

Welcome!

Raspberry Pi Raspbian

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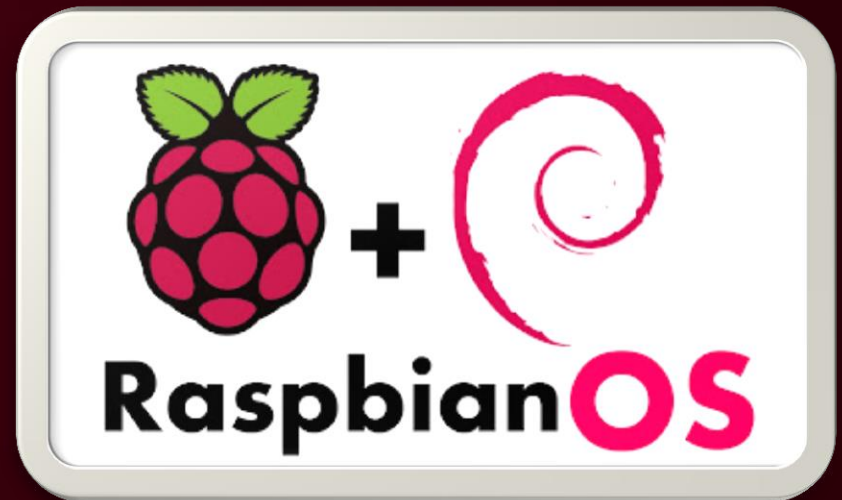
Topics

- What is Raspbian?
- What is SSH?
- What is ‘flashing’?
- Software we need to flash the image
- Flashing the image
- Plugging in and booting up for the first time
- Preparing the Raspberry Pi for your modifications




What is Raspbian?

- **Raspbian** – A version of Debian designed for the Raspberry Pi.
- Includes a suite of software on installation.
- The most widely used desktop platform for the RPi.
- Runs ARM packages.
- Can't run regular 32-bit or 64-bit applications.



What is SSH?

- **SSH** – Stands for Secure Shell. Common way to work with machines remotely and through a terminal style interface.
- Most common piece of software is PuTTY.
- Available on ALL Linux distributions
- OpenSSH is the most common SSH server out there!

A screenshot of a terminal window titled 'james@volcano ~'. The terminal shows the following text:

```
login as: james
james@shell's password:
Linux volcano 2.6.22-14-server #1 SMP Sun Oct 14 23:34:23 GMT 2007 i686

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

james@volcano:~>
```



What is 'flashing'

- **Flashing** is the process of loading an image onto a storage device.
- In this case, we will be flashing a pre-installed image of Raspbian onto an SD Card
- It's super convenient most of the time to use this method as you don't have to sit through the whole install process.
- Allows you to also create images of installations and their content



Software we need to flash the image

- Download the following:
 - Raspbian Image:
 - http://downloads.raspberrypi.org/raspbian_latest
 - Win32 Disk Imager:
 - <http://sourceforge.net/projects/win32diskimager/>
 - Program to extract the ZIP
 - You can use the default windows methods or use WinRAR, 7-Zip, or WinZip.
- Optional Software:
 - SDFormatter
 - Needed to format SD cards that have content on them.
 - https://www.sdcard.org/downloads/formatter_4/



Flashing the image

- Assuming you've extracted the contents of the ZIP and downloaded the Win32 Disk Imager software, we can now begin!
- Steps:
 1. Insert your SD Card and wait for your PC to recognize it.
 2. Run Win32 Disk Imager.
 3. Select the IMG file that you just extracted.
 4. Make sure the device is showing the correct SD card.
 5. Press 'Write'.
 6. Once you do this, it will overwrite everything on the card.
- It will take several minutes to write the content to the SD card.
- Once you've done that, the card is ready to be put in the Raspberry Pi.



Plug into a Monitor/TV

- We need to setup the Raspberry Pi for remote access and allow the full usage of the SD card.
- Steps:
 1. Put the SD Card into the Raspberry Pi.
 2. Plug the Raspberry Pi into your Monitor/TV using an HDMI, VGA (Converter), or RCA video cable.
 3. Plug your keyboard into the Raspberry Pi.
 4. Plug your Micro USB adapter into the Raspberry Pi and it will boot up.
 5. You should see a colorful image pop up on the screen for a moment.
- The Raspberry Pi will then proceed with it's boot process.



