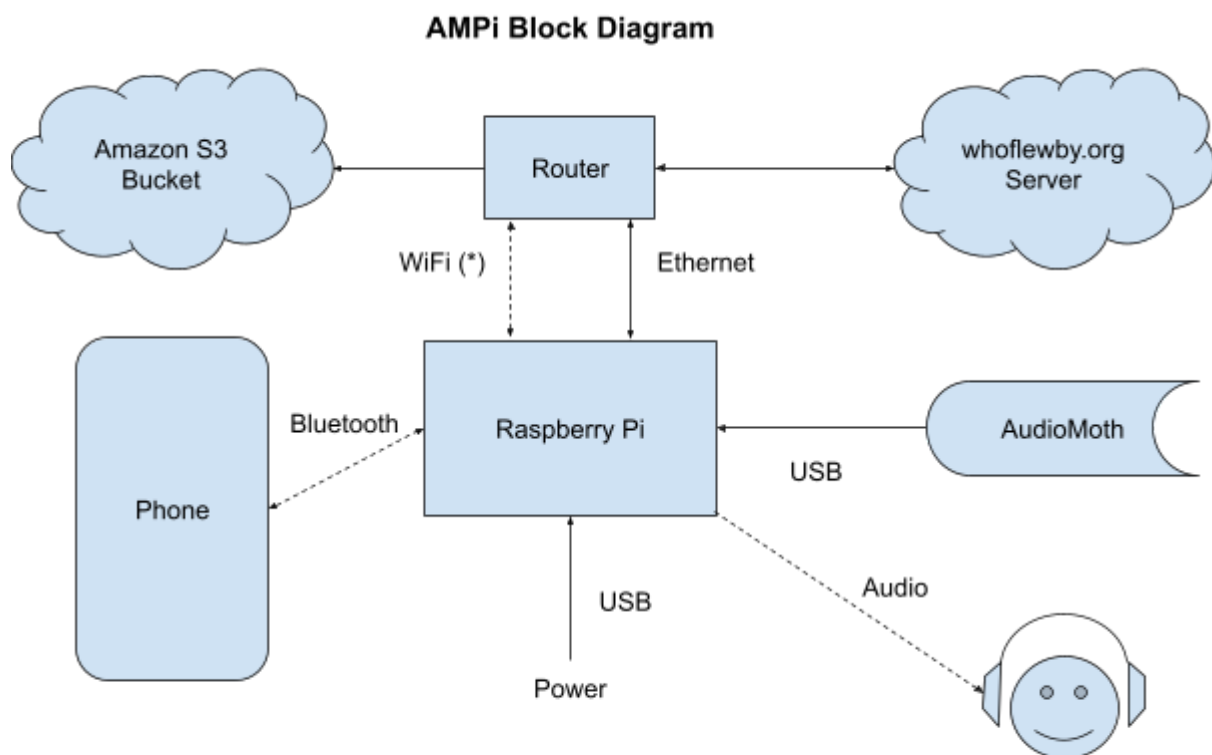


AMPi - Motus Audio Add-on

ampi - Set-up and Use (Aug. 15, 2025)

Summary

The ampi captures audio from one or more AudioMoth USB microphones and uploads it to the Amazon cloud for processing. A phone app is used to configure and monitor the ampi locally. Remote monitoring, troubleshooting, and software updates are provided by the connection to the whoflewby.org server. The ampi will automatically use an ethernet connection to reach the Amazon and whoflewby.org servers. To use a WiFi connection instead, you will need to [configure it using the App Menu](#).



(*) Dashed lines show optional or occasional connections.

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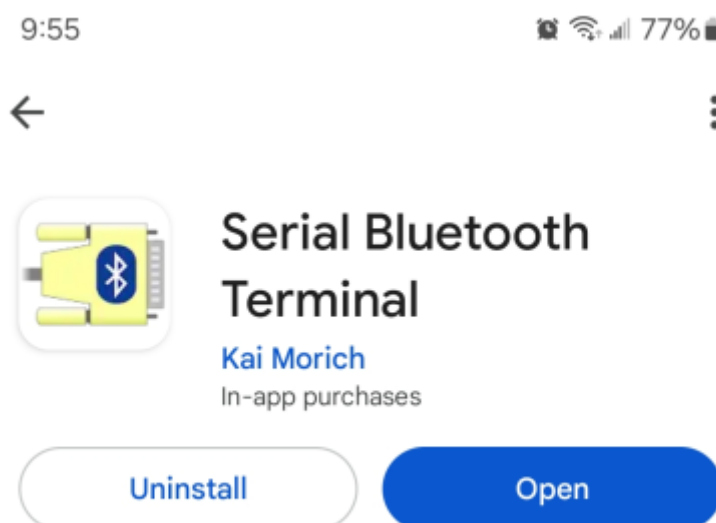
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Phone App (Android)

Operation of the ampi can be configured and monitored locally via Bluetooth using an App on an Android phone or tablet.

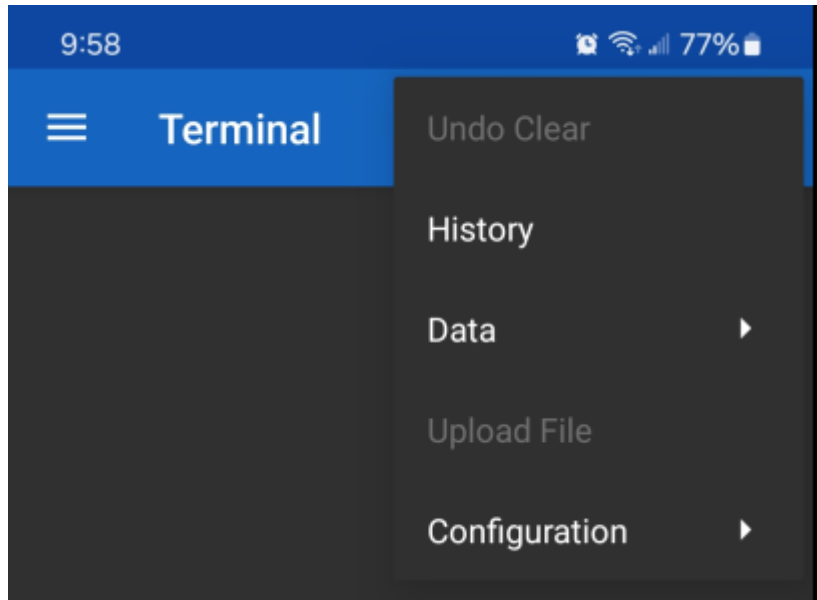
Installing

Install the free [Serial Bluetooth Terminal App](#) by Kai Morich, available on Google Play:

