Note: All the commands, outputs, and configurations in this document are demonstrated on Kali Linux.

Task 1: Scan Your Local Network for Open Ports

Objective: Learn to discover open ports on devices in your local network to understand network exposure.

Tools: Nmap (free), Wireshark (optional)

Hints/Mini Guide:

1. Install Nmap from official website.
2. Find your local IP range (192.168.62.130/24).
3. Run: nmap -sS 192.168.1.0/24 to perform TCP SYN scan.
4. Note down IP addresses and open ports found.
5. Optionally analyze packet capture with Wireshark.
6. Research common services running on those ports.
7. Identify potential security risks from open ports.
8. Save scan results as a text or HTML file.

1. Install Nmap from official website.

Step 1: Update your system package list - sudo apt update

Step 2: Install Nmap - sudo apt install nmap -y

Step 3: Verify the installation - nmap –version

2. Find your local IP range (192.168.62.130/24).

- **ip a Command Output**

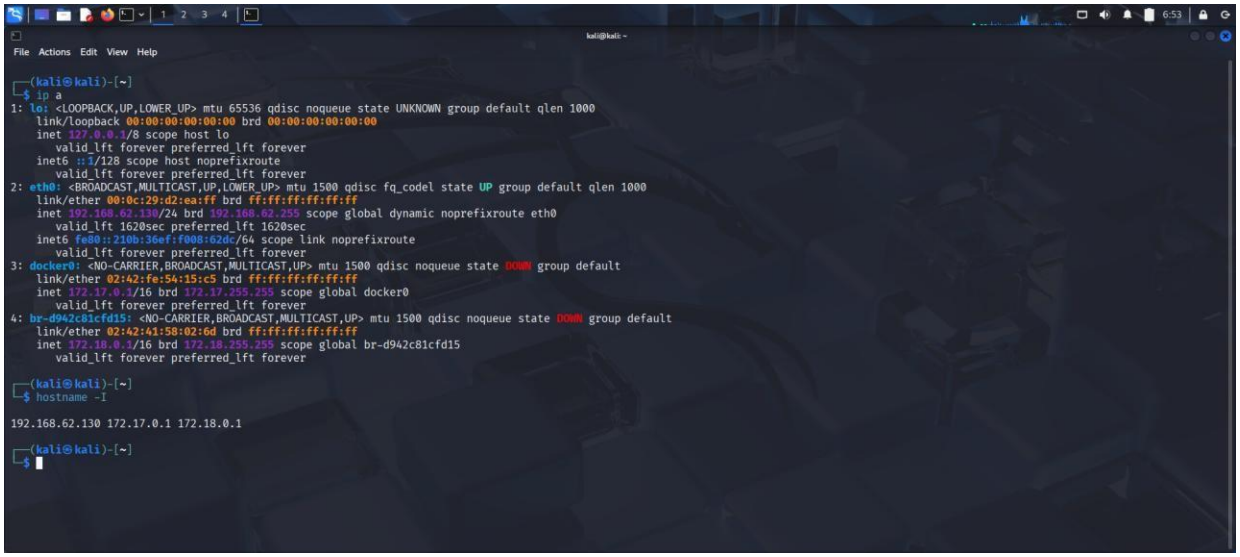
  The ip a (or ip addr) command displays all network interfaces and their IP addresses.

- **Active Network Interface – eth0**

  The interface eth0 is UP and has the IP address 192.168.62.130/24.

