

# Docker

<https://docs.docker.com/storage/volumes/>

## Main install

```
apt-get -y install curl unzip dialog
curl -fSSL get.docker.com | sh
```

Useful alias to exclude container overlays from the df command for use in .bashrc or .profile:

```
alias df='/usr/bin/df -x overlay'
```

## Show logs

```
docker logs --follow <containername>
```

## Build image

To build the docker image based on a Dockerfile in the current directory, use:

```
docker build .
```

## Update container

Update docker container to latest version via docker compose:

```
#Single container:
docker compose pull calibre-web
docker compose up -d calibre-web
docker image prune
```

```
#Update all containers:
docker compose pull
docker compose up -d
docker image prune
```

## Health Checks

Docker compose health checks:

<https://medium.com/geekculture/how-to-successfully-implement-a-healthcheck-in-docker-compose-efced60bc08e>

<https://stefanjarina.gitbooks.io/docker/content/swarm-mode/healthchecks.html>

## Copying files to/from containers

Copying files from/to containers

```
docker cp dockerimage:/bla ./bla
docker cp ./bla dockerimage:/bla
```

## Flatten docker image layers

Flatten docker image layers:

```
FROM yourbuildimage as build
# your existing build steps here
FROM scratch
COPY --from=build / /
CMD ["/your/start/script"]
```

## Change mount points of containers

Change mount points of existing docker containers;

e.g. mount /home/<user-name> folder of host to the /mnt folder of the existing (not running) container.

1. stop docker container or whole docker engine

```
systemctl stop docker.service
```

2. Open configuration file corresponding to the stopped container, which can be found at /var/lib/docker/containers/99d...1fb/config.v2.json (may be config.json for older versions of docker). For pretty print use

```
vi <(jq . /var/lib/docker/containers/<container-ID>/config.v2.json)
Save updates to a file: :w config.v2.json
Exit vim: :q!
Update existing file: jq -c . config.v2.json >
/var/lib/docker/containers/<container-ID>/config.v2.json
```

3. Find MountPoints section: "MountPoints":{}
4. Replace the contents with something like this (you can copy proper contents from another

container with proper settings):

```
"MountPoints":{"/mnt":{"Source":"/home/<user-name>","Destination":"/mnt","RW":true,"Name":"","Driver":"","Type":"bind","Propagation":"rprivate","Spec":{"Type":"bind","Source":"/home/<user-name>","Target":"/mnt"},"SkipMountpointCreation":false}}
```

or the same (formatted):

```
"MountPoints": {
  "/mnt": {
    "Source": "/home/<user-name>",
    "Destination": "/mnt",
    "RW": true,
    "Name": "",
    "Driver": "",
    "Type": "bind",
    "Propagation": "rprivate",
    "Spec": {
      "Type": "bind",
      "Source": "/home/<user-name>",
      "Target": "/mnt"
    },
    "SkipMountpointCreation": false
  },
}
```

5. Start or restart the docker service:

```
systemctl start docker.service
service docker restart
```

6. Start the container if necessary:

```
docker start <container-name/ID>
```

## PHP&NGINX image

Containerised PHP & NGINX on Alpine, image size ~60MB:

<https://levelup.gitconnected.com/containerizing-nginx-php-fpm-on-alpine-linux-953430ea6dbc>

<https://github.com/johnathanesanders/docker-nginx-fpm>

Log nginx to stdout in Dockerfile:

```
# forward request and error logs to docker log collector
RUN ln -sf /dev/stdout /var/log/nginx/access.log \
    && ln -sf /dev/stderr /var/log/nginx/error.log
```

## Rename/Retag image files

```
docker tag current/image:tag new/image:tag
```

## cmd shell of container

```
docker exec -it <mycontainer> bash
docker exec -it <mycontainer> /bin/sh
```

## GPU hardware acceleration

Make sure the relevant GPU drivers are installed on the base system, then pass through the device via docker compose. Check devices are available, there should be a device per GPU starting at renderD128 for the first GPU:

```
ls -la /dev/dri
```

```
devices:
- /dev/dri:/dev/dri
```

for AMD:

<https://rocm.docs.amd.com/projects/install-on-linux/en/latest/install/install-methods/package-manager/package-manager-debian.html>

<https://rocm.docs.amd.com/projects/install-on-linux/en/latest/how-to/docker.html>

```
mkdir --parents --mode=0755 /etc/apt/keyrings
wget https://repo.radeon.com/rocm/rocm.gpg.key -O - | gpg --dearmor | sudo
tee /etc/apt/keyrings/rocm.gpg > /dev/null
echo "deb [arch=amd64 signed-by=/etc/apt/keyrings/rocm.gpg]
https://repo.radeon.com/rocm/apt/6.4.3 jammy main" > tee
/etc/apt/sources.list.d/rocm.list
echo -e 'Package: *\nPin: release o=repo.radeon.com\nPin-Priority: 600' >
/etc/apt/preferences.d/rocm-pin-600
apt update
apt install rocm
```

Then add to the docker containers:

```
devices:
- /dev/kfd
- /dev/dri
security_opt:
- seccomp=unconfined
environment:
- LIBVA_DRIVER_NAME=radeonsi
```

Alpine Linux docker images may require libva to be installed:

```
post_start:
  # for 13th gen Iris Xe GPUs use intel-media-driver for older gens
libva-intel-driver
  # - command: apk add libva-intel-driver intel-media-driver
  # user: root
  # For AMD
  - command: apk add libva libva-utils mesa-va-gallium
  user: root
```

nvidia-smi can be used for AMD and NVidia gpus to see if the gpu is being used. On Debian, nvidia-smi is in the contrib repositories which need to be added.

```
#bookworm
sed -r 's/^deb(.*)$/deb\1 contrib/g' /etc/apt/sources.list

#new deb822 sources format
sed -i 's/^Components: main$/& contrib non-free non-free-firmware/'
/etc/apt/sources.list.d/debian.sources

apt update
```

On Ubuntu systems, nvidia-smi is in the default repositories.

```
apt-get install nvidia-smi
```

## docker ps short

Short form of docker ps to only get the container names:

```
docker ps | sed 's/.*##/g' | cut -d "#" -f 7
```

## docker command template

<https://stackoverflow.com/questions/50667371/docker-ps-output-formatting-list-only-names-of-running-containers>

## docker running out of network addresses

Error response from daemon: all predefined address pools have been fully subnetted

[/etc/docker/daemon.json](#)

```
{
```

```
"default-address-pools": [  
  {"base": "169.254.2.0/23", "size": 28},  
  {"base": "169.254.4.0/22", "size": 28},  
  {"base": "169.254.8.0/21", "size": 28},  
  {"base": "169.254.16.0/20", "size": 28},  
  {"base": "169.254.32.0/19", "size": 28},  
  {"base": "169.254.64.0/18", "size": 28},  
  {"base": "169.254.128.0/18", "size": 28},  
  {"base": "169.254.192.0/19", "size": 28},  
  {"base": "169.254.224.0/20", "size": 28},  
  {"base": "169.254.240.0/21", "size": 28},  
  {"base": "169.254.248.0/22", "size": 28}  
]  
}
```

```
docker restart  
docker network prune
```

From:  
<http://wuff.dyndns.org/> - **Wulf's Various Things**

Permanent link:  
<http://wuff.dyndns.org/doku.php?id=linux:docker>

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