Installing cits3007 VM via UTM for mac computers with ARM based architecture

Ben Varian - 23215049@student.uwa.edu.au

Please note there probably is grammatical errors here and there as I've tried to get this out as soon as possible for all mac users. :)

Setting up

- Install UTM
    - https://mac.getutm.app/
    - Go to that url then click download, don't go to the app store link as you have to pay for It for some reason
- Getting a ubuntu iso that's for arm
    - https://cdimage.ubuntu.com/releases/focal/release/
    - Go to that url again and where it says 'server install image', select the first option called '64-bit ARM …'
- Vs code ARM version
    - https://code.visualstudio.com/docs/?dv=darwinarm64

After that's all installed you want to go to UTM then either click the button called 'create a new virtual machine' or simply the plus button in the taskbar at the top.

Out of the two options 'Virtualize' or 'Emulate', you want to pick the virtualize option, this is because we have downloaded the arm server image. I do think it is possible to do this with a non-arm iso but in this step all that's different is you'll have to click on emulate instead.

Next click linux or other, don't think much really changes but just click on linux. I left the apple virtualisation checkbox unticked. Then where it says 'Boot iso image', you want to click on browse and find the iso that you downloaded from the ubuntu website.

Next comes all the preferences for memory and storage and what not. I put in 35gb from memory for storage and ive got 5gb left after running some update commands for Linux which I'll put in further down the document. And your able to change the ram allocated around so that doesn't matter that much. I also left the shared directory option empty but I think if you do select this option you might need to download spice guest tools for it to work, I did this for penetration testing with windows but haven't done it for linux yet. Then just click through the rest of the options and click save

Running the VM

Next comes running the vm. If you click on the vm on the left you should see a play looking button, click that to start it up. You will have to use your arrows and enter key on your keyboard to do the rest of the navigation just for knowledge if you haven't done something like this before.

You will then be greeted by a language option after a little period of time. Use arrows once again to navigate to your respective language and press enter. You then have an option of updating the installer, either option here is fine. You then get a keyboard config page, I just left it as default as you can change it later.

Next comes a part where the install could become hard-ish. If for the DHCPv4 row you don't see a ip address. You will need to shut down the VM pressing the power button near where you close the window on mac. You then want to go back to the main UTM window, and select the button in the top right that has 3 lines and looks somewhat like a settings slider logo.

This will bring up the settings page for the VM. If your having problems finding this reach out to me or try google as I may have a old version of utm and it might've been updated since.

You then want to find the network option, then under network you will see the network mode, in here you have many options, the main ones to toggle between that have worked for me are shared network and bridged. If you select bridged you don't need to do any more configuration other than clicking on it.

After saving your changes, you will have to start up the VM again and get up to that screen that showed the DHCPv4 with hopefully the IP address if you didn't see it before.

Next page is proxy, leave that blank. Mirror address, if you have internet, the url should have some form of "au" in the string if the internet is working properly, press enter.

Next is the disc configuration screen, I just left all this stuff default as we don't really need encryption I think. Once again make sure to use arrow keys to navigate. Then on the next page click done, and then continue.

The next page will be where you input the user information. Find the screenshot below for reference.


```
Profile setup                                                    [ Help ]

    Enter the username and password you will use to log in to the system. You can
    configure SSH access on the next screen but a password is still needed for
    sudo.

            Your name: [                                                    ]

     Your server's name: [                                                    ]
                          The name it uses when it talks to other computers.

        Pick a username: [                                                    ]

      Choose a password: [                                                    ]

    Confirm your password: [                                                    ]



                                  [ Done      ]
```

In this form, your name is obviously your name, servers name can be anything I think. The next line 'username' is what we will be referencing when ssh'ing into the server. Make sure it is something that you will remember. Make sure to also make sure the password is something that you remember as we will need that for ssh'ing as well. **Write this down if you have a habit of forgetting things.**

After filling that form out, I would recommend clicking enter on installing OpenSSH server as that's what I did and it worked well, I honestly don't know what happens if you don't click this but I can only assume ssh wont work. Leave Import SSH Identity as No, and press enter.

If you have internet connection once again, the next page should show you a list of 'snaps' that you can install. I just left these all blank and went to done straight away. It will then install all the good stuff. This took around 5 minutes for me installing locally on my ssd.

