

Linux network lab

Use the Command Line Terminal

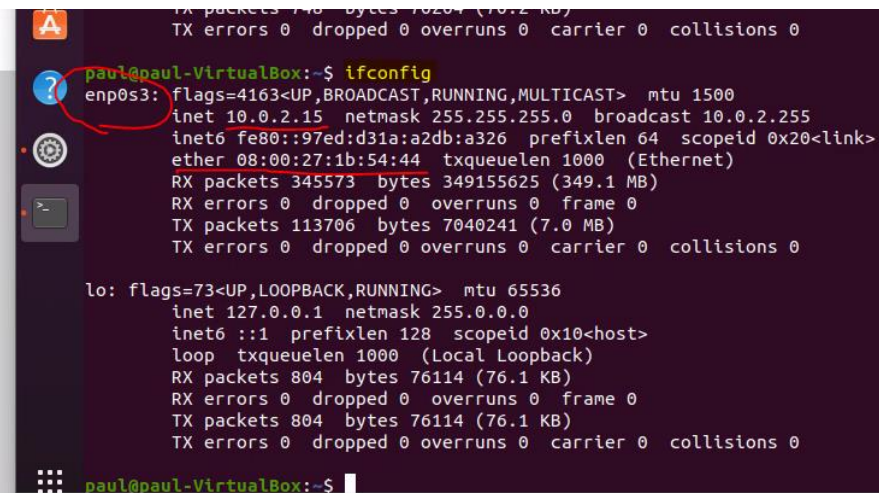
```
paul@paul-VirtualBox:~$ sudo apt install net-tools
[sudo] password for paul:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-5.13.0-30-generic linux-hwe-5.13-headers-5.13.0-30
  linux-image-5.13.0-30-generic linux-modules-5.13.0-30-generic
  linux-modules-extra-5.13.0-30-generic
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  net-tools
0 LibreOfficeWriter wly installed, 0 to remove and 16 not upgraded.
Need to get 196 kB of archives.
After this operation, 864 kB of additional disk space will be used.
Get:1 http://ca.archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60
+git20180626.aebd88e-1ubuntu1 [196 kB]
Fetched 196 kB in 1s (276 kB/s)
Selecting previously unselected package net-tools.
(Reading database ... 212769 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20180626.aebd88e-1ubuntu1_amd64.deb .
..
Unpacking net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Setting up net-tools (1.60+git20180626.aebd88e-1ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...

Progress: [ 80%] [#####.....]
```

- Install the networking commands to your Virtual machine.
- Use the following command
 - Sudo apt install net-tools

