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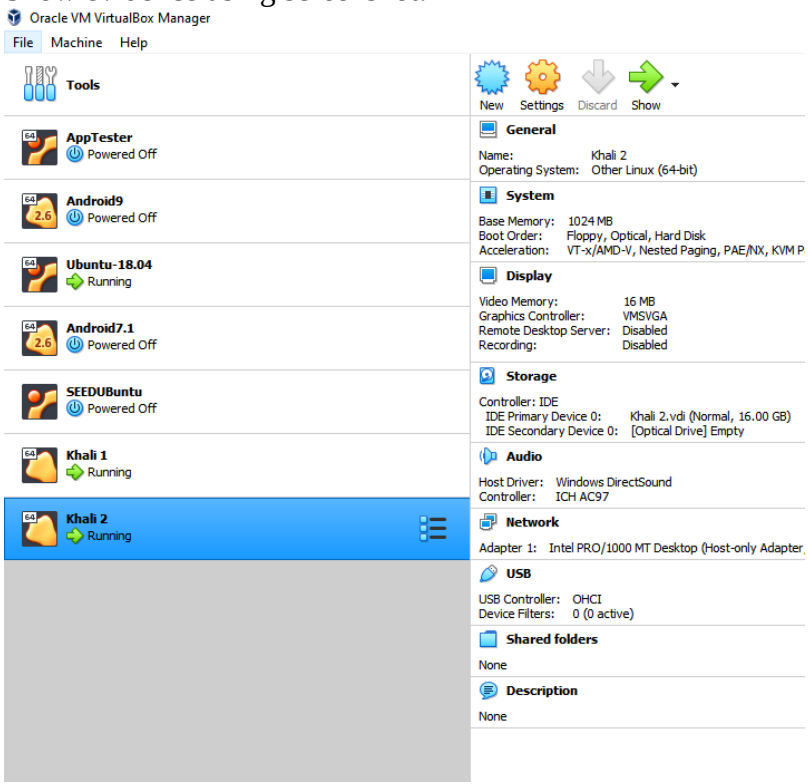
CS 445/645: Internet Security

Instructor: Shahriar Badsha

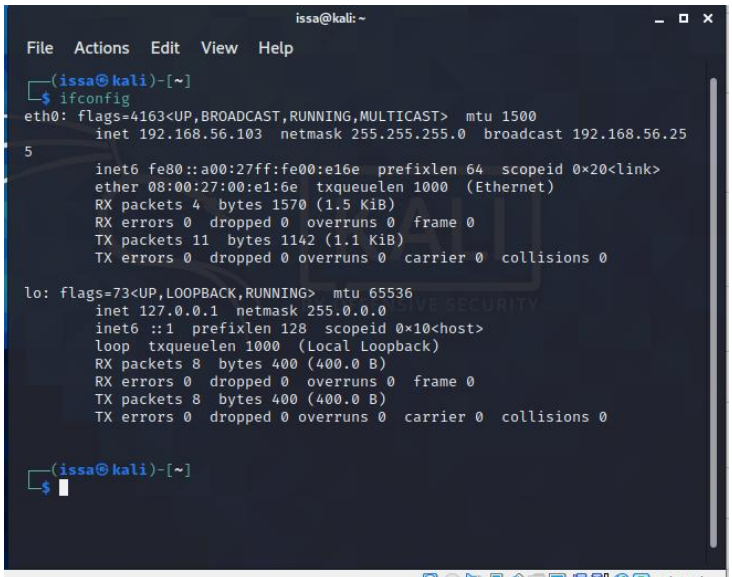
Assignment 2 (Total 20 points)
<u>Due back on: Wed, Feb 16, 2021</u>