This next part is probably one of the most crucial in installing a VM in UTM I have learnt. After waiting for the update to finish, we are going to want to shut down the vm and eject the iso image so it doesn't get stuck in a infinite install loop. You are going to want to navigate to the help option in the top orange bar. For reference refer to the above screenshot. I did this by clicking tab and using arrows a few times. You then want to press enter on it and make sure to enter the shell. Here what we are going to do is to shutdown the machine using the command:

-   shutdown -h now

We don't need to use sudo as we are root.

After running that command you should be stuck on a page with a flashing underscore. I don't think it leads to anything if you wait for it to stop, so just shutdown the vm again by using the power button near the closing of window tools. And click ok on the shutdown. You then want to go back to the main UTM page.
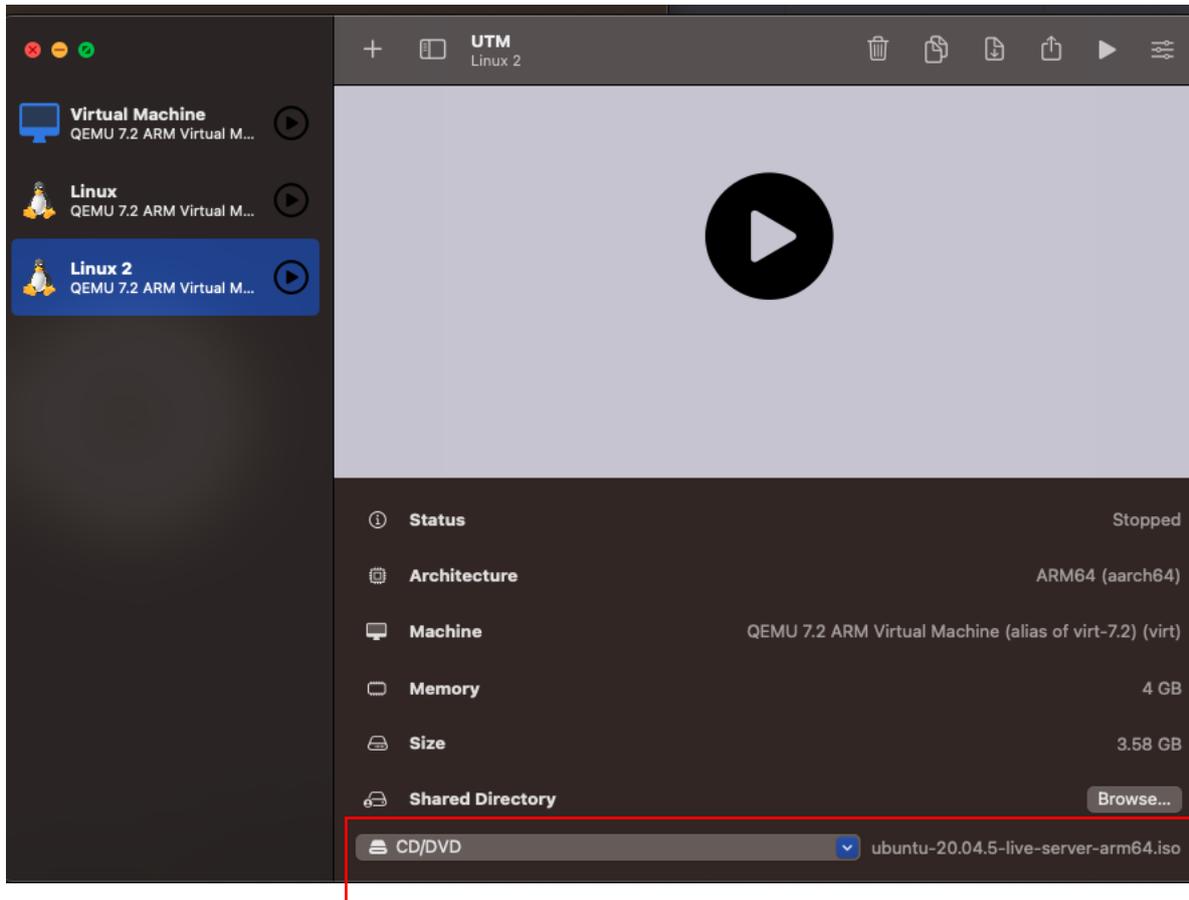
Next we want to eject the iso from the imaginary disk drive. We do this by clicking on the cd/dvd option, and clicking clear. Where it says in the image above 'ubuntu....' It should now say empty. You then want to startup the VM again.

If you get this output when starting up don't worry it is normal, it may take a little bit to load up the first time as well.

