Raspberry Pi Monitor Instruction

Author: Hong Hande contact: kevinhandhung@gmail.com

System Install

- Download image from https://www.raspberrypi.org/downloads/raspbian/, prefer without desktop
- Write image to microsd card.

Remote Login

- The default user is pi, and the password is raspberry. You can add users and change each user's password.
- Add root user passwd
- sudo passwd root
- sudo raspi-config
- Advance option->Expand file system
- Localisation option -> Change keyboard layout->English(US)
- Enable SSH
- Raspi-config -> Interface options -> ssh -> yes
- Edit this file: sudo nano /etc/ssh/sshd_config
  - Find this line: PermitRootLogin without-password
  - Edit: PermitRootLogin yes
  - Close and save file
  - reboot or restart sshd service using: /etc/init.d/ssh restart
- For new version of raspbian you need to do so:
  - sudo rm /etc/ssh/ssh_host_*
  - sudo dpkg-reconfigure openssh-server
- Reboot to apply change

Change the /etc/network/interfaces file to static address, this is for ease of maintenance from laptop with ethernet cable.

 # Include files from /etc/network/interfaces.d:
source-directory /etc/network/interfaces.d

 # The loopback network interface

```
auto lo
iface lo inet loopback

# The primary network interface
auto eth0
iface eth0 inet static
        address 192.168.0.133
        netmask 255.255.255.0
```

Now you should be able to login from laptop

Connect To Network

Change wpa config
Edit /etc/wpa_supplicant/wpa_supplicant.conf

```
ctrl_interface=/var/run/wpa_supplicant
update_config=1
eapol_version=1
ap_scan=1

network={
        ssid="NUS"
        key_mgmt=WPA-EAP
        eap=PEAP
        identity="your identity"
        password="your password"
        phase2="auth=MSCHAPV2"
}
```

To connect network, run the following command

wpa_supplicant -B -i wlan0 -D nl80211 -c /etc/wpa_supplicant/wpa_supplicant.conf
dhclient wlan0

Now your should be able to access to network now
Try to ping google.

Install some software needed for monitoring

apt-get update
apt-get install ntpdate
apt-get install oracle-java7-jdk
apt-get install vim
sudo apt-get install tcpdump

Put the following file in root folder:
SynTime.sh

```
cd /root/
./stopMonitor.sh
echo $(date) >> log.txt
echo "stop monitor" >> log.txt
sleep 5
ifconfig wlan0 down
iwconfig wlan0 mode managed
ifconfig wlan0 up
sleep 5
wpa_supplicant -B -i wlan0 -D nl80211 -c
/etc/wpa_supplicant/wpa_supplicant.conf
dhclient wlan0
service ntp stop
ntpdate us.pool.ntp.org
echo "time synchronise at $(date)" >> log.txt
sleep 5
./startMonitor.sh &
echo "restart monitor" >> log.txt
```

startMonitor.sh

```
ifconfig wlan1 down
iwconfig wlan1 mode monitor
ifconfig wlan1 up
iwconfig wlan1 channel 1

java DataCollection piloc.d1.comp.nus.edu.sg 8080 wlan1 &
```

stopMonitor.sh

```
pkill -f tcpdump
pkill -f DataCollection
```

Crontab -e
Add the following line:

```
00 03 * * * /root/SynTime.sh
```

Rc.local

```
#!/bin/sh -e
#
# rc.local
#
# This script is executed at the end of each multiuser runlevel.
# Make sure that the script will "exit 0" on success or any other
# value on error.
#
# In order to enable or disable this script just change the execution
# bits.
#
# By default this script does nothing.
/root/SynTime.sh
exit 0
```

Chmod +x Syntime
Chmod +x startMonitor.sh
Chmod +x stopMonitor

apt-get install network-manager

Note: May need to change the source to improve the download speed

```
deb http://archive.raspbian.org/raspbian jessie main contrib non-free
rpi
#deb-src http://archive.raspbian.org/raspbian jessie main contrib
non-free rpi
```

```
apt-get update
```

Adding a Wi-Fi Connection

To show all connections:

```
nmcli connection show
```

To show only currently active connections, add the `-a, --active` option as follows:

```
nmcli connection show --active
```

To show devices recognized by NetworkManager and their state:

```
nmcli device status
```

```
~]$ nmcli dev wifi list
  SSID             MODE   CHAN  RATE       SIGNAL  BARS  SECURITY
  FedoraTest       Infra  11    54 MB/s    98      ▂▄▆_  WPA1
  Red Hat Guest    Infra  6     54 MB/s    97      ▂▄▆_  WPA2
  Red Hat          Infra  6     54 MB/s    77      ▂▄▆_  WPA2 802.1X
* Red Hat          Infra  40    54 MB/s    66      ▂▄▆_  WPA2 802.1X
  VoIP             Infra  1     54 MB/s    32      ▂▄__  WEP
  MyCafe           Infra  11    54 MB/s    39      ▂▄__  WPA2
```

```
~]$ nmcli con add con-name WirelessInACM ifname wlan0 type wifi ssid
Wireless@ACM
```

To set a WPA2 password, for example “caffeine”, issue commands as follows:

```
~]$ nmcli con modify WirelessInACM wifi-sec.key-mgmt wpa-psk
~]$ nmcli con modify WirelessInACM wifi-sec.psk caffeine
```

To change Wi-Fi state, issue a command in the following format:

```
~]$ nmcli radio wifi [on | off ]
```

Sometimes you can use nmtui as text user interface

To connect to WiFi in ACM museum, you need to use curl

curl -X POST -d user="acmguest" -d password="passwd1" -d cmd="authenticate" -d Login="l%20ACCEPT" https://securelogin.arubanetworks.com/auth/index.html/u