LIVA X

UBUNTU INSTALLATION GUIDE

Version 1.0

01/30/2016
### REVISION HISTORY

<table>
<thead>
<tr>
<th>VERSION</th>
<th>REVISION HISTORY</th>
<th>DATE</th>
<th>AUTHOR</th>
</tr>
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<tr>
<td>1.0</td>
<td>First version to release</td>
<td>2016-01-30</td>
<td>Taylor Huang</td>
</tr>
</tbody>
</table>
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1. Introduction

This goal of document is to provide information and instructions to people who want to install Ubuntu on LivaX. The information covered here mainly is relevant to Ubuntu 14.04.3 LTS.

1.1. Overall Installation Procedure

- Download and Install Ubuntu OS
- Install GFX Driver
- Install WIFI/BT Driver
2. Download and Install Ubuntu OS

Ubuntu is a Debian-based Linux operating system and distribution for personal computers, smartphones and network servers. You can free download and install desktop distribution of Ubuntu on LivaX. Here are the installation instructions of ubuntu 14.04.3 LTS.

2.1. Download Ubuntu 14.04.3 LTS 64-bit

The ISO file can be downloaded from Ubuntu Official Website.

http://www.ubuntu.com/download/desktop

In the downloading page, find Ubuntu 14.04.3 LTS and choose "64bit – recommended" to download.

2.2. Install Ubuntu OS

Visit Ubuntu Official Website to get the Ubuntu installation guide:

https://help.ubuntu.com/

There are two ways to burn the Ubuntu image into a USB disk:

A. Recommended to burn the Ubuntu image into a USB disk with Universal USB Installer.

B. Use Linux command to burn Ubuntu image into a USB disk.

```
$ su
# fdisk -l  (to make sure USB disk path)
# dd if=/path/ubuntu-14.04.3-desktop-amd64.iso of=/dev/sdx
```

Note: The image must be written to the whole-disk device and not a partition, e.g. /dev/sdb and not /dev/sdb1. Do not use tools like unetbootin which alter the image.

2.3. Ignore Installing Warning

Once warning dialog appears like following picture during installation. You can press “Ignore” buttons to continue installation. The problem is a bug on Ubuntu 14.04 when Ubuntu is installed on eMMC. During installation, Ubuntu will scan all the available partitions. However, /dev/mmcblk0rpmb is special partitions...
for secure data on eMMC and cannot be accessed via normal emmc command. Thus, the popup warning will show up.

Ubuntu 15.10 already skip RPMB partition to fix the problem.
3. **GFX Driver**

Intel has a long history of producing or commissioning open source drivers for its graphics chips. There provide integration of required graphic driver on LivaX.

The version of driver that LivaX need to be installed as follows:

- Libvpdpau -1.1-1
- Libva - 1.6.1
- vaapi-intel-driver - 1.6.1
- Cairo - 1.14.2
- Libdrm - 2.4.64
- Mesa - 11.0.2
- Xorg-server - 1.17.2

There provides two scripts "liva-graphic.sh" and "liva-graphic-e.sh" :

- "liva-graphic.sh" : Download the required version of driver. Then Build and install GFX driver on ubuntu 14.04.3. It should be executed with "mesa.diff" and "xorg-server.diff" diff files.
- "liva-graphic-e.sh" : Download and install GFX driver for reverting to generated version.

The GFX script and diff file download website as following link:

http://www.ecs.com.tw/ECSWebSite/Product/Product_LIVA_DOWNLOAD.aspx?DetailID=1593&LanID=0

Enter LIVA X download page to download GFX script & diff files.

### 3.1. Requirements

To build GFX driver, do following commands first.

```
$ sudo apt-get update
$ sudo apt-get install gcc make binutils libncurses5-dev
```

### 3.2. Build and Install

Execute "liva-graphic.sh" for building and installing drivers. Before executing script, make sure "mesa.diff","xorg-server.diff" and "liva-graphic.sh" in the
same folder. Entry to scripts download folder and Run the script via following commands.

```bash
$ sudo chmod a+x liva-graphic.sh
$ ./liva-graphic.sh
```

If executing scripts that ECS provides successfully means already update GFX driver. Otherwise show more details of GFX driver as following:

a. **Libvdpau**
   
   ◆ Installation info of Libvdpau is in following figure, one of shown version that needs to be installed.

