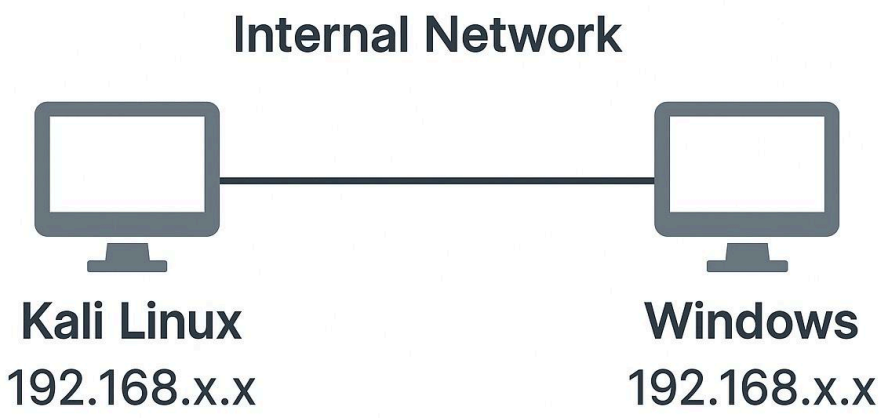
Safe Virtual Machine Environment Lab

Introduction

This logbook outlines the steps taken to set up a safe and completely isolated virtual network environment. This setup allows for experimentation without risking harm to the host machine.

the network would look like the following figure



Tools Used

Oracle VirtualBox: https://www.virtualbox.org/

Windows 10 ISO*: https://www.microsoft.com/en-us/software-download/windows10*

Kali Linux*: https://www.kali.org/get-kali/#kali-virtual-machines*

Setup on Main Computer

1. Install Oracle VirtualBox

Download and install Oracle VirtualBox from the official website.

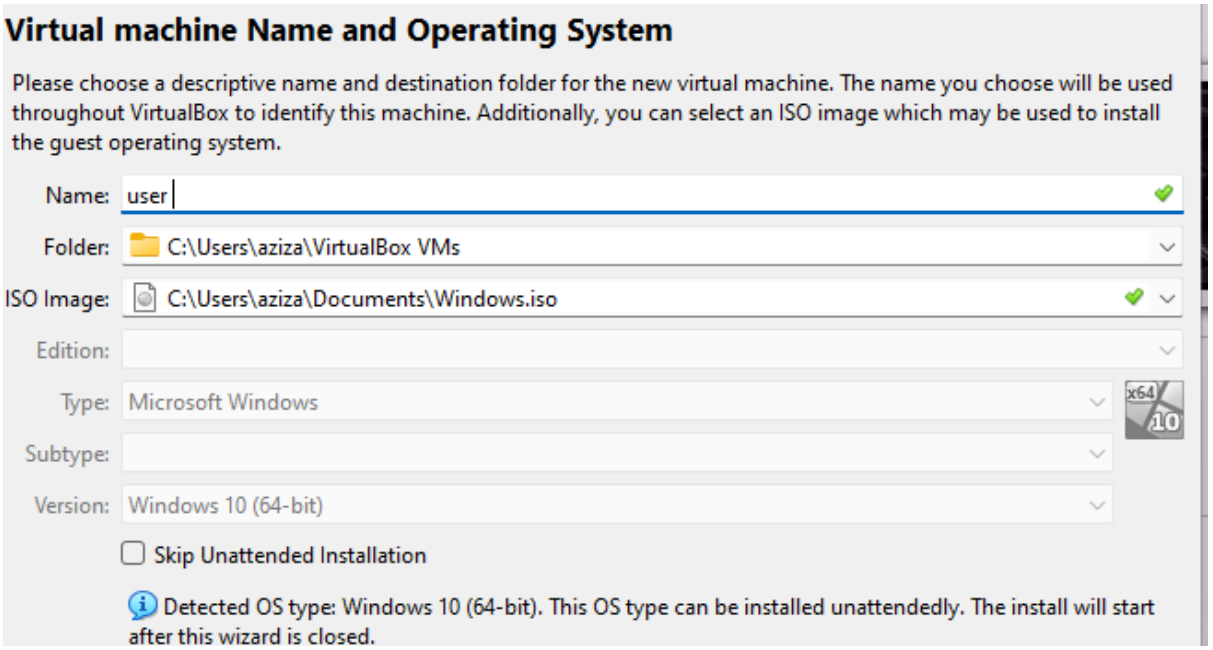
2. Download OS Images

- **Windows 10 ISO**: Either download the ISO directly or use the Media Creation Tool from Microsoft's site.
- **Kali Linux**: Download the Kali VM image from kali.org

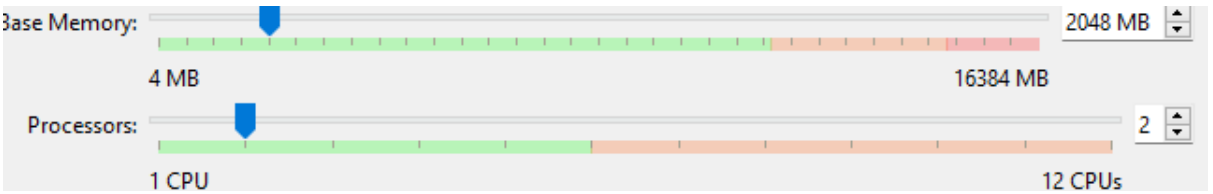
3. Create the Windows VM

- Open VirtualBox and click **New**.

