Lab 2 Recon, Scanning, Enumeration

2.1 Spiderfoot and OSINT

Sections:

- **Browse:** general results sorted by data type/ source
- **Graph:** Shows a relationship between a datapoint from one plugin that seeds another plugin result
- **Status:** shows a bar chart of all the plugins used to evaluate the target and the number of results

Relevant Browse sections:

- **Affiliate - Internet Name:** identifies the service providers and hosting companies associated with the target
- **Co-Hosted Site - Domain Name:** shows any domain names associated with a discovered target
- **Email Addresses:** shows any email addresses found during a webcrawl
- **Hacked Email Address:** (typically found with HaveIBeenPwned)
- **Web Technology:** see what technology the website was built with (e.g. PHP, Linode, Meteor, GoDaddy SSL, etc.)

2.2 DNS Interrogation

DNS typically uses UDP on port 53.

TCP packets to port 53 are indicators of network mapping.

We use `whois` to query the authoritative DNS server for the domain.

```
whois falsimentis.com
```

Dig

We use Dig to query DNS servers from the ISC.

```
dig @172.30.0.254 A www.falsimentis.com

; <<>> DiG 9.11.3-1ubuntu1.13-Ubuntu <<>> @172.30.0.254 A www.falsimentis.com
; (1 server found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 7889
;; flags: qr aa rd; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; COOKIE: 3a50ec9f7ac860590100000062cdd3e4d6d61755b302b37b (good)
```

```
;; QUESTION SECTION:
;www.falsimentis.com.       IN  A

;; ANSWER SECTION:
www.falsimentis.com.    86400   IN  A   45.76.171.86

;; Query time: 9 msec
;; SERVER: 172.30.0.254#53(172.30.0.254)
;; WHEN: Tue Jul 12 20:04:52 UTC 2022
;; MSG SIZE  rcvd: 92

# Zone Transfer request
dig +short @172.30.0.254 AXFR falsimentis.com
```

Defenses:

1. **Don't allow zone transfers** from just any system
2. Use **split DNS** (separates internal and external traffic DNS requests)
3. **Inspect** DNS server **logs** for signs of recon and attacker IPs to leverage in threat intel.

2.3 NMAP + Mapping

==**pgs: 50-63**==

By default, NMAP sends the following four packets: ICMP Echo Request, TCP SYN to 443, TCP ACK 80, ICMP Timestamp request

Lots of ARP packets looking for hosts sequentially indicate host discovery.

Ping

Multiple pings to/ from IPs within the same network --> network mapping.

Attackers send an ICMP echo request to a range of IP addresses.

Ping can also be used by attackers to test whether outbound connections are possible.

TTL

In both IPv4 & IPv6 **valid TTL or Hop Limits are 0-254**

If the value is 0, the router sends back a **Time Exceeded** message.

```
# NMAP host discovery (can also give CIDR range)
sudo nmap -sn 192.168.1.1-254

# Uses a SYN scan on all ports, gets version of service if possible
nmap -sV -sS -p- 172.30.0.254

# Script DNS brute interrogation
sudo nmap --script dns-brute 172.30.0.254
```

```
Starting Nmap 7.60 ( https://nmap.org ) at 2022-07-12 20:11 UTC
Nmap scan report for ns1.falsimentis.com (172.30.0.254)
Host is up (0.000030s latency).
Not shown: 999 closed ports
PORT   STATE SERVICE
53/tcp open  domain
MAC Address: 02:42:AC:1E:00:FE (Unknown)

Host script results:
| dns-brute:
|   DNS Brute-force hostnames:
|     news.falsimentis.com - 172.17.0.183
|     ns1.falsimentis.com - 172.30.0.254
|     ns2.falsimentis.com - 10.200.81.238
|     mail.falsimentis.com - 104.47.73.10
|_    www.falsimentis.com - 45.76.171.86
```