<table>
<thead>
<tr>
<th></th>
<th>Update version for Ubuntu</th>
<th>Generated version of Ubuntu</th>
</tr>
</thead>
<tbody>
<tr>
<td>version</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install</td>
<td>Libvdpau – 1.1-1</td>
<td>Libvdpau – 0.7-1</td>
</tr>
<tr>
<td></td>
<td>libvdpau-dev_1.1-1ubuntu1_amd64.deb</td>
<td>libvdpau-dev_0.7-1ubuntu0.1_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libvdpau1_1.1-1ubuntu1_amd64.deb</td>
<td>libvdpau1_0.7-1ubuntu0.1_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libvdpau-doc_1.1-1ubuntu1_all.deb</td>
<td>libvdpau-doc_0.7-1ubuntu0.1_all.deb</td>
</tr>
</tbody>
</table>

   ◆ If you download needed files, entry to download folder and run the following commands :

   ```bash
   $ sudo dpkg -i *.deb
   $ sudo apt-get install -f
   ```

b. **Libva**
   
   ◆ Installation info of Libva is in following figure, one of shown version that needs to be installed.

<table>
<thead>
<tr>
<th></th>
<th>Update version for Ubuntu</th>
<th>Generated version of Ubuntu</th>
</tr>
</thead>
<tbody>
<tr>
<td>version</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install</td>
<td>Libva – 1.6.1-1</td>
<td>Libva – 1.3.0-2</td>
</tr>
<tr>
<td></td>
<td>libva-dev_1.6.1-1_amd64.deb</td>
<td>libva-dev_1.3.0-2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libva-drm1_1.6.1-1_amd64.deb</td>
<td>libva-drm1_1.3.0-2_amd64.deb</td>
</tr>
</tbody>
</table>
c. vaapi-intel-driver

- Installation info of vaapi-intel-driver is in following figure, one of shown version that needs to be installed.

<table>
<thead>
<tr>
<th></th>
<th>Update version for Ubuntu 14.04.3</th>
<th>Generated version of Ubuntu 14.04.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>version</td>
<td>vaapi-intel-driver –1.6.1-1</td>
<td>vaapi-intel-driver –1.3.0-1</td>
</tr>
<tr>
<td>Install</td>
<td>i965 Va-driver _1.6.1-1_amd64.deb</td>
<td>i965-Va-driver _1.3.0-1Ubuntu1_amd64. deb</td>
</tr>
</tbody>
</table>

- If you download needed files, entry to download folder and run the following commands :

  $ sudo dpkg –i *.deb
  $ sudo apt-get install -f

---

d. Cairo

- Installation info of Cairo is in following figure, one of shown version that needs to be installed.
<table>
<thead>
<tr>
<th>Install</th>
<th>Update version for Ubuntu 14.04.3</th>
<th>Generated version of Ubuntu 14.04.3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cairo –1.14.2-2</td>
<td>Cairo –1.13.0~20140204</td>
</tr>
<tr>
<td>libcairo2-dev_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo2-dev_1.13.0~20140204-0ubuntu1.1_amd64.deb</td>
<td></td>
</tr>
<tr>
<td>libcairo-gobject2_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo-gobject2_1.13.0~20140204-0ubuntu1.1_amd64.deb</td>
<td></td>
</tr>
<tr>
<td>libcairo2-doc_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo2-doc_1.13.0~20140204-0ubuntu1.1_all.deb</td>
<td></td>
</tr>
<tr>
<td>libcairo2_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo2_1.13.0~20140204-0ubuntu1.1_all.deb</td>
<td></td>
</tr>
<tr>
<td>libcairo-script-interpreter2_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo-script-interpreter2_1.13.0~20140204-0ubuntu1.1_amd64.deb</td>
<td></td>
</tr>
<tr>
<td>cairo-perf-utils_1.14.2-2ubuntu2_amd64.deb</td>
<td>cairo-perf-utils_1.13.0~20140204-0ubuntu1.1_amd64.deb</td>
<td></td>
</tr>
</tbody>
</table>

If you download needed files, entry to download folder and run the following commands:

```
$ sudo dpkg -i *.deb
$ sudo apt-get install -f
```

e. **Libdrm**

To build Libdrm, do following commands first.

```
$ sudo apt-get build-dep libdrm
$ sudo apt-get install xutils-dev
```

Update libdrm that must to rebuilt via following commands:

```
$ git clone https://anonscm.debian.org/git/pkg-xorg/lib/libdrm.git
$ cd libdrm && git checkout libdrm-2.4.64-1-b libdrm-2.4.64-1
$ dpkg-buildpackage -uc -us -b -rfakeroot -j4
```

Removing unnecessary files and only remaining installation files required via following commands.

```
$ rm *dbg*
$ rm *.changes
```
Entry to compiled .deb files folder and install them via following commands.

```
$ rm *.udeb
$ rm *.dsc
```

```
$ sudo dpkg -i *.deb
$ sudo apt-get install -f
```

◆ Installation info of Libdrm is in following figure, one of shown version that needs to be installed.

