1st Task SUBMISSION REPORT OF ELEVATE LABS CYBERSECURITY INTERNSHIP

NAME	**SANDEEP MEWARA**
Submitted to:	**Elevate Labs**
Name of the Academic Institute	**Ganpat University**

REPORT SUBMITTED TO

As part of the Cyber Security Internship, I have completed "Task 1st: Scan Your Local Network for Open Ports" by following all steps as instructed.
Below is a detailed summary of each step followed during the task:

Task 1st: Scan Your Local Network for Open Ports

1. Install Nmap from Official Website

Kali Linux typically comes with **Nmap pre-installed**. However, to ensure it's installed or to upgrade it:

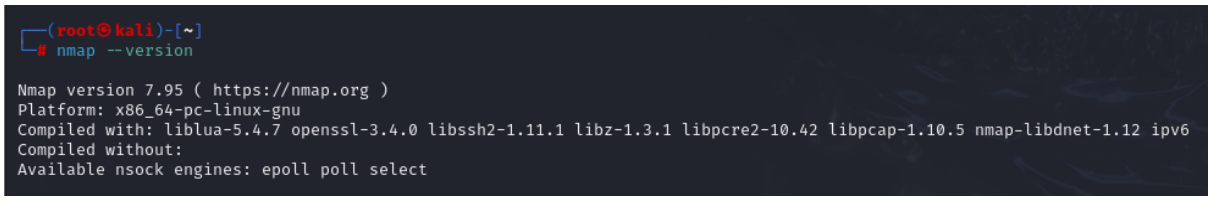
To install or update Nmap:

sudo apt update

sudo apt install nmap -y

To check if Nmap is installed:

nmap –version



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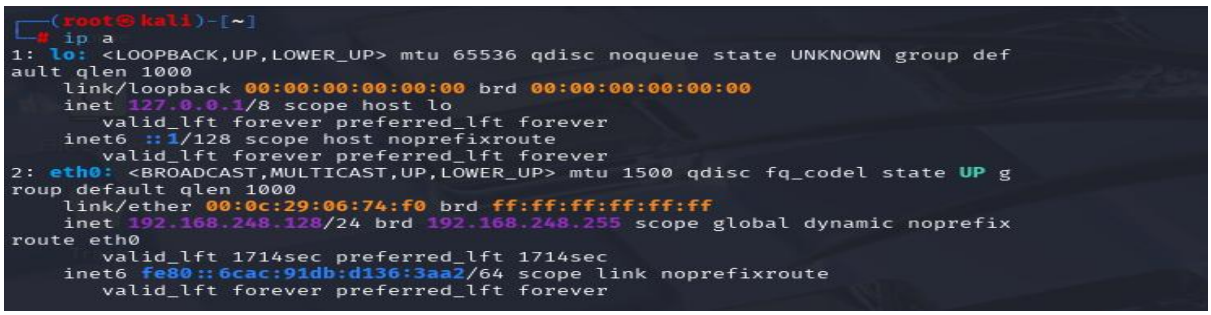
2. Find Your Local IP Range (e.g., 192.168.1.0/24)

To scan your local network, you need to determine the IP address and subnet.

Use the following command scan local network:

ip a



Task 1st: Scan Your Local Network for Open Ports

Active Network Interface (eth0):

- **IP Address: 192.168.248.128**
- **Subnet Mask: /24**
- **Broadcast Address: 192.168.248.255**
- **Subnet Range: 192.168.248.0/24**

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3. Run: Nmap -sS, 192.168.248.128/24 to Perform a TCP SYN Scan

The -sS flag instructs Nmap to perform a **TCP SYN (stealth) scan** which sends SYN packets and observes responses without completing TCP handshakes.

