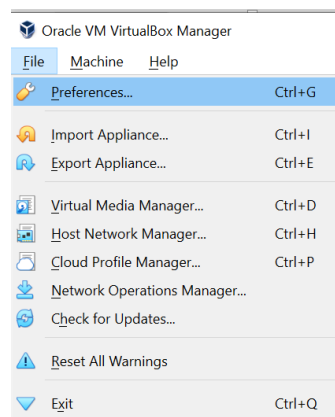


# Setting up 3 Virtual machines as one network

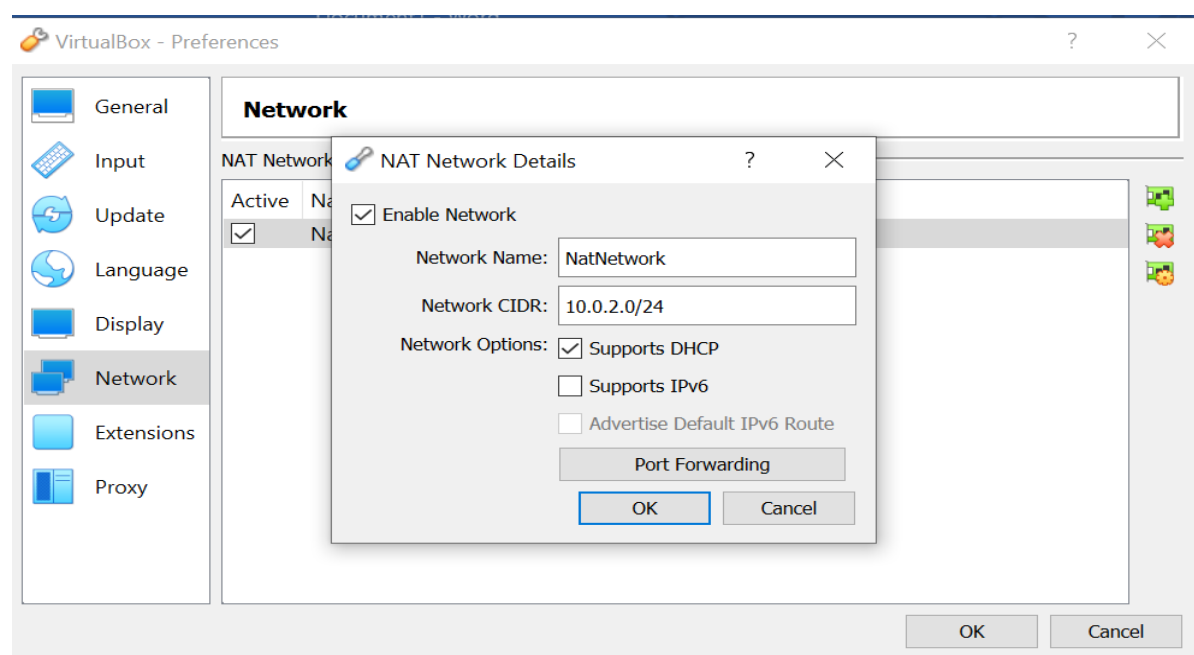
## 1. Set up the environment

### Step 1: Prepare the VM

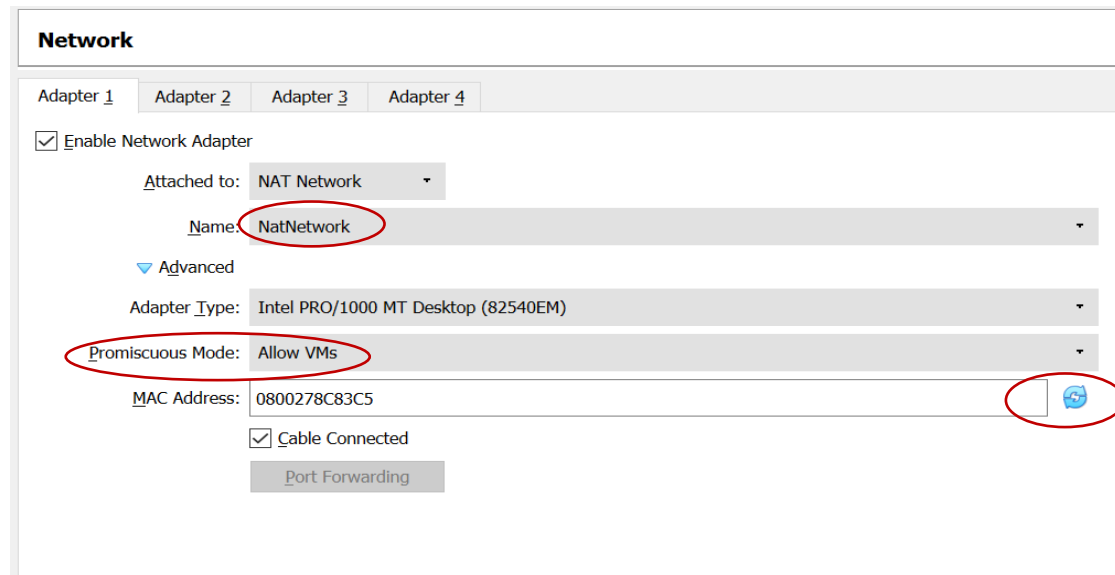
- i. Install VirtualBox software (Recommended Version 6.0.18).
- ii. Create a VM (32 bit or 64 bit) following the steps listed [here](#). (Skip this step if VM has already been created as part of previous lab)
- iii. Go to Virtual box preferences by clicking on File -> Preferences:



- iv. Within Preference select **Network** tab.
- v. Click on the “+” button to create a new NAT Network adapter (if one does not exist). Double click on the **NatNetwork**, set the specifications as what is shown below and click ok.



- vi. Next go to the settings of the VM. (Remember that the VM must be powered off before making the following changes.) Enable Adapter 1 and choose “NAT Network” (also disable the other Adapters). Select **NatNetwork** build in step ii above. Select Allow VMs for the field Promiscuous mode and refresh the MAC address.



- vii. While the VM is powered off, go to VM settings -> Display -> Graphics Controller. Select **VBoxSVGA**.
- viii. Once done, start the VM.
- ix. Go to Devices -> Shared Clipboard -> Bidirectional (This is to allow copy/paste between host and the VM)
- x. Check version of Python3: At command prompt type the following command : **python3 --version** (if not installed install python3 : **sudo apt-get install python3.6**
