Ubuntu 15.10/16.04 LTS For MZBSWIP User Guide GIGABYTE Software

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Authors:	Approved By:
Chris Wu	Storm Chen
Brian, Lu	TS Hwang
XY.Hou	Andy Chen

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0. General Information

0.1. Issue Control

This document was edited with **Microsoft Word**, **Version 2010**. The graphic drawings are originally sketched in **Microsoft PowerPoint Version 2010**.

0.2. Record of Changes

Table 0-1. Record of Changes

Issue	Date	Authors	Reason for Changes
0.1	2016/02/23	Brian, Lu	First version.
0.2	2016/02/24	Brian, Lu	Add illustrate about install driver
0.3	2016/02/25	Brian, Lu	Add illustrate about I2C tools
0.4	2016/02/26	Brian, Lu	Modify figure1 that show incorrect screen
0.5	2016/02/26	Brian, Lu	Add more illustrate about I2C tools
0.6	2016/03/01	Brian, Lu	Add illustrate about test for driver
0.7	2016/03/01	Brian, Lu	Modify chapter 0 illustrate
0.8	2016/03/08	Brian, Lu	Modify install Ubuntu, HSUART and I2C tools illustrate
0.9	2016/03/24	Chris Wu	Add 4.5 kernel install and modify HSUART test.
0.10	2016/06/22	XY Hou	Play 4K video with gstreamer vaapi & install eth driver r8168
0.11	2016/06/23	XY Hou	To get HDMI audio working when playing 4K video
0.12	2016/07/06	XY Hou	Support Ubuntu 16.04 LTS

0.3. References

NO	Document title

0.4. Acronyms

1. Install Ubuntu

- **1.1.** Prepare devices and software
- 1. USB stick
- 2. Image to USB tool Win32DiskImager
- 3. Ubuntu 15.10
- 4. Download Kernel 4.5 (DEBs):
- linux-headers-4.5.0-xxx-_all.deb linux-headers-4.5.0-xxx-generic_4.5.0-xxx_amd64.deb linux-image-4.5.0-xxx-generic_4.5.0-xxx_amd64.deb http://kernel.ubuntu.com/~kernel-ppa/mainline/v4.5-wily/
- 5. Graphics Installer 1.4.0 for Ubuntu* 15.10, 64-bit https://01.org/zh/linuxgraphics/downloads?langredirect=1

1.2. Create a bootable USB stick on Windows

Open the Win32 Disk Imager with Windows OS and as follow figure1. Step1: select your USB device

Step2: Find "ubuntu-15.10-desktop-amd64.iso" file where you download. Step3: Click "Write" button

Image File				De ^l 期閉	Step 1
D:/ubuntu-15.10-desl	ktop-amd64.iso			🦲 [F:\] 🔹	-
Copy 🕅 MD5 Ha Progress	sh:				- Step 2
Version: 0.9.5	Cancel	Read	Write	Exit	
					J.

Figure1

- 1.3. Power on MZBSWIP and setting
- 1. Insert your USB stick to machine before you power on the machine.
- 2. Power on your machine and press "Delete" to enter BOIS setup.
- 3. Make sure your BIOS version is **F1**.
- 4. After select "Save and Exit" option, select "Restore Defaults" to use defaults setting. See figure2.
- 5. Select "Advanced" option and "OS selection" to set Linux System. See figure3 and figure4.
- 6. Select "Chipset" option and set "LPSS DMA #1 (D30:F0)" and "LPSS I2C #1 (D24:F1)" option for **ACPI Mode**. See figure5.

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Figure2



Figure3

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Figure4

Onboard Idio	[Enable
Onboard AN 1	[Enable
Onboard IN 2	[Enable
DVMT Pre-Allocated	[64M]
ERP Lowest Power State Mode	[Disabled]
Restore AC Power Loss	[Power Off]
Use internal UART to output debug	[Disabled]
SCC eMMC Support (D16:FO)	[PCI mode]
LPSS with GPIO Devices Support	[Enabled]
LPSS DMA #1 (D30:F0)	[ACPI Mode]
LPSS I2C #1 (D24:F1)	[ACPI Mode]
LPSS HSUART #1 (D30:F3)	[PCI Mode] Er
LPSS HSUART #2 (D30:F4)	[PCI Mode] +

Figure 5

1.4. Boot from USB device

- 1. After save and exit BIOS setup, press F12 to boot from USB device and select UEFI : <your USB stick, Partition 1> option. See figure6.
- 2. Then you can see the install menu and select "Install Ubuntu" option. You will see figure7 screen after you select "Install Ubuntu". Select "continue" to start installing.
- 3. After you start installing Ubuntu, you will see figure8 screen and select "Erase disk and install Ubuntu" to install.