Some Necessary Steps

1. Expand the file system.
 - Click Expand Filesystem
2. Enable SSH
 1. Click 'Advanced Options'
 2. Click 'SSH'
 3. Make sure you enable this for remote access.

```
Raspberry Pi Software Configuration Tool (raspi-config)
Setup Options
 1 Expand Filesystem           Ensures that all of the SD card storage is available to the OS
 2 Change User Password        Change password for the default user (pi)
 3 Enable Boot to Desktop/Scratch Choose whether to boot into a desktop environment or the command-line
 4 Internationalisation Options Set up language and regional settings to match your location
 5 Enable Camera               Enable this Pi to work with the Raspberry Pi Camera
 6 Add to Rastrack             Add this Pi to the online Raspberry Pi Map (Rastrack)
 7 Overclock                   Configure overclocking for your Pi
 8 Advanced Options            Configure advanced settings
 9 About raspi-config          Information about this configuration tool

<Select>                                <Finish>
```



Some Optional Steps

- You can make the Raspberry Pi boot to a desktop by default rather than the command line.
 - Click ‘Enable Boot to Desktop/Scratch’
- This is recommended for people who are not used to the command line or in need of a GUI interface.
- You can enable this at any point later on by running raspi-config from the command line.

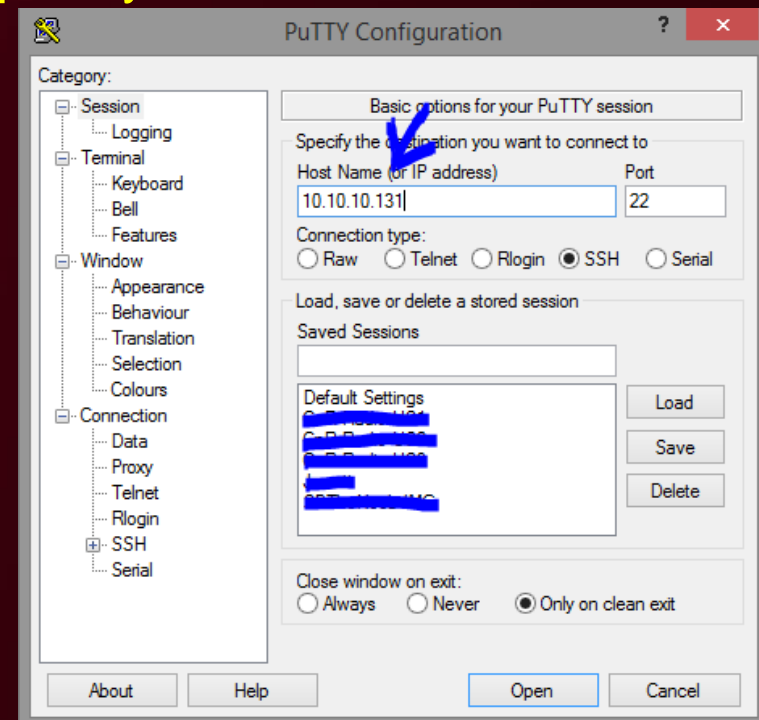
```
Setup Options | Raspberry Pi Software Configuration Tool (raspi-config) |
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<Select>                                <Finish>
```