Select the downloaded Windows 10 ISO.



now on the next we will give the machine some spec which will be the following



Assign minimal specs (RAM, CPU) to save resources for other VMs:

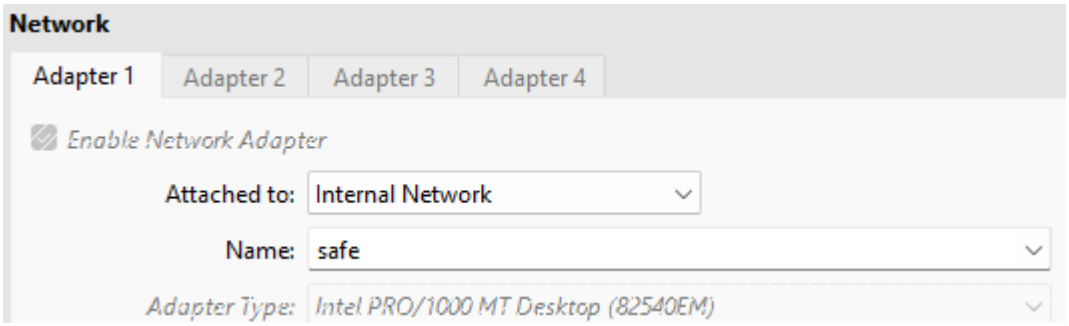
- RAM: 2GB
- Disk: 50GB (preallocated)
- Complete the OS installation.

4. Create the Kali Linux VM

- Use the same steps as above, but assign more resources:
    - RAM: 4GB
    - CPU: 2 cores
    - Disk: 60GB

5. Configure Network Isolation

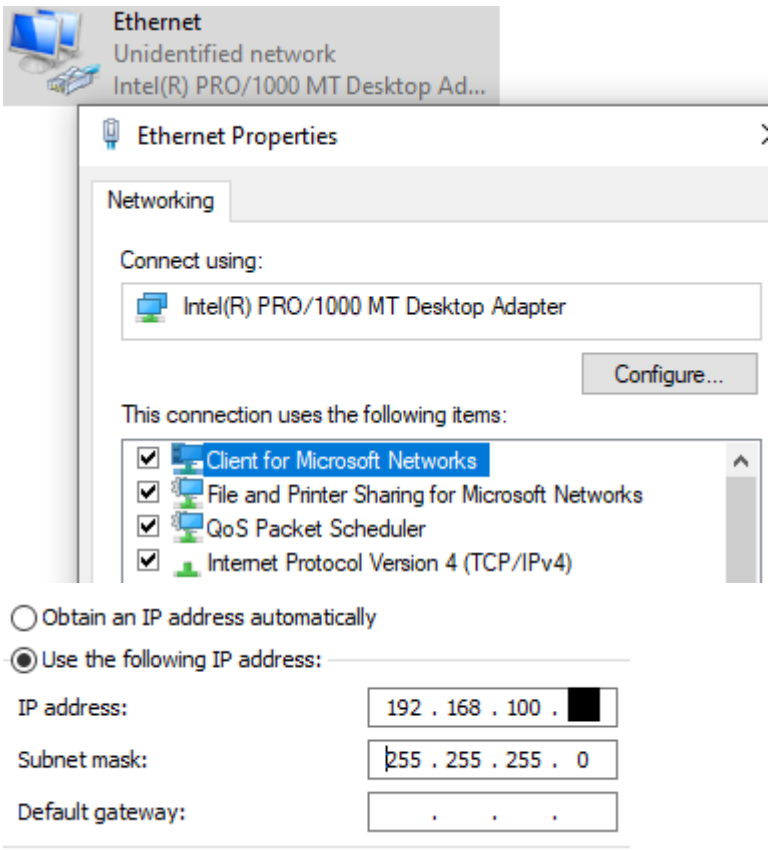
- Set both the Windows and Kali VMs to use **Internal Network** in VirtualBox settings.
- Give the internal network a name (e.g., `safe_lab`).