<table>
<thead>
<tr>
<th>Version</th>
<th>Update version for Ubuntu 14.04.3</th>
<th>Generated version of Ubuntu 14.04.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install</td>
<td>Libdrm –2.4.64-1</td>
<td>Libdrm –2.4.60-2</td>
</tr>
<tr>
<td></td>
<td>libdrm-intel1_2.4.64-1_amd64.deb</td>
<td>libdrm-intel1_2.4.60-2~ubuntu14.04.1_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libdrm2_2.4.64-1_amd64.deb</td>
<td>libdrm2_2.4.60-2~ubuntu14.04.1_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libdrm-nouveau2_2.4.64-1_amd64.deb</td>
<td>libdrm-nouveau2_2.4.60-2~ubuntu14.04.1_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libdrm-amdgpu1_2.4.64-1_amd64.deb</td>
<td>libdrm-amdgpu1_2.4.60-2~ubuntu14.04.1_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libdrm-radeon1_2.4.64-1_amd64.deb</td>
<td>libdrm-radeon1_2.4.60-2~ubuntu14.04.1_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libdrm-dev_2.4.64-1_amd64.deb</td>
<td>libdrm-dev_2.4.60-2~ubuntu14.04.1_amd64.deb</td>
</tr>
</tbody>
</table>

◆ Revert to generated version of Libdrm and download needed files, entry to download folder and run the following commands:

```
$ sudo dpkg –i *.deb
$ sudo apt-get install -f
```

**Mesa**

◆ Update Mesa that must to rebuilt via following commands with diff file "mesa.diff":

```
$ git clone https://anonscm.debian.org/git/pkg-xorg/lib/mesa.git
$ cd mesa && git checkout cd59ba3ade0e24c3b378402e56779db88a8bf0e -b 11.0.2-1ubuntu1
$ patch -p1 < mesa.diff (make sure that mesa.diff is in the mesa folder)
```
$ dpkg-buildpackage -uc -us -b -rfakeroot -j4

Removing unnecessary files and only remaining installation files required via following commands.

$ rm *dbg*
$ rm *.changes
$ rm *.udeb
$ rm *.dsc

Entry to compiled .deb files folder and install them via following commands.

$ sudo dpkg -i *.deb
$ sudo apt-get install -f

◆ Installation info of Mesa is in following figure, one of shown version that needs to be installed.

<table>
<thead>
<tr>
<th>version</th>
<th>Update version for Ubuntu 14.04.3</th>
<th>Generated version of Ubuntu 14.04.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install</td>
<td>Mesa --11.0.2-1</td>
<td>Mesa --10.5.9-2</td>
</tr>
<tr>
<td></td>
<td>libegl1-mesa-dev-lts-vivid_11.0.2-1-ubuntu1_amd64.deb</td>
<td>libegl1-mesa-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libegl1-mesa-lts-vivid_11.0.2-1ubuntu1_amd64.deb</td>
<td>libegl1-mesa-dev-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libgbm1-lts-vivid_11.0.2-1ubuntu1_amd64.deb</td>
<td>libgbm1-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libgbm-dev-lts-vivid_11.0.2-1ubuntu1_amd64.deb</td>
<td>libgbm-dev-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libgl1-mesa-dev-lts-vivid_11.0.2-1ubuntu1_amd64.deb</td>
<td>libgl1-mesa-dev-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libgl1-mesa-dri-lts-vivid_11.0.2-1ubuntu1_amd64.deb</td>
<td>libgl1-mesa-dri-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libgl1-mesa-glx-lts-vivid_11.0.2-1ubuntu1_amd64.deb</td>
<td>libgl1-mesa-glx-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libglapi-mesa-lts-vivid_11.0.2-1ubuntu1_amd64.deb</td>
<td>libglapi-mesa-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
<tr>
<td></td>
<td>libgles1-mesa-dev-lts-vivid_11.0.2-1ubuntu1_amd64.deb</td>
<td>libgles1-mesa-dev-lts-vivid_10.5.9-2ubuntu1~trusty2_amd64.deb</td>
</tr>
</tbody>
</table>
Revert to generated version of Mesa and download needed files, entry to download folder and run the following commands:

```bash
$ sudo dpkg --i *.deb
$ sudo apt-get install -f
```

