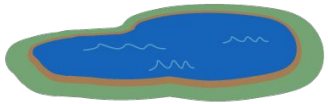
Ashland Daily Photo
http://travelJapanblog.com/ashland/2012/08/portland-oregon-from-the-air/

Data Repository

All data as we receive it stored in one place.



Databases

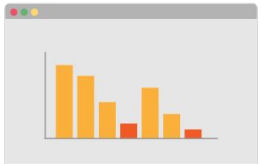
Structured views of the data we receive.

APIs

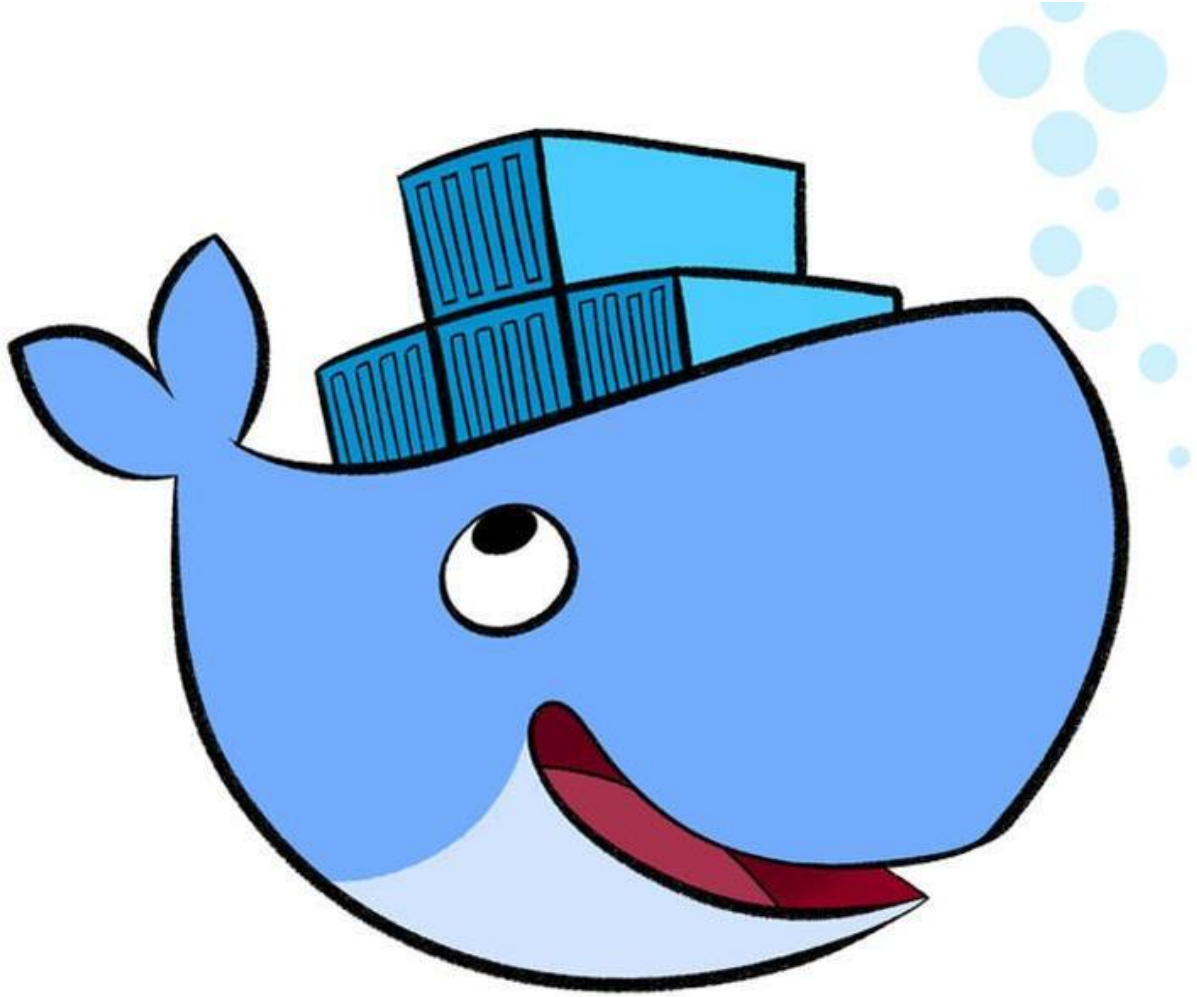
Web accessible ways for developers to interface with our databases

Web

Public knowledge accessible for all



Learn Docker the Hack Oregon Way.



