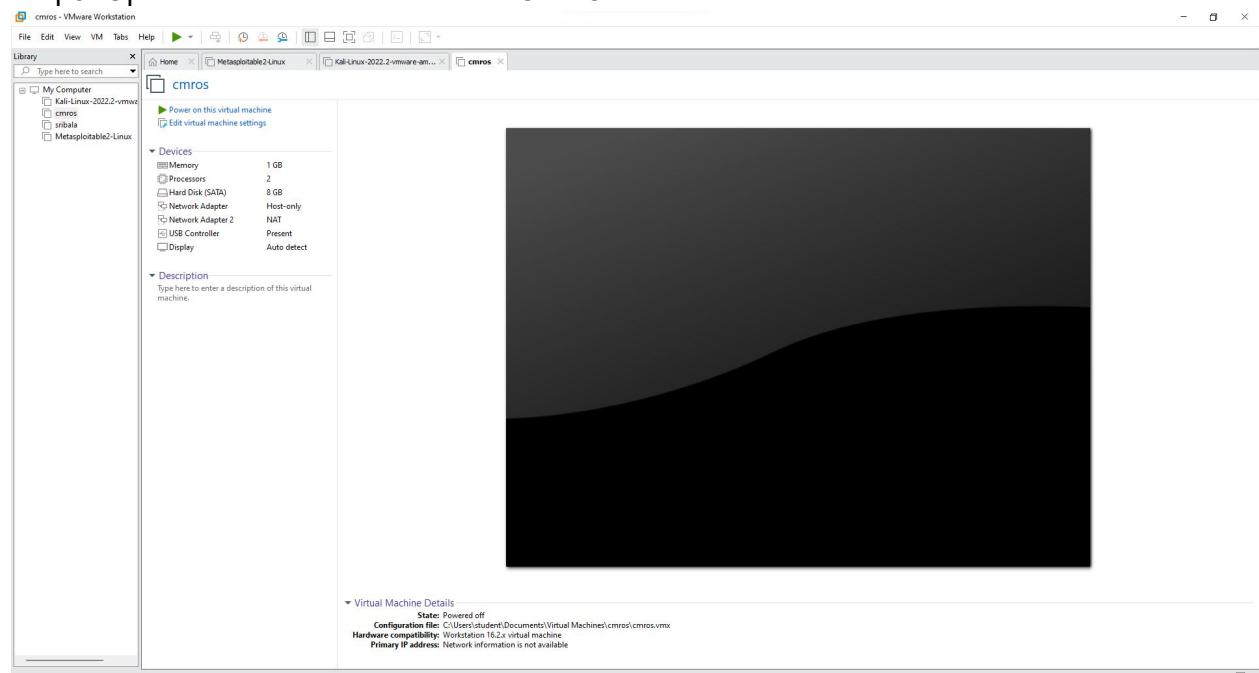


## Experiment 7: Analyze and exploit the root system of CMROS

Step1: Download CMROS.zip and extract the zip file.

Step2: Open VMWare.

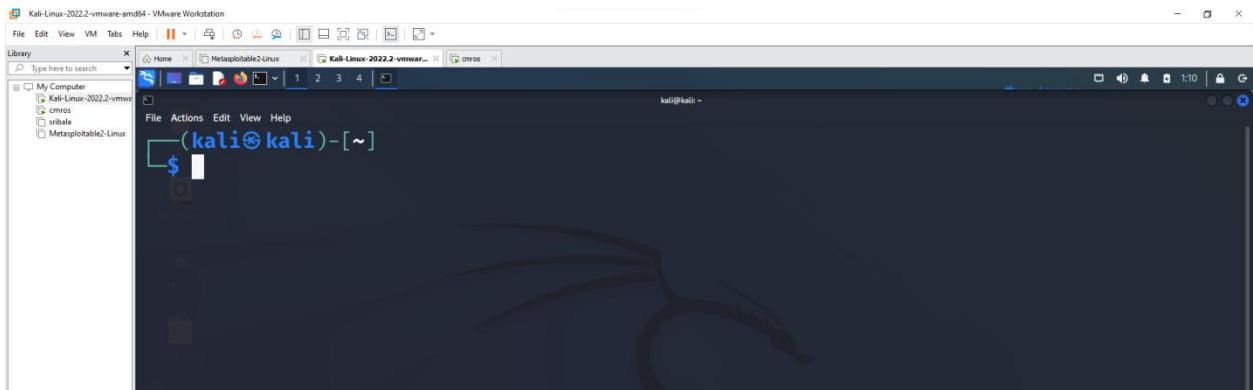
Step3: Open Virtual Machine and click CMROS extracted folder Select the .ovf file



Step4: Power on the cmros virtual machine and consider IP address of cmros

```
Checking filesystem: UUID=3ee3f1b6-3e84-4737-8de3-6be23e01514c
/dev/sda1: clean, 8956/524288 files, 99348/2096896 blocks
Remounting rootfs read/write...
Mounting filesystems in fstab...
Searching for early boot options...
Cleaning up the system...
Starting system log daemon: syslogd...
Starting kernel log daemon: klog...
Loading Kernel modules...
Loading module: ohci_pci
Triggering udev events: --action=add
Processing /etc/init.d/bootopts.sh
Checking for SliTaz cmdline options...
chown: unknown user/group tux:users
Processing /etc/init.d/system.sh
Setting system locale: en_US
Loading console keymap: us
Starting TazPanel web server on port sh: invalid number ''
...
WARNING: Unable to configure sound card
Processing /etc/init.d/network.sh
Loading network settings from /etc/network.conf
Setting hostname to: VulnOs
Configuring loopback...
-
```