P.	lease select boot device:
JEFI:	Built-in EFI Shell
bunti	u
ibunti	u
anDi	sk
EFI:	SanDisk, Partition 1
inter	Setup
t	and ↓ to move selection
EN	TER to select boot device
F	sc to boot using defaults

Figure 6

Quit Back Continue

Figure7

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nstall (as superuser)	
nstallation type	
This computer currently has Ubuntu 15.10 on it. What would you like to do?	
Reinstall Ubuntū 15.10 Documents, music, and other personal files will be kept. Installed software will be kept where possible.	system-wide settings will be cleared.
Crase Ubuntu 15.10 and reinstall Warning: This will delete all your Ubuntu 15.10 programs, documents, photos, music, and any other files	
O Install Ubuntu 15.10 alongside Ubuntu 15.10 Documents, music, and other personal files will be kept. You can choose which operating system you wa	nt each time the computer starts up.
• Erase disk and install Ubuntu Warning: This will delete all your programs, documents, photos, music, and any other files in all operation	g systems.
Encrypt the new Ubuntu installation for security You will choose a security key in the next step.	Hilling and the second
Use LVM with the new Ubuntu installation This will set up Logical Volume Management, It allows taking sparshots and easier partition resizing.	
Something else	8
YOU CAN CREATE OF TESLEE PARTICIONS YOUTHER, OF CHOOSE MULLIUR PARTICIONS OF OWNER.	Back Install N

Figure8

1.5. Upgrade to Linux kernel 4.5 in Ubuntu (recommend to fix kernel issue)

1. Download packages from <u>http://kernel.ubuntu.com/~kernel-ppa/mainline/v4.5-wily/</u> and store under /tmp directory.

linux-headers-4.5.0-xxx-_all.deb linux-headers-4.5.0-xxx-generic_4.5.0-xxx_amd64.deb linux-image-4.5.0-xxx-generic_4.5.0-xxx_amd64.deb

- 2. Open a terminal.
- 3. For command line: *cd /tmp/ sudo dpkg –i *.deb*

2. Install driver

2.1. SD card driver

- 1. If your Ubuntu kernel is 4.4, you don't need install SD card driver, please skip it.
- 2. Download the SD card driver package from gigabyte website.
- 3. Extract the package where you download

\$ cd < path >
\$ tar zxvf realtek-cr-scsi-1.4.4.tar.gz

4. Install driver

```
$ cd < path >/realtek-cr-scsi-1.4.4
$ make
$ sudo make install
```

Install driver do not mean driver is running, if you install successfully, then you can load the

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module to enjoy the driver by insert rts-cr-core.ko and rts-cr-host.ko. It is easy to load driver by following command.

\$ sudo modprobe rts-cr-core
\$ sudo modprobe rts-cr-host

If you want to uninstall this driver, just use the command below:

\$ cd < path >/realtek-cr-scsi-1.4.4 \$ sudo make uninstall

2.2. GPIO driver

- 1. If you need to use GPIO driver, please contact our FAE to get driver.
- 2. Extract the package where you download.

\$ cd < path > \$ tar zxvf gpiodrv.tar.gz

3. Install driver

\$ cd < path >/gpiodrv
\$ make
\$ sudo insmod gpiodrv.ko

- 4. Please reference sisa library to use driver.
- **2.3.** Ethernet driver
- 1. Extract the package

\$ tar jxvf 0005-r8168-8.042.00.tar.bz2

2. Build and install driver

\$ cd r8168-8.042.00 \$ sudo sh autorun.sh

2.4. Intel graphics installer (recommend)

Install unofficial Intel graphic driver to have video HW decode or 3D Open-GL support on Ubuntu, but we are sorry about not to provide any support from open source project.

- 1. Download Graphics Installer 1.4.0 for Ubuntu* 15.10, 64-bit.deb from https://01.org/zh/linuxgraphics/downloads?langredirect=1 and store under /tmp directory.
- For command line: cd /tmp/ sudo dpkg –i intel-linux-graphics-installer_1.4.0-0intel1_amd64.deb

3. Tools

3.1. I2C

If your CPU is N3700, i2c device is **i2c-9**. N3710 displays **i2c-8**.