You then want to provide your login details that where inputted before, start with the username and then obviously the password. After making sure this is correct and you logged in correctly, we now want to get the ip and write it down somewhere. I would recommend installing the net-tools library which can be done by running.

- sudo apt install net-tools

If you then run the command "ifconfig", you should get a output screen that looks something like this:

The crucial part of this screenshot is in the red box. If you look on the second line underneath flags, youll see "inet <ip address>", write this IP address down for later as it is crucial for ssh'ing.

Now what we can do is stop here and go to the ssh'ing but we may as well install the GUI to do stuff later.

The commands that you want to run are:
- sudo apt install tasksel
- sudo tasksel install ubuntu-desktop

If you have never installed packages this way using linux make sure to press Y and enter if it asks to install stuff, its all relatively straight forward. Ive noticed that the tasksel command to install the gui takes a while so watch a yotube video or something.

Once it has reached 100%, we will run:
- sudo shutdown -h now

This will shutdown the VM and make it trigger the GUI on next loadup. After shutdown make sure to restart and wait, you should then see a page that looks like this
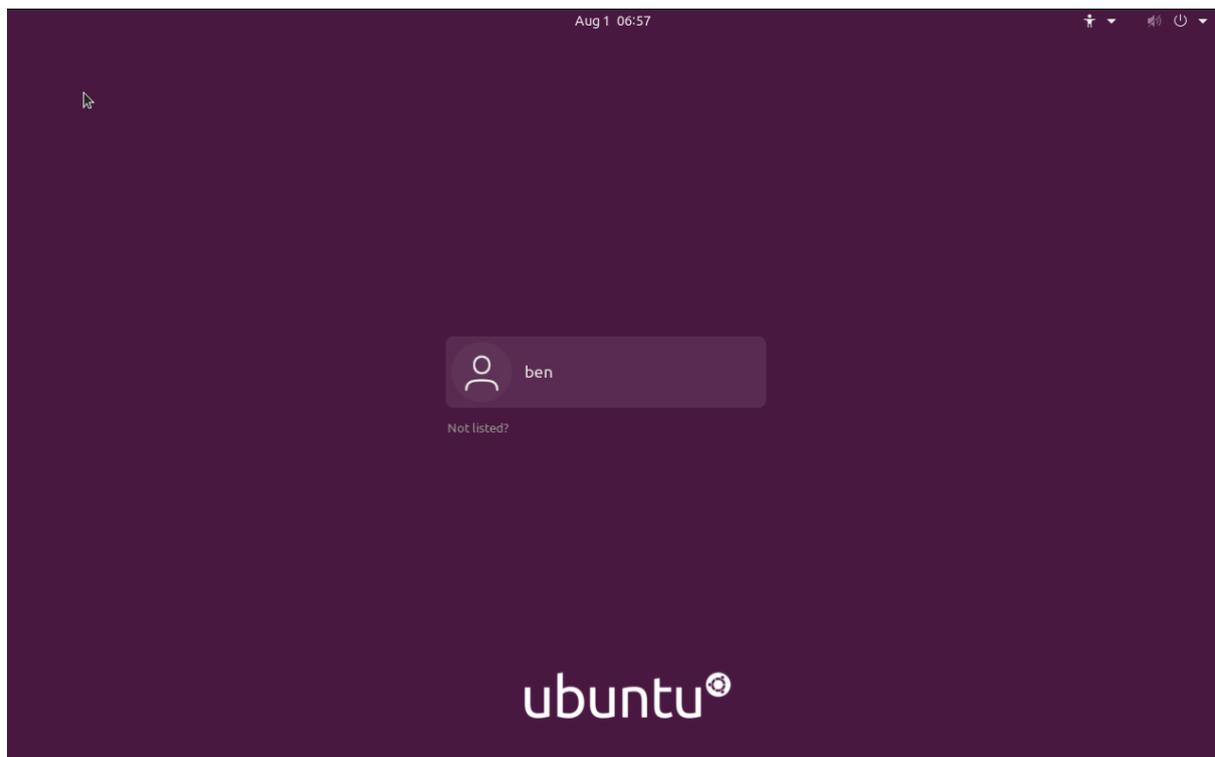
Simply click on <username> and login like you would on mac. The rest of the startup stuff can be completed by yourself I think but I would opt out of sending system info to canonical. We can now get started with connecting it to out mac via ssh.

SSH on mac and connecting with Vs code

Now that we have it all setup lets get to ssh'ing. We have the IP, username and password so all we have to do is connect it up. Start up a new terminal session in your preferred app. And run the following command:

- ssh <username>@<ip address>
- yes
- <password>

Now we have successfully connected to our UTM VM via ssh which is really cool.