Step5: Open Kali linux on and open terminal



### Step6: Start attacking by following commands.

```

File Home Metasploitable2-Linux Kali-Linux-2022.2-vmwar... cmros
File Actions Edit View Help
(kali㉿kali)-[~]
$ ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.23.128 netmask 255.255.255.0 broadcast 192
.168.23.255
              inet6 fe80::20c:29ff:fe0b:96d0 prefixlen 64 scopeid 0x2
0<link>
          ether 00:0c:29:0b:96:d0 txqueuelen 1000 (Ethernet)
          RX packets 21 bytes 11710 (11.4 KiB)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 43 bytes 11536 (11.2 KiB)
          TX errors 0 dropped 0 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 0 bytes 0 (0.0 B)
          RX errors 0 dropped 0 overruns 0 frame 0

```

Open nmap tool and give the IP address of the CMROS. It shows only http service only in the nmap tool.

```

Zenmap
Scan Tools Profile Help
Target: 192.168.232.128
Command: nmap -p T-65535 -T4 -A -v 192.168.232.128
Hosts Services Nmap Output Ports/Hosts Topology Host Details Scans
OS Hosts Services
192.168.23.31
192.168.23.128
192.168.232.128
nmap: starting NSE at 11:16
Completed NSE at 11:16, 0.00s elapsed
Initiating NSE at 11:16
Completed NSE at 11:16, 0.00s elapsed
Initiating ARP Ping Scan at 11:16
Scanning 192.168.232.128 [1 host]
Completed ARP Ping Scan at 11:16, 0.00s elapsed (1 total hosts)
Initiating Parallel DNS resolution of 1 host at 11:16
Completing Parallel DNS resolution of 1 host at 11:16, 0.02s elapsed
Initiating SYN Stealth Scan at 11:16
Scanning 192.168.232.128 [65535 ports]
Disclosed open port 80/tcp on 192.168.232.128
Completed SYN Stealth Scan at 11:16, 1.82s elapsed (65535 total ports)
Initiating NSE at 11:16
Completed NSE at 11:16, 0.00s elapsed
Initiating NSE at 11:16
Completed NSE at 11:16, 0.02s elapsed
Initiating NSE at 11:16
Completed NSE at 11:16, 0.00s elapsed
Nmap scan report for 192.168.232.128
Host is up (0.0000s latency).
Not shown: 65533 closed tcp ports (reset)
PORT      STATE SERVICE VERSION
80/tcp    open  http    BusyBox httpd 1.13
| http-methods:
|_ Supported Methods: GET HEAD POST

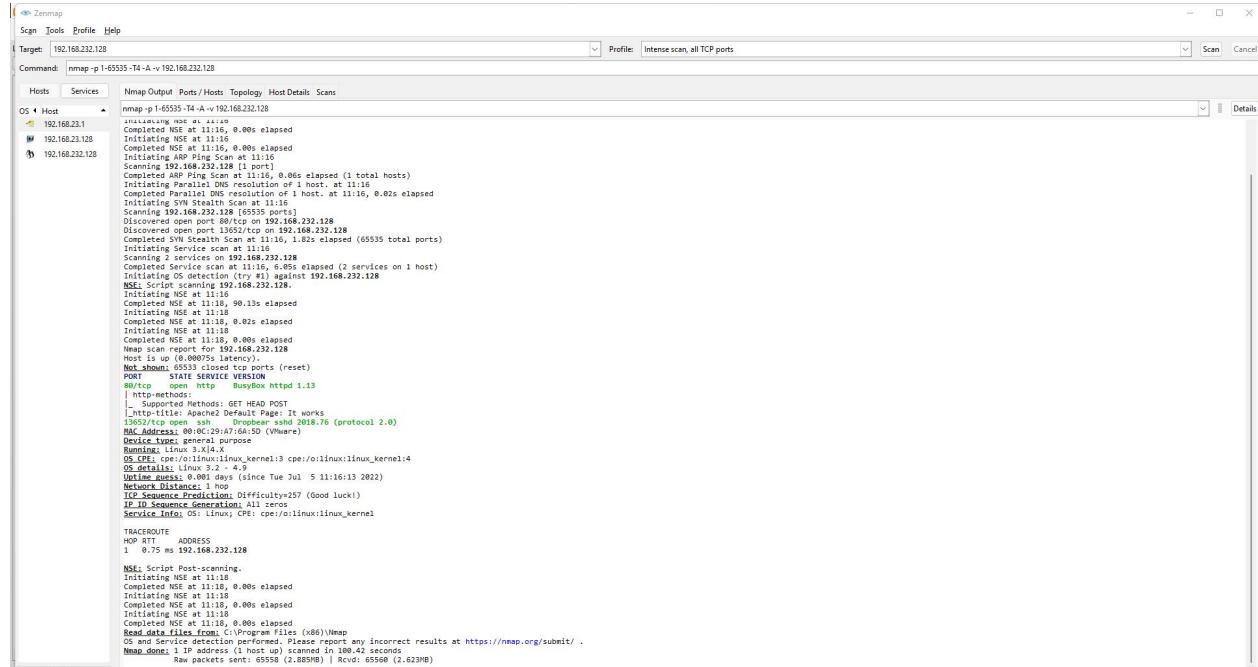
```