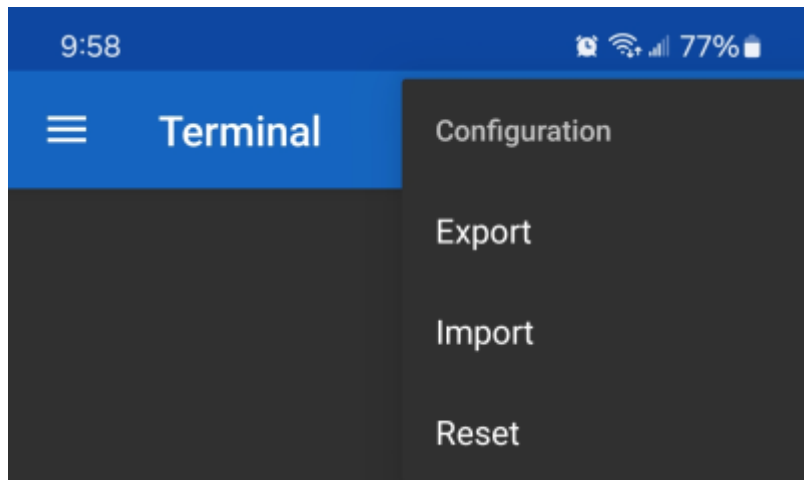


Configuring The App

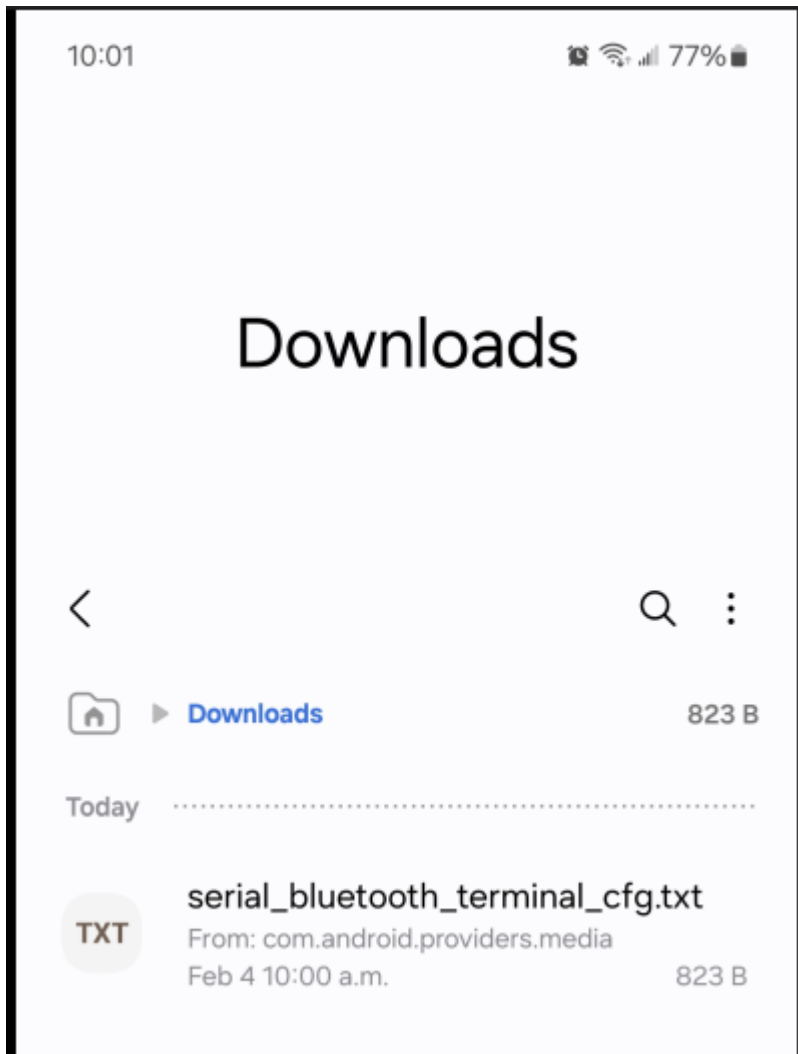
We have found [this configuration file](#) to be helpful in working with the ampi. Follow the link on your phone, and download the file. Then, open the Serial Bluetooth Terminal App on your phone. From the main screen, tap the menu (three dots at right) and select **Configuration**



Then select **Import**:



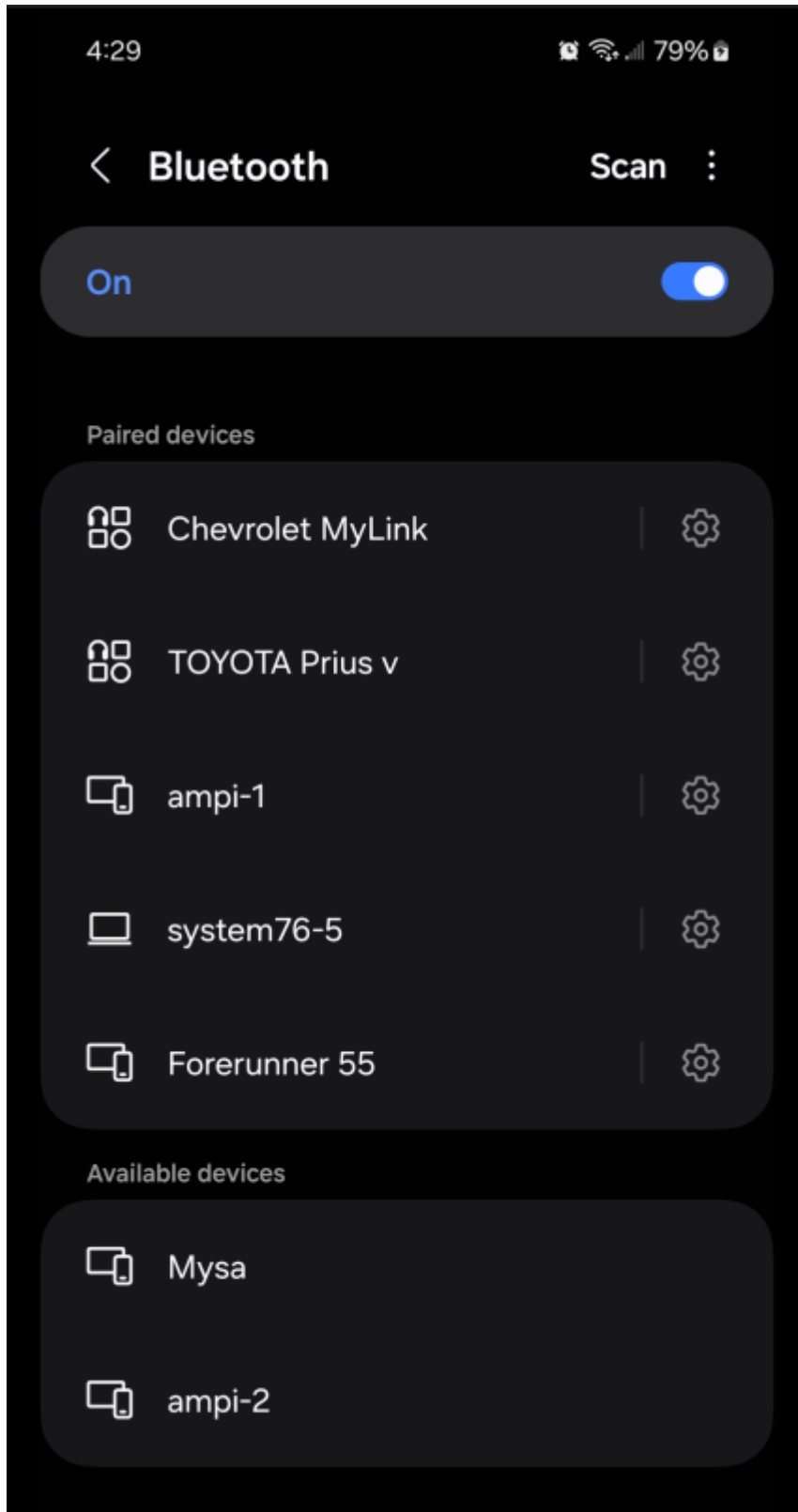
Then navigate to Downloads:



