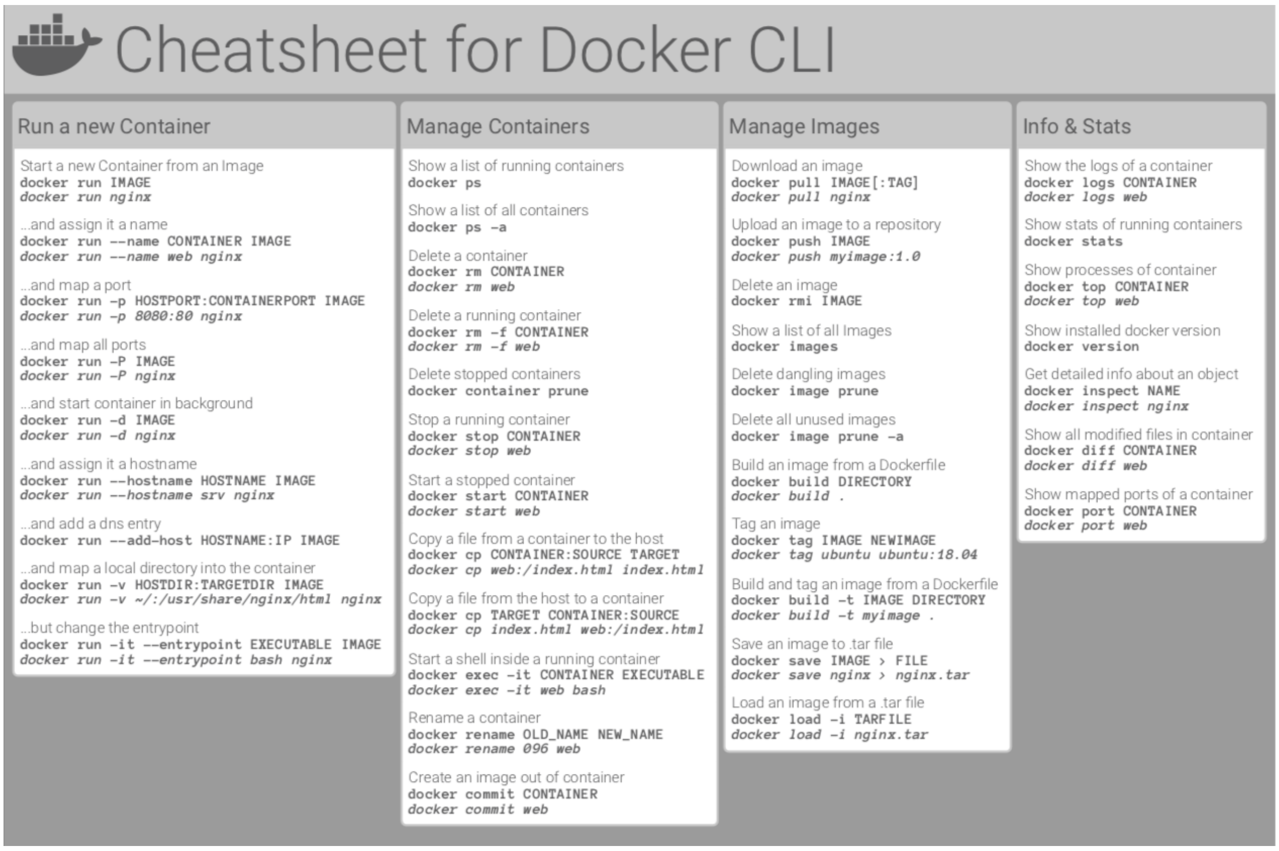
The Ultimate Docker Cheat Sheet

dockerlabs.collabnix.com/docker/cheatsheet/

Complete Docker CLI



Cheatsheet for Docker CLI

Run a new Container

Start a new Container from an Image
```
docker run IMAGE
docker run nginx
```
...and assign it a name
```
docker run --name CONTAINER IMAGE
docker run --name web nginx
```
...and map a port
```
docker run -p HOSTPORT:CONTAINERPORT IMAGE
docker run -p 8080:80 nginx
```
...and map all ports
```
docker run -P IMAGE
docker run -P nginx
```
...and start container in background
```
docker run -d IMAGE
docker run -d nginx
```
...and assign it a hostname
```
docker run --hostname HOSTNAME IMAGE
docker run --hostname srv nginx
```
...and add a dns entry
```
docker run --add-host HOSTNAME:IP IMAGE
```
...and map a local directory into the container
```
docker run -v HOSTDIR:TARGETDIR IMAGE
docker run -v ~/:/usr/share/nginx/html nginx
```
...but change the entrypoint
```
docker run -it --entrypoint EXECUTABLE IMAGE
docker run -it --entrypoint bash nginx
```