Run the command:

sudo nmap -sS 192.168.248.128/24

```
┌──(root㉿kali)-[~]
└─# sudo nmap -sS 192.168.248.0/24

Starting Nmap 7.95 ( https://nmap.org ) at 2025-05-26 08:57 EDT
Nmap scan report for 192.168.248.1
Host is up (0.0031s latency).
All 1000 scanned ports on 192.168.248.1 are in ignored states.
Not shown: 1000 filtered tcp ports (no-response)
MAC Address: 00:50:56:C0:00:08 (VMware)

Nmap scan report for 192.168.248.2
Host is up (0.00031s latency).
Not shown: 999 closed tcp ports (reset)
PORT   STATE    SERVICE
53/tcp filtered domain
MAC Address: 00:50:56:EB:42:36 (VMware)

Nmap scan report for 192.168.248.254
Host is up (0.00060s latency).
All 1000 scanned ports on 192.168.248.254 are in ignored states.
Not shown: 1000 filtered tcp ports (no-response)
MAC Address: 00:50:56:EF:6F:E1 (VMware)

Nmap scan report for 192.168.248.128
Host is up (0.000012s latency).
All 1000 scanned ports on 192.168.248.128 are in ignored states.
Not shown: 1000 closed tcp ports (reset)

Nmap done: 256 IP addresses (4 hosts up) scanned in 11.40 seconds
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This scan identifies:

- **Live devices** (hosts that respond)
- **Open TCP ports**
- **Running services (if identifiable)**

IP Address	Status	Open Ports	Notes
192.168.248.1	Up	None (filtered)	Host responded, no open port
192.168.248.2	Up	53 (filtered)	DNS service, filtered
192.168.248.254	Up	None (filtered)	Host responded, no open port
