How to Setup Raspberry Pi 3 for 2STON Camera Client

Author: 2STON Core Team
Date: 01/31/2018

A. RPi3 Basic Settings and Software Upgrade

1. Setup Network

→ It's easy if you know that of Ubuntu.

2. Menu Preferences → Raspberry Pi Configuration

→ System
- → To CLI selection for more good performance
- → Change Hostname(ex: sun) if you want to change

→ Interfaces
- → Camera Enabled
- → SSH Enabled

3. package upgrade

$ **sudo apt-get update**
$ **sudo apt-get upgrade**

→ It takes long time(more than about 10 minutes)
→ Let's reboot after upgrade

4. motion package installation

$ **sudo apt-get install motion**

→ install motion package

---

pi@sunpi:~ $ **sudo apt-get install motion**
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
ffmpeg libavdevice57 libmariadbclient18 libpq5 libsdl2-2.0-0 libwayland-cursor0 mysql-common
Suggested packages:
ffmpeg-doc default-mysql-client postgresql-client
The following NEW packages will be installed:
ffmpeg libavdevice57 libmariadbclient18 libpq5 libsdl2-2.0-0 libwayland-cursor0 motion mysql-common
0 upgraded, 8 newly installed, 0 to remove and 2 not upgraded.
Need to get 3,048 kB of archives.
After this operation, 8,806 kB of additional disk space will be used.

```
Do you want to continue? [Y/n] y
Get:1 http://ftp.kaist.ac.kr/raspbian/raspbian stretch/main armhf libwayland-cursor0 armhf 1.12.0-1 [12.1 kB]
Get:2 http://ftp.kaist.ac.kr/raspbian/raspbian stretch/main armhf libsdl2-2.0-0 armhf 2.0.5+dfsg1-2 [314 kB]
Get:3 http://ftp.kaist.ac.kr/raspbian/raspbian stretch/main armhf libavdevice57 armhf 7:3.2.9-1~deb9u1 [107 kB]
Get:4 http://ftp.kaist.ac.kr/raspbian/raspbian stretch/main armhf ffmpeg armhf 7:3.2.9-1~deb9u1 [1,513 kB]
Get:5 http://ftp.kaist.ac.kr/raspbian/raspbian stretch/main armhf mysql-common all 5.8+1.0.2 [5,608 B]
Get:6 http://ftp.kaist.ac.kr/raspbian/raspbian stretch/main armhf libmariadbclient18 armhf 10.1.23-9+deb9u1 [710 kB]
Get:7 http://ftp.kaist.ac.kr/raspbian/raspbian stretch/main armhf libpq5 armhf 9.6.6-0+deb9u1 [117 kB]
Get:8 http://ftp.kaist.ac.kr/raspbian/raspbian stretch/main armhf motion armhf 4.0-1 [269 kB]
Fetched 3,048 kB in 5s (523 kB/s)
Preconfiguring packages ...
Selecting previously unselected package libwayland-cursor0:armhf.
(Reading database ... 122957 files and directories currently installed.)
Preparing to unpack .../0-libwayland-cursor0_1.12.0-1_armhf.deb ...
Unpacking libwayland-cursor0:armhf (1.12.0-1) ...
Selecting previously unselected package libsdl2-2.0-0:armhf.
Preparing to unpack .../1-libsdl2-2.0-0_2.0.5+dfsg1-2_armhf.deb ...
Unpacking libsdl2-2.0-0:armhf (2.0.5+dfsg1-2) ...
Selecting previously unselected package libavdevice57:armhf.
Preparing to unpack .../2-libavdevice57_7%3a3.2.9-1~deb9u1_armhf.deb ...
Unpacking libavdevice57:armhf (7:3.2.9-1~deb9u1) ...
Selecting previously unselected package ffmpeg.
Preparing to unpack .../3-ffmpeg_7%3a3.2.9-1~deb9u1_armhf.deb ...
Unpacking ffmpeg (7:3.2.9-1~deb9u1) ...
Selecting previously unselected package mysql-common.
Preparing to unpack .../4-mysql-common_5.8+1.0.2_all.deb ...
Unpacking mysql-common (5.8+1.0.2) ...
Selecting previously unselected package libmariadbclient18:armhf.
Preparing to unpack .../5-libmariadbclient18_10.1.23-9+deb9u1_armhf.deb ...
Unpacking libmariadbclient18:armhf (10.1.23-9+deb9u1) ...
Selecting previously unselected package libpq5:armhf.
Preparing to unpack .../6-libpq5_9.6.6-0+deb9u1_armhf.deb ...
Unpacking libpq5:armhf (9.6.6-0+deb9u1) ...
Selecting previously unselected package motion.
Preparing to unpack .../7-motion_4.0-1_armhf.deb ...
Unpacking motion (4.0-1) ...
Setting up mysql-common (5.8+1.0.2) ...
update-alternatives: using /etc/mysql/my.cnf.fallback to provide /etc/mysql/my.cnf (my.cnf) in auto mode
Setting up libmariadbclient18:armhf (10.1.23-9+deb9u1) ...
Setting up libpq5:armhf (9.6.6-0+deb9u1) ...
Processing triggers for libc-bin (2.24-11+deb9u1) ...
Processing triggers for systemd (232-25+deb9u1) ...
Processing triggers for man-db (2.7.6.1-2) ...
Setting up libwayland-cursor0:armhf (1.12.0-1) ...
Setting up motion (4.0-1) ...
Adding group `motion' (GID 116) ...
```

```
Done.
Warning: The home dir /var/lib/motion you specified already exists.
Adding system user `motion' (UID 111) ...
Adding new user `motion' (UID 111) with group `motion' ...
The home directory `/var/lib/motion' already exists.  Not copying from `/etc/skel'.
adduser: Warning: The home directory `/var/lib/motion' does not belong to the user you are
currently creating.
Adding user `motion' to group `video' ...
Adding user motion to group video
Done.
Setting up libsdl2-2.0-0:armhf (2.0.5+dfsg1-2) ...
Setting up libavdevice57:armhf (7:3.2.9-1~deb9u1) ...
Setting up ffmpeg (7:3.2.9-1~deb9u1) ...
Processing triggers for libc-bin (2.24-11+deb9u1) ...
Processing triggers for systemd (232-25+deb9u1) ...
pi@michaelpi:~ $
```