- xi. Install scapy(At command prompt type the following command): **sudo apt install python-scapy**
- xii. Install editor gedit (At command prompt type the following command) : **sudo apt install gedit**

## Step 2: Create a network of 3 VMs

- i. Now, power off this VM and create a new VM by cloning this VM (give the VM any name that you wish). While cloning remember to select “**Generate New MAC address for all network adapters**” for MAC address policy as shown below:

← Clone Virtual Machine

**New machine name and path**

Please choose a name and optionally a folder for the new virtual machine. The new machine will be a clone of the machine **Ubuntu VM**.

Name:

Path:

MAC Address Policy:

Additional Options: ☐ Keep Disk Names  
☐ Keep Hardware UUIDs

Expert Mode

- ii. Repeat step i to create another VM (give this VM any name that you wish).
- iii. Now we have three VMs in the network. Verify that the three machines are reachable from one another using the **ping** command.
  - a) For this you first need to run **ifconfig** command at the terminal of each of the three machines and note their IP addresses.
  - b) Next, use **ping** command to test reachability of the VMs from each other. (E.g. assuming 10.0.2.3 as IP of VM1 and 10.0.2.5 as IP of VM2 in the network write the following command at terminal of VM1 to check if both these VMs are reachable from each other:

```
osboxes@VM1:~$ ping 10.0.2.5
```

An echo message from 10.0.2.5 means that the machines are connected. A “Destination host unreachable” message indicates that the connection could not be established.