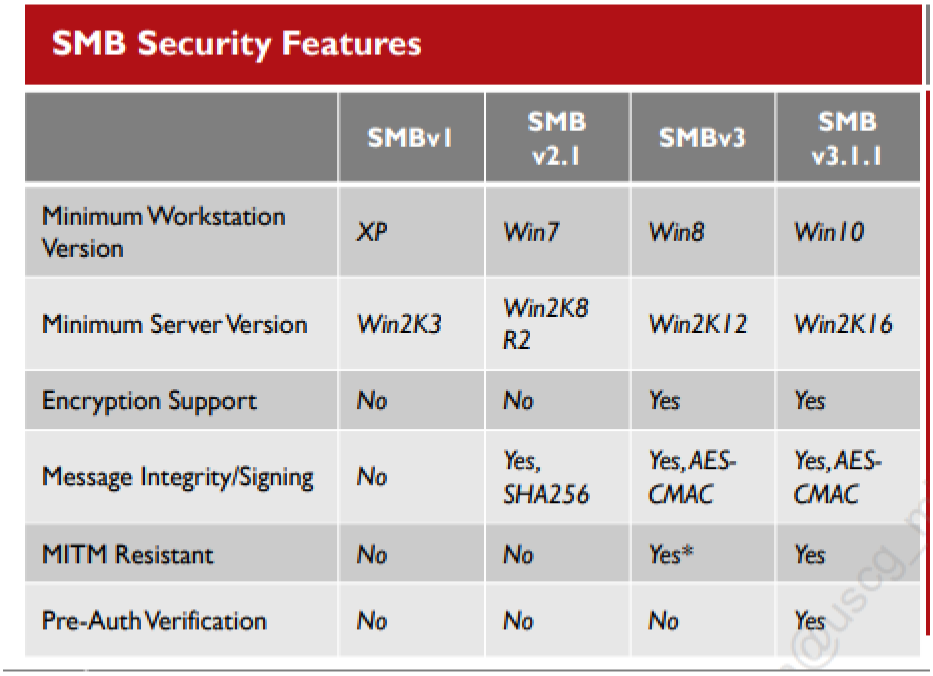
2.4 Cloud Scanning

```
masscan -p 443 --rate 10000 10.200.0.0/16

open tcp 443 10.200.13.31 1657656895
open tcp 443 10.200.140.181 1657656896
open tcp 443 10.200.89.164 1657656896
open tcp 443 10.200.84.164 1657656897
open tcp 443 10.200.23.203 1657656897
open tcp 443 10.200.30.42 1657656897
open tcp 443 10.200.137.13 1657656898
open tcp 443 10.200.125.68 1657656898
open tcp 443 10.200.74.2 1657656898
open tcp 443 10.200.1.10 1657656899
open tcp 443 10.200.0.3 1657656900
open tcp 443 10.200.227.71 1657656901
open tcp 443 10.200.11.125 1657656901
open tcp 443 10.200.248.218 1657656901
```

2.5 SMB + RPC Sessions

If **SMBv2** is turned on and v1 is turned off, **SHA-256 signing is enabled** for message integrity.

Domain controllers have a business need for SMB



SMB Security Features

	SMBv1	SMB v2.1	SMBv3	SMB v3.1.1
Minimum Workstation Version	XP	Win7	Win8	Win10
Minimum Server Version	Win2K3	Win2K8 R2	Win2K12	Win2K16
Encryption Support	No	No	Yes	Yes
Message Integrity/Signing	No	Yes, SHA256	Yes, AES-CMAC	Yes, AES-CMAC
MITM Resistant	No	No	Yes*	Yes
Pre-Auth Verification	No	No	No	Yes

SMB Shares:

- IPC$: used for remote access
- C$: requires admin privileges, allow disk access

```
# Establish SMB session from Windows
C:\WINDOWS\system32>net use \\targetip

C:\WINDOWS\system32>net use \\targetip\sharename password /u:username
```

```
# May need to use -m SMB2 if negotiation fails because SMBv1 is disabled on the
target
smbclient -L 10.10.0.1 -U sec504
WARNING: The "syslog" option is deprecated
Enter WORKGROUP\\sec504\'s password: sec5-4

    Sharename       Type      Comment
    ---------       ----      -------
    ADMIN$          Disk      Remote Admin
    C$              Disk      Default share
    IPC$            IPC       Remote IPC

rpcclient 10.10.0.1 -U sec504

rpcclient $> enum<TabTab>
enumalsgroups      enumdomusers       enummonitors       enumprocs
enumdata           enumdrivers        enumports          enumtrust
enumdataex         enumforms          enumprinters
enumdomains        enumjobs           enumprivs
enumdomgroups      enumkey            enumprocdatatypes
```

