Realtek NAS SDK

Graphics libs

Driving IC Innovation

Agenda

- Introduction
- Kernel – mali driver
- Package Build
- Run application on weston

Introduction

- Make sure there is “mali driver” built in kernel
- Package Build order
  - mali-wayland -> libxml2 -> libffi -> Wayland -> wayland-protocols -> libdrm -> weston
  - You can find patches and files for these packages in SDKRelease/OpenWRT-LEDE or SDKRelease/Packages

Kernel – Mali driver

- Mali source code in SDKRelease/Packages/driver/mali/
- Compile Mali driver please refer to Makefile in SDKRelease/OpenWRT-LEDE/package/kernel/mali/Makefile
  - remove “include $(TOP)/make.include in” Makefile
    - sed -i -e '/make.include/d' Makefile
  - patch
    - patches-bifrost(1619)
      - 100-build-dma-buf-test-exporter-kutf-module.patch
    - patches-midgard(1296)
      - 100-build-dma-buf-test-exporter-kutf-module.patch
  - MAKE_FLAGS
    - make -j1 ARCH=arm64 CROSS_COMPILE="aarch64-openwrt-linux-gnu-" LINUX_KERNEL_PATH="../linux-external“
    - You may need change linux kernel path and need compile kernel first before compile mali driver

Package Build

- mali-wayland
- libxml2
- libffi
- wayland
- wayland-protocols
- libdrm
- weston

mali-wayland (Realtek)

- Name: apps_mali-wayland_bifrost_rp16_OpenWRT-gcc4.9-glibc2.19.tar.gz in SDKRelease/Packages/apps/libs/mali-wayland
- Decompress and copy contents to /usr
  - cp -r /usr/include/ /usr/lib/ /usr/local/ /usr/
- Readme:

  ARM Mali OpenGLES Library

  There are two implementations of ARM OpenGLES libraries, libmali.so and libmali-server.so.
  libmali.so is used for general OpenGLES application, libmali-server.so is used
  for window's render libraries like weston's drm-backend.sp and gl-renderer.so
  User's application should use libEGL.so, libGLESv1.so, libGLESv2.so which link to libmali.so

  These libraries were built with following package,
  libwayland-client/libwayland v1.12
  libdrm 2.4.70
  weston v3.00

libxml2

- Version: 2.9.8
- URL: http://xmlsoft.org/sources/libxml2-2.9.8.tar.gz
- Patch
  - 010-CVE-2018-14404.patch
  - 020-CVE-2018-9251.patch
- ./configure --enable-shared --enable-static --with-c14n --without-catalog --with-debug --without-docbook --with-html --without-ftp --without-http --without-iconv --without-iso8859x --without-legacy --with-output --without-pattern --without-push --without-python --with-reader --without-readline --without-regexps --with-sax1 --with-schemas --with-threads --with-tree --with-valid --with-writer --with-xinclude --with-xpath --with-xptr --with-zlib=/usr --without-lzma
- make
- make install

libffi

- Version: 3.2.1
- URL: ftp://sourceware.org/pub/libffi/libffi-3.2.1.tar.gz
- Patch
  - 002-fix-toolexeclibdir-path.patch
  - 100-fix_mips_softfloat.patch
- ./configure
- make
- make install

wayland

- Version: 1.12.0
- URL: http://wayland.freedesktop.org/releases/wayland-1.12.0.tar.xz
- ./configure --disable-documentation
- make
- make install

wayland-protocols

- Version: 1.8
- URL: https://wayland.freedesktop.org/releases/wayland-protocols-1.8.tar.xz
- ./configure
- make
- make install

libdrm

- Version: 2.4.70
- URL: https://dri.freedesktop.org/libdrm/libdrm-2.4.70.tar.bz2
- Patch
  - 000-remove-dep-on-pthread-stubs.patch
- ./configure --disable-udev --disable-intel --disable-radeon --disable-amdgpu --disable-nouveau --disable-vmwgfx --disable-omap-experimental-api --disable-exynos-experimental-api --disable-freedreno --disable-freedreno-kgsl --disable-tegra-experimental-api --disable-vc4 --disable-cairo-tests --disable-manpages --disable-valgrind
- make
- make install

weston (1/2)

- Version: 3.0.0
- URL: git://anongit.freedesktop.org/wayland/weston
- Please checkout to 71c4f70e08faad6002ec8fe8cd1c7930bee8373b
- Please refer to https://wayland.freedesktop.org/building.html to build weston and dependency packages
- Realtek Patch
  - 0001-DEVNEW-Support-ARGB8888.patch
  - 0002-Set-Transparent-Background.patch

weston (2/2)

- configuration
  - Mali DDK provides libEGLs for wayland server and wayland client.
    - To build weston, please use libEGL-server.so
    - To build wayland client application, please use libEGL.so
  - for example
    - ./configure EGL_LIBS=-L/usr/lib -lEGL-server -lGLESv2-server -lmali-server EGL_CFLAGS=-I/usr/include --disable-silent-rules LIBS=-ldrm -ludev --enable-egl --with-cairo=image --disable-x11-compositor --disable-xwayland-test --disable-xwayland --disable-setuid-install --disable-simple-egl-clients
- make; make install;
- Copy files
  - copy 10-input-tag to /etc/hotplug.d/input/
  - copy weston.ini to /etc/xdg/weston/
    - weston .ini is weston configuration
  - copy weston-init.ini to /etc/init.d/weston
    - Autorun weston after boot

Run application on weston

- Autorun weston after boot
  - Make sure mouse and keyboard connected
  - User will see curser on black background
- [Run application on weston]
  - SDL_VIDEODRIVER=wayland ffplay [/VIDEO/FILE/PATH]