Amlogic Buildroot Openlinux Release Note

AMLOGIC, Inc.
2518 Mission College Blvd
Santa Clara, CA 95054
U.S.A.
www.amlogic.com

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 4.9.113:

```
commit f77982e6911294725180897ff7244446ab708381
Author: Greg Kroah-Hartman <gregkh@linuxfoundation.org>
Date:   Tue Jul 17 11:37:54 2018 +0200

    Linux 4.9.113
```

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	S905D	S905X	S805X
CPU	Quad Cortex-A53	Quad Cortex-A53	Quad Cortex-A53
Max CPU Freq.	1.5G Hz	1.5G Hz	1.2G Hz
GPU	Penta Mali-450	Penta Mali-450	Penta Mali-450
Security	TrustZone & TVP	TrustZone & TVP	TrustZone & TVP

Memory	DDR3/4/3L, LPDDR2/3	DDR3/4/3L, LPDDR2/3	DDR3/4/3L
Video decoding	4K2K H265&VP9	4K2K H265&VP9	1080P H265&H264&VP9
Video Encoding	1080P H264	1080P H264	1080P H264
HDMI-Tx	4K2K	4K2K	1080P
Ethernet	10/100M/1000M	10/100M	10/100M
AV output	CVBS	CVBS	CVBS
IP License	Dolby,DTS	Dolby,DTS	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-201812-gxl.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-201812-gxl.xml
$ repo sync
```

1.4. Reference Platform

- **P212(S905X)**
  EMMC,WIFI AP6335 ,DDR 2GB

- **P230(S905D)**
  EMMC,WIFI AP6255 or QCM9377,DDR3 1GB&DDR4 2GB Auto-detect

- **P241(S805X)**
  EMMC,WIFI AP6255 ,DDR 1GB

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) **P212**

```
. buildroot/build/setenv.sh
Select mesongxl_p212_32_release
make
```

2) **P230**

```
. buildroot/build/setenv.sh
Select mesongxl_p230_32_release
make
```

3) **P241**

```
. buildroot/build/setenv.sh
Select mesongxl_p241_32_release
make
```

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

> **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.

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) Plug in power cable, at the same time, hold down the **POWER** key.
  2) Plug in 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	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 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 KPlayer

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 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	3840x2160	Support

	H265)		
.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	**Not 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) Integrated with TDK by default (P212_TDK_32)
2) Integrated with DTS change for DVB (P230)
3) Integrated with DVB source code stack (P230)
4) Integrated with Cobalt 19.LTS (P212)
5) Fixed libplayer audio/video frame drop issue
6) Enabled overlayfs (All boards)

Note:

1. If you want to build P212_TDK_32, please contact with FAE to get offline **libmediadrm.git**, otherwise compile will be broken due to missing libraries.
2. P230 DVB did not contain fe.ko (driver for frontend demodulator) which is offline managed by FAE, you need to manually install the frontend driver.

4. Known Issue