

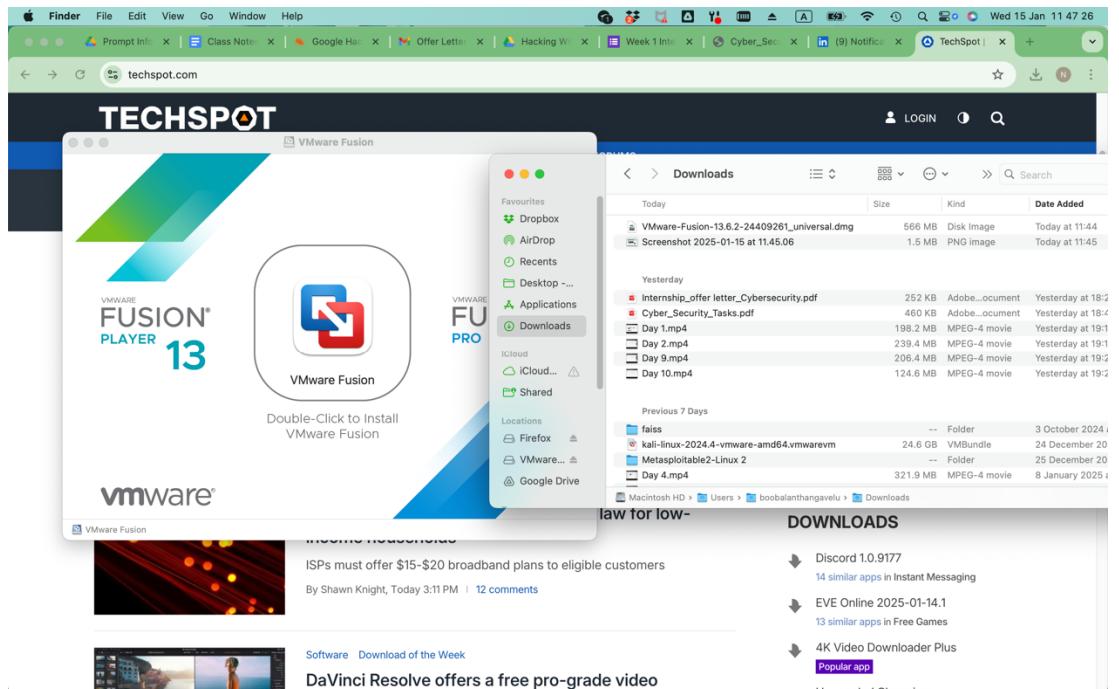
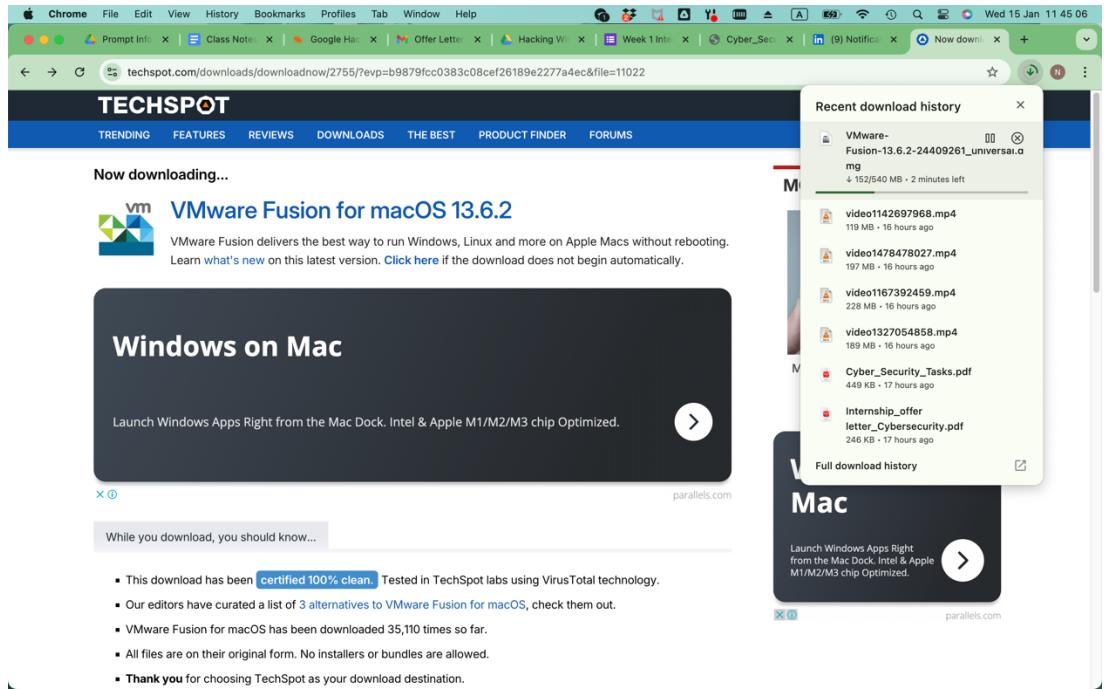
Week 1: Introduction to Cybersecurity and Virtualization

