

Elevate_Labs_Task1

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Task 1: Scan Your Local Network for Open Ports

Tools & Technologies :

Nmap: Open-source network scanning tool

Operating Systems: Ubuntu (Linux Terminal), Kali Linux

Wireshark for packet analysis(here, i used only for kali)

Method 1: Ubuntu (Linux Terminal)

Step 1: Install Nmap

I used these commands to install:

- sudo apt update
- sudo apt install nmap

```
rudra99@DESKTOP-L2T7011:~$ sudo apt install nmap
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  htop libestr0 libfastjson4
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  liblinear4 lua-lpeg nmap-common
Suggested packages:
  liblinear-tools liblinear-dev ncat ndiff zenmap
The following NEW packages will be installed:
  liblinear4 lua-lpeg nmap nmap-common
0 upgraded, 4 newly installed, 0 to remove and 128 not upgraded.
Need to get 5744 kB of archives.
After this operation, 25.6 MB of additional disk space will be used.
Do you want to continue? [Y/n]
Get:1 http://archive.ubuntu.com/ubuntu jammy/universe amd64 liblinear4 amd64 2.3.0+dfsg-5 [41.4 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy/universe amd64 lua-lpeg amd64 1.0.2-1 [31.4 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 nmap-common all 7.91+dfsg1+really7.80+dfsg1-2ubuntu0.1 [3940 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 nmap amd64 7.91+dfsg1+really7.80+dfsg1-2ubuntu0.1 [1731 kB]
Fetched 5744 kB in 7s (767 kB/s)
Selecting previously unselected package liblinear4:amd64.
(Reading database ... 160287 files and directories currently installed.)
Preparing to unpack .../liblinear4_2.3.0+dfsg-5_amd64.deb ...
Unpacking liblinear4:amd64 (2.3.0+dfsg-5) ...
Selecting previously unselected package lua-lpeg:amd64.
Preparing to unpack .../lua-lpeg_1.0.2-1_amd64.deb ...
Unpacking lua-lpeg:amd64 (1.0.2-1) ...
Selecting previously unselected package nmap-common.
Preparing to unpack .../nmap-common_7.91+dfsg1+really7.80+dfsg1-2ubuntu0.1_all.deb ...
Unpacking nmap-common (7.91+dfsg1+really7.80+dfsg1-2ubuntu0.1) ...
Selecting previously unselected package nmap.
Preparing to unpack .../nmap_7.91+dfsg1+really7.80+dfsg1-2ubuntu0.1_amd64.deb ...
Unpacking nmap (7.91+dfsg1+really7.80+dfsg1-2ubuntu0.1) ...
Setting up lua-lpeg:amd64 (1.0.2-1) ...
Setting up liblinear4:amd64 (2.3.0+dfsg-5) ...
Setting up nmap-common (7.91+dfsg1+really7.80+dfsg1-2ubuntu0.1) ...
```

Step 2: Finding local IP range

I used the command – “ip a” and It shows the Network Info as

- Scanned Range: 172.21.96.0/20

- Local Machine IP: 172.21.108.213

```

rudra99@DESKTOP-L2T701I:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet 10.255.255.254/32 brd 10.255.255.254 scope global lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1492 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:c8:95:07 brd ff:ff:ff:ff:ff:ff
    inet 172.21.108.213/20 brd 172.21.111.255 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fec8:9507/64 scope link
        valid_lft forever preferred_lft forever

```

Step 3: To perform TCP-SYN-scan and saving results as a text file

I used this command – “sudo nmap -sS 172.21.96.0/20 -oN TCP-SYN-scan-results.txt”

```

rudra99@DESKTOP-L2T701I:~$ nmap -sS 172.21.96.0/20
You requested a scan type which requires root privileges.
QUITTING!
rudra99@DESKTOP-L2T701I:~$ sudo nmap -sS 172.21.96.0/20
Starting Nmap 7.80 ( https://nmap.org ) at 2025-06-23 12:53 IST
Nmap scan report for DESKTOP-L2T701I.mshome.net (172.21.96.1)
Host is up (0.00068s latency).
All 1000 scanned ports on DESKTOP-L2T701I.mshome.net (172.21.96.1) are filtered
MAC Address: 00:15:5D:C8:95:1E (Microsoft)

Nmap scan report for 172.21.108.213
Host is up (0.000020s latency).
All 1000 scanned ports on 172.21.108.213 are closed

Nmap done: 4096 IP addresses (2 hosts up) scanned in 33.01 seconds

```

Here, in this we can see that all ports are filtered, it means the host is reachable, but a firewall is blocking all port responses. so, I tried with kali, the same scan to see any open ports.