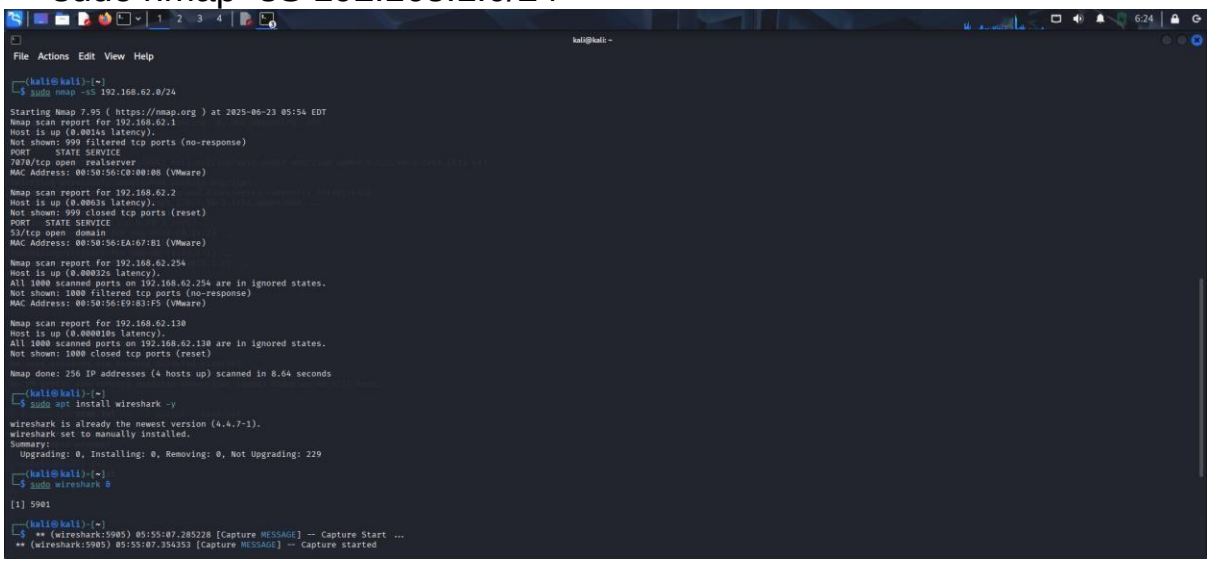
- **Private IP Addresses**

  The system uses private IPs like 192.168.62.130, 172.17.0.1, and 172.18.0.1. These are used within internal networks and are not accessible directly from the internet.



3. Run: nmap -sS 192.168.62.130/24 to perform TCP SYN scan.

- sudo nmap -sS 192.168.1.0/24



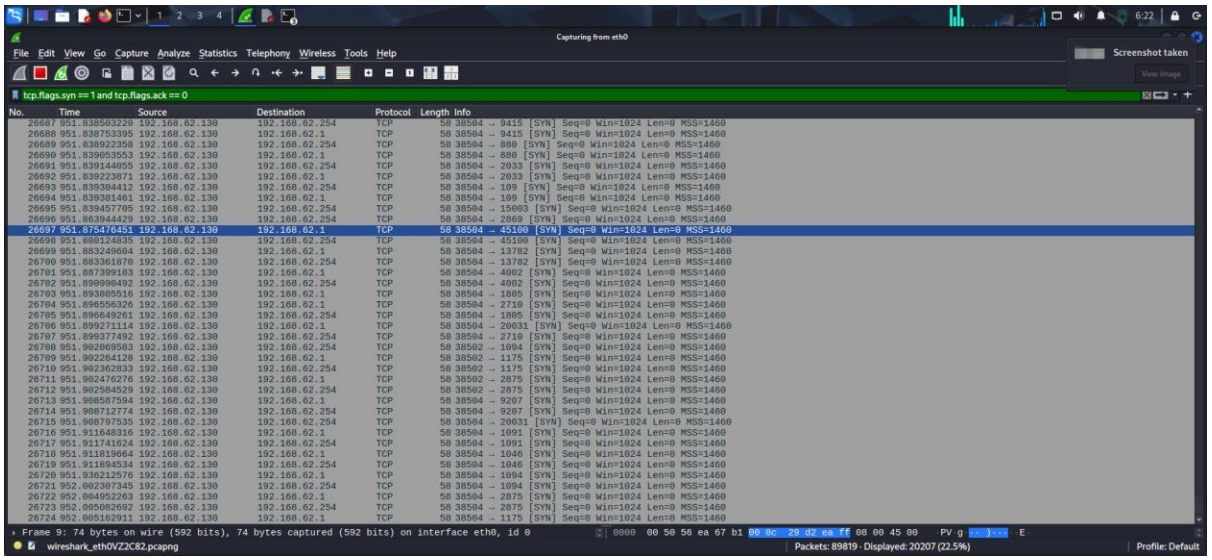
- The command sudo nmap -sS 192.168.1.0/24 is used to perform a TCP SYN scan across all devices in the local network range from 192.168.1.1 to 192.168.1.254.
- The sudo prefix runs the command with administrative privileges, which is required because the scan needs access to raw network packets.