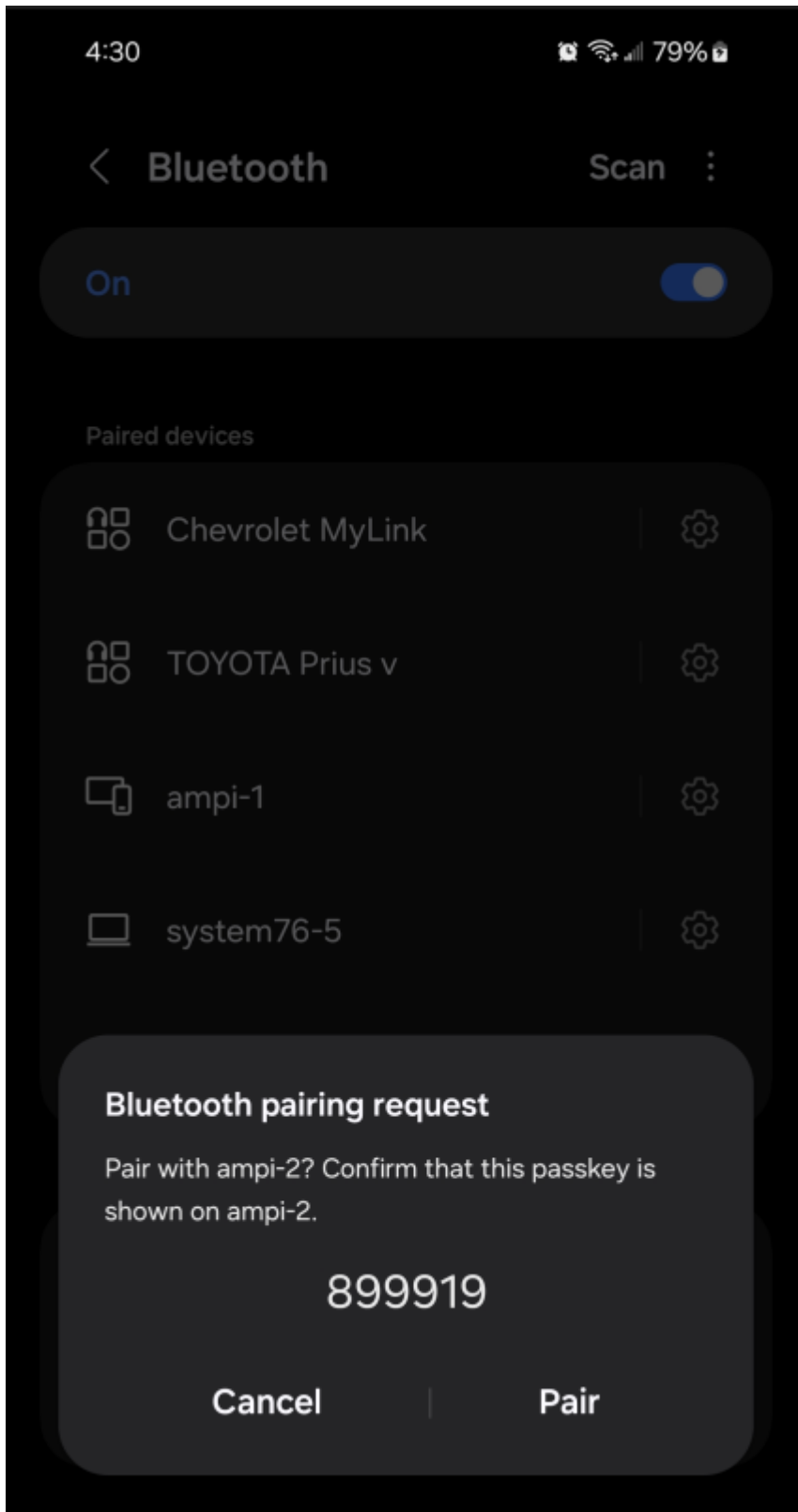
and select the file **serial_bluetooth_terminal_cfg.txt**

Using the App

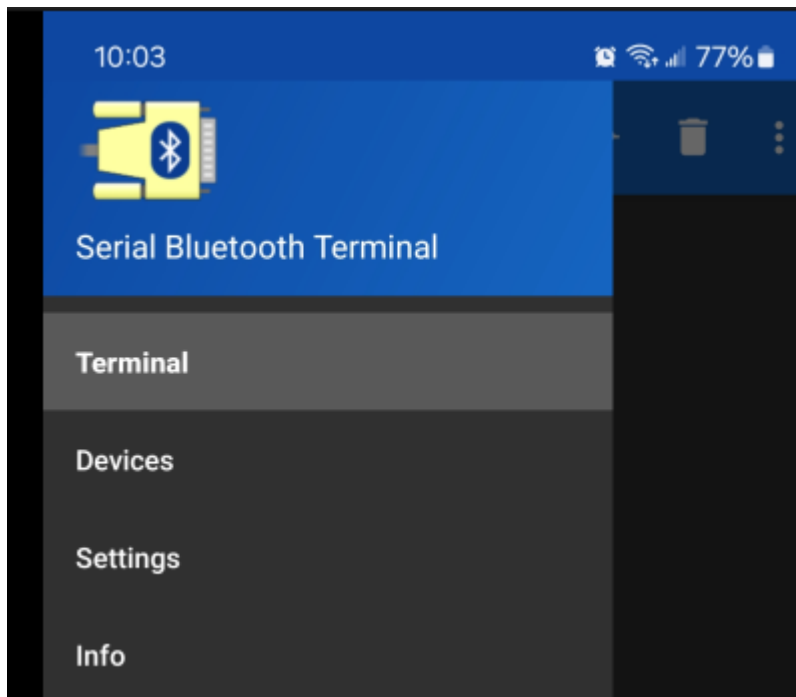
- Power up your ampi, optionally with a USB AudioMoth attached to it.
- Visit the Bluetooth settings screen on your phone
- Tap **Scan** until you see an available device named “ampi-1”, or “ampi-2” or ...:



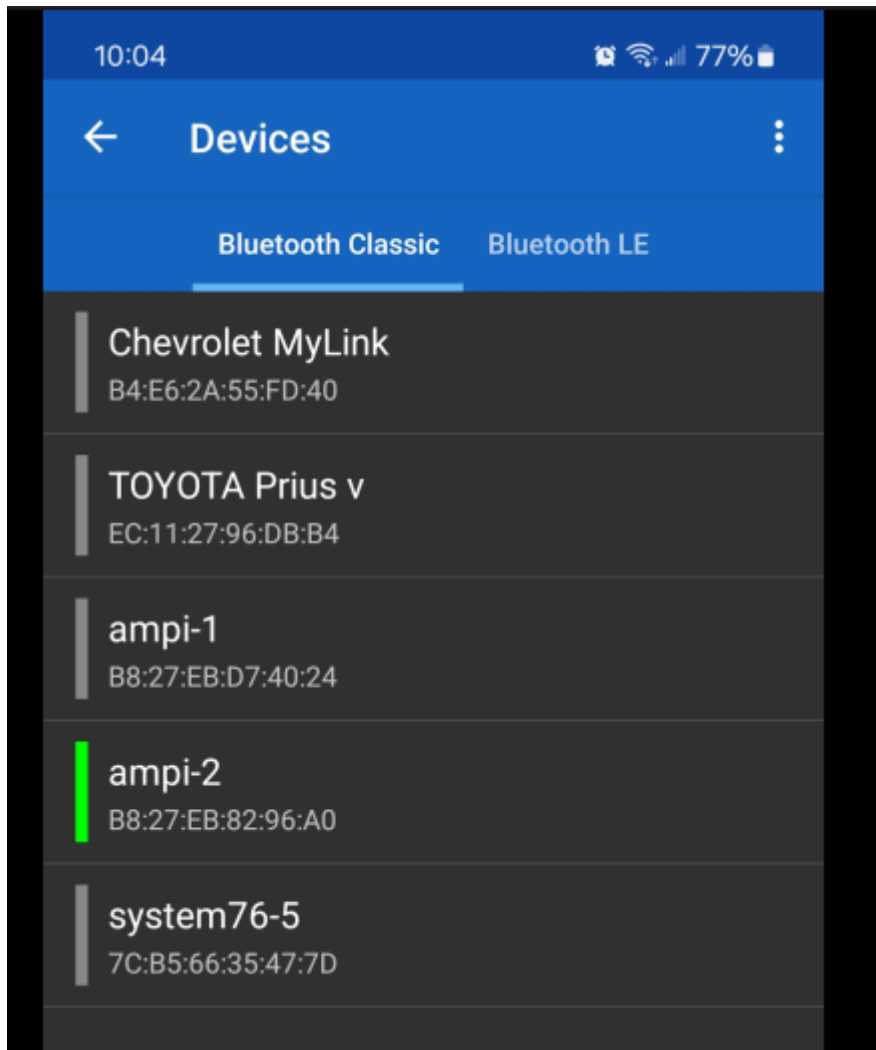
- Pair with the new ampi-XXX device, accepting whatever passkey is displayed.



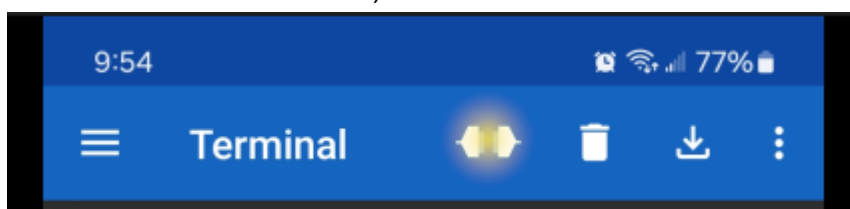
- Open the Bluetooth Serial Terminal App and from the left 3-bars menu select **Devices**:



- Select the device you just paired with (**ampi-1**, **ampi-2**, ...)



