

Of course! Let's properly organize everything for you:

Here's a **full, clean, step-by-step guide** (including errors you faced and their solutions) for:

Task: Implement Network Virtualization using VirtualBox on Windows 11

✂ Full Steps to Implement Network Virtualization Using VirtualBox

1. Install VirtualBox

- Download from [VirtualBox Official Site](#).
- Install it normally on your Windows 11 machine.

Done

2. Create Two Virtual Machines (VMs)

- Click "New" → Create two VMs (Ubuntu OS recommended for practice).
- Example:
 - VM1: Ubuntu-VM1
 - VM2: Ubuntu-VM2

Done

3. Configure Network Setting

Set both VMs to the same Internal Network:

- Open VirtualBox → Select your VM → Settings → Network
- Adapter 1:
 - Enable Network Adapter →
 - Attached to: **Internal Network**
 - Name: intnet
- Do this for **both** VMs!

Done

4. Start and Login into VMs

- Start VM1 and VM2.
- Login into both machines.

Done

5. Become a sudo user (Handle Permissions)

Error 1:

vboxuser is not in the sudoers file. This incident will be reported.

Reason: You are not an admin user.

Solution:

- Either login as root:
- `su -`
-
- Or add user to sudo group:
- `su -`
- `usermod -aG sudo vboxuser`
- `logout`
-
- Then login again and you will have sudo access.

Done

6. Find the Correct Network Interface Name

Run inside each VM:

```
ip a
```

You will see something like:

```
enp0s3
```

Note it! (NOT `eth0` in new systems.)

7. Assign Static IP Addresses

Inside **VM1**:

```
sudo ip addr add 192.168.1.10/24 dev enp0s3
```

Inside **VM2**:

```
sudo ip addr add 192.168.1.20/24 dev enp0s3
```

(Replace enp0s3 if your device name is different.)

Error 2:

```
cannot find device 'eth0'
```

Reason: No device named eth0 exists on new Ubuntu systems.

Solution:

- Use correct device name found by `ip a`, such as enp0s3.

Done

8. Verify IP Assignment

Run inside each VM:

```
ip a
```

Check that:

- VM1 has 192.168.1.10
- VM2 has 192.168.1.20

Done

9. Test the Virtual Network (Ping Test)

From **VM1**, ping VM2:

```
ping 192.168.1.20
```

From **VM2**, ping VM1:

```
ping 192.168.1.10
```

If you get continuous "64 bytes from..." replies → SUCCESS.

10. Troubleshooting Ping Failure (Optional)

If ping fails:

a) Check if VMs are on same "Internal Network"

- VirtualBox → Settings → Network → Adapter 1 → Internal Network → Name intnet

b) Disable firewall inside VM:

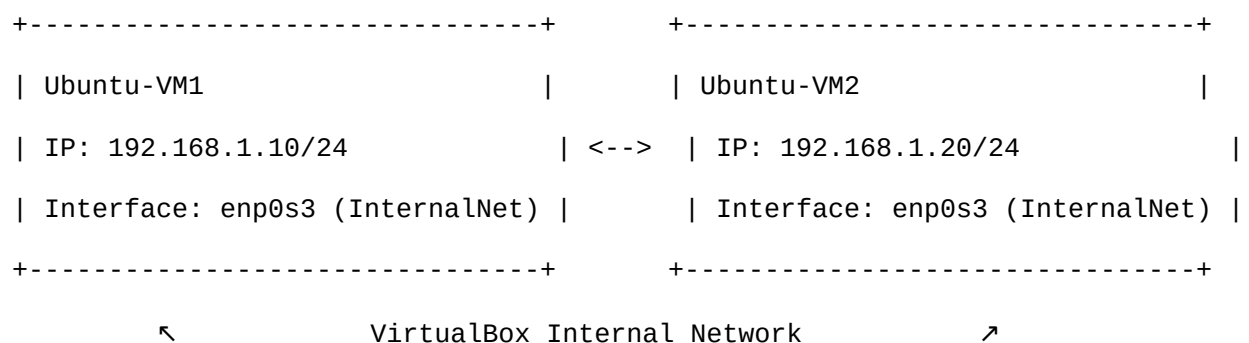
```
sudo ufw disable
```

Done

Quick Summary Table

Step	Command / Action	Purpose
Install VirtualBox	Download + Install	Setup environment
Create 2 VMs	New VM (Ubuntu OS)	Create test machines
Set Internal Network	Adapter 1 → Internal Network (intnet)	Private network
Become sudo user	su - or usermod -aG sudo user	Gain admin rights
Find network interface	ip a	Find correct device name
Assign IP	sudo ip addr add 192.168.1.x/24 dev enp0s3	Setup manual IP
Verify IPs	ip a	Confirm
Ping Test	ping other_vm_ip	Test communication
Troubleshoot	Disable firewall	If ping fails

Final Diagram (ASCII Style)



(intnet)

Important Notes:

- Internal Network (intnet) is isolated from external internet (no browsing unless you configure NAT additionally).
- IPs must be in same subnet: `192.168.1.x/24`
- Interface names differ depending on Linux version.

Congratulations!

You have implemented **basic network virtualization** using **VirtualBox** on **Windows 11**!

Would you also like me to give you a **very small assignment** (optional) to test your virtualization setup? It will be like setting up a small web server between two VMs!

Just say "**yes, give assignment**"!