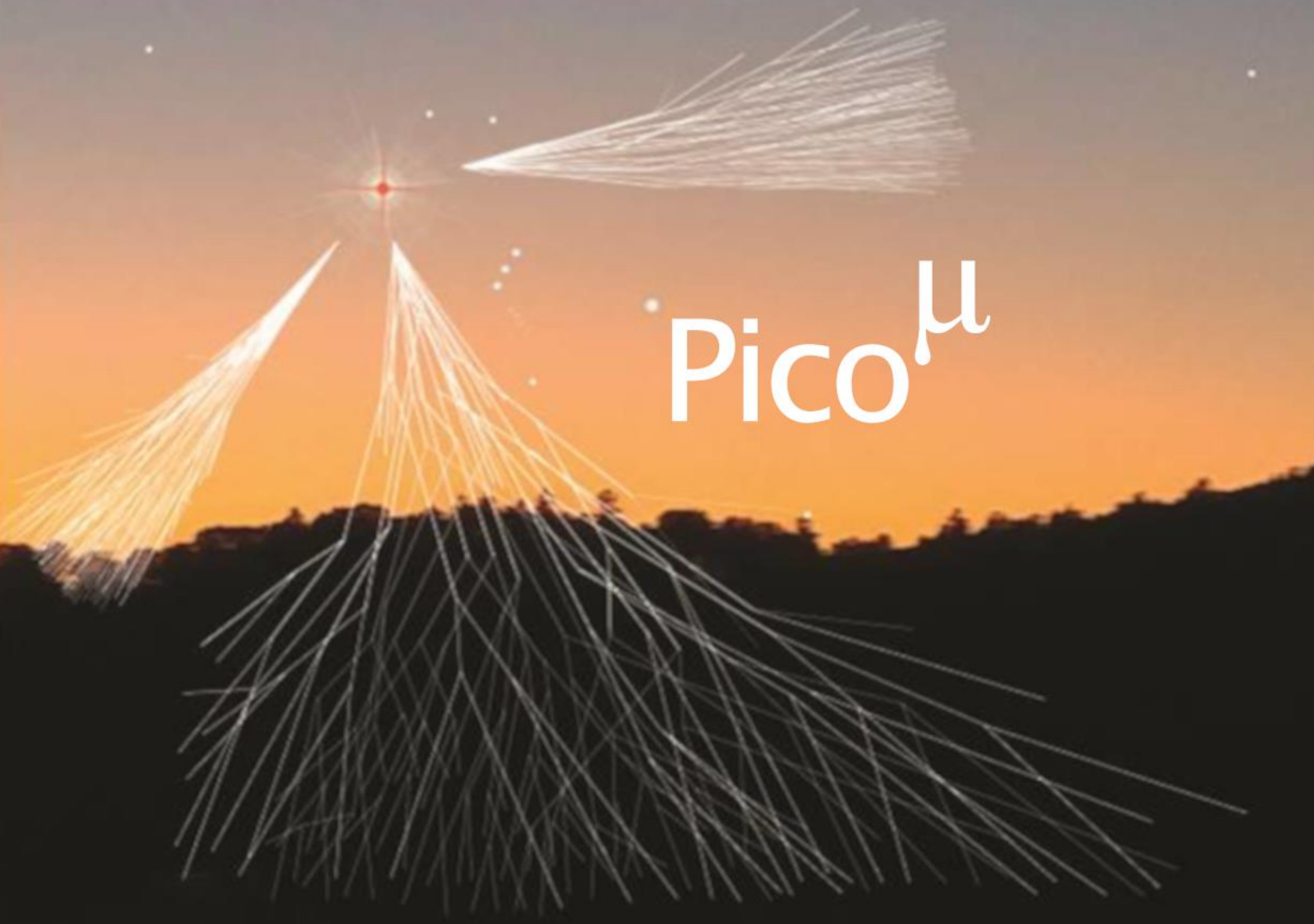
UK Radio Astronomy Association

PicoMuon Detector

Setting up a Raspberry Pi 4/5



https://ukraa.com/

The UK Radio Astronomy Association
A charitable incorporated organisation
Registered charity in England and Wales No. 1123866

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Set-up instructions

These instructions cover setting up your Raspberry Pi4 or Raspberry Pi 5 with a suitable operating system and ability to be remotely access via VNC.

It is recommended that you use a Raspberry Pi 4/5 with at least 2GB memory.

When using the Raspberry Pi Imager, remember to write down the **hostname** you use – this is used to view the web page with the results from your UKRAA PicoMuon detector.

Please keep the username as **pi** when using OS customisation within the Raspberry Pi Imager.

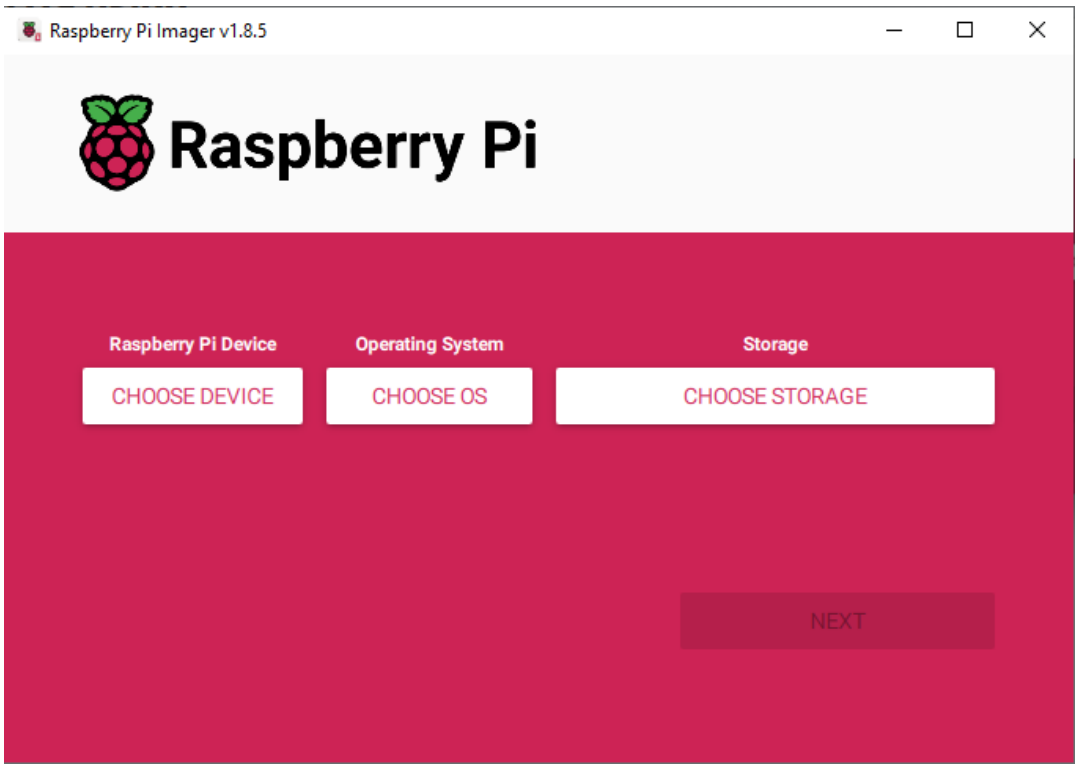
The instructions for accessing your Raspberry Pi heedlessly assume use of Windows PC and that the following two applications are preinstalled on that PC.

- PuTTY
- RealVNC Viewer

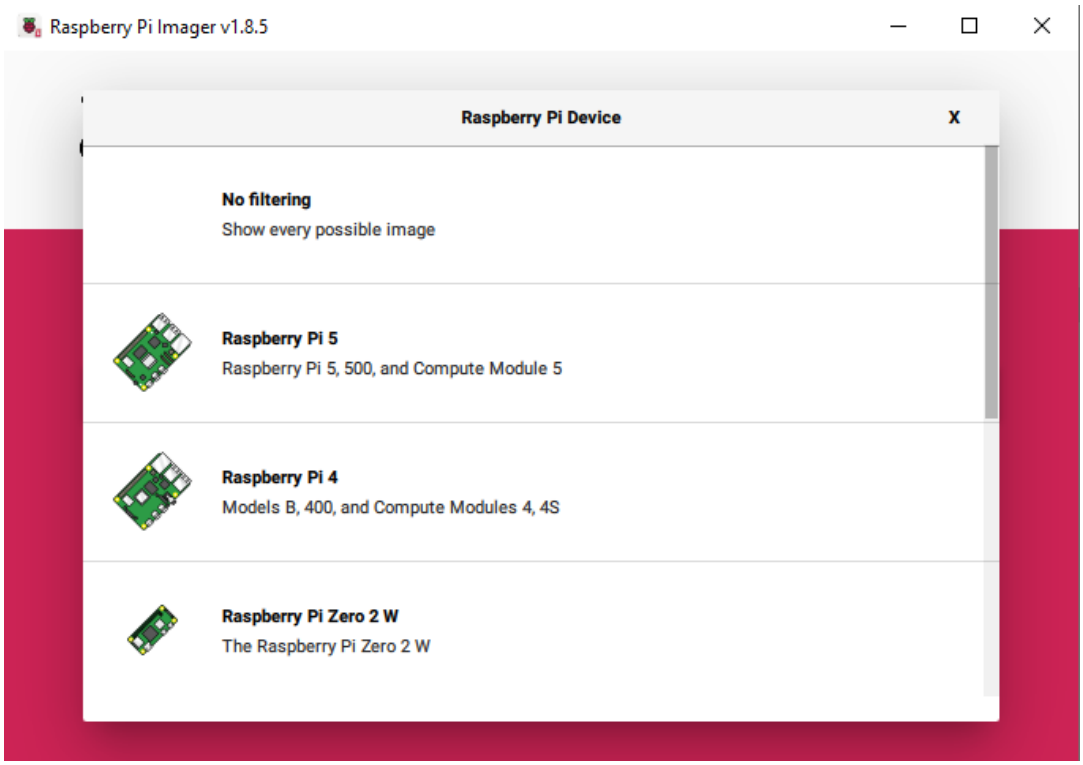
No information on installing these two applications is given in this text – there are numerous guides available on the internet.