- In the main Terminal screen, tap the Connect symbol (pair of sideways acorns between Terminal and Trash):



Note: You might have to tap this symbol several times in order for the App to connect to your ampi.

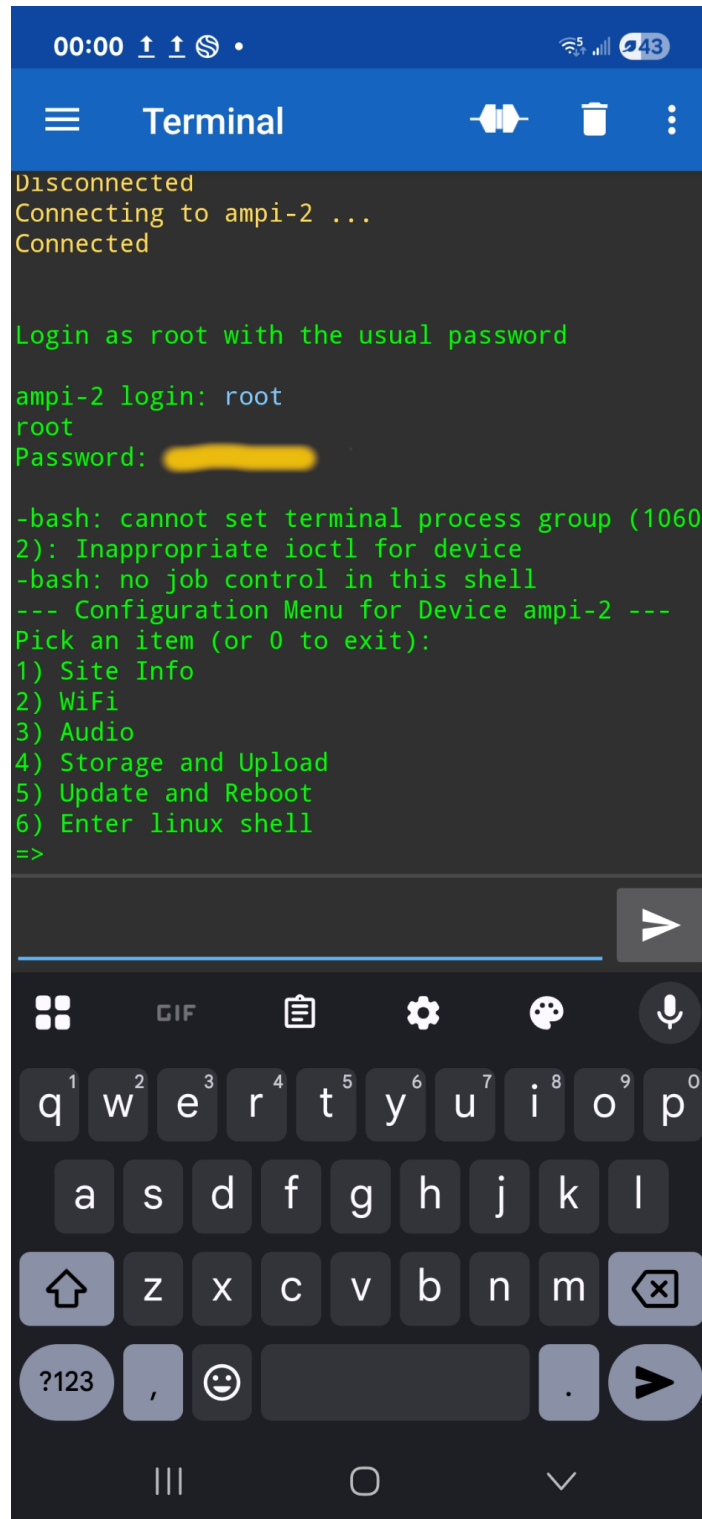
- After a successful connection, your phone should look something like this (Notice the change in the Connect symbol):



- Enter **root** as the login
- Enter the supplied password.

Note: when reconnecting, you can paste the supplied password from the History listing, available from the three dots menu at upper right.

- A connection and correct login will leave your phone looking like this:



The menu is described in the following section.

Using the App Menu with a Connected ampi

1. Site Info

These are the options:

- **Site Name:** lets you set a site name for the ampi. This name will be used as the prefix for all files uploaded to the Amazon cloud. It will also be the name of this ampi on the whoflewby.org dashboard (coming soon...), which is used to monitor the ampi fleet remotely. You can enter a new site name, or a blank entry to continue using the current sitename. The sitename should not include any underscore ('_') or space (' ') characters.

Note: names of recorded audio files will begin with the site name, but will also include a full timestamp.

Caution: entering a new sitename will immediately restart the audio capture process. Any files currently being recorded will be lost.

- **Lat/Long/Lat:** lets you set location. This is needed on-board if you set up a solar-based recording schedule, since e.g. sunrise times depend on location
- **Timezone:** this is used for interpreting time-of-day in schedules (e.g. 11:00) The device will need to reboot if you set a new timezone.

2. WiFi

This entry lets you select which local WiFi network the ampi should use, and to supply a passphrase. You can request a rescan if you do not see the network you wish to use. The WiFi network must use WPA2 or WPA3 security.

3. Audio

This entry lets you examine current activity, recent (last 3 hours) activity, and files awaiting upload to the cloud.

Note: the output from these choices is verbose. Please feel free to suggest a more helpful format!

You can also configure the Audiomoth with these settings:

- **Rate** (sampling rate, usually the smallest value at least as large as the recording sampling rate)
- **Gain** (typically we use the highest value, 33.0 dB)
- **Filter** (we don't usually, but you can select low, high, or band-pass filtering)
- **Energy Saver Mode** (not really sure what this does - check the AudioMoth documentation)
- **DC blocking** (filter below 48 Hz)

You can configure the recordings with these settings:

- **Sample rates for output files** (audio is resampled if this rate is lower than the audiomoth sampling rate)
- **Recording duration:** how long is each file?
- **Recording spacing:** how long do we wait between files?
- **Schedule:** NOT YET CONFIGURABLE BY THIS MENU

Finally, you can listen live to the AudioMoth (resampled, not compressed) through headphones plugged into the audio jack on the Pi. You can listen whether or not the audio is being recorded, and doing so doesn't affect the recordings.

4. Storage and Upload

This entry displays the amount of storage (used and free) on the ampi. The numbers include the Pi's operating system, as well as any data files currently queued for upload.

Note: although not currently enabled, we plan to add automatic spillover to any attached USB storage, to allow use at sites without internet. At that point, numbers in this entry will include that attached storage.

You can also use this menu to select a cloud destination where files will be uploaded (and then deleted from the Pi's storage). You can choose from a pre-configured set of Amazon AWS credentials for S3 buckets, or enter a new set of credentials.

5. Update and Reboot

This is functionality is not available for now.

6. Enter linux shell

This entry is for troubleshooting or exploration. It provides full root-level access to the Linux shell. If you accidentally go into this mode, enter **exit** to return to the menu, or simply tap the Connection symbol to disconnect from the ampi.

Caution: you can turn your ampi into a useless brick by messing around here - use with care (worst case scenario: the SD card has to be re-imaged; not that big a deal, but not something for which we have an end-user-friendly process yet!)

If the ampi becomes unresponsive due to something you have done here, try this:

- Disconnect power from the ampi
- Connect the ampi to a router with an ethernet cable
- Reconnect power to the ampi
- File an issue at the ampi repo on github(<https://github.com/ampi>)

Provisioning

- Create SD cards for the ampi using the image here.
- Create a Provisioning disk using the zip file here, unzipped to the top-level folder of a USB thumb drive.
- You provision by booting a Pi for the first time with the freshly-imaged SD card **and** with a provisioning disk plugged into a USB port. Doing this provides the ampi with credentials for the fleet server, where all the motus acoustic units are monitored.

The following screenshots walk you through writing the ampi OS image to an SD card. You have to set up a default user and enable the ssh server as shown.



