Raspberry Pi 4 Manual

Matthew Cimerola

July 27, 2022

Contents

1 About

The Pi's we are using are "Raspberry Pi 4 Model B" with 2GB of RAM. Link to the case the Pi's use.

1.1 Hardware Monitoring

For the most graphically appeasing view of the general hardware.
(From Desktop) "Start" (Pi icon in the top left) → "*Accessories*" → "*TaskManager*"

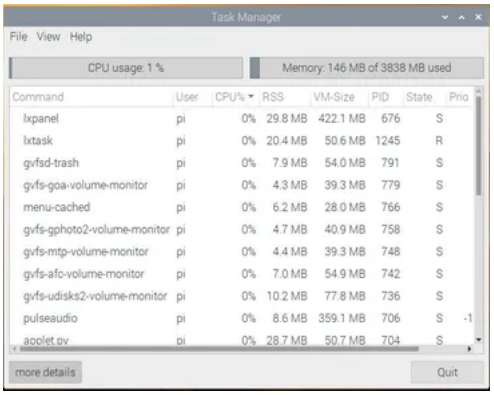

Figure 1: Note this is taken from a Pi with 4GB RAM

Run "top" via the **Terminal** for a view with more details including tasks and users. I added a CPU temperature gauge on the Pi's that you can see on the taskbar. This was added by **Right Clicking the Taskbar → Add/Remove Panel items → Add → CPU Temperature Monitor**. From what I have read, a safe temperature resides under 80°C. Thankfully, the case on the Pi's provide a built in heat sink and a thermal pad which is placed directly on top of the CPU.

2 Network Configuration

2.1 Wireless Connection

After right clicking on the wifi icon and selecting "Wireless & Wired Network Settings", you will want to mimic the settings to follow this:

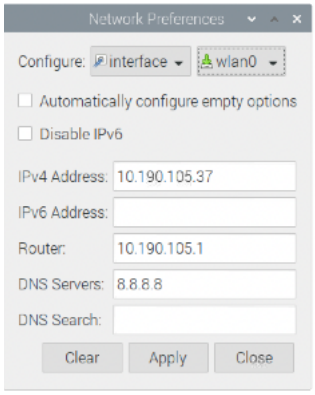

Figure 2: Ensure you are in "wlan0" tab

This is for a static ip configuration, which is the preferred config. and the "8.8.8.8" is just the primary DNS server for Google. One thing I noticed that was causing frequent problems with the ip address being randomly changed was the "Automatically configure empty options" box being checked even though the settings above were typed into the box. Please make sure this is **not checked**.

2.2 Finding ip via Terminal

Typing in the command **ifconfig** will give you the netmask, and the ip can be found next to "inet" under the "wlan0" section.

3 How to Connect

3.1 VNC

VNC viewer is what we are currently using for remote connection into the Pi's, and I was able to use VNC viewer without making an account.

Steps for setting up VNC Viewer:

1. Download VNC Server for the Raspberry Pi OS
2. Take note of the ip under "Connectivity" and the catchphrase under "Security" (see Figure 3)
3. From the computer you want to connect from, download VNC Viewer for the OS of this machine
4. From VNC Viewer, type in the ip address from step 2 in the search bar (Figure 4)
5. You should be prompted to type in the password for the login to the Pi's, then should be connected

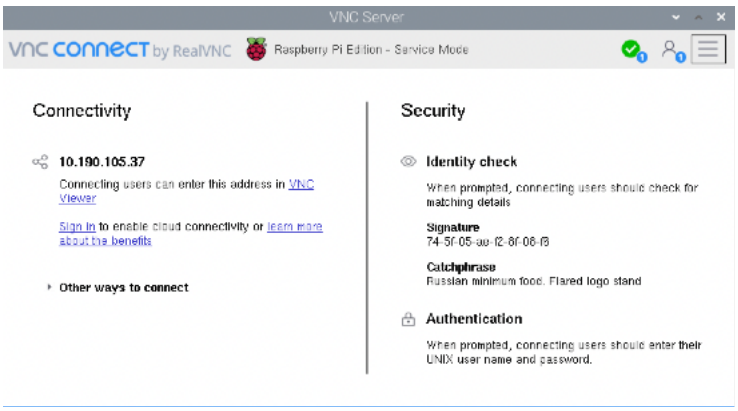

Figure 3:

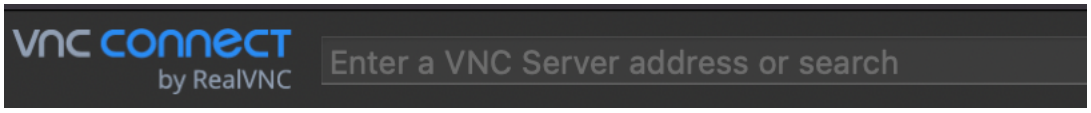

Figure 4:

3.2 SSH

This is more straight forward than VNC.

For Mac:

1. Open the Terminal
2. Type in **ssh pi@INSERT_IP_ADDRESS**
3. You will be prompted to type in the Pi's password, then should be all good

For Windows:

1. Open PuTTy
2. Type in the Pi's ip address in the host name box
3. Ensure ssh is the connection type
4. **open**
5. login with credentials ex: **pi@Pi-#**

Note: In order to reboot the Pi's when connected through SSH, you must put the keyword **sudo** before commands that require sudo privileges. An example would be **sudo reboot**.

4 Auto Start

This section will detail how the Pi's were set up so that on boot, certain web pages are opened automatically. This is done all through the Pi's terminal.

```
# this is a comment

# from the home directory "pi@Pi-#: $"
# need to get to the configuration settings
cd .config

# creating two new directories, error presents itself
# if directories already exist
sudo mkdir -p lxsession/LXDE-pi

# opening the built-in autostart folder
sudo nano lxsession/LXDE-pi/autostart

# copy this inside the editor
@lxpanel --profile LXDE-pi @pcmanfm --desktop --profile
LXDE-pi @xscreensaver -no-splash @xset s off @xset -dpms
@xset s noblank point-rpi @chromium-browser --start-fullscreen
--start-maximized https://YOURURL.com/
# note the YOURURL will be changed with what you would want
# on autostart.  the "@xscreensaver -no-splash" ensures
# the pi does not sleep

CTRL + x(saves), Y (yes), enter

# ensure it works
sudo reboot
```

Note: The browsers with the KPI dashboards utilize Easy Auto Refresh. All chrome extensions from what I have seen *should* be supported by Chromium, the browser the Pi's use. I also installed "Midori", a lightweight browser that can be used.

5 A Note On Credentials

The password for all the Pi's are the same and is the same password used for local admin accounts. The username for all of them is "pi", however, the local name that you will see in the terminal is "pi@Pi-NUMBER_1_THROUGH_4