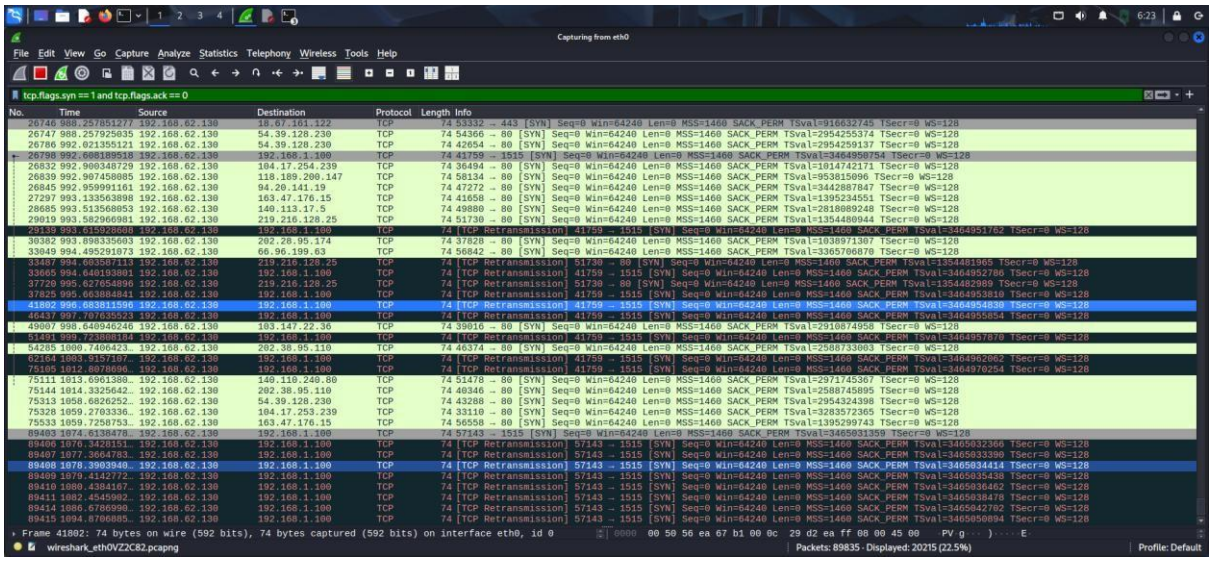
5. Analyze packet capture with Wireshark.

