POISON

LOCAL FILE INCLUSION, LOG POISONING AND EXPLOITING XVNC

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Contents

Scanning the Host

As usual, I began the recon stage of the process by using nmap to scan the hosts address of 10.10.10.84, outputting this to a file called Poison. This showed several processes that were currently running, including an ssh service on port 22, an Apache webserver on port 80, and VNC on port 5902.

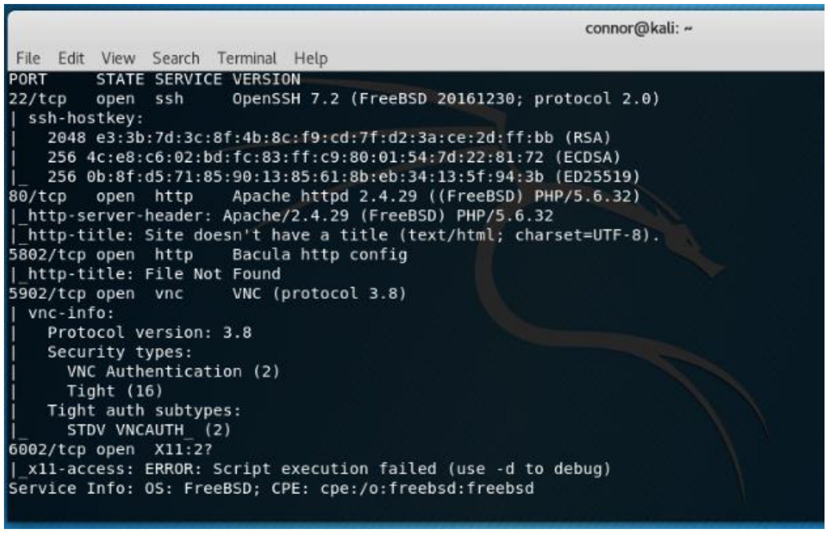


Figure 1.1: Nmap Scan of Poison

Next step was to navigate to the webpage shown from the nmap scan and check out the webpage. This showed a page that was used to test local .php scripts and gave a list of a series of files that were to be tested. Of these files, two were of main interest, *phpinfo.php* – which gave details about the webserver when navigated to, and *listfiles.php*, which listed what files were available to navigate to. On navigating to *listfiles.php*, there was the previous list of files from the index page, as well as another .txt file: *pwdbackup.txt*.

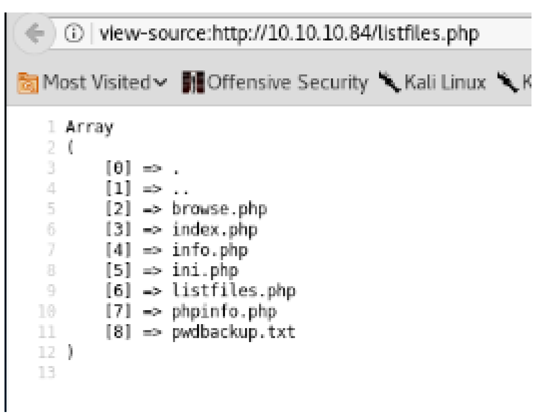


Figure 1.2: listfiles.php

Obtaining Credentials

Upon navigating to the pwdbackup.txt directory, we were left a somewhat cryptic message, stating that the password is secure, and that is had been encoded thirteen times. Looking at the string of characters revealed that it was encoded with base64, which can be identified by its use of '=' characters for padding. So, I copied this into a text file, and then used a quick Python loop to decode it, using the b64decode module.