Cybersecurity Lab Setup Reports

Task 1: Setting Up Virtualization Software

1. Installed VMware Fusion

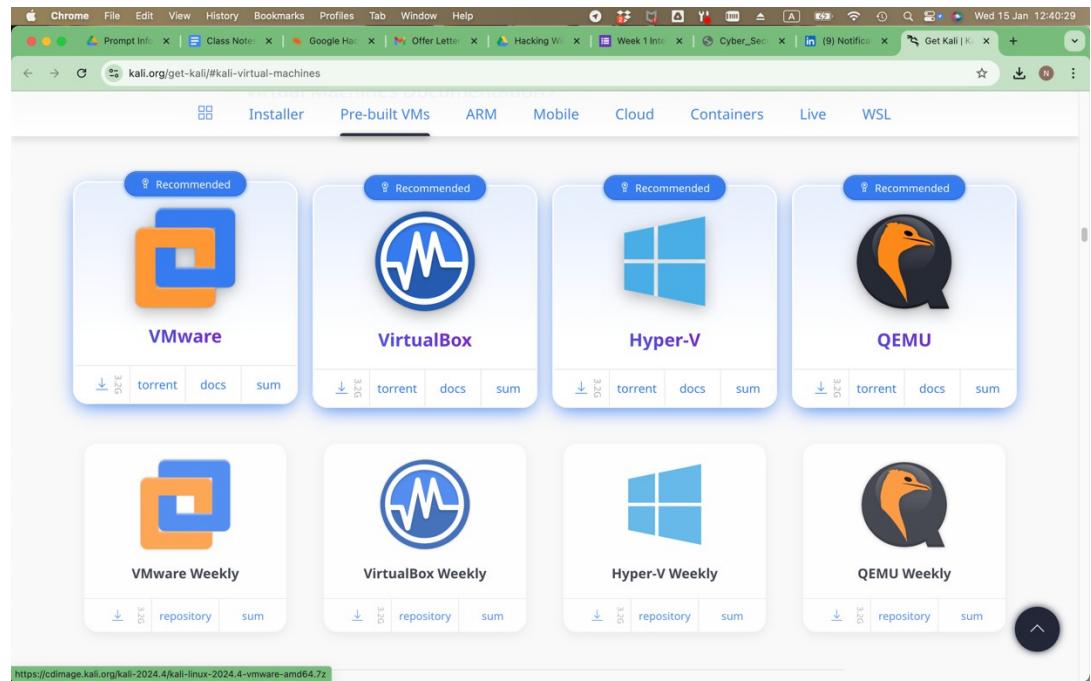
- Downloaded and installed VMware Fusion.



Task 2: Downloading Kali Linux and Metasploitable

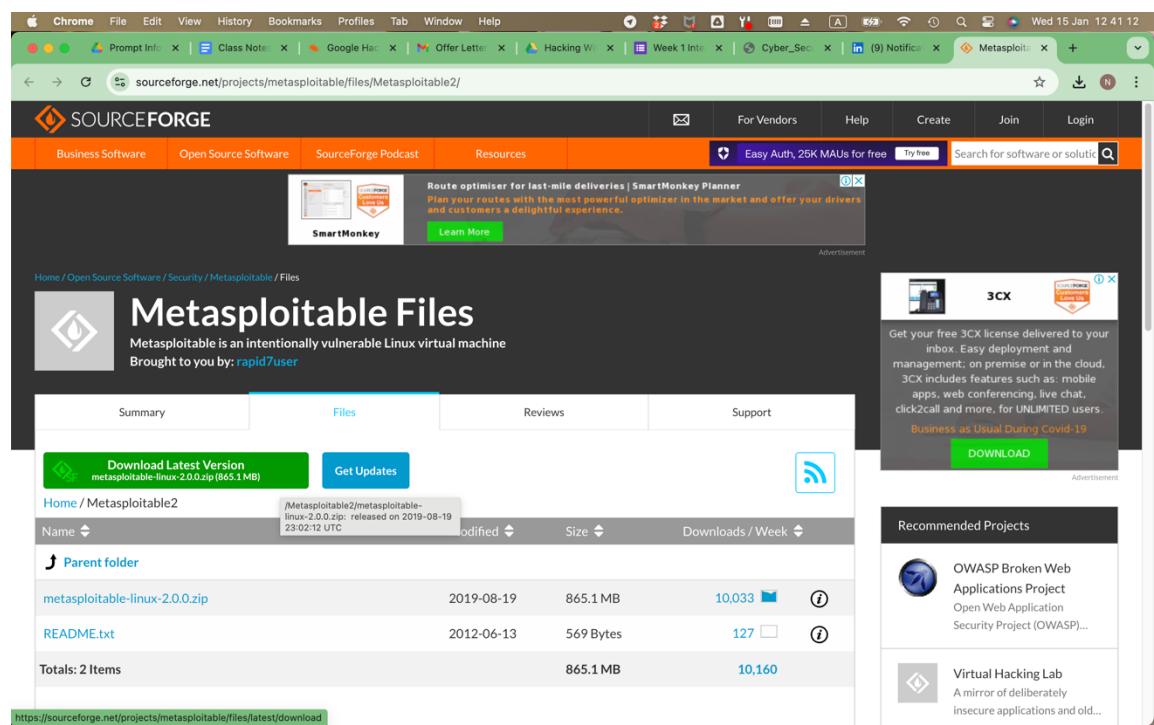
1. Downloaded Kali Linux

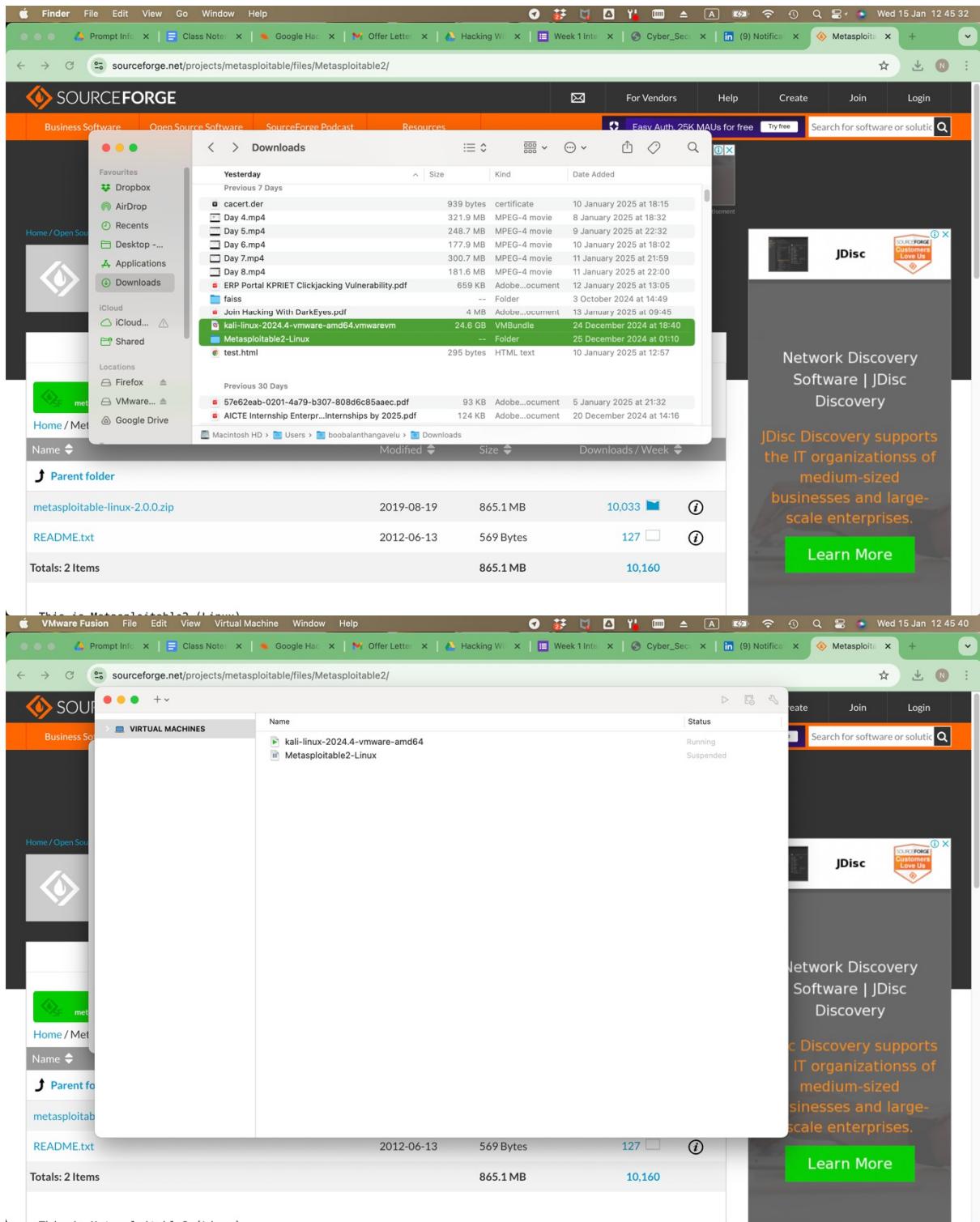
- Used the official website: [Kali Linux Downloads](#).