Now use the command below in the kali linux terminal

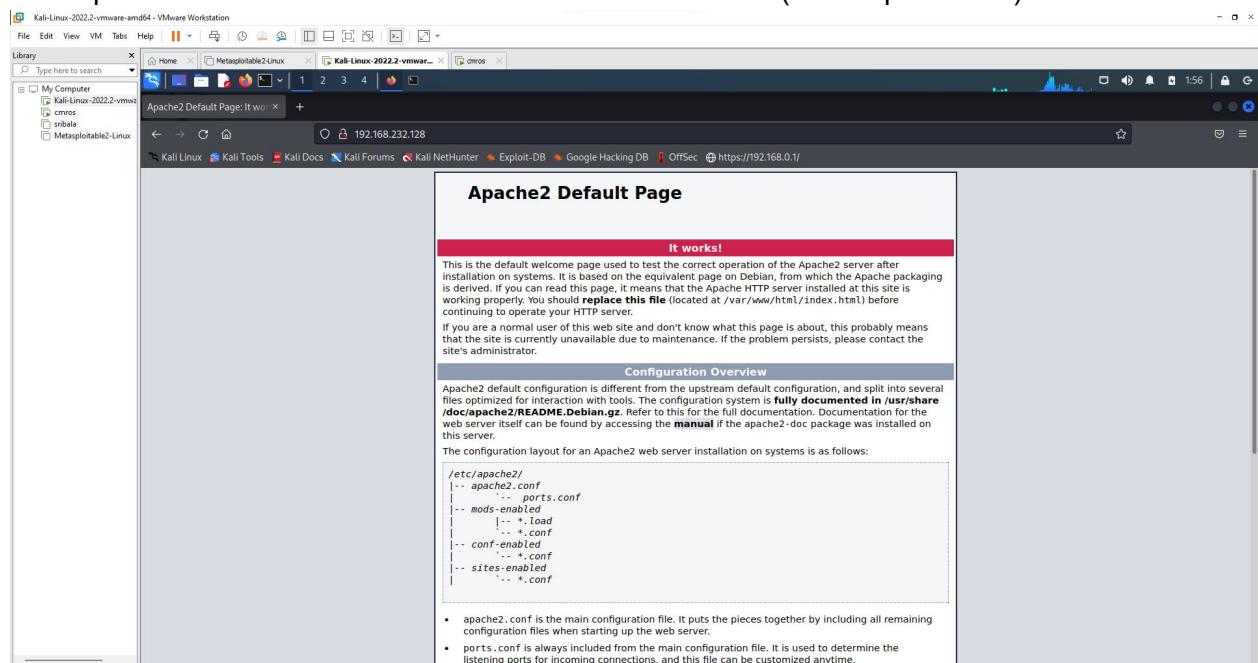
```
(kali㉿kali)-[~]
$ nmap -p -65535 -T4 -A -V 192.168.232.128
Nmap version 7.92 ( https://nmap.org )
Platform: x86_64-pc-linux-gnu
Compiled with: liblua-5.3.6 openssl-1.1.1n libssh2-1.10.0 libz-1.2.11 libpcre-8.39 nmap-
libpcap-1.7.3 nmap-libdnet-1.12 ipv6
Compiled without:
Available nsock engines: epoll poll select
```

Now open again nmap tool and set intense scan, all tcp ports

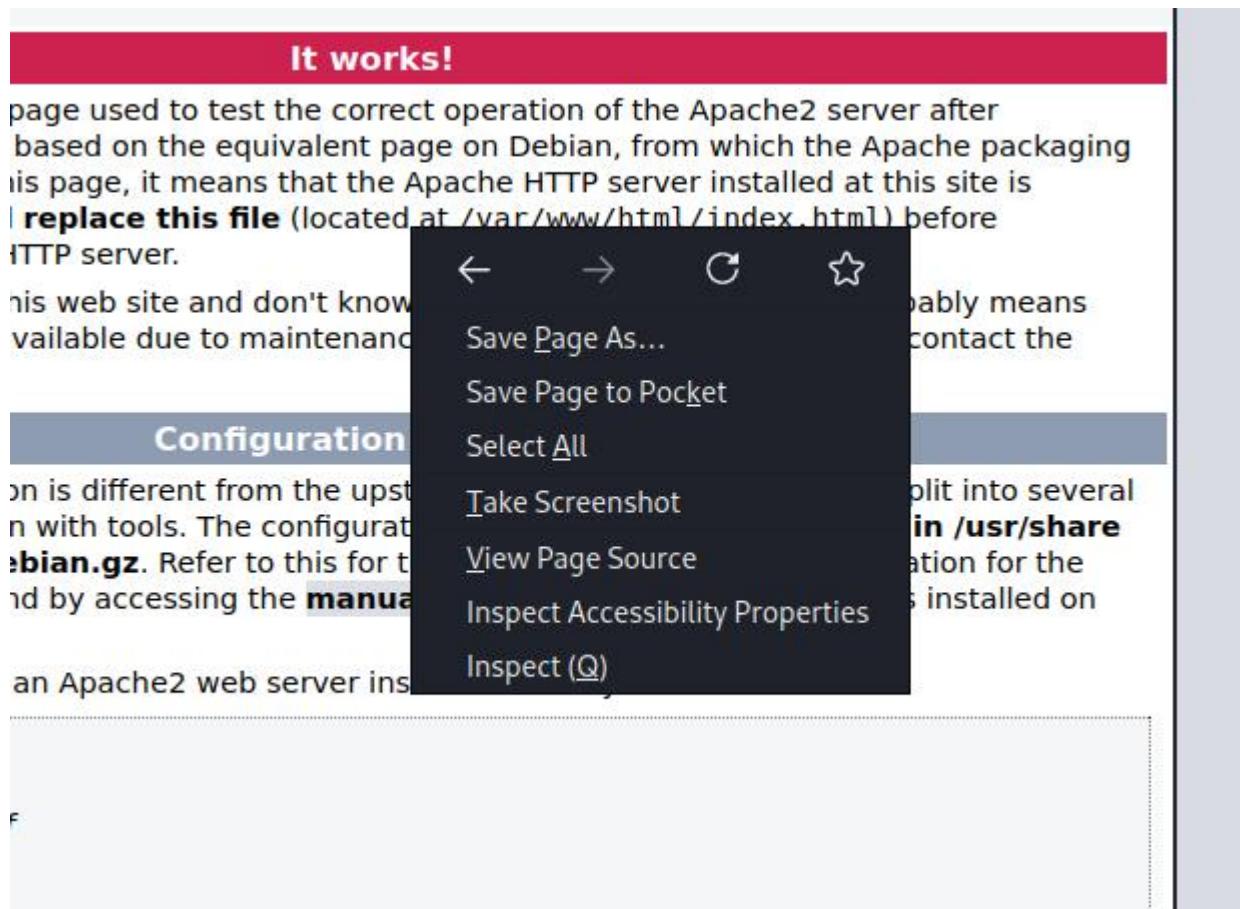
→ Now it displays all ports like http and ssh.



