Wandboard Ubuntu 16.04 Pre-Built Image User's Guide

Rev 0.2 20170725

Contents

1. Boot Ubuntu image

1.1 Supported hardware

These are the systems covered in this guide:

System-on-Modules:

- EDM1-CF-IMX6
- EDM1-CF-IMX6P

Carrier Boards:

- Wandboard

1.2 Software version

name	version
u-boot	2015.04
linux kernel	4.1.15
Ubuntu	16.04 (Xenial Xerus)

2. Memory layout of the ubuntu image

For i.mx6 series (i.mx6Dual/Quad) :

Section	Description
MBR	Partition information
SPL	First stage u-boot image
Partition 1 (FAT32) Under / directory ◆ uEnv.txt ◆ u-boot.img ◆ zImage ◆ dtb	◆ u-boot.img: Second stage u-boot image ◆ uEnv.txt: U-boot environment, you can set display type and baseboard type in this plain text. ◆ dtb: linux device tree file, it's platform-specific.
Partition 2 (EXT4) rootfs	Ubuntu rootfs

4. Login to Ubuntu on target board

Please enter “root” in Ubuntu login prompt.

```
Freescale i.MX Release Distro 4.1.15-1.1.1 wandboard /dev/ttymxc0

wandboard: root
```

5. Change display settings

For imx6 series(i.mx6 Dual/Quad), display settings can be changed by modifying uEnv.txt.
The eMMC corresponds to /dev/mmcblk2. uEnv.txt is in /dev/mmcblk2p1.

```
root@wandboard:~# mkdir -p /mnt/temp
root@wandboard:~# mount /dev/mmcblk2p1 /mnt/temp/
root@wandboard:~# vi /mnt/temp/uEnv.txt
root@wandboard:~# umount /mnt/temp/
```

The content of uEnv.txt:

```
displayinfo=video=mxcfb0:dev=hdmi,1280x720M@60,if=RGB24 fbmem=28M
```

Replace the red string with:

For HDMI 720P output:
video=mxcfb0:dev=hdmi,1280x720M@60,if=RGB24 fbmem=28M

For HDMI 1080P output:
video=mxcfb0:dev=hdmi,1920x1080M@60,if=RGB24 fbmem=28M

Note:

For HDMI ouput, the display resolution depends on the display monitor. In order to adapt to different monitors, the display timings should follow CVT timings standard.

If ‘M’ is present after the resolution you give, it will force to output CVT timings:
example:

```
video=mxcfb0:dev=lcd,1280x720M@60,if=RGB24
```

6. Test 3D-accelesation

Glx test:

```
root@wandboard:~#  su ubuntu
root@wandboard:~#  export DISPLAY=:0
root@wandboard:~#  glxgears -info
```

Egl test:

