Lab_01_1: Installing Ubuntu Linux

Otago Polytechnic, IN616 Operating Systems Concepts,

Semmester 1 – 2020

1 Objectives

- Install and configure a Linux distribution in VMWare Workstation.

2 Preparation

2.1 VMware

In this lab you will install Ubuntu Linux in a virtual environment. We will do so using VMware Workstation which is preinstalled on all OP lab computers. Alternatively, you can use the free VMware Workstation Player that does not require any registration.

2.2 Ubuntu Disk Image

On the `L:` drive you will find an ISO image (which is effectively a raw image of the installation DVD) which you will need during the installation process. You will find it under:

- `L:\Linux\Ubuntu\18.04LTS\ubuntu-18.04.1-live-server-amd64.iso`

If you are working from home and don't have access to the L drive, you can download the image from Canonical directly via:

- `http://www.ubuntu.com/download/server`

Or, via a local New Zealand host (this should be a much faster download):

- `http://ucmirror.canterbury.ac.nz/linux/ubuntu/`

3 Creating the Virtual Machine

- Start VMware Workstation. You should see a screen as shown in Figure 1.

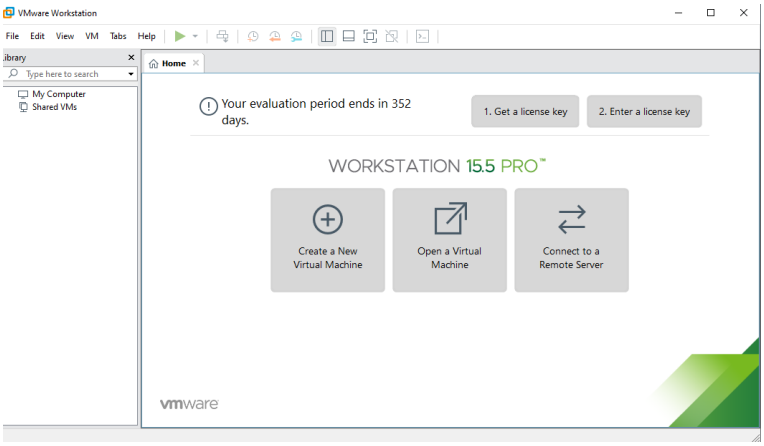

Figure 1: VMware Workstation

- Click on **Create New Virtual Machine**.
- In the upcoming dialogue select **Typical**.
- When prompted for the install medium, choose the second option **Installer disc image file (iso)** and navigate to the ISO image location and confirm the selection.
- If asked to provide username and password (depends on the VMware Workstation version), choose
  - Full name: **student**
  - User name: **student**
  - Password: `P@ssw0rd` (That is a zero)
  - Confirm: `P@ssw0rd` (That is a zero)
- As location for your virtual machine, choose the `C:` drive and leave the Virtual Machine Name unchanged (as shown in Figure 2). This way we have a unified location for all our course-related virtual machines. Click **Next**.

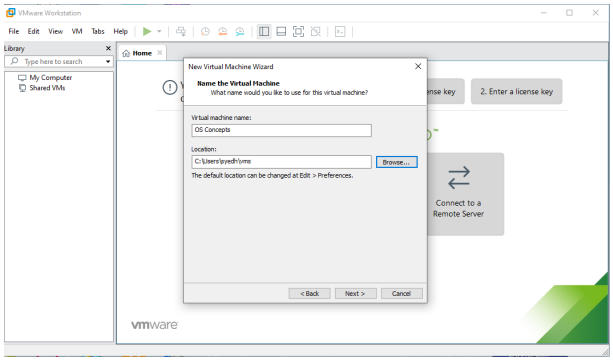

Figure 2: Configuring the Virtual Machine Location

- Leave the disk size settings unchanged and confirm.

4 Installing Ubuntu Linux

We are now ready to install Ubuntu Linux! Navigate back the VMWare Workstation. The following instructions will guide you through this process:

- In the Ubuntu 64-bit tab, click on **Power on this virtual machine**
- When the virtual machine is powered on, left-click inside the virtual machine

> **PRO TIP:** When working with VMware Workstation (and later vRealize) when you click in most virtual machines, the guest operating system (Ubuntu in this case) will take control of your mouse. To release your mouse from the guest system and return to your host system press `Ctrl + Alt`. Remember this shortcut, since you will need it throughout our course.