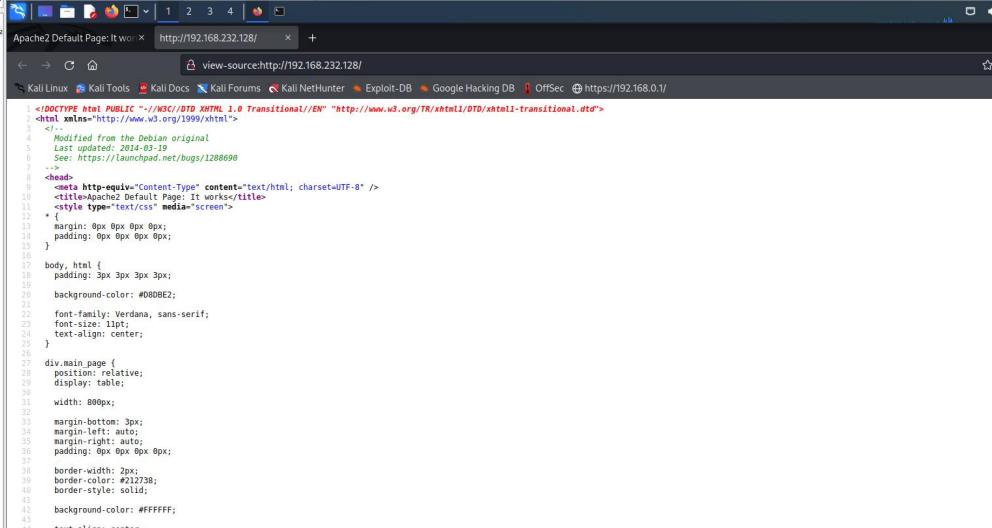
Now open Kali Linux browser and search 192.168.232.128/(cmros ip address)



Right click → view page source



It displays the source code



Kali-Linux-2022.2-vmware-amd64 - VMware Workstation

File Edit View VM Help

Library

Type here to search

My Computer

- Kali-Linux-2022.2-vmware
- cmos
- sribal
- Metasploitable2-Linux

Metasploitable2-Linux

Home Metasploitable2-Linux Kali-Linux-2022.2-vmware... chros

Apache2 Default Page: It works! http://192.168.232.128/ +

view-source:http://192.168.232.128/

Kali Linux Kali Tools Kali Docs Kali Forums Kali NetHunter Exploit-DB Google Hacking DB OffSec https://192.168.0.1/

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<!--
    Modified from the Apache original
    Last updated: 2014-03-11
    Source: https://bugs.debian.org/1288699
-->
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
<title>Apache2 Default Page: It Works!</title>
<style type="text/css" media="screen">
    body {
        margin: 0px 0px 0px 0px;
        padding: 0px 0px 0px 0px;
    }
    body, html {
        padding: 3px 3px 3px 3px;
        background-color: #0080B2;
        font-family: Verdana, sans-serif;
        font-size: 1pt;
        text-align: center;
    }
    div.main_page {
        position: relative;
        display: table;
        width: 800px;
        margin-bottom: 3px;
        margin-left: 0px;
        margin-right: auto;
        padding: 0px 0px 0px 0px;
    }
    div.main_page div {
        border-width: 2px;
        border-color: #21272B;
        border-style: solid;
        background-color: #FFFFFF;
        text-align: center;
    }
    div.page_header {
        height: 99px;
        width: 100%;
        background-color: #F5F5F7;
    }

```

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

After scrolling down the source code page there we can find username and password

```

275      </pre>
276
277  <!--
278  Username : test
279  Password : ****
280  -->
281      <ul>
282          <li>
283              <tt>apache2.conf</tt> is the main configuration
284              file. It puts the pieces together by including all remaining configuration
285              files when starting up the web server.
286          </li>
287
288          <li>
289              <tt>ports.conf</tt> is always included from the
290              main configuration file. It is used to determine the listening ports for
291              incoming connections, and this file can be customized anytime.
292          </li>
293
294          <li>
295              Configuration files in the <tt>mods-enabled/</tt>,
296              <tt>conf-enabled/</tt> and <tt>sites-enabled/</tt> directories contain
297              particular configuration snippets which manage modules, global configuration
298              fragments, or virtual host configurations, respectively.
299          </li>

```

Goto kali linux terminal and use the below command

Use the password we got from the view page source code which is **test**

```

└─(kali㉿kali)-[~] 
$ ssh test@192.168.232.128 -p 13652
Secure login on VulnOs GNU/Linux powered by Dropbear SSH server.
test@192.168.232.128's password:
test@VulnOs:~$ 

```

The binary is called apache2, due to the use of environment variables. In the default configuration, apache2 needs to be run as root.

Use ls command

```

test@VulnOs:~$ ls
Desktop/    Downloads/  Music/       Templates/
Documents/   Images/    Public/     Videos/
test@VulnOs:~$ 

```

The binary is called apache2, due to the use of environment variables. In the default configuration, apache2 needs to be run as root.

Use whoami to find the user