g. **Xorg-server**

- Update xorg-server that must to be rebuilt via following commands with diff file "xorg-server.diff":

```bash
$ git clone https://anonscm.debian.org/git/pkg-xorg/xserver/xorg-server.git
$ cd xorg-server
$ git checkout cbdf27a6dad9533e9811c17cd8722591d4b8b4a6 -b 1.17.2-1ubuntu7
$ patch -p1 < xorg-server.diff (make sure that mesa.diff is in the xorg-server folder)
$ dpkg-buildpackage -uc -us -b -rfakeroot -j4
```

Removing unnecessary files and only remaining installation files required via following commands.
$ rm *dbg*
$ rm *source*
$ rm *.changes
$ rm *.udeb
$ rm *.dsc

Entry to compiled .deb files folder and install them via following commands.

$ sudo dpkg -i *.deb
$ sudo apt-get install -f

* Installation info of xorg-server is in following figure, one of shown version that needs to be installed.

<table>
<thead>
<tr>
<th>version</th>
<th>Update version for Ubuntu 14.04.3</th>
<th>Generated version of Ubuntu 14.04.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install</td>
<td>Cairo –1.14.2-2</td>
<td>Cairo –1.13.0~20140204</td>
</tr>
<tr>
<td>libcairo2-dev_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo2-dev_1.13.0~20140204-0ubuntu1.1_amd64.deb</td>
<td></td>
</tr>
<tr>
<td>libcairo-gobject2_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo-gobject2_1.13.0~20140204-0ubuntu1.1_amd64.deb</td>
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<tr>
<td>libcairo2-doc_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo2-doc_1.13.0~20140204-0ubuntu1.1_all.deb</td>
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<tr>
<td>libcairo2_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo2_1.13.0~20140204-0ubuntu1.1_all.deb</td>
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<tr>
<td>libcairo-script-interpreter2_1.14.2-2ubuntu2_amd64.deb</td>
<td>libcairo-script-interpreter2_1.13.0~20140204-0ubuntu1.1_amd64.deb</td>
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<tr>
<td>cairo-perf-utils_1.14.2-2ubuntu2_amd64.deb</td>
<td>cairo-perf-utils_1.13.0~20140204-0ubuntu1.1_amd64.deb</td>
<td></td>
</tr>
</tbody>
</table>

* Revert to generated version of xorg-server and download needed files, entry to download folder and run the following commands:

$ sudo dpkg –i *.deb
$ sudo apt-get install -f

3.3.Reinstall GFX driver
After executing "liva-graphic.sh", there are some "deb" files in the folder. You can keep these files when reinstalling Ubuntu system at LivaX next time. The commands as following:

```
$ sudo dpkg --install *.deb
$ sudo apt-get install -f
```

3.4. Revert GFX driver

There provide the way to revert generated GFX driver. Entry to downloaded script folder and run the script via following commands:

```
$ sudo chmod a+x liva-graphic-e.sh
$ ./liva-graphic-e.sh
```
4. **WiFi/BT driver**

LivaX uses Realtek RTL8723be Wireless and Bluetooth card. You need to install WiFi & BT driver for function working normally on Ubuntu.

The WiFi/BT driver download website as following link:

http://www.ecs.com.tw/ECSWebSite/Product/Product_LIVA_DOWNLOAD.aspx?DetailID=1593&LanID=0

Enter LIVA X download page to download WiFi/BT driver.

4.1. **Install / Uninstall WiFi driver**

a. **Build & install**

Entry to the WiFi driver directory, and run the following commands:

```
$ make
$ sudo make install -s
$ sudo modprobe 8723be
```

b. **Uninstall**

Entry to the WiFi driver directory, and run the following commands:

```
$ sudo make uninstall -s
```

4.2. **Install / Uninstall BT driver**

a. **Build & install**

Entry to the Bluetooth driver directory, and run the following commands:

```
$ sudo make install -s
$ sudo modprobe rtk_btusb
```

b. **Uninstall**

Entry to the Bluetooth driver directory, and run the following commands:

```
$ sudo make uninstall -s
```