



Arm Virtual Hardware Troubleshooting and FAQs

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Knowledge Base Article

Non-Confidential

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1. CPU Cores and Device Slot Limits

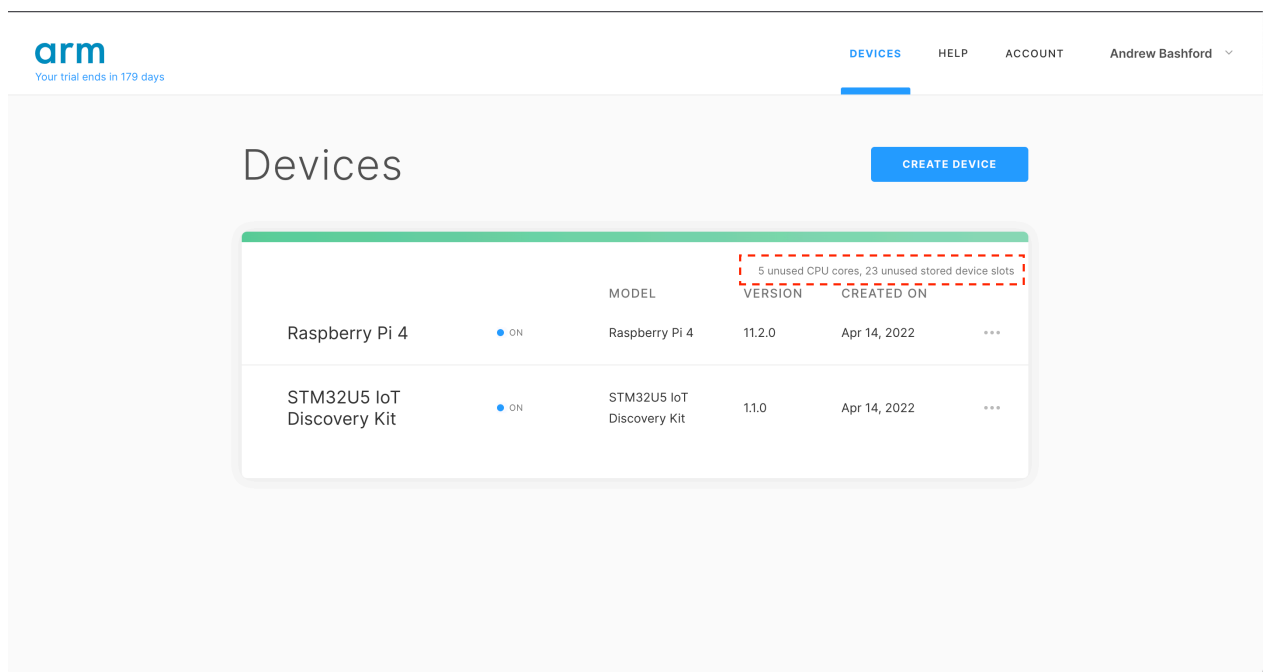
In AVH your account is initially provisioned with 10 CPU Cores and 25 Device Slots.

CPU Cores are the combined maximum number of cores you can have across all of your devices at any one time.

Device Slots are the combined maximum number of devices you can have in your devices list at any one time.

You can find out your current usage on the devices page.

Figure 1-1: CPU usage



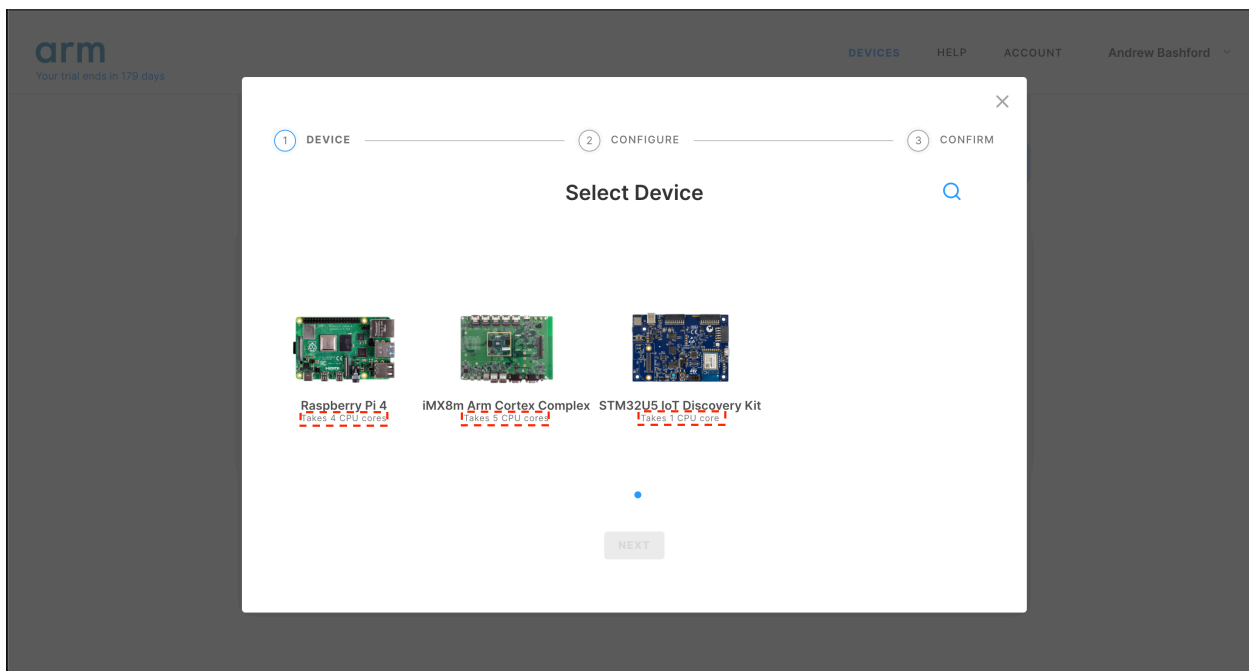
In the image above the user initially had 10 CPU Cores and 25 Device Slots.

The Raspberry Pi 4 device takes 4 CPU Cores and 1 device slot. The STM32U5 IoT Discovery Kit takes 1 CPU Cores and 1 device slot.

If you delete a device you will get the number of CPU Cores it occupied and Device Slot credited back to your account.

You can see how many CPU Cores a device requires before you create it.

Figure 1-2: Select device



The number of cores per device:

- Raspberry Pi 4 - Takes 4 CPU cores
- iMX8m Arm Cortex Complex - Takes 5 CPU cores
- STM32U5 IoT Discovery Kit - Takes 1 CPU core

To request more CPU Cores and Device Slots please click on the chat button in the bottom right of the screen and send us a message with how many more you would like and their intended purpose.

2. Using the console interactively

The console of devices running Linux can sometimes be flooded with system and kernel logs, making it difficult to use interactively.