192.168.248.128	Up (Kali)	None (reset)	This is the scanning machine

Task 1st: Scan Your Local Network for Open Ports

Observations

- Only port 53 (DNS) on 192.168.248.2 was detected, and it is **filtered**.
- Other hosts had **all ports filtered or reset**, indicating strong firewall rules or inactive services.
- The scan completed in **11.40 seconds**.

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4. Note Down IP Addresses and Open Ports Found

From the scan output,

IP Address	Status	Open Ports	Service	Remarks
192.168.248.1	Up	None	—	All 1000 TCP ports filtered
192.168.248.2	Up	53/tcp	Filtered (domain)	Likely running DNS service
192.168.248.254	Up	None	—	All ports filtered
192.168.248.128	Up	None	—	This is the Kali machine itself

Additional Notes:

- **192.168.248.2** is the only host with a detected **filtered port (53/tcp)**, which commonly indicates a DNS service—possibly a DNS server or firewall filtering responses.
- Other hosts responded to the scan but showed **no open ports**, meaning they may be protected by firewalls or not running services on standard TCP ports.
- **Filtered ports** suggest that a firewall is blocking Nmap from determining the actual state (open/closed).

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5. Optionally Analyze Packet Capture with Wireshark

Wireshark helps visualize the traffic generated during a scan and understand how devices respond.