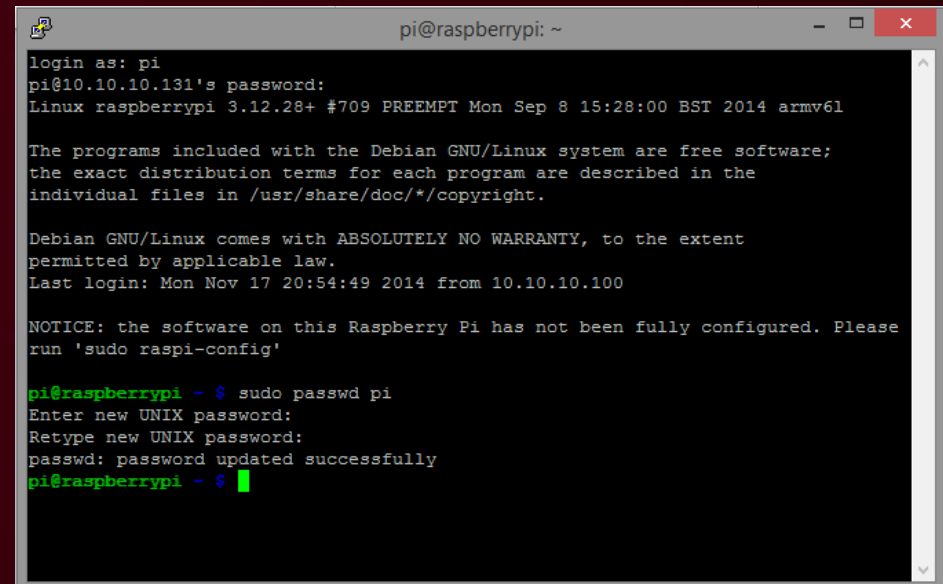
1. SSH into the Raspberry Pi

- We need to SSH into the Raspberry Pi.
- This assumes we know the IP address and that the SSH server is running. By default, it will be running on port 22
- If you need obtain the IP, plug your Raspberry Pi into a TV/Monitor.
- Login with the following credentials:
 - Username: pi
 - Password: raspberry
- Run the command `ifconfig`
- It will return an IP address



2. Update Login Credentials

- If you haven't done so already, we need to modify the login credentials for security reasons.
- Run the following command:
 - `sudo passwd pi`
- The command above will allow you to change the password.
- When you are inserting the password, it will appear blank, but it is actually working.

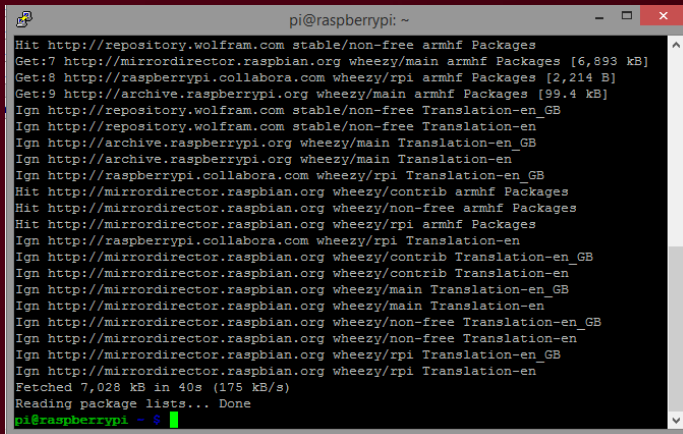


```
pi@raspberrypi: ~  
login as: pi  
pi@10.10.10.131's password:  
Linux raspberrypi 3.12.28+ #709 PREEMPT Mon Sep 8 15:28:00 BST 2014 armv6l  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Mon Nov 17 20:54:49 2014 from 10.10.10.100  
  
NOTICE: the software on this Raspberry Pi has not been fully configured. Please  
run 'sudo raspi-config'  
  
pi@raspberrypi ~$ sudo passwd pi  
Enter new UNIX password:  
Retype new UNIX password:  
passwd: password updated successfully  
pi@raspberrypi ~$
```