Manage Containers

Show a list of running containers
```
docker ps
```
Show a list of all containers
```
docker ps -a
```
Delete a container
```
docker rm CONTAINER
docker rm web
```
Delete a running container
```
docker rm -f CONTAINER
docker rm -f web
```
Delete stopped containers
```
docker container prune
```
Stop a running container
```
docker stop CONTAINER
docker stop web
```
Start a stopped container
```
docker start CONTAINER
docker start web
```
Copy a file from a container to the host
```
docker cp CONTAINER:SOURCE TARGET
docker cp web:/index.html index.html
```
Copy a file from the host to a container
```
docker cp TARGET CONTAINER:SOURCE
docker cp index.html web:/index.html
```
Start a shell inside a running container
```
docker exec -it CONTAINER EXECUTABLE
docker exec -it web bash
```
Rename a container
```
docker rename OLD_NAME NEW_NAME
docker rename 096 web
```
Create an image out of container
```
docker commit CONTAINER
docker commit web
```

Manage Images

Download an image
```
docker pull IMAGE[:TAG]
docker pull nginx
```
Upload an image to a repository
```
docker push IMAGE
docker push myimage:1.0
```
Delete an image
```
docker rmi IMAGE
```
Show a list of all Images
```
docker images
```
Delete dangling images
```
docker image prune
```
Delete all unused images
```
docker image prune -a
```
Build an image from a Dockerfile
```
docker build DIRECTORY
docker build .
```
Tag an image
```
docker tag IMAGE NEWIMAGE
docker tag ubuntu ubuntu:18.04
```
Build and tag an image from a Dockerfile
```
docker build -t IMAGE DIRECTORY
docker build -t myimage .
```
Save an image to .tar file
```
docker save IMAGE > FILE
docker save nginx > nginx.tar
```
Load an image from a .tar file
```
docker load -i TARFILE
docker load -i nginx.tar
```

Info & Stats

Show the logs of a container
```
docker logs CONTAINER
docker logs web
```
Show stats of running containers
```
docker stats
```
Show processes of container
```
docker top CONTAINER
docker top web
```
Show installed docker version
```
docker version
```
Get detailed info about an object
```
docker inspect NAME
docker inspect nginx
```
Show all modified files in container
```
docker diff CONTAINER
docker diff web
```
Show mapped ports of a container
```
docker port CONTAINER
docker port web
```

Container management commands

command	**description**
`docker create` *image* [*command*] `docker run` *image* [*command*]	create the container = `create` + `start`
`docker start` *container...* `docker stop` *container...* `docker kill` *container...* `docker restart` *container...*	start the container graceful[2] stop kill (SIGKILL) the container = `stop` + `start`
`docker pause` *container...* `docker unpause` *container...*	suspend the container resume the container
`docker rm` [`-f`[3]] *container...*	destroy the container

[2]send SIGTERM to the main process + SIGKILL 10 seconds later
[3]`-f` allows removing running containers (= `docker kill` + `docker rm`)

Inspecting the container

command	**description**
`docker ps`	list running containers
`docker ps -a`	list all containers
`docker logs` [`-f`[6]] *container*	show the container output (*stdout*+*stderr*)
`docker top` *container* [*ps options*]	list the processes running inside the containers
`docker diff` *container*	show the differences with the image (modified files)
`docker inspect` *container...*	show low-level infos (in json format)

Interacting with the container

command	**description**
`docker attach` *container*	attach to a running container (stdin/stdout/stderr)
`docker cp` *container:path hostpath*|- `docker cp` *hostpath*|- *container:path*	copy files from the container copy files into the container
`docker export` *container*	export the content of the container (tar archive)
`docker exec` *container args...*	run a command in an existing container (**useful** for debugging)
`docker wait` *container*	wait until the container terminates and return the exit code
`docker commit` *container image*	commit a new docker image (snapshot of the container)

Image management commands

command	**description**
`docker images` `docker history` *image* `docker inspect` *image...*	list all local images show the image history (list of ancestors) show low-level infos (in json format)
`docker tag` *image tag*	tag an image
`docker commit` *container image* `docker import` *url*|- [*tag*]	create an image (from a container) create an image (from a tarball)
`docker rmi` *image...*	delete images

