LifeCycle

• docker create • Creates a container but does not start it
• docker rename • Allows the container to be renamed
• docker run • Creates and starts a container in one operation
• docker rm • Deletes a container
• docker update • Updates a container's resource limits
• docker run --rm • Removes container when stopped
• docker run -v $HOSTDIR•$DOCKERDIR • Maps a directory on the host to the Docker
container; see also• Volumes
• docker rm -v • Removes volumes associated with container
• docker run --log-driver=syslog • Runs Docker with custom log driver

Starting and Stopping

• docker start • Starts a container, so it is running
• docker stop • Stops a running container
• docker restart • Stops and starts a container
• docker pause • Pauses a running container, "freezing" it in place
• docker unpause • Unpauses a running container
• docker wait • Blocks until running container stops
• docker kill • Sends a SIGKILL to a running container
• docker attach • Connects to a running container

Information on Docker Containers, Processes and Performance

• docker ps • Shows running containers
• docker logs • Gets logs from container; you can use a custom log driver, but logs are only
available for json-file and journald in 1.10
• docker inspect • Looks at all the info on a container (including IP address)
• docker events • Gets events from container
• docker port • Shows public facing port of container
• docker top • Shows running processes in container
• docker stats • Shows containers' resource usage statistics
• docker diff • Shows changed files in the container's filesystem
• docker ps -a • Shows running and stopped containers
• docker stats --all • Shows a running list of containers

Import / Export (Backup / Restore)

• docker cp • Copies files or folders between a container and the local filesystem
• docker export • Turns container filesystem into tarball archive stream to STDOUT

Executing Commands

• docker exec • Executes a command in container

To enter a running container, attach a new shell process to a running container called foo, use:
docker exec -it foo /bin/bash.

Images

Images are templates that Docker containers are based on. They are the foundational layer from which your container is launched, and your changes then become independent from it (as another layer).

Lifecycle of Containers (Create, Run, Build, Commit)

- **docker images • Shows all images**
- **docker import • Creates an image from a tarball**
- **docker build • Creates image from Dockerfile**
- **docker commit • Creates image from a container, pausing it temporarily if it is running**
- **docker rmi • Removes an image**
- **docker load • Loads an image from a tar archive**
- **docker save • Saves an image to a tar archive stream to STDOUT with all parent layers**

Info

- **docker history • Shows history of image**
- **docker tag • Tags an image to a name (local or registry)**

Cleaning up

While you can use the docker rmi command to remove specific images, there's a tool called dockergci that will clean up images that are no longer used by any containers in a safe manner.

Images Created by Redirection

Load an image from file:

```
docker load < my_image.tar.gz
```

Save an existing image:

```
docker save my_image•my_tag > my_image.tar.gz
```

Import/Export Container

Import a container as an image from file:

```
cat my_container.tar.gz | docker import - my_image•my_tag
```

Export an existing container:

```
docker export my_container > my_container.tar.gz
```

Differences between loading a saved image and importing an exported container as an image:

Loading an image using the load command creates a new image, including its history.

• Importing a container as an image using the import command creates a new image, excluding the history which results in a smaller image size compared to loading an image.

Dockerfile

The configuration file. Sets up a Docker container when you run docker build on it.

.dockerignore • Files and directories to be ignored during the build -t of the Dockerfile

FROM • Sets the base image for subsequent instructions

MAINTAINER • Sets the Author field of the generated images

RUN • Executes any commands in a new layer on top of the current image and commits the results

CMD • Provides defaults for an executing container

EXPOSE • Informs Docker that the container listens on the specified network ports at runtime; does not make ports accessible

ENV • Sets environment variables

ADD • Copies new files, directories or remote file to container; invalidates caches; avoid ADD and use COPY instead

COPY • Copies new files or directories to container

ENTRYPOINT • Configures a container that will run as an executable

VOLUME • Creates a mount point for externally mounted volumes or other containers

USER • Sets the username for following RUN/CMD/ENTRYPOINT commands

WORKDIR • Sets the working directory

ARG • Defines a build-time variable

ONBUILD • Adds a trigger instruction when the image is used as the base for another build

STOPSIGNAL • Sets the system call signal that will be sent to the container to exit

LABEL • Apply key/value metadata to your images, containers, or daemons

Johnny Najjar