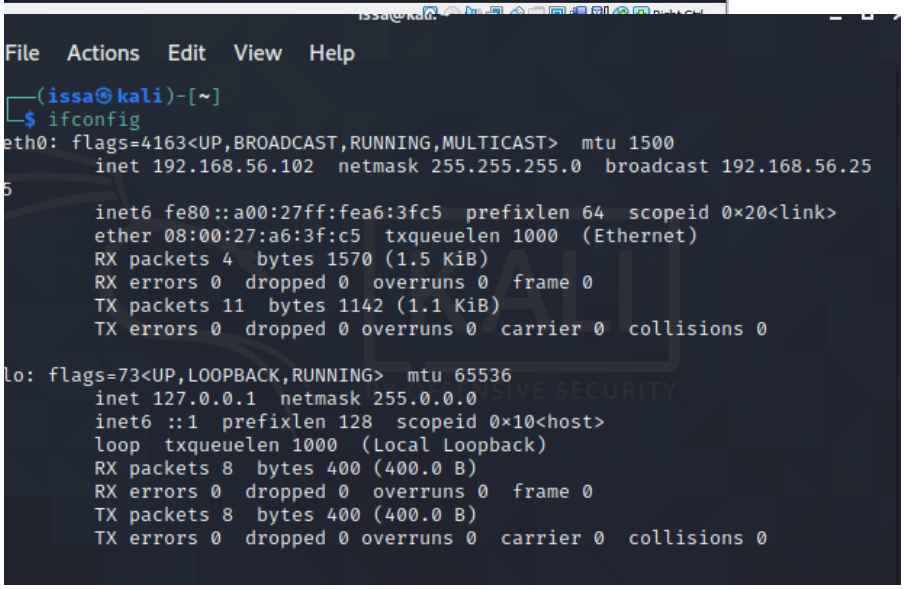
[6] Part 1: Setup:

1) Make sure to have two Kali VM and one non-Kali (e.g., Ubuntu Linux) VM. Show evidence using screenshot.



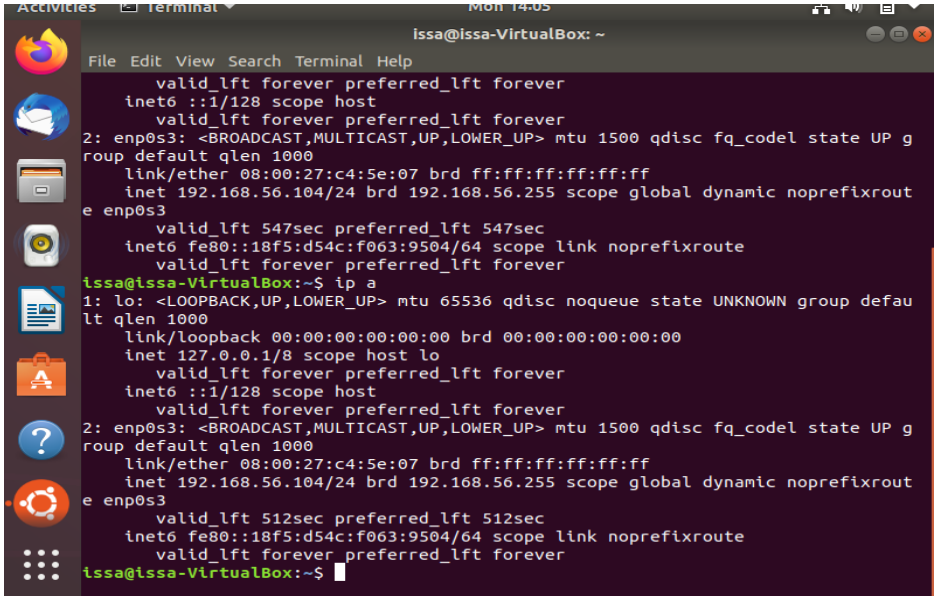
2) Make sure they are in the same subnet, i.e., all of them can ping each other. Show evidence using screenshot.