2. Downloaded Metasploitable

- Used the official repository: [Metasploitable Downloads](#).





Task 3 & 4: Creating Virtual Machines

1. Kali Linux Virtual Machine:

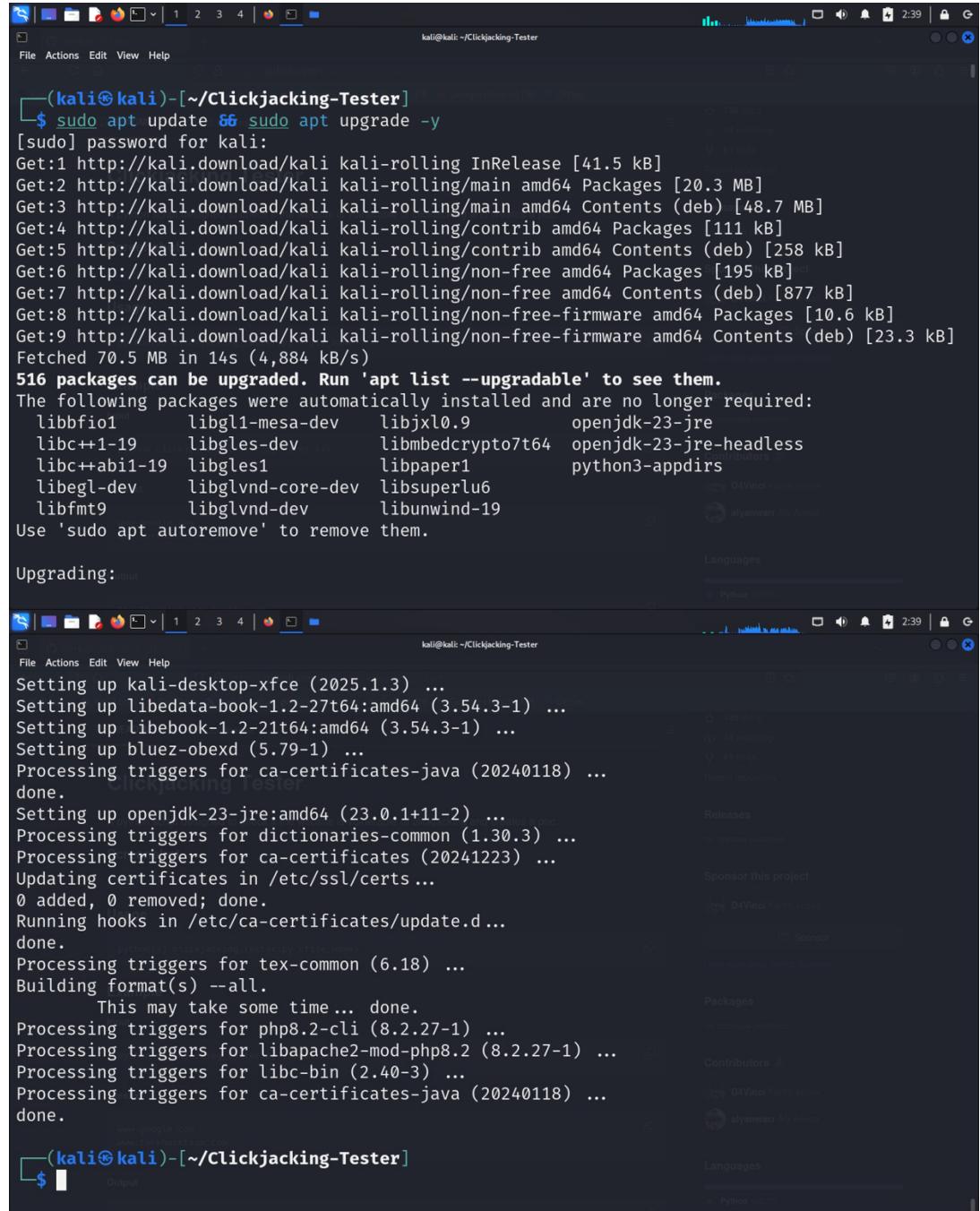
- Created a new VM in VMware Fusion.
- Allocated resources:

RAM: 4 GB

Disk Space: 50 GB

- Attached the Kali Linux ISO to the virtual CD/DVD drive.
- Booted the VM and followed the installation steps. Commands used:

```
# Update system
sudo apt update && sudo apt upgrade -y
```



```
(kali㉿kali)-[~/Clickjacking-Tester]
$ sudo apt update && sudo apt upgrade -y
[sudo] password for kali:
Get:1 http://kali.download/kali kali-rolling InRelease [41.5 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [20.3 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents (deb) [48.7 MB]
Get:4 http://kali.download/kali kali-rolling/contrib amd64 Packages [111 kB]
Get:5 http://kali.download/kali kali-rolling/contrib amd64 Contents (deb) [258 kB]
Get:6 http://kali.download/kali kali-rolling/non-free amd64 Packages [195 kB]
Get:7 http://kali.download/kali kali-rolling/non-free amd64 Contents (deb) [877 kB]
Get:8 http://kali.download/kali kali-rolling/non-free-firmware amd64 Packages [10.6 kB]
Get:9 http://kali.download/kali kali-rolling/non-free-firmware amd64 Contents (deb) [23.3 kB]
Fetched 70.5 MB in 14s (4,884 kB/s)
516 packages can be upgraded. Run 'apt list --upgradable' to see them.
The following packages were automatically installed and are no longer required:
  libbbfi01      libgl1-mesa-dev    libjxl0.9        openjdk-23-jre
  libc++1-19     libgles-dev       libmbcrypto7t64   openjdk-23-jre-headless
  libc++abi1-19   libgles1         libpaper1       python3-appdirs
  libegl-dev      libglvnd-core-dev  libsuperlu6
  libfmt9        libglvnd-dev      libunwind-19

Use 'sudo apt autoremove' to remove them.

Upgrading:
Setting up kali-desktop-xfce (2025.1.3) ...
Setting up libedata-book-1.2-27t64:amd64 (3.54.3-1) ...
Setting up libebook-1.2-21t64:amd64 (3.54.3-1) ...
Setting up bluez-obexd (5.79-1) ...
Processing triggers for ca-certificates-java (20240118) ...
done.
Setting up openjdk-23-jre:amd64 (23.0.1+11-2) ...
Processing triggers for dictionaries-common (1.30.3) ...
Processing triggers for ca-certificates (20241223) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d ...
done.
Processing triggers for tex-common (6.18) ...
Building format(s) --all.
  This may take some time... done.
Processing triggers for php8.2-cli (8.2.27-1) ...
Processing triggers for libapache2-mod-php8.2 (8.2.27-1) ...
Processing triggers for libc-bin (2.40-3) ...
Processing triggers for ca-certificates-java (20240118) ...
done.

(kali㉿kali)-[~/Clickjacking-Tester]
```

- # Install essential tools


```
sudo apt install net-tools nmap
```

```

Processing triggers for libc-bin (2.40-3) ...
Processing triggers for ca-certificates-java (20240118) ...
done.

[kali㉿kali]-[~/Clickjacking-Tester]
$ sudo apt install net-tools nmap
[sudo] password for kali:
net-tools is already the newest version (2.10-1.1).
net-tools set to manually installed.
nmap is already the newest version (7.95+dfsg-1kali1).
nmap set to manually installed.
The following packages were automatically installed and are no longer required:
  libbfio1   libgl1-mesa-dev   libjxl0.9      openjdk-23-jre
  libc++1-19  libgles-dev     libmbcrypto7t64  openjdk-23-jre-headless
  libc++abi1-19 libgles1      libpaper1      python3-appdirs
  libegl-dev   libglvnd-core-dev libsperlu6
  libfmt9      libglvnd-dev    libunwind-19
Use 'sudo apt autoremove' to remove them.

Summary:
Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 20

[kali㉿kali]-[~/Clickjacking-Tester]
$ 

```

2. Metasploitable Virtual Machine:

- Created another VM for Metasploitable.
- Allocated resources:

RAM: 512 MB
Disk Space: 8 GB

- Attached the Metasploitable ISO and completed the installation.

```

* Starting deferred execution scheduler atd [ OK ]
* Starting periodic command scheduler crond [ OK ]
* Starting Tomcat servlet engine tomcat5.5 [ OK ]
* Starting web server apache2 [ OK ]
* Running local boot scripts (/etc/rc.local)
nohup: appending output to 'nohup.out'
nohup: appending output to 'nohup.out' [ OK ]

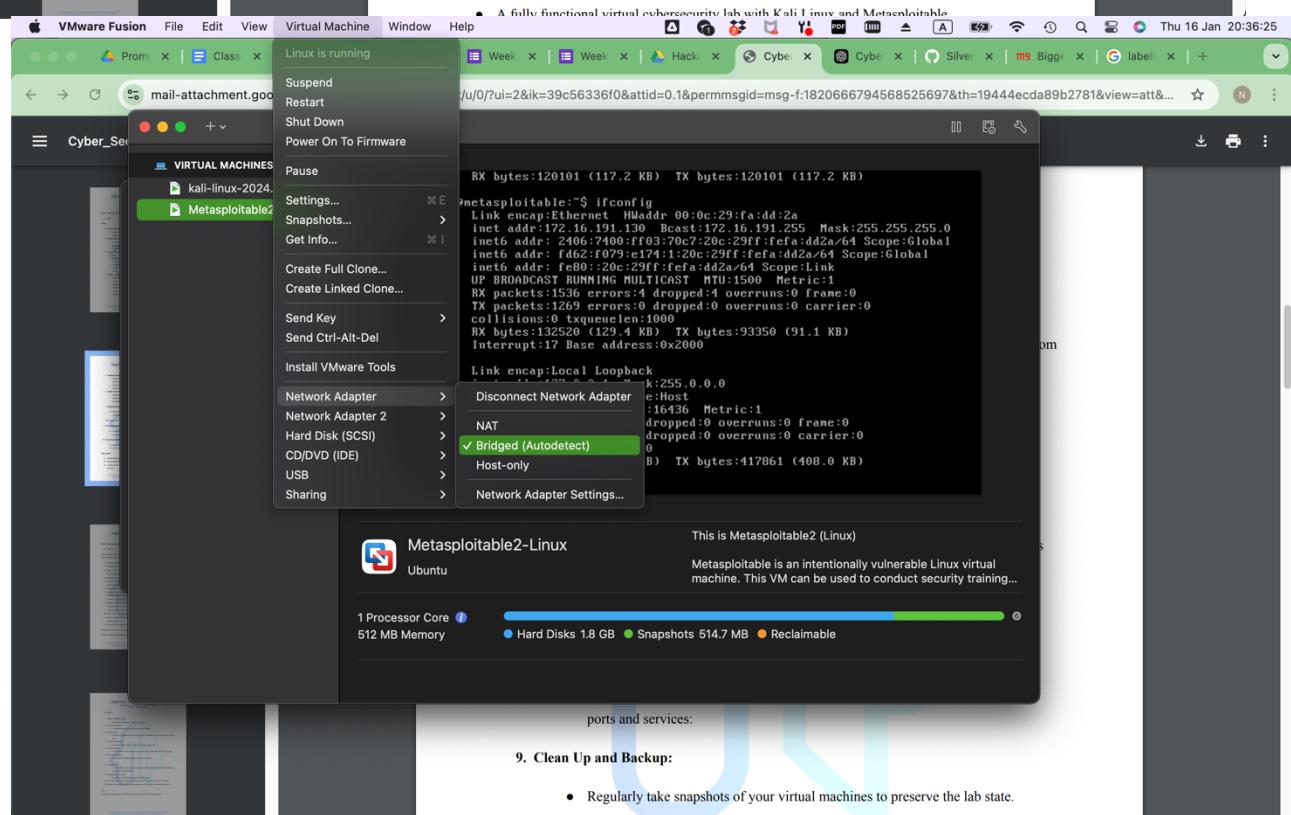
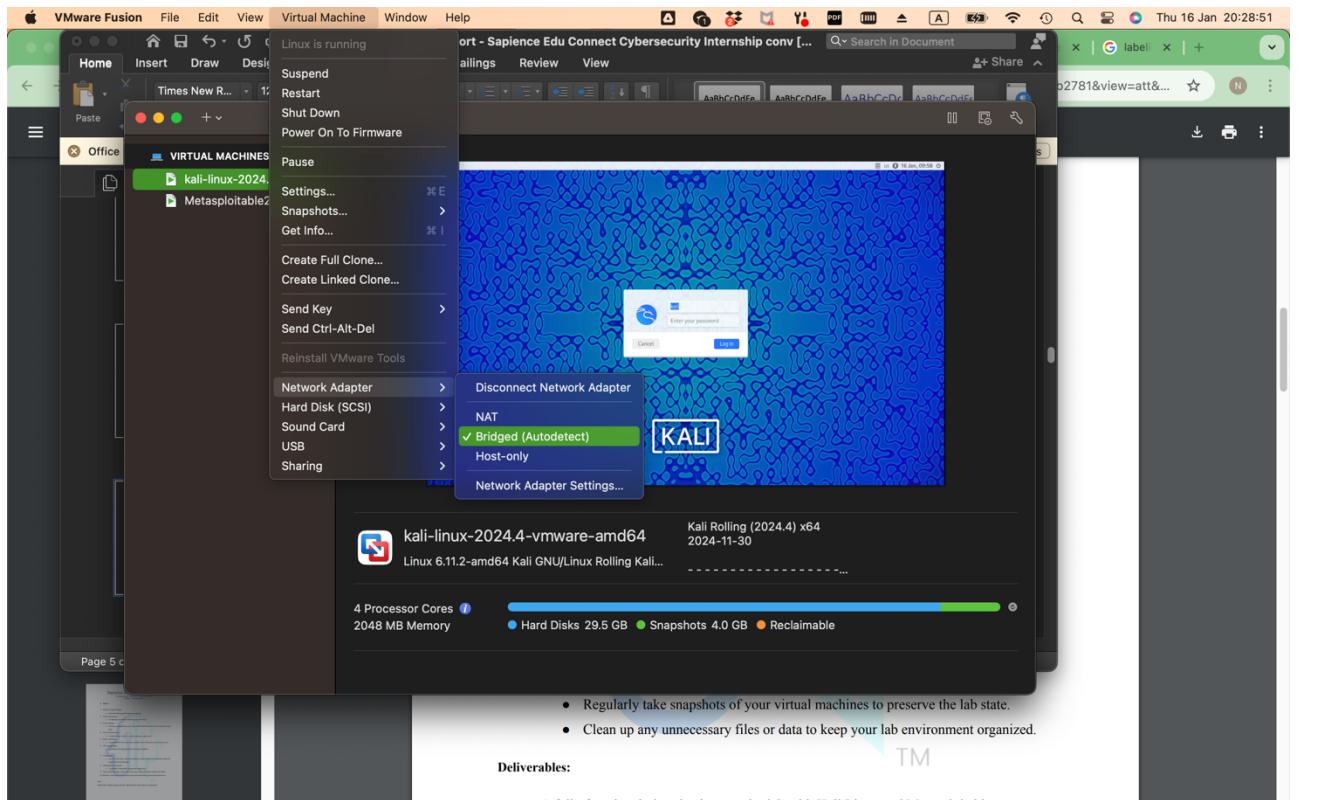
Warning: Never expose this VM to an untrusted network!
Contact: msfdev[at]metasploit.com
Login with msfadmin/msfadmin to get started

metasploitable login: 

```

Task 5: Configuring Networking

- Configured both VMs to use a bridged network adapter communicate with each other and the host.



- Verified the IP addresses using:

```
# On Kali Linux:  
ifconfig
```

The screenshot shows a terminal window titled 'kali@kali:~'. The window displays the output of the 'ifconfig' command. It shows two interfaces: 'eth0' and 'lo'. 'eth0' has an IPv4 address of 172.16.191.128 and an IPv6 address of fe80::f8ab:fb73:6326:5e9c. 'lo' is a loopback interface with an IPv4 address of 127.0.0.1. Both interfaces are up and running.

```
kali@kali:~$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
        inet 172.16.191.128 netmask 255.255.255.0 broadcast 172.16.191.255  
        inet6 fe80::f8ab:fb73:6326:5e9c prefixlen 64 scopeid 0x20<link>  
          ether 00:0c:29:17:47:fc txqueuelen 1000 (Ethernet)  
            RX packets 1043943 bytes 148431897 (1.3 GiB)  
            RX errors 0 dropped 347 overruns 0 frame 0  
            TX packets 166673 bytes 14669899 (13.9 MiB)  
            TX errors 0 dropped 19 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
        inet 127.0.0.1 netmask 255.0.0.0  
        inet6 ::1 prefixlen 128 scopeid 0x10<host>  
          loop txqueuelen 1000 (Local Loopback)  
            RX packets 188 bytes 16367 (15.9 KiB)  
            RX errors 0 dropped 0 overruns 0 frame 0  
            TX packets 188 bytes 16367 (15.9 KiB)  
            TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
# On Metasploitable:  
Ifconfig
```