Step 6: Research Common Services

In this scan, no open ports were found on the active devices. One host (172.21.96.1) had all ports filtered, which likely means a firewall is blocking scan attempts. The other host (172.21.108.213) had all ports closed, meaning no services are currently listening.

Step 7: Identify Potential Security Risks

Since no ports were open, there were no immediate exposed services found on the scanned hosts. The filtered status on one device is a good sign of firewall protection, and closed ports indicate that the device isn't running unnecessary services. Overall, the network appears to be secure with minimal exposure.

Method 2: kali version

Step 1 and 2: Install Nmap and finding ip

I followed the step 1 and step2 same to find the local ip range using "ip a" command

The Network Info

- Scanned Range: 192.168.236.0/24
- Local IP: 192.168.236.15 the result is as follows for this kali version:

```
kali [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
kali@kali: ~
File Actions Edit View Help
(kali@kali)-[~]
$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group de
fault qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000
    link/ether 08:00:27:3c:c1:e3 brd ff:ff:ff:ff:ff:ff
    inet 192.168.236.15/24 brd 192.168.236.255 scope global dynamic noprefix
route eth0
        valid_lft 3569sec preferred_lft 3569sec
    inet6 2401:4900:6271:1bcc:b34d:f86b:4c15:fd25/64 scope global temporary
dynamic
        valid_lft 7172sec preferred_lft 7172sec
    inet6 2401:4900:6271:1bcc:a00:27ff:fe3c:c1e3/64 scope global dynamic mng
tmpaddr noprefixroute
        valid_lft 7172sec preferred_lft 7172sec
    inet6 fe80::a00:27ff:fe3c:c1e3/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
```

Step 3:To perform TCP-SYN-scan and saving results as a text file(kali)

Verification: for this, i used cat kali-scan-results.txt command to verify the text file content

```

(kali㉿kali)-[~]
$ sudo nmap -sS 192.168.236.0/24 -oN kali-scan-results.txt
[sudo] password for kali:
Starting Nmap 7.94SVN ( https://nmap.org ) at 2025-06-23 19:41 IST
Nmap scan report for 192.168.236.138
Host is up (0.0053s latency).
Not shown: 999 closed tcp ports (reset)
PORT      STATE SERVICE
53/tcp    open  domain
MAC Address: 82:82:59:B1:44:AD (Unknown)

Nmap scan report for 192.168.236.223
Host is up (0.0012s latency).
All 1000 scanned ports on 192.168.236.223 are in ignored states.
Not shown: 1000 filtered tcp ports (no-response)
MAC Address: 4C:D5:77:5B:EF:FD (Chongqing Fugui Electronics)

Nmap scan report for 192.168.236.15
Host is up (0.0000080s latency).
All 1000 scanned ports on 192.168.236.15 are in ignored states.
Not shown: 1000 closed tcp ports (reset)

Nmap done: 256 IP addresses (3 hosts up) scanned in 16.94 seconds

(kali㉿kali)-[~]
$

```

```

(kali㉿kali)-[~]
$ cat kali-scan-results.txt
# Nmap 7.94SVN scan initiated Mon Jun 23 19:41:13 2025 as: /usr/lib/nmap/nmap -sS -oN kali-scan-results.txt 192.168.236.0/24
Nmap scan report for 192.168.236.138
Host is up (0.0053s latency).
Not shown: 999 closed tcp ports (reset)
PORT      STATE SERVICE
53/tcp    open  domain
MAC Address: 82:82:59:B1:44:AD (Unknown)

Nmap scan report for 192.168.236.223
Host is up (0.0012s latency).
All 1000 scanned ports on 192.168.236.223 are in ignored states.
Not shown: 1000 filtered tcp ports (no-response)
MAC Address: 4C:D5:77:5B:EF:FD (Chongqing Fugui Electronics)

Nmap scan report for 192.168.236.15
Host is up (0.0000080s latency).
All 1000 scanned ports on 192.168.236.15 are in ignored states.
Not shown: 1000 closed tcp ports (reset)

# Nmap done at Mon Jun 23 19:41:30 2025 -- 256 IP addresses (3 hosts up) scanned in 16.94 seconds

(kali㉿kali)-[~]
$

```

Step 4: Note IP Addresses and Open Ports

After running the scan, I reviewed the results from step 3 figure, to identify which IP addresses were active and whether any ports were open. Out of the scanned range, three devices were found to be active. Among them, only one device had an open port (53/tcp), while the others had all ports either closed or filtered. This helps in understanding which devices are visible on the network and what services they might be exposing.