Raspberry Pi

Raspberry Pi Device

RASPBERRY PI 3

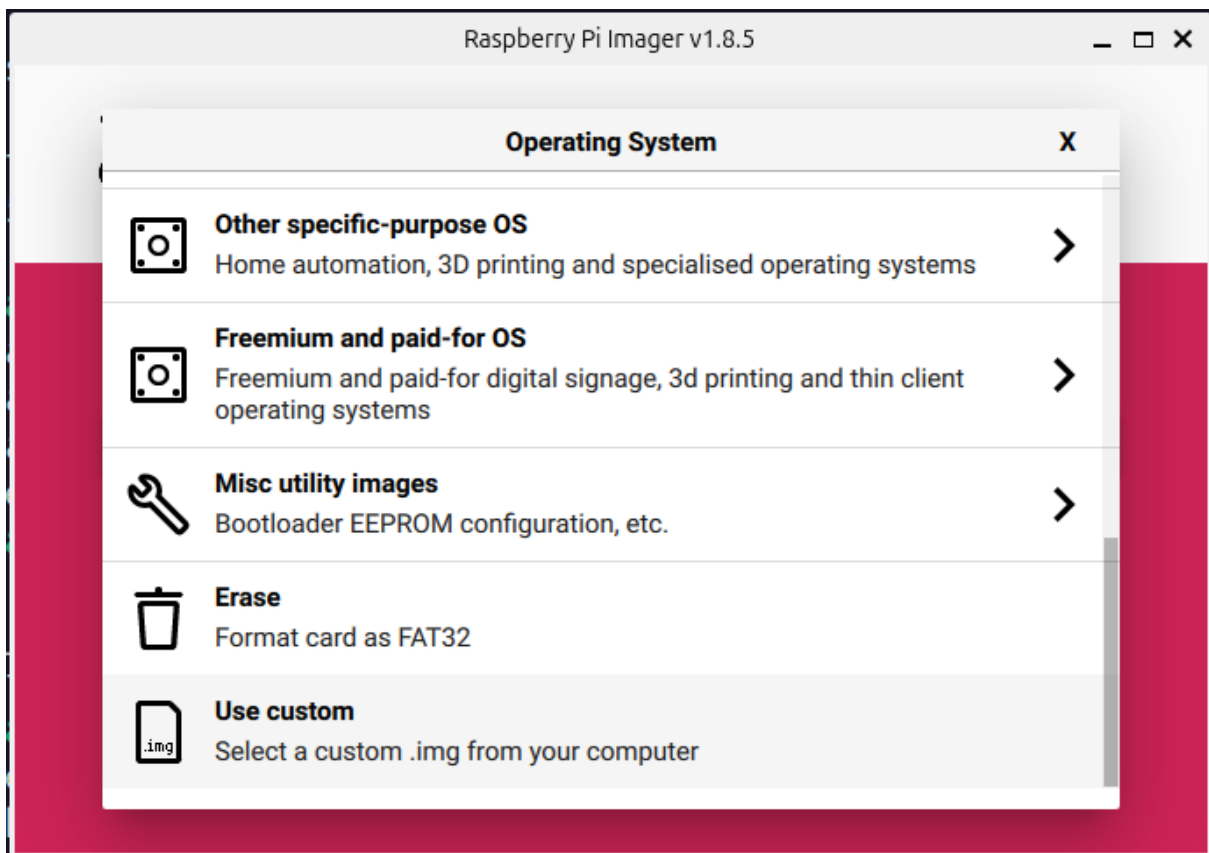
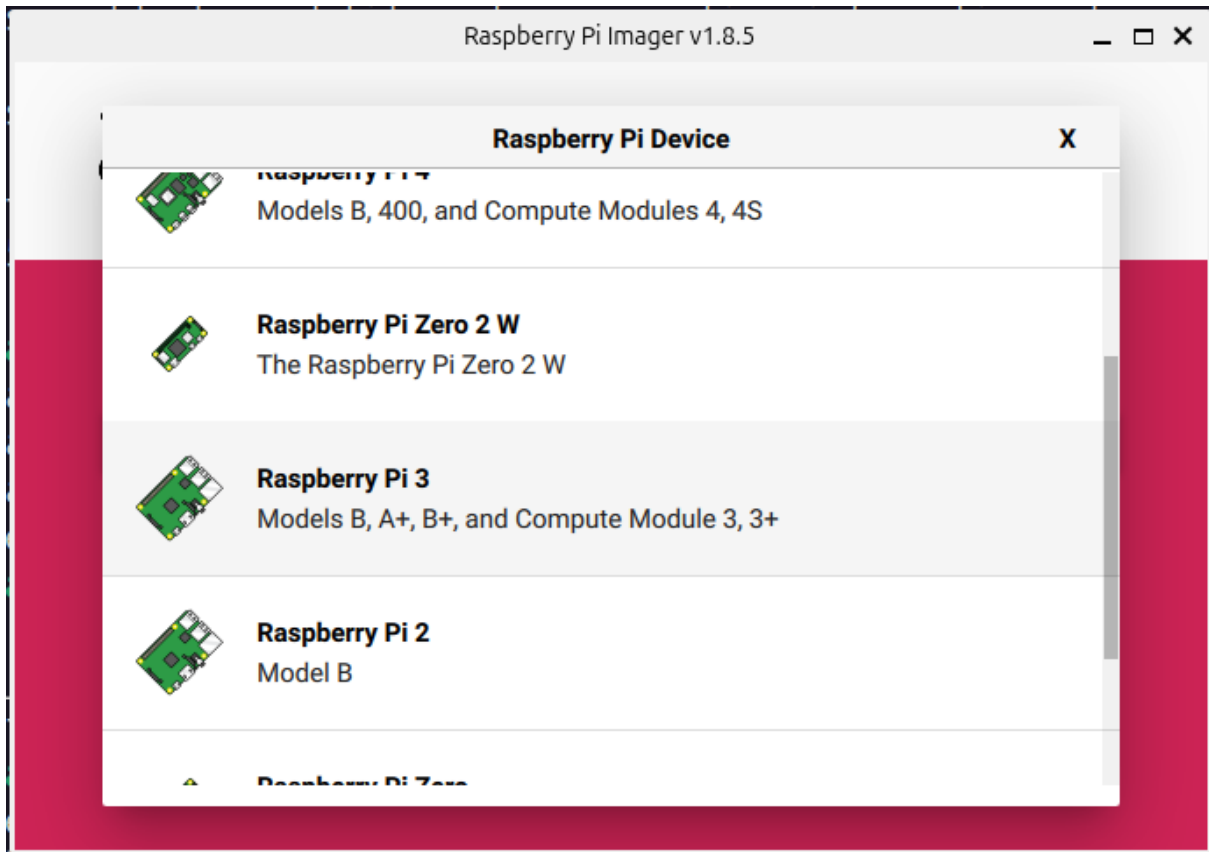
Operating System