I will now walk you through some of the commands I would recommend running to update packages and install what Arran wants in lab 1, this can be done either via ssh or in the actual UTM VM terminal.

- sudo apt update
- sudo apt upgrade
- sudo apt install build-essential

I think that these are all the packages that are required to be installed and updated but if you find one that requires installing please let everyone know via the help forum.


SSH via Vs Code Remote Extensions

Now we will move onto connecting the VM with vs code for a GUI like arran talked about in the first lab. For those of you that don't have vs code installed please reference the link at the top of the document about installing.

After the installation process you should see a home screen that looks something like this.

**Please look at the next page the formatting is weird**.

The main thing on this screen that we want is the icon in the bottom left corner of the screen. This will open up a banner at the top which can actually be triggered by typing "CMD + SHIFT + P". But for now simply click it and something like the screenshot below should pop up.
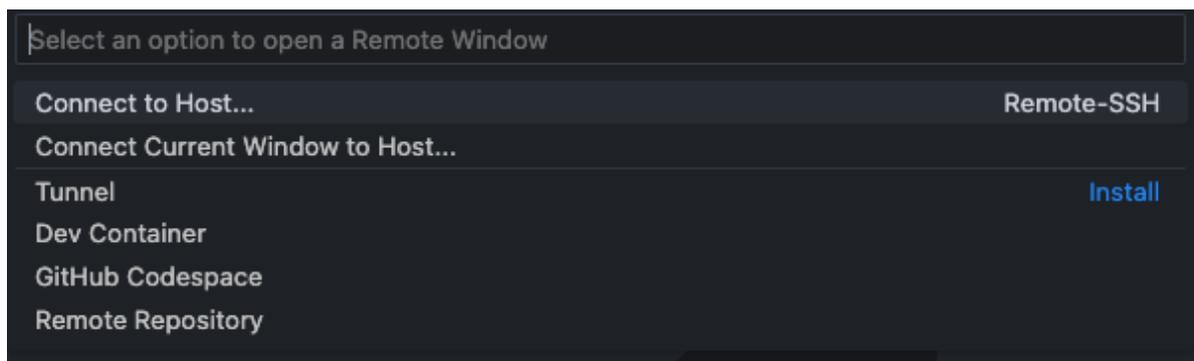
I think because I have the extensions already installed it's a little different but none the less it should look the same and you should try and find something that either says "ssh to host" or connect to host like I have selected. You then want to select that and it may install and extension so give it a minute to download. After that you want to simply click add new ssh host and run the exact same command we ran before to get it all working. You will obviously need to put in your password once ran.

After inputting the password, you should be able to click the icon on the left that looks like two pages stacked on top of each other, and click open folder
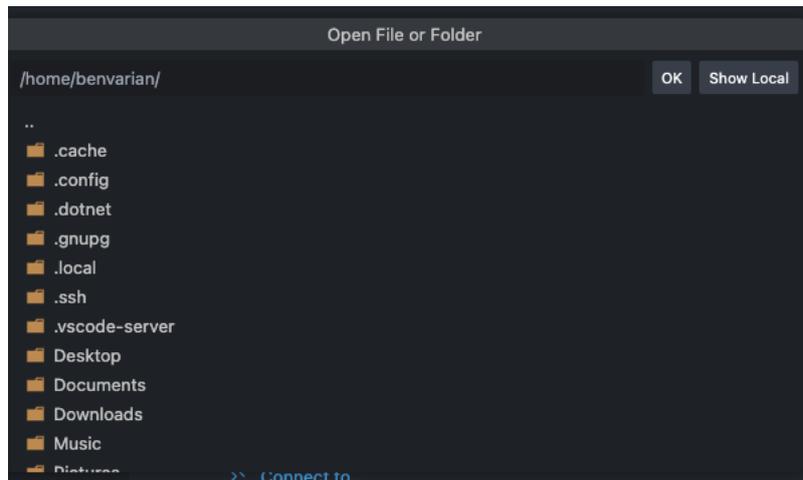
This will open something that looks exactly like this. You can select whatever folder you want to work out of here. Just know that it will ask for password when accessing a new folder every so often I think, but it does stop.

Conclusion

We now have our ubuntu ARM VM running on UTM fully connected to VS code and the internet. If you have any running problems feel free to contact me and I will try and respond with help as soon as possible or ask the lab facilitators as they probably have more of an idea than I might.