If you're using the console interactively, you may want to run `dmesg -n 1` to prevent all messages, except emergency (panic) messages. Run `dmesg -n 4` to restore the default behaviour, and run `dmesg -n 7` to log all messages to the console.

3. FAQ - My VPN keeps disconnecting

The VPN is only active when at least one device in the project is in the On state. If all devices are off, or if no devices exist in the project, then the VPN will disconnect. It will reconnect when a device in that project turns on.

4. FAQ - What is a core?

You are allotted a certain number of CPU cores, and you can run as many virtual devices as that number of CPUs will permit at a time.

These CPU cores correspond to the number of CPU cores available on the Arm servers assigned to that account. Each virtual device requires a certain number of CPU cores in order to run.

For instance, if you have a 12-core account, you can spin up two 6-core devices for your first test run, then you could turn those off for storage and create six 2-core devices for the next test. For every two active CPU cores allotted to your account, you can store up to five devices in an Off state.

The number of cores per device:

- Raspberry Pi 4 - Takes 4 cores
- iMX8m Arm Cortex Complex - Takes 5 cores
- STM32U5 IoT Discovery Kit - Takes 1 core

5. Deleting your AVH account

Deleting your AVH account will permanently remove your account from AVH. All data, devices and snapshots will be erased.

Deleting your AVH account does not delete or alter your Arm account that you use to sign into AVH.

Once deleted should you wish to create a new AVH account you can sign up again as long as you have an active Arm Account.

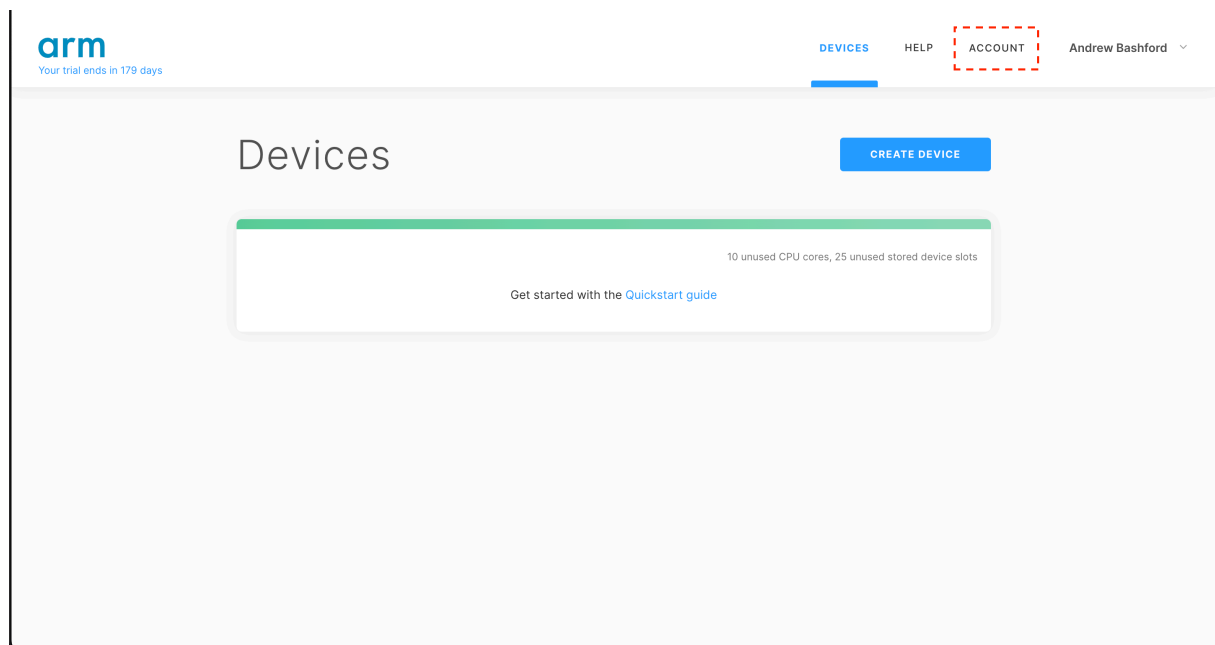
If your Arm account is deleted or suspended your access to AVH will be removed.

5.1 Deleting your account

To delete your account:

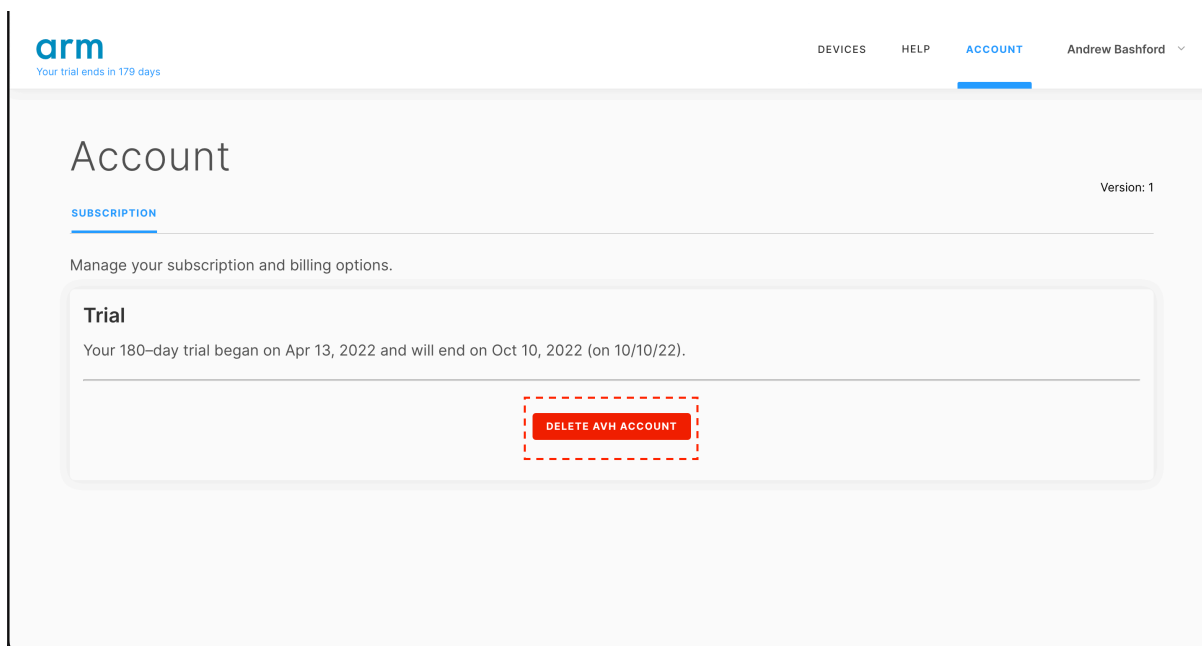
1. To delete your account go to ACCOUNT in the navbar.