```

test@VulnOs:~$ whoami
test

```

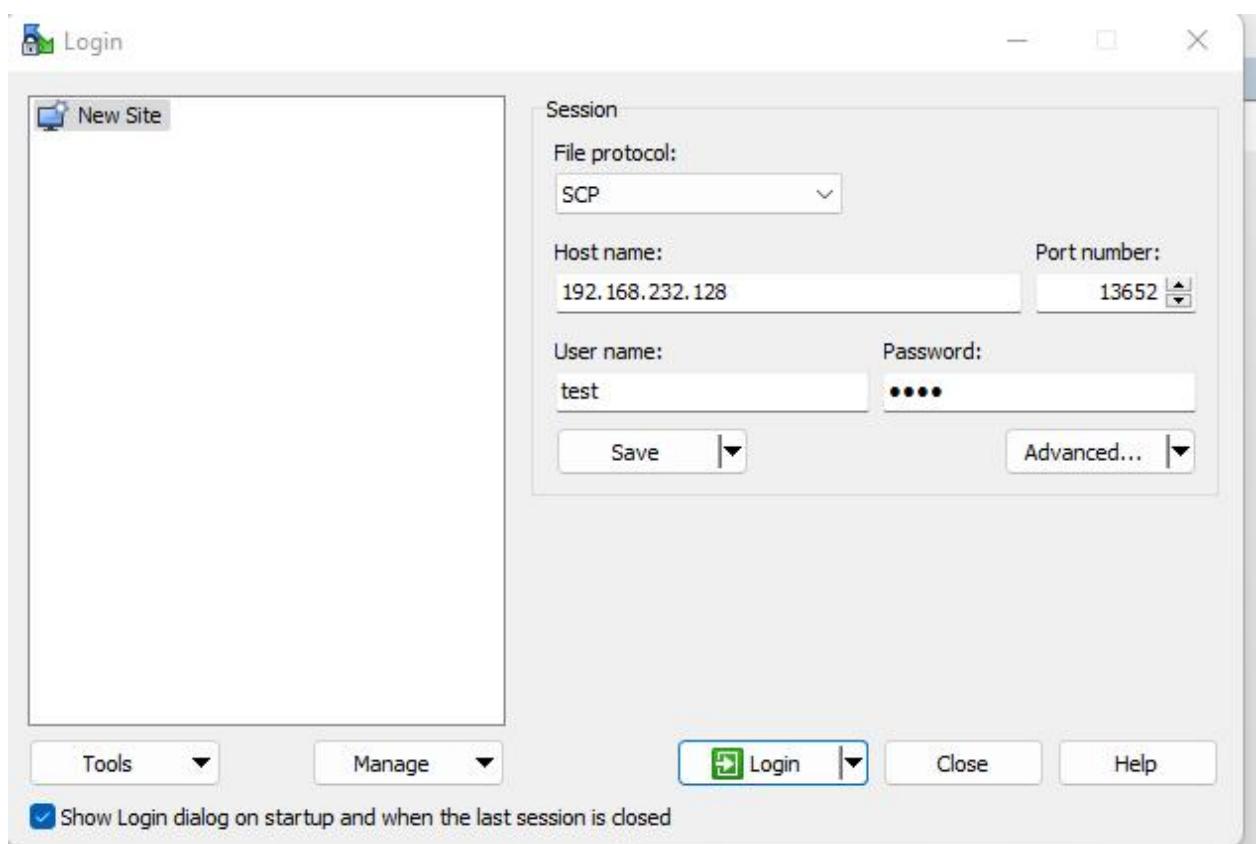
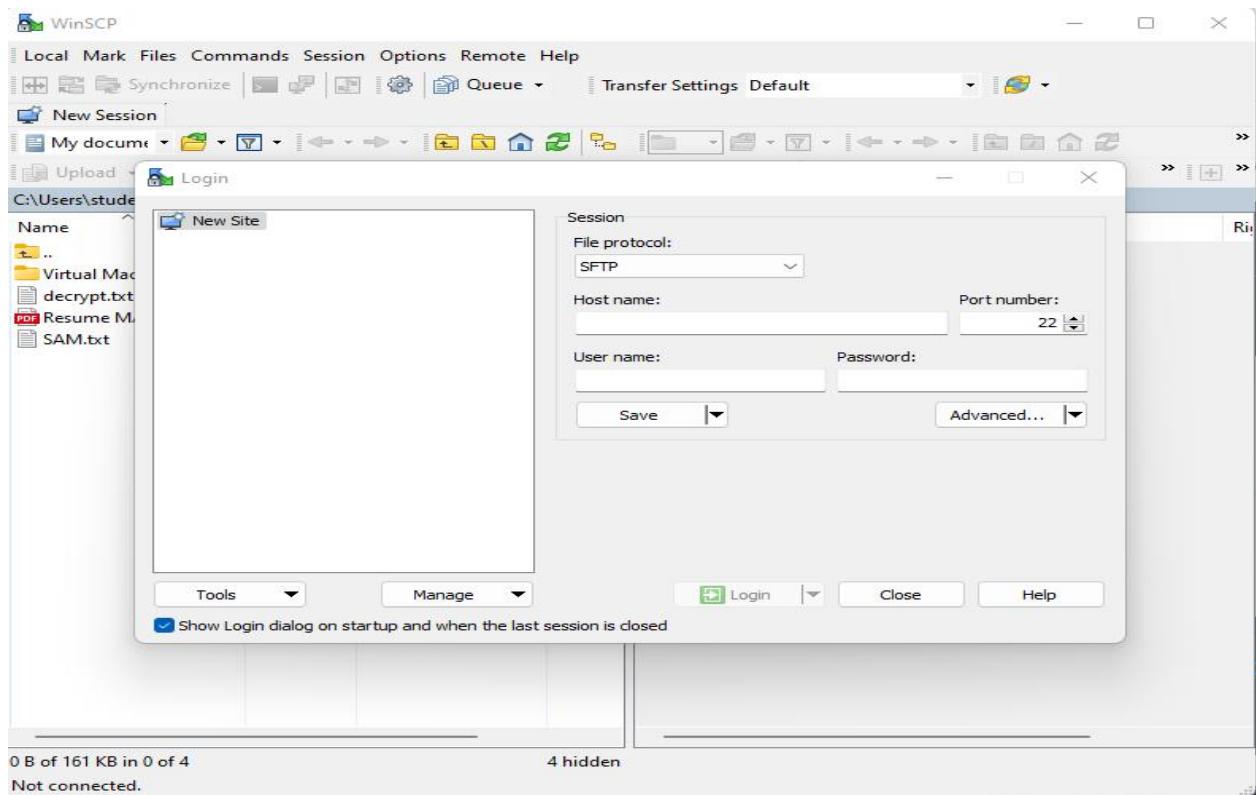
To know the suspicious file redirect to Desktop and the use ls command

