

# Welcome!

## Raspberry Pi Motion

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# Topics

- What is Motion?
- What can we do with Motion?
- Installing and configuring Motion
- Viewing Motion from a web browser or media player
- Caveats



# What is Motion?

- **Motion** – A software package for monitoring cameras and security devices using Linux.
- Extremely lightweight.
- Very easy to setup and maintain.
- Provides motion detection as well.
- Integrates with a ton of webcams.



# Why would I want Motion?

- Motion is great for monitoring your home.
  - Monitor your doors to make sure no one is trying to break in.
  - Setup motion detection to take pictures of everyone who is near your home or enters your home.
  - Setup a VPN to view your home from anywhere in the world.
- Monitor weather conditions without having to step outside.



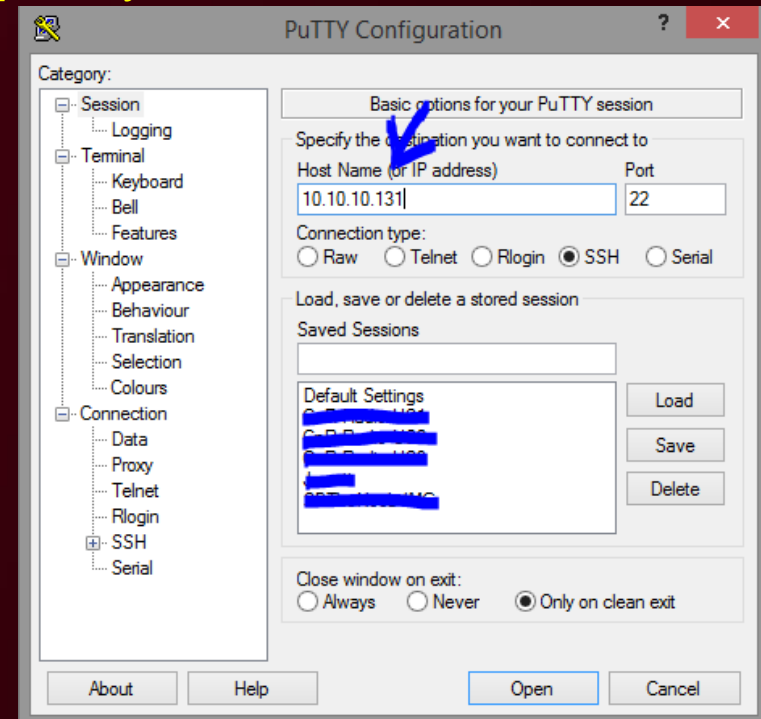
# What we need!

- USB Powered Hub
  - Required since the Raspberry Pi doesn't supply enough power for itself and a webcam.
- Supported Webcam
  - If the webcam isn't supported by your Linux Distribution, it's not going to work.
  - <http://www.lavrsen.dk/foswiki/bin/view/Motion/WorkingDevices>
  - Make sure the camera is plugged into the hub when you first power up the Raspberry Pi
- VLC or another media player
  - This will be used to stream the webcam.



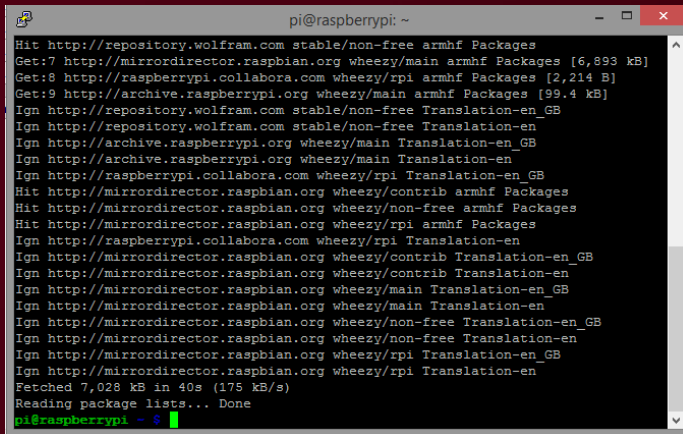
# 1. SSH into the Raspberry Pi

- 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

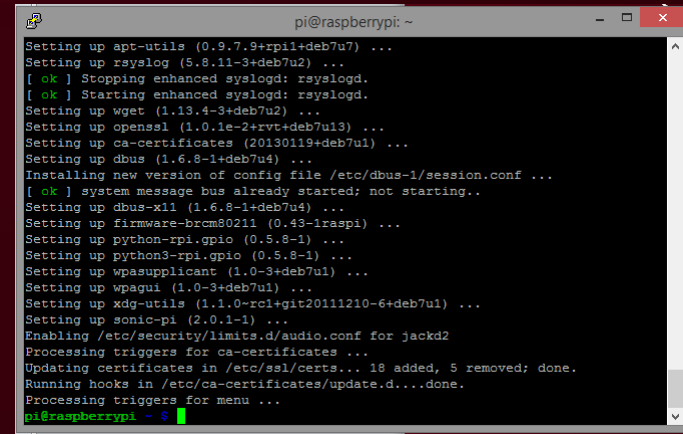


## 2. Run Updates/Upgrades

- 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 ~ $
```



# 3. Install Motion

- We need to start the installation process for motion!
- Run the following command:
  - `sudo apt-get install motion`
- The command above will fetch the motion package and install it for you.





# 4. Configuring Motion

- We need to configure motion
- Run the following command:
  - `sudo nano /etc/default/motion`
- The above command will open Nano, a powerful text editor for Linux.
- We need to make the following modification:
  - `start_motion_daemon=no`
  - to
  - `start_motion_daemon=yes`
- Press CTRL + O and then Enter to write the file
- Press CTRL + X to exit



# 5. Configuring Motion

- We need to configure motion
- Run the following command:
  - `sudo nano /etc/motion/motion.conf`
- We need to make the following modifications:
  - `daemon off` to `daemon on`
  - `webcam_localhost on` to `webcam_localhost off`
  - `width 352` to `width 1280`
  - `height 288` to `height 720`
- You can use CTRL + W to find those lines of text.
- Press CTRL + O and then Enter to write the file
- Press CTRL + X to exit



# 5. Starting Motion

- We need to start motion now!
- Run the following command:
  - `sudo service motion start`
- We can now access the webcam from VLC
  - Open VLC Media Player
  - Media > Open Network Stream...
  - `http://IP:8081` (IP Being your Raspberry Pi's IP)
  - Press play and you should see your webcam
- Every time the Raspberry Pi starts, it will automatically start motion since we enabled the daemons.



# Caveats

- In reality, this should only be used internally on your network.
- Port forwarding and allowing remote viewing from anywhere can be dangerous to your safety.
  - If you want to be able to view this from anywhere, look into setting up a VPN.
- There is a web browser viewing for Motion.
  - It has issues with the Raspberry Pi and certain cameras in my experience.
  - VLC is the best alternative to this problem.
  - You can try going to <http://IP:8081> in your browser to see if you face this issue.



# Questions?



Feel free to ask any questions you may have now!

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