Figure 5-1: Account



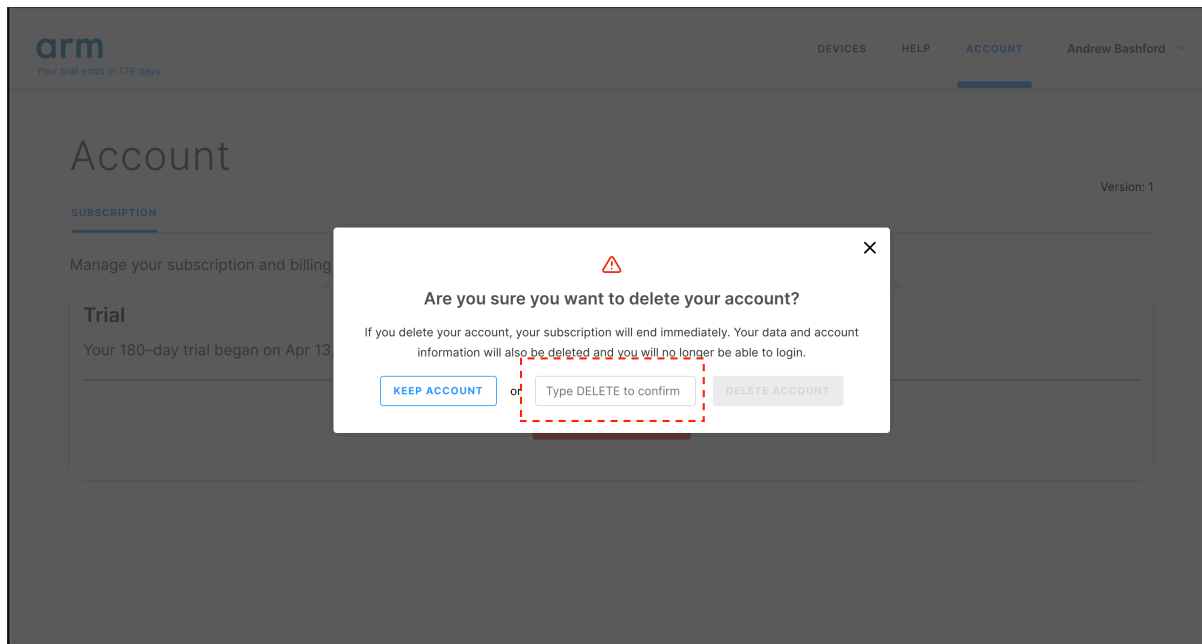
2. Click DELETE AVH ACCOUNT.

Figure 5-2: Delete AVH account



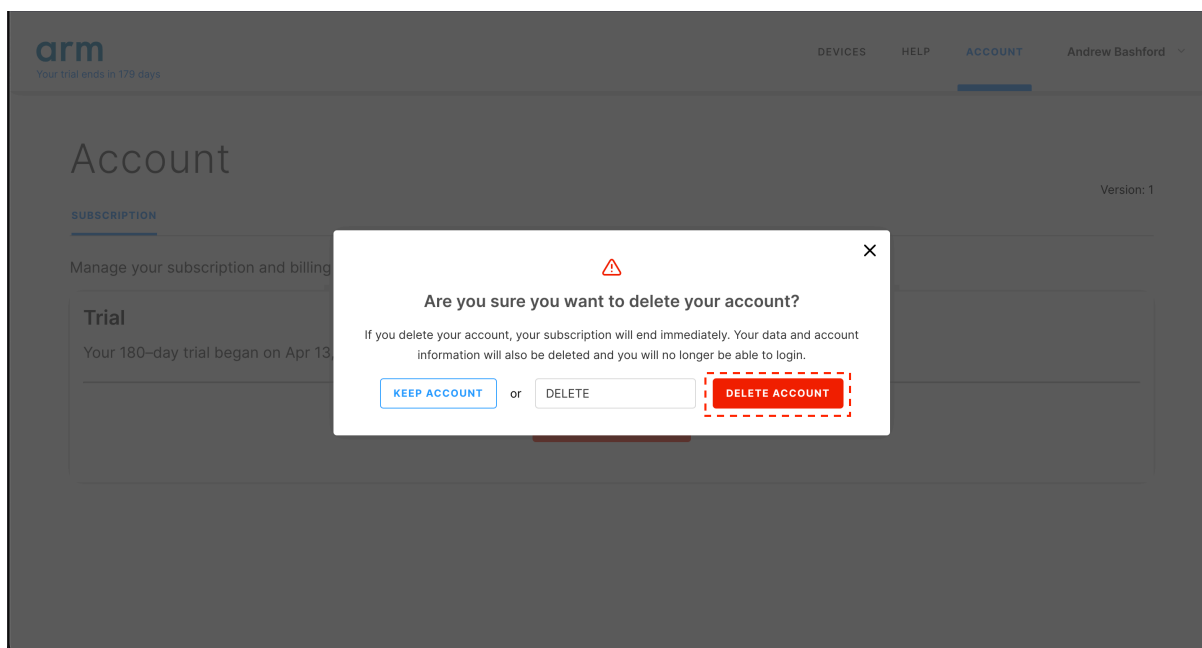
3. Type DELETE into the input, it is case sensitive.

Figure 5-3: Type DELETE



4. Click DELETE ACCOUNT to confirm deleting your account. All of your data will be permanently deleted.

Figure 5-4: Click DELETE ACCOUNT



6. Updating the Raspberry Pi 4 Kernel

Follow these steps to fix your kernel after updating your virtual Raspberry Pi 4 board.

6.1 Table of Contents

This section contains the following:

- [Updating the Raspberry Pi 4 Kernel](#)
 - [Update Using the Console Command Line](#)
 - [Update Using the Welcome to Raspberry Pi GUI on the Desktop Firmware](#)
- [Identifying Issues with the Device Kernel](#)
 - [List the Loaded Kernel Modules](#)
 - [Try to Install and Run Docker](#)
- [Fixing the Updated Kernel File](#)

