Amlogic Buildroot 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 need to have an account to access Amlogic GIT source code repository.

1.1.1. Kernel Version

Kernel version is 4.9.99:

```
commit 04cd74a759bf381f8f2c12e9ddb5fe8d0651c483
Author: Greg Kroah-Hartman <gregkh@linuxfoundation.org>
Date:   Wed May 9 09:50:24 2018 +0200

    Linux 4.9.99
```

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

1.2. Chip Information

Item	A311D
CPU	Quad Cortex-A73 Dual Cortex-A53
Max CPU Freq.	TBD
GPU	ARM G52 MP4(4ppc) GPU

Security	TrustZone & TVP
Memory	DDR3/4 LPDDR3/4
Video decoding	4K H265&VP9&AVS2
Video Encoding	1080P H264 H265
HDMI-Tx	4K2K
Ethernet	10/100M/1000M
AV output	CVBS
IP License	Dolby,DTS

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-20180706.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-20180706.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_20180706.tar.gz
$ tar xvzf buildroot_openlinux_kernel_4.9_fbdev_20180706.tar.gz
```

1.4. Reference Platform

- **W400(A311D)**
  EMMC,WIFI AP6398S,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 W400

```
. buildroot/build/setenv.sh
choose mesong12b_w400_32_release or mesong12b_w400_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.
```

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. (version 2.1.5 or upper)
- 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. Video Format Test Report For GSTplayer

Extension	Codec Detail	Tested Resolution	W400
.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 MPEG-4	720x480	Support
		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
.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

2.2.Video Format Test Report For Kmplayer

Extension	Codec Detail	Tested Resolution	W400
.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 MPEG-4	720x480	Support
		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
.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) Update kernel to 4.9.99
2) Support HDR HLG
3) Support EAS CPU schedule
4) Optimize di/usb/hdmi/osd/emmc/media
5) Optimize system stablity
6) Wifi throughput data improved

4. Known Issues

1) No web browser
2) Low probability fail during video stress testing
3) USB read/write speed still need improve