

Lab #2:

Course Name: Ethical Hacking and Offensive Security (HOD401)

Student Name: Nguyễn Trần Vinh – SE160258

Instructor Name: Mai Hoàng Đỉnh

Lab Due Date: 16/09/2023

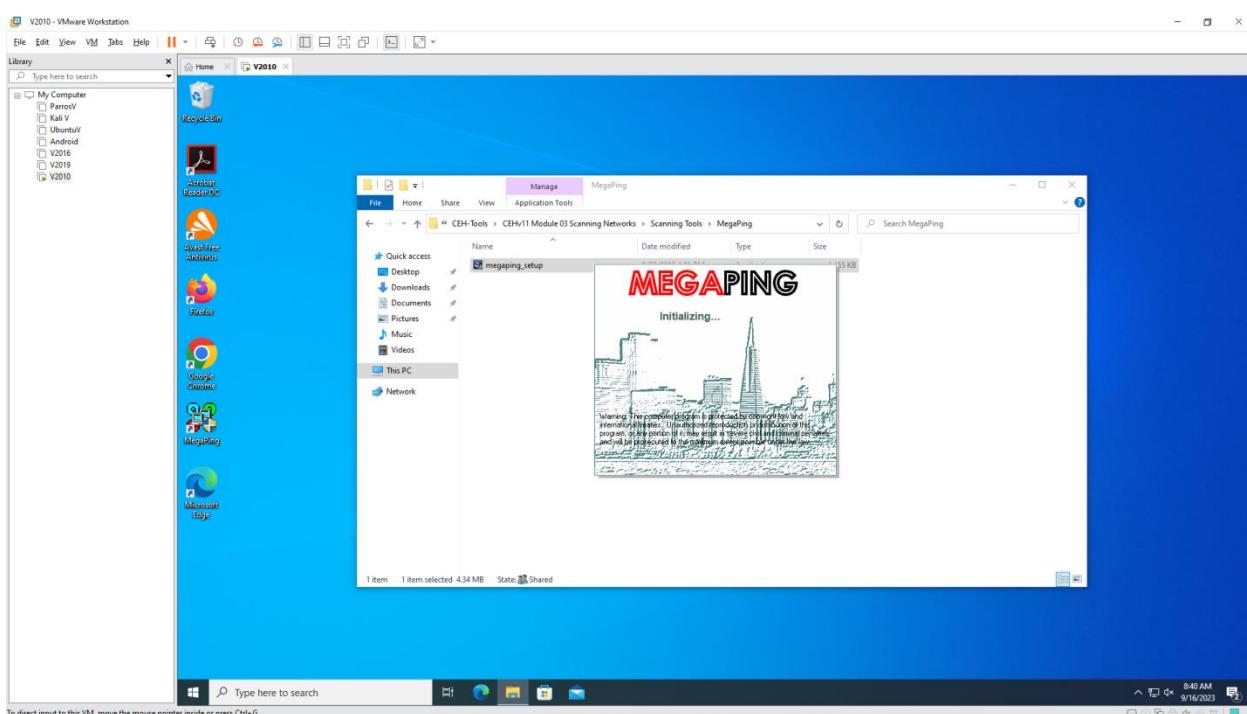
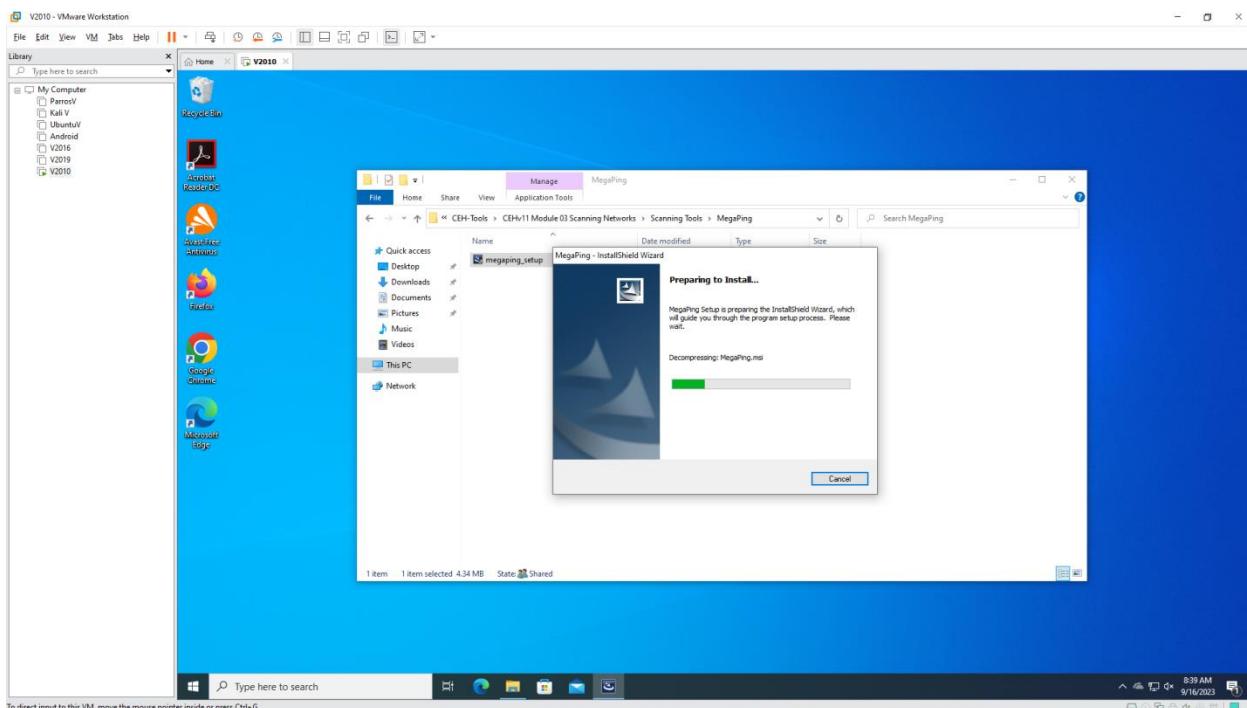
Lab tasks

2. Perform Port and Service Discovery

2.1 Perform Port and Service Discovery using MegaPing

- Open Windows 10, Windows Server 2016, Parrot and Ubuntu machine

- Install MegaPing



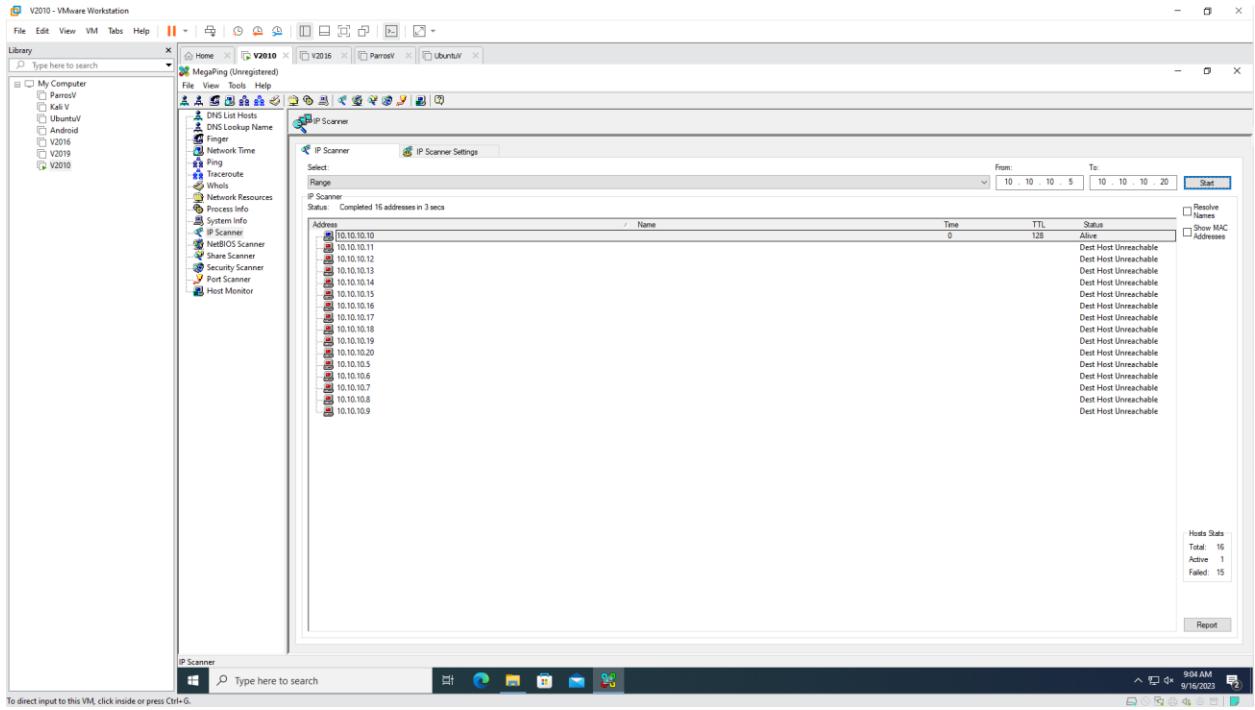
- System Info

The screenshot shows the 'System Info' tab of the MegaPing application. The left sidebar lists various tools: ParosV, Kali V, UbuntuV, Android, V2016, V2019, and V2020. The main pane displays a table of network connections. The columns are: Protocol, Local Address, Remote Address, State, and Action buttons. The table shows numerous connections, mostly ESTABLISHED, with ports ranging from 49885 to 57066. A report button is visible at the bottom right.

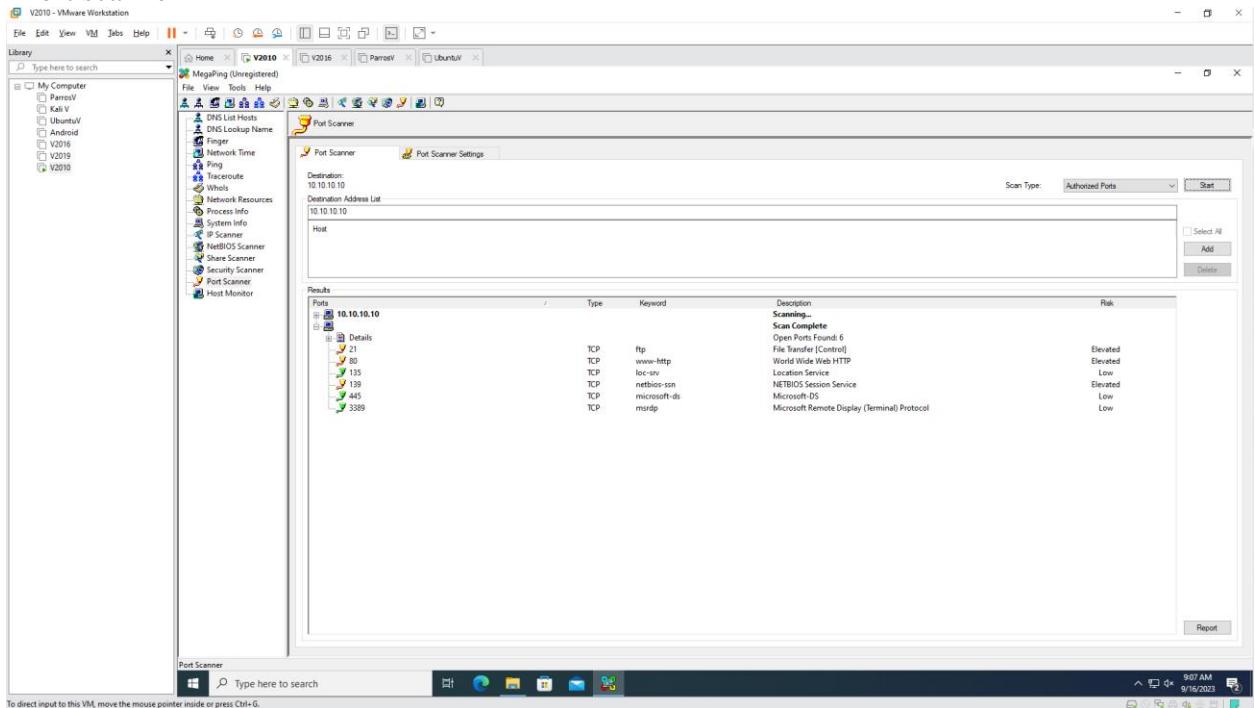
- Scan port from 10.10.10.5 to 10.10.10.20

The screenshot shows the 'IP Scanner' tab of the application. The left sidebar lists the same set of tools as the previous screenshot. The main pane displays the 'IP Scanner Settings' dialog. It includes fields for 'Select' (Range), 'IP Scanner' status (Idle), and 'Address' table. The 'Address' table has columns for Address, Name, Time, TTL, Status, and checkboxes for Resolve Names, MAC Addresses, and IP Addresses. Below the table are 'From' and 'To' address fields (set to 10.10.10.5 to 10.10.10.20) and a 'Start' button. A report button is also present.