6.2 Updating the Raspberry Pi 4 Kernel

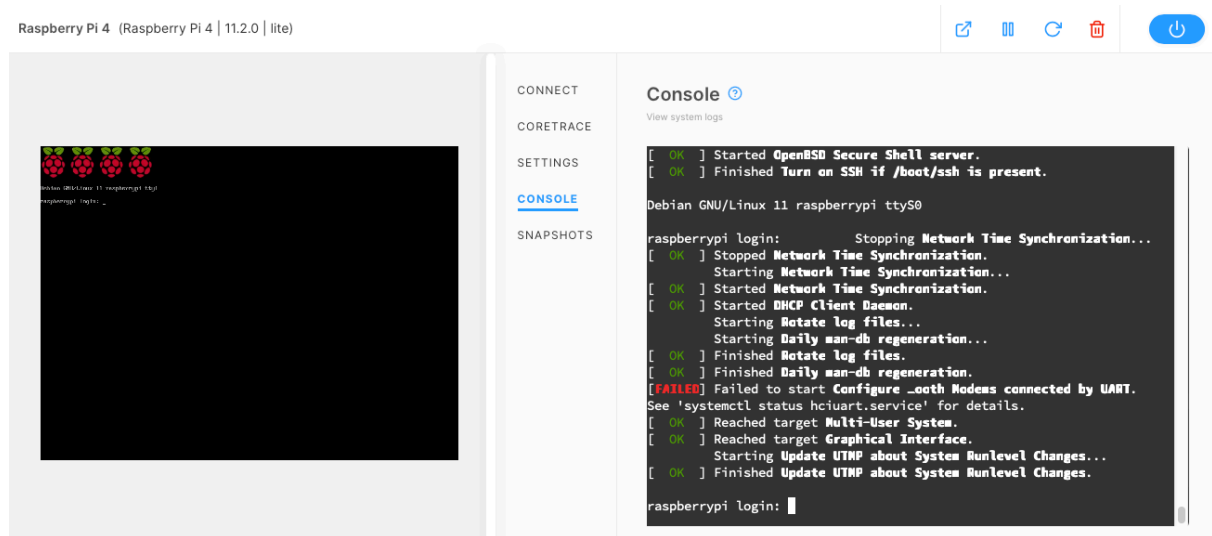
You can update the kernel using either the command line or the Desktop firmware's "Welcome to Raspberry Pi" GUI.

6.3 Update Using the Console Command Line

To update the kernel using the console command line:

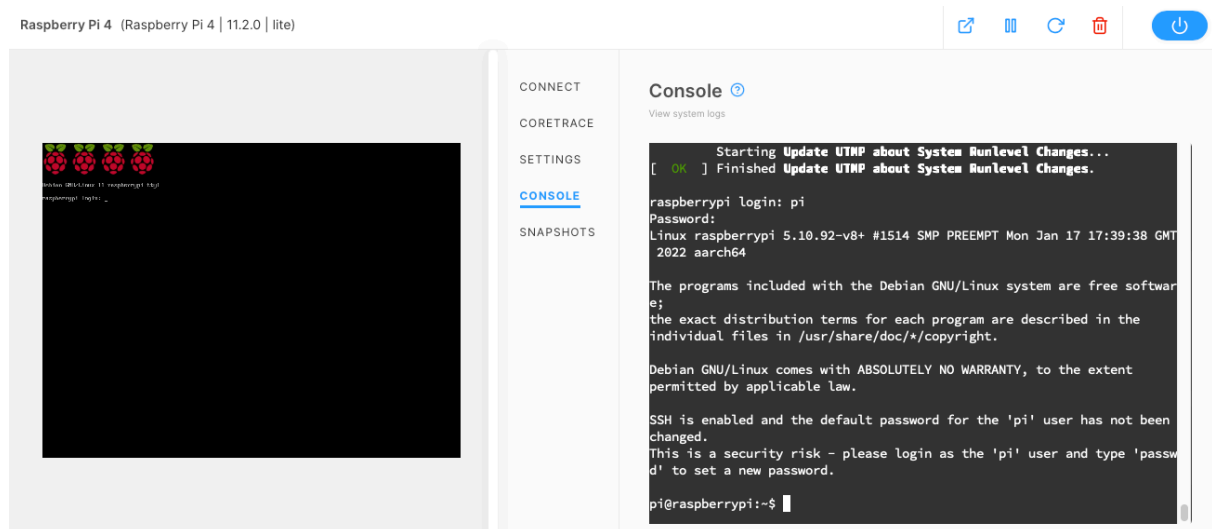
1. Open the Console tab and press return to show the login prompt.

Figure 6-1: Open Console tab



2. Log in with the username `pi` and password `raspberrypi`.

Figure 6-2: Logged in



3. Update the device using:

```
sudo apt-get update && sudo apt-get upgrade -y
```

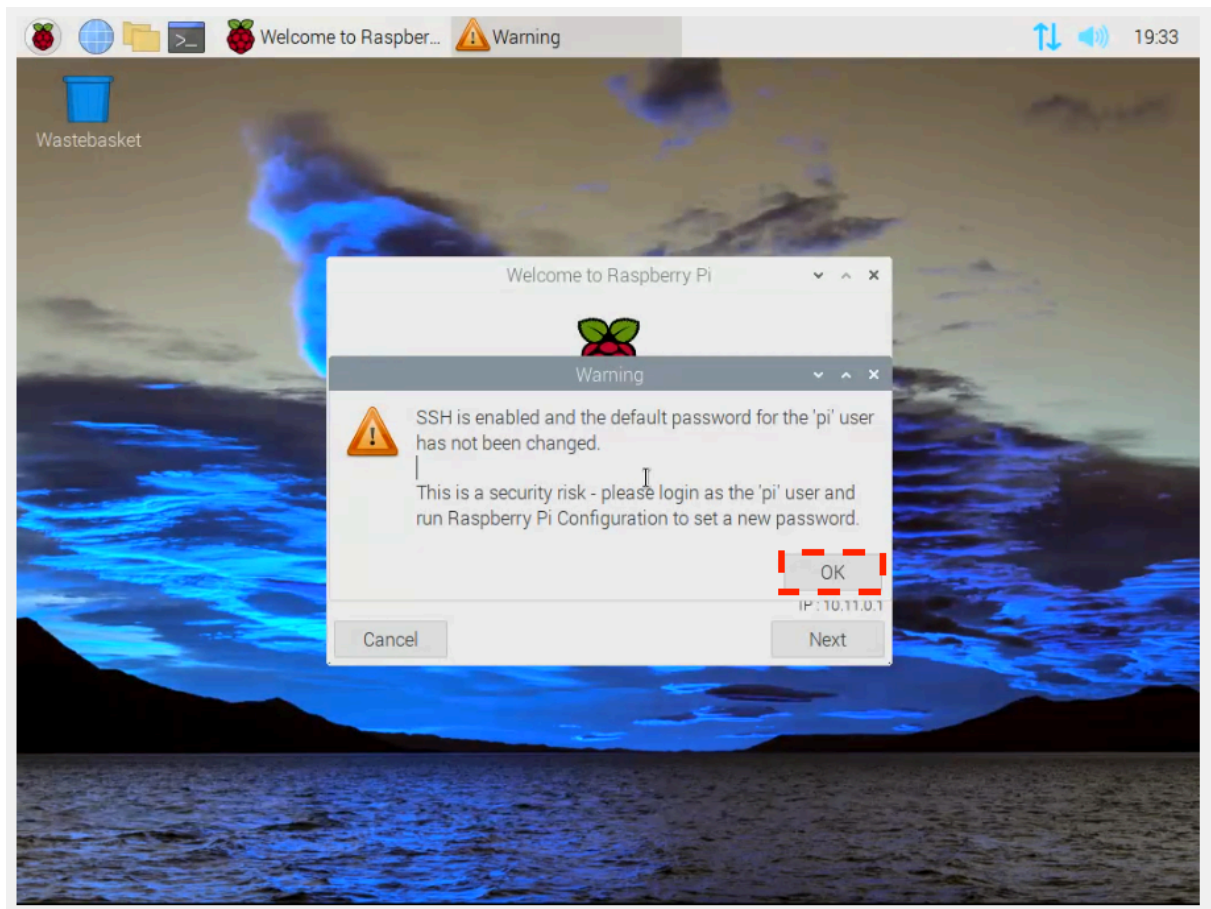
4. When the installation is complete, click the Restart button towards the top-right.
5. Continue to the [Identifying Issues with the Device Kernel](#) section to check for issues with your kernel.