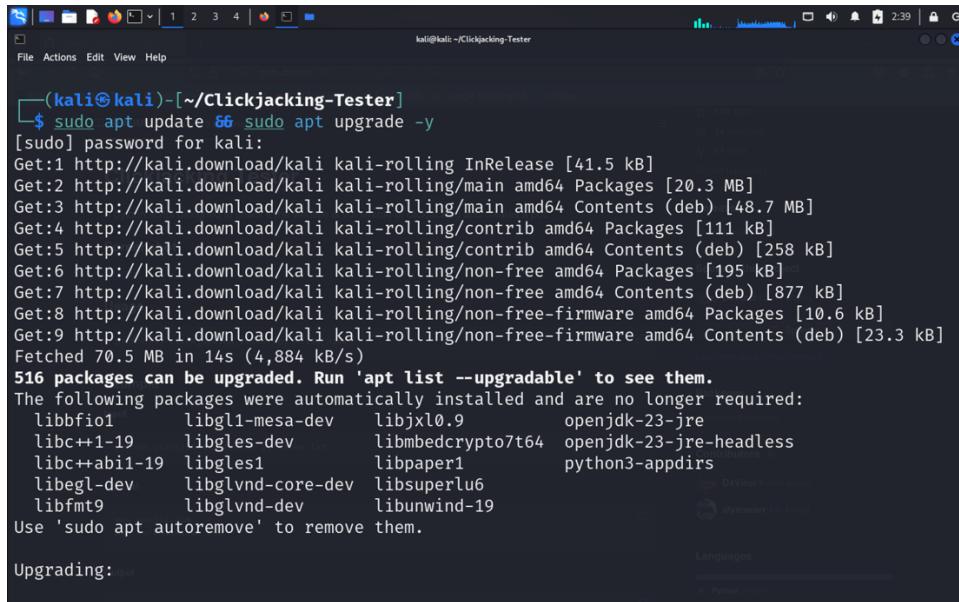
The screenshot shows a terminal window titled 'msfadmin@metasploitable:~\$'. The window displays the output of the 'ifconfig' command. It shows two interfaces: 'eth0' and 'lo'. 'eth0' has an IPv4 address of 172.16.191.130 and an IPv6 address of fe80::20c:29ff:fed2a/64. 'lo' is a loopback interface with an IPv4 address of 127.0.0.1. Both interfaces are up and running.

```
To access official Ubuntu documentation, please visit:  
http://help.ubuntu.com/  
No mail.  
msfadmin@metasploitable:~$ ifconfig  
eth0      Link encap:Ethernet HWaddr 00:0c:29:fa:dd:2a  
          inet addr:172.16.191.130 Bcast:172.16.191.255 Mask:255.255.255.0  
          inet6 addr: fe80::20c:29ff:fed2a/64 Scope:Link  
            UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1  
            RX packets:43 errors:0 dropped:0 overruns:0 frame:0  
            TX packets:66 errors:0 dropped:0 overruns:0 carrier:0  
            collisions:0 txqueuelen:1000  
            RX bytes:4407 (4.3 KB) TX bytes:6868 (6.7 KB)  
            Interrupt:17 Base address:0x2000  
  
lo      Link encap:Local Loopback  
          inet addr:127.0.0.1 Mask:255.0.0.0  
          inet6 addr: ::1/128 Scope:Host  
            UP LOOPBACK RUNNING MTU:16436 Metric:1  
            RX packets:91 errors:0 dropped:0 overruns:0 frame:0  
            TX packets:91 errors:0 dropped:0 overruns:0 carrier:0  
            collisions:0 txqueuelen:0  
            RX bytes:19301 (18.8 KB) TX bytes:19301 (18.8 KB)
```

Task 6: Updating and Configuring Kali Linux

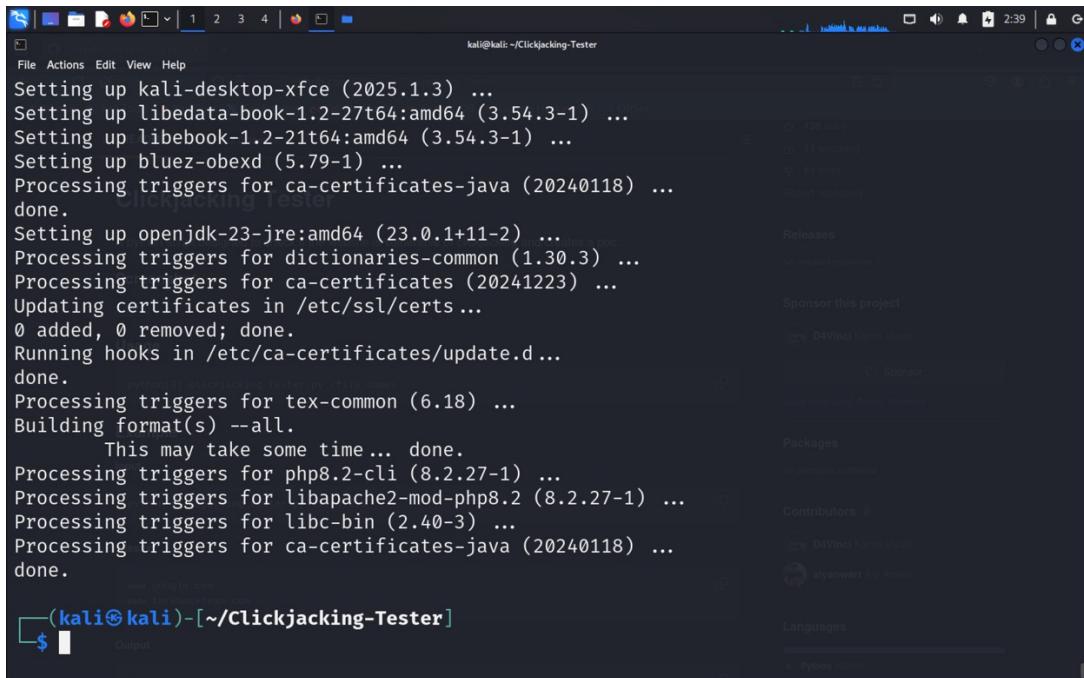
- Updated Kali Linux using:

```
sudo apt update && sudo apt upgrade -y
```



```
(kali㉿kali)-[~/Clickjacking-Tester]
$ sudo apt update && sudo apt upgrade -y
[sudo] password for kali:
Get:1 http://kali.download/kali kali-rolling InRelease [41.5 kB]
Get:2 http://kali.download/kali kali-rolling/main amd64 Packages [20.3 MB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Contents (deb) [48.7 MB]
Get:4 http://kali.download/kali kali-rolling/contrib amd64 Packages [111 kB]
Get:5 http://kali.download/kali kali-rolling/contrib amd64 Contents (deb) [258 kB]
Get:6 http://kali.download/kali kali-rolling/non-free amd64 Packages [195 kB]
Get:7 http://kali.download/kali kali-rolling/non-free amd64 Contents (deb) [877 kB]
Get:8 http://kali.download/kali kali-rolling/non-free-firmware amd64 Packages [10.6 kB]
Get:9 http://kali.download/kali kali-rolling/non-free-firmware amd64 Contents (deb) [23.3 kB]
Fetched 70.5 MB in 14s (4,884 kB/s)
516 packages can be upgraded. Run 'apt list --upgradable' to see them.
The following packages were automatically installed and are no longer required:
  libffio1      libgl1-mesa-dev    libjxl0.9      openjdk-23-jre
  libc++1-19    libgles-dev       libmbcrypto7t64  openjdk-23-jre-headless
  libc++abi1-19 libgles1         libpaper1      python3-appdirs
  libegl-dev    libglvnd-core-dev  libsuperlu6
  libfmt9       libglvnd-dev     libunwind-19
Use 'sudo apt autoremove' to remove them.

Upgrading:
```



```
Setting up kali-desktop-xfce (2025.1.3) ...
Setting up libedata-book-1.2-27t64:amd64 (3.54.3-1) ...
Setting up libebook-1.2-21t64:amd64 (3.54.3-1) ...
Setting up bluez-obexd (5.79-1) ...
Processing triggers for ca-certificates-java (20240118) ...
done.
Setting up openjdk-23-jre:amd64 (23.0.1+11-2) ...
Processing triggers for dictionaries-common (1.30.3) ...
Processing triggers for ca-certificates (20241223) ...
Updating certificates in /etc/ssl/certs ...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d ...
done.
Processing triggers for tex-common (6.18) ...
Building format(s) --all.
      This may take some time... done.
Processing triggers for php8.2-cli (8.2.27-1) ...
Processing triggers for libapache2-mod-php8.2 (8.2.27-1) ...
Processing triggers for libc-bin (2.40-3) ...
Processing triggers for ca-certificates-java (20240118) ...
done.

(kali㉿kali)-[~/Clickjacking-Tester]
$
```