CHOOSE OS

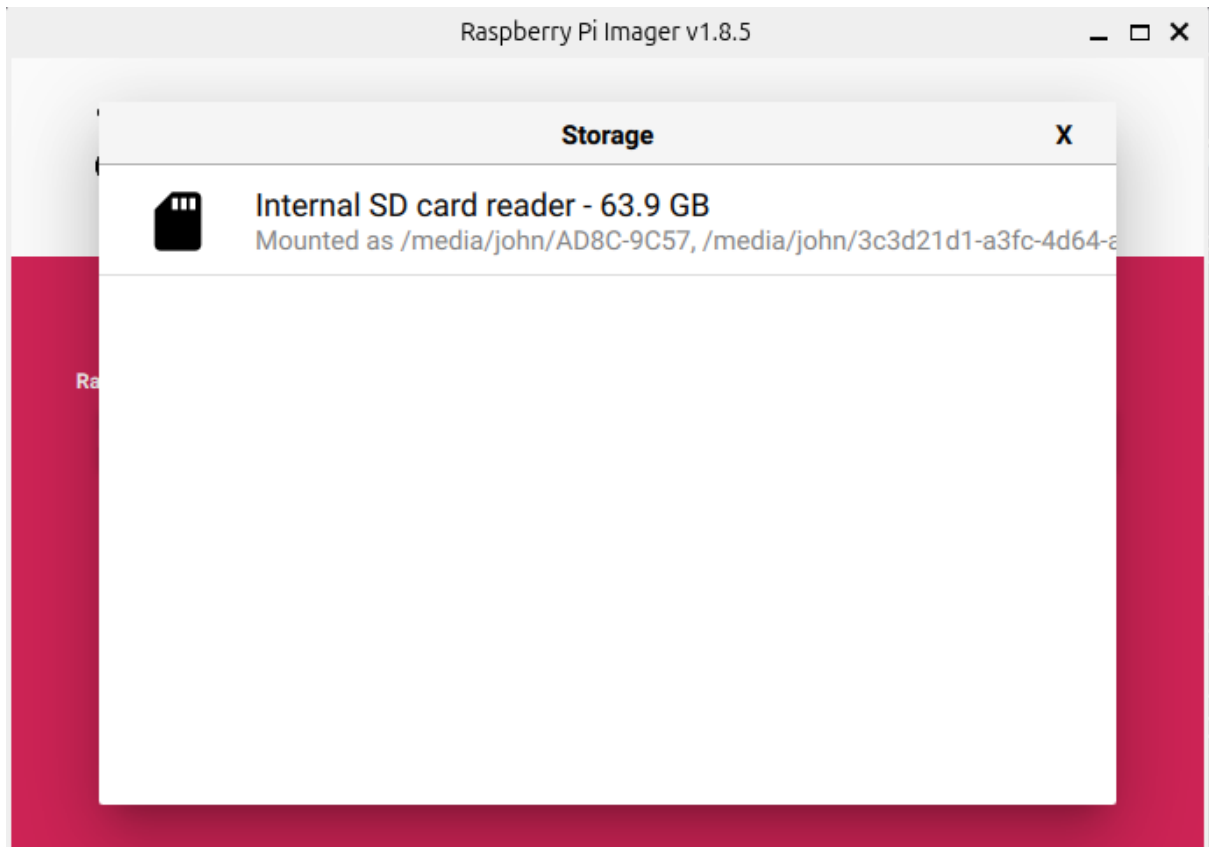
Storage

CHOOSE STORAGE

NEXT



- 2025-05-13-raspios-bookworm-arm64-lite.img
- 2025-05-13-raspios-bookworm-arm64-lite_fleetsie.img.xz
- ampi_files_for_usb_disk.zip
- firmware-stable.zip



GENERAL

SERVICES

OPTIONS

☒ Set hostname: .local☒ Set username and passwordUsername: Password: ☒ Configure wireless LANSSID: Password: ☐ Show password ☐ Hidden SSIDWireless LAN country: ☒ Set locale settingsTime zone: Keyboard layout:

SAVE

GENERAL

SERVICES

OPTIONS

☒ Enable SSH☒ Use password authentication☐ Allow public-key authentication only

Set authorized_keys for 'pi':

