Amlogic Linux BSP Openlinux Release Note

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Content

1. Basic Information

1.1. Introduction

This document provides the Openlinux notes for Amlogic Linux BSP reference source code release running on Amlogic reference hardware. To obtain Amlogic Linux BSP reference source code, you will need to have an account to access Amlogic GIT source code repository.

1.1.1. Kernel Version

Kernel version is 4.9.30:

```
commit db3fd4527ed32be44cbd8ffa6dd6a301c89d0d6d
Author: Greg Kroah-Hartman <gregkh@linuxfoundation.org>
Date:    Thu May 25 15:45:05 2017 +0200

       Linux 4.9.30
```

1.1.2. List of Supported Drivers

1)   Timer / Interrupts
2)   Clocks
3)   Pinmux/GPIO/GPIO IRQ
4)   Remote
5)   Hdmi
6)   UART
7)   USB Host
8)   CPU DVFS
9)   System Thermal (IPA)
10) CPU Hotplug
11) SD/SDHC/SDXC
12) eMMC
13) eFuse
14) CEC
15) SARADC/ADCKEY
16) I2C
17) PWM
18) SDIO WiFi/USB WiFi
19) Bluetooth
20) LED
21) Ethernet
22) SecureOS
23) SecureBoot

1.1.3. List of Not Supported Drivers

1)   SPI

1.2. Chip Information

Item	S905X
CPU	Quad Cortex-A53
Max CPU Freq.	1.5G Hz

GPU	Penta Mali-450
Security	TrustZone & TVP
Memory	DDR3/4/3L, LPDDR2/3
Video decoding	4K2K H265&VP9
Video Encoding	1080P H264
Video output	V-by-1/Dual LVDS
HDMI-Tx	4K2K
Ethernet	10/100M

1.3. How to Get Code

1) repo command

You can download Linux BSP source code by running the following repo commands:

- **China openlinux server**

```
$ cd ~/<your-repo-dir>/
$ repo init -u ssh://git@openlinux.amlogic.com/buildroot/platform/manifest.git
$ repo init -m buildroot-openlinux-20170619.xml
$ repo sync
```

- **Overseas openlinux server**

```
$ cd ~/<your-repo-dir>/
$ repo init -u ssh://git@openlinux2.amlogic.com/buildroot/platform/manifest.git
$ repo init -m buildroot-openlinux-20170619.xml
$ repo sync
```

2) download tar package

You can download the tar package freely, but it has no git info:

```
$ wget -c
http://openlinux.amlogic.com:8000/download/ARM/filesystem/Linux_BSP/buildro
ot_openlinux_kernel_4.9_fbdev_20170619.tar.gz
$ tar xvzf buildroot_openlinux_kernel_4.9_fbdev_20170619.tar.gz
```

1.4. Reference Platform

- **P212(S905X)**

    EMMC,WIFI AP6335 ,DDR 2GB

1.5. How to Build Code

1.5.1. Kernel Toolchain

The cross-compile tool used for kernel 4.9 is : gcc-linaro-6.3.1-2017.02-x86_64_aarch64-linux-gnu/,　and it should be pre-installed before kernel build.

```
aarch64-linux-gnu-gcc -v
gcc version 6.3.1 20170109 (Linaro GCC 6.3-2017.02)
```

1.5.2. Build

You can find corresponding Buildroot setenv config and kernel config for the reference hardware by doing the following:

1)　Mbox P212

```
. buildroot/build/setenv.sh
choose mesongxl_p212_32_kernel49_release or
mesongxl_p212_kernel49_release config option
make
Note: Do not use make -jN here as Buildroot does not support top-level parallel
make. This does not mean that Buildroot does not support parallel compilation, but
just that it will handle this inside the Buildroot compilation system.

Uboot compile:
cd bootloader/uboot-2015-dev
./mk gxl_p212_v1
(uboot/fip/u-boot.bin for nand and EMMC, uboot/fip/u-boot.bin.sd.bin for making
bootcard)
```

The upgrade file aml_upgrade_package.img will be generated in output/[config_build_folder]/images/.

1.6. How to Upgrade

- For Windows: Upgrade with USB burn tool.
- For Linux: Upgrade with bash script aml_update_whole_package.sh. Make sure usb driver has been installed correctly.
    1) plugin power cable, at the same time, hold down the POWER key.
    2) plugin the usb cable within 5 seconds.
    3) cd the script directory.
    4) ./aml_update_whole_package.sh path/to/aml_upgrade_package.img.

2. Test Report

2.1. Stability test

Test Platform	Test Case	Total test time	Test Result	
P212#079	dvfs stress	72H	Fail	
P212#096	4KH264&4KH265	12H	Pass	
P212#096	EMMC pressure	10000 times	Pass	

P212#096	EMMC stability	1000 times	Pass	
P212#079	Auto reboot	3000 times	Pass	
P212#166	Auto reboot	3000 times	Pass	

