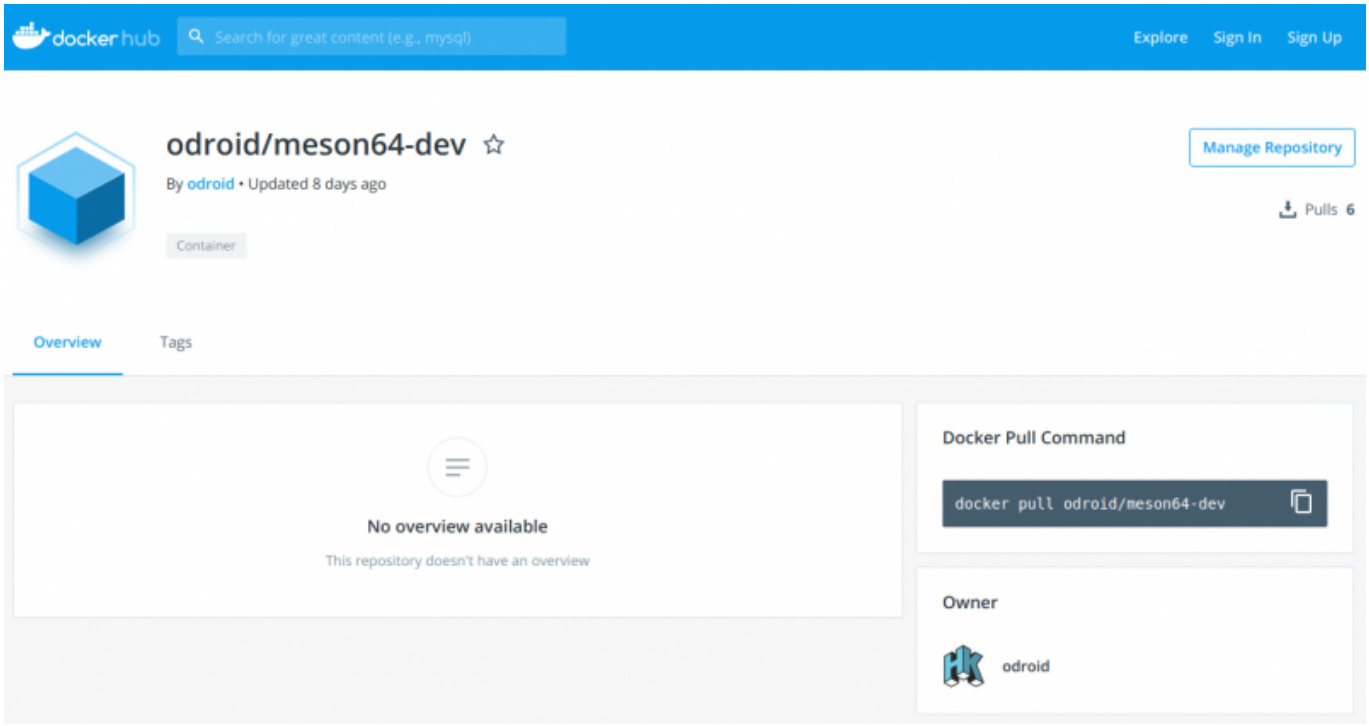
Docker as build environment

Due to the compatibility issues in different OS platform, some tools such as **automake** or **autoconf** which is the popular tool in opensource to set up the compile environment, the building numerous open source projects could be failed because of unmatched tool versions on your building environment. In order to prevent this failure, Docker container that already has necessary tools and toolchains would be the promising building environment tools, it could help you to start the building and you are not required to install unnecessary tools to your OS platform.

For ODROID-N2, the Docker container based on Ubuntu 16.04 with toolchains is provided through Docker Hub. This page will briefly go through how you can use it.

https://hub.docker.com/r/odroid/meson64-dev



Installation

Installing Docker

In order to run the Docker container, Docker must be installed on your system and Docker webpage provides the instructions for the various OS platforms and the versions. Between the variant of Docker services, **Docker CE** is strongly recommended to install.

- Debian
- Ubuntu
- Fedora
- Mac
- Windows

Installing the container

Once your account is privileged to access Docker service, you can start to download and install the Docker image. For ODROID-N2, the Docker container based on Ubuntu 16.04 with toolchains is provided through **Docker Hub**, https://hub.docker.com/r/odroid/meson64-dev.

host

```
$ docker pull odroid/meson64-dev:201901
201901: Pulling from odroid/meson64-dev
3b37166ec614: Pull complete
504facff238f: Pull complete
ebbcacd28e10: Pull complete
c7fb3351ecad: Pull complete
2e3debadcbf7: Pull complete
8200f2345b79: Pull complete
19b0cbc43f19: Downloading [============================>
]  27.62MB/51.06MB
44413b1d22ad: Downloading [========================================>
]  98.68MB/125.4MB
26eb8b89cad2: Download complete
f70b2fb97e70: Download complete
2ac91b46f862: Download complete
f065583f93e0: Download complete
25e2e434e6c5: Downloading [====================>
]  48.28MB/111.1MB
7c9bfd7b4c30: Waiting
47492c161b55: Waiting
0dd0cecdfc05: Pulling fs layer
e34313b986e1: Waiting
a5a90a812114: Waiting
6c3b77dd78fc: Waiting
e1f9544ef33e: Waiting
403a115e7e88: Pulling fs layer
9fd3394805a2: Waiting
8f0535da0557: Waiting
```

