



Maximum Respect and Gratitude to You!

I am very grateful for people like you that value freedom, privacy and responsible individualism that were the foundation that made this nation great. You deserve my utmost respect for taking steps to preserve those values.

With your purchase or use of my products you are demonstrating you care about these values. It is my sincere desire that my products serve you well to preserve the information you value, in keeping you informed and helping you inform others.

I am only a *virtual voyage* away on the Pirate Box/Stick Support group on Telegram or the Pirate Box discord server if you need assistance.

Questions are the start of wisdom. Curiosity and self interest are the fuel that prompts them. May your tank never run dry!

Captain V

Captain V of the ship *Virtual Voyager*

Getting Started – Your Pirate Box Maiden Voyage

This guide will explain how to replace the micro SD card and setup your Raspberry Pi (RPi) to boot from your new Pirate Box SSD drive. You will enjoy more available space and the peace of mind of using a more reliable storage medium. This is a rather technical topic but I have every confidence you're up to the challenge! So with that said, somebody crack that champagne on the hull & let's get underway!

NOTE: Although the RPi 3B will boot and run the 64 bit Pirate Box version (all releases since November, 2021 are 64 bits), the 3B is severely resource limited and not reliable with the 64 bit Pirate Box software. For those using a Raspberry Pi 3B it is highly recommended to use the latest 32 bit version of the Pirate Box software published prior to November, 2021. I will produce a new 32 bit image for the 3B when I receive enough requests for it. This guide is only for the Raspberry Pi 4. The RPi 3B uses a different boot process.

The first requirement is setting up your Raspberry Pi 4 computer so it will boot from a USB device. If you bought your Raspberry Pi recently it may already be setup and ready to go. To save you time why not just try it? Shut down the Pi, remove the SD card and plug in the Pirate Box SSD. Power it back on and observe. Did it come up? You may need to wait for it, but if you don't see the desktop within 3 minutes, power off the system and read on, and I will describe how to setup your Raspberry Pi to boot from the Pirate Box USB.

If you purchased a Pirate Box micro SD card or flashed one yourself from the image available online all you need to do is power off, replace your existing SD card with the new SD card and power up.

Make Sure Your Raspberry Has Latest Boot Loader

Starting with the Raspberry Pi 4, the device actually has an onboard upgradable firmware boot loader stored on a separate EEPROM chip. All storage including the boot loader was on the SD card on earlier RPi's. Updating this firmware is very important. One of the first released updates for it reduced power usage of the RPi by 30% which also reduces how hot it gets.

You will need an existing version of Raspberry Pi OS or the Pirate Box software (either 32 or 64 bits) on an SD card to run the *rpm-eeeprom-update* program, which will be used to both check and if necessary update your boot loader firmware. You will also need to be connected to the Internet. You may need to update your RPi operating system if the *rpm-eeeprom-update* program is not found. Now is as good a time as any to make sure your system is up to date. Open a terminal window (>_ icon on yellow taskbar) and enter the following command:

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

 and press the Enter key

After the updates are finished restart your RPi by entering `sudo reboot` into the terminal to apply them. After the system has again restarted, check the bootloader with:

```
sudo rpm-eeeprom-update
```

 and press Enter, which will produce output like this:

```
BCM2711 detected
VL805 firmware in bootloader EEPROM
BOOTLOADER: up-to-date
CURRENT: Thu 3 Sep 12:11:43 UTC 2020 (1599135103)
LATEST: Thu 3 Sep 12:11:43 UTC 2020 (1599135103)
FW DIR: /lib/firmware/raspberrypi/bootloader/critical
VL805: up-to-date
CURRENT: 000138a1
```

Your boot loader firmware should now be up to date, otherwise it will say **BOOTLOADER: update available**. You can also manually update your firmware anytime using this command:

```
sudo rpi-eeeprom-update -d -a and press Enter.
```

If you see *EEPROM updates pending*, enter `sudo reboot` to reboot the RPi and apply the update.

Now that your boot loader is up to date it's time to set your bootloader preferences. The default is to first try and boot from a USB device if one is present, then fall back to booting from the SD card. If that fails the RPi will reboot and repeat.

You can use that default process, but I don't recommend it because it wastes 1-2% of your CPU power to "poll" the existence of the SD card, even after it finishes booting from USB! It also requires some power for the SD card itself. Let's review the other boot options available.

The Raspberry Pi 4 Boot EEPROM Parameters

You are now ready to edit your Raspberry Pi's bootloader configuration to prioritize the boot order per your preferences. For more information see James Chambers *Editing Bootloader Configuration* at this URL: <https://jamesachambers.com/new-raspberry-pi-4-bootloader-usb-network-boot-guide/>. I'll spare you the click and save you time and provide these common choices:

- 1) **0xF4** - boot only from USB device, on failure reboot and try again
- 2) **0xF14** - first boot from USB device, on failure try to boot from SD card, on failure reboot and try again
- 3) **0xF41** - first boot from SD card, on failure try to boot from USB device, on failure reboot and try again

To view the current boot parameters, enter this into the terminal:

```
sudo rpi-eeeprom-config | grep BOOT_ORDER and press Enter.
```

To edit or change the boot order, use this command:

```
sudo -E rpi-eeeprom-config --edit and press Enter.
```

Choose the appropriate `BOOT_ORDER` you would like (one of the values in bold text from 3 choices above) and use your arrow keys to move down to the `BOOT_ORDER` line. Change the line and press `Control+X` and then 'y' to save your changes. One last step before you test booting from your new Pirate Box USB-3 SSD.