Raspberry Pi OS

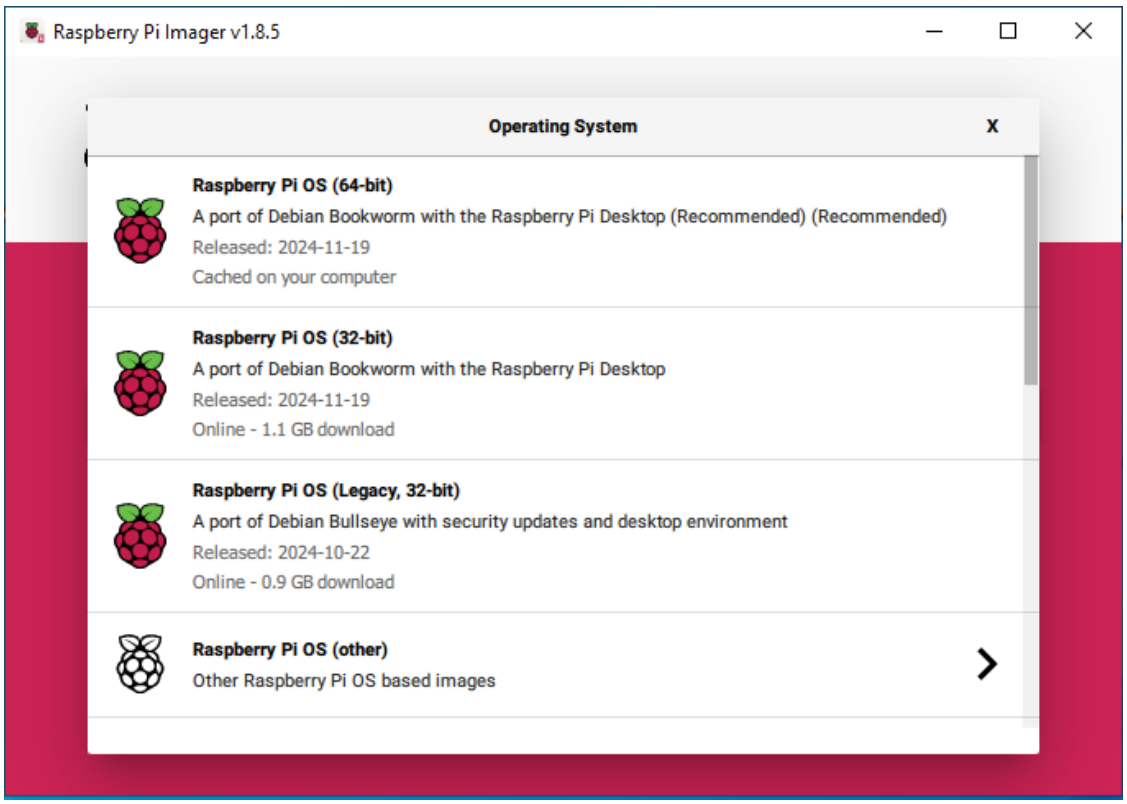
1. Download Raspberry Pi Imager for your operating system.



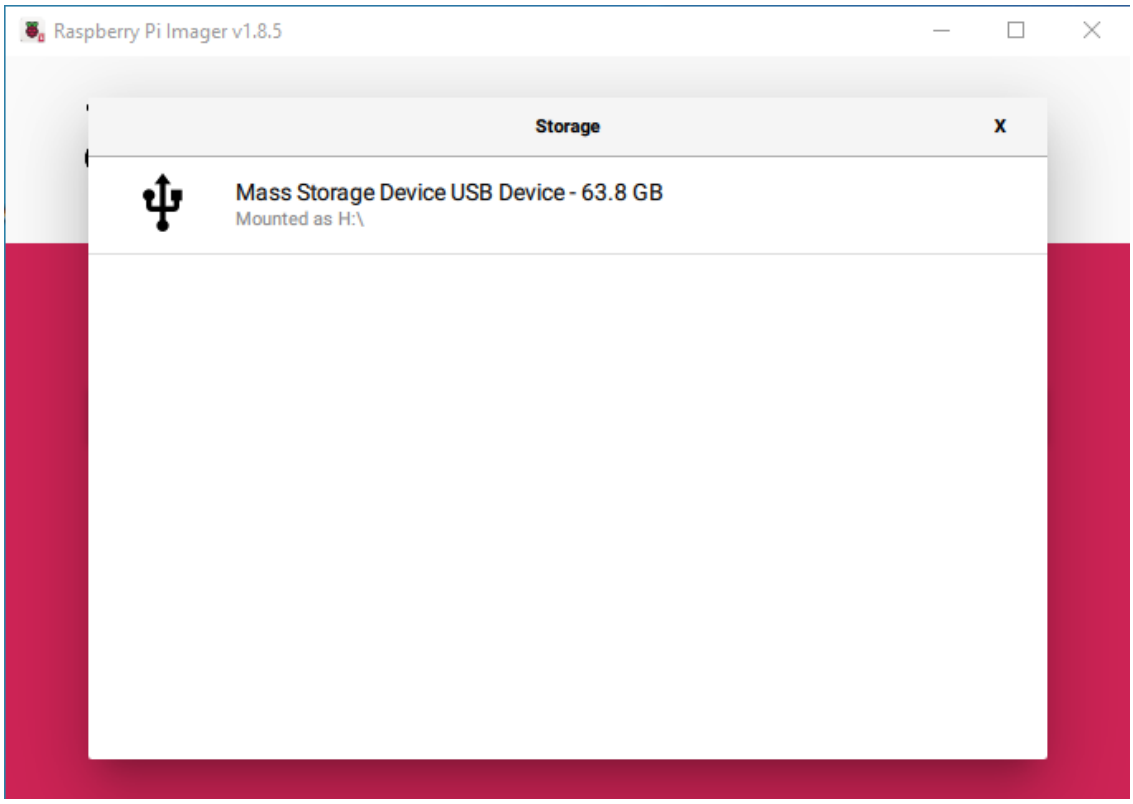
2. Run Raspberry Pi Imager.



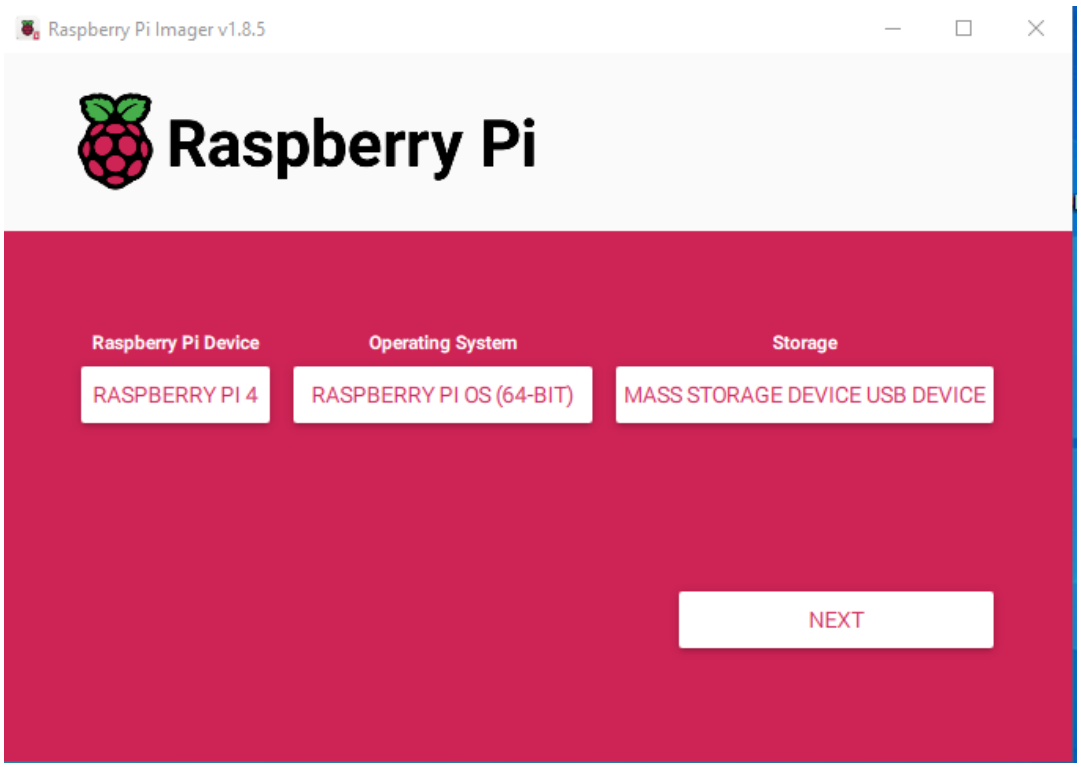
3. Select **CHOOSE DEVICE** and then select your **Raspberry Pi device**.



