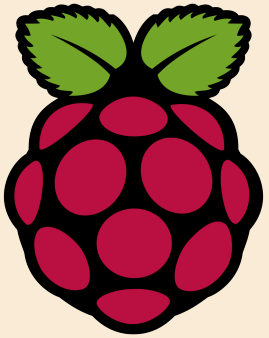
Installing Linux: Raspberry Pi OS



UMD Homelab Club Meeting 2024-12-02

Why Raspberry Pi OS?:

See our previous presentations for information about why we chose the Raspberry Pi and Raspberry Pi OS:
Picking Hardware[0]
Picking Operating Systems[1]

[0] https://suddenlysixam.club/meetings/past_meetings/2024-11-11-meeting.html
[1] https://suddenlysixam.club/meetings/past_meetings/2024-11-18-meeting.html

Installation Method:

For the initial installation, we are going to be using the official Raspberry Pi Imager[0].

[0] https://www.raspberrypi.com/software/
(Note: You can alternatively directly download OS images from the above link if you wish to install manually.)

Supplies Needed:

1. Raspberry Pi
2. SD card
3. A device (e.g. laptop, desktop, another pi) with the Raspberry Pi Imager installed, and an SD card port/adapter/reader for that device.
4. Monitor & display cable(s)
5. Keyboard & mouse
6. Power cable (or alternate power method, e.g. PoE)
7. (If using wired connection) Ethernet cable

(Note: There are other ways to configure pi's, e.g. headless. If you are configuring a pi with specific needs in mind, you may need to adjust these steps to fit your use case.)

Formatting the SD Card:

Raspberry Pi Device:
Raspberry Pi 4

Operating System:
Raspberry Pi OS (64-bit)

Storage:
(select SD card)

Click 'Next'

(Note: Keep in mind when selecting this version that the description says *A port of Debian*. For some things, you will need to follow Debian instructions, rather than Raspberry Pi instructions.)

Formatting the SD Card (cont.):

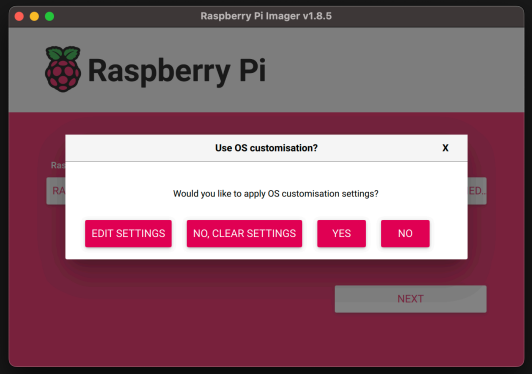
Would you like to apply OS customization settings?:
Edit Settings

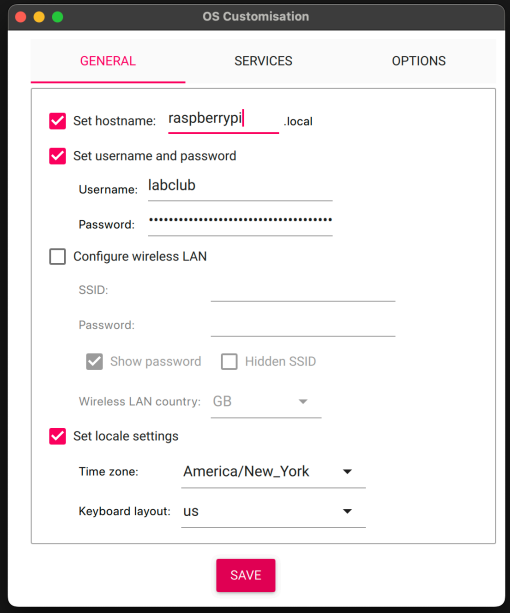
Set hostname:
raspberrypi (or custom)

Set username and password:
Username: labclub (or custom)
Password: umdhomelabclub! (or custom)

Set locale settings:
Time zone: America/New_York (or custom)
Keyboard layout: us (or custom)