2.2.Video Format Test Report For GSTplayer

Extension	Codec Detail	Tested Resolution	S905X
.3g2	H263	704x576	Support
.3gp	MPEG-4 Visual	640x480	Support
	H263	704x576	Support
	MPEG-4	320x240	Support
.asf	WMV3	320x240	Support
.avi	AVC	1920x1080	Support
	DivX5	1280x720	Support
	M-JPEG	1024x576	Support
	MS MPEG-4 V1	352x218	Support
	RealMagic	720x480	Support
	MPEG-4	720x576	Support
	h264	1920x1080	Support
	FF mpeg MPEG4	640x480	Support
	XVID	640x480	Support
	S-Mpeg 4 v3	720x400	Support
	DivX3	720x576	Support
	DivX4	1920x1080	Support
.dat	MPEG-1	352x288	Support
.divx	DivX5	1280x720	Support
.f4v	AVC(H264)	1280x720	Support
.flv	Sorenson Spark	1920x1080	Support
.mp4	AVC(H264)	1920x1080	Support
	HEVC(H265)	1920x1080	Support
	4K HEVC(4K H265)	4096x2304	Support
	H263	176x144	Support
	MPEG-4 Visual	640x480	Support
.m2ts	AVC	1920x1080	Support
.m2v	MPEG-2	480x576	Support
.m4v	AVC	1280x720	Support
.mkv	WMV3	1280x720	Support
	MPEG-4 Visual	1920x1080	Support
	AVC	1920x1080	Support
	4K HEVC(4K H265)	3840x2160	Support
.mov	MPEG-4 Visual	1280x720	Support
	mjpa	640x480	Support
	H263	320x240	Support
	M-JPEG	640x480	Support
	AVC	1920x1080	Support
	MPEG-4 Visual	640x480	Support
.mpeg	MPEG-2	1920x1080	Support
	MPEG-1	720x576	Support

Extension	Codec Detail	Tested Resolution	Support
.mts	AVC	1440x1080	Support
.ogm	DivX5	640x336	Support
	XVID	640x480	Support
.tp	MPEG-2	1920x1088	Support
.ts	HEVC(H265)	1920x1080	Support
	4K HEVC(4K H265)	4096x2304	Support
	MPEG-1	1920x1080	Support
	AVC	1920x1080	Support
	MPEG-2	1920x1080	Support
.vob	MPEG-2	720x576	Support
.h265	HEVC(H265)	1920x1080	Support
4K	AVC(H264)	4096x2304	Support
	HEVC(H265)	4096x2304	Support

2.3. Video Format Test Report For Kmplayer

Extension	Codec Detail	Tested Resolution	S905X
.3g2	H263	704x576	Support
.3gp	MPEG-4 Visual	640x480	Support
	H263	704x576	Support
	MPEG-4	320x240	Support
.asf	WMV3	320x240	Support
.avi	AVC	1920x1080	Support
	DivX5	1280x720	Support
	M-JPEG	1024x576	Support
	MS MPEG-4 V1	352x218	Support
	RealMagic	720x480	Support
	MPEG-4	720x576	Support
	h264	1920x1080	Support
	FF mpeg MPEG4	640x480	Support
	XVID	640x480	Support
	S-Mpeg 4 v3	720x400	Support
	DivX3	720x576	Support
	DivX4	1920x1080	Support
.dat	MPEG-1	352x288	Support
.divx	DivX5	1280x720	Support
.f4v	AVC(H264)	1280x720	Support
.flv	Sorenson Spark	1920x1080	Support
.mp4	AVC(H264)	1920x1080	Support
	HEVC(H265)	1920x1080	Support
	4K HEVC(4K H265)	4096x2304	Support
	H263	176x144	Support
	MPEG-4 Visual	640x480	Support
.m2ts	AVC	1920x1080	Support
	VC-1	1920x1080	Support
.m2v	MPEG-2	480x576	Support
.m4v	AVC	1280x720	Support
.mkv	WMV3	1280x720	Support
	MPEG-4 Visual	1920x1080	Support

	AVC	1920x1080	Support
	4K HEVC(4K H265)	3840x2160	Support
.mov	MPEG-4 Visual	1280x720	Support
	mjpa	640x480	Support
	H263	320x240	Support
	M-JPEG	640x480	Support
	AVC	1920x1080	Support
	MPEG-4 Visual	640x480	Support
.mpeg	MPEG-2	1920x1080	Support
	VC-1	1920x1080	Support
	MPEG-1	720x576	Support
	WMV1	320x240	Support
.mts	AVC	1440x1080	Support
.ogm	DivX5	640x336	Support
	XVID	640x480	Support
.PMP	H264	480x272	Support
.rmvb	RealVideo4	1920x1080	Support
.tp	MPEG-2	1920x1088	Support
.ts	HEVC(H265)	1920x1080	Support
	4K HEVC(4K H265)	4096x2304	Support
	MPEG-1	1920x1080	Support
	AVC	1920x1080	Support
	AVS	720x576	Support
	AVS＋	720x576	Support
	MPEG-2	1920x1080	Support
.vob	MPEG-2	720x576	Support
.mvc	mvc	1920x1080	Support
.h265	HEVC(H265)	1920x1080	Support
4K	AVC(H264)	4096x2304	Support
	HEVC(H265)	4096x2304	Support

3. Recent Changes

1) Support Widevine Level 1 and Playready DRM. The TDK version is 2.4 now.
2) Fix wifi cannot suspend for the first time.

4. Known Issue

1) The display quality of CVBS output need improve when playback video files.
2) DVFS stability need improve.
3) Compatibility of gstreamer need improve.
4) TrueHD audio does not support.
5) Picture has not been tested.