4. Select **CHOOSE OS** and then select **Raspberry Pi OS (64bit)**.

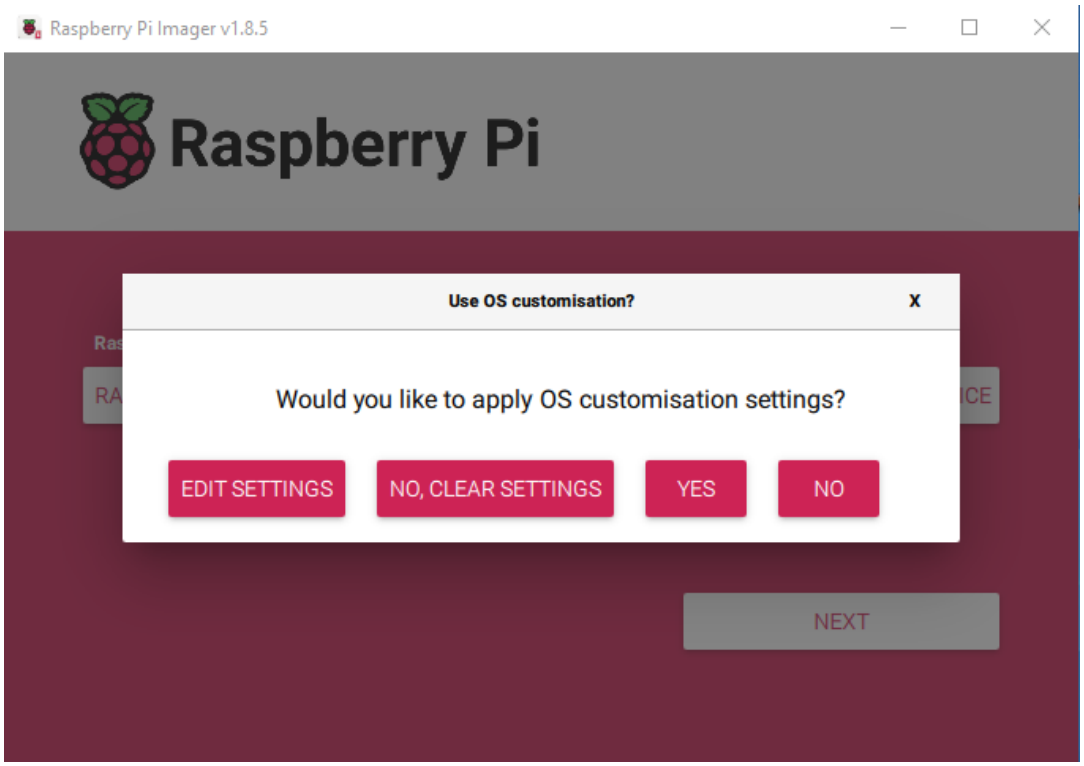


5. Select **CHOOSE STORAGE** and select your **microSD card** for your RPi.

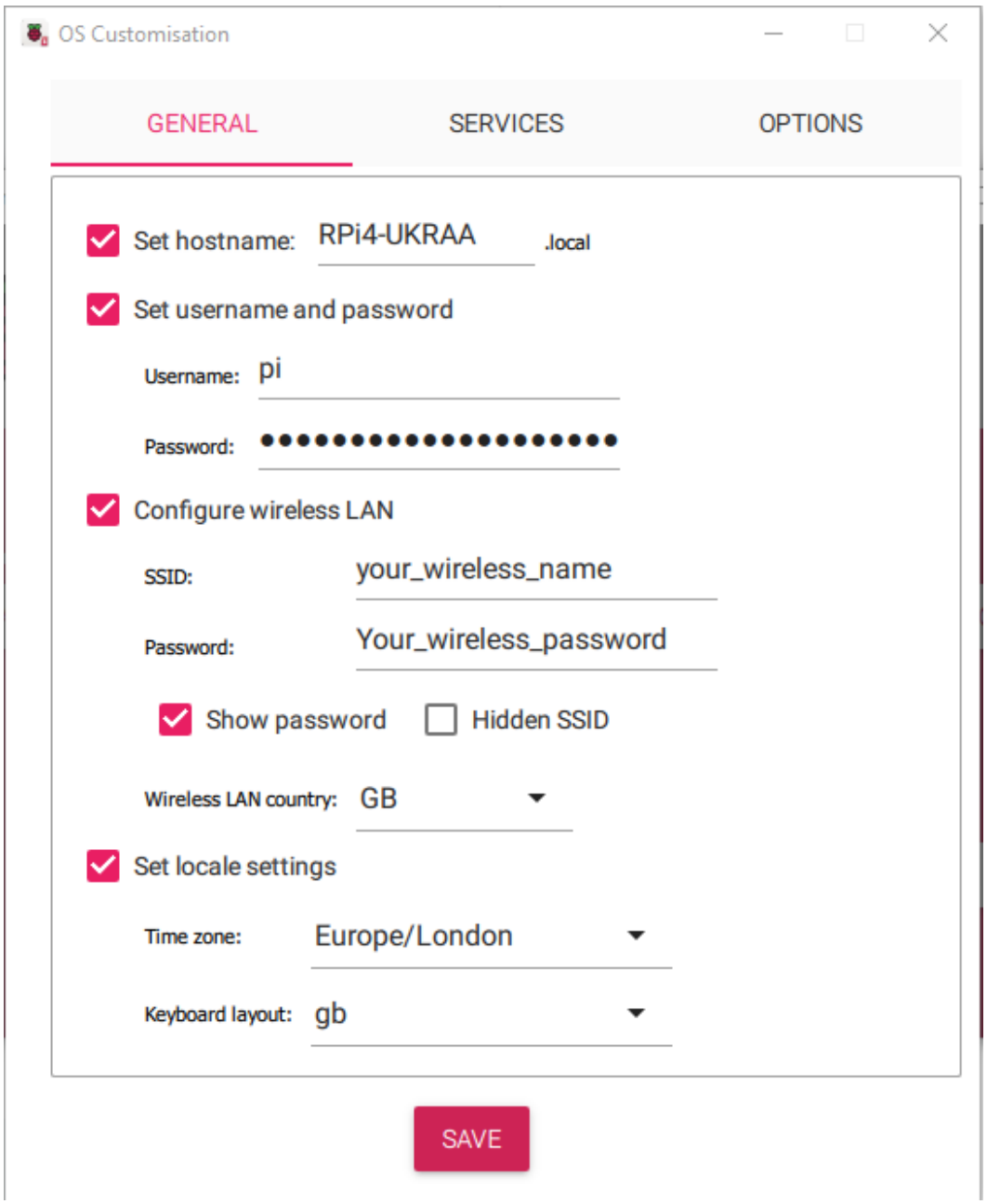


6. Select **NEXT**

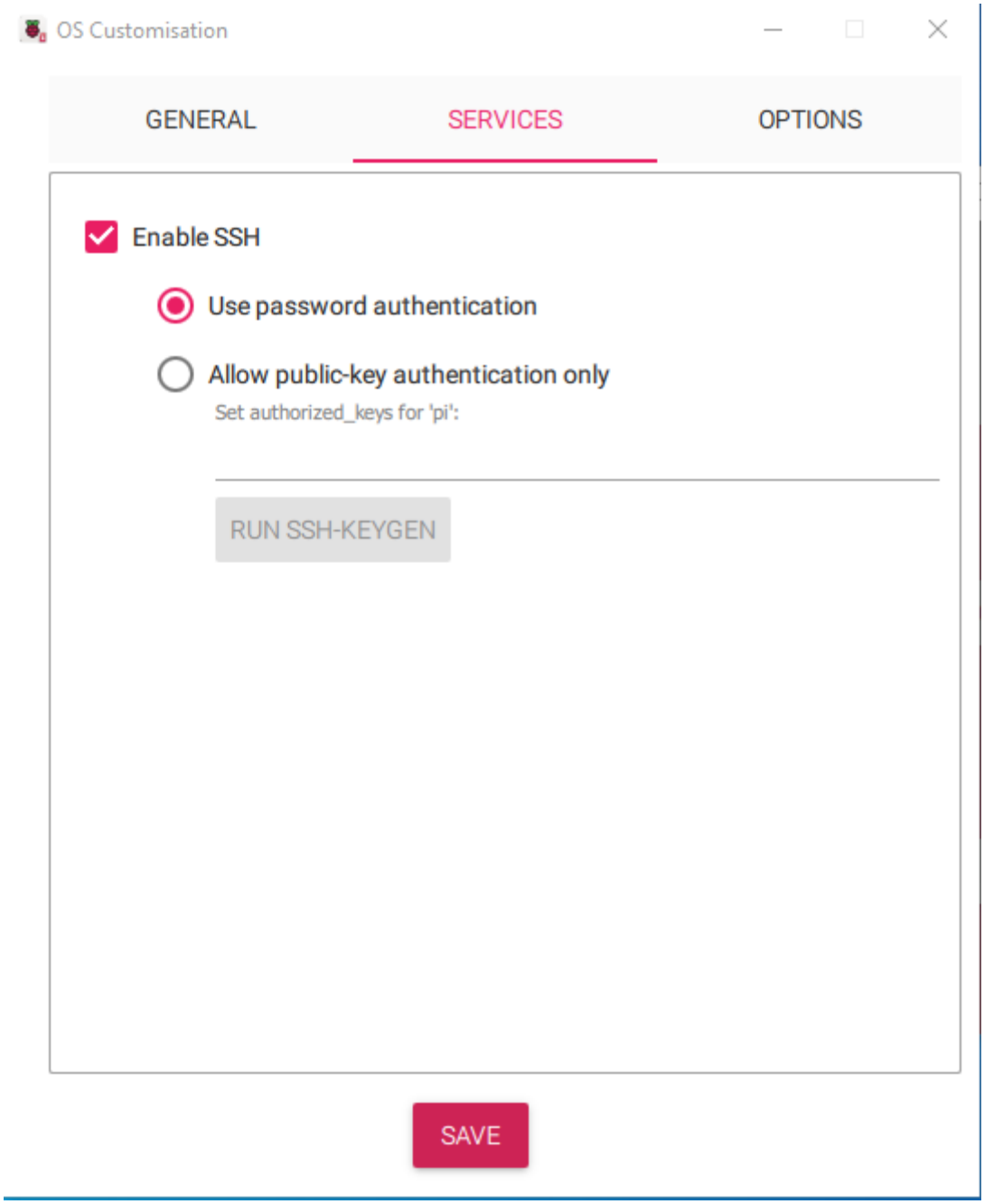
7. You are presented with a **Use OS customisation?** window, select **EDIT SETTINGS**.



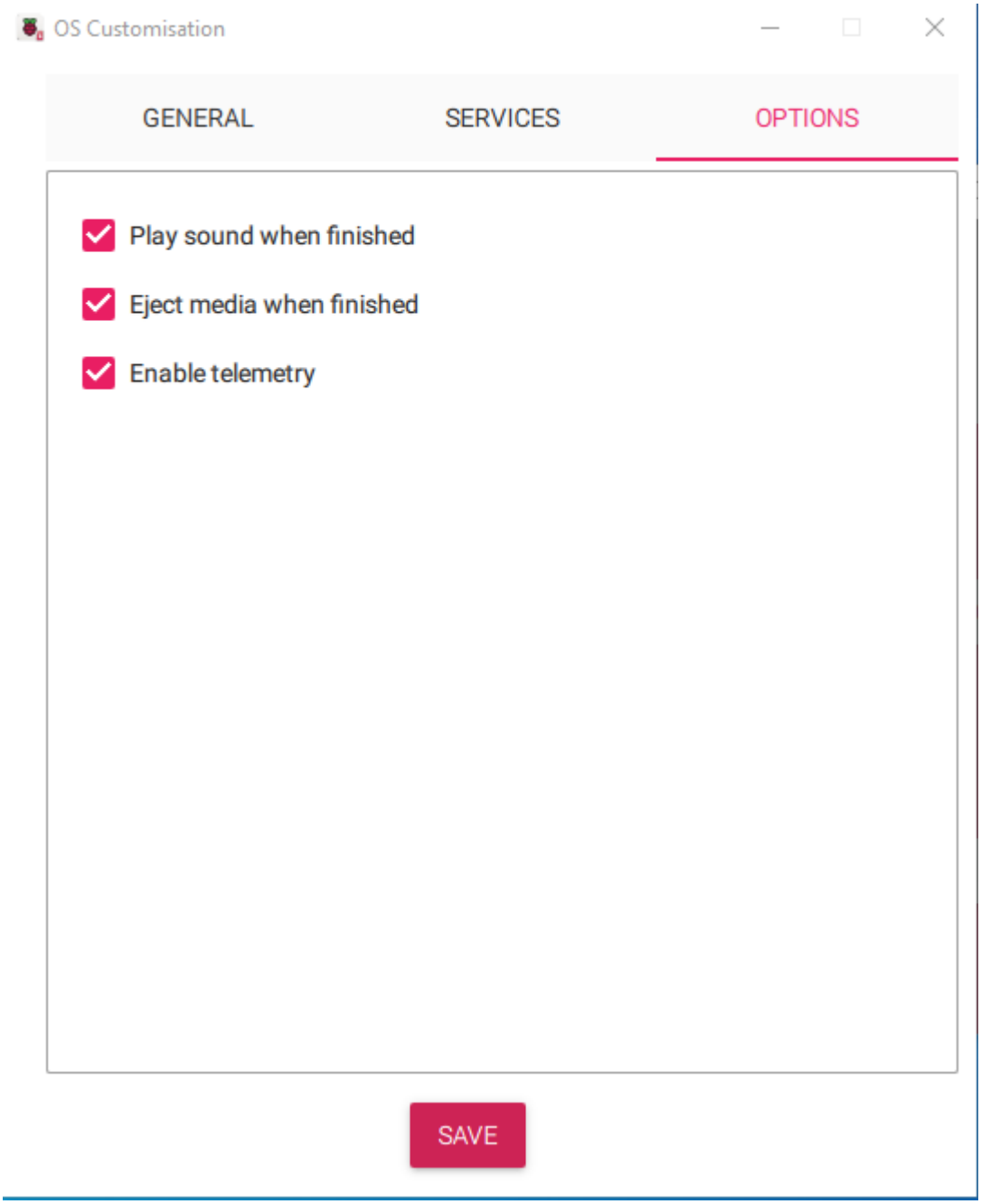
8. On the **GENERAL** page...
    - **Set hostname** - set to whatever you want - but write it down, we will need it latter!
    - Set **Username:** and **Password:**
        - Keep username as **pi**
        - set your own password
    - Configure wireless LAN
        - if you wish to use you RPi wirelessly
        - Enter your wireless network's **SSID:**, **Password:** and **Wireless LAN country:**
    - Set locale settings
        - set **Time zone:** and **Keyboard layout** to your preferences



