Docker

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Docker in 30-ish Seconds

- Lightweight, portable, self-contained applications
- No hypervisor, no instruction translation
- Run the same container everywhere - develop on a laptop, test on a VM, prod in the cloud
- Built on top of Linux Containers and AUFS
- Runs on a modern (3.8+) Linux Kernel (Ubuntu 13)
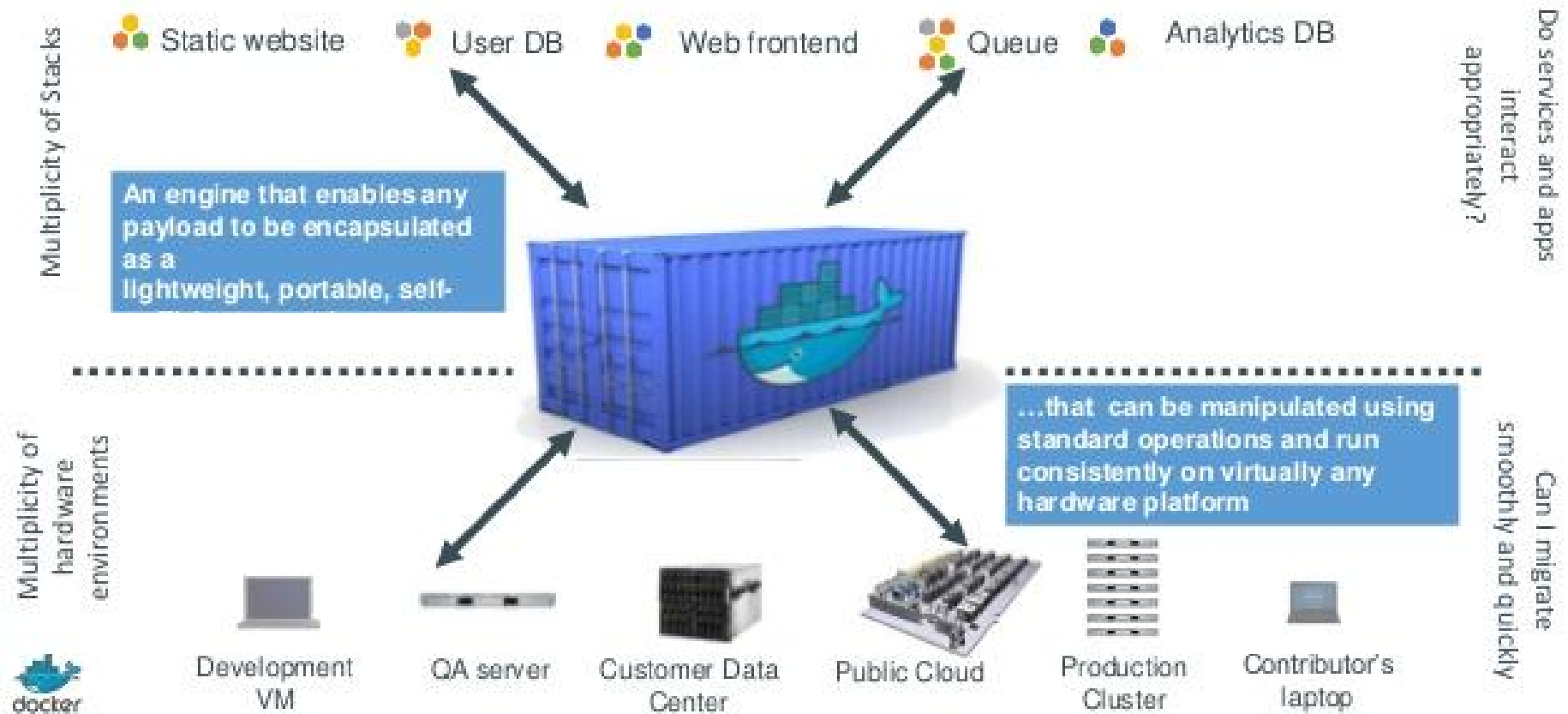- Targeting EPEL6 before 1.0

Why "Docker"?

Before the 1960s, cargo transport was a mess.

Everything was shipped separately and had to be unpacked and repacked many times before it arrived at its final destination.

The solution: put things into a standardized container than stacks onto trucks, trains, and ships, and keep it sealed and intact until it gets there.

Docker is a shipping container system for code

Multiplicity of Stacks

Static website   User DB   Web frontend   Queue   Analytics DB

An engine that enables any payload to be encapsulated as a lightweight, portable, self-

Do services and apps interact appropriately?