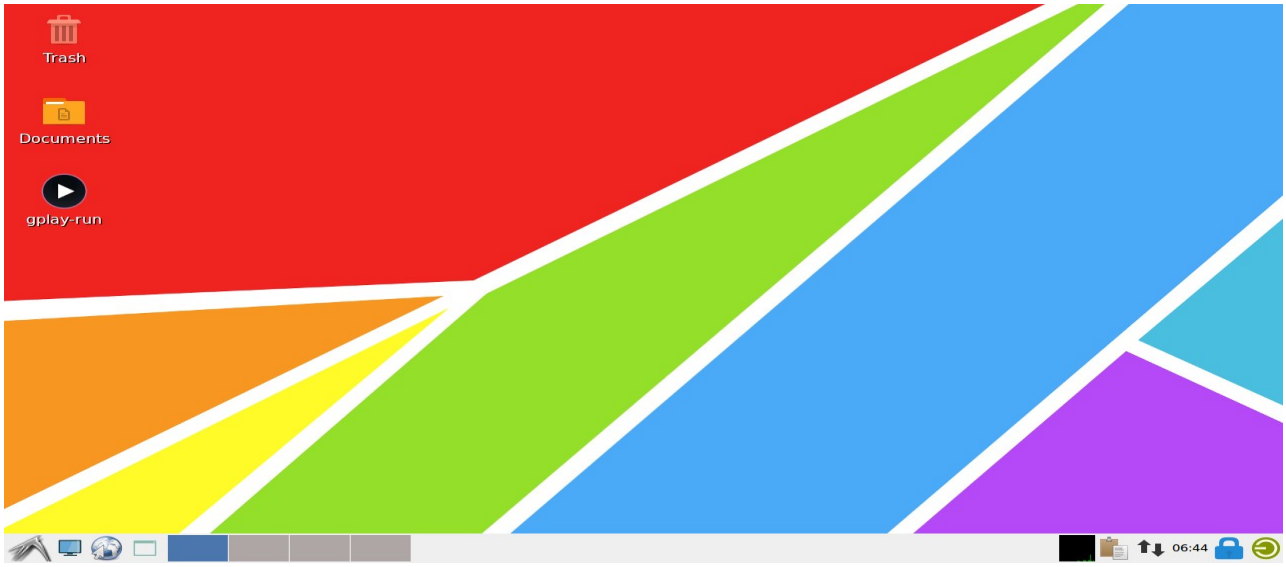
```
root@wandboard:~# glmark2-es2
```

7. Test WIFI and Bluetooth

Test wifi:

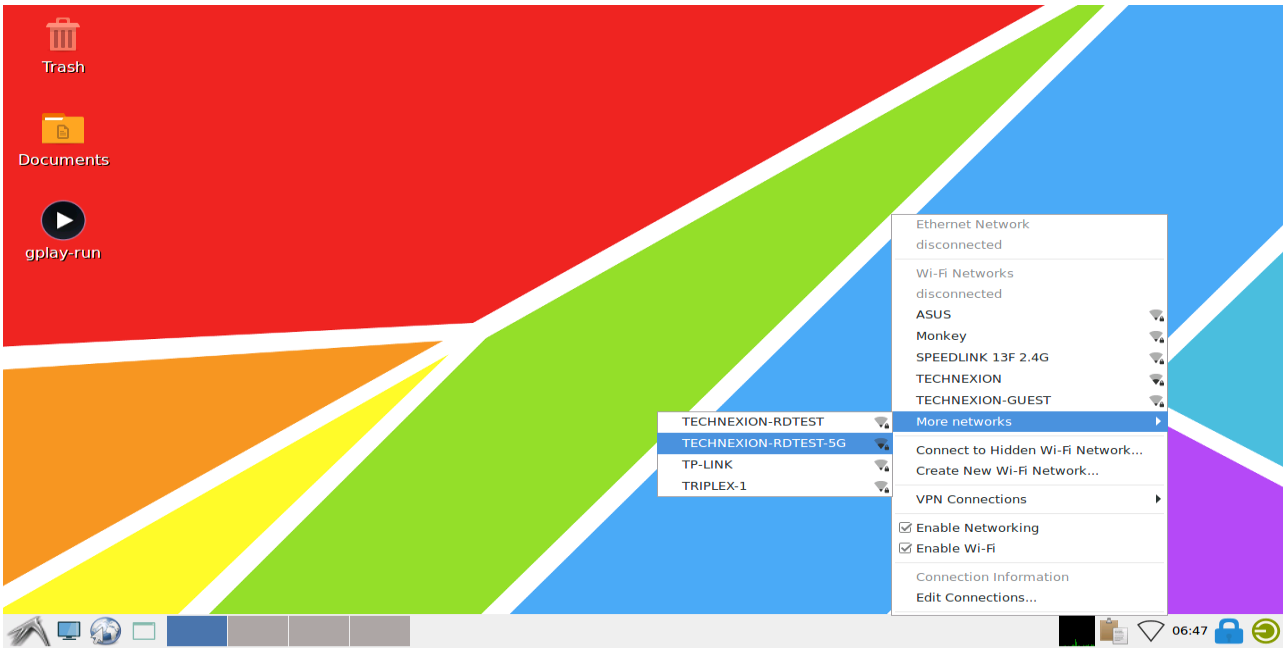
Load wifi driver module first, then driver would load wifi firmware correspondingly by wifi chip ID.

```
root@wandboard:~# modprobe bcmdhd
```

