Enhancing Digital Government and Economy

Cyber Security Course

Classwork-07

Submitted by,

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CIA → Fundamental concept

C – Confidentiality

I – Integrity

A – Accessibility

Defensive Security: Protect any system

Offensive Security: Testing security →

- Penetration Testing(Ethical Hacking) : find any security gap
    - Information Gathering → BLACK BOX,WHITE BOX, Gray BOX
    - Network Scanning →
        - Scanning IP address
        - Details scanning for one IP address
        - Find the open port for target IP address (0 to 65535 port)
        - Probe packet(without data packet): find response to become ensure port is open or not
        - Scanning tools:
            - Nmap/ zenmap
            - Hhping2/hpings
            - Masscan
        - Need to know 6 topic
- Red Teaming: advance and un-analogue testing.

Discovery Scan

- Nmap –sn –PR (target ip)
- 192.168.10.0/24
- From Terminal nmap –sn 192.168.10.0/24
- Find live ip : nmap –sn 192.168.10.0/24 →C block
- 17 hosts up mean 17 hosts are in live

┌──(root㉿kali)-[~]

└─# **nmap -sn 192.168.0.101/24**

Starting Nmap 7.94SVN (https://nmap.org) at 2024-10-04 13:32 EDT

Nmap scan report for 192.168.0.1

Host is up (0.0076s latency).

MAC Address: D8:32:14:63:32:E8 (Tenda Technology,Ltd.Dongguan branch)

Nmap scan report for 192.168.0.108

Host is up (0.00075s latency).

MAC Address: A8:41:F4:1D:81:D1 (Unknown)

Nmap scan report for 192.168.0.101

Host is up.

Nmap done: 256 IP addresses (3 hosts up) scanned in 2.13 seconds

Common scanning Techniques

- Metasploitable -2
- nmap –sT 192.168.10.100 (only 1000 port work) → It is the default TCP scan method. It completes the three-way handshake, making it easier to detect by firewalls.

```
┌──(root㉿kali)-[~]
└─# nmap -sT 192.168.0.108
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-10-04 13:48 EDT
Nmap scan report for 192.168.0.108
Host is up (0.0017s latency).
All 1000 scanned ports on 192.168.0.108 are in ignored states.
Not shown: 1000 filtered tcp ports (no-response)
MAC Address: A8:41:F4:1D:81:D1 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 22.11 seconds
```

- nmap –sT 192.168.10.100 –p 80 →for single port

```
┌──(root㉿kali)-[~]
└─# nmap -sT 192.168.0.108 -p 80
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-10-04 13:52 EDT
Nmap scan report for 192.168.0.108
Host is up (0.00033s latency).

PORT   STATE    SERVICE
80/tcp filtered http
MAC Address: A8:41:F4:1D:81:D1 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 0.39 seconds
```

- nmap –sT 192.168.10.100 –p 80,44,123

```
┌──(root㉿kali)-[~]
└─# nmap -sT 192.168.0.108 -p 80,44,123
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-10-04 13:54 EDT
Nmap scan report for 192.168.0.108
Host is up (0.00028s latency).

PORT    STATE    SERVICE
44/tcp  filtered mpm-flags
80/tcp  filtered http
123/tcp filtered ntp
MAC Address: A8:41:F4:1D:81:D1 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 1.44 seconds
```

- nmap –sT 192.168.10.100 –p 80-1000
- nmap –sT 192.168.10.100 –p- →for scanning all port (65535 port)
- nmap –sU 192.168.10.100 –p 80 → for scanning UDP port

```
┌──(root㉿kali)-[~]
└─# nmap -sU 192.168.0.108 -p 80
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-10-04 14:00 EDT
Nmap scan report for 192.168.0.108
Host is up (0.00031s latency).

PORT   STATE         SERVICE
80/udp open|filtered http
MAC Address: A8:41:F4:1D:81:D1 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 0.50 seconds
```

- nmap –sS 192.168.10.100 –p 80 → syn port → just check port is open or not,not send data

```
┌──(root㉿kali)-[~]
└─# nmap -sS 192.168.0.108 -p 80
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-10-04 14:01 EDT
Nmap scan report for 192.168.0.108
Host is up (0.00027s latency).

PORT   STATE    SERVICE
80/tcp filtered http
MAC Address: A8:41:F4:1D:81:D1 (Unknown)

Nmap done: 1 IP address (1 host up) scanned in 0.46 seconds
```

- open wireshark and run all above code in terminal
- nmap 192.168.10.100 –p 80 –sv → show service version (is it latest or old version)
- nmap 192.168.10.100 –p 80 –sv -O → for show operating system details

Nmap Scan Speed

- -T0-T5 (slow to fast search T1-T2..-T5)
- Normally use T4
- nmap 192.168.10.100 –p 80 –sv -T4

Inverse Scan (For bypass firewall)

- First send reset (allow firewall)
- If port in open, there was no any response and vice versa
- Download : Metasploitable-3 (Windows 2008)
- ping 192.168.10.100
- If ttl value 64,63 this is linux
- If ttl value 128,127 this is windows
- nmap 192.168.10.198 (showing blocking our ping probes)
- 2 technique for bypass
    - –sX –xmass
    - –sX –Maimon scan
- nmap 192.168.10.198 –sX –p 137,139,445 (if ip not work,create new ip on virtual box)

Scan Domain(when admin block any ip)

- nmap 192.168.10.100 –D RND:10 (open wireshark)

Enumeration (collect more details of target ip):

- SMTP Enumeration
    - 25 port is open (email gateway)
    - nmap –p 25 192.168.10.100
    - telnet 192.168.10.100 25
    - VRFY root (smpt command)
    - VRFY test
    - Hunter.io (collect mail ip service)
    - quit for exit
    - nano users.txt →ctrl+X→y→enter
    - cat users.txt → show data
    - smtp-user-enum –M VRFY –U users.txt –t 192.168.10.100 (M = mode U=user t=target)
    - namp –p 2049 192.168.10.100 (p=port)
    - showmount –e 192.168.10.100
    -

Target – 192.168.10.100 → ping 192.168.10.100

If ttl value 64, 63 this is Linux

If ttl value 128, 127 this is windows

For find help menu → name –help example: namp –help

sudo passwd root→ change root password

su root → for switch to root

Process of Scan IP:

- Information Gathering
- Network Scanning
- Enumeration