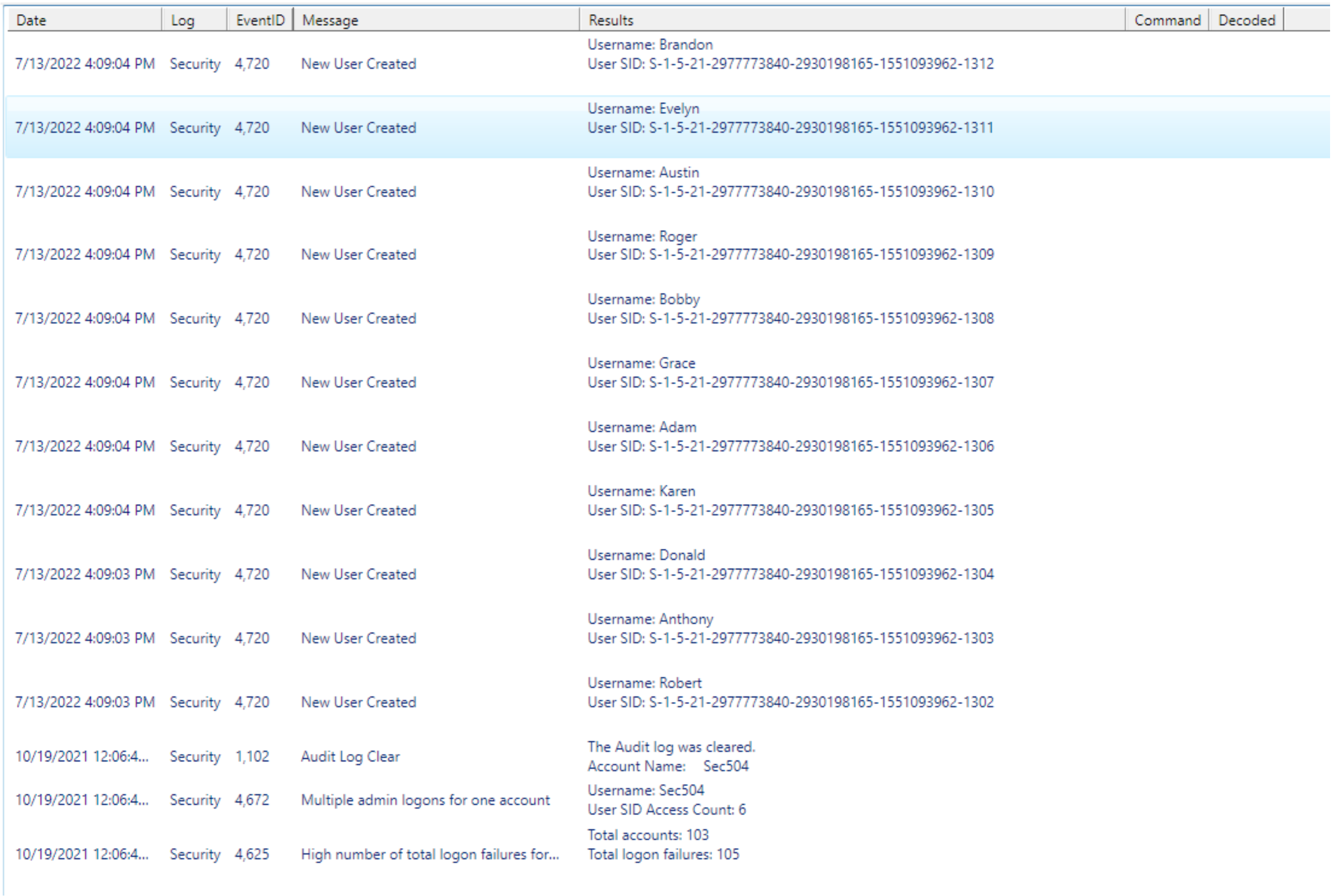
```
# Gives use all the users on the system and the RID (suffix of the SID)
rpcclient $> enumdomusers
user:[Administrator] rid:[0x1f4]
user:[DefaultAccount] rid:[0x1f7]
user:[Guest] rid:[0x1f5]
user:[Sec504] rid:[0x3e8]
user:[WDAGUtilityAccount] rid:[0x1f8]

# Enumerate server info and groups
rpcclient $> srvinfo
    10.10.0.1      Wk Sv NT PtB LMB     Sec504Student
    platform_id     :   500
    os version      :   10.0
    server type     :   0x51003

rpcclient $> enumalsgroups domain
group:[Ssh Users] rid:[0x3e9]

# Pull internal groups
rpcclient $> enumalsgroups builtin
group:[Access Control Assistance Operators] rid:[0x243]
group:[Administrators] rid:[0x220]
group:[Backup Operators] rid:[0x227]
group:[Cryptographic Operators] rid:[0x239]
group:[Distributed COM Users] rid:[0x232]
group:[Event Log Readers] rid:[0x23d]
group:[Guests] rid:[0x222]
...

# Lookup SIDs
rpcclient $> lookupnames administrator
administrator S-1-5-21-2977773840-2930198165-1551093962-500 (User: 1)

# Enumerate Admins Account Details
rpcclient $> queryuser 500
    User Name   :   Administrator
    Full Name   :
    Home Drive  :
    Dir Drive   :
    Profile Path:
    Logon Script:
    Description :   Built-in account for administering the computer/domain
    Workstations:
    Comment     :
    Remote Dial :
    Logon Time               :  Thu, 01 Jan 1970 00:00:00 UTC
    Logoff Time              :  Thu, 01 Jan 1970 00:00:00 UTC
    Kickoff Time             :  Thu, 14 Sep 30828 02:48:05 UTC
    Password last set Time   :  Thu, 01 Jan 1970 00:00:00 UTC
    Password can change Time :  Thu, 01 Jan 1970 00:00:00 UTC
    Password must change Time:  Thu, 14 Sep 30828 02:48:05 UTC
    unknown_2[0..31]...
    user_rid :  0x1f4
    group_rid:  0x201
    acb_info :  0x00000211
    fields_present: 0x00ffffff
    logon_divs: 168
    bad_password_count: 0x00000000
    logon_count:    0x00000000
    padding1[0..7]...
    logon_hrs[0..21]...
```