High-level takeaways

- What it takes to run docker. (OS Wise)
- Pulling and running a docker Image
- Running a django docker project/hack oregon image
- A basic understanding of docker security.
- How we use docker in development.

TODO: Add this to slides.

Yaml talk

testing

Commit + travis deploy

Docker Vocab

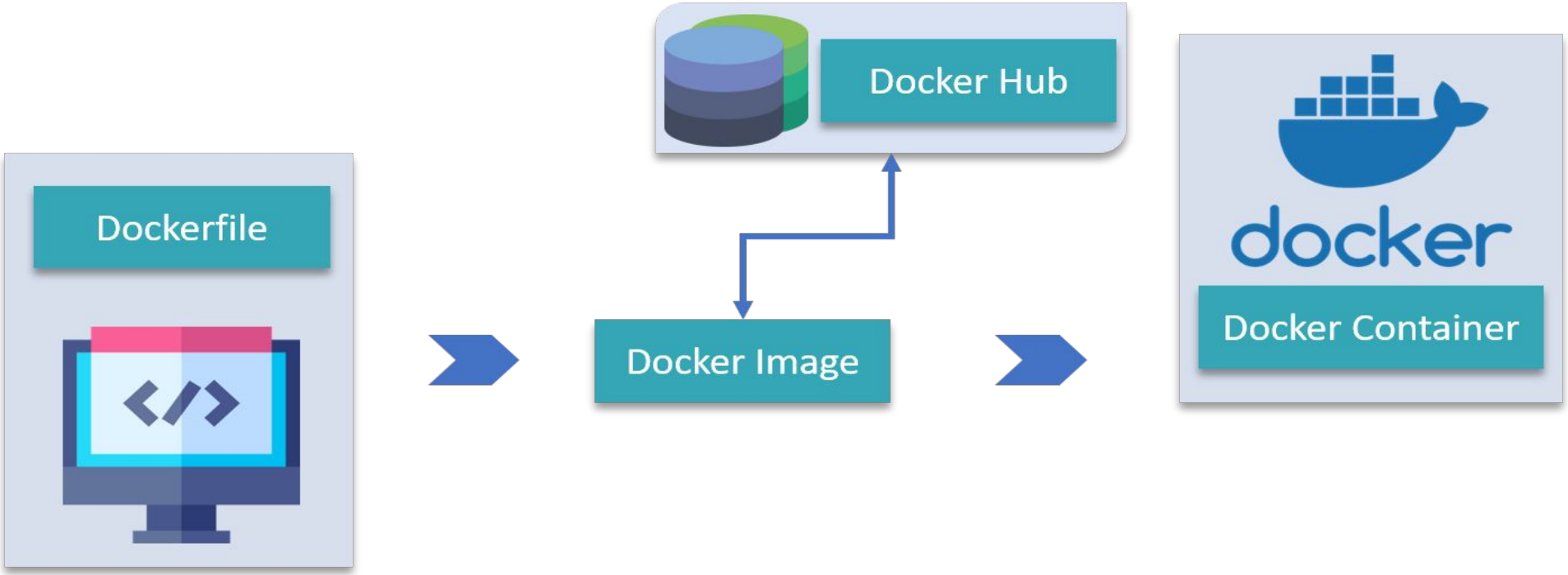
- Image
  - A package with all the dependencies and information needed to create a container. An image includes all the dependencies (such as frameworks) plus deployment and execution configuration to be used by a container runtime.
- Container
  - An instance of a Docker image. A container represents the execution of a single application, process, or service.
- Volumes
  - Offer a writable filesystem that the container can use. Since images are read-only but most programs need to write to the filesystem, volumes add a writable layer, on top of the container image, so the programs have access to a writable filesystem.
- Dockerfile
  - A text file that contains instructions for how to build a Docker image. It's like a batch script, the first line states the base image to begin with and then follow the instructions to install required programs, copy files and so on, until you get the working environment you need.