```

test@VulnOs:~$ cd Desktop
test@VulnOs:~/Desktop$ ls
cap.pcapng  s3cr3t.txt

```

Now go to Windows system, open browser and download WinSCP



Authentication Banner - test@192.168.232.128

X

Secure login on VulnOs GNU/Linux powered by Dropbear SSH server.

Never show this banner again

Continue

Help

test - test@192.168.232.128 - WinSCP

Local Mark Files Commands Session Options Remote Help

Synchronize Transfer Settings Default

test@192.168.232.128 X New Session

My documents Upload Download

C:\Users\student\Documents\ /home/test/

Name	Size	Type	Change	Rights
..		Parent directory	7/2/2022	rw
Virtual Machines		File folder	7/2/2022	rw
decrypt.txt	1 KB	Text Document	7/1/2022	rw
Resume MAH.pdf	160 KB	Microsoft Edge P...	6/24/2022	rw
SAM.txt	1 KB	Text Document	7/1/2022	rw

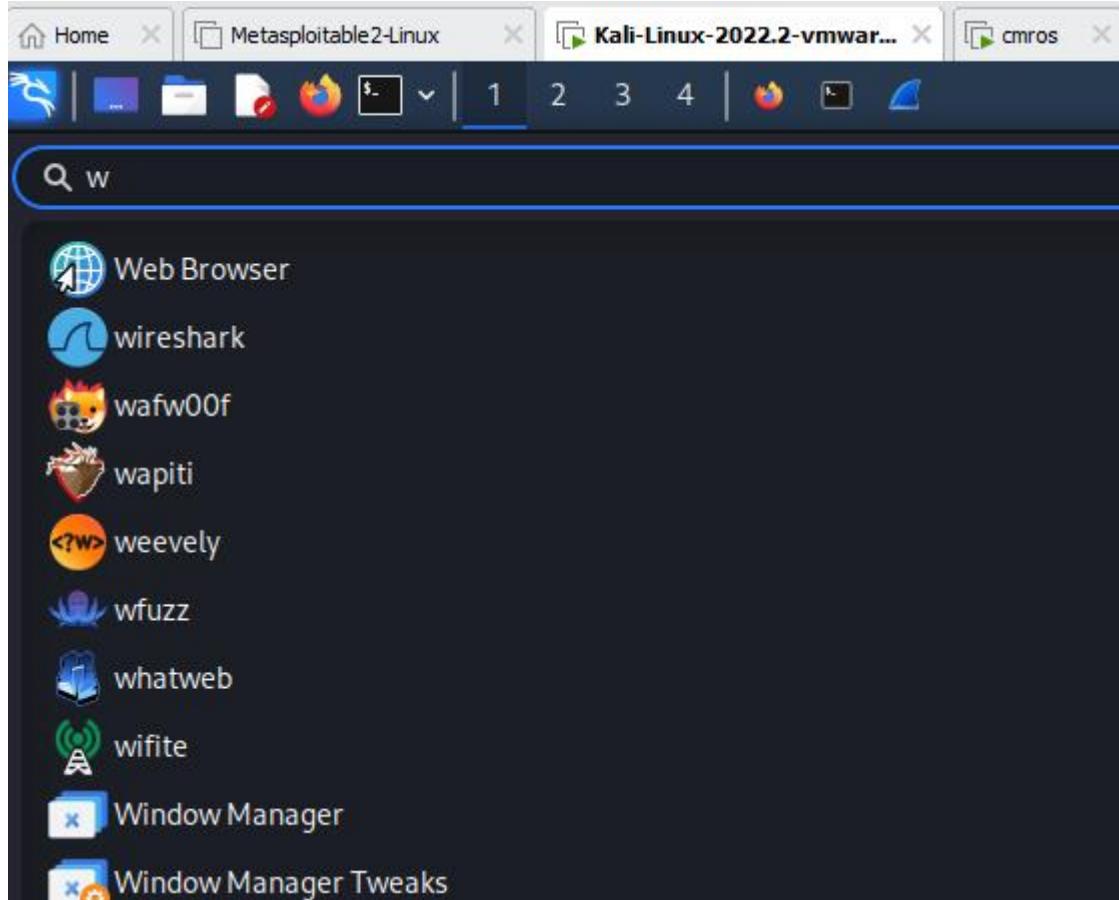
Name	Size	Changed	Rights