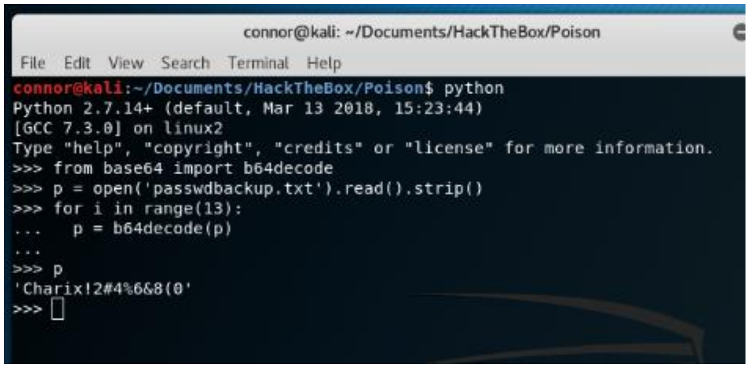
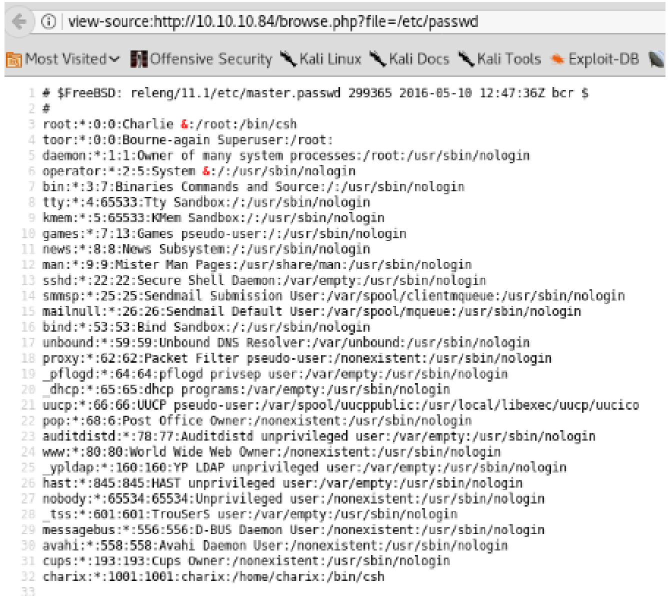


Figure 1.3: Python to decode Base64 password

This revealed a password: *Charix!2#4%6&8(0,* which could be used on the ssh service we spotted from the nmap scan previously.

To login using ssh however, you need a password and a username, which I still hadn't obtained yet, so I went back to the *index.php* page and had a look at the submission box. I typed in *hello.php,* to see if the server would execute the underlying php code, and noticed that it returned an error, stating that it couldn't find the hello.php file. This suggested that it may be vulnerable to Local File Inclusion (LFI), so I modified the URL to change from hello.php to /etc/passwd, which then revealed the password file, with an interesting username at the bottom.




```
# $FreeBSD: releng/11.1/etc/master.passwd 299365 2016-05-10 12:47:36Z bcr $
#
root:*:0:0:Charlie &:/root:/bin/csh
toor:*:0:0:Bourne-again Superuser:/root:
daemon:*:1:1:Owner of many system processes:/root:/usr/sbin/nologin
operator:*:2:5:System &:/:/usr/sbin/nologin
bin:*:3:7:Binaries Commands and Source:/:/usr/sbin/nologin
tty:*:4:65533:Tty Sandbox:/:/usr/sbin/nologin
kmem:*:5:65533:KMem Sandbox:/:/usr/sbin/nologin
games:*:7:13:Games pseudo-user:/:/usr/sbin/nologin
news:*:8:8:News Subsystem:/:/usr/sbin/nologin
man:*:9:9:Mister Man Pages:/usr/share/man:/usr/sbin/nologin
sshd:*:22:22:Secure Shell Daemon:/var/empty:/usr/sbin/nologin
smmsp:*:25:25:Sendmail Submission User:/var/spool/clientmqueue:/usr/sbin/nologin
mailnull:*:26:26:Sendmail Default User:/var/spool/mqueue:/usr/sbin/nologin
bind:*:53:53:Bind Sandbox:/:/usr/sbin/nologin
unbound:*:59:59:Unbound DNS Resolver:/var/unbound:/usr/sbin/nologin
proxy:*:62:62:Packet Filter pseudo-user:/nonexistent:/usr/sbin/nologin
_pflogd:*:64:64:pflogd privsep user:/var/empty:/usr/sbin/nologin
_dhcp:*:65:65:dhcp programs:/var/empty:/usr/sbin/nologin
uucp:*:66:66:UUCP pseudo-user:/var/spool/uucppublic:/usr/local/libexec/uucp/uucico
pop:*:68:6:Post Office Owner:/nonexistent:/usr/sbin/nologin
auditdistd:*:78:77:Auditdistd unprivileged user:/var/empty:/usr/sbin/nologin
www:*:80:80:World Wide Web Owner:/nonexistent:/usr/sbin/nologin
_ypldap:*:160:160:YP LDAP unprivileged user:/var/empty:/usr/sbin/nologin
hast:*:845:845:HAST unprivileged user:/var/empty:/usr/sbin/nologin
nobody:*:65534:65534:Unprivileged user:/nonexistent:/usr/sbin/nologin
_tss:*:601:601:TrouSerS user:/var/empty:/usr/sbin/nologin
messagebus:*:556:556:D-BUS Daemon User:/nonexistent:/usr/sbin/nologin
avahi:*:558:558:Avahi Daemon User:/nonexistent:/usr/sbin/nologin
cups:*:193:193:Cups Owner:/nonexistent:/usr/sbin/nologin
charix:*:1001:1001:charix:/home/charix:/bin/csh
```