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGCfnqR
YrmbNvwd/bcPpk81vJwLKjIMXbBJEyNZI2qvYbHwNZU
Y2alC1BsXKAxatbXBH6+tV4NW4RyHatyf77NU8JAq9XN
VSSOrNtFUurs9SJuxfKi0mDK5uS1yPa2hxfrzAiaDeGnW
NkK5CMwaSToec8QOZuyYGfjI5nGDKIWB0lf5dNGrLUB
dyj+KTxkvWmqGgYK86w6WKd9DI84yrSNfjhojPDIYBMA
SxxDR+mm3LjeV9GaBNEt92brgEtr8eRiMCWxc1JPLAhq
CNILJO2HdEgu+fu8etBB9oLkue2+bGeBL3Cq5V343l+Zc
qoKbKFvbUE4ksocYWjRTA4IJ54i3uf0wClT9d+IlglQ7Q3o
wGoj80vcLWgMO5Z1KEtBSjVVjG1D1Z5G1TvX5cCpFP
XpjYaBduYSVmi3wuUNxVypkpSjj9oUYVj+29FDV5rfrjaG
hXwvVhI5ZLBg1pMrq60nBo4KBoJ+3xHI7sPFj/+dliYNlq
huzh21xPl/7qWrV6s= john@yoga
```

RUN SSH-KEYGEN

SAVE

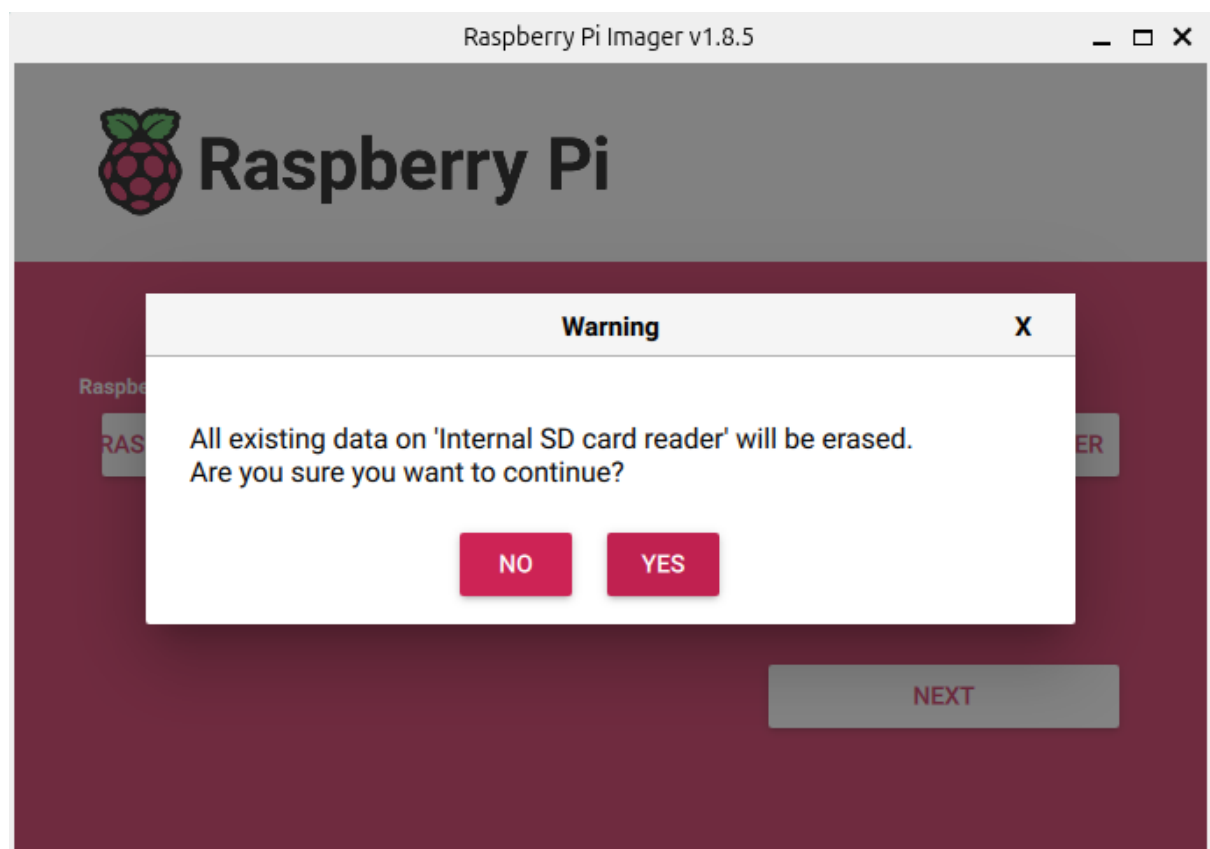
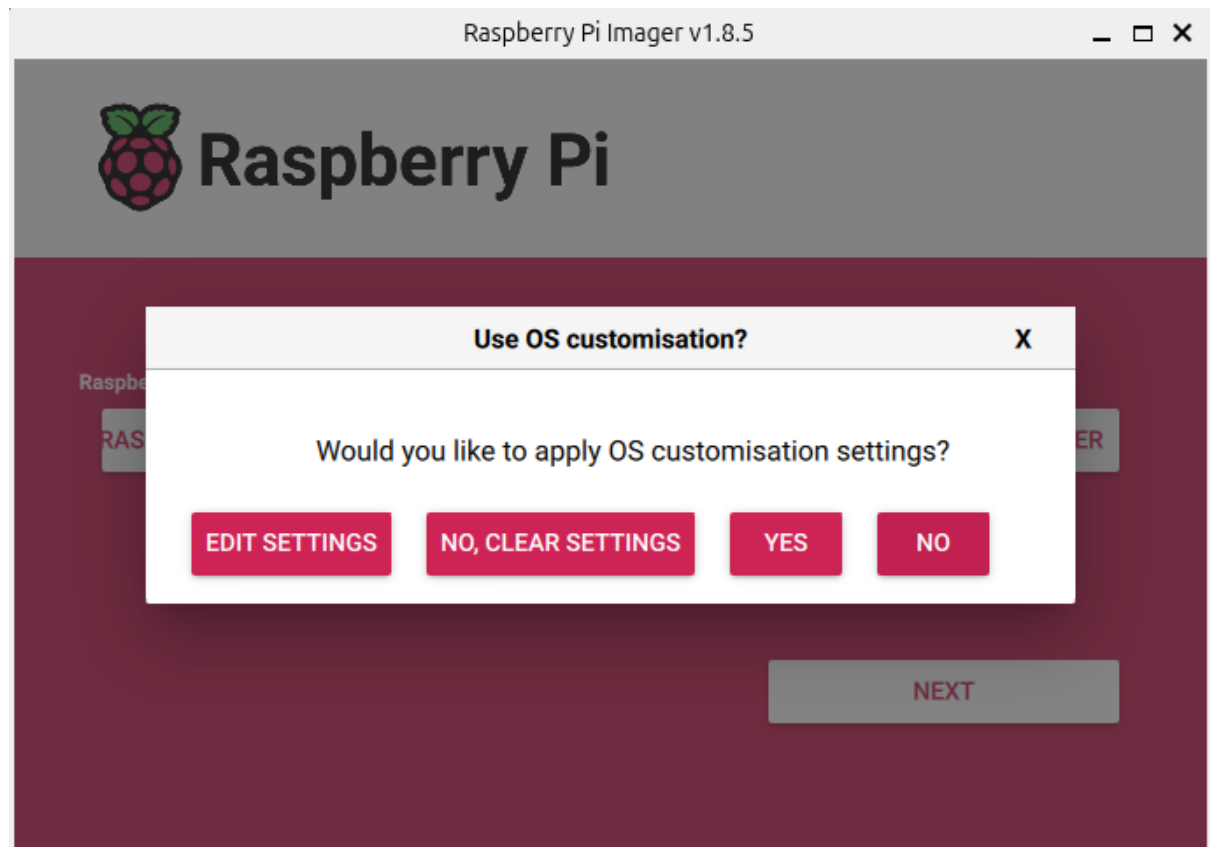
GENERAL

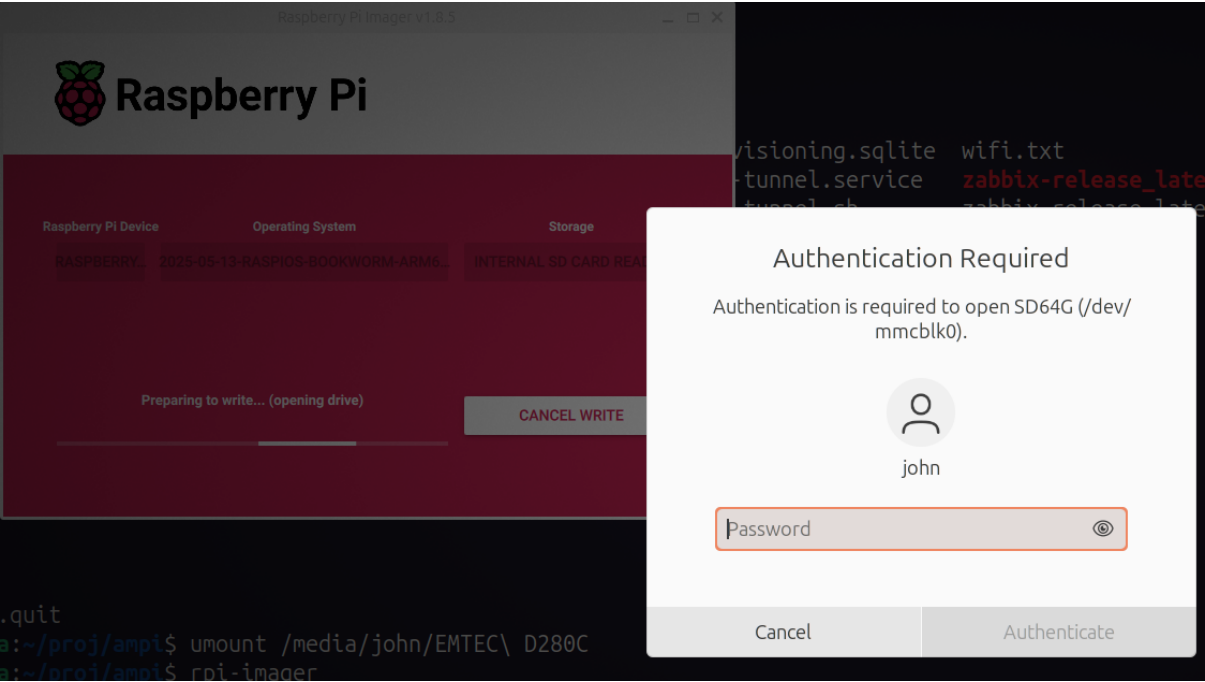
SERVICES

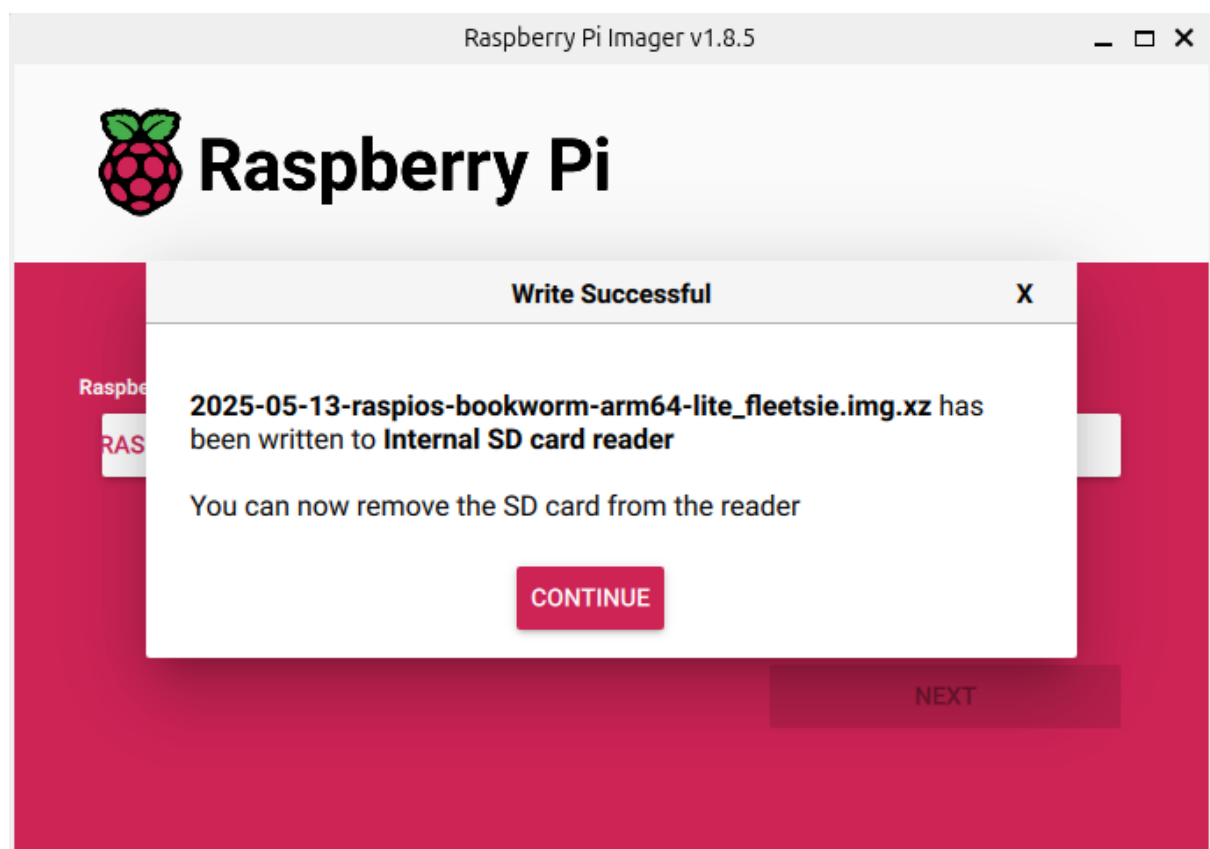
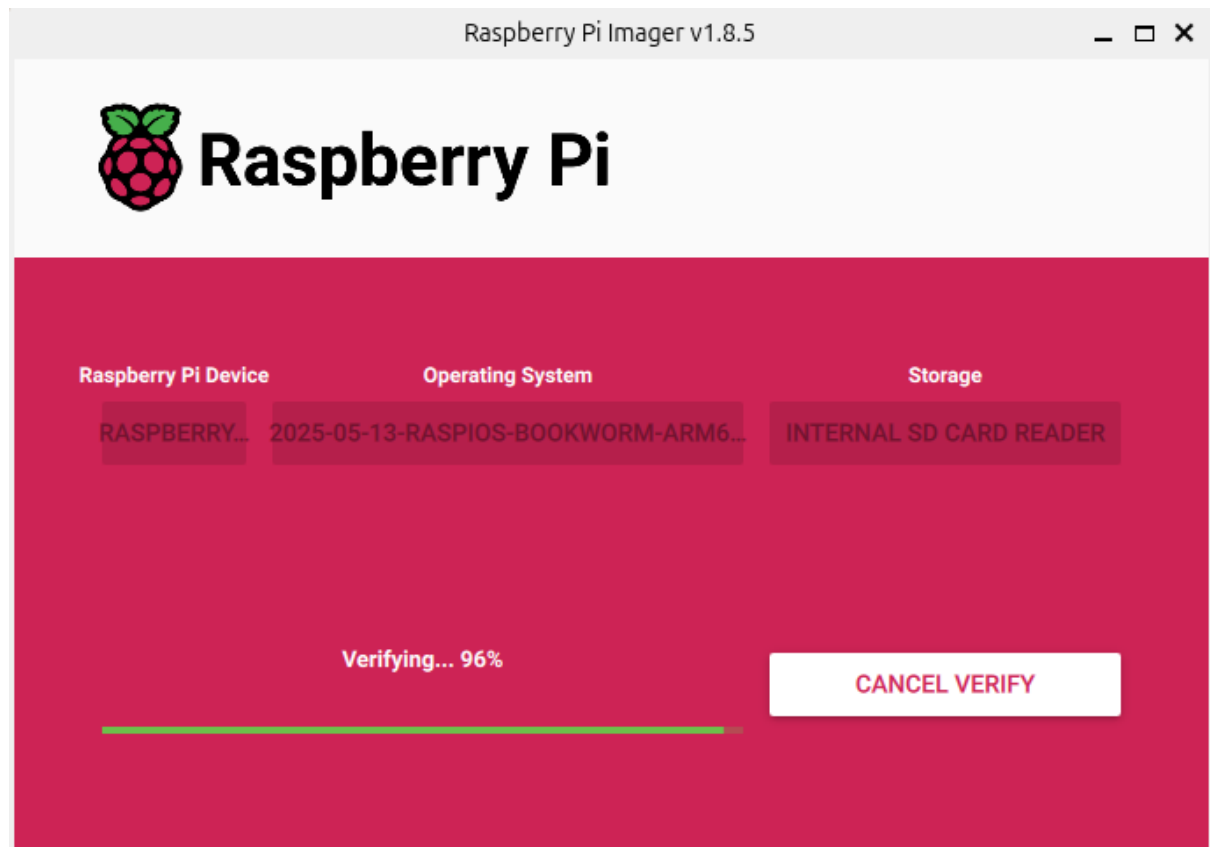
OPTIONS

☒ Play sound when finished☒ Eject media when finished☐ Enable telemetry

SAVE







March 28, 2025 - TODO

Updated Aug 15

[X] Provisioning

- create Raspberry Pi disk image for use with rpi-imager
- Disk image has run-first-time script to read wifi credentials and one-time-password from attached USB drive and uses this to connect to wfb server to obtain credentials there

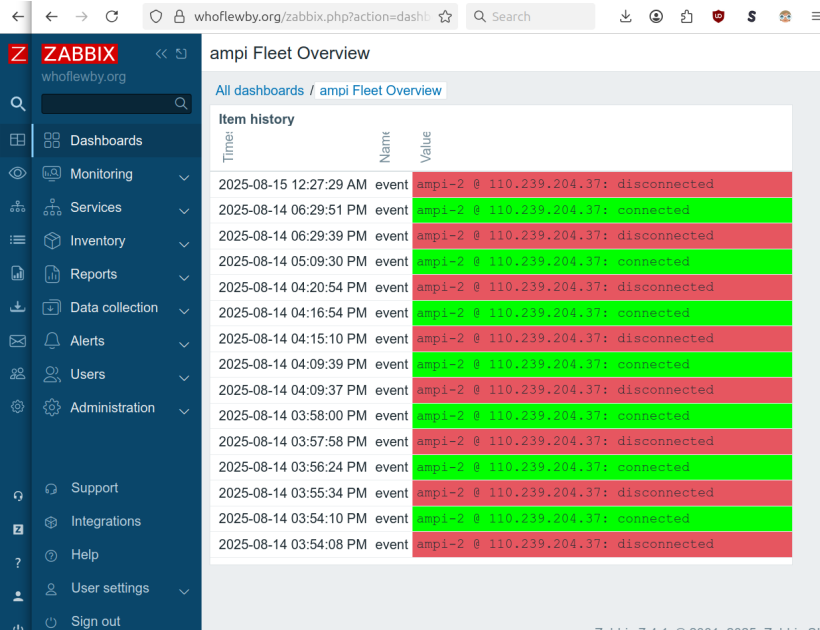
[X] Monitoring (partially)

- provisioning step should add host to dashboard host list (zabbix)
- design dashboard
- determine alerts
- live remote listening

[X] Fleet Management (partially)

- change acoustic parameters, sampling regime, data targets simultaneously across a subset of ampi
- push software updates
- Now possible via script run on the whoflewby.org server because each ampi can be logged into from there via ssh, but scripts haven't been written.

Here's a screenshot from zabbix, showing connection events for the ampi fleet