- Result

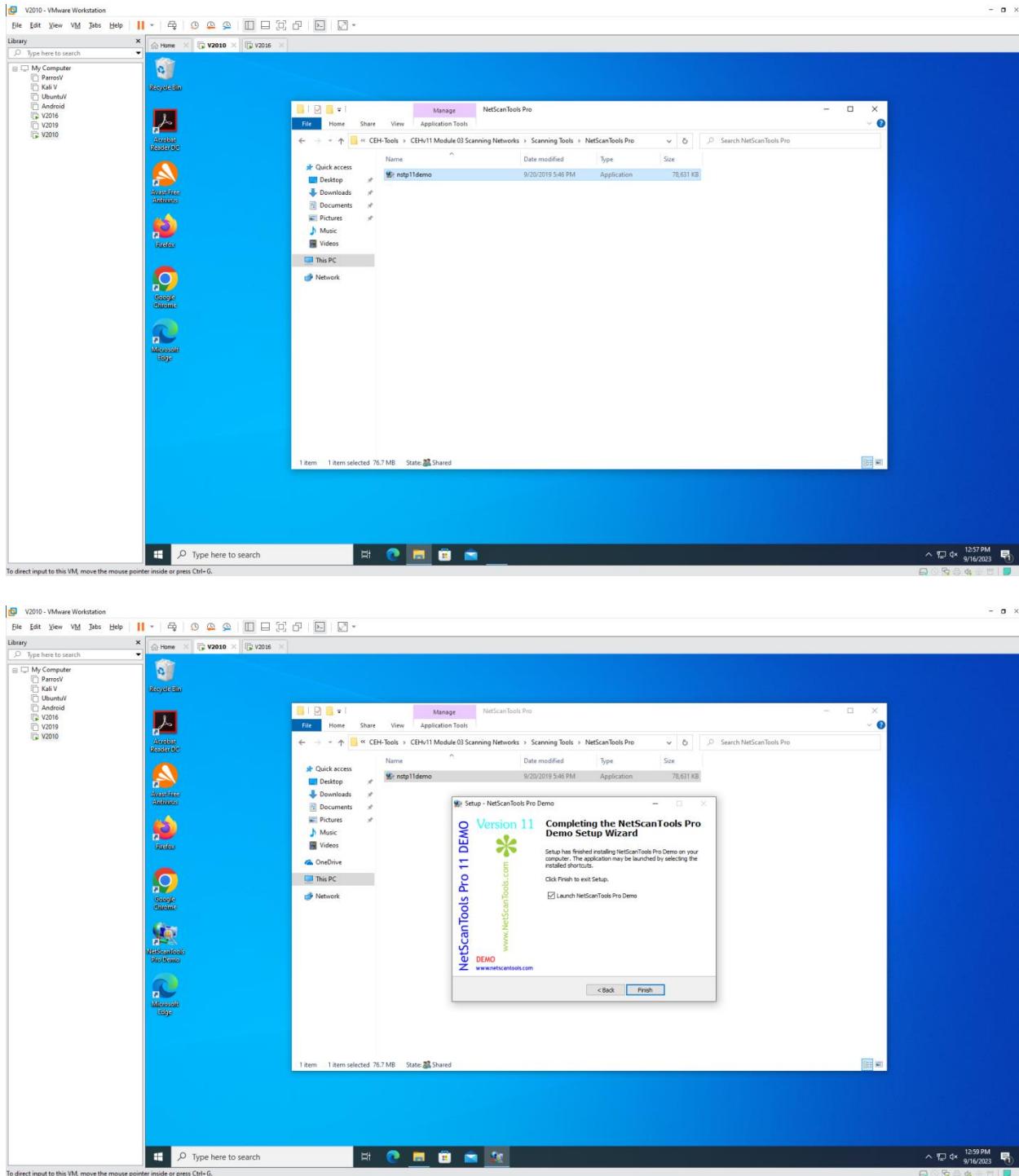


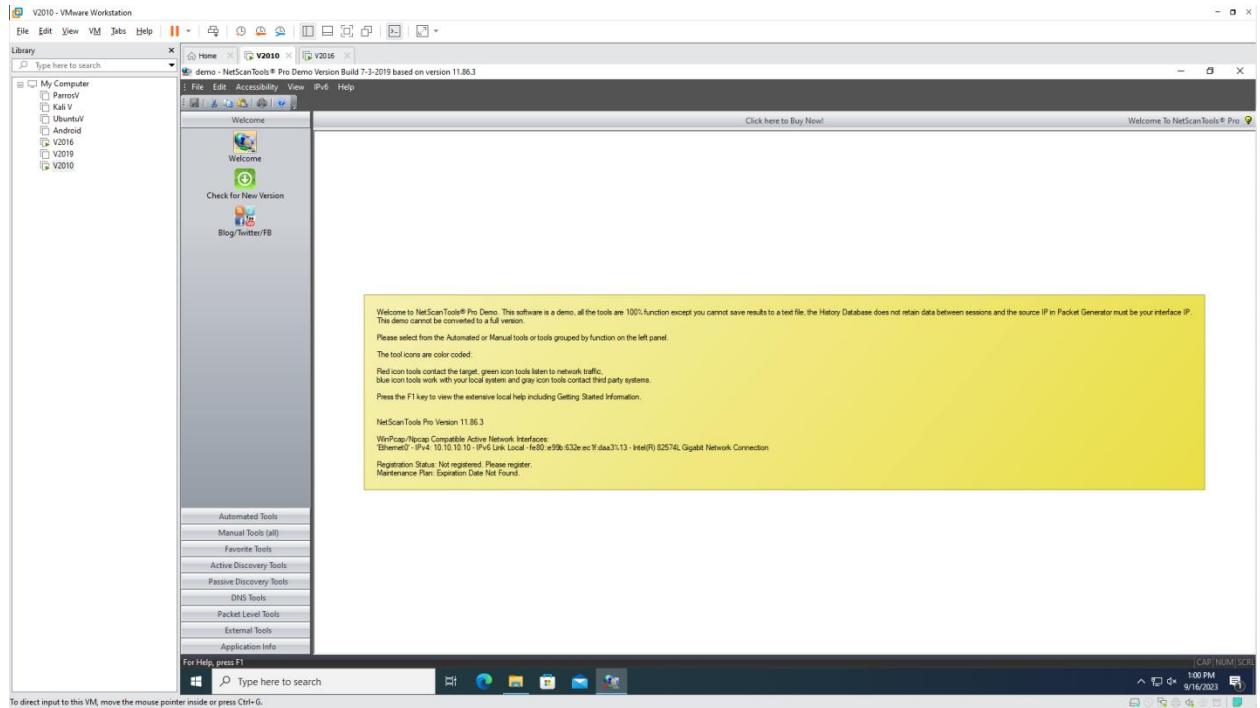
- Port scanner



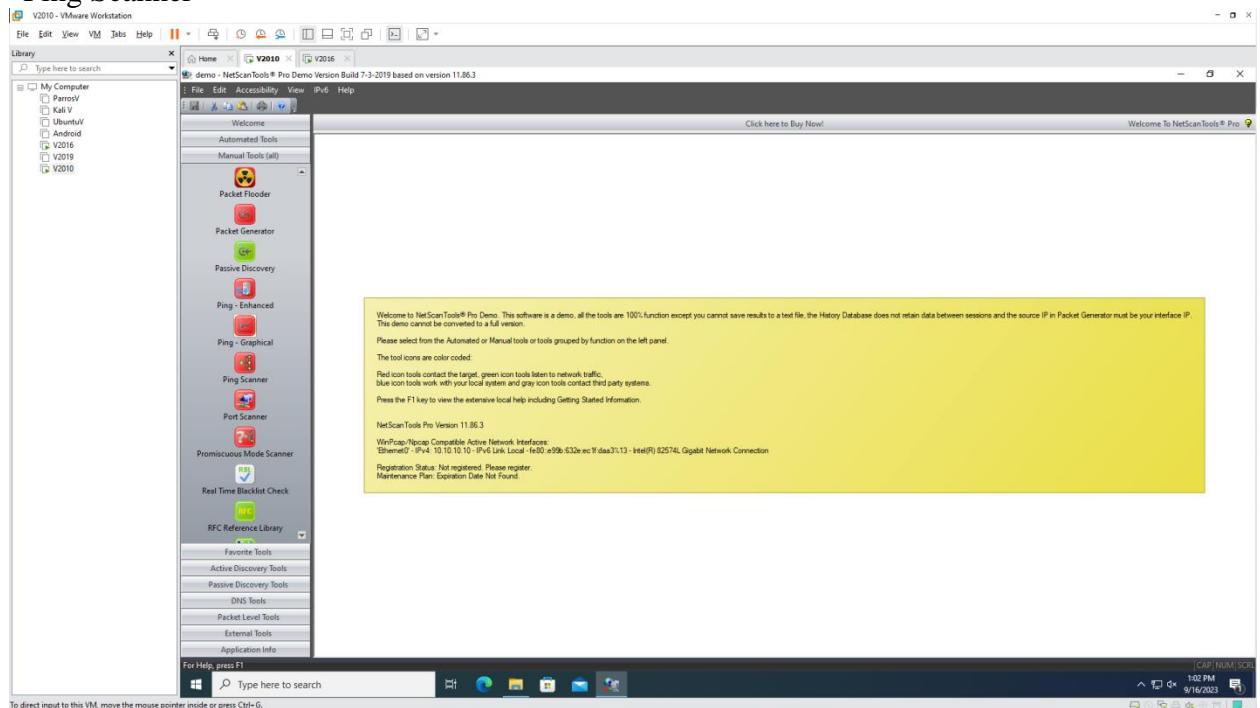
2.2 Perform Port and Service Discovery using NetScanTools Pro