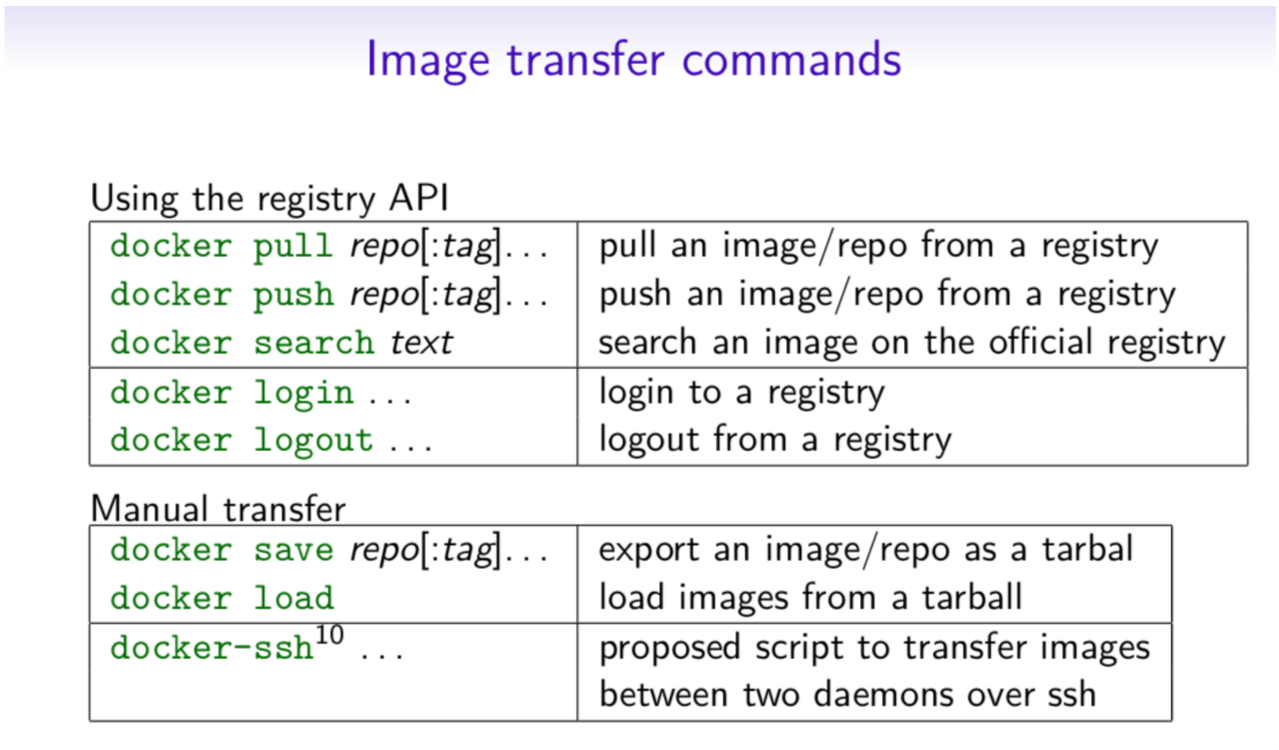


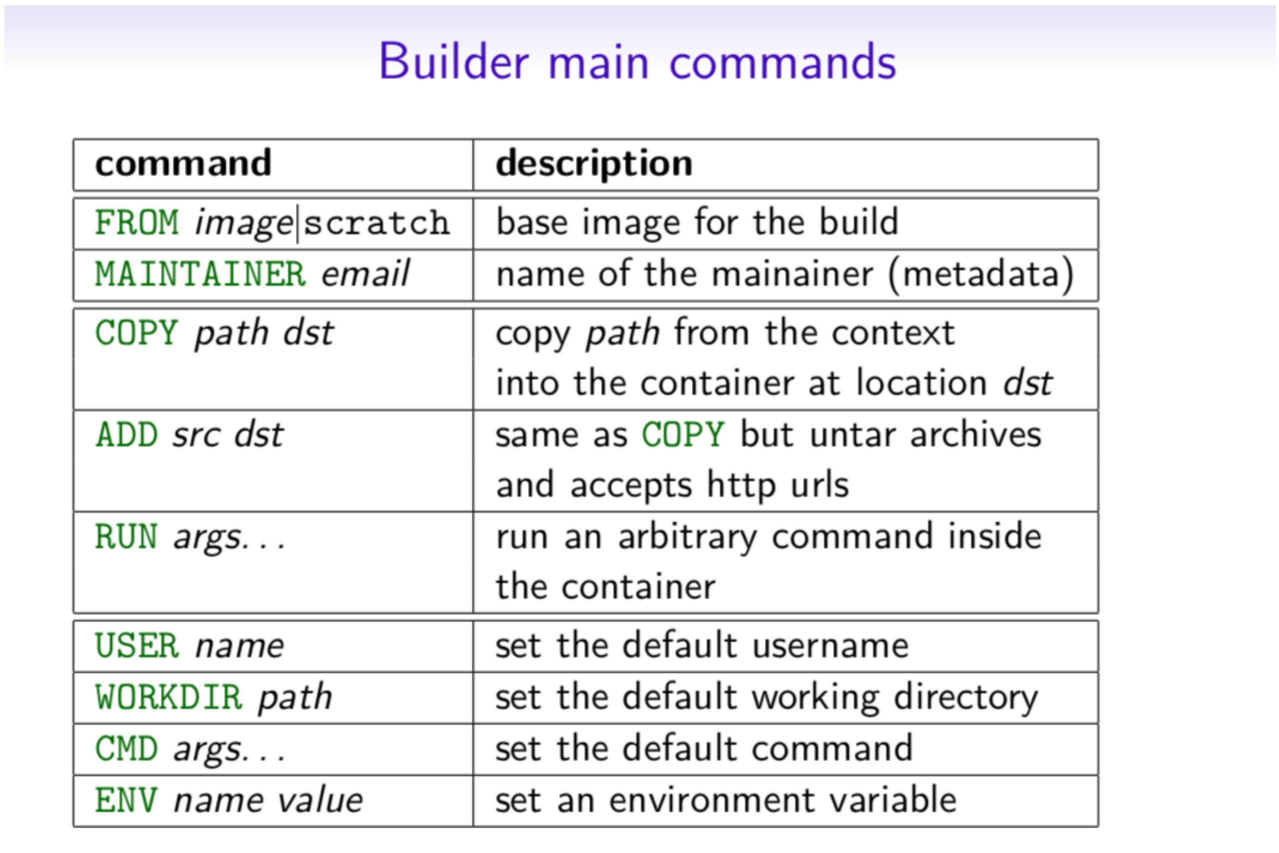
Image transfer commands

Using the registry API

`docker pull` *repo*[:*tag*]...	pull an image/repo from a registry
`docker push` *repo*[:*tag*]...	push an image/repo from a registry
`docker search` *text*	search an image on the official registry
`docker login` ...	login to a registry
`docker logout` ...	logout from a registry

Manual transfer

`docker save` *repo*[:*tag*]...	export an image/repo as a tarbal
`docker load`	load images from a tarball
`docker-ssh`[10] ...	proposed script to transfer images between two daemons over ssh



Builder main commands

command	description
`FROM` *image*|`scratch`	base image for the build
`MAINTAINER` *email*	name of the mainainer (metadata)
`COPY` *path dst*	copy *path* from the context into the container at location *dst*
`ADD` *src dst*	same as `COPY` but untar archives and accepts http urls
`RUN` *args...*	run an arbitrary command inside the container
`USER` *name*	set the default username
`WORKDIR` *path*	set the default working directory
`CMD` *args...*	set the default command
`ENV` *name value*	set an environment variable

The Docker CLI

Manage images

`docker build`

```
docker build [options] .
  -t "app/container_name"    # name
```

Create an `image` from a Dockerfile.