Downloaded Docker containers can be listed with the command **docker images**.

host

```
$ docker images
REPOSITORY                          TAG                 IMAGE ID
CREATED             SIZE
odroid/meson64-dev                  201901              1a26e3b18434
8 days ago          2.51GB
```

Getting into Docker container

In this example, the host OS platform is Ubuntu 18.04 and after starting Docker container with **docker run ...** command, OS platform is switched to another one installed to the container.

host

```
$ uname -a
Linux paju.odroid.com 4.15.0-45-generic #48-Ubuntu SMP Tue Jan 29
16:28:13 UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
$ cat /etc/lsb-release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=18.04
DISTRIB_CODENAME=bionic
DISTRIB_DESCRIPTION="Ubuntu 18.04.1 LTS"
```

You can simple get into the container and the default directory is **/srv** in the container.

host

```
$ docker run --privileged -it odroid/meson64-dev:201901
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

Kernel version and OS platform version is switched from the host platform.

host

```
odroid@e3b08b8268aa:/srv$ uname -a
Linux e3b08b8268aa 4.15.0-45-generic #48-Ubuntu SMP Tue Jan 29 16:28:13
UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
odroid@e3b08b8268aa:/srv$ lsb_release
bash: lsb_release: command not found
odroid@e3b08b8268aa:/srv$ cat /etc/lsb-release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=16.04
DISTRIB_CODENAME=xenial
DISTRIB_DESCRIPTION="Ubuntu 16.04.5 LTS"
```

Building

The toolchains for ODROID-N2 are already installed in the container, **odroid/meson64-dev:201901**.

host

```
$ ls -l /opt/toolchains/
total 16
drwxr-xr-x 6 root  root 4096 Feb  4 03:44 gcc-arm-none-eabi-6-2017-q1-
update
drwxr-xr-x 8 11827 9000 4096 Feb 16  2017 gcc-linaro-6.3.1-2017.02-
x86_64_aarch64-linux-gnu
drwxr-xr-x 7  1001 1001 4096 Nov 19  2013 gcc-linaro-aarch64-none-
elf-4.8-2013.11_linux
drwxr-xr-x 7  1001 1001 4096 Apr 17  2014 gcc-linaro-arm-none-
eabi-4.8-2014.04_linux
```

For example, you alrady have downloaded the source tree of Buildroot in your host platform and willing to build it in the container, you must mount the source tree to a directory in the container. This can be simply done adding an argument **-v $PWD:/srv** to **docker run**.

This is the directory in the host platform.

host

```
$ ls -l
total 36
-r--r--r--  1 tobetter tobetter   98 Aug 29 03:07 Makefile
drwxr-xr-x  3 tobetter tobetter 4096 Jan  9 00:30 bootloader
drwxr-xr-x 18 tobetter tobetter 4096 Feb  9 19:02 buildroot
drwxr-xr-x  5 tobetter tobetter 4096 Nov  8 22:55 hardware
drwxr-xr-x  3 tobetter tobetter 4096 Dec  3 23:03 kernel
drwxr-xr-x 17 tobetter tobetter 4096 Nov  8 22:55 multimedia
drwxr-xr-x  3 tobetter tobetter 4096 Aug 29 03:07 toolchain
drwxr-xr-x  5 tobetter tobetter 4096 Feb  9 18:49 vendor
```

Docker container can be started,

host

```
$ docker run -v $PWD:/srv -it odroid/meson64-dev:201901
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

odroid@6020bc058acd:/srv$ ls -l
total 36
-r--r--r--  1 odroid 1000   98 Aug 28 18:07 Makefile
drwxr-xr-x  3 odroid 1000 4096 Jan  8 15:30 bootloader
drwxr-xr-x 18 odroid 1000 4096 Feb  9 10:02 buildroot
drwxr-xr-x  5 odroid 1000 4096 Nov  8 13:55 hardware
drwxr-xr-x  3 odroid 1000 4096 Dec  3 14:03 kernel
drwxr-xr-x 17 odroid 1000 4096 Nov  8 13:55 multimedia
drwxr-xr-x  6 odroid root 4096 Oct 10 15:51 output
drwxr-xr-x  3 odroid 1000 4096 Aug 28 18:07 toolchain
```

```
drwxr-xr-x  5 odroid 1000 4096 Feb  9 09:49 vendor
odroid@6020bc058acd:/srv$ pwd
/srv
odroid@6020bc058acd:/srv$ whoami
odroid
odroid@6020bc058acd:/srv$ id -u
1000
odroid@6020bc058acd:/srv$ id -g
0
```

From:
https://wiki.odroid.com/ - **ODROID Wiki**

Permanent link:
https://wiki.odroid.com/odroid-n2/software/using_docker

Last update: **2021/12/17 09:48**