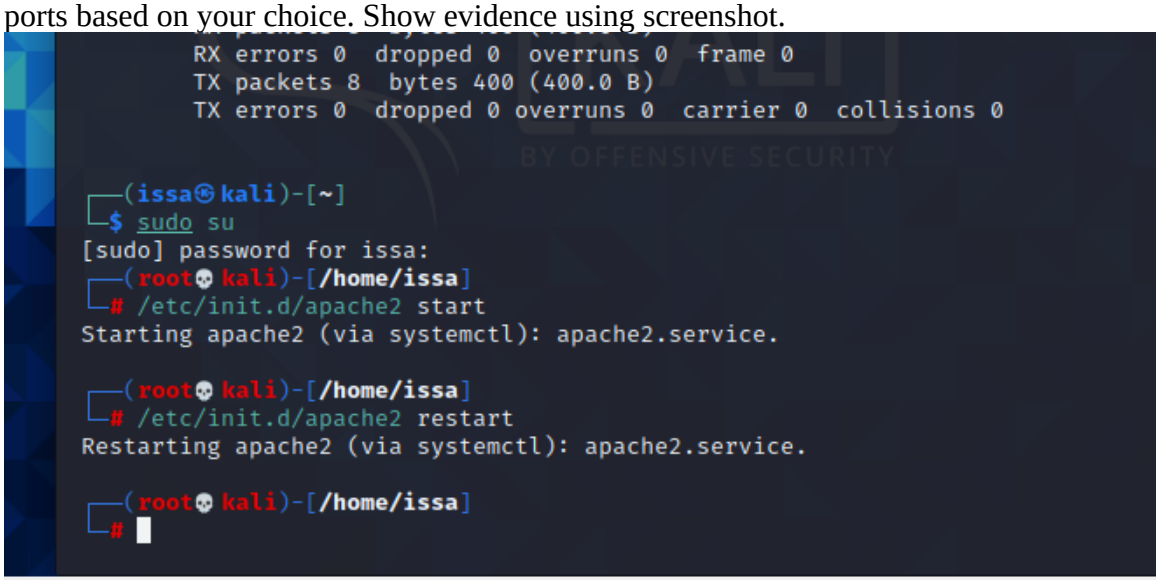
Ip address is 192.168.56.102 in Kali 1

Ip address is 192.168.56.103 in Kali 2



Ip address is 192.168.56.104 in the Ubuntu

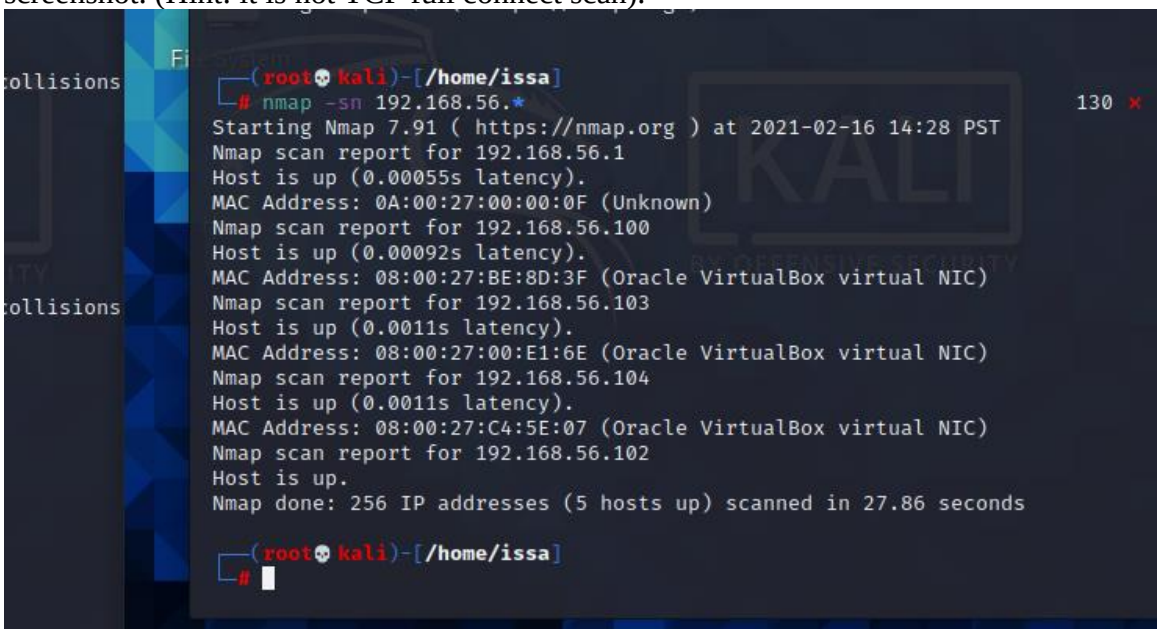
3) Make sure web service is running in one of the target Kali. You can open other ports based on your choice. Show evidence using screenshot.