ifconfig

- Use the ifconfig command to view the network settings for your Linux Virtual machine.
- **Record** the IP ADDRESS (Hint: inet)
- **Record** the MAC Address (Hint: ether)



```
paul@paul-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::97ed:d31a:a2db:a326 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:1b:54:44 txqueuelen 1000 (Ethernet)
    RX packets 345573 bytes 349155625 (349.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 113706 bytes 7040241 (7.0 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

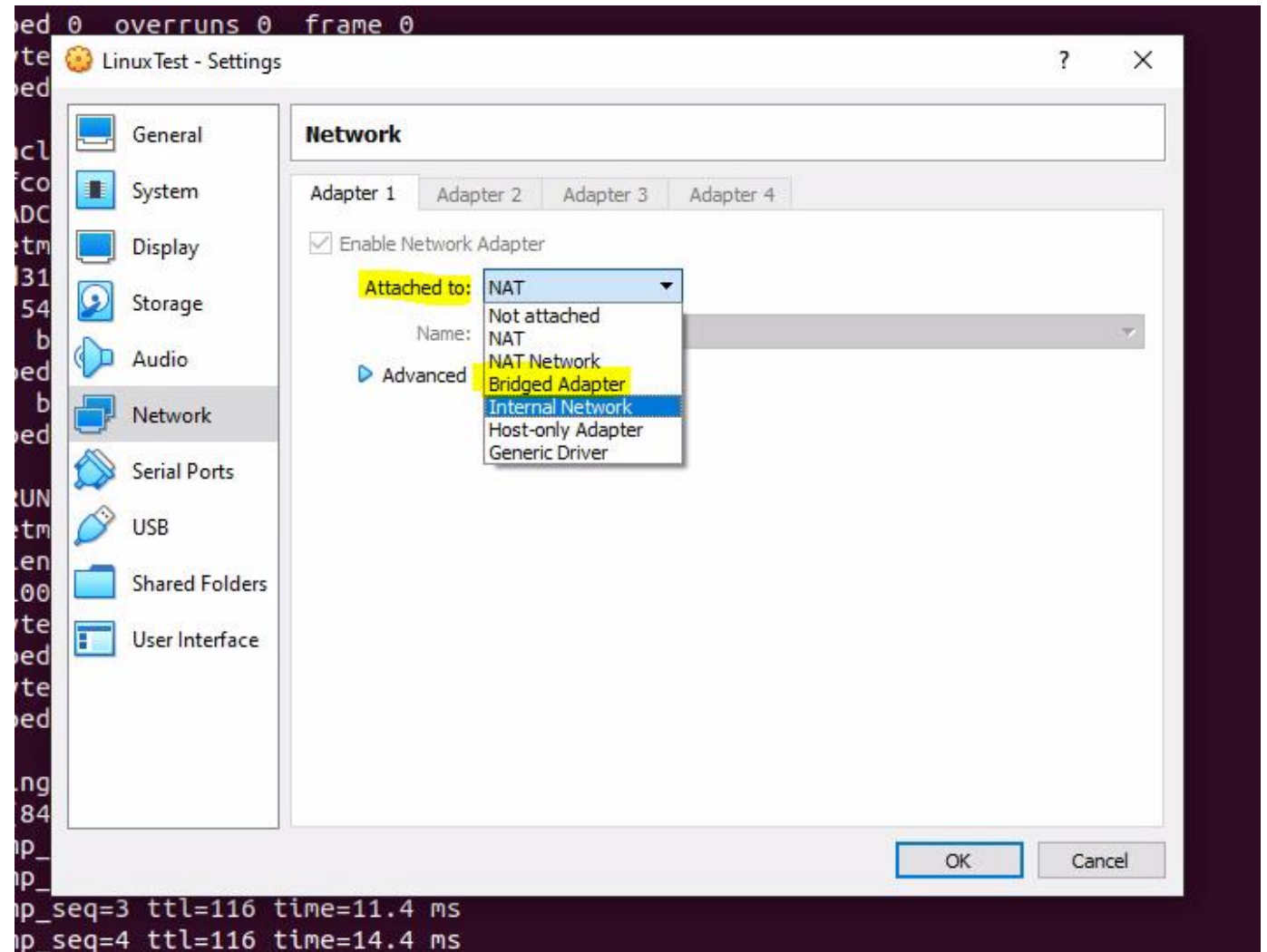
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 804 bytes 76114 (76.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 804 bytes 76114 (76.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

paul@paul-VirtualBox:~$
```

The screenshot shows a terminal window with the output of the 'ifconfig' command. The output displays details for the 'enp0s3' network interface, including its flags, MTU, IP address (10.0.2.15), netmask, broadcast address, IPv6 address, MAC address (08:00:27:1b:54:44), and statistics for RX and TX packets and bytes. The 'lo' (loopback) interface is also shown with its flags, MTU, IP address (127.0.0.1), and statistics. The terminal prompt is 'paul@paul-VirtualBox:~\$'.

Change the Virtual Machine Network.

- Using the VirtualBox menu, Click Devices -> Network > Network Settings.
- Where it says Attached to: change NAT to Bridged Adapter
- Click OK



Check the network settings again.