- Select **English** as the language for the installation, by using the **Enter** key
- Note: We have to perform the installation only using the keyboard! You will need to use the arrow keys, Enter key and Tab key to navigate
- Once you confirm the language selection of the Ubuntu installer you should see a menu that offers advanced options... Simply confirm the selection **Install Ubuntu Server** to proceed with the installation

The installation process requires you to configure various aspects such as language, location, and keyboard layout. In most cases you can simply confirm the selection and have a default installation. However, there are some things we need to be mindful of. The following list documents required configuration:

- **Location** – The location is important to set time zone information, select **New Zealand**.
- **Host name** – The host name is the name the virtual machine will be known as on the network. For the hostname concatenate your student code (e.g. `laurt1`) and `-host`, producing something like `laurt1-host`. Doing this allows anyone to quickly figure out the installation owner.
- **User details** – When prompted for the real name (full name), user name and password, enter the following details:
  - Full name: `student`
  - User name: `student`
  - Password: `P@ssw0rd`
- **Home directory encryption** – If asked to encrypt your home directory, leave the setting at **No** and continue
- **Time zone** – Check that the time zone is set to **Pacific/Chatham**

When you reach the **Partition disks** configuration step, make sure that you read the documentation provided. We want to configure the disk partitioning manually, so **make sure you select Manual**. We want to setup the following two partitions on the disk:

1. A partition for the operating system files
2. A partition for swap space (virtual memory)

Use the following instructions to setup the parition for the operating system files: [this may not be needed, depends on Ubuntu installer version]

- Start by selecting the disk to partition: there should only be one listed and should be named: `SCSI33 (0,0,0) (sda) -21.5 GB VMWare`
- Confirm the creation of an empty partition table, by selecting **Yes**
- Select the item from the list that reads: `pri/log 21.5 GB FREE SPACE`
- Create a new partition
- Make the partition a size of **10 GB**
- Choose the **Primary** partition type
- Choose **Beginning** as partition location - this will be where the partition starts on the physical disk
- Leave the file system configuration unchanged (the top entry should read **Use as: Ext4 journaling file system**) and navigate to the bottom to select **Done setting up the partition**

You should now see the created partition which will be used for the Linux installation, along with some remaining `FREE SPACE`. In addition to this first partition we will need to create a swap partition as well. In Linux, swap space is used when all the physical memory (RAM) is full. If the system needs more memory resources, inactive memory is moved to the swap space. This is similar to the PageFile in Micrsoft Windows - which provides the same functionality.

- Select the item from the list that reads: `pri/log 11.5 GB FREE SPACE`
- Create a new partition
- Make the partition a size of **2 GB**
- Choose the **Logical** partition type
- Choose **Beginning** as partition location - this will mean the swap parition will follow where the file system partition ended
- This time we need to modify the file system configuration unchanged. Navigate to the file system entry which reads: **Use as:**, where the default value is **Ext4**. Press the Enter key to select, which should bring up a wide range of options for possible file systems. Select **swap area** as file system type. Navigate to the bottom to select **Done setting up the partition**
- In the next dialog, write the changes to disk by selecting **Finish partitioning and write changes to disk**

At this stage the installation should continue by copying files to your virtual machine. Simply confirm all other default configuration (e.g. proxy servers) by pressing Enter. However, make sure the read each option thoroughly.

Note that the installer will download some updates during installation, which may take a while (especially if we are all installing updates at the same time).

Don't allow automatic updating (the default selection) and **don't select any software to install** (simply press Enter). We will discuss system and software configuration in future sessions.

[Confirm the GRUB boot loader installation: **Install the GRUB boot loader to the master boot record?**, by selecting Yes.]

Finally, the installation is done. Once finished, your system should reboot and should present you with a console login prompt, similar to the ones you may have seen before in other courses. Log on with the user name and password you configured before (`student`, `P@ssw0rd`) and you should eventually see a console prompt.

Congratulations! At this stage you have a running bare Linux system with network access. To make it useful we will obviously require more configuration, but let's get comfortable with Linux first. That will be the next lab!