TPS do
        frequency i sizeof ( MATCHp);
        if frequency > f_min then P  ← P {p};
        end
        size++;
 end.
```

V. IMPLEMENTATION & RESULTS



CONCLUSION

DDoS attacks are occurring in increasingly greater scale and frequency. Monetization of the business of cyber-crime through DDoS attacks has dramatically changed the number of botnets and attackers. Adaptation to the changing threat landscape is untenable using IPS IDS for only known attacks, mitigation by rate limit, and at a high occurrence of false positives. Automation using behavior analysis and cyber control for automation are necessary to meet SLA availability requirements.

REFERECES

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