

Amlogic Buildroot Openlinux Release Note

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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:

\$ waet -c

http://openlinux.amlogic.com:8000/download/ARM/filesystem/Linux_BSP/buildroot_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
	MPEG-4 Visual	640x480	Support
.3gp	H263	704x576	Support
	MPEG-4	320x240	Support
.asf	WMV3	320x240	Support

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	AVC	1920x1080	Support	
	DivX5	1280x720	Support	
	M-JPEG	1024x576	Support	
	MS MPEG-4 V1	352x218	Support	
	RealMagic	720x480	Support	
	MPEG-4	720x576	Support	
.avi	h264	1920x1080	Support	
	FF mpeg		Support	
	MPEG4	640x480	''	100/80/106
	XVID	640x480	Support	
	S-Mpeg 4 v3	720x400	Support	
	DivX3	720x576	Support	
	DivX4	1920x1080	Support	4.40
.dat	MPEG-1	352x288	Support	
.divx	DivX5	1280x720	Support	
.f4v	AVC(H264)	1280x720	Support	\ 0
.flv	Sorenson Spark	1920x1080	Support	
	AVC(H264)	1920x1080	Support	
	HEVC(H265)	1920x1080	Support	
	4K HEVC(4K	4006,0004	Support	
.mp4	H265)	4096x2304		
	H263	176x144	Support	
	MPEG-4 Visual	640x480	Support	
.m2ts	AVC	1920x1080	Support	
.m2v	MPEG-2	480x576	Support	
.m4v	AVC	1280x720	Support	
	WMV3	1280x720	Support	
	MPEG-4 Visual	1920x1080	Support	
.mkv	AVC	1920x1080	Support	
	4K HEVC(4K	3840x2160	Support	
	H265)			
	MPEG-4 Visual	1280x720	Support	
	mjpa	640x480	Support	
.mov	H263	320x240	Support	
.11104	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	
.ogiii	XVID	640x480	Support	
.tp	MPEG-2	1920x1088	Support	
	HEVC(H265)	1920x1080	Support	
	4K HEVC(4K	4096x2304	Support	
.ts	H265)			
	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

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Extension	Codec Detail	Tested Resolution	W400
.3g2	H263	704x576	Support
	MPEG-4 Visual	640x480	Support
.3gp	H263	704x576	Support
0.	MPEG-4	320x240	Support
.asf	WMV3	320x240	Support
	AVC	1920x1080	Support
	DivX5	1280x720	Support
	M-JPEG	1024x576	Support
	MS MPEG-4 V1	352x218	Support
	RealMagic	720x480	Support
	MPEG-4	720x576	Support
.avi	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
	AVC(H264)	1920x1080	Support
	HEVC(H265)	1920x1080	Support
.mp4	4K HEVC(4K H265)	4096x2304	Support
	H263	176x144	Support
	MPEG-4 Visual	640x480	Support
Ot	AVC	1920x1080	Support
.m2ts	VC-1	1920x1080	Support
.m2v	MPEG-2	480x576	Support
.m4v	AVC	1280x720	Support
	WMV3	1280x720	Support
	MPEG-4 Visual	1920x1080	Support
.mkv	AVC	1920x1080	Support
10	4K HEVC(4K H265)	3840x2160	Support
	MPEG-4 Visual	1280x720	Support
	mjpa	640x480	Support
.mov	H263	320x240	Support
	M-JPEG	640x480	Support
	AVC	1920x1080	Support
	MPEG-4 Visual	640x480	Support
	MPEG-2	1920x1080	Support
.mpeg	VC-1	1920x1080	Support
	MPEG-1	720x576	Support
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	WMV1	320x240	Support	
.mts	AVC	1440x1080	Support	
oam	DivX5	640x336	Support	
.ogm XVID	XVID	640x480	Support	
.PMP	H264	480x272	Support	
.tp	MPEG-2	1920x1088	Support	
	HEVC(H265)	1920x1080	Support	
	4K HEVC(4K H265)	4096x2304	Support	00
•	MPEG-1	1920x1080	Support	
AVC AVS AVS+ MPEG-2	1920x1080	Support		
	720x576	Support		
	720x576	Support	100	
	1920x1080	Support		
.vob	MPEG-2	720x576	Support	
.mvc	mvc	1920x1080	Support	400
.h265	HEVC(H265)	1920x1080	Support	
ALC	AVC(H264)	4096x2304	Support	
4K	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