$ **sudo vi /etc/motion/motion.conf**
→ You can edit this file

$ **sudo vi /etc/default/motion**
→ You can edit this file
→ start_motion_daemon=yes

$ **sudo service motion start**

(*) Actually detailed settings for motion as above is not needed because 2ston_cam rpi3 package(See Section B) will setup it automatically at installation time.

---

5. Edit /etc/rc.local

$ **sudo vi /etc/rc.local**
← load bcm2835-v4l2.ko while booting
...
modprobe bcm2835-v4l2

exit 0

$ **sudo reboot**

$ lsmod
← Let's check bcm2835-v4l2 module

```
Module                  Size  Used by
fuse                   99603  3
rfcomm                 37723  6
cmac                    3239  1
bnep                   12051  2
```

```
hci_uart                20020  1
btbcm                    7916  1 hci_uart
bluetooth              365780  29 hci_uart,bnep,btbcm,rfcomm
bcm2835_v4l2            44695  1
videobuf2_vmalloc        5920  1 bcm2835_v4l2
videobuf2_memops         2009  1 videobuf2_vmalloc
videobuf2_v4l2          17077  1 bcm2835_v4l2
videobuf2_core          34083  2 bcm2835_v4l2,videobuf2_v4l2
v4l2_common              6284  1 bcm2835_v4l2
videodev               184712  5
v4l2_common,videobuf2_core,bcm2835_v4l2,videobuf2_v4l2
media                   28362  1 videodev
joydev                   9988  0
brcmfmac               292632  0
brcmutil                 9863  1 brcmfmac
cfg80211               544545  1 brcmfmac
rfkill                 20851  6 bluetooth,cfg80211
snd_bcm2835             24427  1
snd_pcm                 98501  1 snd_bcm2835
snd_timer               23968  1 snd_pcm
snd                     70032  5 snd_timer,snd_bcm2835,snd_pcm
bcm2835_gpiomem          3940  0
evdev                   12423  6
fixed                    3285  0
uio_pdrv_genirq          3923  0
uio                     10204  1 uio_pdrv_genirq
i2c_dev                  6913  0
ip_tables              13161  0
x_tables                20578  1 ip_tables
ipv6                   408900  26
```

(*) Actually detailed settings(/etc/rc.local) as above is not needed because 2ston_cam rpi3 package(See Section B) will setup it automatically at installation time.