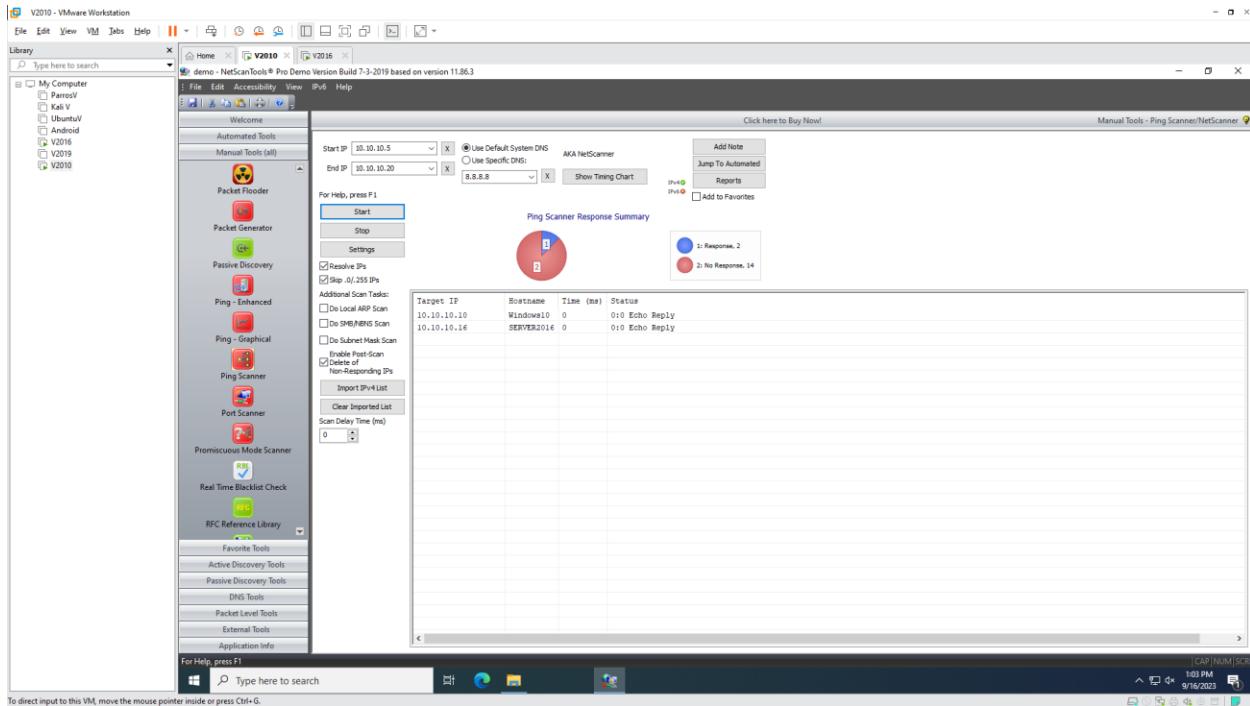
- Install NetScanTools Pro





- Ping Scanner





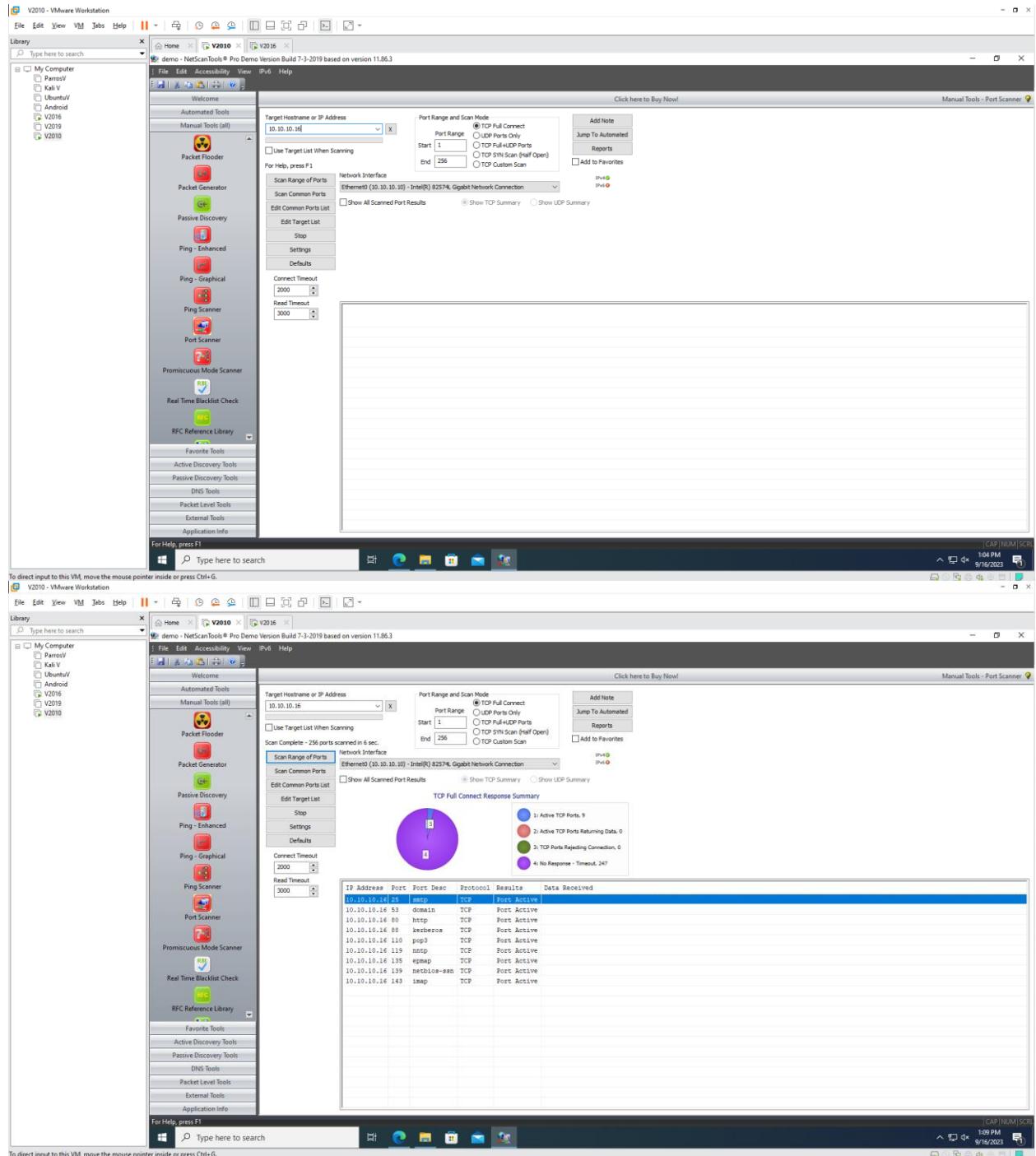
NetScanTools® Pro v11
Reports Created with DEMO v11.11
Buy from: www.netscantools.com

Report created with NetScanTools Pro v11 DEMO
Purchase NetScanTools Pro at www.netscantools.com

Statistics for Ping Scanner

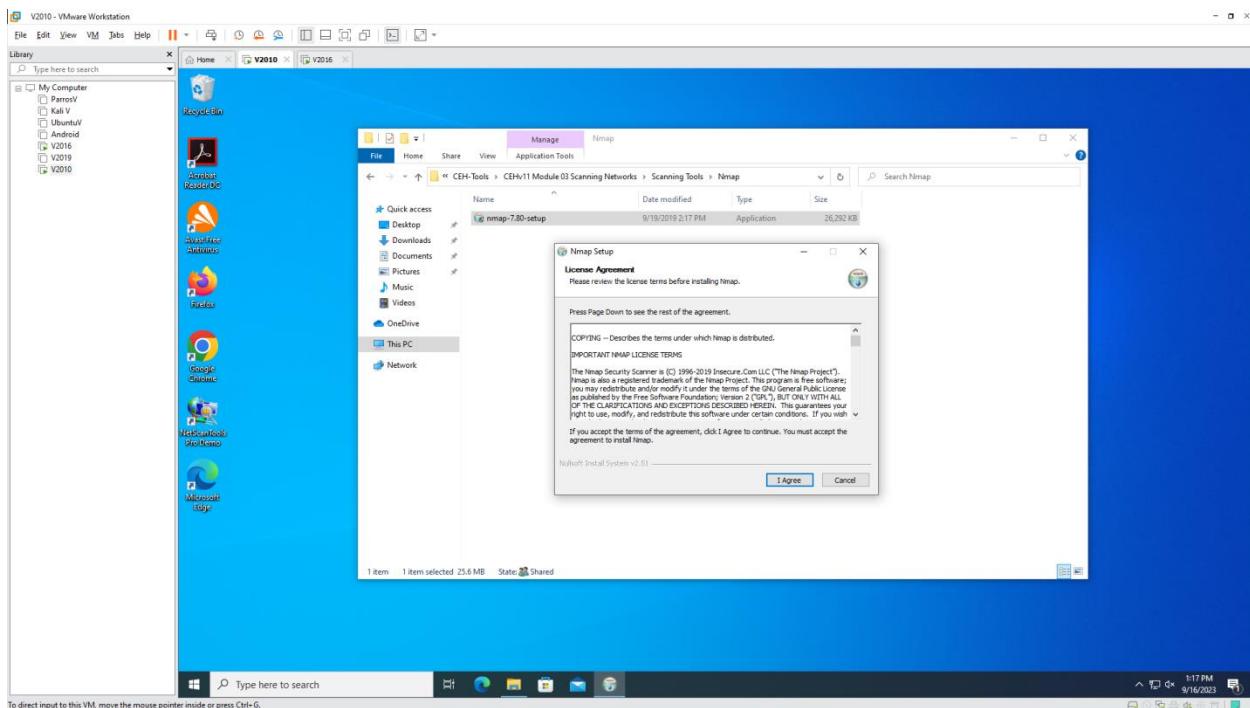
Report Timestamp	Saturday, September 16, 2023 13:03:07
Scan Start Timestamp	Saturday, September 16, 2023 13:03:01
Total Scan Time	4.158 seconds
Start IP address	10.10.10.5
End IP address	10.10.10.20
Number of target IP addresses	16
Number of IP addresses responding to pings	2
Number of intermediate routers responding to pings	0
Number of successful NetBIOS queries	0
Number of MAC Addresses obtained by ARP or NetBIOS queries	0
Number of successful Subnet Mask queries	0

- Port Scanner



2.1 Explore Various Network Scanning Techniques using Nmap

- Install Nmap



- Scan port

V2010 - VMware Workstation

File Edit View VM Jobs Help

Library Type here to search

Home X V2010 X V2016 X

Zmap Scan Tools Profile Help

Target: 10.10.10.16

Command: nmap -sT -v 10.10.10.16

OS Host Services Nmap Output Ports / Hosts Topology Host Details Scans

OS Host

10.10.10.16

Discovered open port 139/tcp on 10.10.10.16
 Discovered open port 995/tcp on 10.10.10.16
 Discovered open port 2105/tcp on 10.10.10.16
 Discovered open port 110/tcp on 10.10.10.16
 Discovered open port 465/tcp on 10.10.10.16
 Discovered open port 2107/tcp on 10.10.10.16
 Discovered open port 139/tcp on 10.10.10.16
 Discovered open port 3269/tcp on 10.10.10.16
 Discovered open port 636/tcp on 10.10.10.16
 Discovered open port 139/tcp on 10.10.10.16
 Discovered open port 1389/tcp on 10.10.10.16
 Discovered open port 1388/tcp on 10.10.10.16
 Discovered open port 2103/tcp on 10.10.10.16
 Discovered open port 2105/tcp on 10.10.10.16
 Discovered open port 139/tcp on 10.10.10.16
 Discovered open port 464/tcp on 10.10.10.16
 Discovered open port 139/tcp on 10.10.10.16
 Discovered open port 139/tcp on 10.10.10.16
 Completed Connect Scan at 13:23, 47.88s elapsed (1000 total ports)
 Nmap version 7.91 (https://nmap.org) running on windows-10-10.16
 Host is up (0.000998s latency).
 Not shown: 974 filtered ports
 PORTS STATE SERVICE
 23/tcp open 22/tcp
 25/tcp open smtp
 53/tcp open domain
 80/tcp open http
 88/tcp open kerberos-sec
 110/tcp open pop3
 139/tcp open netbios-ssn
 143/tcp open imap
 389/tcp open ldap
 445/tcp open microsoft-ds
 464/tcp open kpasswd5
 465/tcp open smtps
 563/tcp open snews
 587/tcp open submission
 593/tcp open http-ssl-epmap
 636/tcp open ldaps
 993/tcp open imaps
 995/tcp open pop3s
 1389/tcp open ms-mgmt
 2103/tcp open zephyr-clt
 2105/tcp open eklogin
 2107/tcp open ms-mgmt
 3268/tcp open globalcatDAP
 3269/tcp open globalcatDAPs1
 3389/tcp open ms-wbt-server
 MAC Address: 00:0C:29:47:86:30 (VMware)

Read data files from: C:\Program Files (x86)\Nmap
 Nmap done: 1 IP address (1 host up) scanned in 48.38 seconds
 Raw packets sent: 1 (20B) | Rcvd: 1 (20B)