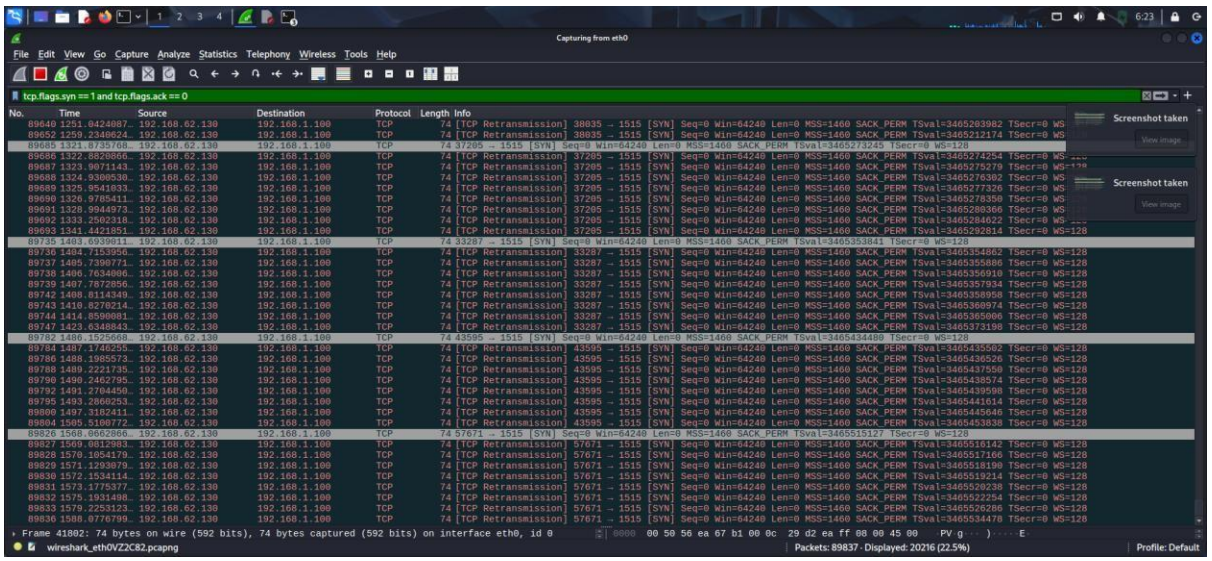
```
┌──(kali㉿kali)-[~]
└─$ sudo wireshark &

[1] 5901

┌──(kali㉿kali)-[~]
└─$  ** (wireshark:5905) 05:55:07.285228 [Capture MESSAGE] -- Capture Start ...
 ** (wireshark:5905) 05:55:07.354353 [Capture MESSAGE] -- Capture started
```

- Command used is **“sudo wireshark &”.**
- **sudo** is used to run Wireshark with root privileges, which is needed to capture packets.

- **&** runs it in the background so your terminal stays usable.







6. Research common services running on those ports & Identify potential security risks from open port.

- A TCP SYN scan was performed on the local subnet 192.168.62.0/24 using the command sudo nmap -sS -oN /home/kali/scan.txt 192.168.62.0/24.
- The scan successfully detected 4 active hosts out of 256 IP addresses in the range and completed in 9.31 seconds.
- The system at IP 192.168.62.1 was found with port 7070/tcp open, running the realserver service, which may indicate streaming or proxy functionalities.
- Another host, 192.168.62.2, had port 53/tcp open, indicating it might be running a DNS service. Two additional hosts,

192.168.62.254 and 192.168.62.130, had no open ports; all 1000 scanned ports were either filtered or closed.

- This scan helps in identifying potentially exposed services in the network and sets the foundation for further analysis such as vulnerability detection or access control verification.

```
# Nmap 7.95 scan initiated Mon Jun 23 06:12:25 2025 as: /usr/lib/nmap/nmap -sS -oN /home/kali/scan.txt 192.168.62.0/24
Nmap scan report for 192.168.62.1
Host is up (0.0053s latency).
Not shown: 999 filtered tcp ports (no-response)
PORT     STATE SERVICE
7070/tcp open  realserver
MAC Address: 00:50:56:C0:00:08 (VMware)

Nmap scan report for 192.168.62.2
Host is up (0.00021s latency).
Not shown: 999 closed tcp ports (reset)
PORT   STATE SERVICE
53/tcp open  domain
MAC Address: 00:50:56:EA:67:B1 (VMware)

Nmap scan report for 192.168.62.254
Host is up (0.00029s latency).
All 1000 scanned ports on 192.168.62.254 are in ignored states.
Not shown: 1000 filtered tcp ports (no-response)
MAC Address: 00:50:56:E9:83:F5 (VMware)

Nmap scan report for 192.168.62.130
Host is up (0.0000090s latency).
All 1000 scanned ports on 192.168.62.130 are in ignored states.
Not shown: 1000 closed tcp ports (reset)

# Nmap done at Mon Jun 23 06:12:34 2025 -- 256 IP addresses (4 hosts up) scanned in 9.31 seconds
```