---

6. How to check motion & camera's status

```
pi@michaelpi:~ $ ps aux|grep motion
motion       544 10.1  2.2 119876 20188 ?        Sl   01:38   0:21 /usr/bin/motion
pi          1556  0.0  0.0   4372   572 pts/0    S+   01:41   0:00 grep --
color=auto motion
```

<web browser>
http://YOUR_RPI3_IP_ADDRESS:8081/

B. How to install 2ston cam package

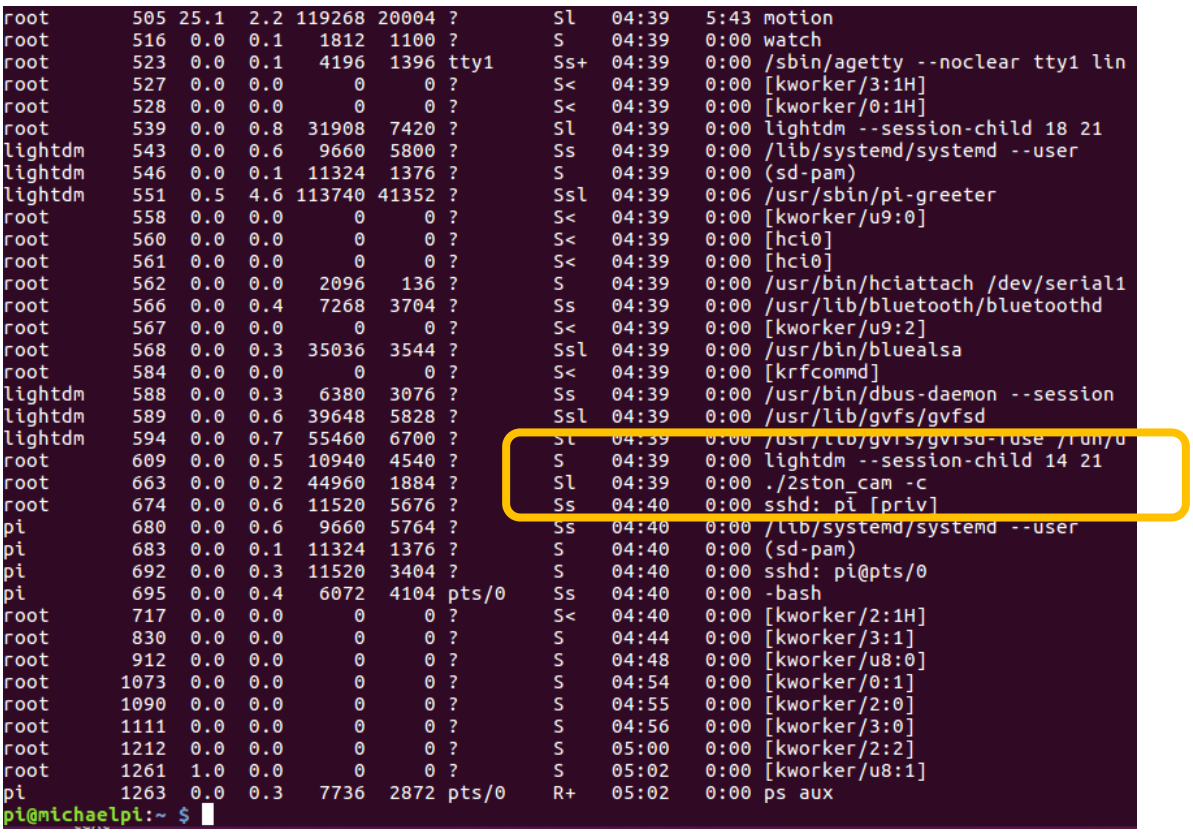
1. Install and uninstall 2ston cam package file to RPi3 board

<Copy Step>
$ scp ./2ston_cam_rpipkg_20180131_130210.tar.gz
pi@YOUR_PI_ADDRESS:~/workspace

<Installation Step>
$ tar xvzf ./2ston_cam_rpipkg_20180131_130210.tar.gz
$ cd rpi/2ston_cam_pkg
$ **sudo ./Install.sh**
  => *You should run this script with root permission.*
$ sudo reboot
  => *After rebooting the RPi3, 2ston_cam daemon will be loaded.*

<Uninstallation Step>
$ **sudo ./Uninstall.sh**
  => *You should run this script with root permission.*

2. Let's check the running 2ston_cam daemon



■