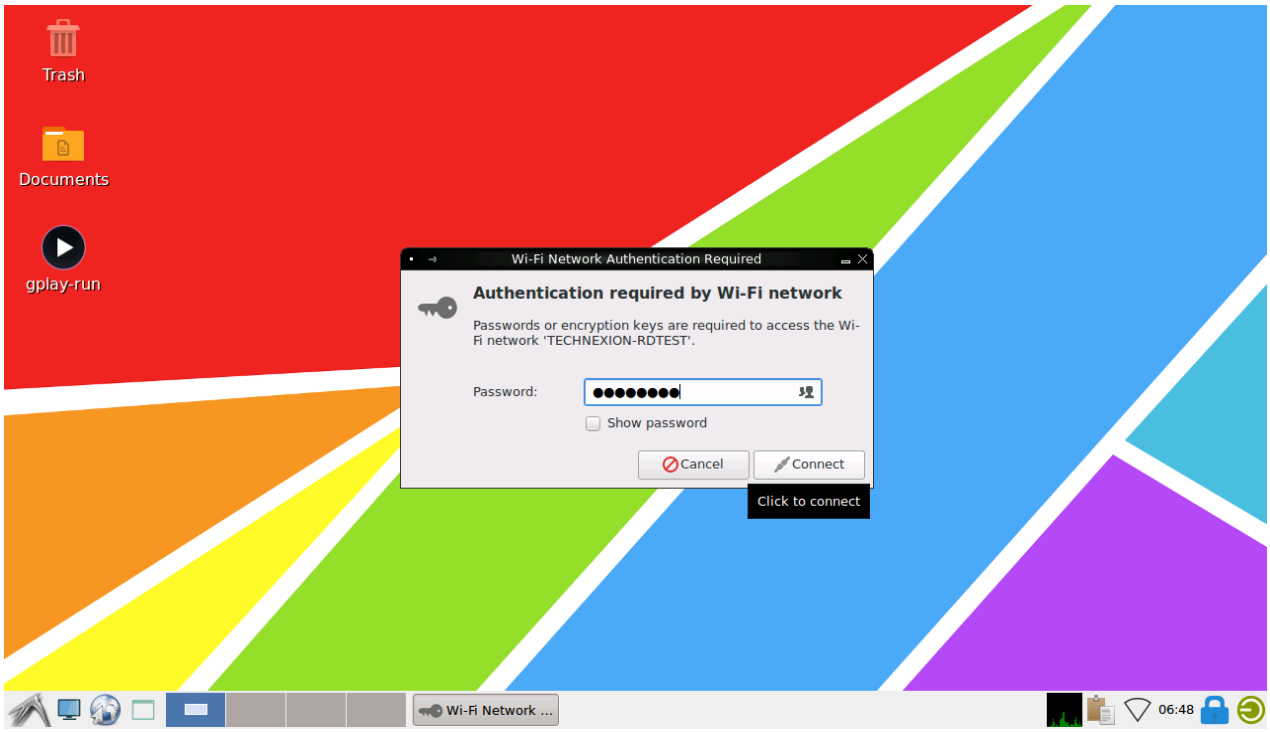


Click the network connections icon.

Select the wifi hotspot, then click it.



Enter the passphrase and connect to the hotspot.



Test if wifi actually works.

```
root@wandboard:~# ping www.google.com
PING www.google.com (203.66.124.251): 56 data bytes
64 bytes from 203.66.124.251: seq=0 ttl=59 time=4.905 ms
64 bytes from 203.66.124.251: seq=1 ttl=59 time=12.278 ms
```

For the next boot, connman will automatically connect to the hotspot you used before.

Clean the stored settings of hotspot.

```
root@wandboard:~# rm /etc/NetworkManager/system-connections/*
```

Switch on/off wifi.

```
root@wandboard:~# nmcli radio wifi off
Disabled wifi

root@wandboard:~# nmcli radio wifi on
Enabled wifi
```

Test bluetooth:

Make sure bluetooth device for testing is able to be scanned.