9. Select **SERVICES**
    - Keep as shown

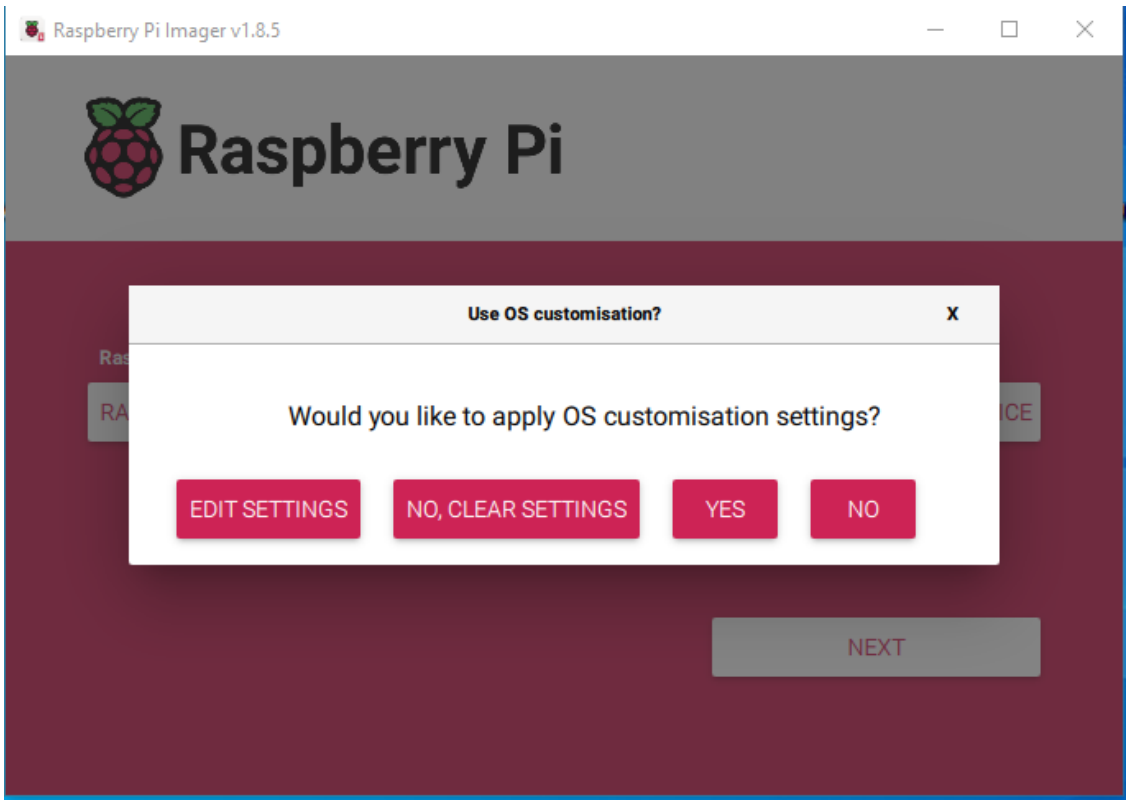


10. Select **OPTIONS**
    - Keep as shown

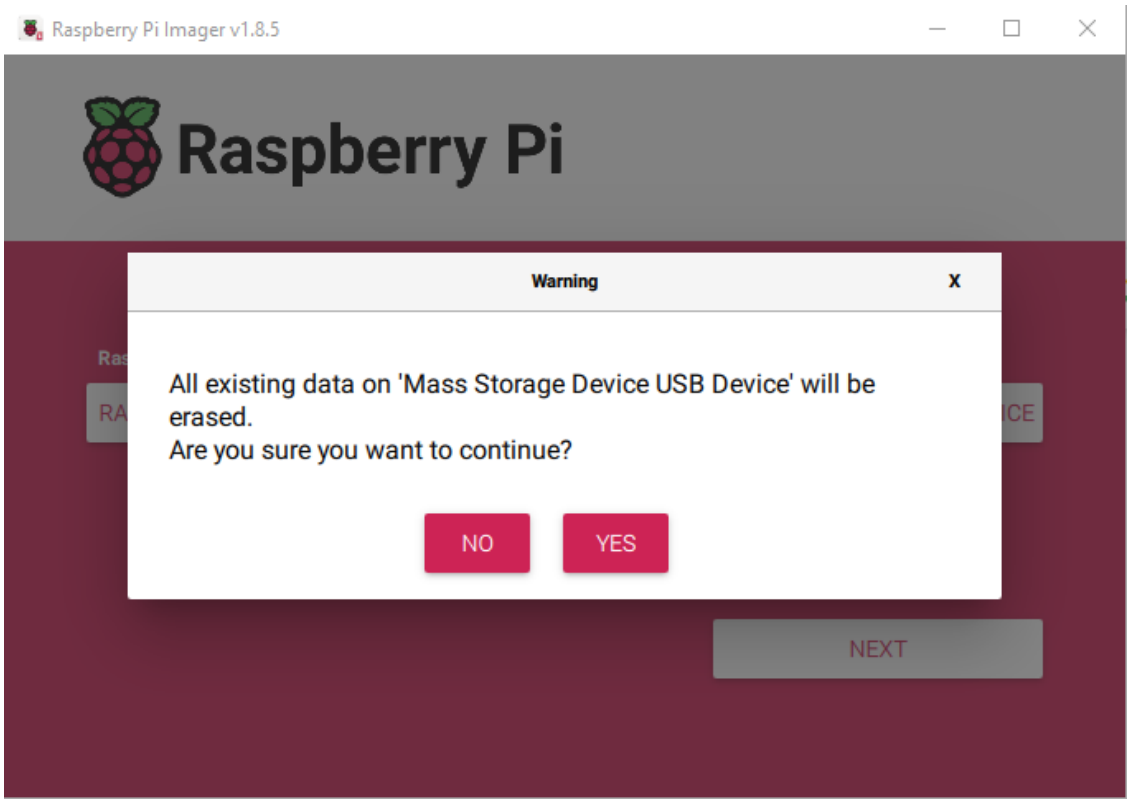


11. Select **SAVE** at bottom of window.

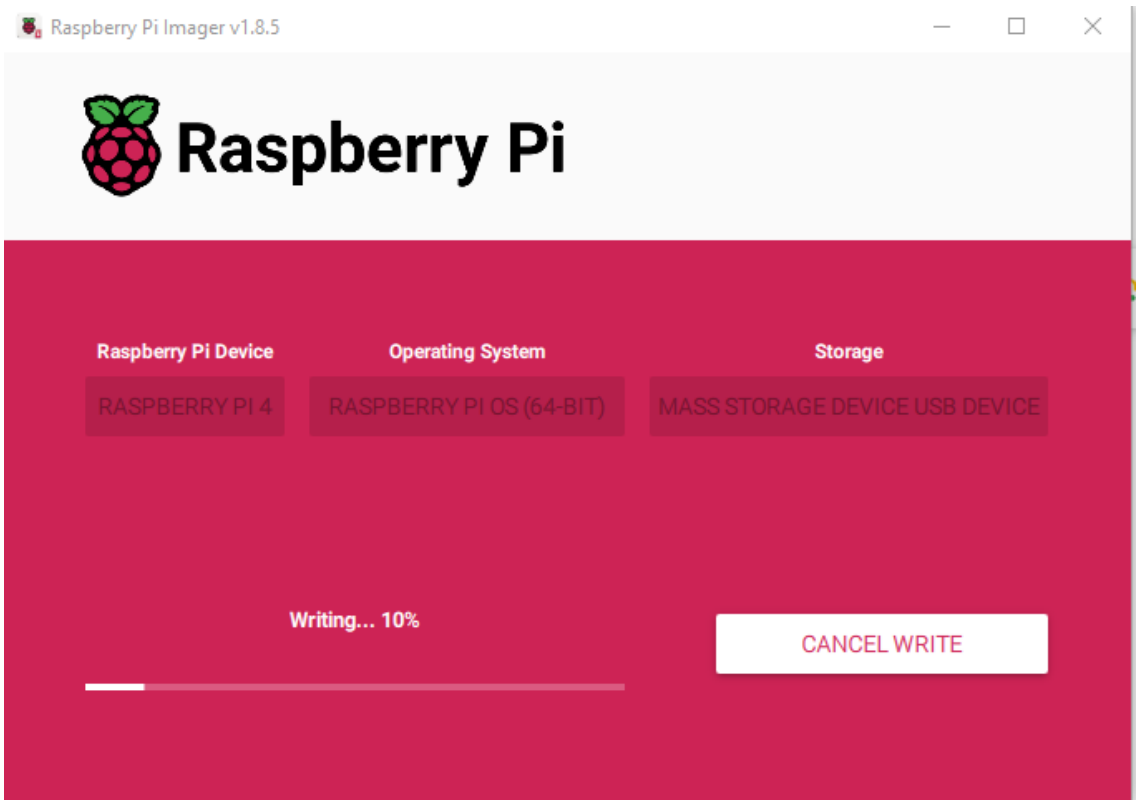
12. Now apply the customised OS settings by selecting **YES**.



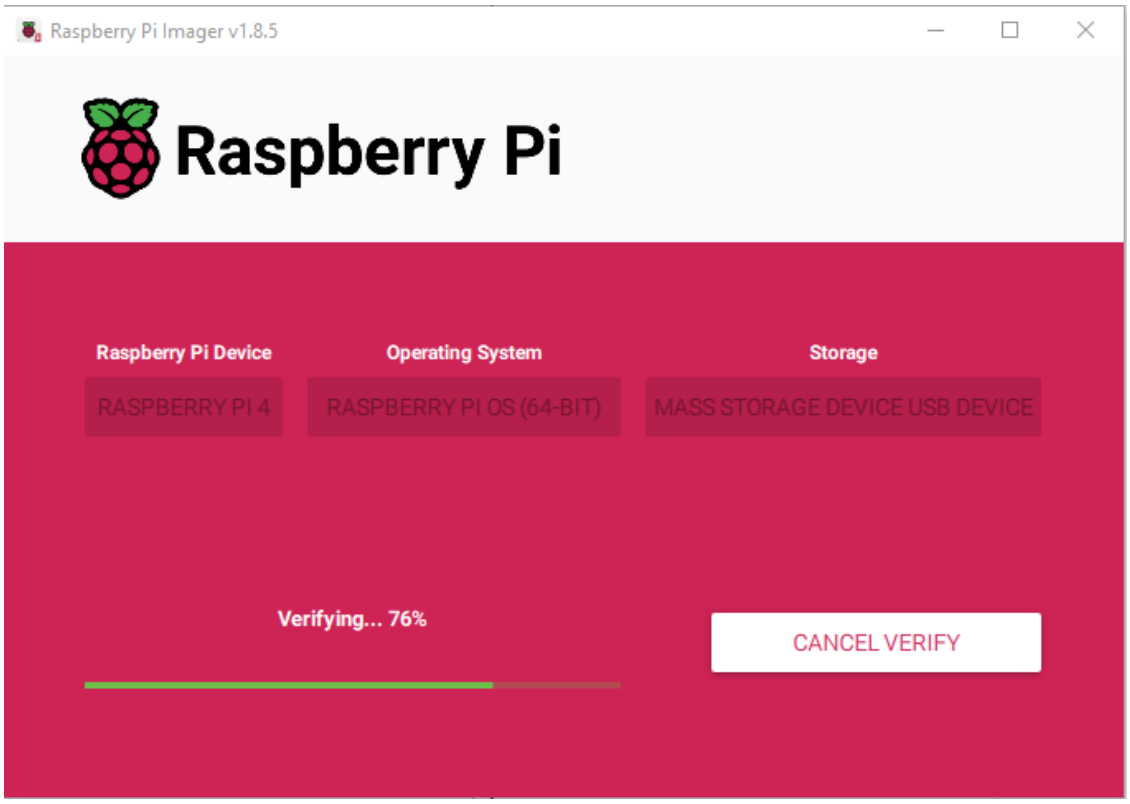
13. You will be asked if you wish to proceed, select **YES**.