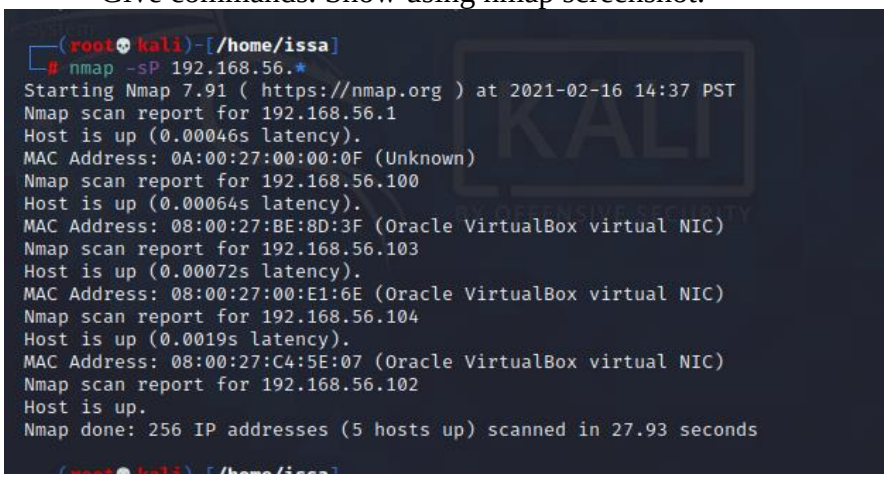
[14] Part 2: Experiment:

1) Intruders are able to sweep entire networks looking for targets with nmap. This is usually done with a ping sweep. How can you do ping sweep on your virtual network? Give command(s). How many hosts are up? Show using nmap

screenshot. (Hint: it is not TCP full connect scan).



2) Equipped with previous step, put the live host ip addresses in a file and use the file to probe using nmap. Which ports are open and which services are running? Give commands. Show using nmap screenshot.



```
┌──(root💀 kali)-[/home/issa]
└─# nmap -iL file.txt
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 07:32 PST
Nmap scan report for 192.168.56.103
Host is up (0.00024s latency).
Not shown: 999 closed ports
PORT   STATE SERVICE
80/tcp open  http
MAC Address: 08:00:27:00:E1:6E (Oracle VirtualBox virtual NIC)

Nmap scan report for 192.168.56.104
Host is up (0.00023s latency).
All 1000 scanned ports on 192.168.56.104 are closed
MAC Address: 08:00:27:C4:5E:07 (Oracle VirtualBox virtual NIC)

Nmap scan report for 192.168.56.102
Host is up (0.0000070s latency).
All 1000 scanned ports on 192.168.56.102 are closed

Nmap done: 3 IP addresses (3 hosts up) scanned in 26.50 seconds
```

3) Find out the versions of services these are running and find out the operating systems. Show using nmap screenshot.

```
Nmap done: 1 IP address (1 host up) scanned in 16.11 seconds

┌──(root💀 kali)-[/home/issa]
└─# nmap 192.168.56.103 -sV -O
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-15 23:14 PST
Nmap scan report for 192.168.56.103
Host is up (0.0011s latency).
Not shown: 999 closed ports
PORT   STATE SERVICE VERSION
80/tcp open  http    Apache httpd 2.4.46 ((Debian))
MAC Address: 08:00:27:00:E1:6E (Oracle VirtualBox virtual NIC)
Device type: general purpose
Running: Linux 4.X|5.X
OS CPE: cpe:/o:linux:linux_kernel:4 cpe:/o:linux:linux_kernel:5
OS details: Linux 4.15 - 5.6
Network Distance: 1 hop

OS and Service detection performed. Please report any incorrect results at https:/
/nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 22.42 seconds

┌──(root💀 kali)-[/home/issa]
```

```
File  Actions  Edit  View  Help

┌──(root💀 kali)-[/home/issa]
└─# nmap 192.168.56.102 -sV -O
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-15 23:17 PST
Nmap scan report for 192.168.56.102
Host is up (0.000076s latency).
All 1000 scanned ports on 192.168.56.102 are closed
Too many fingerprints match this host to give specific OS details
Network Distance: 0 hops

OS and Service detection performed. Please report any incorrect results at https:/
/nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 15.95 seconds

┌──(root💀 kali)-[/home/issa]
└─# nmap 192.168.56.104 -sV -O
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-15 23:18 PST
Nmap scan report for 192.168.56.104
Host is up (0.00080s latency).
All 1000 scanned ports on 192.168.56.104 are closed
MAC Address: 08:00:27:C4:5E:07 (Oracle VirtualBox virtual NIC)
Too many fingerprints match this host to give specific OS details
Network Distance: 1 hop

OS and Service detection performed. Please report any incorrect results at https:/
/nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 16.11 seconds

┌──(root💀 kali)-[/home/issa]
└─#
```

