


Install Docker

Since I'm going to use Docker to build my OpenFaaS functions, I need to install Docker and have buildx in it. I have installed Docker before and could not run command:

```
docker buildx
```

So, if you have docker installed and can execute that, you can skip this part.

 **Note**

I'm doing this only on one of my nodes, `control01`, so I can build arm64 native images and push them to registry, and also build OpenFaaS functions. Building OpenFaaS functions on the same node where the server is running is not recommended, and Alex Ellis told me personally that that's not the way it should be done! You should build on your client and push to OpenFaaS gateway from there, and so on... However, I can confirm this works just fine, and it's less hassle for me as I can also setup GitLab worker on this node and have my stuff build automatically there whenever I push to my local GitLab (GitLab is on a different server in my network, outside the scope of this guide.)

Clean slate first

Remove the installation you have now.

```
sudo apt-get remove docker docker-engine docker.io containerd runc
```

Install Docker

Install Docker on Ubuntu arm64 as follow. You will need all of these 🍷

Install new repo

```
sudo add-apt-repository \
"deb [arch=arm64] https://download.docker.com/linux/ubuntu \
$(lsb_release -cs) \
stable"
```


Install Docker

```
sudo apt-get update
sudo apt-get install docker-ce docker-ce-cli containerd.io
```

Edit Docker settings

Add `/etc/docker/daemon.json` configuration for docker daemon.

```
{
  "exec-opts": ["native.cgroupdriver=systemd"],
  "insecure-registries": ["registry.cube.local:5000"],
  "experimental": true,
  "log-driver": "json-file",
  "storage-driver": "overlay2",
  "log-opts": {
    "max-size": "100m"
  }
}
```

 **Note**

"insecure-registries": ["registry.cube.local:5000"] This is for insecure private registry running on HTTP; if you use TLS, you don't need this line.

Enable at boot and start docker daemon.


```
sudo systemctl enable docker
sudo systemctl start docker
```

Adding support for multi-arch.

Some additional packages are needed.

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

Using buildx with private registry.

 **Note**

This is mainly related to OpenFaaS, since it uses buildx with faas-cli

Buildx is running inside container.

ool@control01:/home/ubuntu# docker ps									
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES			
97829148a748	moby/buildkit:buildx-stable-1	"buildkitd"	2 days ago	Up 24 hours		buildx_buildkit_multiarch			

I'm a bit fuzzy on exactly how and when this is created, to be honest. If it's not there, try to run `docker buildx`.

Here is the issue. The container does not know about your private registry, nor does it have a root certificate of it if you use TLS...

The solution for not knowing the private registry is to add it to containers `/etc/hosts`.

You can find it by inspecting the ID of the container:

```
root@control01:/home/ubuntu# docker inspect 97829148a748 | grep /hosts
"HostsPath": "/var/lib/docker/containers/97829148a7482ac215762c8db751fa5992bf008aas9dfcb683aca796ae49098/hosts",
```

My private registry address is `192.168.8.232 registry registry.cube.local`, so lets add it:

```
echo '192.168.8.232 registry registry.cube.local' | sudo tee -a /var/lib/docker/containers/97829148a7482ac215762c8db751fa5992bf008aas9dfcb683aca796ae49098/hosts
>/dev/null
```

This should be enough if you use the HTTP registry only.

TLS Fix for buildx

To push to a private TLS protected registry, you need to make the container aware of the root certificate.

You get the certificate I'm talking about when setting up a private Docker registry. [Docker-Registry TLS](#)

```
BUILDER=$(sudo docker ps | grep buildkitd | cut -f1 -d' ' )
sudo docker cp registry.crt $BUILDER:/usr/local/share/ca-certificates/
sudo docker exec $BUILDER update-ca-certificates
sudo docker restart $BUILDER
```

This solution is from: [GitHub Issue 80](#)

This fixed the issue for me, and `faas-cli` works as expected 🍷

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