Step 5: Wireshark analysis(kali)

Here, in kali, followed same procedure as ubuntu till the third step then, open Wireshark and started packet capturing while running nmap command in the terminal and filtered the TCP SYN responses in real time using filter "tcp.flags.syn==1 && tcp.flags.ack==0" and saved the pcap file.

The image shows a Wireshark packet capture of a network traffic. The top bar indicates the interface is 'eth0'. The menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. The toolbar contains various icons for packet capture and analysis. The packet list pane shows a series of TCP SYN packets from source IP 192.168.236.15 to destination IP 192.168.236.223. The packet details pane for frame 522 shows the Ethernet II header, Internet Protocol Version 4 header, and Transmission Control Protocol header.

No.	Time	Source	Destination	Protocol	Length	Info
522	26.553288446	192.168.236.15	192.168.236.223	TCP	58	34250 → 111 [SYN] Seq
523	26.554045640	192.168.236.15	192.168.236.138	TCP	58	34250 → 111 [SYN] Seq
524	26.554445998	192.168.236.15	192.168.236.223	TCP	58	34250 → 113 [SYN] Seq
525	26.558092061	192.168.236.15	192.168.236.138	TCP	58	34250 → 113 [SYN] Seq
526	26.558648757	192.168.236.15	192.168.236.223	TCP	58	34250 → 445 [SYN] Seq
528	26.559960552	192.168.236.15	192.168.236.138	TCP	58	34250 → 445 [SYN] Seq
529	26.560445948	192.168.236.15	192.168.236.223	TCP	58	34250 → 443 [SYN] Seq
530	26.560785832	192.168.236.15	192.168.236.138	TCP	58	34250 → 443 [SYN] Seq
531	26.561265684	192.168.236.15	192.168.236.223	TCP	58	34250 → 5900 [SYN] Seq
532	26.561724697	192.168.236.15	192.168.236.138	TCP	58	34250 → 5900 [SYN] Seq
537	26.578282470	192.168.236.15	192.168.236.223	TCP	58	34250 → 256 [SYN] Seq
538	26.578470484	192.168.236.15	192.168.236.138	TCP	58	34250 → 256 [SYN] Seq
539	26.578640518	192.168.236.15	192.168.236.223	TCP	58	34250 → 143 [SYN] Seq
540	26.578775269	192.168.236.15	192.168.236.138	TCP	58	34250 → 143 [SYN] Seq
541	26.578900098	192.168.236.15	192.168.236.223	TCP	58	34250 → 139 [SYN] Seq
542	26.579079685	192.168.236.15	192.168.236.138	TCP	58	34250 → 139 [SYN] Seq
543	26.579340120	192.168.236.15	192.168.236.223	TCP	58	34250 → 1723 [SYN] Seq
544	26.579467590	192.168.236.15	192.168.236.138	TCP	58	34250 → 1723 [SYN] Seq
545	26.579601014	192.168.236.15	192.168.236.223	TCP	58	34250 → 8080 [SYN] Seq
546	26.579696534	192.168.236.15	192.168.236.138	TCP	58	34250 → 8080 [SYN] Seq
552	26.587688917	192.168.236.15	192.168.236.138	TCP	58	34250 → 3389 [SYN] Seq
553	26.587972423	192.168.236.15	192.168.236.138	TCP	58	34250 → 23 [SYN] Seq

Frame 522: 58 bytes on wire (464 bits), 58 bytes captured (464 bits) on interface eth0

Ethernet II, Src: PCSSystemtec_3c:c1:e3 (08:00:27:00:10:00), Dst: 192.168.236.223 (08:00:27:00:00:00)

Internet Protocol Version 4, Src: 192.168.236.15, Dst: 192.168.236.223

Transmission Control Protocol, Src Port: 34250, Dst Port: 111

Step 6: Research Common Services

The scan found only one open port: 53/tcp, which is used for DNS (Domain Name System). This service is usually found on routers or servers to resolve domain names. In this case, it was found on 192.168.236.138, which may be a router or a device running DNS. If it's not meant to run DNS, this could be a misconfiguration.

Step 7: Identify Potential Security Risks

An open DNS port on a normal device can be risky if not needed — it may allow misuse like DNS tunneling. The other devices had all ports closed or filtered, which is good because it means no unnecessary services are exposed and firewalls may be protecting them.

