Docker Cheatsheet

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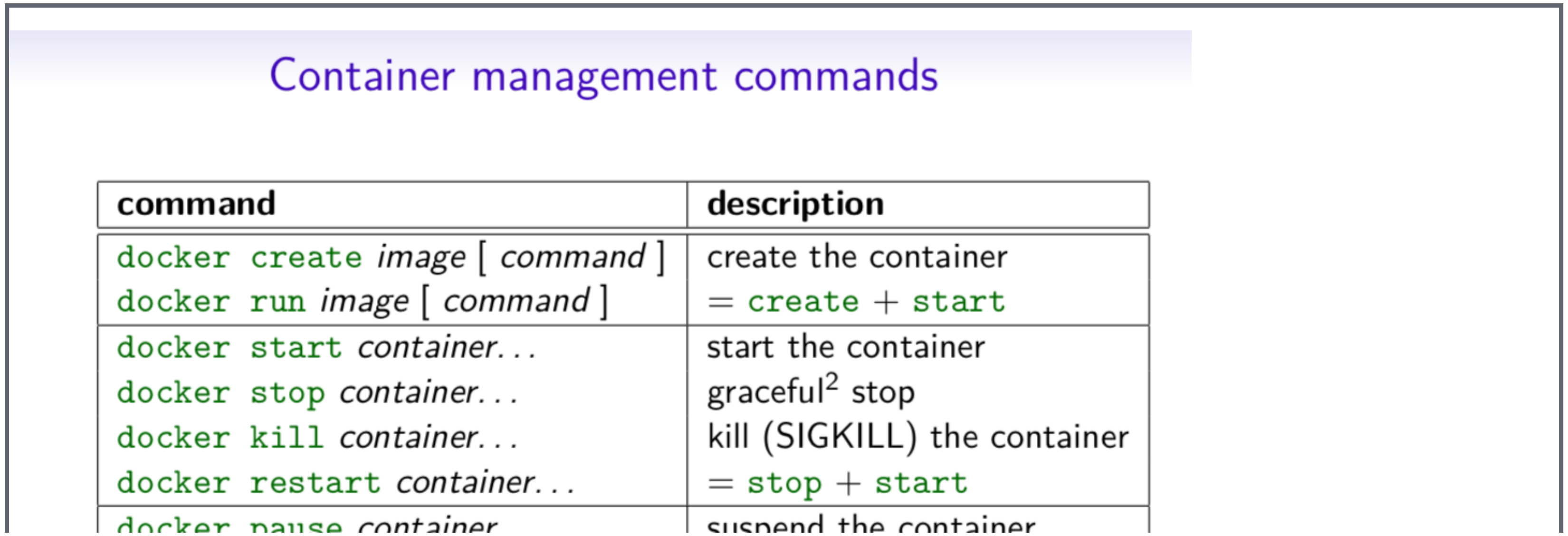