1. Install I2C tools

\$ sudo apt-get update
\$ sudo apt-get install i2c-tools

2. Find I2C device.

\$sudo i2cdetect -1

3. Scan an I2C bus for devices.

\$ sudo i2cdetect -y -r 9

4. Examine registers visible through the I2C bus

\$ sudo i2cdump -f -y 9 0x56

5. set registers visible through the I2C bus

\$ sudo i2cset -f -y 9 0x56 0x00 0x00

- 3.2. Gstreamer vaapi
- 1. Installing gstreamer1.0-vaapi package

\$ sudo apt-get update
\$ sudo apt-get install gstreamer1.0-vaapi

2. Installing gst-plugins-bad package

\$ sudo apt-get install ubuntu-restricted-extras

3. Playback 4K video

\$ sudo gst-launch-1.0 filesrc location=< video path > ! qtdemux name=d d. ! queue ! h264parse ! vaapidecode ! vaapisink d. ! queue ! avdec_aac ! audioconvert ! alsasink

4. If no sound when playing 4K video, please go to "System Settings". See Figure 9.

🛞 🖨 System Se	ttings					
All Settings					Q	
Personal						
			<u>()</u>			
Appearance	Brightness & Lock	Language Support	Online Accounts	Security & Privacy	Text Entry	
Hardware						
*	*			•		
Bluetooth	Color	Displays	Keyboard	Mouse & Touchpad	Network	Power
Printers	Sound	Wacom Tablet				
System						
?	ŵ			\odot	Ŕ	88
Backups	Details	Landscape	Software &	Time & Date	Universal	User Accounts
			Figure9			

Then select the HDMI in the "Play sound through". See Figure 10.

Righ
Q
Maximur
11 3) Output 👻

Figure10

4. Test

- **4.1.** GPIO
- 1. Change file permission.

\$ sudo chmod 777 /sys/kernel/gpiodrv/gpio_*

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\$ echo "0xFED8C400" > /sys/kernel/gpiodrv/gpio_pin

You can choose register as below

0xFED8C400	0xFED8C408
0xFED8C410	0xFED8C418
0xFED8C420	0xFED8C428
0xFED8C438	0xFED8C440
0xFED85400	0xFED85410
0xFED85430	

3. Control the gpio low and you can see the LED lights on.

\$ echo "0" > /sys/kernel/gpiodrv/gpio_value

4. Control the gpio high and you can see the LED lights off.

\$ echo "1" > /sys/kernel/gpiodrv/gpio_value

5. "0xFED85400", "0xFED85410" and "0xFED85430" are reversed. Control the gpio low LED lights off and Control the gpio high lights on.

4.2. HSUART

- 1. Make sure your console cable is connecting "SERPO1" with MZBSWIP and your PC.
- 2. Open terminal and run minicom on MZBSWIP.

\$sudo minicom

and type CTRL+A O to open configure minicom. See figure 11.

Welcome	e to minicom 2.7	
OPTIONS	5: T18n	
Compile	ed on Jan 1 2014, 17:13:19.	
Port /d	dev/ttyS4, 14:31:55	
Proga (TPI-A 7 for beln on aperial key	10
FIGSS C	SIRL-M 2 IOI HEID OH SPECIAL KE	
	+[configuration]	
	Filenames and paths	
	File transfer protocols	
	Serial port setup	
	Modem and dialing	
	Screen and keyboard	
	Save setup as s4	
	Save setup as	
	Exit	

Figure 11

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Ubuntu User Guide GIGABYTE Software All Rights Reserved Ubuntu For MZBSWIP User Guide_v0.12 Ubuntu For MZBSWIP User Guide _v0 12 12/13 3. Set A-Serial Device to /dev/ttyS4 and F-Set Hardware Flow Control to No. See figure 12.

Welcon	me to minicom 2.7
OPTI+-	
Comp	A - Serial Device : /dev/ttyS4
Port	B - Lockfile Location : /var/lock
1	C - Callin Program :
Pres	D - Callout Program :
1	E - Bps/Par/Bits : 115200 8N1
1	F - Hardware Flow Control : No
1	G - Software Flow Control : No
1	
1	Change which setting?
+-	
	Screen and keyboard
	Save setup as s4
	Save setup as
	Exit
	++
OTDI 1	3 7 5-0 5-1- 445000 0M4 MOD Ministry 0 7 177400 0551ins 55074
CIRL-A	A 2 for help 115200 SNI NOK Minicom 2.7 VI102 Offline tty34

Figure 12

4. Save setup and give name to save your configuration. See figure 11, configuration saves as hsuart.

Welcome to minicom 2.7					
OPTIONS: I18n					
Port /dev/ttyS4, 14:31:55					
Press CTRL-A Z for help on special keys					
+[configuration]+					
Filen++					
File Give name to save this configuration?					
Seria > hsuart					
Modem++					
Screen and keyboard					
Save setup as s4					
Save setup as					
Exit					
++					

Figure 13

- 5. Type CTRL+A Q to close minicom.
- 6. For terminal on MZBSWIP, run minicom again and load your configuration, hsuart.

\$sudo minicom hsuart

- 7. Type any word by minicom on MZBSWIP. You can use putty or other tools to connect com port on your PC and check HSUART is working.
- 8. If your console cable is connecting **SERPO2**, you should back to step 3 and set Serial Device option to /dev/ttyS5

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