Application Notes

Linux 3.10 OpenWrt Release Note
Revision 0.2

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distribution.

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Revision History

Revision	Date	Author	Changes
0.1	Oct. 24, 2014	Matthew Shyu	Initial draft
0.2	Apr. 2, 2015	Matthew Shyu	Release for S805

1. Overview

This document describes the packages and features that are supported in Amlogic OpenWrt Linux platforms.

It includes:
- Chapter 1: Supported Packages
- Chapter 2: Supported Boards
- Chapter 3: Linux Building and Installation Procedures

2. Chapter 1: Supported Packages

Amlogic adopts OpenWrt as package management system.   See https://openwrt.org/ for more details on how it works.

2.1 List of Supported Package

Package	Version	Description
alsa-lib	1.0.27.2	ALSA User space library. See http://www.alsa-project.org/
attr	20140610	Commands for Manipulating Filesystem Extended Attributes. See http://savannah.nongnu.org/projects/attr
busybox	1.22.1	Tiny versions of many common UNIX utilities. See http://www.busybox.net/
dropbear	2014.63	SSH server and client. See https://matt.ucc.asn.au/dropbear/dropbear.html
firewall	20140919	See http://nbd.name/gitweb.cgi
fstools	2015-02-25.1	See http://nbd.name/gitweb.cgi
gettext	0.19.3	Text processing. See https://www.gnu.org/software/gettext/
glib	1.2.10	See https://git.gnome.org/browse/
gmp	6.0.0a	Library for arbitrary precision arithmetic. See https://gmplib.org/
gnutls	3.3.10	Transport Layer Security Library. See http://www.gnutls.org/.
gssdp	0.13.2	See https://developer.gnome.org/gssdp/unstable/
gst-plugins-base	0.10.36	See http://gstreamer.freedesktop.org/modules/gst-plugins-base.html
gstreamer	0.10.36	Gstreamer. See http://gstreamer.freedesktop.org/
gupnp	0.19.4	Upnp library. See https://wiki.gnome.org/Projects/GUPnP
gupnp-av	0.12.1	See https://wiki.gnome.org/Projects/GUPnP
gupnp-dlna	0.6.6	See https://wiki.gnome.org/Projects/GUPnP
json	0.11	See http://json.org/
jsonfilter	20140619	See http://json.org/
libffi	3.0.13	See https://sourceware.org/libffi
libiconv	1.14	See https://www.gnu.org/software/libiconv/
libnl-tiny	0.1	Libraries for netlink protocol. See http://www.infradead.org/~tgr/libnl/doc/api/
libogg	1.3.2	Ogg library. See http://xiph.org/ogg/
liboil	0.3.17	See http://liboil.freedesktop.org/
libpcap	1.5.3	Packet analyzing. See http://www.tcpdump.org/
libtheora	1.1.1	Video codec. See

		http://www.theora.org/doc/libtheora-1.0/
libubox	20140804	See http://wiki.openwrt.org/doc/techref/libubox
libvorbis	1.3.4	See http://xiph.org/vorbis/
libxml2	2.9.2	XML toolkit. See http://xmlsoft.org/
linux-meson	3.10.33	Amlogic Linux kernel
lua	5.1.5	See http://www.lua.org/
lzo	2.08	See http://gnuwin32.sourceforge.net/packages/lzo.htm
netifd	20140908	See http://wiki.openwrt.org/doc/techref/netifd
nettle	2.7.1	Crypto library. See http://www.lysator.liu.se/~nisse/nettle/.
odhcpd	20140925	DHCP daemon. See https://github.com/sbyx/odhcpd
openssl	1.0.2	Cryptography library. See http://www.openssl.org/
opkg	9c97d5ecd	See http://wiki.openwrt.org/doc/techref/opkg
ppp	2.4.7	Point to point protocol. See https://ppp.samba.org/
procd	20140915	See http://wiki.openwrt.org/doc/techref/procd
uboot		Amlogic uboot
ubox	20150225	See http://nbd.name/gitweb.cgi
ubus	20140917	See http://nbd.name/gitweb.cgi
uci	20140411	See http://nbd.name/gitweb.cgi
util-linux	2.24.1	See https://www.kernel.org/pub/linux/utils/util-linux/
zlib	1.2.8	Data compression library. See http://www.zlib.net/

3. Chapter 2: Supported Boards

This chapter lists the reference boards that Amlogic currently supports.