..		7/5/2022 11:11:52 AM	rw
Desktop		3/19/2021 9:05:02 AM	rw
Documents		10/13/2018 4:26:05 PM	rw
Downloads		10/13/2018 4:26:05 PM	rw
Images		10/13/2018 4:26:05 PM	rw
Music		10/13/2018 4:26:05 PM	rw
Public		10/13/2018 4:26:05 PM	rw
Templates		10/13/2018 4:26:05 PM	rw
Videos		10/13/2018 4:26:05 PM	rw

Goto Desktop

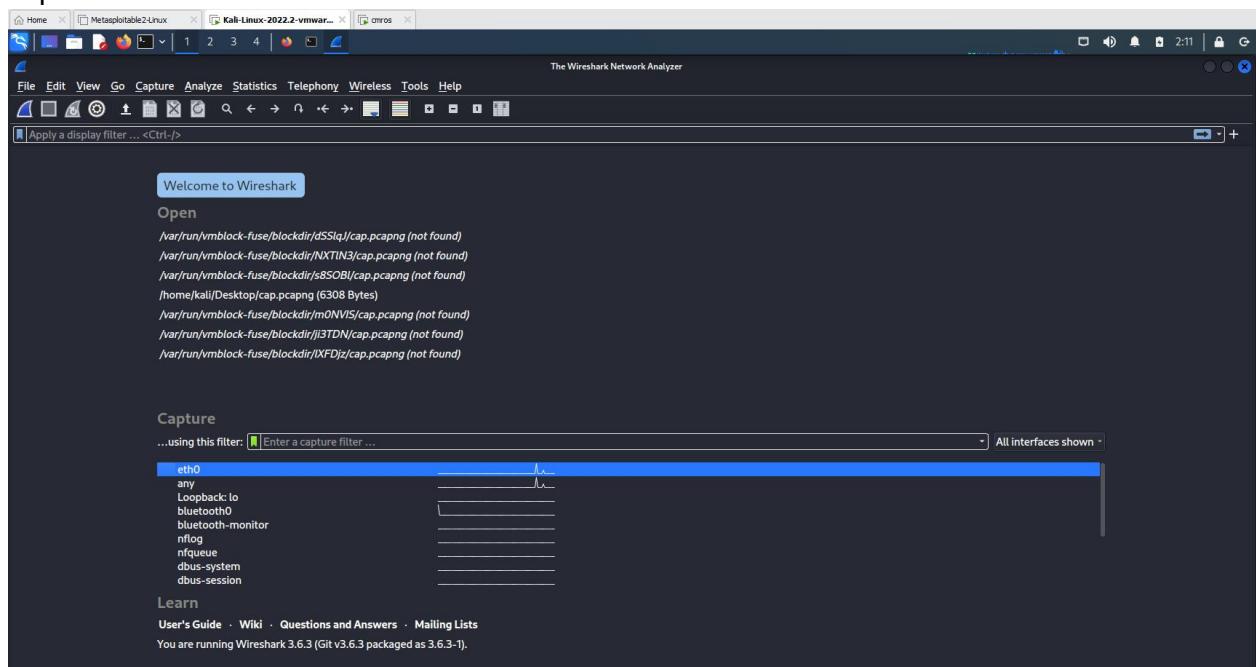
/home/test/Desktop/

Name	Size	Changed	Rights	Owner
..		11/6/2021 1:49:30 AM	rwxr-xr-x	test
cap.pcapng	7 KB	3/12/2021 5:13:44 AM	rwx-----	test
s3cr3t.txt	1 KB	3/19/2021 9:03:46 AM	r-----	root

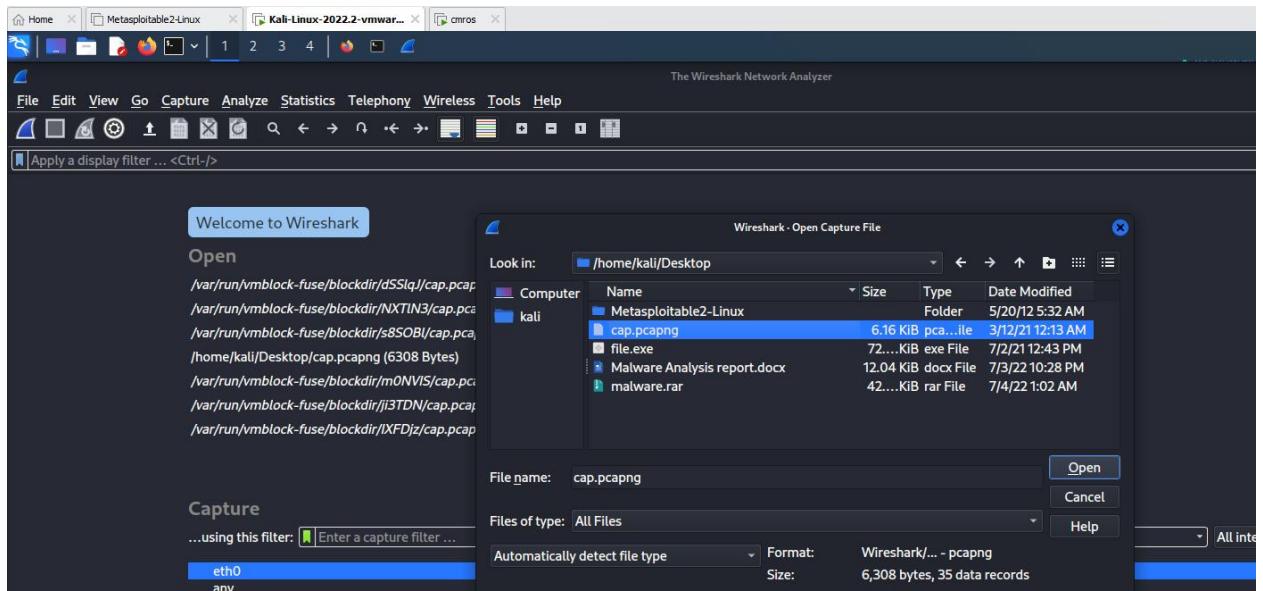
Open kali linux and search for wireshark tool



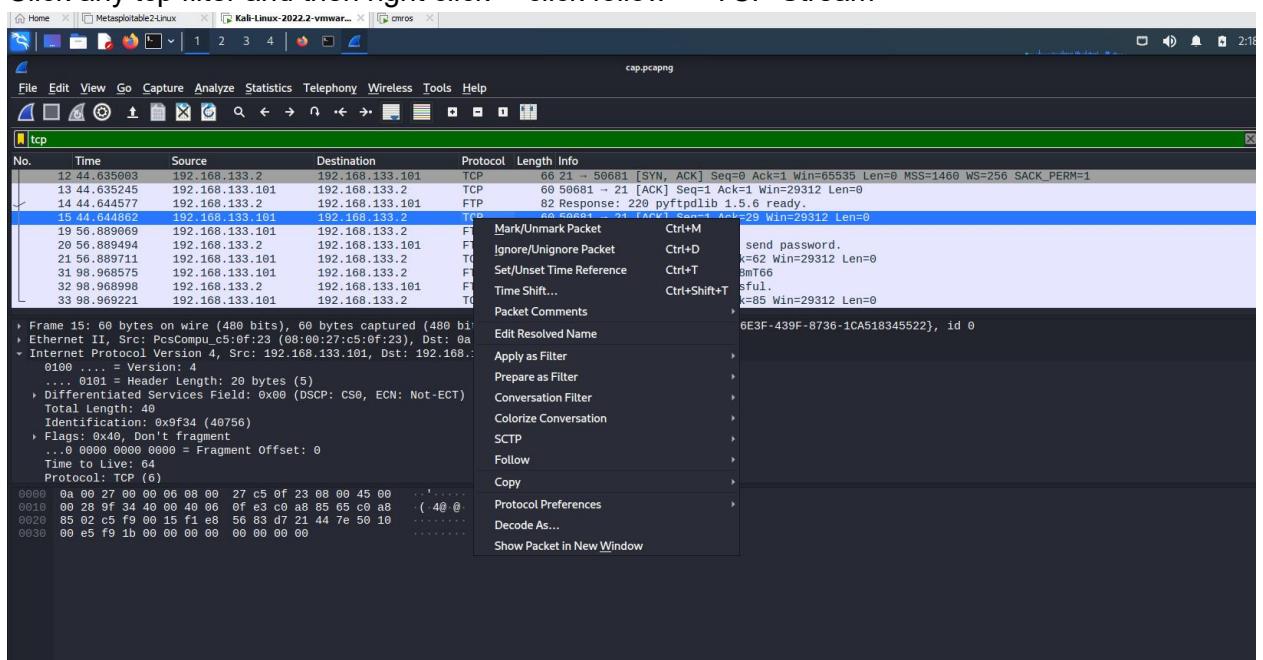
Open wireshark tool in kali



Open cap.pcapng file in the wireshark from desktop folder



Click any tcp filter and then right click →click follow → TCP Stream



It displays user credentials

