**Setting Up The NanoPi 2 From Start to Finish**

April 25, 2017

Revised June 7, 2017

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**0. Install operating system**

Download: 5p4418-eflasher-sd8g-xxx-full.img.7z  from this website: <https://www.mediafire.com/folder/ilkcy37otd7il/S5P4418>

Unzip and then usw win32DiskImager to write to micrdSD card

Instal sdl in NanoPi S2, hold the boot button and then power on.

Select operating system and wait.

**1.** **Install Node**

Reference:  <https://github.com/nodesource/distributions>

Enter these commands:

curl -sL<https://deb.nodesource.com/setup_7.x> | sudo -E bash -

sudo apt-get install -y nodejs

To check installation: node -v

**2.** **Install Serial port (from npm.js)**

sudo apt-get update

sudo apt-get install build-essential

npm install serialport

           There could be some error messages – this seems to be OK

**3.** **Install GIT - and project**

sudo apt-get install git

git clone <https://github.com/level451/r5.git>

cd r5

npm update

**4.** **Install Chromium**

sudo apt-get update

wget -qO - http://bintray.com/user/downloadSubjectPublicKey?username=bintray | sudo apt-key add -

echo "deb http://dl.bintray.com/kusti8/chromium-rpi jessie main" | sudo tee -a /etc/apt/sources.list

sudo apt-get update

sudo apt-get install chromium-browser

**5. Install SMB – using Samba**

sudo apt-get update

           sudo apt-get install samba  (accept prompt)

sudo apt-get install samba-common-bin

sudo nano /etc/samba/smb.conf

                then:

**Add to bottom of file::**

[nanohome]

path=/home/fa

read only = no

writable = yes

browseable = yes

guest ok = yes

create mask = 0755

directory mask = 0755

public = yes

[nanoroot]

comment = Nano root

path=/

Writeable = Yes

browseable=Yes

only guest=no

create mask=0777

directory mask=0777

public=yes

then save

set up password:  sudo smbpasswd -a root

Do a restart just to make sure:  sudo /etc/init.d/samba restart

TO REMOVE SAMBA: sudo apt-get purge samba

**6. Install Audio**

**apt-get update**  
 **apt-get install** libasound2  
 **apt-get install** alsa-base  
 **apt-get install** alsa-utils

**7. Install Screen**

sudo apt-get install screen

These are the commands to use screen:

screen –ls to see all running screens

screen –r (name) to go to a screen

screen exit to exit and kill processes running on that screen

**8. Autorun program**

**Do Parts 1 and 2!**

**Part 1:**

Auto run on boot script file:

create file:   sudo nano /etc/init.d/autorun.sh

copy contents between the dashed lines and save it

Then:    cd /etc/init.d

           sudo chmod 755 autorun.sh

To make auto start:  sudo update-rc.d autorun.sh defaults

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### BEGIN INIT INFO

# Provides:          autorun.sh

# Required-Start:    $all

# Required-Stop:     $all

# Default-Start:     2 3 4 5

# Default-Stop:      0 1 6

# Short-Description: Short script description

# Description:       Longer script description.

### END INIT INFO

cd /root/r5

screen  -d -m -S r6 bash -c "sudo /usr/bin/node /home/fa/r5/app.js; exec bash"

echo  "Started R6"

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**Part 2**:

sudo nano /etc/xdg/lxsession/LXDE/autostart

Insert: @/etc/init.d/autorun.sh , before the screensaver line:

**HELPFUL HINTS:**

**To Stop node program: killall node**

**To close chromium-browser in kiosk mode: ALT-F4**

**9. Change CPU Frequency**

Auto run on boot script file:

This is where all of these files are:  /sys/devices/system/cpu/cpu0/cpufreq/

To allow ability to change speed change: scaling\_governor to: userspace

Then frequency can be changed by changing contents of: scaling\_setspeed

Max is 1400000

Min is 400000

Power results of changing frequency:

1400000 =>.36 amps

1200000 =>.35 amps

 400000 =>.32 amps

About 10 % system power reduction - this is with backlight at set at 10

Reference: https://www.kernel.org/doc/Documentation/cpu-freq/user-guide.txt

**Note:  Disabling cores does NOT save any power.**

**10.  Serial Port Debugging**

* Super Easy Way Using Minicom

Run Minicom with the following parameters:

minicom -b 115200 -o -D Port\_Name

**11.  Switches and codes**

Physical layout of switches:

Switch 1 Switch 3   Switch2

**X     X     X**

**Switch Codes        Press Release HELD**

Switch1 1 100 x

Switch2 2 200 x

Switch 3 3 300 YES

If Switch 3 is held for 5 seconds all the switches are read and the returned value is:

**Switch 1 State    Switch 2 State Value Returned**

UP DOWN 4

DOWN UP 5

UP DOWN 6

DOWN DOWN 7