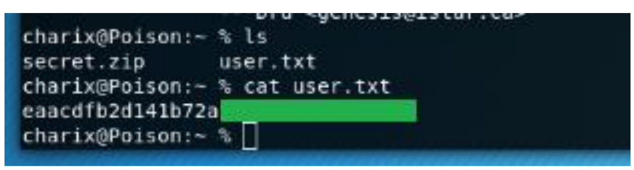
Figure 1.4: LFI to grab /passwd file

Getting a Shell

Method One: SSH

There are actually two completely separate methods to obtain a shell on this machine, the first method involves simply creating an ssh session and logging in with the credentials obtained earlier, while the second method involves using a technique known as Log Poisoning. For the purpose of learning new techniques, I will cover both methods in this section.

Using the credentials obtained earlier, it was simple to ssh into the box and grab the user flag. Which can be seen in the example below.



```
charix@Poison:~ % ls
secret.zip       user.txt
charix@Poison:~ % cat user.txt
eaacdfb2d141b72a
charix@Poison:~ %
```

Figure 1.5: User Flag

There was also a second file, called *Secret.zip,* which required a password to unzip, so I used scp to move this to my kali box, and unzipped it with the password gained from decoding the base64 message earlier. It appeared to be a file of ASCII text, and when catting the file to the terminal it just returned garbage, so for now the file was useless, although it would become useful later.

Method Two: Log Poisoning

This method involves using a method known as Log Poisoning, whereby commands can be executed server-side by using LFI to navigate to the directory of the log files. In order to perform this, I first had to intercept the traffic between my machine and the Poison box. So I fired up Burp, grabbed the request and modified it so that the user-agent became a php query that would be executed, seen below:

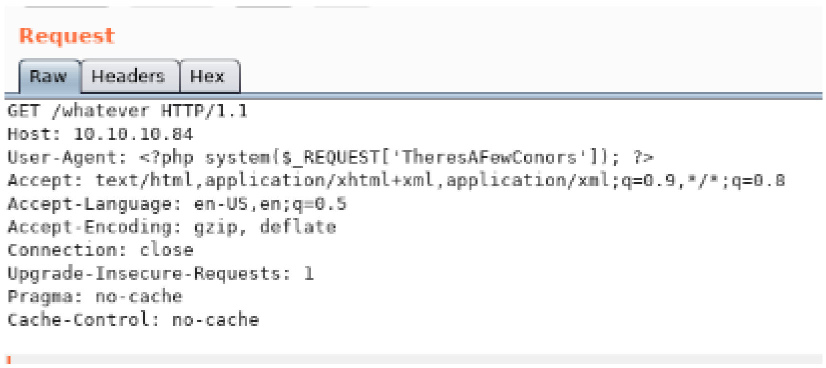


Figure 1.6: Modified Burp Request

I then navigated to the directory of the httpd-access.log file, and from here was able to modify the 'TheresAFewConors' variable in the URL to execute bash server-side! I first tested this with *hostname*, followed by *ls -la*. Since it appeared to be working, all that was left was to use the netcat reverse shell code from PentestMonkey (linked at the end) while listening over port 4568 for the connection, the connection can be seen below:

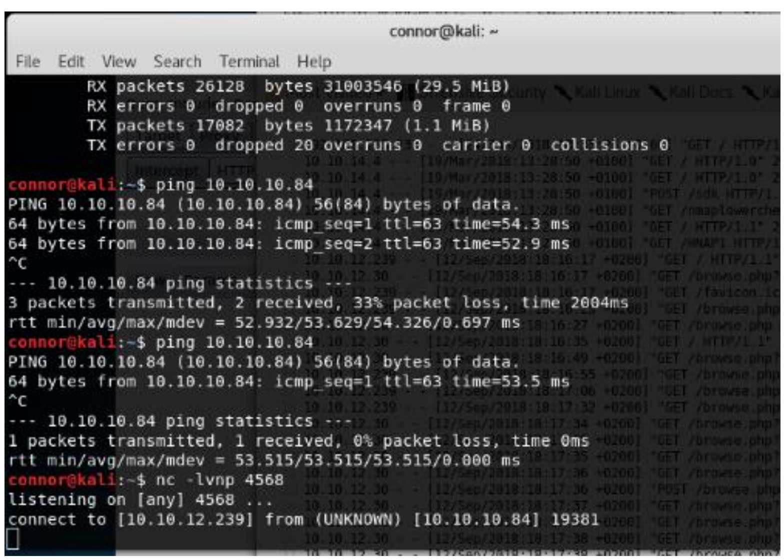


Figure 1.7: LogPoisoning complete

Privilege Escalation

The first part of the privilege escalation step was to see what processes were running on the box, this was performed with the *ps -auxw* command. This immediately showed a root process running VNC, which showed up in the nmap scan earlier, so I decided to start by looking at this service.

Using a technique to forward all traffic from the localhost of the machine to an arbitrary port number, I established a new ssh session to tunnel this information. This was completed with the following command:

ssh -L 4567:127.0.0.1:5901 charix@10.10.10.84

The syntax being -L for listening port : host : hostport. This was then tested using netstat, and searching for port 4567, to see if anything was listening, which showed that it had successfully worked, seen below:

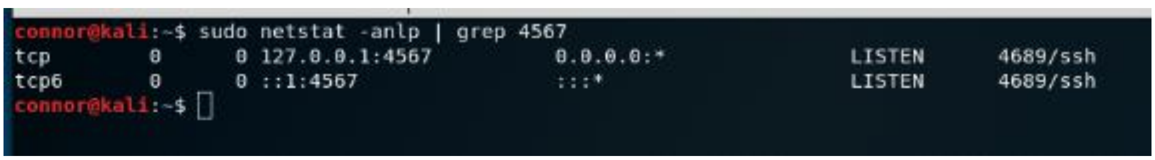


Figure 1.8: netstat detect tunnel

Next was to attempt to login to the vnc server, which I performed using vncviewer, and on first attempt using the password decoded from earlier, it failed. So this was obviously not the correct credentials. However, I remembered that secret file from earlier, so using the *-passwd* argument I directed the secret file into the vnc login, which worked successfully, giving me root access on the machine. I then opened the root.txt file to grab the hash, which can be seen below:

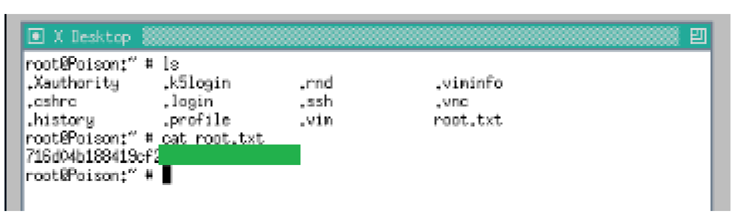


Figure 1.9: Grabbing the Root Flag

What was learnt from this Machine

Two new techniques were learnt from this machine, the first method involves using Local File Inclusion (LFI) to include files that are already locally present on the server. The vulnerability exists because of a lack of proper input validation, and allows an attacker to inject characters traversal characters such as '../' for directory traversal. LFI was used on this machine to read the /etc/passwd file and obtain a list of usernames, which were then used in conjunction with the password obtained from decoding the base64 message to log in via ssh.

The second technique learnt is a method known as Log Poisoning. This involves 'poisoning' the logs on the server by intercepting and modifying the request. This can then be stored in the server's log files, eg. error.log, then navigating to the directory via LFI where the log exists, causing the poisoned log to be loaded, and underlying code to be executed. This again exists due to a lack of input validation, as well as incorrect file permissions. In this scenario it was used to execute bash commands.

Further Reading

Cover Image: http://mulliganstudios.tumblr.com/post/25563703539/csa-images

PentestMonkey: http://pentestmonkey.net/cheat-sheet/shells/reverse-shell-cheat-sheet