6.4 Update Using the Welcome to Raspberry Pi GUI on the Desktop Firmware

To update the kernel using the desktop firmware GUI:

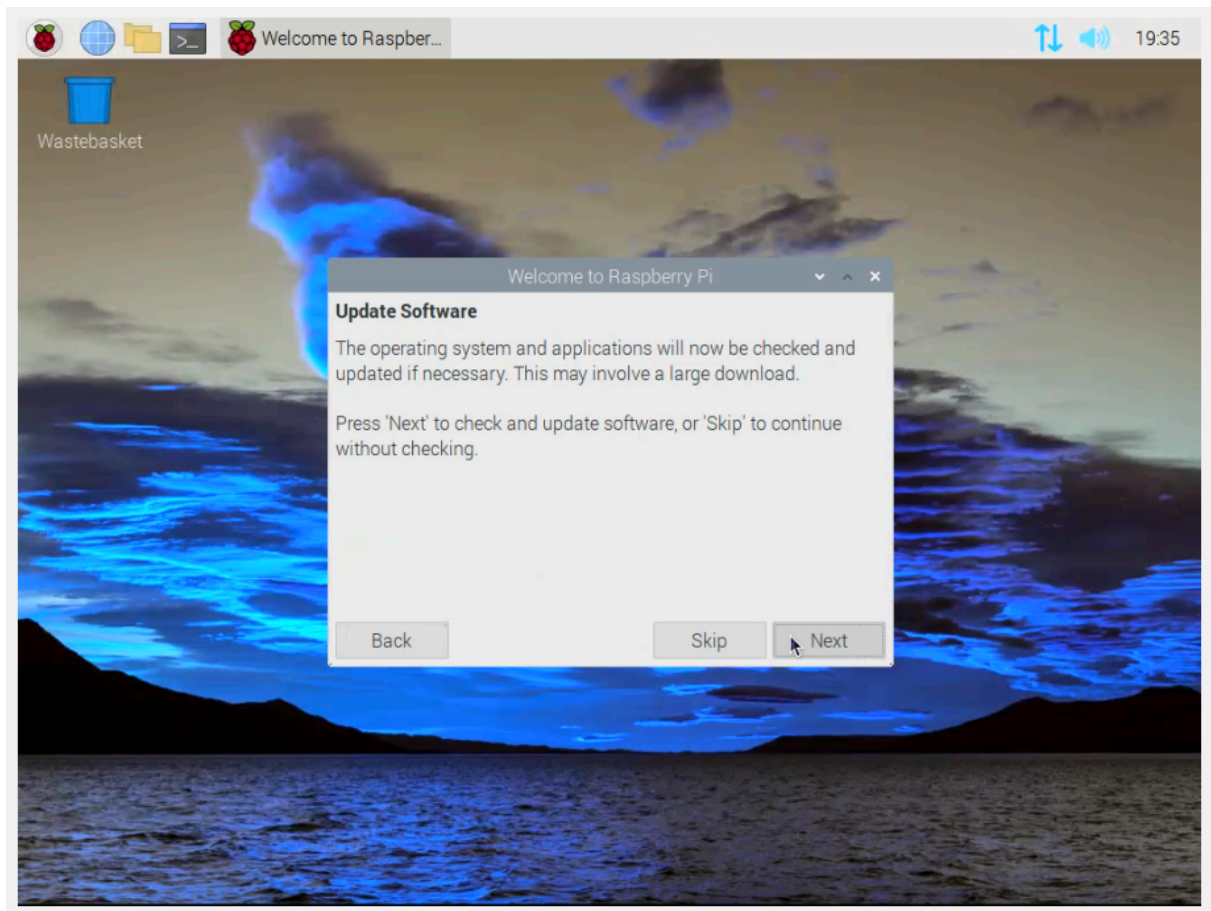
1. Create a Raspberry Pi 4 device using the stock firmware `Raspberry Pi OS Desktop (11.2.0)`.
2. Close the warning window about the default SSH password.

Figure 6-3: Close SSH popup



3. Click through the Welcome to Raspberry Pi window.
4. The last screen will ask if you want to update. Click Next.

Figure 6-4: Update software



5. Restart the device when the update completes.
6. Continue to the [Identifying Issues with the Device Kernel](#) section to check for issues with your kernel.

6.5 Identifying Issues with the Device Kernel

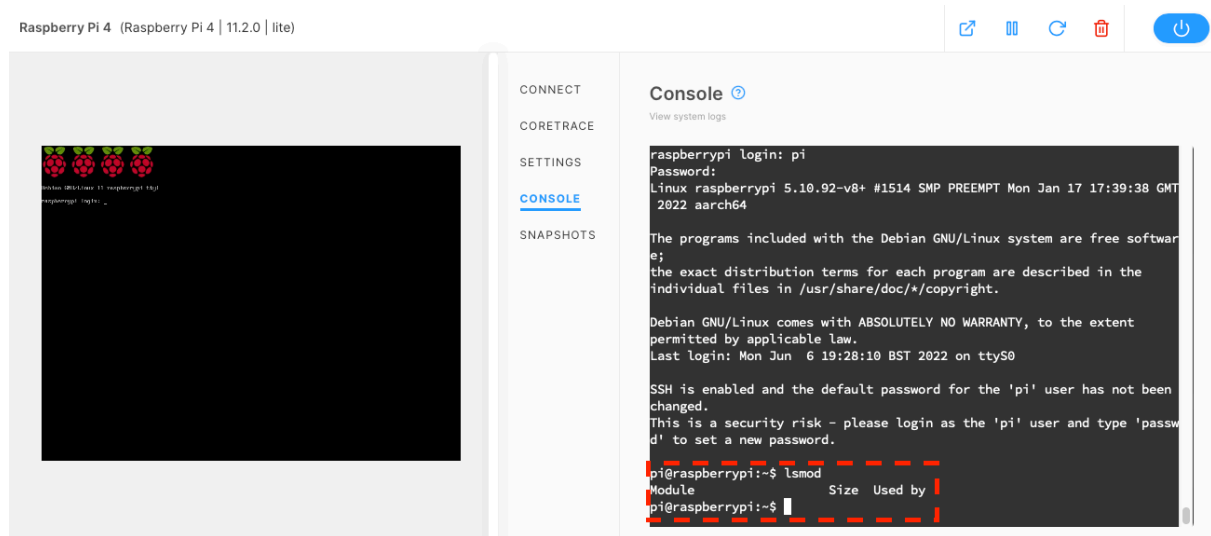
In this section we check if modules are loaded into the kernel and try to install and run Docker.