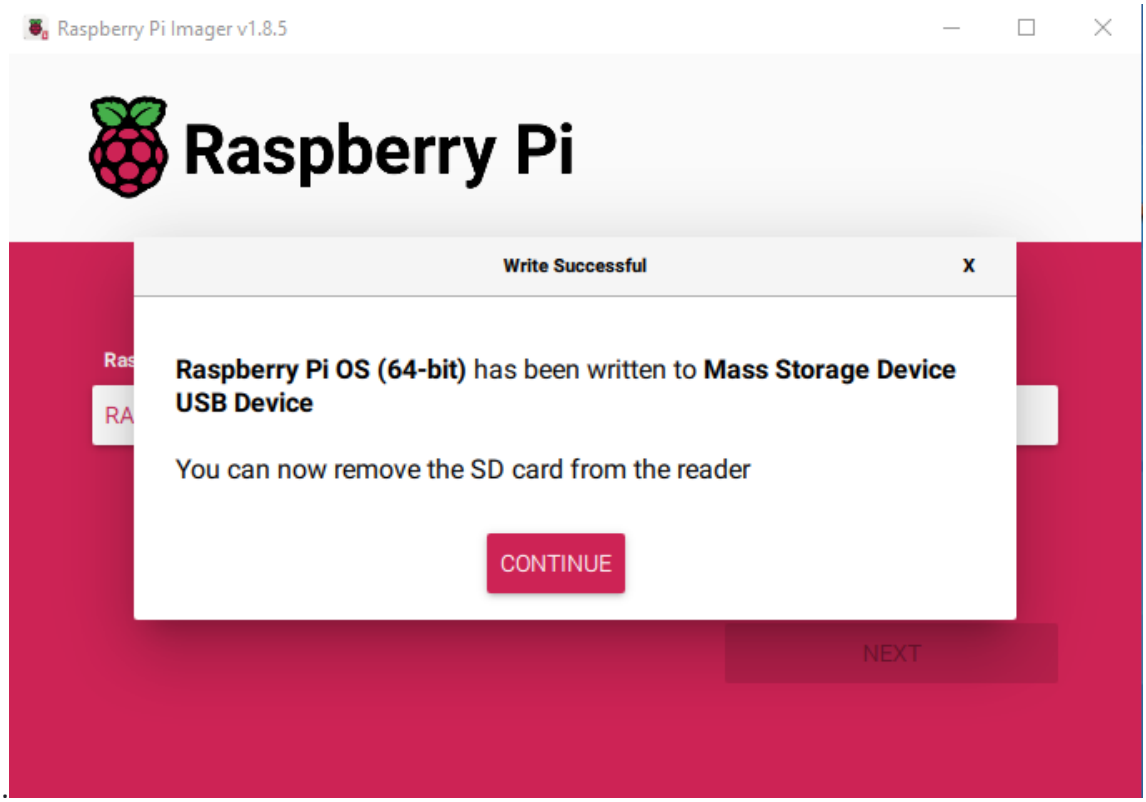
14. The operating system will now be written to the microSD card



15. and then verified, this take a bit of time...



16. When finished, you can remove the microSD card and select **CONTINUE** and close the **Raspberry Pi Imager**.

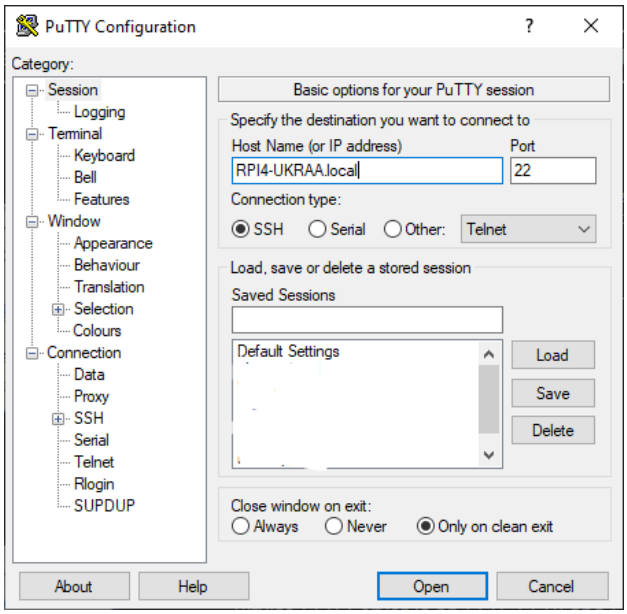


RPi4 configuration

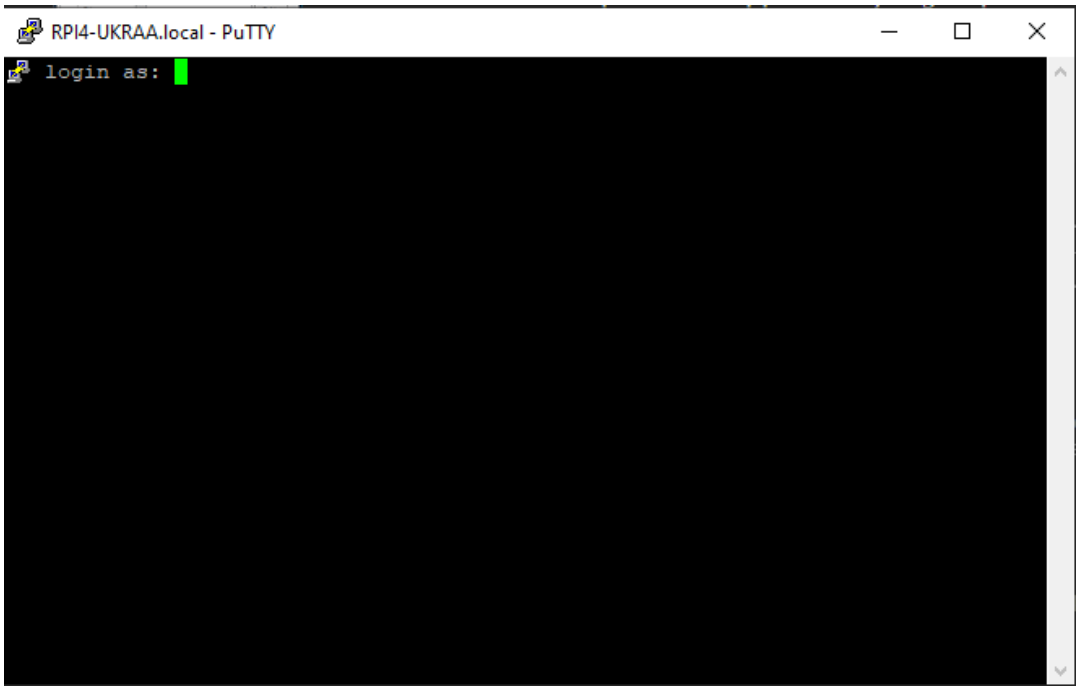
Put the microSD card you have just created into your RPi4, connect the RPi to your LAN if necessary, insert the power cable and turn on.

Using PuTTY (https://www.putty.org/)

1. In **Host Name (or IP address)**, type the host name of your RPi that you wrote down earlier... and select **Open**



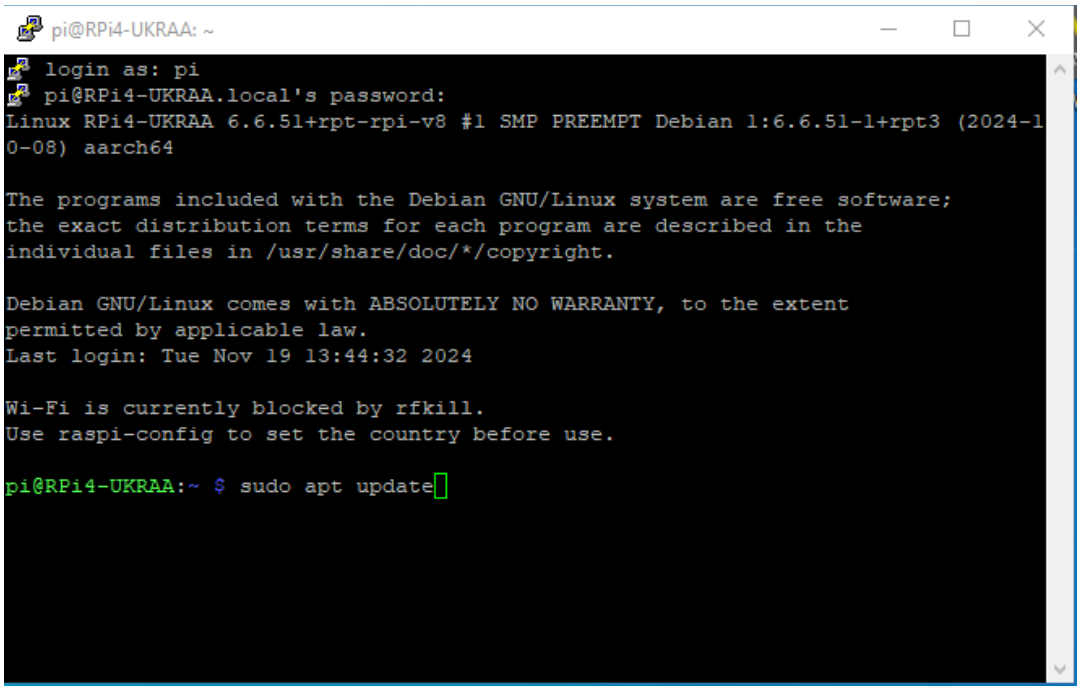
2. You will be presented with a PuTTY Security Alert - select **Accept**. You will now have a PuTTY terminal window.



