Docker for Developers

Containerization is the new virtualization

James Turnbull
@kartar
who

- VP of Engineering at Kickstarter
- Advisor at Docker
- Open source chap
- Funny accent
Who are you folks?
What's this all about?
What is Docker?
Container virtualization
Build, ship, run
Build once
Run in many places
Isolated
Layered
Standard
Content agnostic
So why should I care?

Software delivery mechanism
Portability
A bit like a VM but ...
... not like a VM

1. Containers boot faster
2. Containers have less overhead
3. Containers bring native performance
4. Containers are Cloud & VM-compatible
Devs care about their app

Ops cares about the containers
Why developers care...

• Clean, safe, hygienic and portable
• No worries about dependencies
• Encourage good architecture
Why operations care...

- Make the lifecycle more efficient
- Eliminate inconsistencies
- Support segregation of duties
What can I use Docker for?

• Docker for CI/CD
• Packaging and deploying applications
• Build your own PAAS
• Deploy applications at hyperscale!
Technology Stack

• Runs on most Linux distributions
• Boot2Docker for OSX and Windows
• **Windows in the works!**
• Uses Linux kernel features
Docker Basics

Image & Dockerfile

Container

The Docker Hub
Building Docker images

FROM ubuntu
MAINTAINER James Turnbull "james@example.com"

RUN apt-get -qqy update
RUN apt-get install -qqy apache2
ADD index.html /var/www/

ENV APACHE_RUN_USER www-data
ENV APACHE_RUN_GROUP www-data
ENV APACHE_LOG_DIR /var/log/apache2

VOLUME ["/var/log/apache2"]
EXPOSE 80

ENTRYPOINT ["/usr/sbin/apache2"]
CMD ["-D", "FOREGROUND"]
Building the image

$ sudo docker build -t="jamtur01/fluentconf" .
Sharing the image

$ sudo docker push jamtur01/fluentconf
Running the container

$ sudo docker run --name mywebsite -ti -p 80:80 jamtur01/fluentconf
Docker Hub

- Like GitHub but for containers.
- Integrates with GitHub and BitBucket.
- Web hooks for integration with other services.
Workflow

- Write awesome code!
- Commit code.
- (Automatically) build Docker images
- Share images
- Profit!
But it's not simple to build a stack
Docker Compose

- Fast, isolated development environments using Docker.
- Quick and easy to start.
- Manages a collection of containers.
Installing Compose

$ sudo pip install -U docker-compose
$ docker-compose --version
Compose basics

- Build your apps with Dockerfile's.
- Combine applications and images with a docker-compose.yml file.
The Dockerfile

FROM ubuntu:14.04
RUN apt-get -yqq update
RUN apt-get -yqq install nodejs npm
RUN ln -s /usr/bin/nodejs /usr/bin/node
RUN mkdir -p /var/log/nodeapp
ADD nodeapp /opt/nodeapp/
WORKDIR /opt/nodeapp/
RUN npm install
The docker-compose.yml file

db:
  image: redis
  ports:
    - "6379"

web:
  image: jamtur01/fluentdemo
  command: nodejs server.js
  ports:
    - "3000:3000"
  links:
    - db
Compose details

• Can build images, use existing or pull images
• Can map ports, manage links and create volumes
• Still single host centric.
Start Compose

$ sudo docker-compose up
Creating compose_db_1...
Creating compose_web_1...
...
Demo
Compose benefits

- Build complex local stacks.
- Consistent and shareable.
- No more..
WORKED FINE IN DEV

OPS PROBLEM NOW
Team and Deployment Workflow

• Write awesome code!
• Commit code.
• (Automatically) build Docker images.
• (Automatically) run Jenkins tests.
• Promote images to new environments.
• Profit!
Questions?