```
Wireshark - Follow TCP Stream (tcp.stream eq 0)

220 pyftpdlib 1.5.6 ready.
USER root
331 Username ok, send password.
PASS 5gr3ss9hvvc68mT66
230 Login successful.
```

Now copy password and open cmros using above credentials

By using the above credentials we can crack cmros system

```
VulnOs login: root
Password:

Welcome to the Open Source World!

Slitaz GNU/Linux is distributed in the hope that it will be useful,
but with ABSOLUTELY NO WARRANTY.

root@VulnOs:~# _
```

Now use ls command

```
root@VulnOs:~# ls
Desktop tazinst.conf
root@VulnOs:~# cd Desktop
root@VulnOs:~/Desktop# ls
```

```
Slitaz GNU/Linux Kernel 3.16.55-slitaz /dev/ttys1
VulnOs login: root
Password:

Welcome to the Open Source World!

Slitaz GNU/Linux is distributed in the hope that it will be useful,
but with ABSOLUTELY NO WARRANTY.

root@VulnOs:~# ls
Desktop tazinst.conf
root@VulnOs:~# cd Desktop
root@VulnOs:~/Desktop# pwd
/root/Desktop
root@VulnOs:~/Desktop# cd ..
root@VulnOs:~# pwd
/root
root@VulnOs:~# cd ..
root@VulnOs:~# ls
bin etc lib mnt run tmp
boot home lost+found proc sbin usr
dev init media root sys var
root@VulnOs:~#
```

```
root@VulnOs:~# cd Desktop
root@VulnOs:/Desktop# ls
root@VulnOs:/Desktop# cd home
-sh: cd: can't cd to home
root@VulnOs:/Desktop# cd ..
root@VulnOs:~# cd ..
root@VulnOs:~/# ls
bin      etc      lib      mnt      run      tmp
boot     home     lost+found  proc     sbin     usr
dev      init     media    root     sys      var
root@VulnOs:~/# cd home
root@VulnOs:/home# cd desktop
-sh: cd: can't cd to desktop
root@VulnOs:/home# ls
test
root@VulnOs:/home# cd test
root@VulnOs:/home/test# ls
Desktop   Downloads  Music      Templates
Documents  Images    Public    Videos
root@VulnOs:/home/test# cd Desktop
root@VulnOs:/home/test/Desktop# ls
cap.pcapng s3cr3t.txt
root@VulnOs:/home/test/Desktop# cat s3cr3t.txt
37cedde2e90a22a53f12c57094e1f0dea2ddd260
root@VulnOs:/home/test/Desktop#
```