6. Assign Static IPs

On Windows:

1. Go to `Control Panel > Network & Internet > Change adapter settings`.
2. Right-click adapter > Properties > IPv4 settings.
3. Use these settings:
    - IP Address: `192.168.100.xx`
    - Subnet Mask: `255.255.255.0`



after that save and close

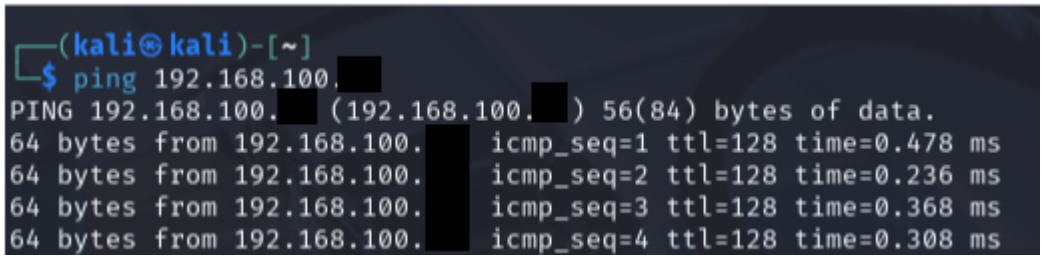
On Kali:

In the terminal, run:

sudo ip addr add 192.168.100.xx/xx dev eth0

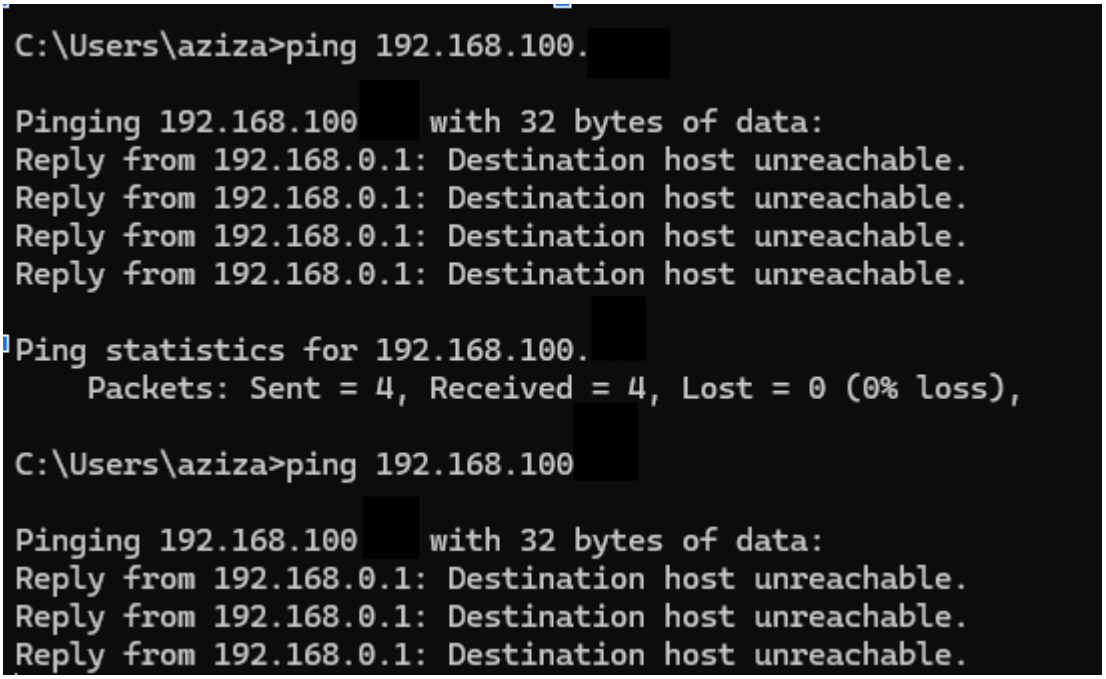
Testing the Setup

now to test from kali to the windows we will ping the windows ip 192.168.100.24 from the kali machine



we can see that the kali device now can ping the windows lets make sure that it is not connected to the main pc and its safe we will ping both vms from the main pc

ping 192.168.100.xx
ping 192.168.100.xx



There should be no response, confirming full network isolation.

Conclusion

The isolated virtual environment is now ready for testing and experimentation. It is completely separated from the host system, ensuring a safe and secure setup for penetration testing, malware analysis, or any risky operations.

Issue: Internal Network Name Typo

Problem:
The VMs couldn't communicate — ping failed between Kali and Windows.

Cause:
I misspelled the internal network name in one VM (`saf_lab` instead of `safe_lab`), so they ended up on different networks.

Fix:
Corrected the network name in VirtualBox settings to match exactly on both VMs.

Lesson:
Even a small typo in the network name breaks the connection — always double-check it.

Issue: Kali `eth0` Interface Down & IP Misconfig

Problem:
After assigning the IP, `eth0` was down and the network still didn't work. Also, I used an incomplete IP (`192.168.xx/xx`), which caused issues.

Fix:

Flushed any incorrect IPs:

bash
CopyEdit
```
sudo ip addr flush dev eth0
```

1.

Brought the interface up:

bash
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sudo ip link set eth0 up
```

2.

Reassigned the correct IP (with full address):

bash
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```
sudo ip addr add 192.168.100.xx/xx dev eth0
```

3.

Lesson:
Make sure the interface is **UP** and always use a **full IP address** (like `192.168.100.xx/xx`) — missing the last octet will break connectivity.