Filter Hosts

Type here to search

11:23 PM 9/16/2023

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

V2010 - VMware Workstation

File Edit View VM Jobs Help

Library Type here to search

Home X V2010 X V2016 X

Zmap Scan Tools Profile Help

Target: 10.10.10.16

Command: nmap -sT -v 10.10.10.16

OS Host Services Nmap Output Ports / Hosts Topology Host Details Scans

OS Host

10.10.10.16

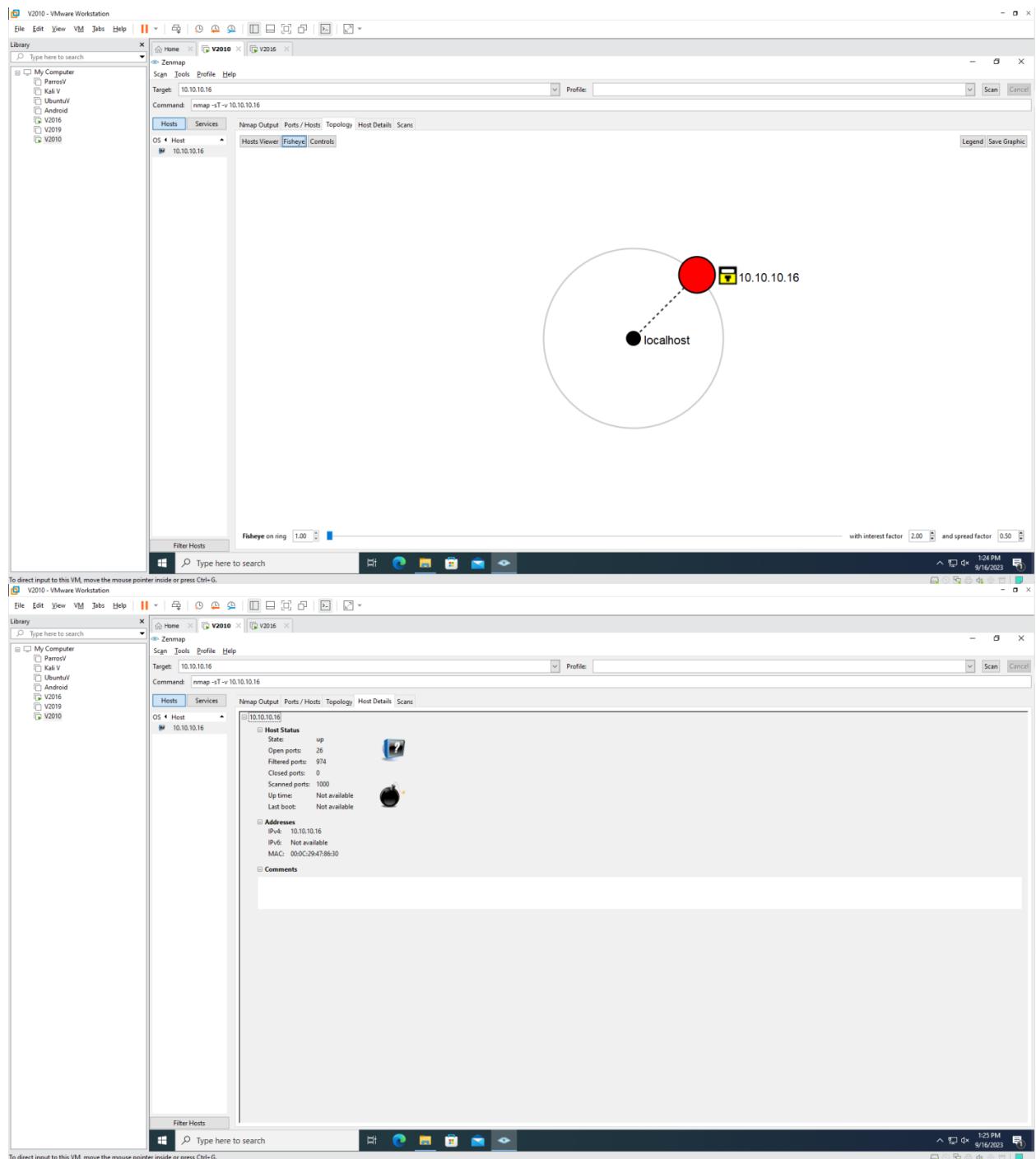
Port	Protocol	State	Service	Version
25	tcp	open	smtp	
53	tcp	open	domain	
80	tcp	open	http	
88	tcp	open	kerberos-sec	
110	tcp	open	pop3	
119	tcp	open	nntp	
135	tcp	open	msrpc	
139	tcp	open	netbios-ssn	
143	tcp	open	imap	
389	tcp	open	ldap	
445	tcp	open	microsoft-ds	
464	tcp	open	kpasswd5	
465	tcp	open	smtps	
563	tcp	open	snews	
587	tcp	open	submission	
593	tcp	open	http-ssl-epmap	
636	tcp	open	ldaps	
993	tcp	open	imaps	
995	tcp	open	pop3s	
1389	tcp	open	ms-mgmt	
2103	tcp	open	zephyr-clt	
2105	tcp	open	eklogin	
2107	tcp	open	ms-mgmt	
3268	tcp	open	globalcatDAP	
3269	tcp	open	globalcatDAPs1	
3389	tcp	open	ms-wbt-server	

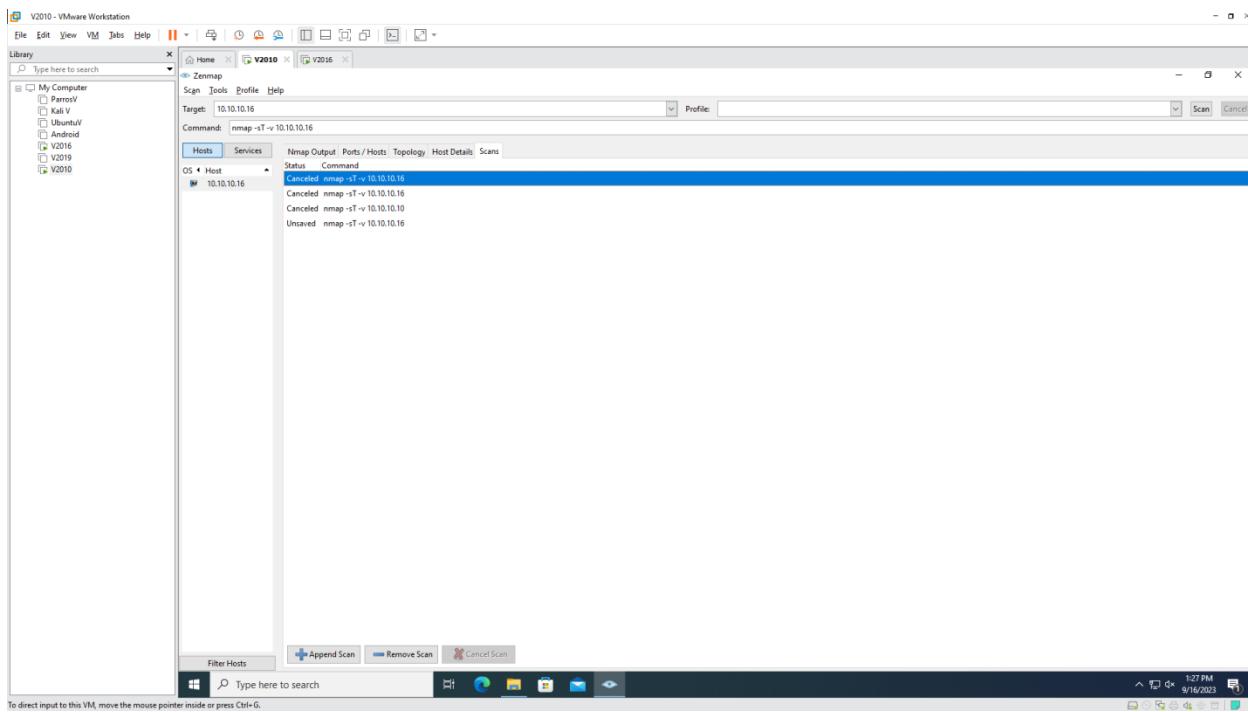
Filter Hosts

Type here to search

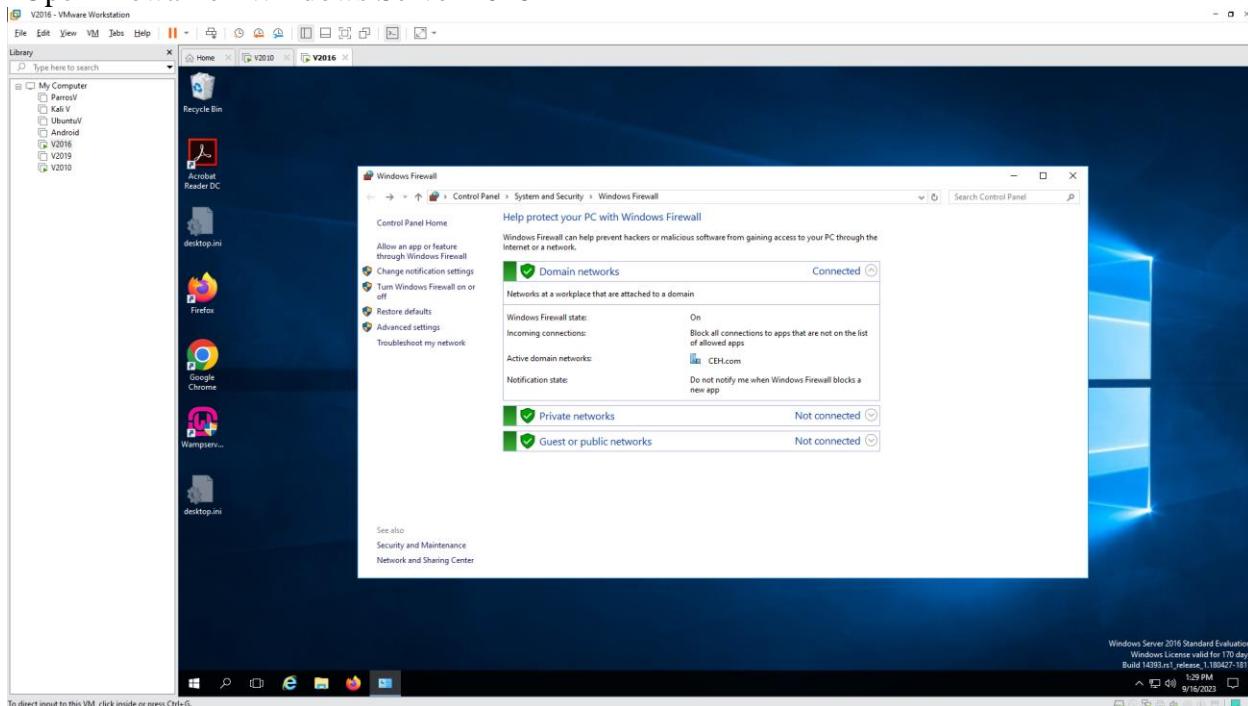
11:23 PM 9/16/2023

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.





- Open firewall on Windows Server 2016



- Stealth scan on Windows 10

V2010 - VMware Workstation

File Edit View VM Jobs Help

Library Type here to search

Home Zmap Scan Tools Profile Help

Target: 10.10.10.16

Command: nmap -sV -v 10.10.10.16

OS Host Services Nmap Output Ports / Hosts Topology Host Details Scans

Starting Nmap 7.00 (https://nmap.org) at 2023-09-16 13:30 SE Asia Standard Time

Initiating ARP Ping Scan at 13:30

Scanning 10.10.10.16 [1 port]

Completed Parallel DNS resolution of 1 host. at 13:30

Initiating Parallel DNS resolution of 1 host. at 13:30

Completed Parallel DNS resolution of 1 host. at 13:30, 0.03s elapsed

Initiating SYN Stealth Scan at 13:30

Scanning 10.10.10.16 [1000 ports]

Completed SYN Stealth Scan at 13:30, 4.41s elapsed (1000 total ports)

Map type: http://nmap.org/nsmap.html#http.nse

Host is up (0.00062s latency).