- Type ifconfig.
- Record the IP address
- Record the MAC address.
- Note your observations
 - Are the addresses the same or different.
 - If it is different why?
 - If it is the same why?

```
ifconfig: command not found
paul@paul-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 192.168.5.151  netmask 255.255.255.0  broadcast 192.168.5.255
    inet6 fe80::97ed:d31a:a2db:a326  prefixlen 64  scopeid 0x20<link>
    ether 08:00:27:1b:54:44  txqueuelen 1000  (Ethernet)
    RX packets 347577  bytes 351860780 (351.8 MB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 114130  bytes 7083332 (7.0 MB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
    inet 127.0.0.1  netmask 255.0.0.0
    inet6 ::1  prefixlen 128  scopeid 0x10<host>
    loop txqueuelen 1000  (Local Loopback)
    RX packets 871  bytes 82602 (82.6 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 871  bytes 82602 (82.6 KB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

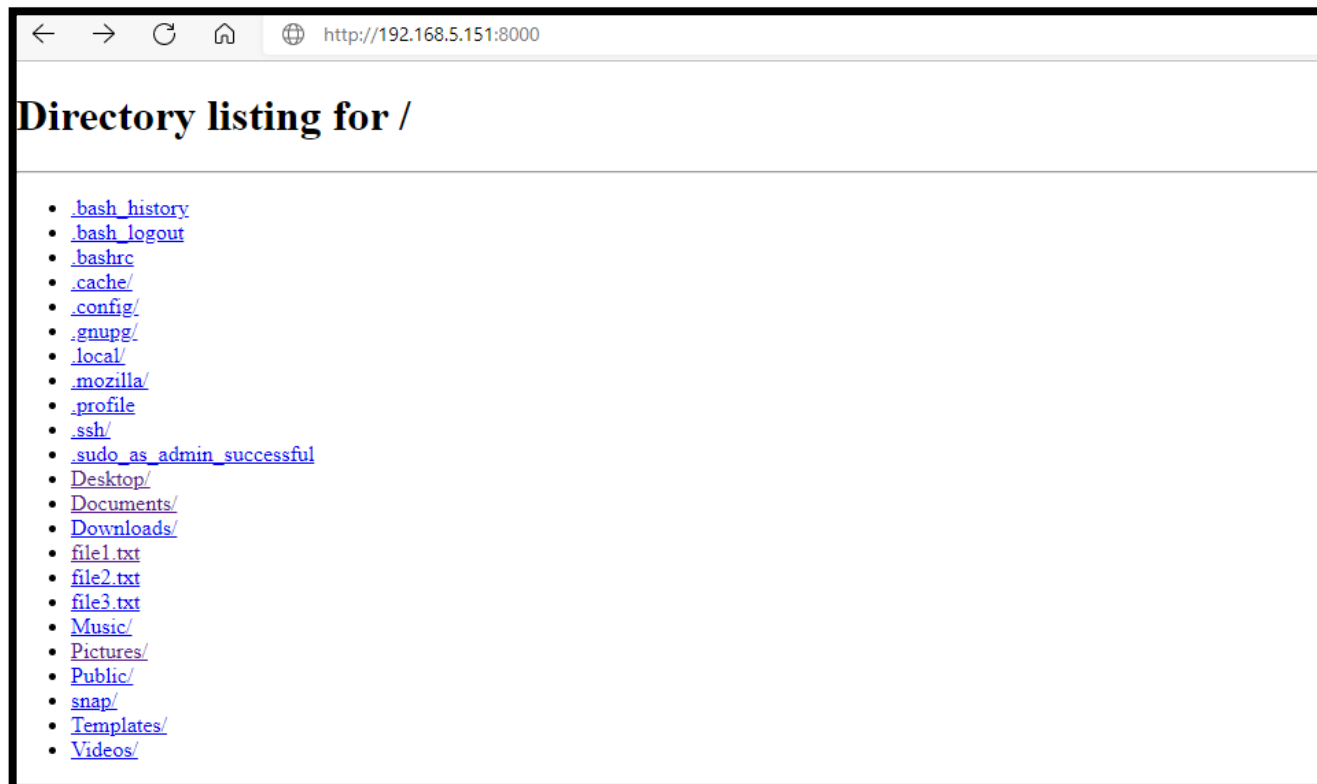
paul@paul-VirtualBox:~$
```

Setup a Basic Webserver

- Configure a basic python3 webserver
 - Type: `python3 -m http.server`

```
paul@paul-VirtualBox:~$ python3 -m http.server
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
192.168.1.5 - - [2022-04-14:22:11:22] "GET / HTTP/1.1" 200
```

Connect to your new webserver



- Using the Windows Host machine connect to you VM webserver's address. This will be the IP address of your Linux machine recorded earlier.
- `http://<ipaddress>:8000`

Connect to your neighbours!

- Get the URL of your neighbour's machine.
- Create files on your system using LibreOffice or other applications
 - share between your neighbour.
 - Download the files from the web browser.
- Record your thoughts and observations on the exercise
 - What happens on the Linux terminal when a computer is interacting with your Webserver?
- Submit.