Load bluetooth firmware into BT chip via UART and need to wait 5~10 sec to complete.

```
root@wandboard:~#  brcm_patchram_plus -d --timeout=6.0 --patchram
/lib/firmware/brcm/bcm4339a0.hcd --baudrate 3000000 --no2bytes --tosleep=2000 --enable_hci
/dev/ttymxc2 &
```

Check if interface “hci” device node exist.

```
root@technexion:~# hciconfig -a
hci0:   Type: BR/EDR  Bus: UART
        BD Address: 43:30:A0:00:00:00  ACL MTU: 1021:8  SCO MTU: 64:1
        DOWN
        RX bytes:574 acl:0 sco:0 events:27 errors:0
        TX bytes:411 acl:0 sco:0 commands:27 errors:0
        Features: 0xbf 0xfe 0xcf 0xfe 0xdb 0xff 0x7b 0x87
        Packet type: DM1 DM3 DM5 DH1 DH3 DH5 HV1 HV2 HV3
        Link policy: RSWITCH SNIFF
        Link mode: SLAVE ACCEPT
```

Bring hci interface up.

```
root@wandboard:~# hciconfig hci0 up
```

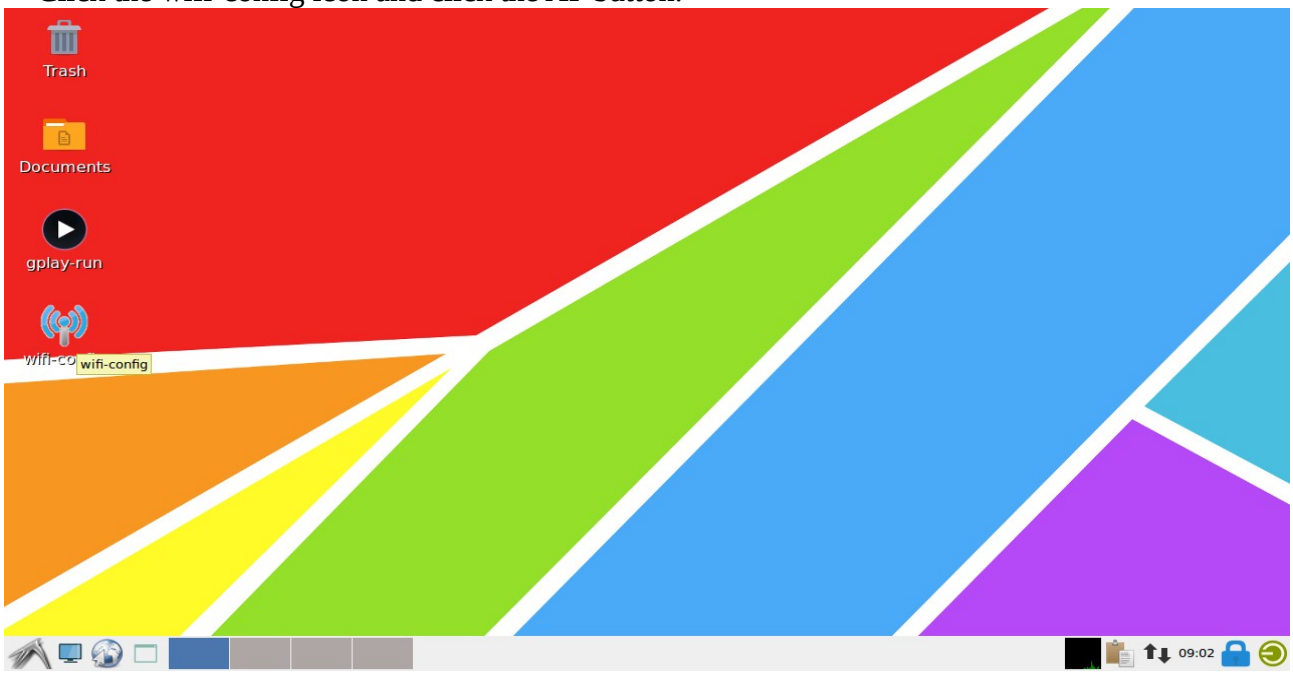
Scan the bluetooth device.