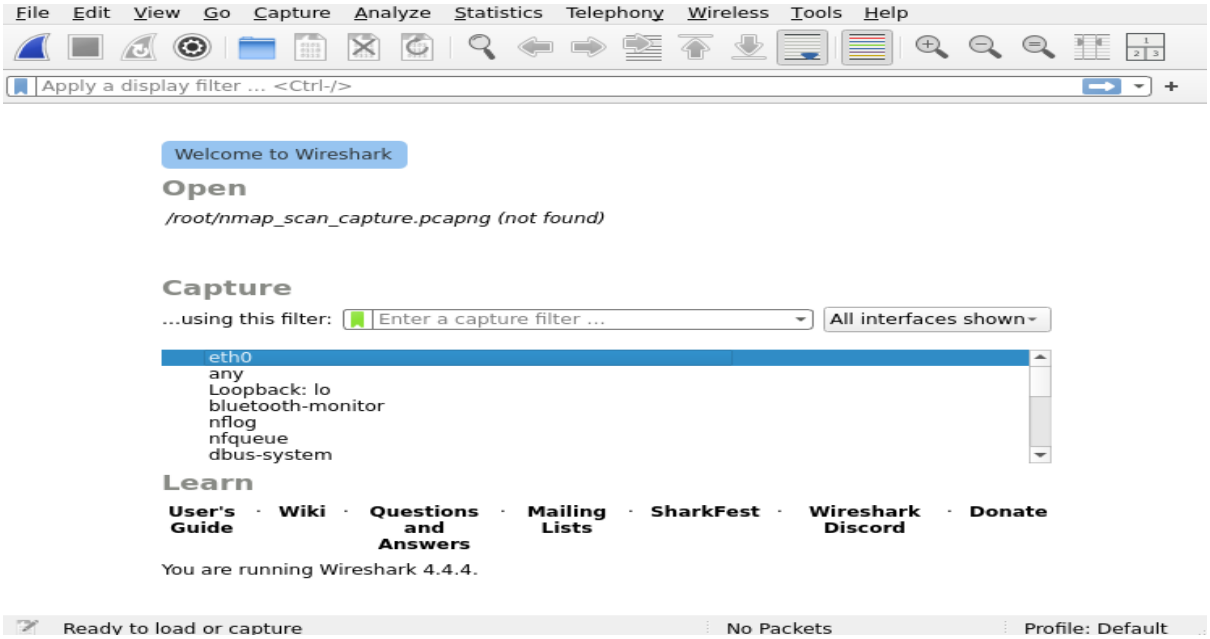
Steps:

1. **Open Wireshark in Kali:**

sudo wireshark

2. **Chooses active interface (likely eth0 for wired or bridged).**

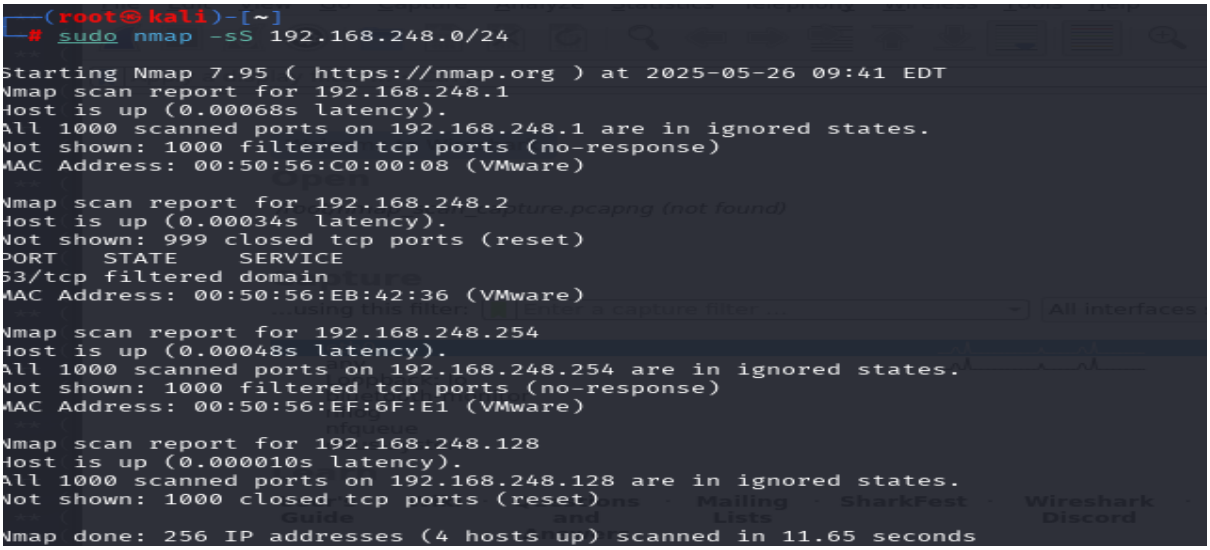
Task 1st: Scan Your Local Network for Open Ports



WE HAVE CHOOSES eth0 and then Start capturing before running the Nmap scan.

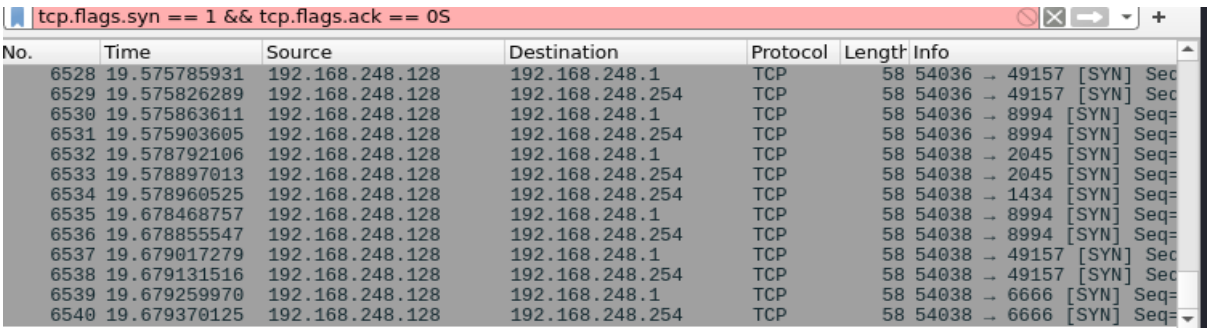
3. **In a new terminal, run:**

   sudo nmap -sS 192.168.248.0/24

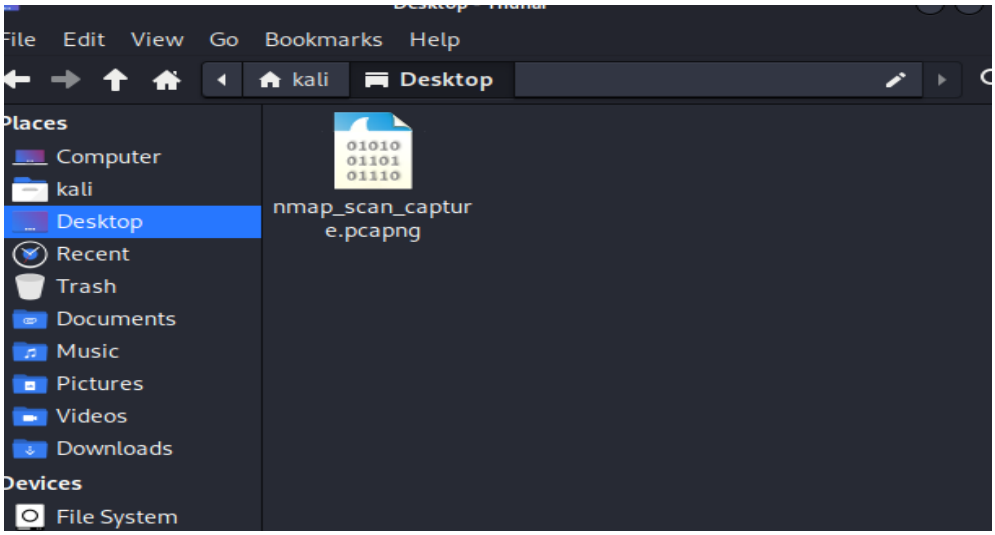


4. **Return to Wireshark and apply this filter to see SYN packets:**

   tcp.flags.syn == 1 && tcp.flags.ack == 0



5. **Observe That:**
    - **How SYN packets are sent.**
    - **Responses like SYN-ACK (open port) or RST (closed) are received.**
6. **Then Stop the capture and save it:**
    - **File → Save As → nmap_scan_capture.pcapng**



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6. Research Common Services Running on Those Ports

From scan:

- **Only 192.168.248.2 has a detected open (filtered) port:**
    - **Port 53/tcp → Service: domain**
    - **This refers to the DNS (Domain Name System) service.**

About Port 53:

Port	Protocol	Service	Description
53	TCP/UDP	DNS	Resolves domain names (e.g., google.com → IP address). Typically runs on DNS servers.

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7. Identify Potential Security Risks from Open Ports

