Assignment 3: Configuring NIC

Using SFTP to transfer files to and from your Linux VM

Option 1: Using Bitvise SSH client

If you are using BitVise you can simply click on the "New SFTP window" button and open a GUI sftp session to your VM. Drag the file from the remote machine (on the right) to the local machine (on the left).

Option 2: Using PuTTY PSFTP

If you are using Putty, then run Start -> PuTTY (64) -> PSFTP. In PSFTP you need to type "open <username>@<ip_address>" to connect to your VM. Authenticate using your password. You can use "ls" and "cd" commands to navigate the remote machine (Linux). Use "lcd" (lowercase L in front of the command for local) and "!dir" (use ! to run commands on the local machine) to navigate the local machine). Then use the "get" command to download the file from the remote machine to the local folder. You can also try "put" command to practice copying a file from Windows to Linux.

Option 3: Using another client

If the above options do not work for you here are some other graphical SFTP Client options:

FileZilla (https://filezilla-project.org/) for both Windows and MacOS

WinSCP (https://winscp.net/eng/download.php) for Windows

OR find your own! Find any SFTP or SSH client application for your platform that you like!

Adding a NIC to your VM

Please follow instruction in Lab3 from Blackboard in order to add a second NIC to your Linux VM.

Tip: If you are using VMware Fusion under MacOS, you can edit your virtual networks configuration by navigating to VMware Fusion -> "Preferences…" and click on "Network" tab at the top and access the virtual network settings

Tip: If you are using VirtualBox, you can edit your virtual networks configuration by navigating to "File" -> "Preferences…" and click on "Network" tab at the left. You can now select "Host-only Networks" tab at the top and use "add" or "edit" buttons to create or modify a virtual network

You can now modify the IP address of your SSH client profile to use the static IP address. Later on we will be using this IP to reach SQL, Apache and PHP.

Identifying system hardware using lshw

You can use ip command, or directly list the hardware in your system to find the logical name of your network interface card. However, lshw is also an interesting command to know in case you are working in an unfamiliar system environment.

```
sudo lshw
lshw -help
```

Use lshw command to export your hardware configuration to a file called "hardware.html" in HTML format (use the redirection special character ">" to accomplish this).

Transfer this file out of your VM and into your host computer using SFTP and examine the file using a web browser.

Now try to specify the "class" of hardware in you VM as network for lshw command and examine the output:

```
sudo lshw -class network
```

Run the command again and redirect the output of this command to a file called "network.txt" (Do NOT use HTML format this time).

Specifying DNS to your DHCP enabled NIC

As you may be aware DHCP can provide many settings to the client. The minimum requirement for a client to be able to connect to a network is IP, Subnet Mask, and a Gateway (if connecting to outside network or Internet). However, DHCP can also deliver DNS, Domain and many other configurations as needed. In this exercise you will specify DNS for your first NIC that is set to DHCP using Netplan.

Edit your netplan .yaml file to specify DNS nameserver IP addresses 1.1.1.1 and 1.0.0.1. When done try the settings and apply. Now ping google.ca to see if you DNS is working (i.e. your system can figure out what the IP address for the domain google.ca is and can successfully ping the IP address). You can hit Ctrl+C to cancel or stop a command from running (to stop the ping). You may want to try to ping 1.1.1.1 itself if for some reason your DNS service is not resolving names.

You can also verify that netplan applied your settings properly by running:

```
resolvectl status
```

It should give you an output similar to this:

```
Link 2 (ens33)
      Current Scopes: DNS
DefaultRoute setting: yes
       LLMNR setting: yes
MulticastDNS setting: no
  DNSOverTLS setting: no
      DNSSEC setting: no
    DNSSEC supported: no
         DNS Servers: 1.1.1.1
                      1.0.0.1
                      192.168.202.2
          DNS Domain: localdomain
ali@ers20095559:~$ resolvectl status
```

Make a copy of your netplan .yaml file to your home folder and rename it to "netplanConfig.yaml.txt" and download to your local machine via SFTP.

Submission of Results

- Refer to the rubrics for marks breakdown.
- Submit "network.txt" and "netplanConfig.yaml.txt"