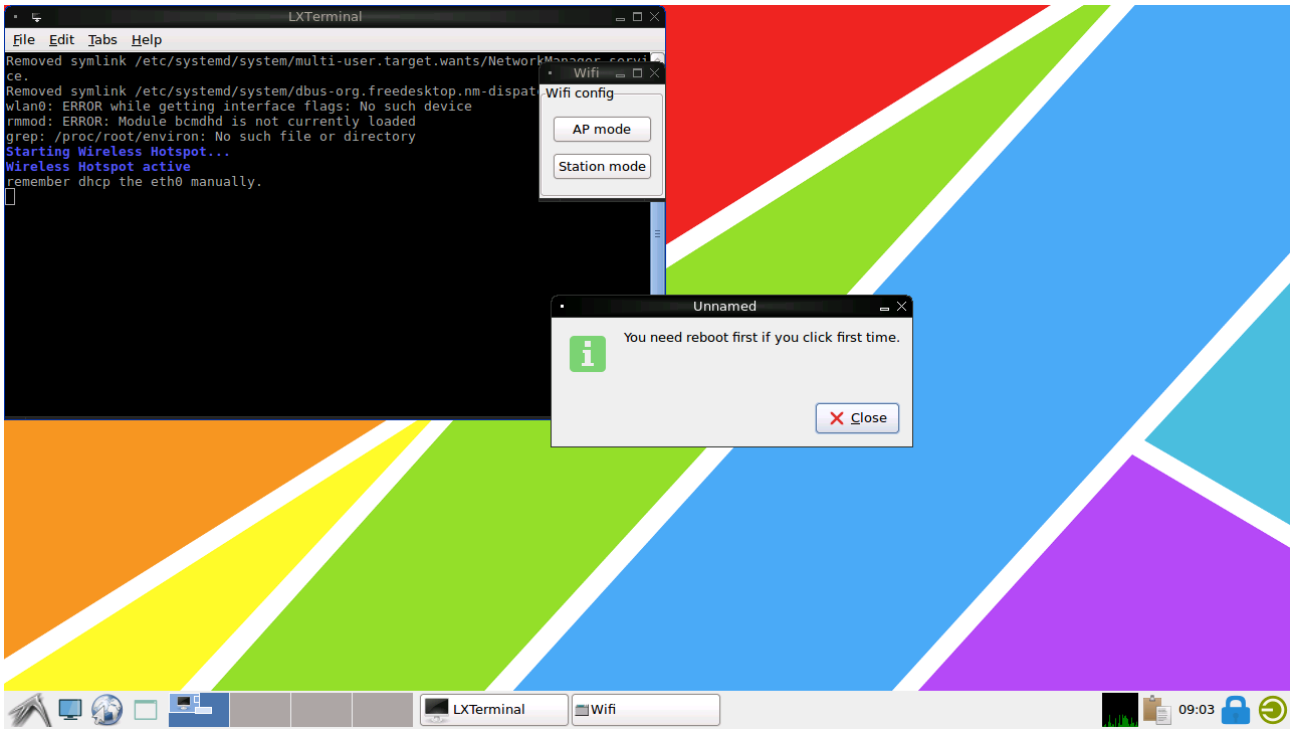
```
root@wandboard:~# hcitool -i hci0 scan
Scanning ...
        00:1D:D8:3A:90:BB       Microsoft Bluetooth Notebook Mouse 5000
```

8. Set up WIFI in AP mode

Set it up in AP mode.

Click the wifi-config icon and click the AP button.





Enable the wifi hotspot.

```
sudo  dhclient eth0
```

Let smart phone connect to board and install the Test APP “speedtest” on your smart phone.

https://play.google.com/store/apps/details?id=org.zwanoo.android.speedtest&hl=zh_TW

Password: 123456789

Set back to station mode.