Terminating sessions

```
# Find the session
C:\WINDOWS\system32>net session

Computer               User name            Client Type       Opens Idle time
-------------------------------------------------------------------------------
\\10.10.75.1           sec504                                     6 00:02:31
The command completed successfully.

# Kill inbound session
C:\WINDOWS\system32>net session \\10.10.75.1 /del
The session from 10.10.75.1 has open files.

Do you want to continue this operation? (Y/N) [N]: Y
The command completed successfully.
```

2.6 Detecting Windows Password Spraying

This section uses the DeepBlueCLI PowerShell module to comb Windows event logs for anomalous events like event log manipulation, user account creation, logon failures, Metasploit activity, etc.



Date	Log	EventID	Message	Results	Command	Decoded
7/13/2022 4:09:04 PM	Security	4,720	New User Created	Username: Brandon User SID: S-1-5-21-2977773840-2930198165-1551093962-1312		
7/13/2022 4:09:04 PM	Security	4,720	New User Created	Username: Evelyn User SID: S-1-5-21-2977773840-2930198165-1551093962-1311		
7/13/2022 4:09:04 PM	Security	4,720	New User Created	Username: Austin User SID: S-1-5-21-2977773840-2930198165-1551093962-1310		
7/13/2022 4:09:04 PM	Security	4,720	New User Created	Username: Roger User SID: S-1-5-21-2977773840-2930198165-1551093962-1309		
7/13/2022 4:09:04 PM	Security	4,720	New User Created	Username: Bobby User SID: S-1-5-21-2977773840-2930198165-1551093962-1308		
7/13/2022 4:09:04 PM	Security	4,720	New User Created	Username: Grace User SID: S-1-5-21-2977773840-2930198165-1551093962-1307		
7/13/2022 4:09:04 PM	Security	4,720	New User Created	Username: Adam User SID: S-1-5-21-2977773840-2930198165-1551093962-1306		
7/13/2022 4:09:04 PM	Security	4,720	New User Created	Username: Karen User SID: S-1-5-21-2977773840-2930198165-1551093962-1305		
7/13/2022 4:09:03 PM	Security	4,720	New User Created	Username: Donald User SID: S-1-5-21-2977773840-2930198165-1551093962-1304		
7/13/2022 4:09:03 PM	Security	4,720	New User Created	Username: Anthony User SID: S-1-5-21-2977773840-2930198165-1551093962-1303		
7/13/2022 4:09:03 PM	Security	4,720	New User Created	Username: Robert User SID: S-1-5-21-2977773840-2930198165-1551093962-1302		
10/19/2021 12:06:4...	Security	1,102	Audit Log Clear	The Audit log was cleared. Account Name: Sec504		
10/19/2021 12:06:4...	Security	4,672	Multiple admin logons for one account	Username: Sec504 User SID Access Count: 6		
10/19/2021 12:06:4...	Security	4,625	High number of total logon failures for...	Total accounts: 103 Total logon failures: 105		