CUBIEBOARD
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Microphone Linux SDK Usage Guide

Version	Author	Modification	Check
V-1.0-20170210	Reashion	Init version	Darren
V-2.0-20170623	Reashion	Release 2.0	Software Group

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Table of Contents

1. Overview

This is a quick guide for these:

- How to setup compiling environment on computer
- How to download SDK
- How to build source code and make a firmware file

2. Hardware Requirements

- Microphone x1
- Computer x1,computer configuration in this guide:Intel® Core™ i5-3470 CPU @ 3.20GHz x4， Memory 8G
- 5V@2A power adapter or CubieBoard lithium battery XTEF855095
- Best to have USB UART Cable ,monitor,mouse,keyboard

3. Software Requirements

- Recommended host OS: Ubuntu 12.04 above
- Install the necessary cross-compile tool chain and software packages on the Ubuntu host OS

4. Cross-compile Environment

```
$sudo apt-get update
$sudo apt-get upgrade
$sudo apt-get install ia32-libs
$sudo apt-get install ncurses-dev
$sudo apt-get install build-essential git u-boot-tools
$sudo apt-get install texinfo texlive ccache zlib1g-dev gawk bison flex gettext uuid-dev
$sudo apt-get install build-essential u-boot-tools uboot-mkimage
$sudo apt-get install binutils-arm-linux-gnueabihf gcc-arm-linux-gnueabi
$sudo apt-get install gcc-arm-linux-gnueabihf cpp-arm-linux-gnueabihf
$sudo apt-get install libusb-1.0-0 libusb-1.0-0-dev
$sudo apt-get install git wget fakeroot kernel-package zlib1g-dev libncurses5-dev
```

5. SDK Prepare

5.1. Download SDK Package File

MEGA： Link

path: Microphone/Source/

For version 1.0, download the Microphone-v1.0.tar.gz and Microphone-v1.0.tar.gz.md5.

If it has new version , please download the new files.

5.2. Check The MD5

After download the files, check the MD5 value of source package.

```
$ md5sum  Microphone-v1.0.tar.gz
```

To check whether the calculated value is same with MD5 file on Mega cloud. If not, please download it again.

5.3. Extract Compressed File

```
$ mkdir  -p XXX-sdk
$ tar -C XXX-sdk -zxpf  Microphone-v1.0.tar.gz
$ sync
$ cd XXX-sdk
```

5.4. Initialization

```
$git reset --hard
$git branch -a
```

There are one branches by default, "master" is development branch, You can also build a new branch to develop, "master" is backup branch.

6. How To Compile

6.1. Configure Board Type

```
$cd owl
$./config.sh
```

```
Select board type:
     1. bubble_gum
     2. bubble_gum_sd
     3. cubieaio-s500
     4. cubieboard6
     5. cubieboard6-lite
     6. gb5_wxga
     7. gb5_wxga_sd
     8. smart-microphone

Which would you like? [bubble_gum] 8
s500 ubuntu smart-microphone configured.
```

Select "smart-microphone". As shown in the following picture , type "8"

Note:

1. After configuration, it will generate the ".config" file in the current directory, ".config" file is copied from owl/s500/boards/ubuntu/smart-microphone/config.

2. If modify config file or change board type, please execute the script "./config.sh" again , update the ".config". If don't change anything , can no longer do this step type configuration.

6.2. Compile Firmware

```
$ make
$ make firmware
```

Above command for starting compile the firmware file,may need to type password to access permissions during this process . At the last the terminal print "Compound firmware successfully! " and print the path of firmware, it proves that the compilation is successful. The path of firmware is owl/out/board type/images/s500_ubuntu_board type_date.fw. This firmware that can be write into the eMMC by USB upgrade tools, the details please refer to installation guide document.

Note:

1.The output files are located at owl/out/board type. Sometimes compile error or change does not take effect, you can go to the directory to check or directly delete the directory to recompile.

2.Compile the firmware repeatedly on the same day, be sure to change the name of the previous firmware file, otherwise the previous file will be overwritten.

6.3. Useful Commands

```
$make kernel
```

Compile kernel only and generate the uImage file in directory owl/out/board type/kernel/arch/arm/boot/.

```
$make  modules
```

Compile modules only and generate the driver modules files in directory owl/out/board type/kernel/driver.

```
$make dtbs
```

Compile dts files only and generate the dtb files in directory owl/out/board type/kernel/arch/arm/boot/dts.

For more commands, please refer to file owl/Makefile.

7. System Modification

After has confirmed that the compiled firmware was successful and can be write into board , boot system OK, you can modify the files or add new files in the following two directories . When compiling the firmware, they will overwrite the old files.

```
ubuntu/system/boards/common/rootfs/          ( the common files every board will use)
ubuntu/system/boards/board type/rootfs/      (configuration file of specific board)
```