6.6 List the Loaded Kernel Modules

To list the loaded kernel modules:

1. Run `lsmod` in the console to list the modules that are loaded into the kernel.

Figure 6-5: List the loaded kernel modules



2. Review the results.

- If the list is empty (or nearly empty,) you likely have kernel issues that need to be manually resolved. Continue to the [Fixing the Updated Kernel File](#) section to correct your issue.
- If the list comes back with multiple results, such as xt_conntrack, nft_chain_nat, xt_MASQUERADE, nf_nat, nf_conntrack_netlink, nf_defrag_ipv6, nf_defrag_ipv4, nf_conntrack, nft_counter, xt_addrtype, nft_compat, nf_tables, and nfnetlink, the kernel is likely behaving normally.

6.7 Try to Install and Run Docker

Running docker requires a properly configured kernel. If docker installs but the service fails to run, you may be having an issue with your updated kernel.

1. Install docker and look for a `Job for docker.service failed` message.

```
sudo apt-get update && sudo apt-get install -y docker.io
```

Figure 6-6: Job for docker service failed

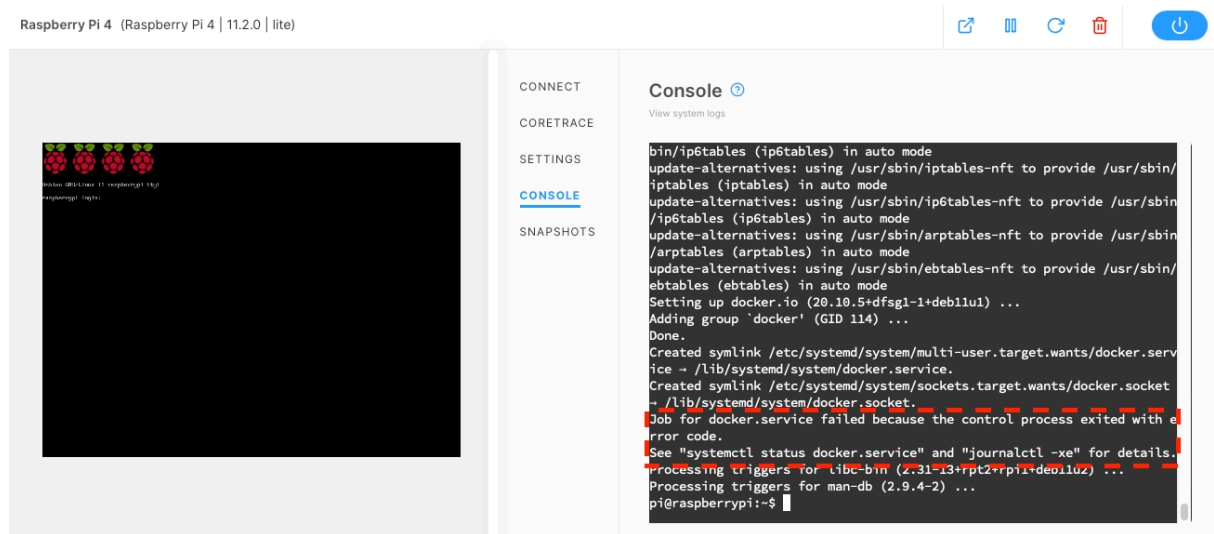
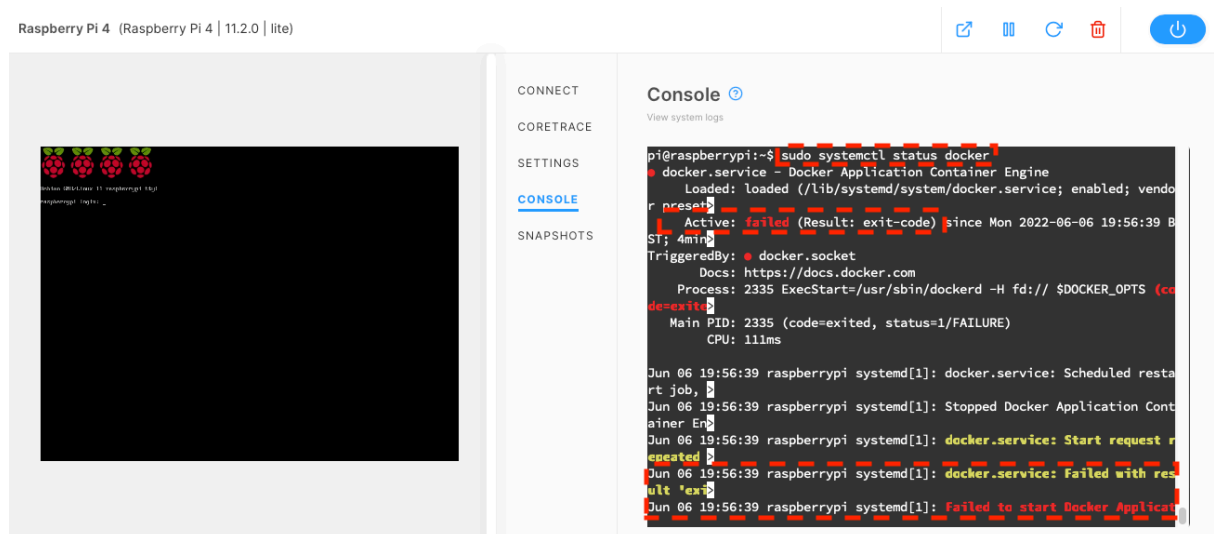