3.1 List of Supported Boards

Amlogic supports the meson3 f16 with Linux kernel 3.10.33. This section lists the features and peripherals for these boards.

f16:

- Amlogic 8726-M3 CPU
- 1GB DDR3
- HDMI out x 1
- TF Card x 1
- Ethernet x 1
- SDIO Wifi x 1
- ADC key x 1
- YPbPr out x 1
- SPDIF (coaxial) x 1
- USB hub x 1
- USB otg x 1
- SPI & Nand x 1

M201:

- Amlogic S805 CPU
- 1GB DDR3
- HDMI out x 1
- TF Card x 1
- Ethernet x 1
- USB Wifi/BT (AP6210) x 1
- USB hub x 1
- eMMC x 1

M200:

- Amlogic S805 CPU
- 1GB DDR3
- HDMI out x 1
- TF Card x 1
- Ethernet x 1
- USB Wifi/BT (AP6210) x 1

- USB port x 2
- eMMC x 1
- VGA x 1

4. Chapter 3: Linux Compilation and Installation Procedures

4.1 Toolchains

For compiling uboot, additional external tool chain is required and can be downloaded from Amlogic OpenLinux website through

wget -c http://openlinux.amlogic.com:8000/deploy/CodeSourcery.tar.gz
wget -c http://openlinux.amlogic.com:8000/deploy/gnutools.tar.gz
wget -c http://openlinux.amlogic.com:8000/deploy/arc-4.8-amlogic-20130904-r2.tar.gz

Extract and put them into search path.

$ tar zxf CodeSourcery.tar.gz -C /opt
$ tar zxf gnutools.tar.gz -C /opt
$ tar zxf arc-4.8-amlogic-20130904-r2.tar.gz -C /opt
$ export PATH=$PATH:
/opt/gnutools/arc2.3-p0/elf32-4.2.1/bin:/opt/gnutools/arc2.3-p0/uclibc-4.2.1/bin:/opt/arc-4.8-amlogic-20130904-r2/bin: /opt/CodeSourcery/Sourcery_G+
+_Lite/bin:/opt/CodeSourcery/Sourcery_G+
+_Lite/arm-none-eabi/bin:/opt/CodeSourcery/Sourcery_G+
+_Lite/arm-none-linux-gnueabi/bin

4.2 Compiling the System

Getting the source code:
$ wget -c
http://openlinux.amlogic.com:8000/download/ARM/filesystem/openwrt-2015-04-01-8ccfe85432.tar.gz
$ wget -c
http://openlinux.amlogic.com:8000/download/ARM/openwrt/oldpackages-2015-04-01-c18fb70da5.tar.gz
$ wget -c
http://openlinux.amlogic.com:8000/download/ARM/openwrt/packages-2015-04-01-6e8e14cd81.tar.gz
Compilation:
$ tar zxvf oldpackages-2015-04-01-c18fb70da5.tar.gz
$ tar zxvf packages-2015-04-01-6e8e14cd81.tar.gz
$ tar zxvf openwrt-2015-04-01-8ccfe85432.tar.gz

```
$ cd openwrt
$ ./scripts/feeds update -a
$ ./scripts/feeds install -a
$ cp boardcfg/meson3_3.10_f16_release .config   # m3
$ cp boardcfg/meson8b_3.10_m200_release .config  # s805 m200 board
$ cp boardcfg/meson8b_3.10_m201_release .config  # s805 m201 board
$ make oldconfig # or make menuconfig
$ make
```

4.3 Installing Linux on SD Cards

The following steps show how to install the resulting system on your SD card.
1. Create an SD card with two partitions in ext2 format.
2. Copy uboot and kernel to partition 1

> $ sudo cp bin/meson/boot.img /media/sdcard
> $ sudo cp bin/meson/openwrt-meson-<board>-u-boot.bin
> /media/sdcard/u-boot.bin
> $ sync

3. Dump rootfs to partition2:

> $ sudo dd if=rootfs.squashfs of=/dev/mmcblk0p2

4. Insert SD card into your platform and reboot it into uboot. Replace original uboot with the new one under uboot prompt:

> # mmcinfo
> # ext2load mmc 0 ${loadaddr} u-boot.bin
>
> // for m3
> # sf probe 2
> # sf erase 0 60000
> # sf write ${loadaddr} 0 60000
>
> // for s805
> # store rom_write ${loadaddr} 0 100000
>
> # reset

5. Enter uboot again, and reset environment variables:

> # defenv
> # saveenv
> # reset