3. Login as **pi** and enter your **password**

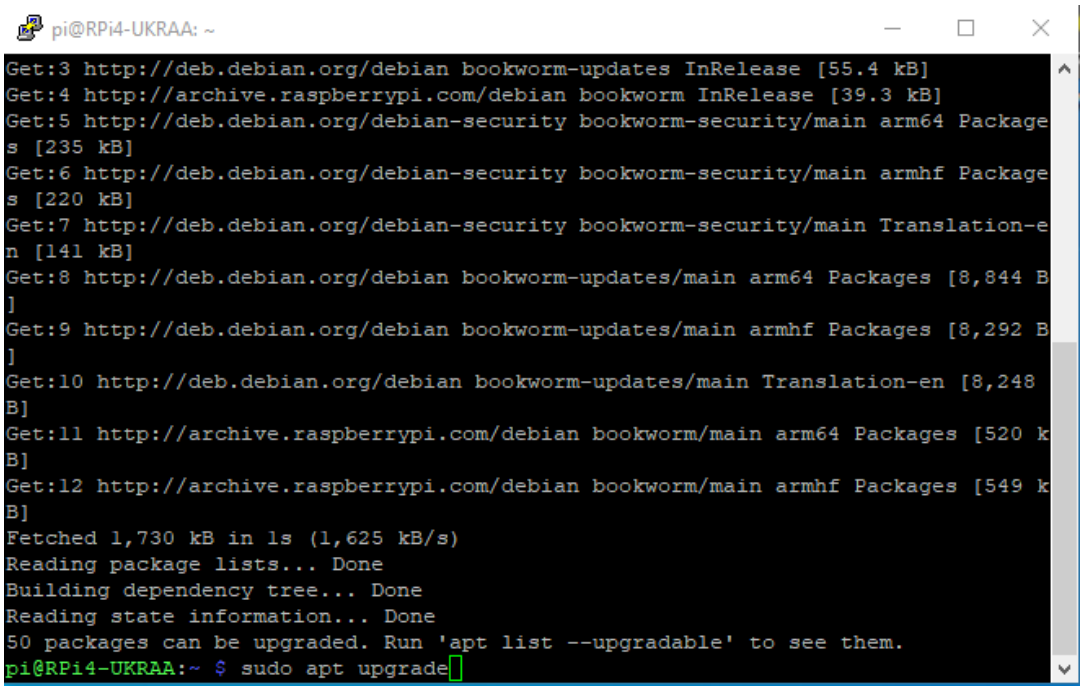
4. Now type the command below and press enter. This will update the RPi OS

sudo apt update



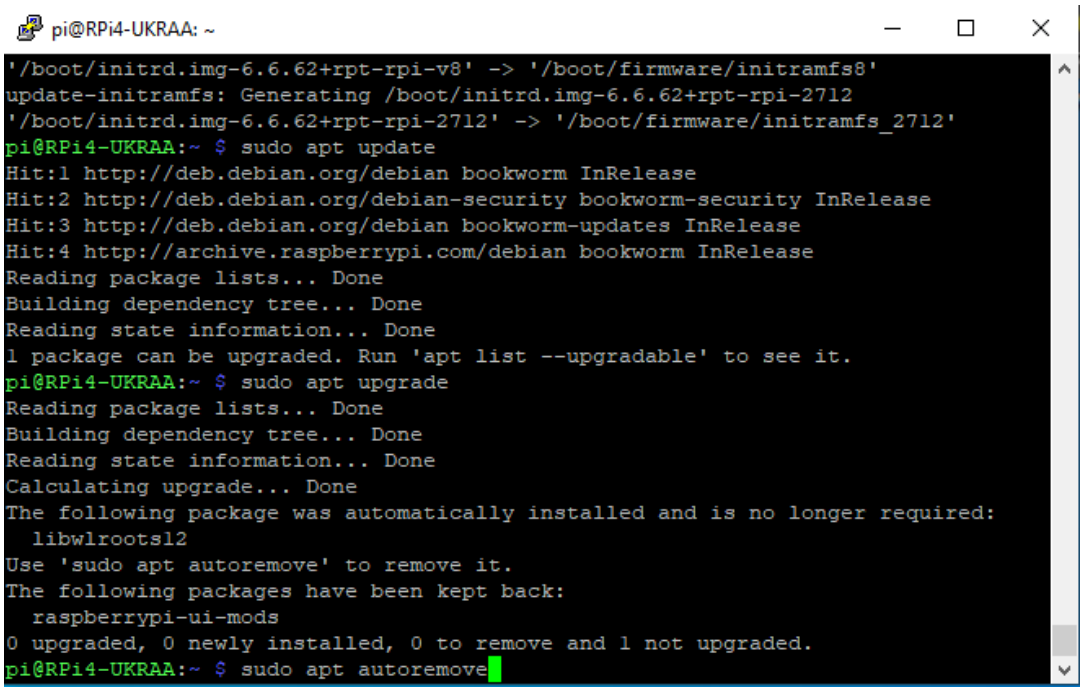
5. Now type the command below and press enter. This will update any preinstalled software packages. You will be asked to type **y** to proceed.

sudo apt upgrade



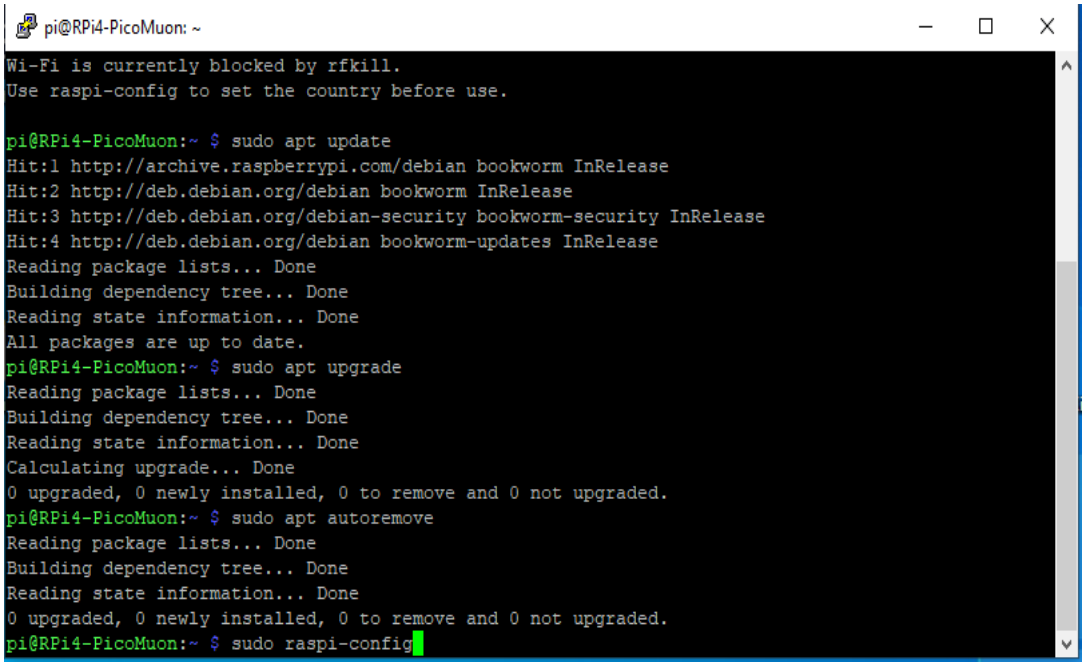
6. You may be advised that you can remove **no longer required** packages. You can type the command below and press enter. Again, you will be asked to type **y** to proceed.

sudo apt autoremove

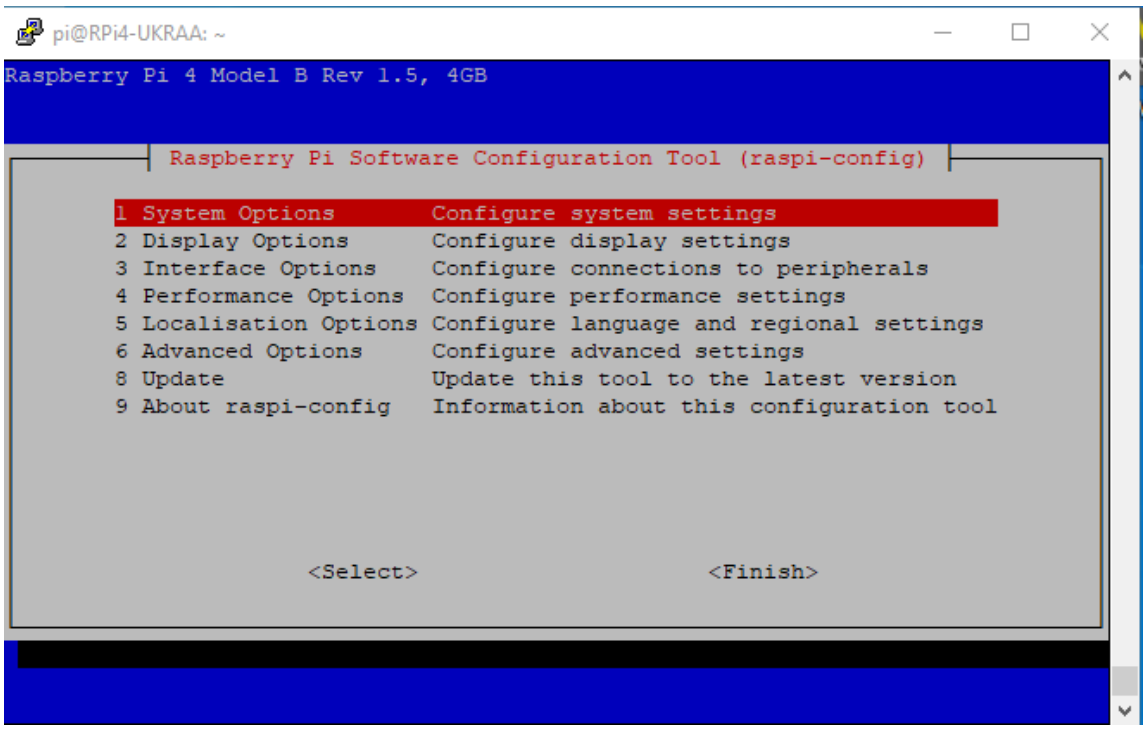


7. We can now set up VNC to access the RPi from our desktop PC. Type the command below and press enter. We will be presented with the RPi configuration tool.