Figure 6-7: Docker failed

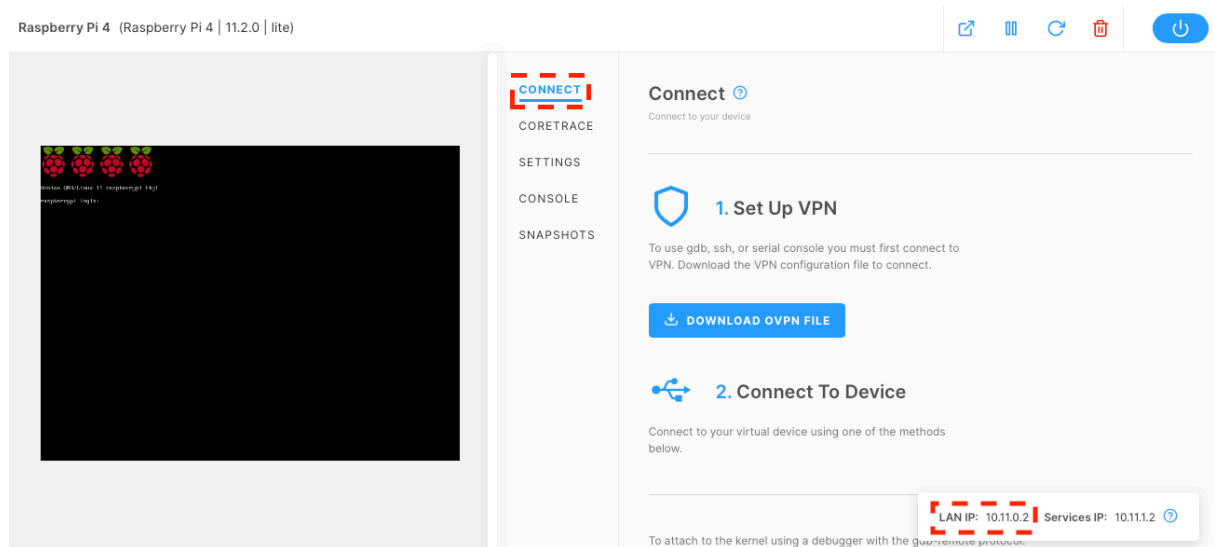


6.8 Fixing the Updated Kernel File

To fix the updated kernel file:

1. Connect to your device's VPN using the Connect tab.
2. Find your device's LAN IP on the bottom-right of the Connect tab. In our example, we will use 10.11.0.2.

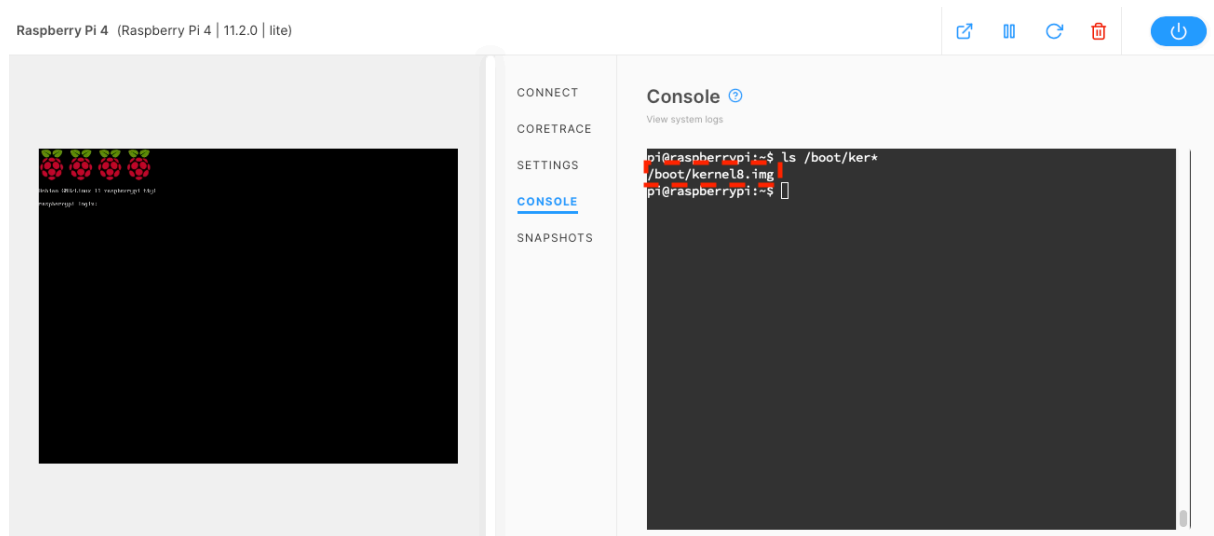
Figure 6-8: Find your LAP IP



3. On your virtual device, locate the path to your kernel file. In our example, we will use `/boot/kernel8.img`.

```
ls /boot/ker*
```

Figure 6-9: Locate the kernel img file



4. From your computer's terminal, download the VM's kernel using scp and the LAN IP and kernel path we just found.

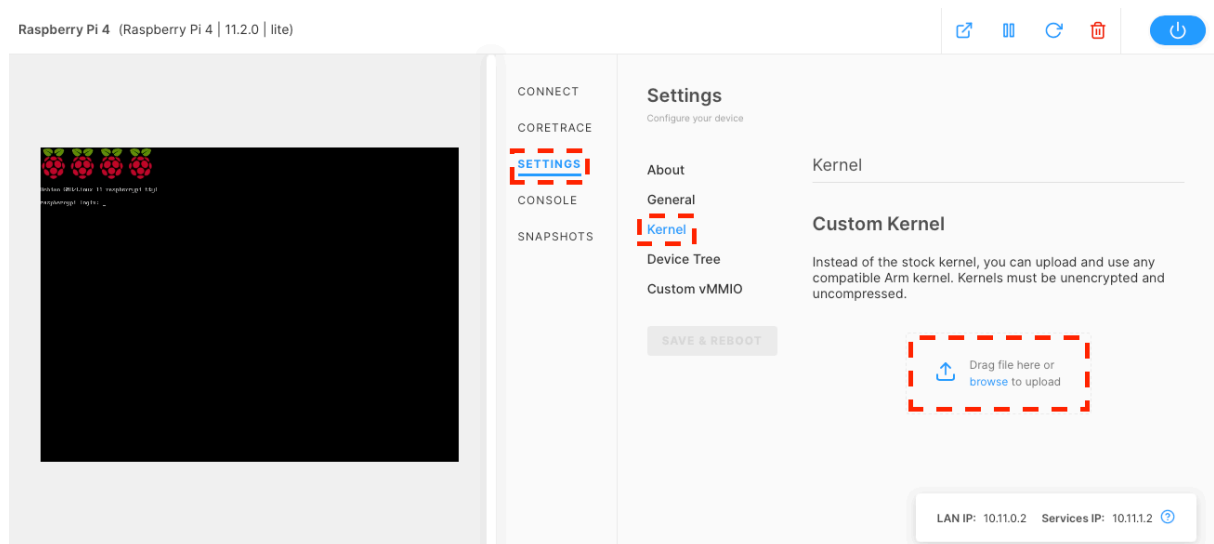
```
scp pi@10.11.0.2:/boot/kernel8.img ./
```