Not shown: 999 closed ports

PORT	STATE	SERVICE
53/tcp	open	domain
80/tcp	open	http
88/tcp	open	kerberos-sec
135/tcp	open	microsoft-ds
139/tcp	open	netbios-ssn
389/tcp	open	ldap
445/tcp	open	microsoft-ds
464/tcp	open	kpasswd3
593/tcp	open	http-rpc-epmap
636/tcp	open	ldaps
8001/tcp	open	msmq
2103/tcp	open	zephyr-clt
2105/tcp	open	eklogin
2107/tcp	open	mmmp-mgmt
3268/tcp	open	globalcatDAP
3269/tcp	open	globalcatDAPssl
3389/tcp	open	ms-wbt-server

MAC Address: 00:0C:29:47:86:30 (VMware)

Read data files from: C:\Program Files (x86)\Nmap

Nmap done: 1 IP address (1 host up) scanned in 4.78 seconds

Raw packets sent: 1984 (87.288KB) | Rcvd: 18 (776B)

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

V2010 - VMware Workstation

File Edit View VM Jobs Help

Library Type here to search

Home Zmap Scan Tools Profile Help

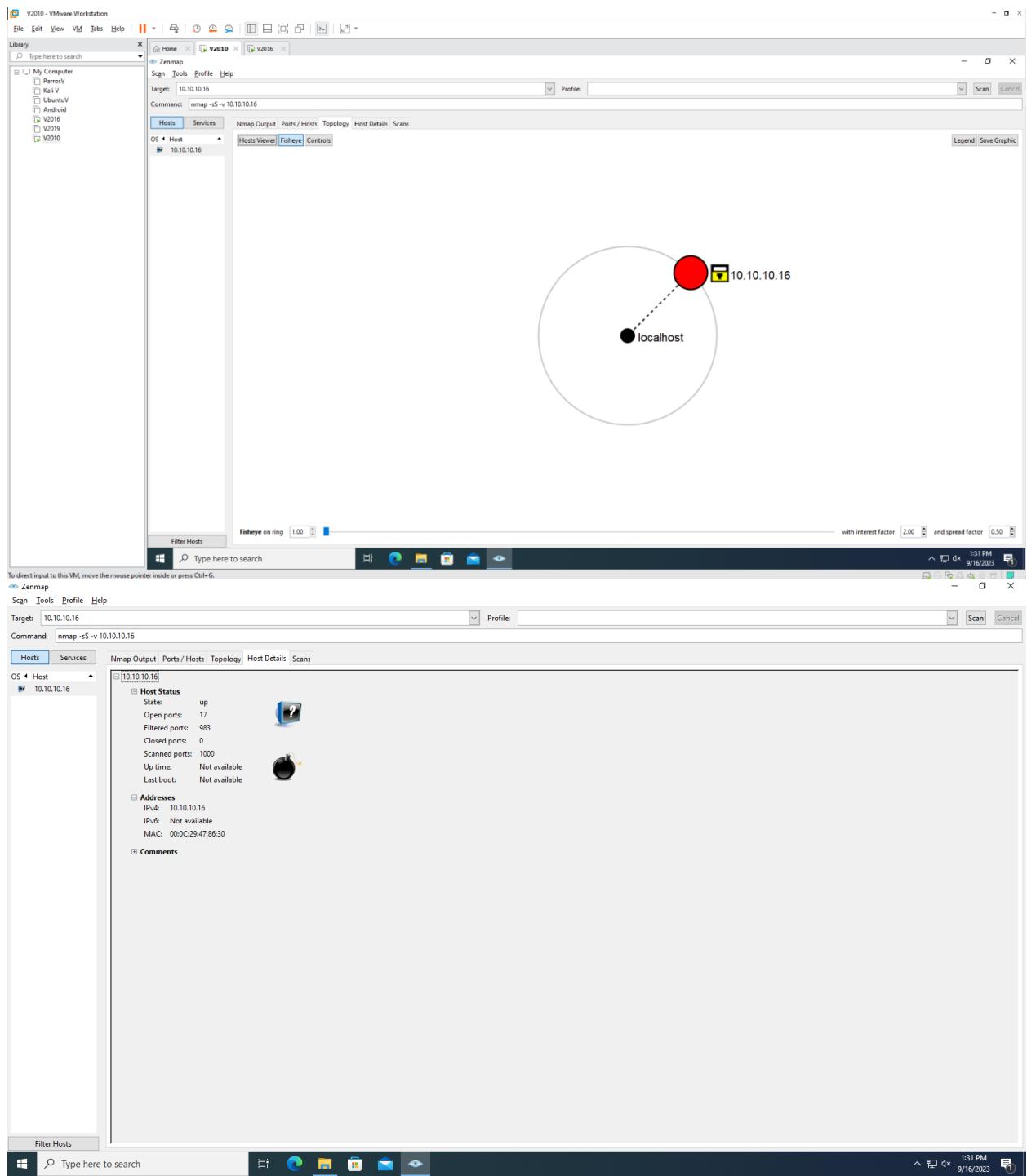
Target: 10.10.10.16

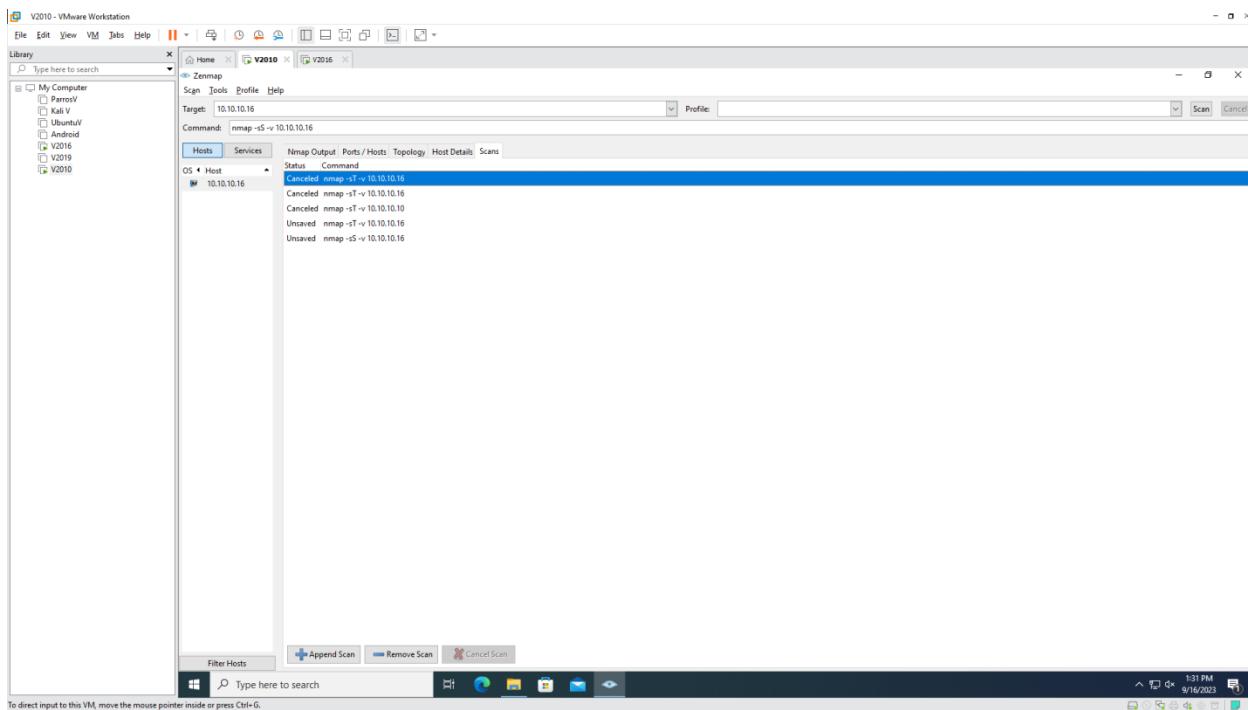
Command: nmap -sV -v 10.10.10.16

OS Host Services Nmap Output Ports / Hosts Topology Host Details Scans

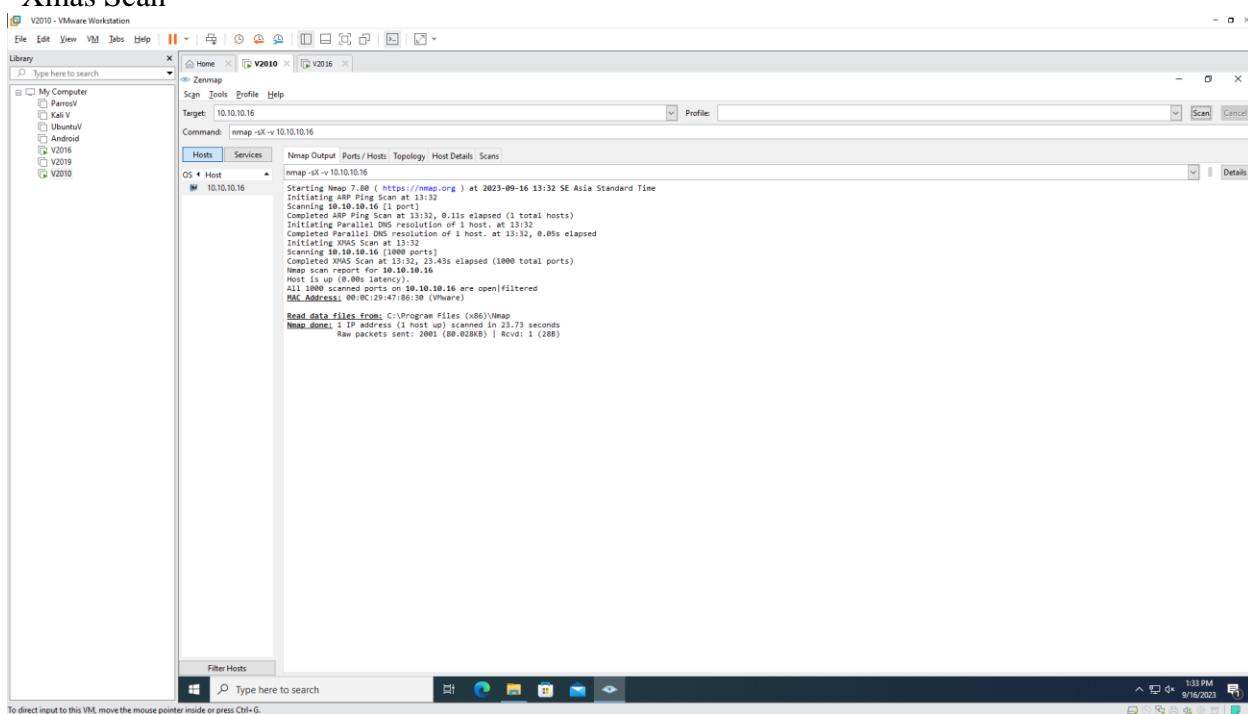
Port	Protocol	State	Service	Version
53	tcp	open	domain	
80	tcp	open	http	
88	tcp	open	kerberos-sec	
135	tcp	open	microsoft-ds	
139	tcp	open	netbios-ssn	
389	tcp	open	ldap	
445	tcp	open	microsoft-ds	
464	tcp	open	kpasswd3	
593	tcp	open	http-rpc-epmap	
636	tcp	open	ldaps	
8001	tcp	open	msmq	
2103	tcp	open	zephyr-clt	
2105	tcp	open	eklogin	
2107	tcp	open	mmmp-mgmt	
3268	tcp	open	globalcatDAP	
3269	tcp	open	globalcatDAPssl	
3389	tcp	open	ms-wbt-server	