OS requirements

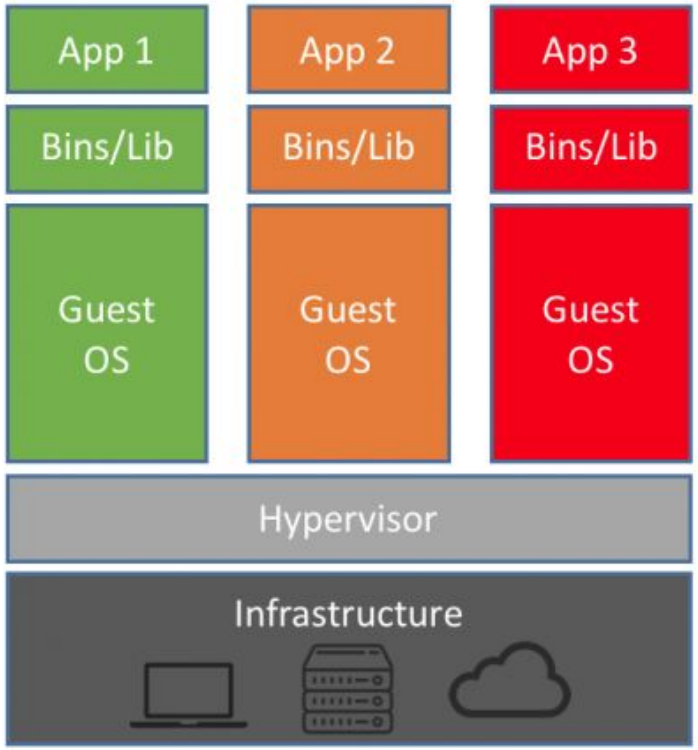
- If you’re running windows, you’re gonna have a bad time.

  Linux and mac make docker :)

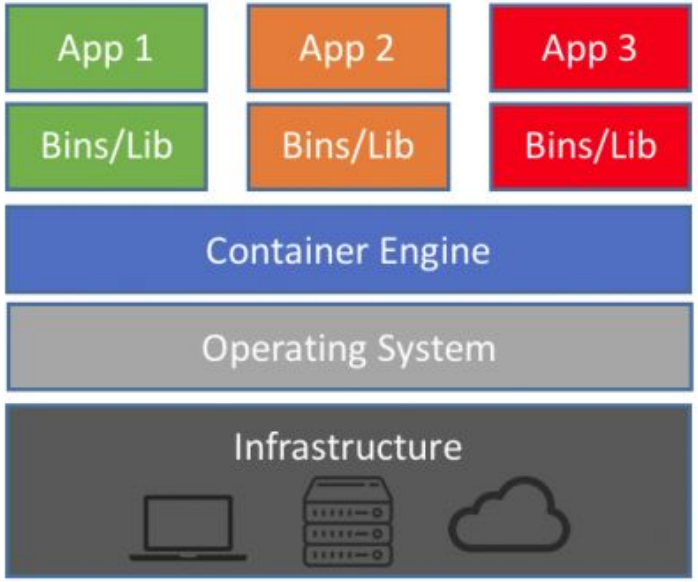
Docker Basics - What is it?