- Installed additional tools for penetration testing:

```
sudo apt install metasploit-framework -y
sudo apt install nikto -y
```

```
kali@kali: ~/Clickjacking-Tester
libfmt9      libglvnd-dev    libunwind-19
Use 'sudo apt autoremove' to remove them.

Summary:
Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 20

[(kali㉿kali)-~/Clickjacking-Tester]
$ sudo apt install metasploit-framework -y
[sudo] password for kali:
metasploit-framework is already the newest version (6.4.44-0kali1).
metasploit-framework set to manually installed.
The following packages were automatically installed and are no longer required:
libbbfio1    libgl1-mesa-dev   libjxl0.9      openjdk-23-jre
libc++1-19   libgles-dev     libmbcrypto7t64  openjdk-23-jre-headless
libc++abi1-19 libgles1       libpaper1      python3-appdirs
libegl-dev    libglvnd-core-dev libsperlu6
libfmt9       libglvnd-dev    libunwind-19
Use 'sudo apt autoremove' to remove them.

Summary:
Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 20

[(kali㉿kali)-~/Clickjacking-Tester]
$
```

```
kali@kali: ~/Clickjacking-Tester
libegl-dev    libglvnd-core-dev  libsperlu6
libfmt9       libglvnd-dev      libunwind-19
Use 'sudo apt autoremove' to remove them.

Summary:
Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 20

[(kali㉿kali)-~/Clickjacking-Tester]
$ sudo apt install nikto
nikto is already the newest version (1:2.5.0+git20230114.90ff645-0kali1).
nikto set to manually installed.
The following packages were automatically installed and are no longer required:
libbbfio1    libgl1-mesa-dev   libjxl0.9      openjdk-23-jre
libc++1-19   libgles-dev     libmbcrypto7t64  openjdk-23-jre-headless
libc++abi1-19 libgles1       libpaper1      python3-appdirs
libegl-dev    libglvnd-core-dev libsperlu6
libfmt9       libglvnd-dev    libunwind-19
Use 'sudo apt autoremove' to remove them.

Summary:
Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 20

[(kali㉿kali)-~/Clickjacking-Tester]
$
```

Task 7: Identifying Metasploitable's IP Address

- Logged into Metasploitable using default credentials:

```
Username: msfadmin  
Password: msfadmin
```

- Identified IP address:

```
ifconfig
```

```
To access official Ubuntu documentation, please visit:  
http://help.ubuntu.com/  
No mail.  
msfadmin@metasploitable:~$ ifconfig  
eth0      Link encap:Ethernet HWaddr 00:0c:29:fa:dd:2a  
          inet addr:172.16.191.130 Bcast:172.16.191.255 Mask:255.255.255.0  
          inet6 addr: fe80::20c:29ff:fe:dd2a/64 Scope:Link  
            UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1  
            RX packets:43 errors:0 dropped:0 overruns:0 frame:0  
            TX packets:66 errors:0 dropped:0 overruns:0 carrier:0  
            collisions:0 txqueuelen:1000  
            RX bytes:4407 (4.3 KB) TX bytes:6868 (6.7 KB)  
            Interrupt:17 Base address:0x2000  
  
lo        Link encap:Local Loopback  
          inet addr:127.0.0.1 Mask:255.0.0.0  
          inet6 addr: ::1/128 Scope:Host  
            UP LOOPBACK RUNNING MTU:16436 Metric:1  
            RX packets:91 errors:0 dropped:0 overruns:0 frame:0  
            TX packets:91 errors:0 dropped:0 overruns:0 carrier:0  
            collisions:0 txqueuelen:0  
            RX bytes:19301 (18.8 KB) TX bytes:19301 (18.8 KB)  
  
msfadmin@metasploitable:~$
```