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

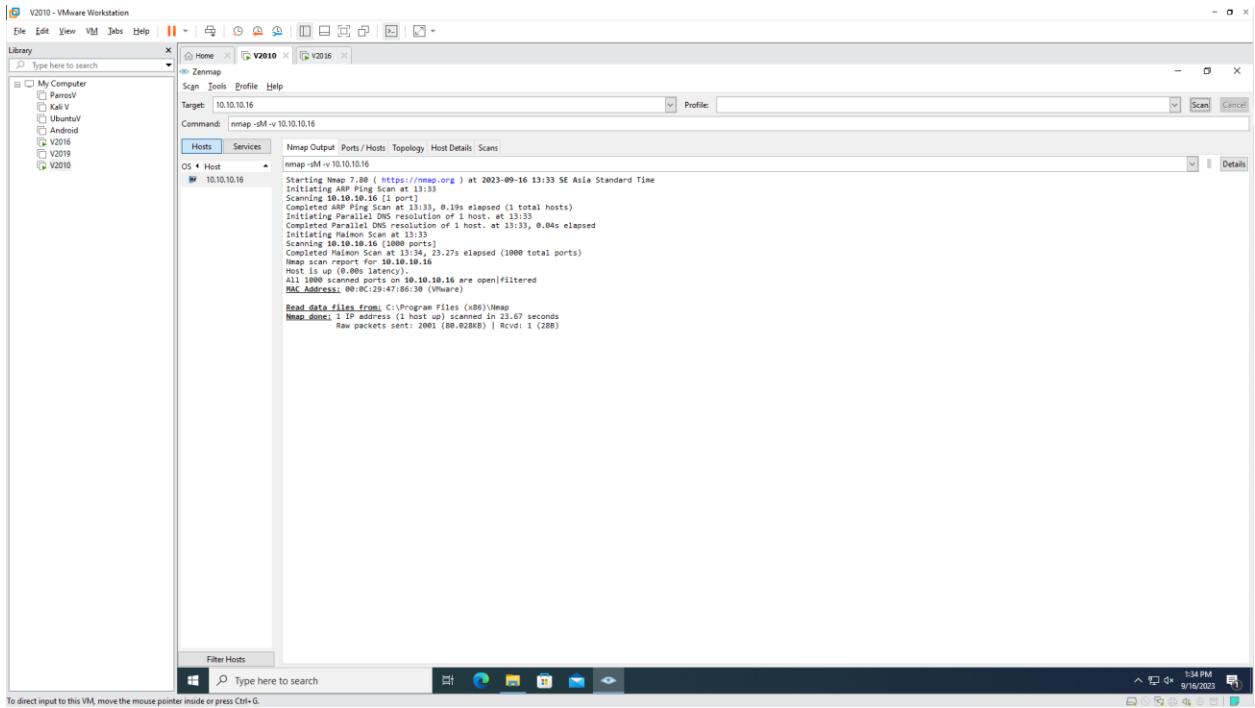




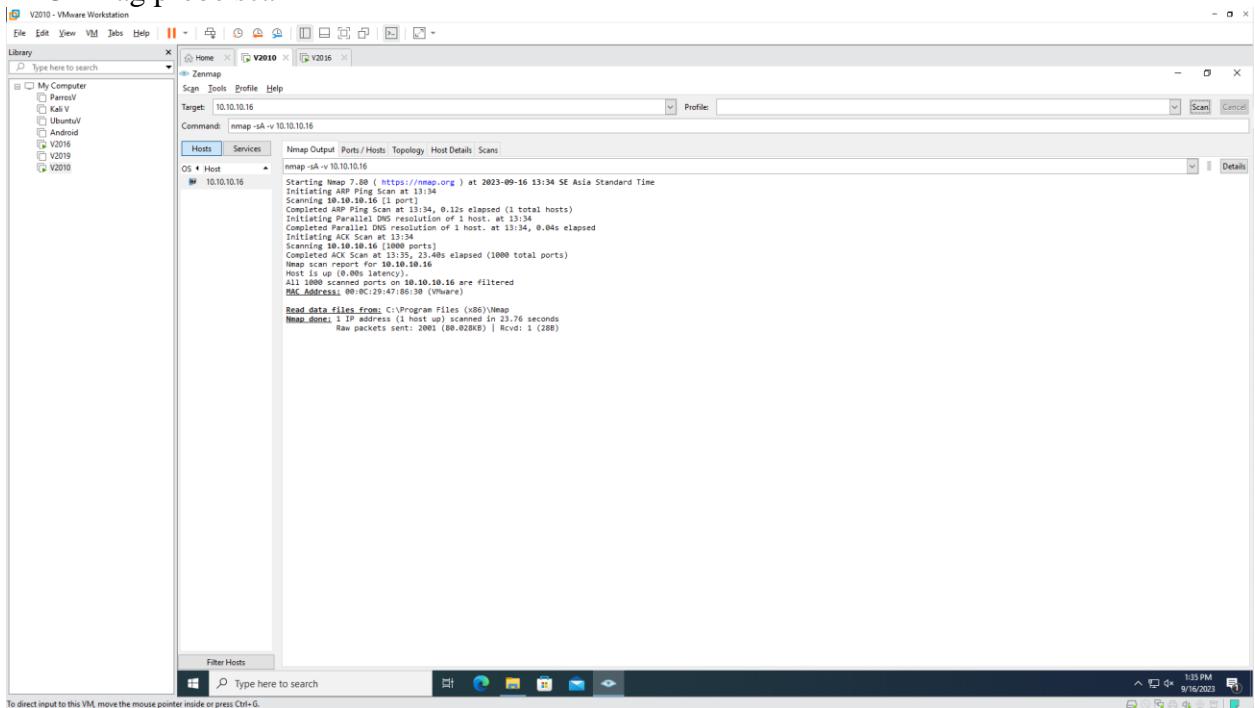
- Xmas Scan



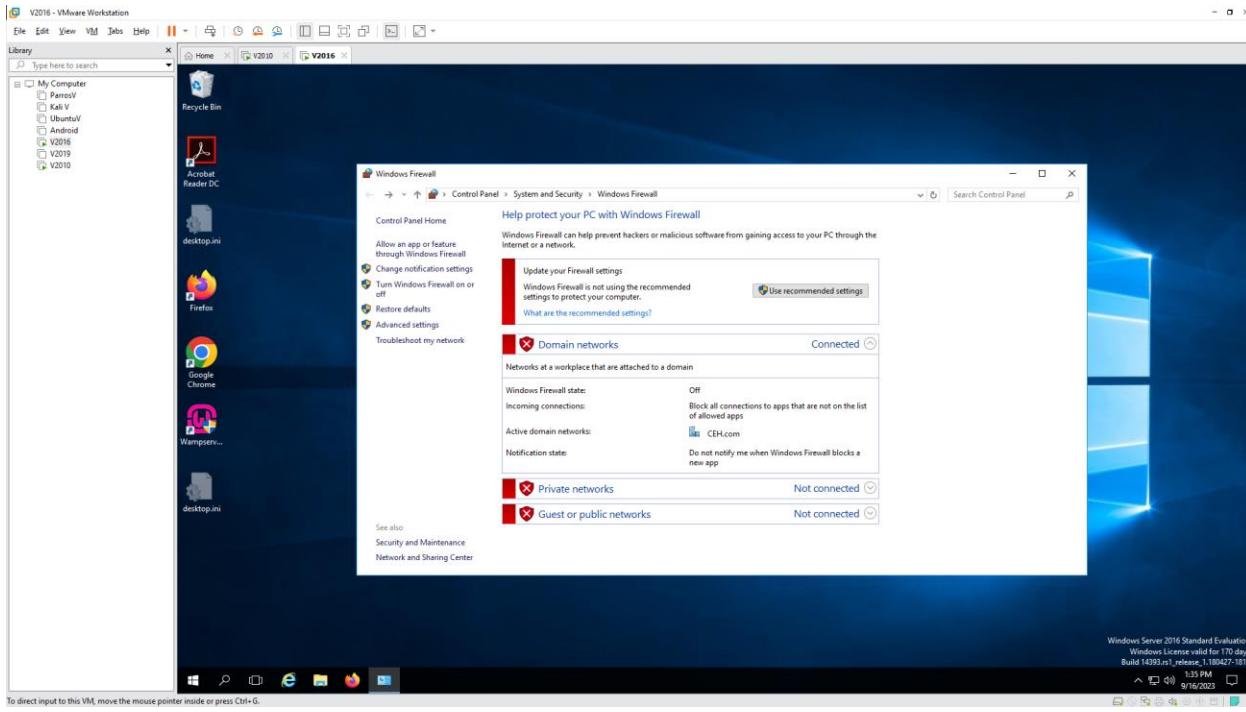
- Maimon scan



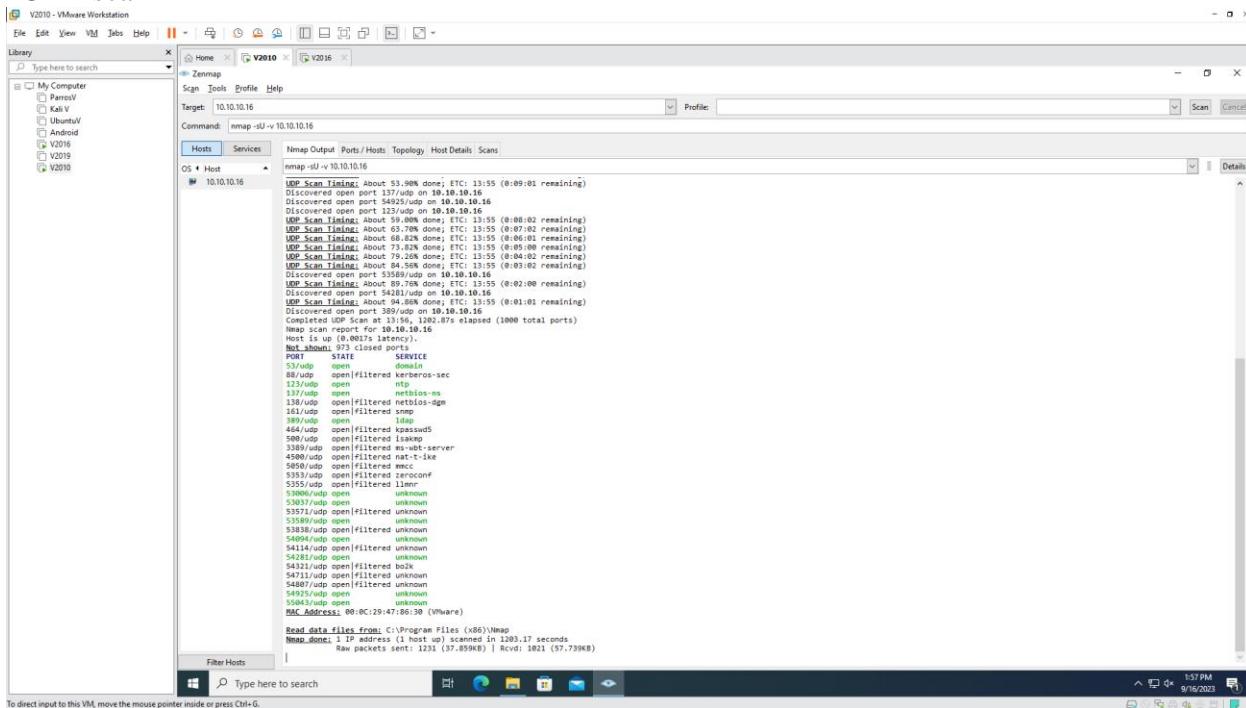
- ACK flag probe scan



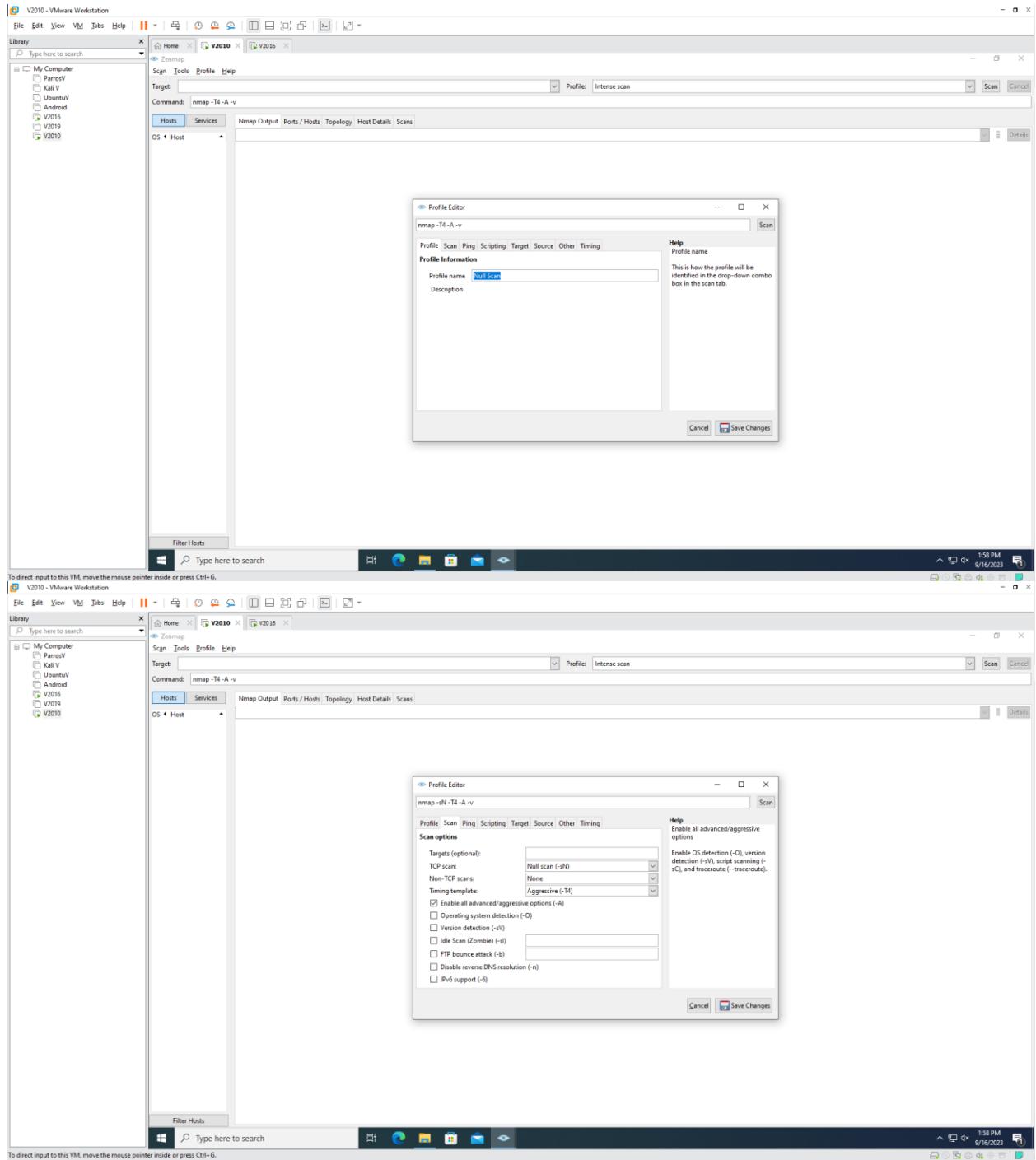
- Turn off firewall

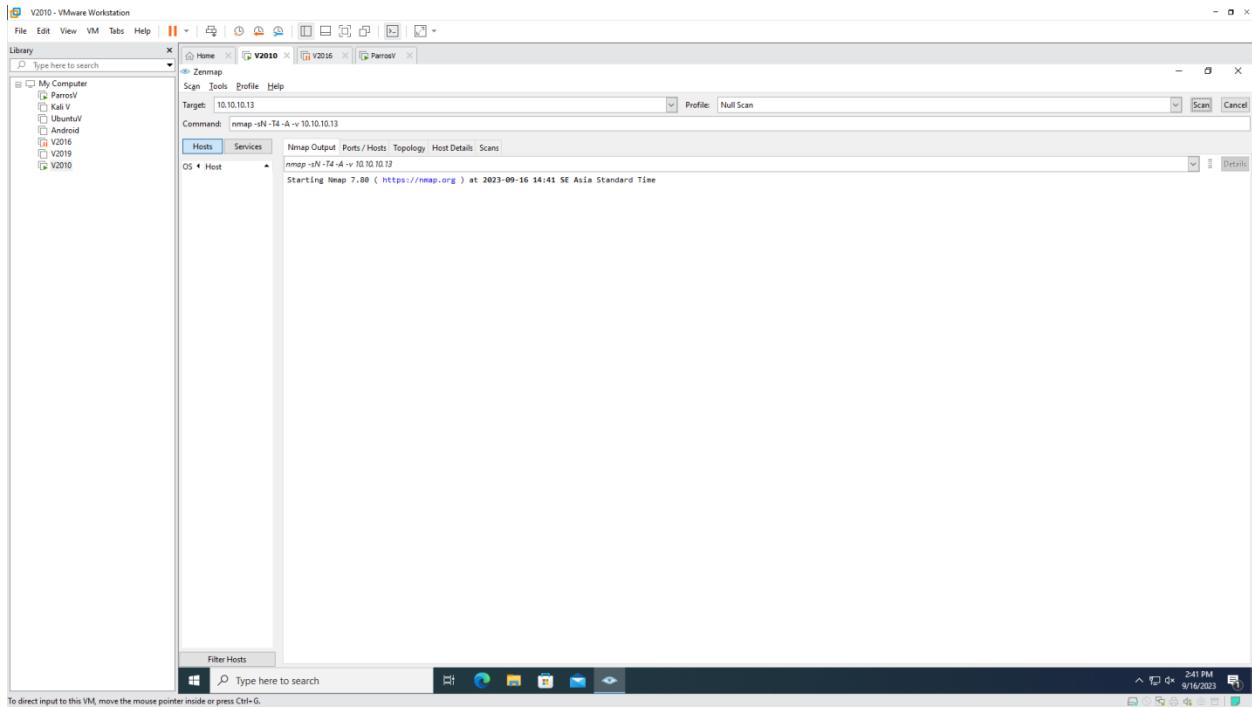


- UDP scan

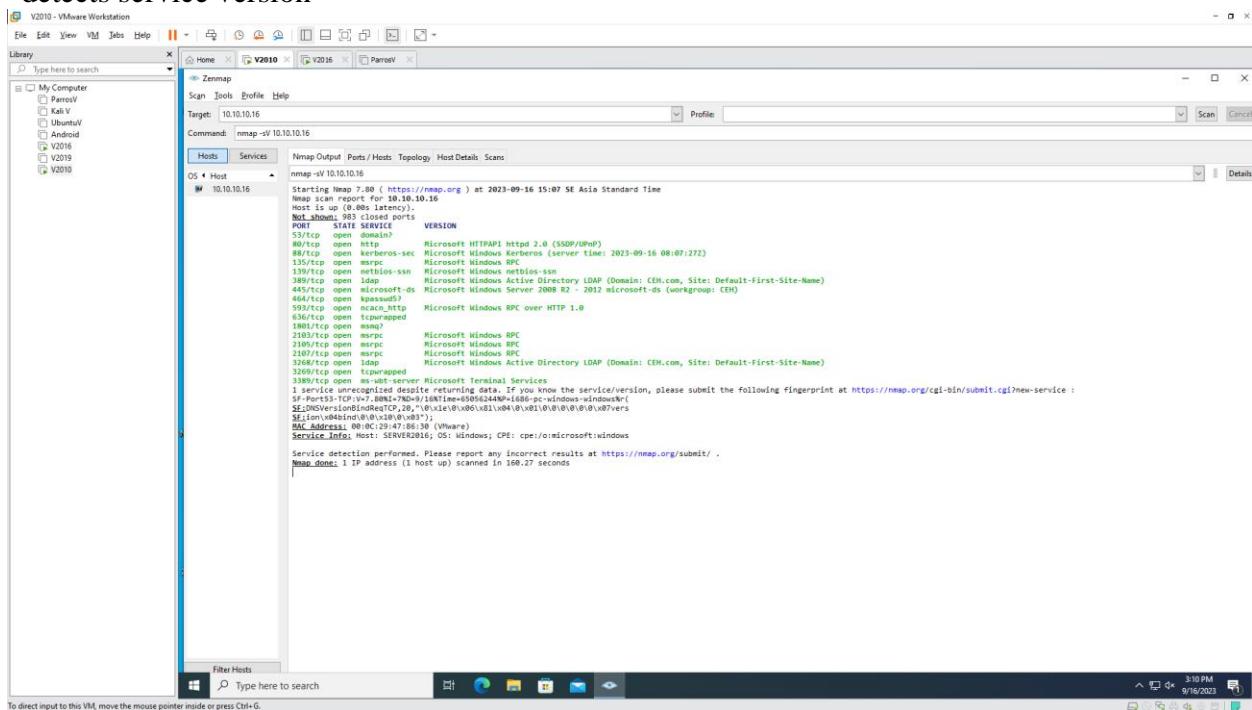