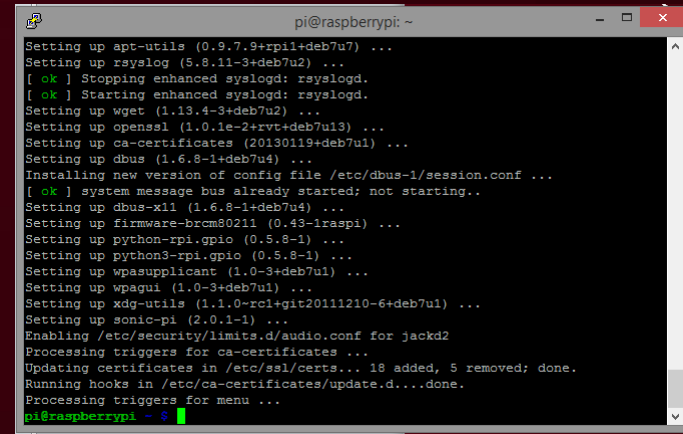


3. Run Updates/Upgrades

- We need to make sure the repositories and packages on the Raspberry Pi are up-to-date.
- Run the following commands:
 - `sudo apt-get update`
 - `sudo apt-get upgrade`
- Follow the prompts and answer Y when necessary.



```
pi@raspberrypi: ~  
Hit http://repository.wolfram.com stable/non-free armhf Packages  
Get:7 http://mirrordirector.raspbian.org wheezy/main armhf Packages [6,893 kB]  
Get:8 http://raspberrypi.collabora.com wheezy/rpi armhf Packages [2,214 B]  
Get:9 http://archive.raspberrypi.org wheezy/main armhf Packages [99.4 kB]  
Ign http://repository.wolfram.com stable/non-free Translation-en_GB  
Ign http://repository.wolfram.com stable/non-free Translation-en  
Ign http://archive.raspberrypi.org wheezy/main Translation-en_GB  
Ign http://archive.raspberrypi.org wheezy/main Translation-en  
Ign http://raspberrypi.collabora.com wheezy/rpi Translation-en_GB  
Hit http://mirrordirector.raspbian.org wheezy/contrib armhf Packages  
Hit http://mirrordirector.raspbian.org wheezy/non-free armhf Packages  
Hit http://mirrordirector.raspbian.org wheezy/rpi armhf Packages  
Ign http://raspberrypi.collabora.com wheezy/rpi Translation-en  
Ign http://mirrordirector.raspbian.org wheezy/contrib Translation-en_GB  
Ign http://mirrordirector.raspbian.org wheezy/contrib Translation-en  
Ign http://mirrordirector.raspbian.org wheezy/main Translation-en_GB  
Ign http://mirrordirector.raspbian.org wheezy/main Translation-en  
Ign http://mirrordirector.raspbian.org wheezy/non-free Translation-en_GB  
Ign http://mirrordirector.raspbian.org wheezy/non-free Translation-en  
Ign http://mirrordirector.raspbian.org wheezy/rpi Translation-en_GB  
Ign http://mirrordirector.raspbian.org wheezy/rpi Translation-en  
Fetched 7,028 kB in 40s (175 kB/s)  
Reading package lists... Done  
pi@raspberrypi ~ $
```



```
pi@raspberrypi: ~  
Setting up apt-utils (0.9.7.9+rp1+deb7u7) ...  
Setting up rsyslog (5.8.11-3+deb7u2) ...  
[ ok ] Stopping enhanced syslogd: rsyslogd.  
[ ok ] Starting enhanced syslogd: rsyslogd.  
Setting up wget (1.13.4-3+deb7u2) ...  
Setting up openssl (1.0.1e-2+rvt+deb7u13) ...  
Setting up ca-certificates (20130119+deb7u1) ...  
Setting up dbus (1.6.8-1+deb7u4) ...  
Installing new version of config file /etc/dbus-1/session.conf ...  
[ ok ] system message bus already started: not starting..  
Setting up dbus-x11 (1.6.8-1+deb7u4) ...  
Setting up firmware-brcm80211 (0.43-1raspi) ...  
Setting up python3-rpi.gpio (0.5.8-1) ...  
Setting up python3-rpi.gpio (0.5.8-1) ...  
Setting up wpasupplicant (1.0-3+deb7u1) ...  
Setting up wpagui (1.0-3+deb7u1) ...  
Setting up xdg-utils (1.1.0-rc1+git20111210-6+deb7u1) ...  
Setting up sonic-pi (2.0.1-1) ...  
Enabling /etc/security/limits.d/audio.conf for jackd2  
Processing triggers for ca-certificates ...  
Updating certificates in /etc/ssl/certs... 18 added, 5 removed; done.  
Running hooks in /etc/ca-certificates/update.d...done.  
Processing triggers for menu ...  
pi@raspberrypi ~ $
```



Questions?



Feel free to ask any questions you may have now!



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