Output: 172.16.191.130

Task 8: Initial Reconnaissance

- Performed a basic network scan from Kali Linux:

```
nmap 172.16.191.130
```

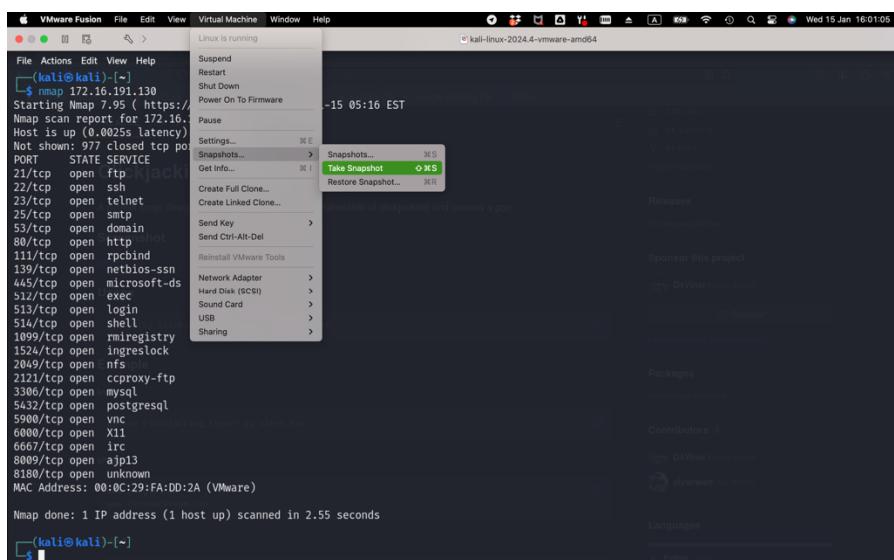
```
(kali㉿kali)-[~] $ nmap 172.16.191.130
Starting Nmap 7.95 ( https://nmap.org ) at 2025-01-15 05:16 EST
Nmap scan report for 172.16.191.130
Host is up (0.0025s latency).
Not shown: 977 closed tcp ports (reset)
PORT      STATE SERVICE
21/tcp    open  ftp
22/tcp    open  ssh
23/tcp    open  telnet
25/tcp    open  smtp
53/tcp    open  domain
80/tcp    open  http
111/tcp   open  rpcbind
139/tcp   open  netbios-ssn
445/tcp   open  microsoft-ds
512/tcp   open  exec
513/tcp   open  login
514/tcp   open  shell
MAC Address: 00:0C:29:FA:DD:2A (VMware)

Nmap done: 1 IP address (1 host up) scanned in 2.55 seconds
(kali㉿kali)-[~]
```

Output: Identified open ports, running services, and OS information of Metasploitable.

Task 9: Snapshots and Cleanup

- Took snapshots of both VMs to save the current state.



```

msfadmin@metasploitable:~$ ifconfig
eth0      Link encap:Ethernet HWaddr 00:0c:29:fa:dd:2a
          inet addr:172.16.191.255  Bcast:172.16.191.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:feff:dd2a/64 Scope:Link
          UP BROADCAST MULTICAST  MTU:1500 Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:6868 (6.7 KB)  TX bytes:6868 (6.7 KB)
          address:0x2000

lo        Link encap:Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436 Metric:1
          RX packets:91 errors:0 dropped:0 overruns:0 frame:0
          TX packets:91 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:19301 (18.8 KB)  TX bytes:19301 (18.8 KB)

msfadmin@metasploitable:~$ _

```

- Cleaned unnecessary files using:

```
sudo apt autoremove && sudo apt autoclean
```

```

kali㉿kali: ~
└$ sudo apt autoremove && sudo apt autoclean
[sudo] password for kali:
REMOVING:
libbfio1      libgl1-mesa-dev    libjxl0.9      openjdk-23-jre
libc++1-19     libgles-dev       libmbcrypto7t64 openjdk-23-jre-headless
libc++abi1-19  libgles1         libpaper1      python3-appdirs
libegl-dev     libglvnd-core-dev libsuperlu6   Screenshots
libfmt9        libglvnd-dev      libunwind-19  Summary:
Upgrading: 0, Installing: 0, Removing: 18, Not Upgrading: 20
Freed space: 217 MB
Continue? [Y/n] Y
(Reading database ... 408659 files and directories currently installed.)
Removing libbfio1:amd64 (20170123-6+b2) ...
Removing libc++1-19:amd64 (1:19.1.6-1+b1) ...
Removing libc++abi1-19:amd64 (1:19.1.6-1+b1) ...
Removing libegl1-mesa-dev:amd64 (24.2.8-1) ...
Removing libglvnd-dev:amd64 (1.7.0-1+b2) ...
Removing libgles-dev:amd64 (1.7.0-1+b2) ...
Removing libegl-dev:amd64 (1.7.0-1+b2) ...
Removing libfmt9:amd64 (9.1.0+ds1-2) ...
Removing libgles1:amd64 (1.7.0-1+b2) ...

```

The screenshot shows a terminal window at the bottom and a GitHub repository page for the 'kali' project above it.

Terminal Output:

```
File Actions Edit View Help
Del samba-ad-provision 2:4.21.2+dfsg-3 [500 kB]
Del libnm0 1.50.0-1+b1 [453 kB]
Del libpam-systemd 257-2 [292 kB]
Del libharfbuzz-icu0 10.1.0-1 [15.1 kB]
Del libgpg-error0 1.51-2 [82.1 kB]
Del chromium 131.0.6778.139-1 [86.7 MB]
Del libsdll2-2.0-0 2.30.10+dfsg-1 [667 kB]
Del kali-desktop-core 2025.1.1 [14.0 kB]
Del util-linux-extra 2.40.2-12 [265 kB]
Del libudev1 257-2 [147 kB]
Del kali-system-cli 2025.1.1 [13.9 kB]
Del python3-pkg-resources 75.2.0-1 [213 kB]
Del aspell 0.60.8.1-2 [275 kB]
Del apt 2.9.17 [1,368 kB]
Del libgs10 10.04.0~dfsg-2 [2,562 kB]
Del metasploit-framework 6.4.38-0kali1 [221 MB]
Del kali-themes-common 2025.1.1 [6,889 kB]
Del librav1e0.7 0.7.1-7+b3 [940 kB]
Del pipewire-bin 1.2.7-1 [385 kB]
Del php8.2-mysql 8.2.26-4 [118 kB]
Del login 1:4.16.0-2+really2.40.2-12 [81.8 kB]
```

GitHub Repository Page:

- 198 stars
- 14 watching
- 61 forks
- Report repository
- Releases
- Sponsor this project
- D4Vinci Karm shah
- Sponsor
- Contributors
- D4Vinci Karm shah
- alyamwarr Aly Aman
- Languages
- Python