- Null Scan

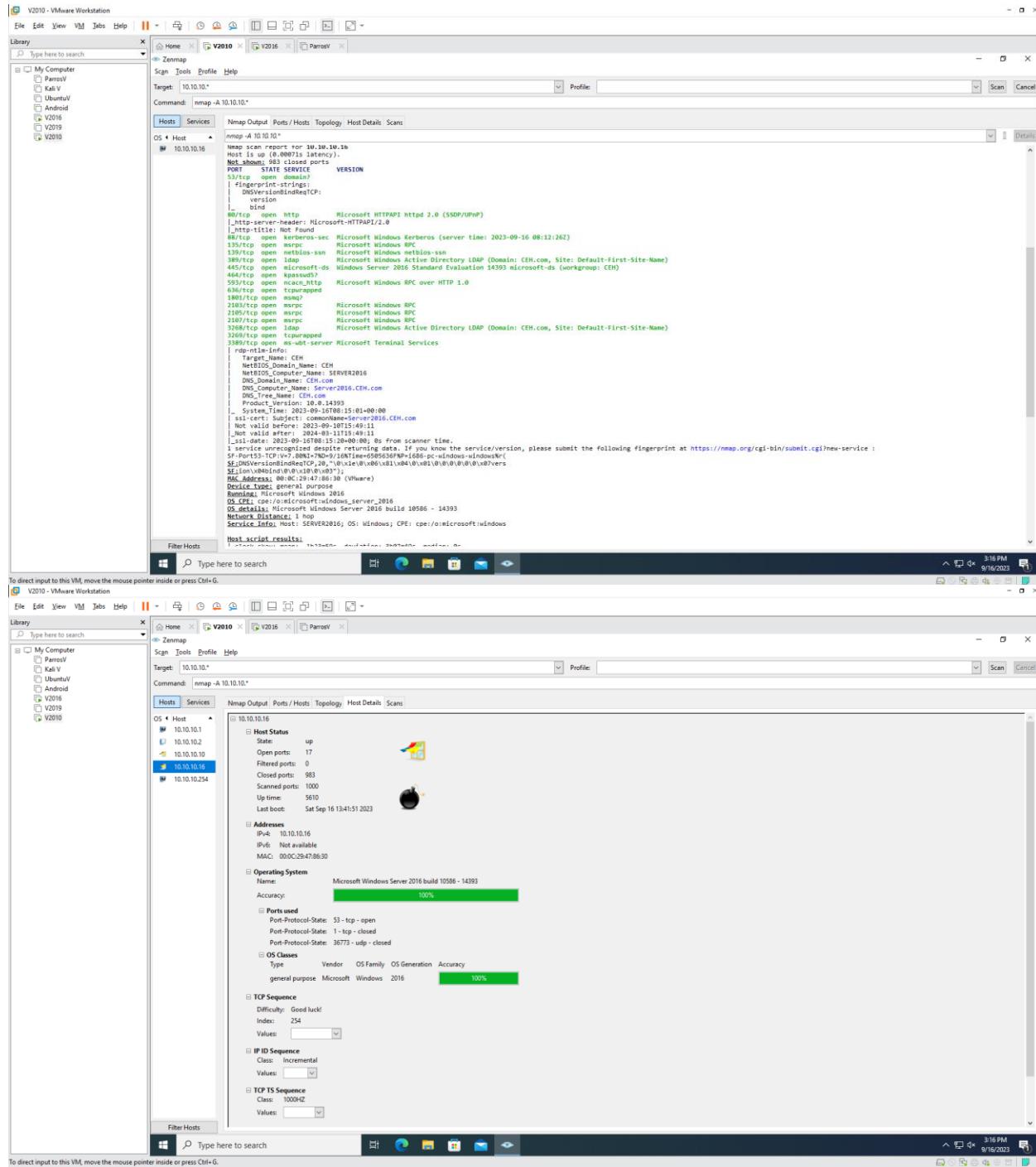




- detects service version



- enable aggressive scan



2.4 Explore Various Network Scanning Techniques using Hping3 - Open Parrot

- Open terminal

The image shows a screenshot of the Parrot OS desktop environment within a VMware Workstation window. The desktop background features a dark, abstract geometric pattern. Two terminal windows are open:

Top Terminal (Attacker's Home):

```
[attacker@parrot:~] $
```

Bottom Terminal (Rooted):[root@parrot:~/home/attacker]
[x]-[root@parrot:~/home/attacker]
hping3 -A 10.10.10.16 -p 80 -c 5
HPING 10.10.10.16 (eth0 10.10.10.16): A set, 40 headers + 0 data bytes
... 10.10.10.16 hping statistic ...
5 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
[x]-[root@parrot:~/home/attacker]
hping3 -A 10.10.10.16 -p 80 -c 5
HPING 10.10.10.16 (eth0 10.10.10.16): A set, 40 headers + 0 data bytes
... 10.10.10.16 hping statistic ...
5 packets transmitted, 0 packets received, 100% packet loss
round-trip min/avg/max = 0.0/0.0/0.0 ms
[x]-[root@parrot:~/home/attacker]
hping3 -A 10.10.10.16 -p 80 -c 5
HPING 10.10.10.16 (eth0 10.10.10.16): A set, 40 headers + 0 data bytes
[len=40 ip=10.10.10.16 ttl=128 DF id=1 sport=80 flags=R seq=0 win=0 rtt=5.1 ms
[len=40 ip=10.10.10.16 ttl=128 DF id=2 sport=80 flags=R seq=1 win=0 rtt=5.2 ms
[len=40 ip=10.10.10.16 ttl=128 DF id=3 sport=80 flags=R seq=2 win=0 rtt=5.2 ms
[len=40 ip=10.10.10.16 ttl=128 DF id=4 sport=80 flags=R seq=3 win=0 rtt=4.6 ms
[len=40 ip=10.10.10.16 ttl=128 DF id=6 sport=80 flags=R seq=4 win=0 rtt=16.7 ms
... 10.10.10.16 hping statistic ...
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 4.6/7.3/16.7 ms
[root@parrot:~/home/attacker]
#

```
ParrotV - VMware Workstation
File Edit View VM Jobs Help ||| Applications Places System Parrot Terminal
Library Type here to search
My Computer ParrotV Kali V UbuntuV Android V2016 V2019 V2010
File Edit View Search Terminal Help
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 4.6/7.3/16.7 ms
[root@parrot ~]# hping3 -8 0-100 -S 10.10.10.16 -V
using eth0, addr: 10.10.10.13, MTU: 1500
Scanning 10.10.10.16 (10.10.10.16), port 0-100
101 ports to scan, use -v to see all the replies
+---+
|port| serv name | flags |ttl| id | win | ten |
+---+
  0   : ..R.A... 128 1792 0 46
  1  tcpmux : ..R.A... 128 2048 0 46
  2  nntp : ..R.A... 128 2304 0 46
  3   : ..R.A... 128 2560 0 46
  4  echo : ..R.A... 128 2816 0 46
  5   : ..R.A... 128 3072 0 46
  6  zip : ..R.A... 128 3328 0 46
  7  echo : ..R.A... 128 3584 0 46
  8   : ..R.A... 128 3840 0 46
  9  discard : ..R.A... 128 4096 0 46
 10   : ..R.A... 128 4352 0 46
 11  systat : ..R.A... 128 4608 0 46
 12   : ..R.A... 128 4864 0 46
 13  daytime : ..R.A... 128 5120 0 46
 14   : ..R.A... 128 5376 0 46
 15  netstat : ..R.A... 128 5632 0 46
 16  rttMonModule : ..R.A... 128 5888 0 46
 17  qtd : ..R.A... 128 6144 0 46
 18  pollinotify : ..R.A... 128 6400 0 46
 19  chargen : ..R.A... 128 6656 0 46
 20  ftp-data : ..R.A... 128 6912 0 46
 21  ftp : ..R.A... 128 7168 0 46
 22  ssh : ..R.A... 128 7424 0 46
 23  telnet : ..R.A... 128 7680 0 46
 24   : ..R.A... 128 7936 0 46
 25  smtp : ..R.A... 128 8192 0 46
 26   : ..R.A... 128 8448 0 46
 27   : ..R.A... 128 8704 0 46
 28   : ..R.A... 128 8960 0 46
+---+
To direct input to this VM, click inside or press Ctrl-G.
ParrotV - VMware Workstation
File Edit View VM Jobs Help ||| Applications Places System Parrot Terminal
Library Type here to search
My Computer ParrotV Kali V UbuntuV Android V2016 V2019 V2010
File Edit View Search Terminal Help
[root@parrot ~]# hping3 -F -P -U 10.10.10.16 -p 80 -c 5
HPING 10.10.10.16 (eth0 10.10.10.16): FPU set, 40 headers + 0 data bytes
len=46 ip=10.10.10.16 ttl=128 DF id=30731 sport=80 flags=RA seq=0 win=0 rtt=3.5 ms
len=46 ip=10.10.10.16 ttl=128 DF id=30732 sport=80 flags=RA seq=1 win=0 rtt=7.1 ms
len=46 ip=10.10.10.16 ttl=128 DF id=30733 sport=80 flags=RA seq=2 win=0 rtt=6.6 ms
len=46 ip=10.10.10.16 ttl=128 DF id=30734 sport=80 flags=RA seq=3 win=0 rtt=5.8 ms
len=46 ip=10.10.10.16 ttl=128 DF id=30735 sport=80 flags=RA seq=4 win=0 rtt=5.6 ms

... 10.10.10 hping statistic ...
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 3.5/5.7/7.1 ms
[root@parrot ~]#
```

```
ParrotV - VMware Workstation
File Edit View VM Jobs Help ||| Applications Places System Parrot Terminal
Library Type here to search
My Computer ParrotV Kali V UbuntuV Android V2016 V2019 V2010
File Edit View Search Terminal Help
[root@parrot ~]# hping3 -F -P -U 10.10.10.16 -p 80 -c 5
HPING 10.10.10.16 (eth0 10.10.10.16): FPU set, 40 headers + 0 data bytes
len=46 ip=10.10.10.16 ttl=128 DF id=30731 sport=80 flags=RA seq=0 win=0 rtt=3.5 ms
len=46 ip=10.10.10.16 ttl=128 DF id=30732 sport=80 flags=RA seq=1 win=0 rtt=7.1 ms
len=46 ip=10.10.10.16 ttl=128 DF id=30733 sport=80 flags=RA seq=2 win=0 rtt=6.6 ms
len=46 ip=10.10.10.16 ttl=128 DF id=30734 sport=80 flags=RA seq=3 win=0 rtt=5.8 ms
len=46 ip=10.10.10.16 ttl=128 DF id=30735 sport=80 flags=RA seq=4 win=0 rtt=5.6 ms

... 10.10.10 hping statistic ...
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 3.5/5.7/7.1 ms
[root@parrot ~]#
```

```

ParrotV - VMware Workstation
File Edit View VM Jobs Help || Applications Places System ParrotV Sat Sep16, 04:36
Library Type here to search
My Computer ParrotV Kali V UbuntuV Android V2016 V2019 V2010
File Edit View Search Terminal Help
[root@parrot ~]# hping3 -P -U 10.10.10.16 -p 80 -c 5
HPING 10.10.10.16 (eth0 10.10.10.16): FPU set, 40 headers + 0 data bytes
len=40 ip=10.10.10.16 ttl=128 DF id=30731 sport=80 flags=RA seq=0 win=0 rtt=3.5 ms
len=40 ip=10.10.10.16 ttl=128 DF id=30732 sport=80 flags=RA seq=1 win=0 rtt=7.1 ms
len=40 ip=10.10.10.16 ttl=128 DF id=30733 sport=80 flags=RA seq=2 win=0 rtt=6.6 ms
len=40 ip=10.10.10.16 ttl=128 DF id=30734 sport=80 flags=RA seq=3 win=0 rtt=5.8 ms
len=40 ip=10.10.10.16 ttl=128 DF id=30735 sport=80 flags=RA seq=4 win=0 rtt=5.6 ms

... 10.10.10.16 hping statistic ...
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 3.5/5.7/7.1 ms
[root@parrot ~]# hping3 --scan 0-100 -s 10.10.10.16
Scanning 10.10.10.16 (10.10.10.16), port 0-100
101 ports to scan, use -V to see all the replies
+---+-----+-----+-----+
|port| serv name | flags | ttl| id | win | len |
+---+-----+-----+-----+
 53 domain   : .S.A... 128 17784 8192 46
 80 http     : .S.A... 128 24696 8192 46
 88 kerberos : .S.A... 128 26744 8192 46
All replies received. Done.
Not responding ports:
[root@parrot ~]# 

CEHall Module 14
Hacking Web
Applications

ParrotV - VMware Workstation
File Edit View VM Jobs Help || Applications Places System ParrotV Sat Sep16, 04:36
Library Type here to search
My Computer ParrotV Kali V UbuntuV Android V2016 V2019 V2010
File Edit View Search Terminal Help
[root@parrot ~]# hping3 -F -P -U 10.10.10.16 -p 80 -c 5
HPING 10.10.10.16 (eth0 10.10.10.16): FPU set, 40 headers + 0 data bytes
len=40 ip=10.10.10.16 ttl=128 DF id=30731 sport=80 flags=RA seq=0 win=0 rtt=3.5 ms
len=40 ip=10.10.10.16 ttl=128 DF id=30732 sport=80 flags=RA seq=1 win=0 rtt=7.1 ms
len=40 ip=10.10.10.16 ttl=128 DF id=30733 sport=80 flags=RA seq=2 win=0 rtt=6.6 ms
len=40 ip=10.10.10.16 ttl=128 DF id=30734 sport=80 flags=RA seq=3 win=0 rtt=5.8 ms
len=40 ip=10.10.10.16 ttl=128 DF id=30735 sport=80 flags=RA seq=4 win=0 rtt=5.6 ms

... 10.10.10.16 hping statistic ...
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 3.5/5.7/7.1 ms
[root@parrot ~]# hping3 --scan 0-100 -s 10.10.10.16
Scanning 10.10.10.16 (10.10.10.16), port 0-100
101 ports to scan, use -V to see all the replies
+---+-----+-----+-----+
|port| serv name | flags | ttl| id | win | len |
+---+-----+-----+-----+
 53 domain   : .S.A... 128 17784 8192 46
 80 http     : .S.A... 128 24696 8192 46
 88 kerberos : .S.A... 128 26744 8192 46
All replies received. Done.
Not responding ports:
[root@parrot ~]# hping3 -1 10.10.10.16 -p 80 -c 5
HPING 10.10.10.16 (eth0 10.10.10.16): icmp mode set, 28 headers + 0 data bytes
len=46 ip=10.10.10.16 ttl=128 id=30839 icmp_seq=0 rtt=6.2 ms
len=46 ip=10.10.10.16 ttl=128 id=30840 icmp_seq=1 rtt=14.8 ms
len=46 ip=10.10.10.16 ttl=128 id=30841 icmp_seq=2 rtt=2.0 ms
len=46 ip=10.10.10.16 ttl=128 id=30842 icmp_seq=3 rtt=2.0 ms
len=46 ip=10.10.10.16 ttl=128 id=30843 icmp_seq=4 rtt=4.7 ms

... 10.10.10.16 hping statistic ...
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 2.0/5.9/14.8 ms
[root@parrot ~]# 

```