`docker run`

```
docker run [options] IMAGE
  # see `docker create` for options
```

Run a command in an `image`.

Manage containers

`docker create`

```
docker create [options] IMAGE
  -a, --attach               # attach stdout/err
  -i, --interactive          # attach stdin (interactive)
  -t, --tty                  # pseudo-tty
      --name NAME            # name your image
  -p, --publish 5000:5000    # port map
      --expose 5432          # expose a port to linked containers
  -P, --publish-all          # publish all ports
      --link container:alias # linking
  -v, --volume `pwd`:/app    # mount (absolute paths needed)
  -e, --env NAME=hello       # env vars
```

Example

```
$ docker create --name app_redis_1 \
  --expose 6379 \
  redis:3.0.2
```

Create a `container` from an `image`.

`docker exec`

```
docker exec [options] CONTAINER COMMAND
  -d, --detach        # run in background
  -i, --interactive   # stdin
  -t, --tty           # interactive
```

Example

```
$ docker exec app_web_1 tail logs/development.log
$ docker exec -t -i app_web_1 rails c
```

Run commands in a `container`.

`docker start`

```
docker start [options] CONTAINER
  -a, --attach        # attach stdout/err
  -i, --interactive   # attach stdin

docker stop [options] CONTAINER
```

Start/stop a `container`.