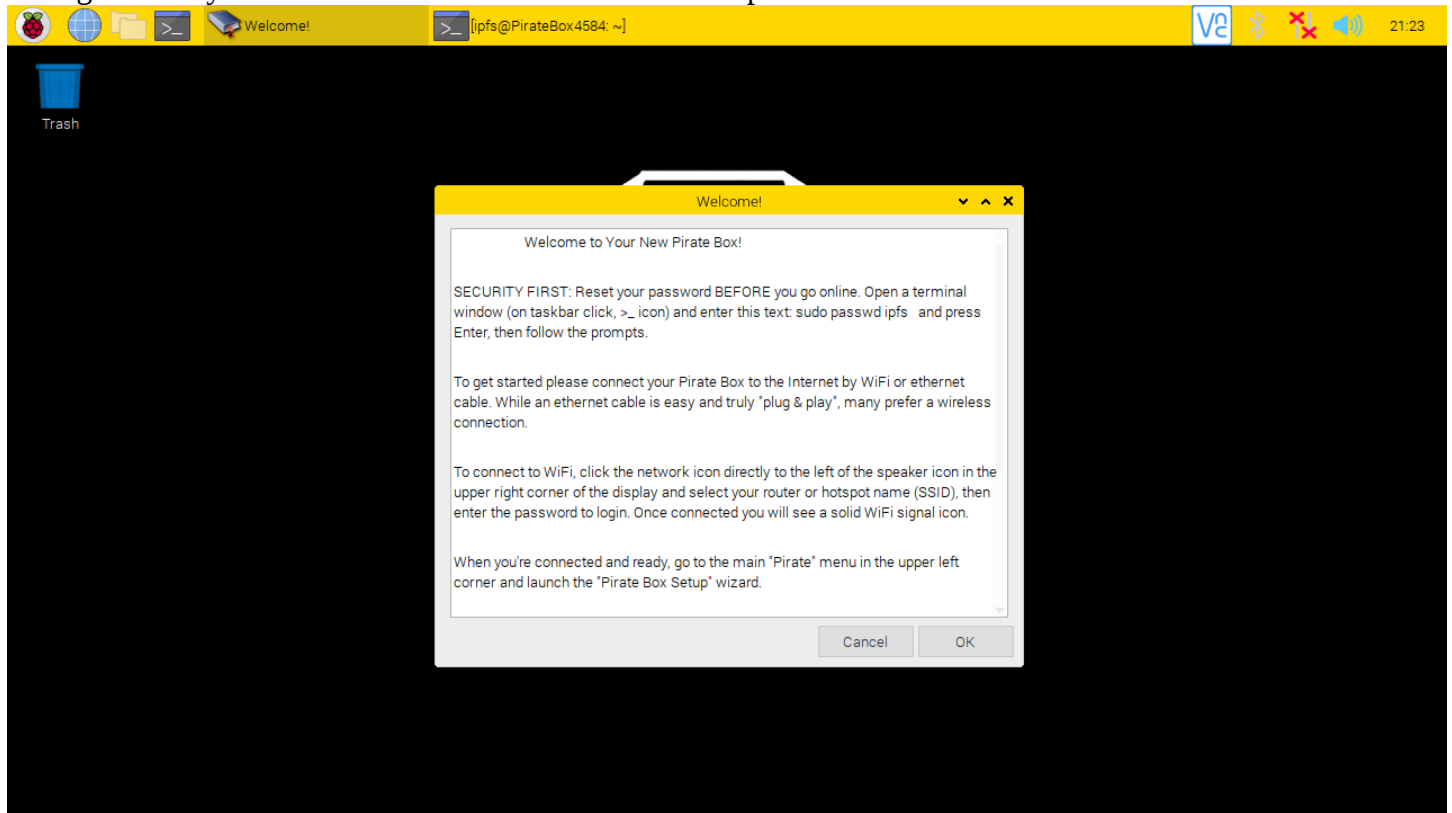
As mentioned earlier the Raspberry Pi polls endlessly for a SD card to be inserted if there isn't one present. It polls so quickly that it actually registers as CPU usage on your system. The fix is to add a new parameter to the `/boot/config.txt` file. Type the following command into the terminal and press the Enter key. Be careful, because if entered incorrectly may cause booting problems and be difficult to fix (Getting it wrong won't "brick" your RPi, but it could cause it not to boot properly):

```
sudo sed -i "s|\(dtparam=audio=on\)|\1,sd_poll_once|g" /boot/config.txt
```

Power off the system and remove the SD card for this test. If you want to use the SD card as a USB failure backup you can insert it after testing. Make sure the Pirate Box SSD is plugged into one of the blue USB ports

for optimum performance. Also unplug your network cable if you have one plugged in. Now the moment of truth – power on and observe. First positive sign is a flashing LED on the Pirate Box USB.

If all goes well you should soon see the Pirate Box desktop:



Congradulations, and welcome to your new Pirate Box!

First Steps After Booting

- **Read the Welcome text**, it provides important information you need to know
- **Reset the ipfs account password** *before* you go online!

The easiest way to reset your password is open a terminal window (>_ icon on yellow taskbar) and enter:
sudo passwd ipfs then press the Enter key and type your new password, twice.

When you are ready, connect to the Internet. Your Pirate Box will be active immediately. It may take some time for your Pirate Box node to become fully bootstrapped into the IPFS network. The network bandwidth used will be heavier initially and taper off to a steady level in a short while. Please be patient. Creating a replacement infrastructure to the highly centralized and optimized Internet that took decades to create will not happen quickly, but you're off to a great start to help make it happen with the Pirate Box!