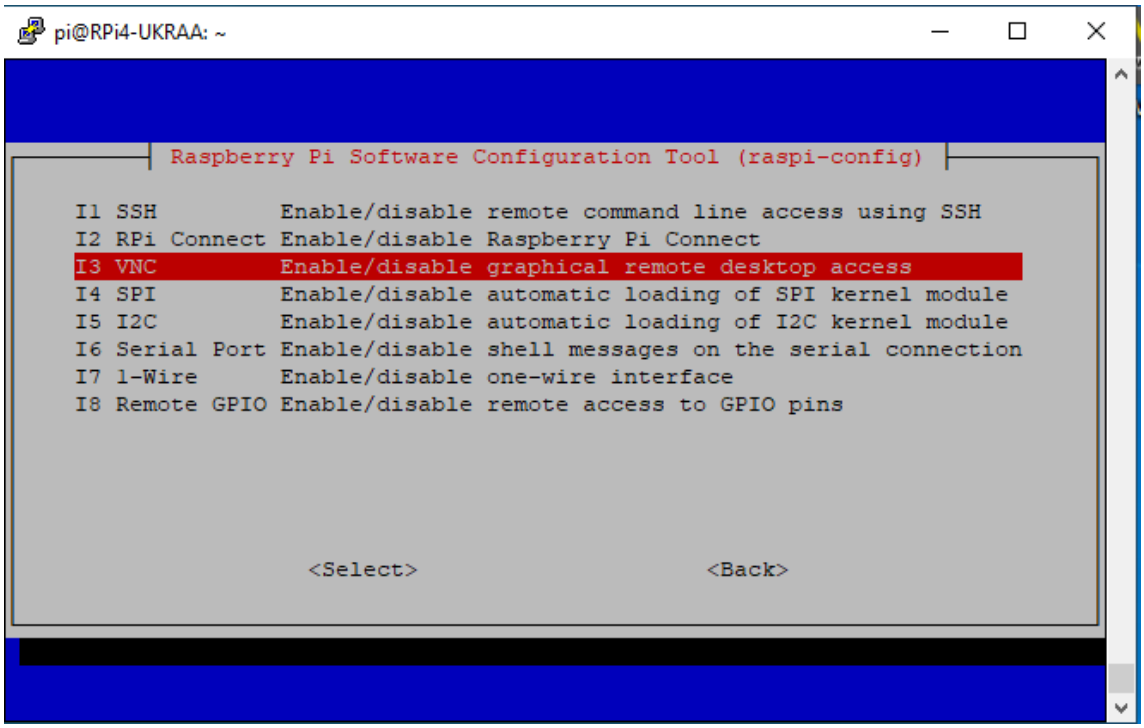
sudo raspi-config



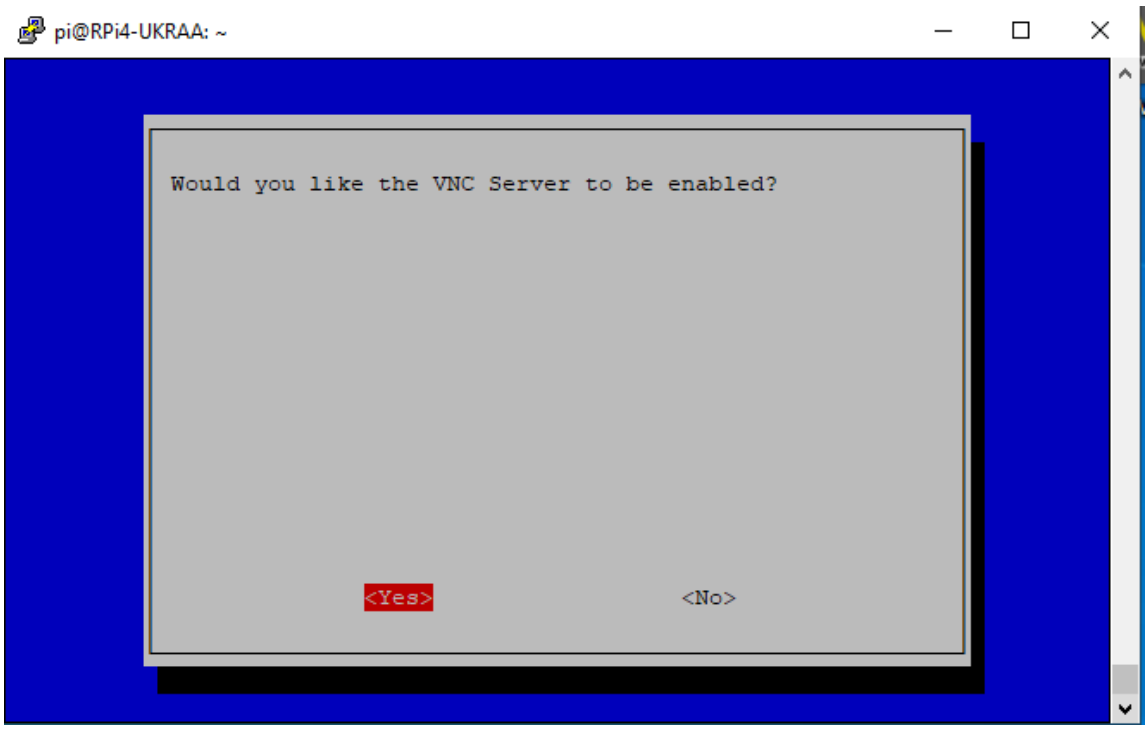
8. Select **3 Interface Options** and selecting **Select** and press enter.



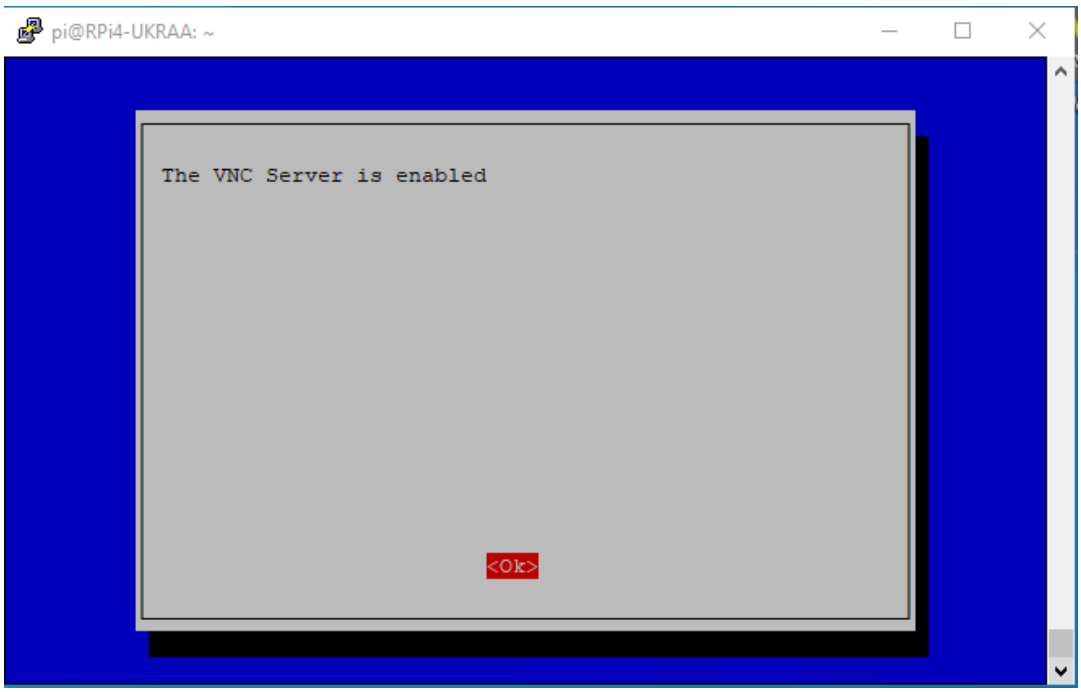
9. Now navigate down to **I3 VNC** and selecting **Select** and press enter.



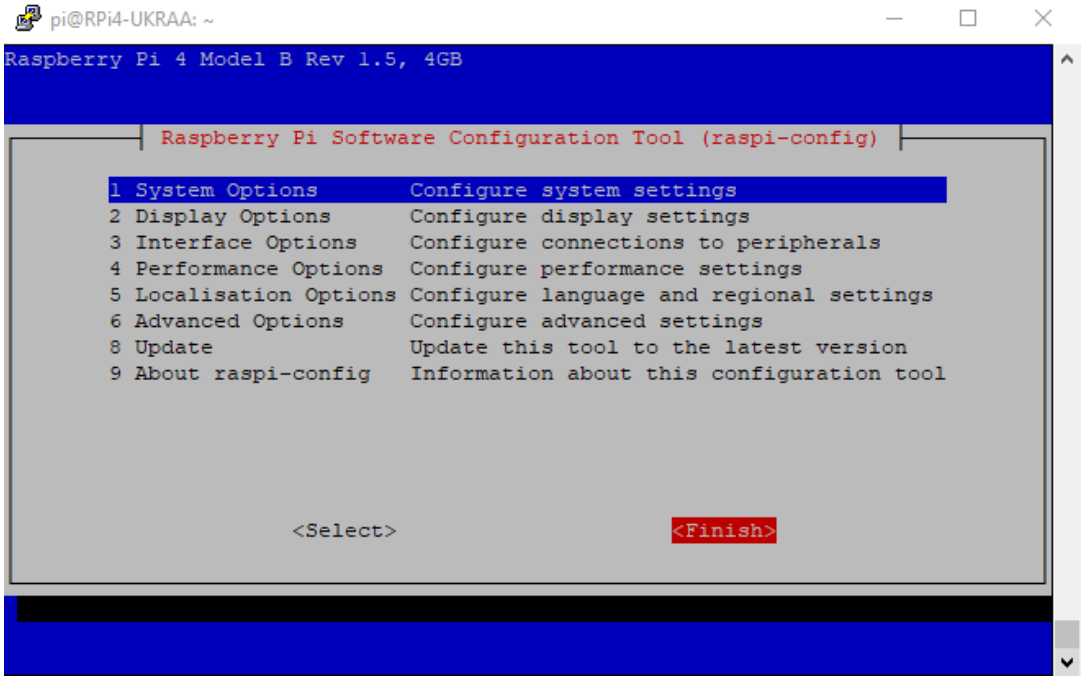
10. Select **Yes** and press enter to enable the VNC Server.



11. VNC server will now be enabled, press enter.

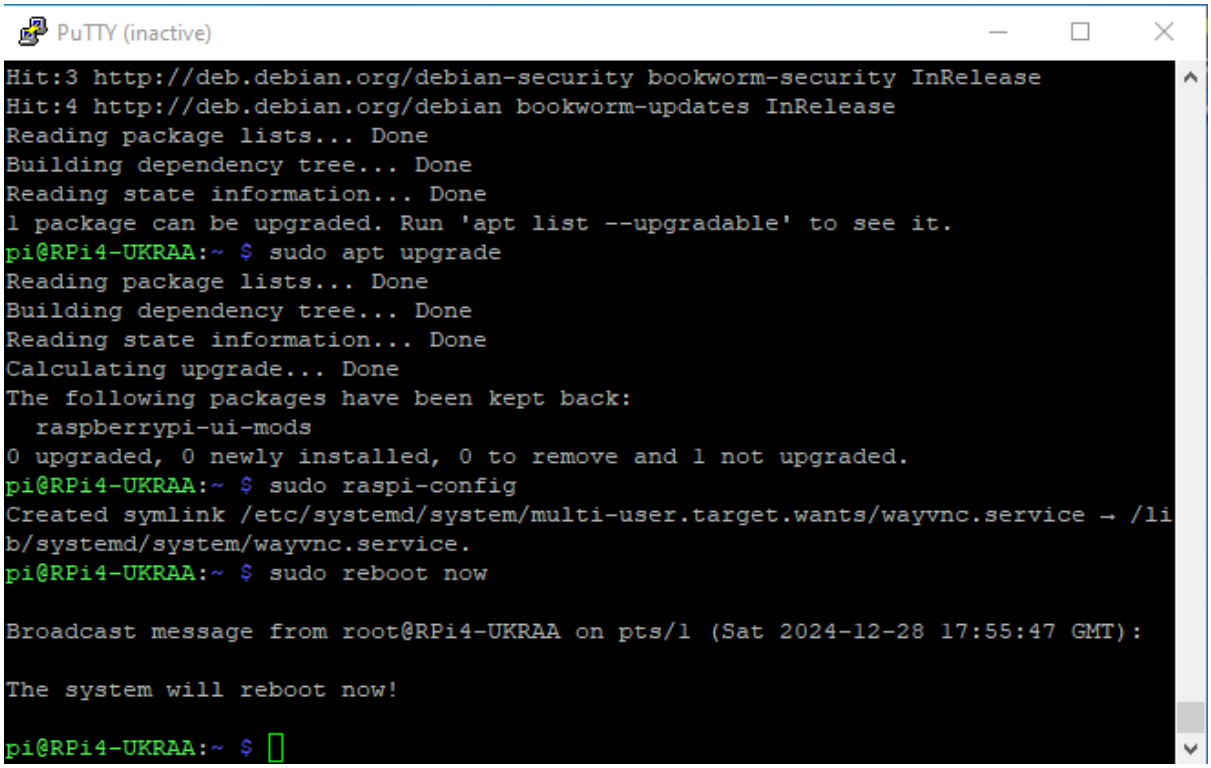


12. Finish with the Configuration Tool by selecting **Finish** and press enter.



13. Reboot the RPi, type the command below and press enter. This will close the PuTTY connection. You can close the Putty window.