`docker ps`

```
$ docker ps
$ docker ps -a
$ docker kill $ID
```

Manage `container`s using ps/kill.

Images

`docker images`

```
$ docker images
  REPOSITORY   TAG        ID
  ubuntu       12.10      b750fe78269d
  me/myapp     latest     7b2431a8d968

$ docker images -a   # also show intermediate
```

Manages `image`s.

`docker rmi`

```
docker rmi b750fe78269d
```

Deletes `image`s.

Dockerfile

Inheritance

```
FROM ruby:2.2.2
```

Variables

```
ENV APP_HOME /myapp
RUN mkdir $APP_HOME
```

Initialization

```
RUN bundle install

WORKDIR /myapp

VOLUME ["/data"]
# Specification for mount point

ADD file.xyz /file.xyz
COPY --chown=user:group host_file.xyz /path/container_file.xyz
```

Onbuild

```
ONBUILD RUN bundle install
# when used with another file
```

Commands

```
EXPOSE 5900
CMD    ["bundle", "exec", "rails", "server"]
```

Entrypoint

```
ENTRYPOINT ["executable", "param1", "param2"]
ENTRYPOINT command param1 param2
```

Configures a container that will run as an executable.

```
ENTRYPOINT exec top -b
```

This will use shell processing to substitute shell variables, and will ignore any `CMD` or `docker run` command line arguments.

Metadata

```
LABEL version="1.0"

LABEL "com.example.vendor"="ACME Incorporated"
LABEL com.example.label-with-value="foo"

LABEL description="This text illustrates \
that label-values can span multiple lines."
```

docker-compose

Basic example

```
# docker-compose.yml
version: '2'

services:
  web:
    build: .
    # build from Dockerfile
    context: ./Path
    dockerfile: Dockerfile
    ports:
     - "5000:5000"
    volumes:
     - .:/code
  redis:
    image: redis
```

Commands

```
docker-compose start
docker-compose stop

docker-compose pause
docker-compose unpause

docker-compose ps
docker-compose up
docker-compose down
```

Reference

Building

```
web:
  # build from Dockerfile
  build: .

  # build from custom Dockerfile
  build:
    context: ./dir
    dockerfile: Dockerfile.dev

  # build from image
  image: ubuntu
  image: ubuntu:14.04
  image: tutum/influxdb
  image: example-registry:4000/postgresql
  image: a4bc65fd
```

Ports

```
  ports:
    - "3000"
    - "8000:80"  # guest:host

  # expose ports to linked services (not to host)
  expose: ["3000"]
```

Commands

```
# command to execute
command: bundle exec thin -p 3000
command: [bundle, exec, thin, -p, 3000]

# override the entrypoint
entrypoint: /app/start.sh
entrypoint: [php, -d, vendor/bin/phpunit]
```

Environment variables

```
# environment vars
environment:
  RACK_ENV: development
environment:
  - RACK_ENV=development

# environment vars from file
env_file: .env
env_file: [.env, .development.env]
```

Dependencies

```
# makes the `db` service available as the hostname `database`
# (implies depends_on)
links:
  - db:database
  - redis

# make sure `db` is alive before starting
depends_on:
  - db
```

Other options

```
# make this service extend another
extends:
  file: common.yml  # optional
  service: webapp

volumes:
  - /var/lib/mysql
  - ./_data:/var/lib/mysql
```

Advanced features

Labels

```
services:
  web:
    labels:
      com.example.description: "Accounting web app"
```

DNS servers

```
services:
  web:
    dns: 8.8.8.8
    dns:
      - 8.8.8.8
      - 8.8.4.4
```

Devices

```
services:
  web:
    devices:
    - "/dev/ttyUSB0:/dev/ttyUSB0"
```

External links

```
services:
  web:
    external_links:
      - redis_1
      - project_db_1:mysql
```

Hosts

```
services:
  web:
    extra_hosts:
      - "somehost:192.168.1.100"
```

sevices

To view list of all the services runnning in swarm

```
docker service ls
```

To see all running services

```
docker stack services stack_name
```

to see all services logs

```
docker service logs stack_name service_name
```

To scale services quickly across qualified node

```
docker service scale stack_name_service_name=replicas
```

clean up

To clean or prune unused (dangling) images

```
docker image prune
```

To remove all images which are not in use containers , add - a

```
docker image prune -a
```

To Purne your entire system

```
docker system prune
```

To leave swarm

```
docker swarm leave
```

To remove swarm (deletes all volume data and database info)

```
docker stack rm stack_name
```

To kill all running containers

```
docker kill $(docekr ps -q )
```

Contributor -

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