5. Extract the img file.

```
gunzip -cd kernel8.img > kernel
```

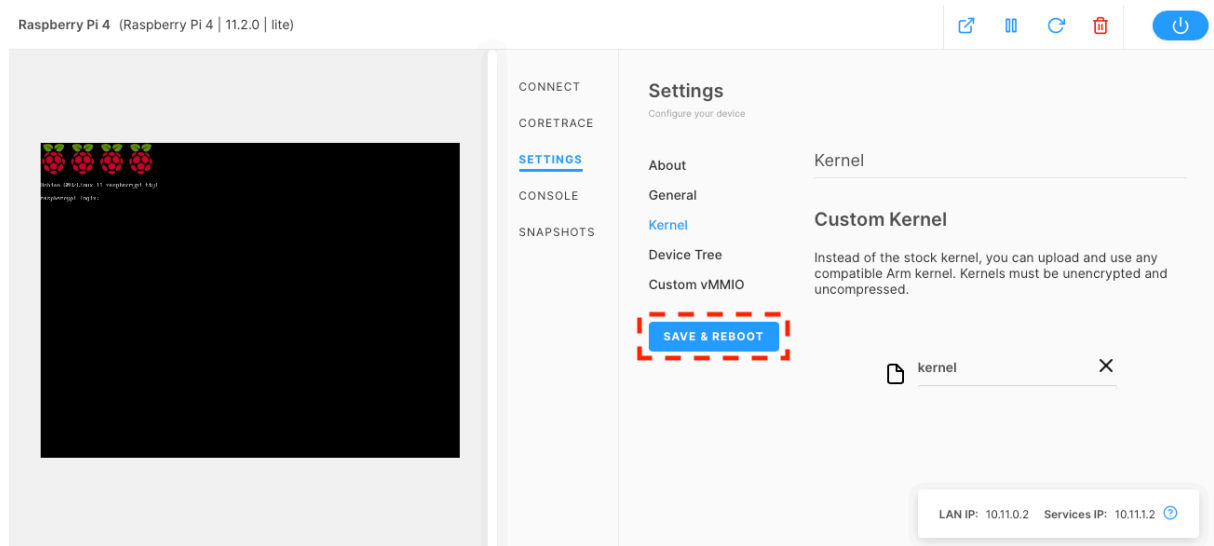
6. Upload the kernel file in the Kernel section of the Settings tab.

Figure 6-10: Upload new kernel



7. Wait for the upload to complete then click SAVE & REBOOT.

Figure 6-11: Save & reboot



8. Confirm the kernel is working properly using `lsmod` or `sudo systemctl status docker`.

Figure 6-12: Modules are loaded

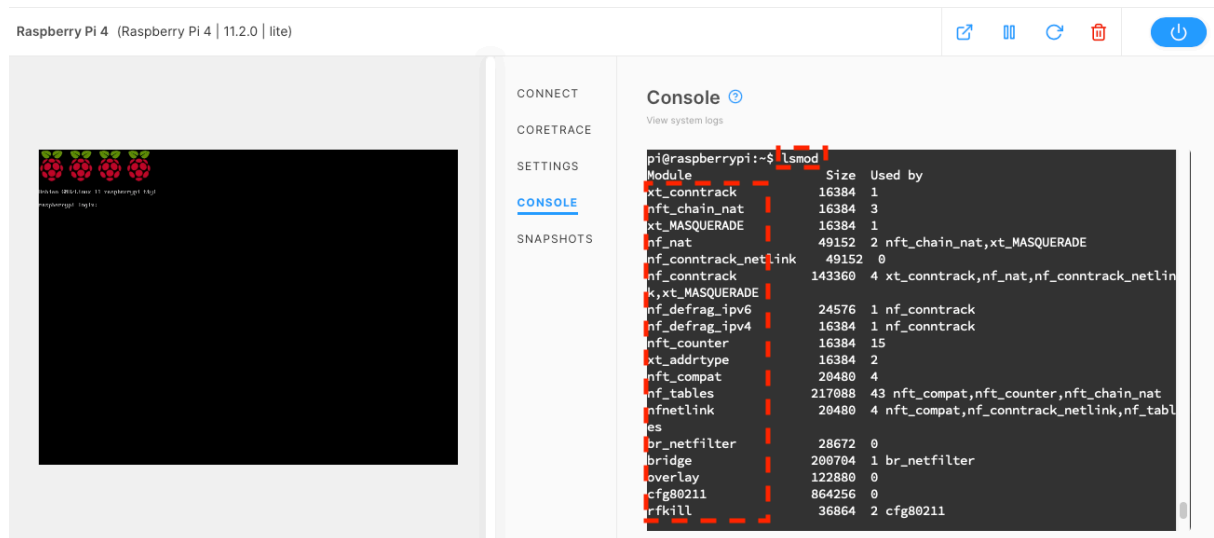
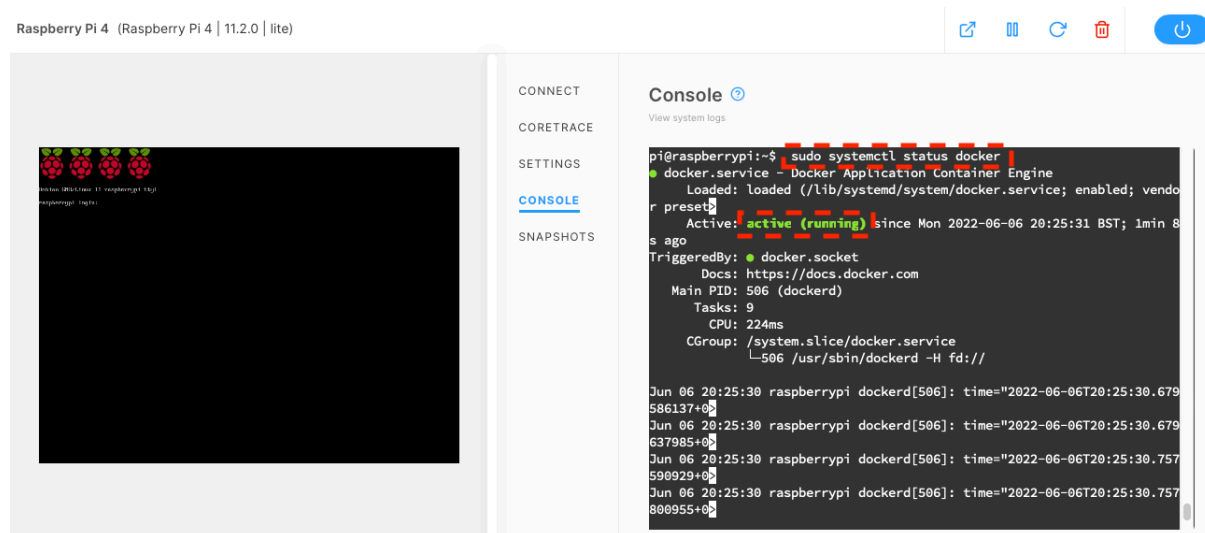


Figure 6-13: Docker running



9. Clean up your local system.

```
rm kernel8.img kernel
```

10. You're all set!