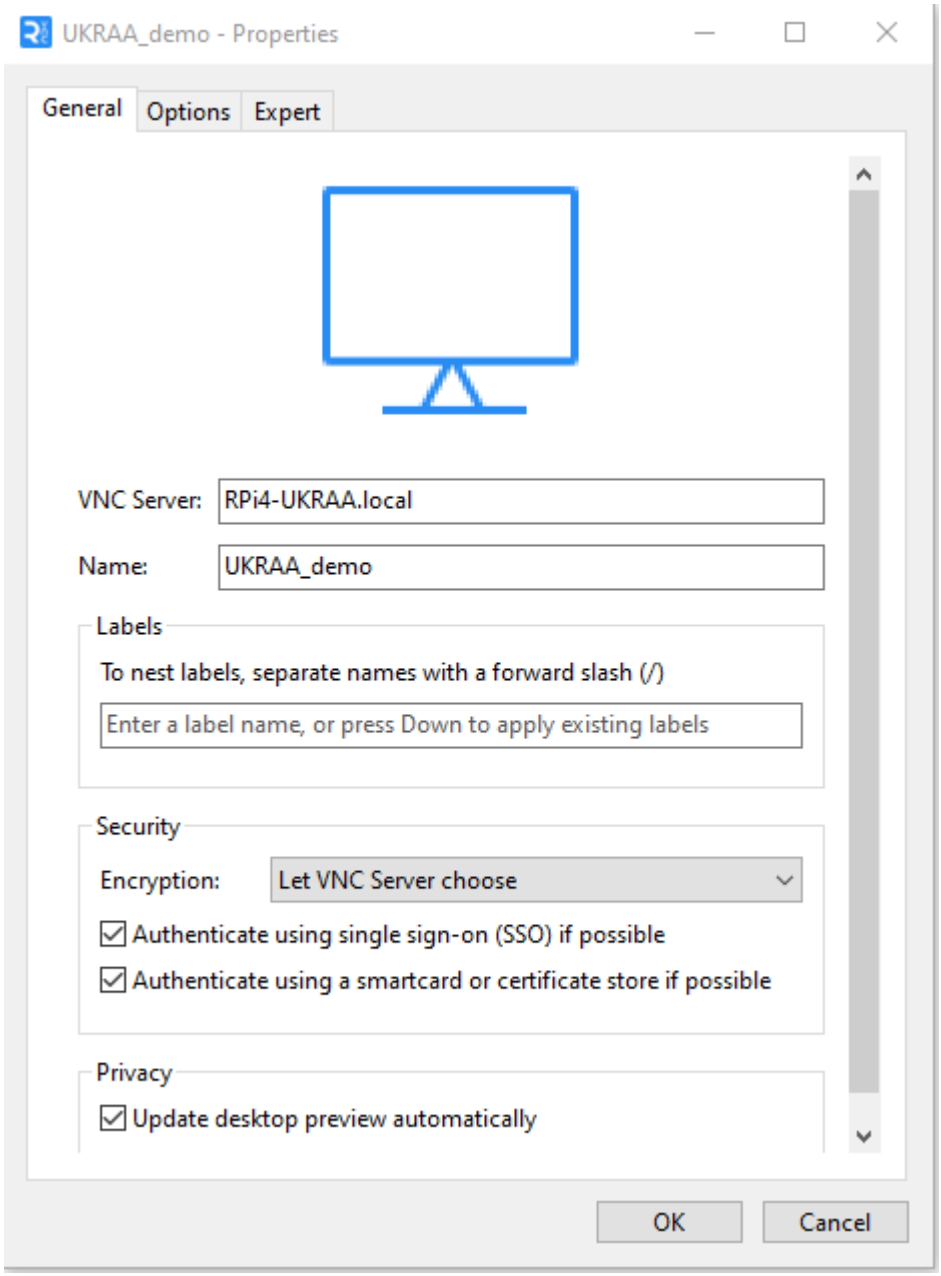
sudo reboot



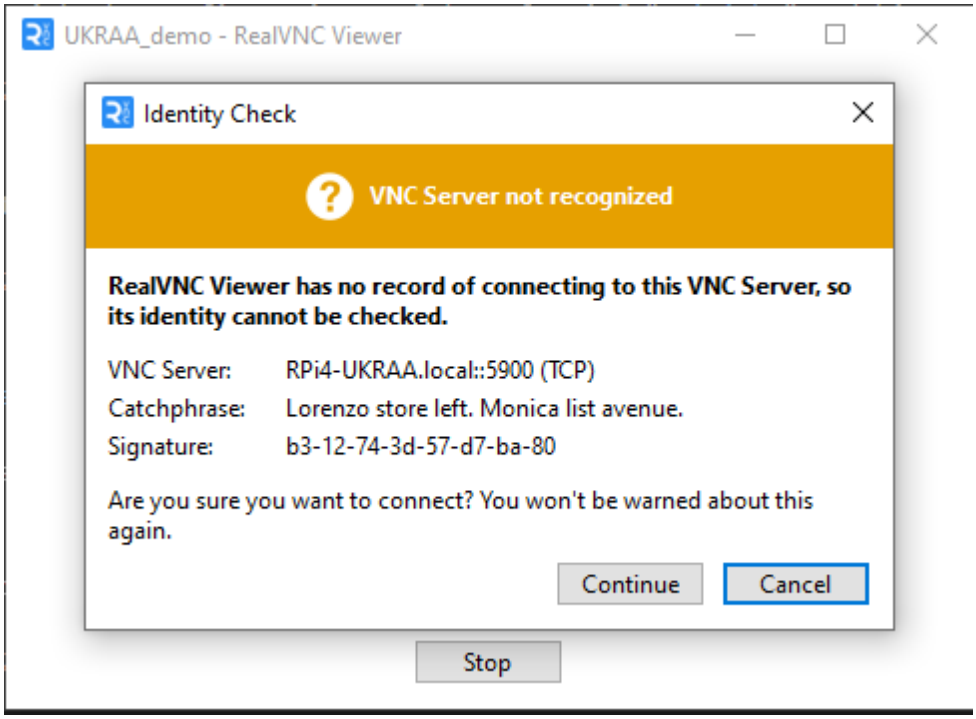
Headless access to RPi via VNC

Using a VNC program like RealVNC (https://www.realvnc.com/en/), connect to your RPi using your desktop PC...

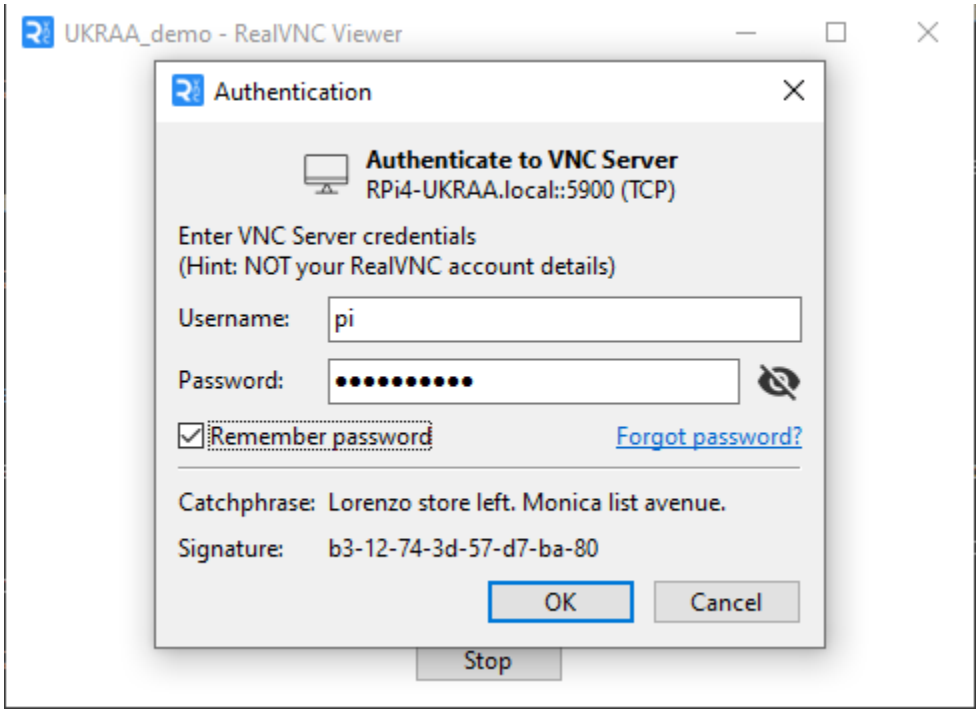
1. Create a **New connections** (CTRL-N) and enter the hostname into the **VNC Server:** box, add friendly name in the **Name** box and select **OK**.



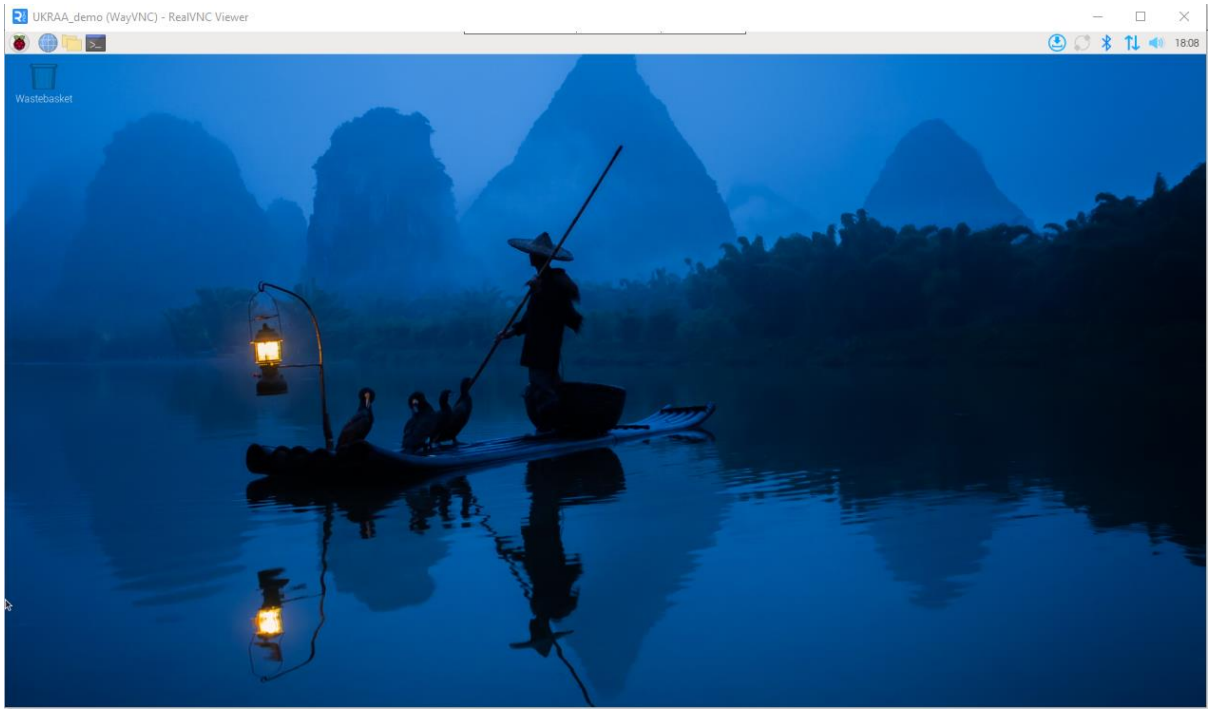
2. Open this VNC connection to your RPi; you will get a **VNC server not recognised** window from RealVNC. Select **Continue**



3. You will now get an **Authentication** window from RealVNC, enter your **Username** and **Password** details and select **Remember password** to make it easier to login in future.



4. You are now remotely accessing your RPi from your desktop PC...



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Contact us

Please send an e-mail to picomuon@ukraa.com