Container management commands

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*	suspend the container

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

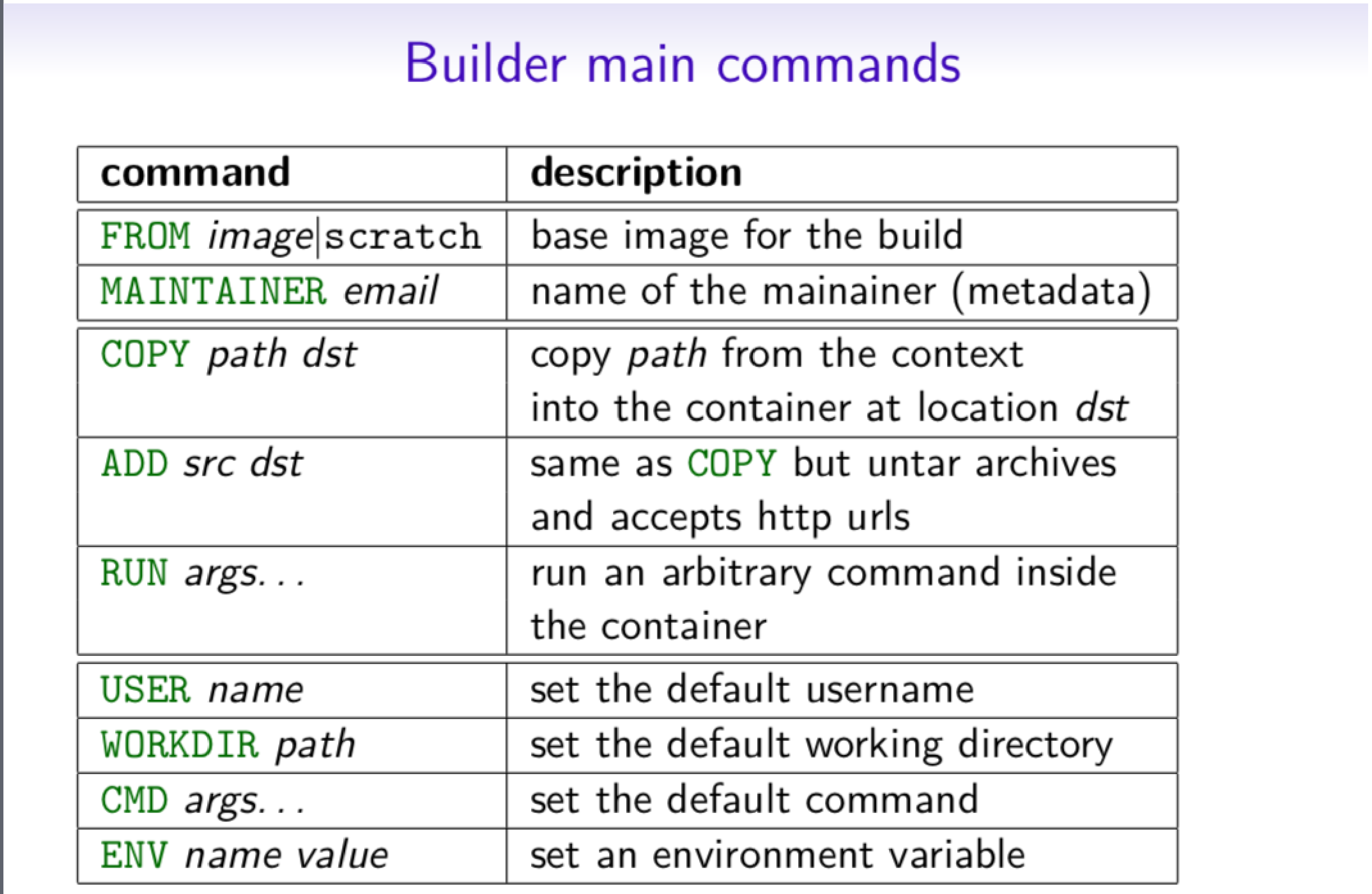
Image transfer commands

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

1. Manage Docker Images

Build a Docker Image:

Build a Docker image:

Command: `docker build`

```
docker build [options] .

-t "app/container_name" # name
```

Description: Create an `image` from a Dockerfile.

2. Run a Docker Container:

Run a command in an `image`.

Command: `docker run`

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

Description: Run a command in an `image`.

3. 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`.

4. Executing command in a container

`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`.

5. Start 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`.

6. Managing Container

`docker ps`

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

Manage `container`s using ps/kill.

7. Managing 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.

8. Delete Image

`docker rmi`

```
docker rmi b750fe78269d
```

Deletes `image`s.

Also see

- Getting Started *(docker.io)*

9. 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."
```

See also

- https://docs.docker.com/engine/reference/builder/

docker-compose

Basic example

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

services:
```

```
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

{: .-three-column}

Building

```

web:
  # build from Dockerfile
  build: .

  # build from custom Dockerfile
  # 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
```

Cleaning 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 Prune 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 )
```

Reference

- https://github.com/collabnix/dockerlabs/blob/master/docker/cheatsheet/README.md2.