Risks of Exposing Port 53 (DNS):

Threat	Description
DNS Amplification Attacks	Can be abused for DDoS attacks by spoofing requests.
DNS Cache Poisoning	Attacker manipulates DNS cache to redirect traffic to malicious sites.

Zone Transfers (if misconfigured)	**May reveal internal domain details to attackers.**
Information Leakage	**Poor DNS configuration might expose subdomains or hostnames.**

Mitigation:

- **Restrict DNS access to trusted IPs.**
- **Disable zone transfers unless absolutely necessary.**
- **Keep DNS server software updated.**
- **Monitor DNS traffic for anomalies.**

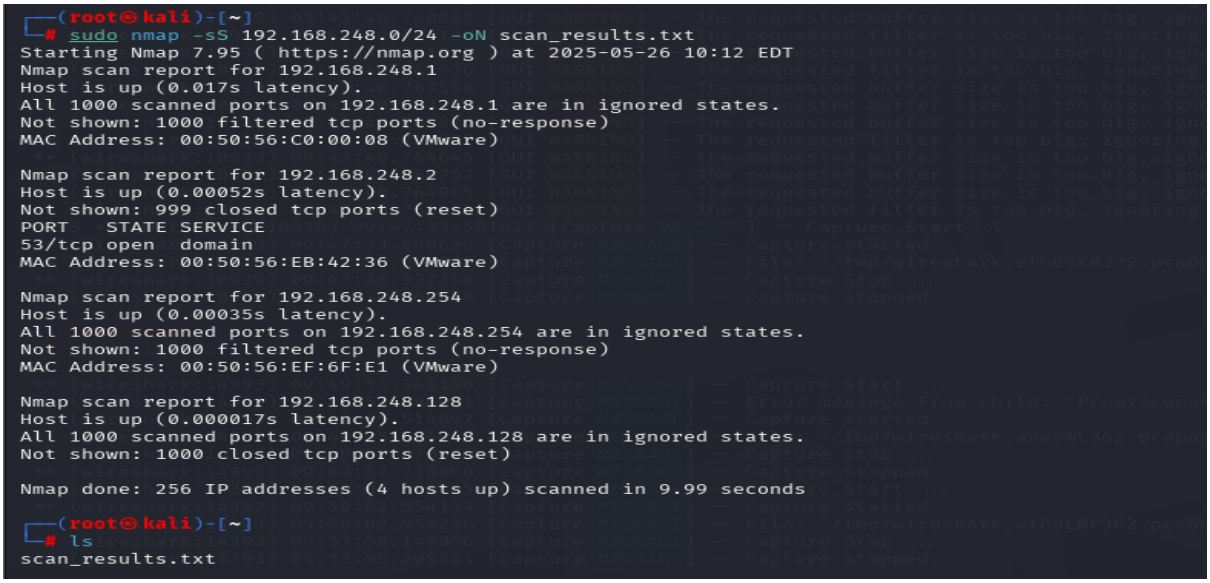
8. Save Scan Results as a Text or HTML File

To document your work and submit it as part of your internship or GitHub task, here are two ways to save your Nmap results:

Option 1: Save as Plain Text (.txt)

sudo nmap -sS 192.168.248.0/24 -oN scan_results.txt

- **-oN = Normal text format**
- **Output will be saved as scan_results.txt in your current directory.**



GitHub Repository Link

All files, documentation, and supporting evidence for Task 1 have been uploaded to the following GitHub repository:

Repository URL:
https://github.com/CyberSIDH/Task-1-

Repository Contents:

Task 1st: Scan Your Local Network for Open Ports

- README.md – Full explanation of the task
- scan_results.txt – Output from the Nmap TCP SYN scan
- nmap_scan_capture.pcapng – Wireshark packet capture file