4) Can you create an executable script that will use nmap scans at varying intervals to scan 10 well known ports and print the status of the ports in easy readable manner. Show the script code and show the results using screenshot.

```
File  Actions  Edit  View  Help
  GNU nano 5.3                                    file.sh
nmap -p 21 192.168.56.102
nmap -p 22 192.168.56.102
nmap -p 25 192.168.56.102
nmap -p 53 192.168.56.102
nmap -p 80 192.168.56.102
nmap -p 110 192.168.56.102
nmap -p 123 192.168.56.102
nmap -p 143 192.168.56.102
nmap -p 443 192.168.56.102
nmap -p 465 192.168.56.102
```

```
┌──(root💀 kali)-[/home/issa]
└─# chmod +x file.sh

┌──(root💀 kali)-[/home/issa]
└─# ./file.sh
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:04 PST
Nmap scan report for 192.168.56.102
Host is up (0.000038s latency).

PORT   STATE  SERVICE
21/tcp closed ftp

Nmap done: 1 IP address (1 host up) scanned in 13.13 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:04 PST
Nmap scan report for 192.168.56.102
Host is up (0.000036s latency).

PORT   STATE  SERVICE
22/tcp closed ssh

Nmap done: 1 IP address (1 host up) scanned in 13.14 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:05 PST
Nmap scan report for 192.168.56.102
Host is up (0.000069s latency).

PORT   STATE  SERVICE
25/tcp closed smtp

Nmap done: 1 IP address (1 host up) scanned in 13.11 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:05 PST
Nmap scan report for 192.168.56.102
Host is up (0.000037s latency).
```

```
PORT   STATE  SERVICE
53/tcp closed domain

Nmap done: 1 IP address (1 host up) scanned in 13.11 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:05 PST
Nmap scan report for 192.168.56.102
Host is up (0.000034s latency).

PORT   STATE  SERVICE
80/tcp closed http

Nmap done: 1 IP address (1 host up) scanned in 13.11 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:05 PST
Nmap scan report for 192.168.56.102
Host is up (0.000034s latency).

PORT    STATE  SERVICE
110/tcp closed pop3

Nmap done: 1 IP address (1 host up) scanned in 13.11 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:06 PST
Nmap scan report for 192.168.56.102
Host is up (0.000034s latency).

PORT    STATE  SERVICE
123/tcp closed ntp

Nmap done: 1 IP address (1 host up) scanned in 13.11 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:06 PST
Nmap scan report for 192.168.56.102
Host is up (0.000035s latency).
```

```
Nmap done: 1 IP address (1 host up) scanned in 13.11 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:06 PST
Nmap scan report for 192.168.56.102
Host is up (0.000036s latency).

PORT    STATE  SERVICE
443/tcp closed https

Nmap done: 1 IP address (1 host up) scanned in 13.11 seconds
Starting Nmap 7.91 ( https://nmap.org ) at 2021-02-16 15:06 PST
Nmap scan report for 192.168.56.102
Host is up (0.000034s latency).

PORT    STATE  SERVICE
465/tcp closed smtps

Nmap done: 1 IP address (1 host up) scanned in 13.11 seconds
```