Lab Assignment No:-9

Aim:- Simulate DOS attack using HPING3.

Lab Outcome Attained :- LO5

Theory:-

What is Denial of Service Atack?

A Denial of Service (DoS) attack is a malicious attempt to disrupt the normal functioning of a computer system, network, or online service by overwhelming it with a flood of illegitimate requests or traffic. The primary goal of a DoS attack is to make a resource, such as a website or server, unavailable to its intended users. It does so by consuming the target's resources, such as bandwidth, processing power, or memory, to the point where it cannot handle legitimate requests.

Explain SYN flood, ICMP flood and SMURF attack.

Three common types of DoS attacks:

SYN Flood Attack:

A SYN flood attack is a type of network-based DoS attack that targets the threeway handshake process in the Transmission Control Protocol (TCP), which is used for establishing connections between devices on the internet.

In a TCP connection, the client sends a SYN (synchronize) packet to initiate a connection with a server. The server is expected to respond with a SYN-ACK (synchronize acknowledgment) packet, and then the client responds with an ACK (acknowledgment) packet to complete the handshake and establish the connection.

In a SYN flood attack, the attacker sends a high volume of SYN packets to the target server, but they do not complete the handshake by sending the expected ACK packets. This leaves the server waiting for the final ACKs, tying up its resources and preventing it from accepting legitimate connections.

SYN flood attacks can quickly overwhelm a server's ability to handle incoming connections, leading to service disruption.

ICMP Flood Attack:
An ICMP (Internet Control Message Protocol) flood attack, also known as a "ping flood" attack, targets the ICMP protocol, which is used for network diagnostics, particularly the "ping" command.

In this type of attack, the attacker sends a high volume of ICMP echo requests (ping requests) to the target system. Each request typically generates a response from the target, creating a flood of traffic.

ICMP flood attacks can consume the target's network bandwidth and processing resources, making it difficult for legitimate network traffic to pass through. This results in network congestion and service degradation or unavailability.

SMURF Attack:
A SMURF attack is a network-based DoS attack that takes advantage of ICMP and IP addressing.
In a SMURF attack, the attacker sends a large number of ICMP echo request (ping) packets to an IP broadcast address, typically spoofing the source IP address to make it appear as if the requests are coming from the victim's IP address. When these requests are sent to the broadcast address, all devices on the target network respond with ICMP echo replies. With a high enough volume of requests, this can flood the victim's network, overwhelming its resources and causing a DoS.
To mitigate DoS attacks, organizations use various security measures, including firewalls, intrusion detection systems (IDS), intrusion prevention systems (IPS), and content delivery networks (CDNs). These tools help identify and filter out malicious traffic, allowing legitimate traffic to reach its destination. Additionally, proper network design and configuration can help minimize the impact of DoS attacks.

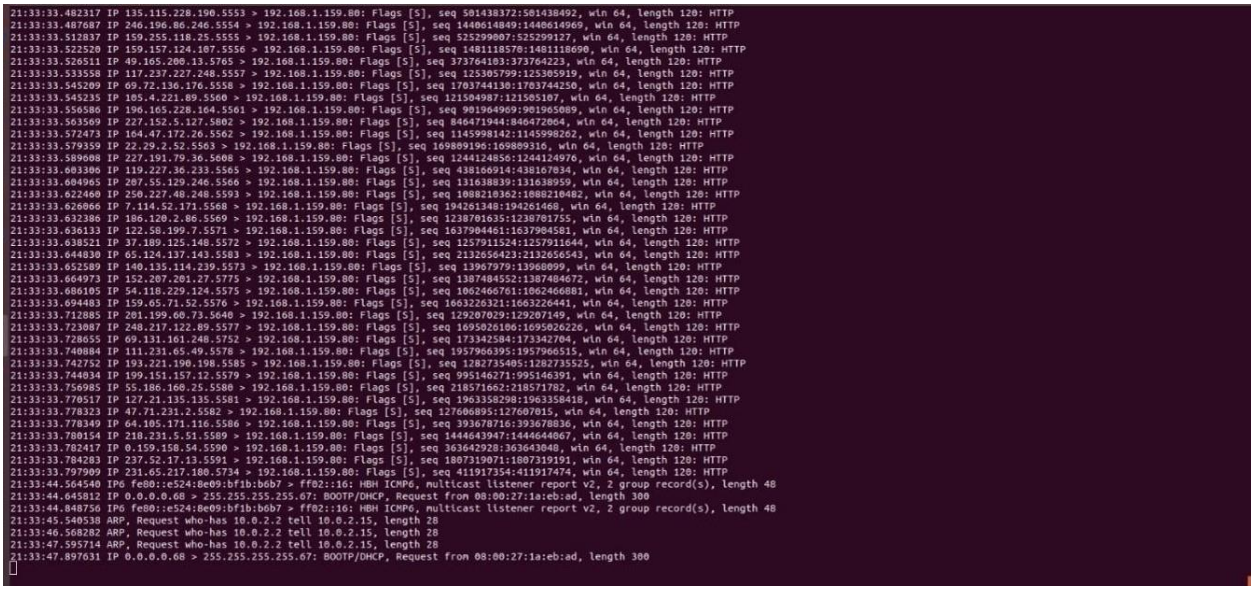
Write the Hping3 commands used for performing SYN flood and ICMP flood.

