DOCKER FOR DEVELOPERS

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CONTAINERS?

WHAT IS DOCKER?

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LETS START WITH
CONTAINERS

WHAT IS A CONTAINER

- A packaged program or service

    - Similar to a VM a container can include an OS.

        - Virtualization abstracts the hardware

        - Containers abstract the OS kernel

        - Containers are *lighter* than VMs

- A *container* is a running instance of an *image*.

IMAGES HAVE
LAYERS

And this is good

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IMAGE LAYERS

- Images are created by inheriting from a BASE image

    - This docker to cache similar layers

    - Saves file system space between similar containers

    - Also saves downloading

LETS START A CONTAINER

- First download and install docker

- Open Terminal or Command Prompt

- Execute docker run:

    - docker run **imageName**

RUN SQL SERVER

```
docker run microsoft/mssql-server-linux:latest
```

WHERE DO YOU FIND IMAGES?

DOCKER RUN
COMMAND ARGS

- -p local:container *map a local port to the container port*

  - *eg -p 8084:80 maps local port 8084 to port 80 on the container.*

- -e 'VAR_NAME=value' *set an environment variable*

- *More options:* https://docs.docker.com/engine/reference/run/

RUN SQL SERVER

```
docker run
  -e 'ACCEPT_EULA=Y'
  -e 'SA_PASSWORD=sqlserver123'
  -p 8433:1433
  -d microsoft/mssql-server-linux:latest
```

HOW TO GET INSIDE A CONTAINER
OPEN A SHELL

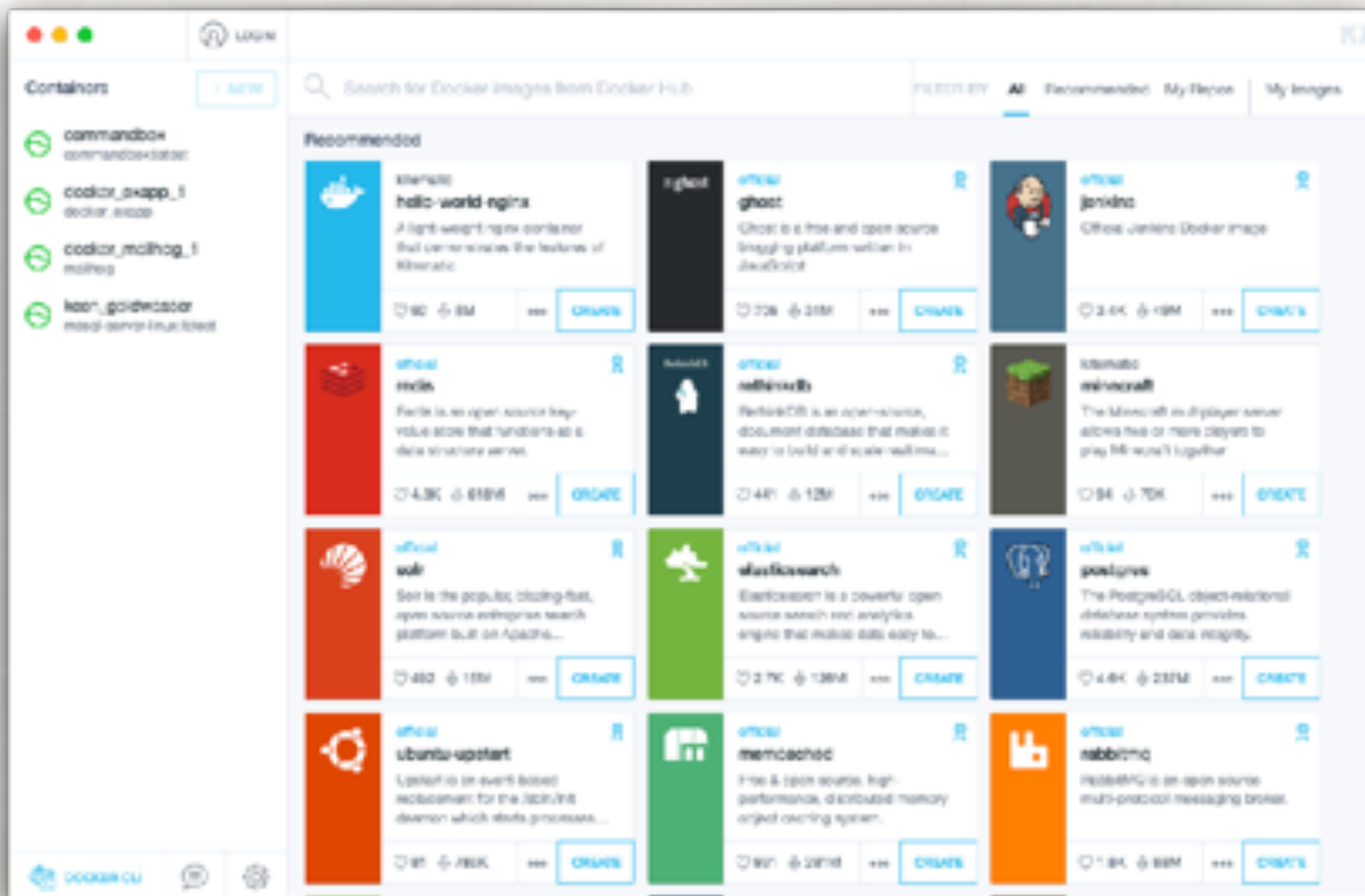docker exec -it container-id /bin/bash

how do you know the container-id?

docker ps

HAVE I LOST YOU?
DON'T WORRY THERE ARE

EASIER WAYS TO RUN CONTAINERS

EASIER WAYS TO START CONTAINERS

KITEMATIC GUI

MAKING YOUR OWN IMAGES
ITS NOT TOO HARD

1. Create a Dockerfile

    A. Use FROM to specify what image your image will inherit from, some examples (eg: FROM centos:7)

    B. Use RUN to execute commands

    C. Use COPY to put files into the image

    D. Use EXPOSE to expose a network port.

    E. Use CMD to tell it what executable to run.

ANOTHER WAY TO RUN CONTAINERS
DOCKER COMPOSE

- Create a docker-compose.yml file

  - This allows you to define all the containers used by a project.

    - You can also define relationships between the containers.

- Start all the containers by running: **docker-compose up**

- This file is all that is needed to replicate the infrastructure on any number of developer machines or servers.

EXAMPLES

DOCKER COMPOSE

THINGS TO KEEP IN MIND

- A container typically consists of a single process.

- The process should log output to standard output.

CONCLUSIONS
WRAPPING IT UP

- Docker is a fast paced technology with lots of bells and whistles, we have hardly scratched the surface.

- Docker in production could be the topic of many further presentations. Lots of deployment options with even more bells and whistles.