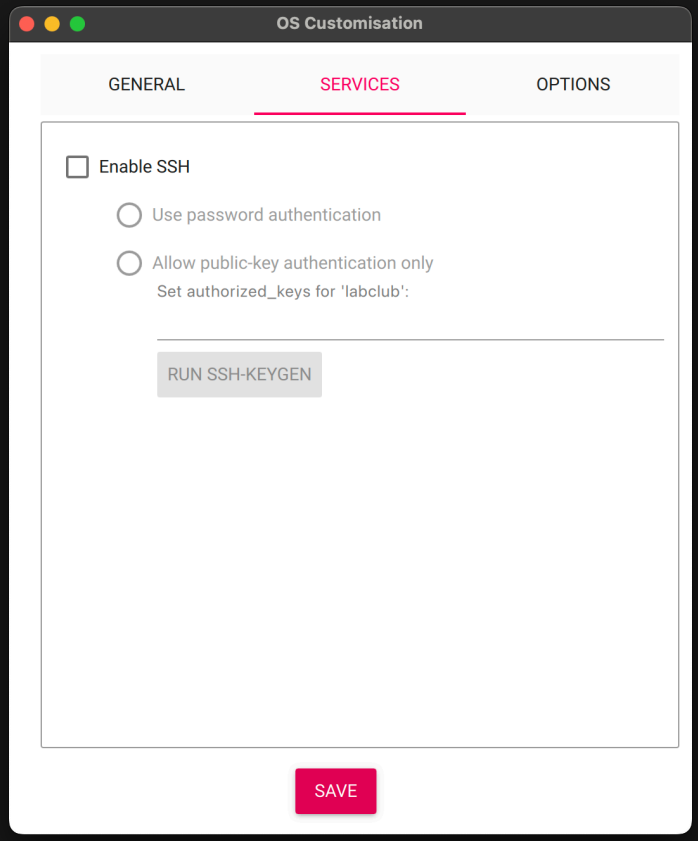
(Note: We did not set a custom hostname, but in your own homelab, especially if you have multiple Pi's, you may want to give it a unique name)
(Note: We are setting a generic bad password and displaying it here, don't do this in practice!)
(Note: If you run into problems later with your time being incorrect or not syncing, make sure you have your time zone set correctly)





Formatting the SD Card (cont.):

If you want/need to, you can Enable SSH from these settings as well.



(Note: We do not need to be able to access the pi remotely for the purpose of this guide, but you may need to when you are installing a pi in practice.)

Formatting the SD Card (cont.):

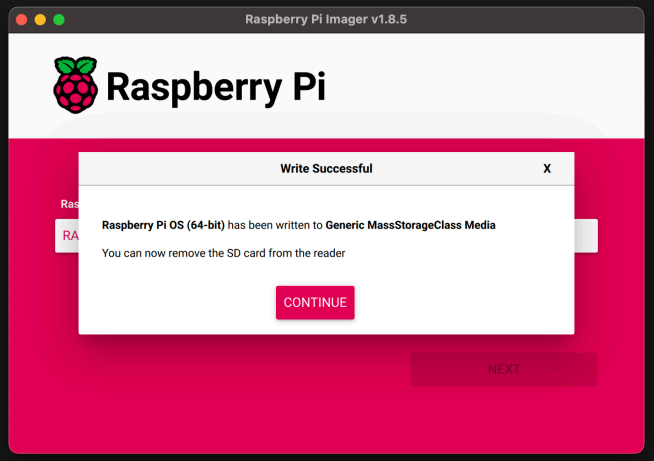
Save the customization settings.

Would you like to apply OS customization settings?:
Yes

All existing data on '<sd-card>' will be erased. Are you sure you want to continue?:
Yes *(assuming that you are in fact okay with erasing everything on the SD card)*

Likely enter your password for permission to write to the SD card, and wait for it to complete.

(Note: Next time, if you would like to apply the same settings, you can simply say Yes to applying the OS customization settings.)



Boot up!:

Put the SD card into the pi, and power it on / plug it in.

Once its fully booted up, open up the Terminal. You should see labclub@raspberrypi (*username@hostname*)

Run updates:

```
sudo apt update
sudo apt upgrade -y
```

(Note: Unless you have configured your homelab/pis to run updates automatically, you should run them periodically, at least when you are going in to make changes.)
(Note: If you run into problems, make sure your internet connection is working properly, and then check the next slide)

(If needed) Time setup:

If your time is not syncing like mine was, stop and start NTP:

```
sudo timedatectl set-ntp False
timedatectl status
sudo timedatectl set-ntp True
timedatectl status
```

If your time is still not correct, set it manually to the correct time and check your time zone configuration:

```
sudo date -s '2022-10-06 02:00:00'
sudo raspi-config
```

Once your time is correct, go back and retry the previous commands.

(Optional) Enable SSH:

sudo raspi-config
Arrow key to ‘3 Interface Options’ and hit Enter
Arrow key to ‘I1 SSH’ and hit Enter
Arrow key to ‘Yes’ and hit Enter

(Note: You can also do this through the Preferences menu under *‘Raspberry Pi Configuration’*)

(Optional) Backup & Restore:

Plug the SD card into the device where you are backing up from.

Determine the device name of the SD card. (method varies by the OS you are backing up on)

Backup:

```
sudo dd if=<device> status=progress bs=32m | gzip -c > <path-to-backup>/raspberrypi.img.gz
```

Restore:

```
gunzip -c <path-to-backup>/raspberrypi.img.gz | sudo dd of=<device> status=progress bs=32m
```

(Note: You could `dd` directly to an `img` file, however it would be the size of our SD card, which is not ideal. However, if you are transferring from one SD card to another, using `dd` directly may make more sense.)

(Optional) Clone SD Card:

Plug both of the SD cards into the device that you are going to use to perform this clone.

Determine the device name of both the SD cards. (method varies by the OS you are cloning on)

```
sudo dd bs=32m if=<input-device> of=<output-device>
```

Thank you!

Don’t forget to join the Discord!

https://suddenlysixam.club/discord