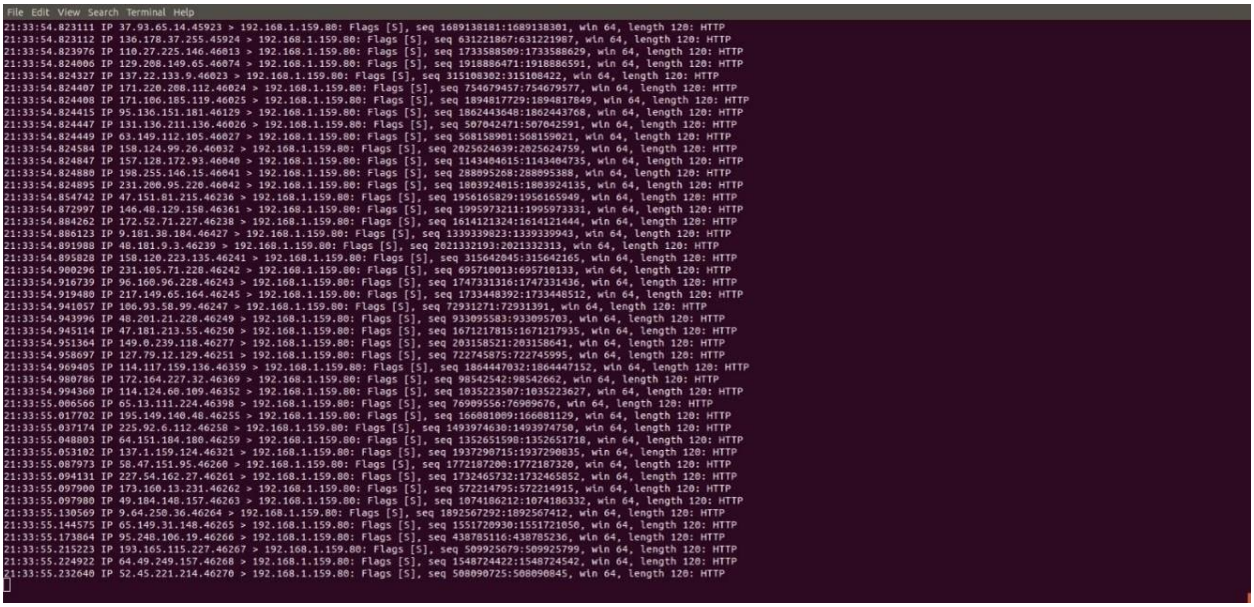
Syn flood :

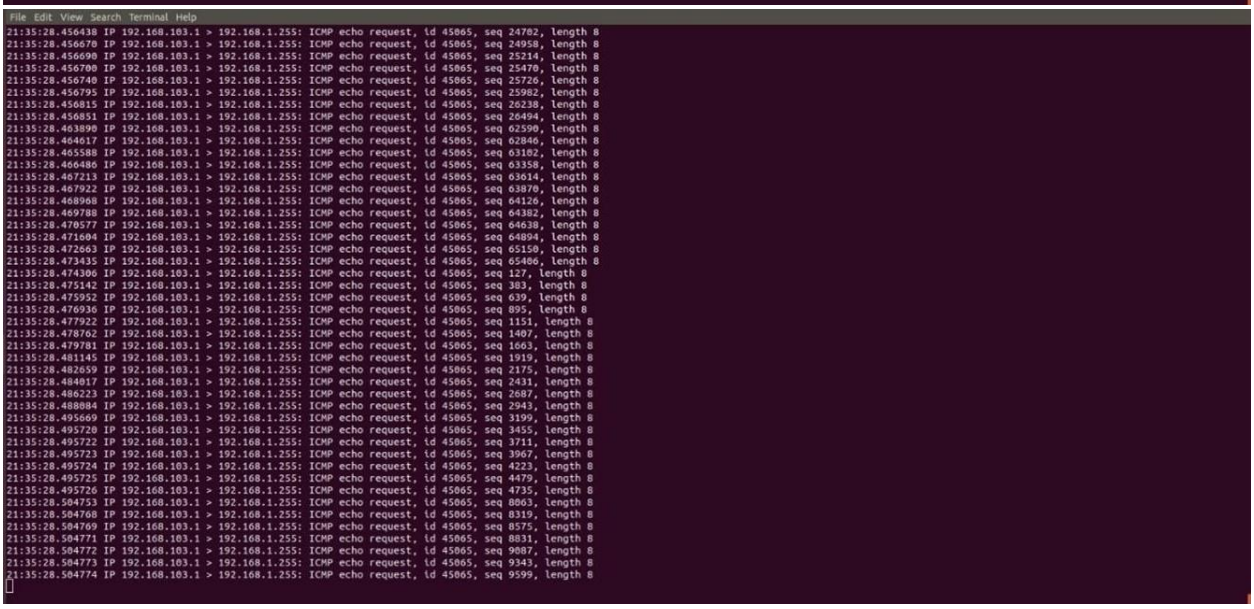
hping3 -c 15000 -d 120 -S -w 64 -p 80 --flood --rand-source 192.168.1.159

ICMP flood: **hping3 -1 --flood -a 192.168.103 192.168.1.255**

Output Screenshots:-







Conclusion:-Learnt more about the network analysis and security assessment tools. Explored various network probing and testing techniques, which are valuable skills in the field of network administration and cybersecurity.Also executed several hping3 commands and performed DOS attack using hping3