The screenshot shows the Zabbix web interface with the 'ampi Fleet Overview' dashboard. The dashboard displays a table of connection events for the 'ampi-2' host. The table has columns for Time, Name, and Value. The events show a sequence of 'connected' (green) and 'disconnected' (red) status changes for the host 'ampi-2 @ 110.239.204.37'.

Time	Name	Value
2025-08-15 12:27:29 AM	event	ampi-2 @ 110.239.204.37: disconnected
2025-08-14 06:29:51 PM	event	ampi-2 @ 110.239.204.37: connected
2025-08-14 06:29:39 PM	event	ampi-2 @ 110.239.204.37: disconnected
2025-08-14 05:09:30 PM	event	ampi-2 @ 110.239.204.37: connected
2025-08-14 04:20:54 PM	event	ampi-2 @ 110.239.204.37: disconnected
2025-08-14 04:16:54 PM	event	ampi-2 @ 110.239.204.37: connected
2025-08-14 04:15:10 PM	event	ampi-2 @ 110.239.204.37: disconnected
2025-08-14 04:09:39 PM	event	ampi-2 @ 110.239.204.37: connected
2025-08-14 04:09:37 PM	event	ampi-2 @ 110.239.204.37: disconnected
2025-08-14 03:58:00 PM	event	ampi-2 @ 110.239.204.37: connected
2025-08-14 03:57:58 PM	event	ampi-2 @ 110.239.204.37: disconnected
2025-08-14 03:56:24 PM	event	ampi-2 @ 110.239.204.37: connected
2025-08-14 03:55:34 PM	event	ampi-2 @ 110.239.204.37: disconnected
2025-08-14 03:54:10 PM	event	ampi-2 @ 110.239.204.37: connected
2025-08-14 03:54:08 PM	event	ampi-2 @ 110.239.204.37: disconnected

Field Maintenance

- replace bluetooth menu with ampi hotspot + web server to allow configuration / troubleshooting via web from any device (current scheme only works with Android)
- Booting without AM attached enables hotspot; AM can then be plugged in for configuration, listening, etc; as failsafe, 5 minutes after last web config activity, unit reboots to start normal monitoring (in case its internet connection uses WiFi)