Container vs VM

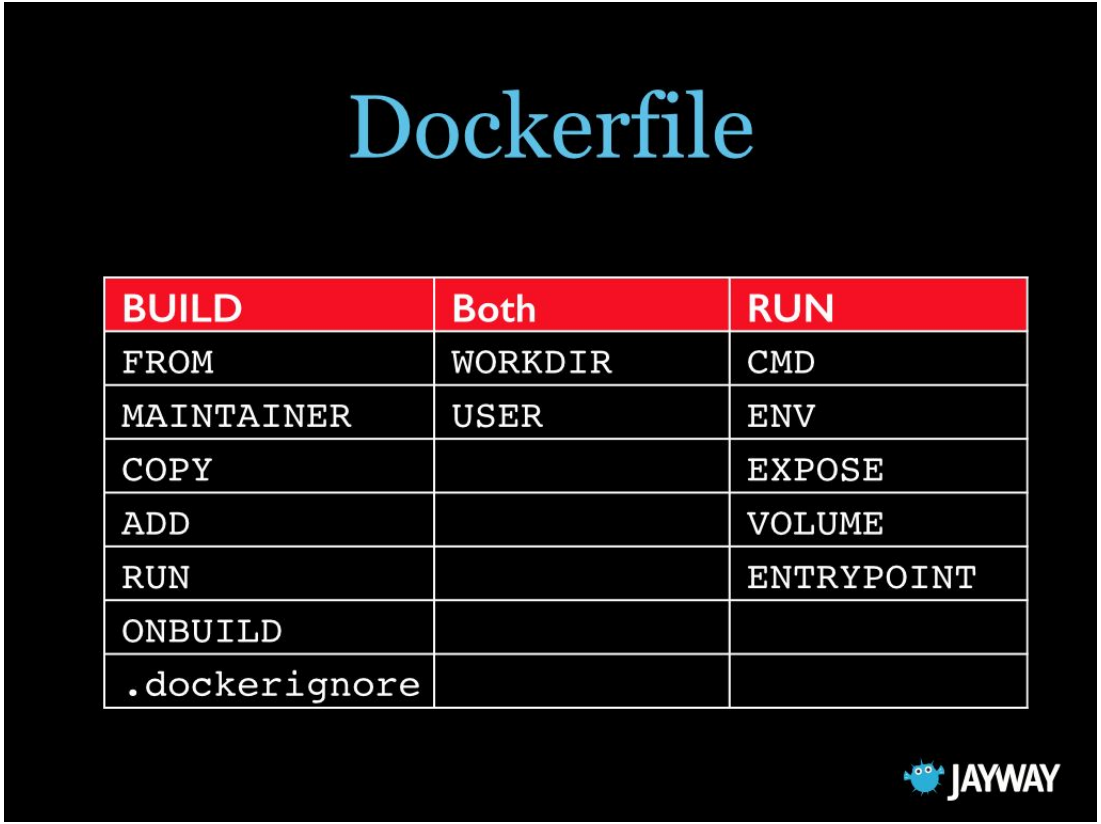


Machine Virtualization



Containers

Dockerfile Basics



Docker Basics - How we use it.

Demo - Install Docker

- https://docs.docker.com/get-started/

1. For me I had to run
    a. sudo apt-get install -y docker-ce

- Let's confirm the Install.
    - Run `docker --version`
    - You should see something like:
        - Docker version 18.09.6, build 481bc77

Docker - Test the Install.

1. docker run hello-world
   a. You don't have it locally, so it will pull the image.
   b. Look it worked
2. Run: docker image ls
   a. This shows you all docker images on your machine

```
## List Docker CLI commands
docker
docker container --help

## Display Docker version and info
docker --version
docker version
docker info

## Execute Docker image
docker run hello-world

## List Docker images
docker image ls

## List Docker containers (running, all, all in
##quiet mode)

docker container ls
docker container ls --all
docker container ls -aq
```

Pulling and running a Image from dockerhub

1. If you have a dockerhub account, change your passwords. They had a breach.
2. https://hub.docker.com/r/06kellyjac/nyancat/
    a. To run Nyan cat:
    b. docker run -it --rm --name nyancat 06kellyjac/nyancat
    c. This will pull and run it.

Demo - pull and run the datascience container.

Put instructions on slide. Run basic docker

https://github.com/karenng-civicsoftware/HackORDataScienceTemplate

https://cloud.docker.com/repository/docker/karenngcivicsoftware/hackordatasciencetemplate

Demo - pull and run the backend container.

Put instructions on slide. Run basic docker

https://github.com/hackoregon/2019-backend-docker/tree/staging

https://hub.docker.com/r/hackoregoncivic/backend-docker-django-dev

Running a django docker project

    - Break down parts of the image
    - File system mounting
    - Port mapping

    - Environmental variables/credentials
- Show how to build locally and change things a bit/

Docker Security

We just try and follow best practices

https://docs.docker.com/develop/develop-images/dockerfile_best-practices/

Don’t bake in the passwords

Changes from last year.

In the past we haven’t deployed images to docker hub,we would build from base python images.

This year we have the image repo.

The idea this year is we makes changes, trigger build, update all the projects. Abstracting the infrastructure.

Docker development

- How to create images/files
- Best practices for organization
- Pushing to repository -docker push

End with deployment to ecs

Docker Further Resources

Docker docs:
https://docs.docker.com/

Quick overview of some best practices:
https://docs.docker.com/develop/dev-best-practices/

The base pattern we build from:
https://docs.docker.com/compose/django/

Exploration of the ways variables can be set in a docker container:
https://vsupalov.com/docker-arg-env-variable-guide/

Thank you!

Nick A. | Karen N.
Stephen T.L. | Brian G.
Mary Anne T.