Rockchip Docker Develop Guide

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Preface

Overview

This document introduces how to build a Docker environment to compile libmali, gstreamer, mpp, qt, xserver, libdrm and other deb packages on a PC with Ubuntu system, that for installation on the Debian platform.

Product ID

Chipset Name	OS Version
All chipset	Debian 9 / Debian 10

Application Object

This document (this guide) is intended primarily for the following readers:

Field Application Engineer

Software Development Engineer

Revision History

Date	Revision No.	Author	History
2019.08.27	V1.0	Caesar Wang	Upload the initial version

Rockchip Docker

Docker is a tool designed to make it easier to create, deploy, and run applications by using containers. Containers allow a developer to package up an application with all of the parts it needs, such as libraries and other dependencies, and ship it all out as one package. By doing so, thanks to the container, the developer can rest assured that the application will run on any other Linux machine regardless of any customized settings that machine might have that could differ from the machine used for writing and testing the code.

In a way, Docker is a bit like a virtual machine. But unlike a virtual machine, rather than creating a whole virtual operating system, Docker allows applications to use the same Linux kernel as the system that they're running on and only requires applications be shipped with things not already running on the host computer. This gives a significant performance boost and reduces the size of the application.

And importantly, Docker is open source. This means that anyone can contribute to Docker and extend it to meet their own needs if they need additional features that aren't available out of the box.

The Rockchip Docker open source is on docker-rockchip.

OS requirements

To install Docker, you need the 64-bit version of one of these Ubuntu versions:

- Bionic 18.04 (LTS)
- Xenial 16.04 (LTS)
- Trusty 14.04 (LTS)

Note: the dockerfile is used for arm64 socs by default.

Below is used for arm32 Socs: cp dockerfile-32 dockerfile

Install Docker

Use this command to install the latest version of Docker(replace docker with docker.io in ubuntu 14.04):

```
sudo apt-get install docker qemu-user-static binfmt-support
```

Start run Docker deamon:

```
sudo service docker start
```

Build Docker image by dockerfile:

```
sudo docker build -t rockchip .
```

Now you get a Docker image named "rockchip" which include a debian multiarch cross-compiling enviroment.

Build application

1. Enter docker shell:

```
docker run -it -v <package dir>:/home/rk/packages rockchip /bin/bash
```

2. Start build:

for arm 32-bit Socs：

```
    cd /home/rk/packages/<package-name>
    DEB_BUILD_OPTIONS=nocheck dpkg-buildpackage -rfakeroot -b -d -uc -us -aarmhf
    ls ../ | grep *.deb
```

for arm 64-bit Socs：

```
    cd /home/rk/packages/<package-name>
    DEB_BUILD_OPTIONS=nocheck dpkg-buildpackage -rfakeroot -b -d -uc -us -aarm64
    ls ../ | grep *.deb
```

Modify image

If you want to modify your Docker image, you can open a shell by below command:

```
docker run -it rockchip /bin/bash
```

After exit from container, you should use below command to save your changes.

```
docker commit  <container_id> rockchip
```

Others

To get more informations about dockers, please check below link: https://docs.docker.com

Examples

1. How to get the libmali-rk-midgard-t86x-r14p0_1.7-1_arm64.deb on libmali

```
wxt@nb:~/work/docker/docker-rockchip$sudo service docker start
wxt@nb:~/work/docker/docker-rockchip$sudo docker build -t rockchip .
wxt@nb:~/work/docker/docker-rockchip$sudo docker run -it -v /home/wxt/work:/home/rk/packages rockchip /bin/bash
rk@2888134f9c12:/$ cd /home/rk/packages/docker/libmali
rk@2888134f9c12:~/packages/docker/libmali$ DEB_BUILD_OPTIONS=nocheck dpkg-buildpackage -rfakeroot -b -d -uc -us -aarm64
```

The above steps will get the debs for ~/packages/docker/

2. Rockchip had uploaded some source code for building and generating the deb packages

libdrm libmali openbox xserver qt gstreamer-rockchip mpp