...that can be manipulated using standard operations and run consistently on virtually any hardware platform

Multiplicity of hardware environments

docker

Development VM   QA server   Customer Data Center   Public Cloud   Production Cluster   Contributor's laptop

Can I migrate smoothly and quickly

Building Docker Containers

- Easy to automate and integrate into your CI system
- Content agnostic: if it runs on Linux x64, it will run in a container
- Sealed at build time with all its dependencies: no need for rvm / rbenv / etc.
- Created from layers: only store the differences between a container and its parent

Visualizing Image Hierarchies
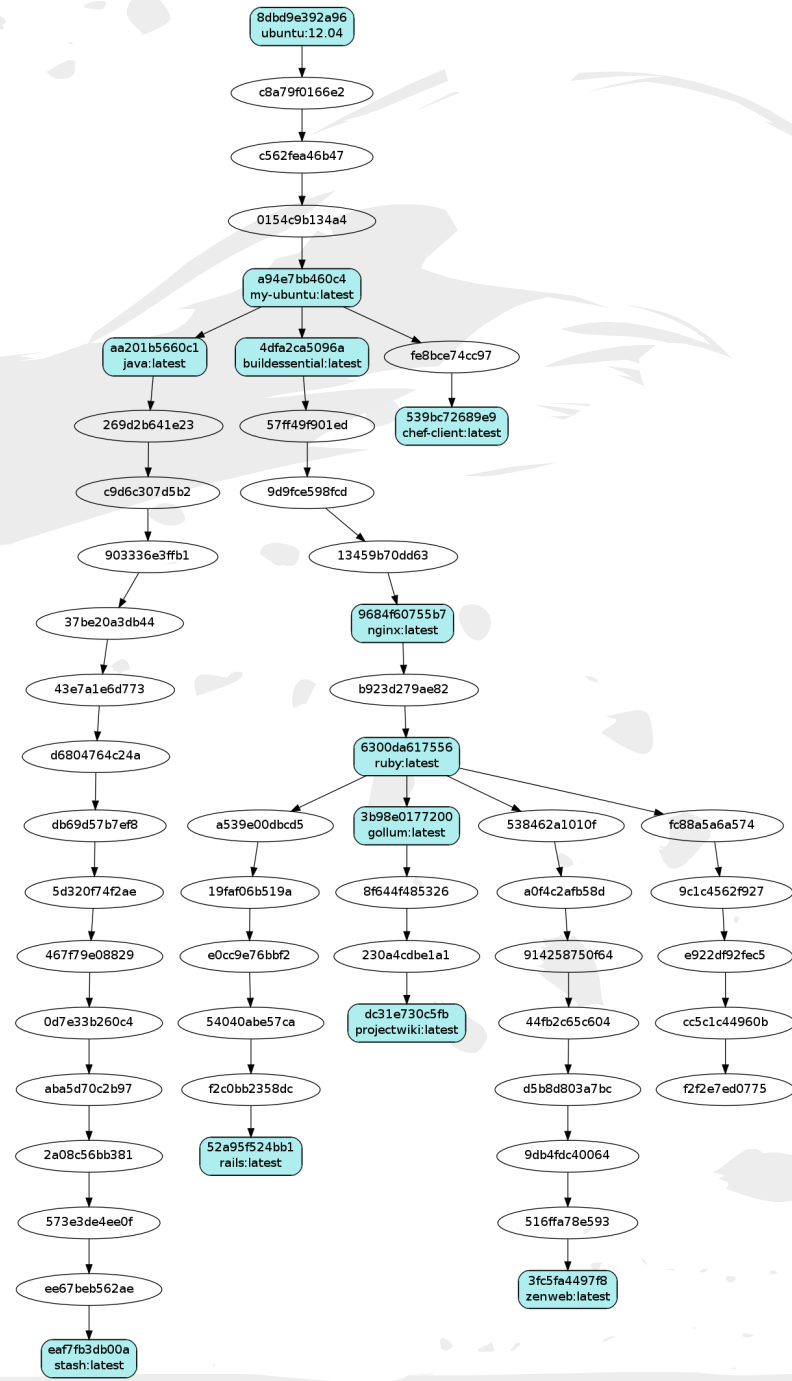
Running Docker Containers

- Process isolation
- Network isolation
- Memory Caps (lxc cgroups)
- Relative CPU Weighting
- Ephemeral filesystem, but …
- Can bind mount from the host into a container or share a virtual FS among several containers

Rapid Iteration

Snapshot a running container to an image:

```
docker commit f4328ca3
3ac8234d
```

Then start up a new container from that image:

```
docker run -t -i 3ac8234d bash
```

Now go debug a private copy of your live app while the original still runs.

Share Inside or Out

DotCloud operate a public registry where you can push images.

Open-source registry server with optional S3 storage for distributing private images.

Use Cases

- Create your own PaaS (DotCloud, the authors of Docker started as a PaaS)
- Repeatable environments for teaching or testing (like a very lightweight Vagrant)
- Secure Sandboxes

Getting Started

Clone

https://github.com/jf647/devops-docker-lightningtalk.git

- Vagrantfile to build a docker host and a private registry host
- Docker builds for
  - chef-client
  - nginx -> Zenweb (static website generator)
  - openjdk -> Atlassian Stash
  - ruby -> gollum -> Version Controlled Wiki
  - ruby -> rails + unicorn

Read More

http://www.docker.io

https://github.com/dotcloud/docker/

Thank-you