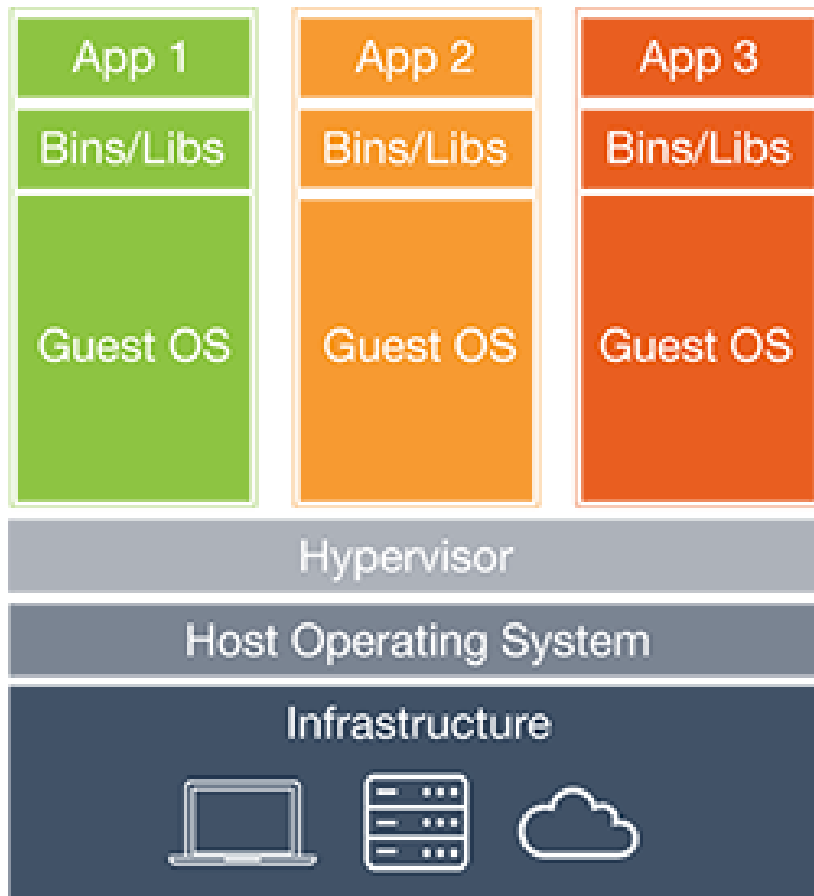# Setting up a server in 5 minutes with boinc-server-docker
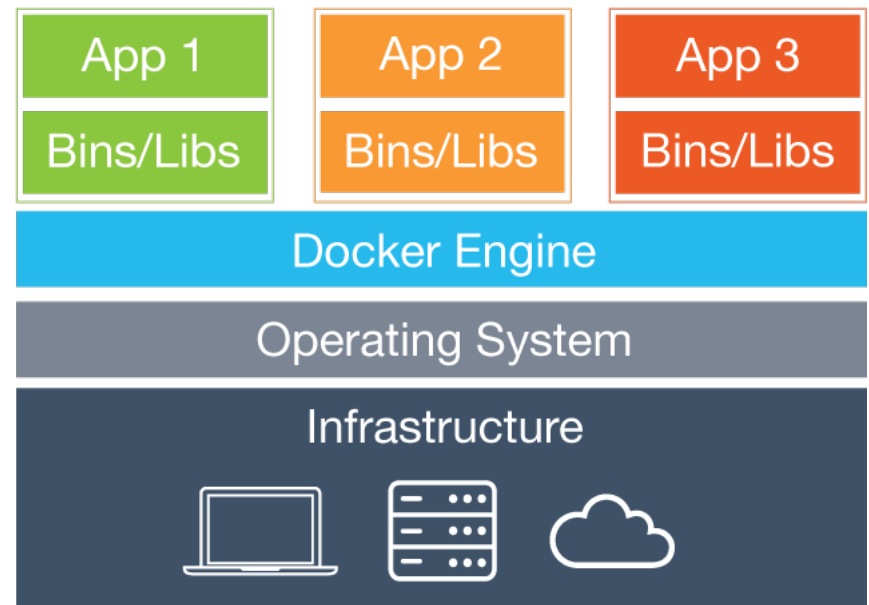

Marius Millea

Cosmology@Home

What is Docker?

Virtual Machine		
App 1	App 2	App 3
Bins/Libs	Bins/Libs	Bins/Libs
Guest OS	Guest OS	Guest OS

Hypervisor

Host Operating System

Infrastructure

Virtual Machine

Docker serves many of the same purposes of a Virtual Machine, but is functionally very different (and in many ways, better)

App 1	App 2	App 3
Bins/Libs	Bins/Libs	Bins/Libs

Docker Engine

Operating System

Infrastructure

Docker

Demo1

322 repository results

BOINC/*boinc*
● PHP   ★ 436

Open-source software for volunteer computing
and grid computing.

`c-plus-plus` `boinc` `php` `science`

Updated 20 minutes ago

matszpk/native-*boinc*-for-android
● C   ★ 34

Native *BOINC* client for android and *boinc*
applications

Updated on Feb 10, 2015

marius311/*boinc*-server-docker
● Shell   ★ 27

A Docker multi-container application that runs a
BOINC server

`docker` `science` `boinc` `volunteer-computing`

Updated on Jul 29

← 3rd most starred repository when
searching "BOINC" on Github*

* one unrelated result removed

boinc ▾   📕 Repositories   👥 Teams   💲 Billing   ⚙ Settings

Repositories

Type to filter repositories by name

boinc/server_makeproject public | automated build	1 STARS	2.5K PULLS	**>** DETAILS
boinc/server_apache public | automated build	1 STARS	1.9K PULLS	**>** DETAILS
boinc/server_mysql public | automated build	1 STARS	1.5K PULLS	**>** DETAILS

Several thousand "pulls" of the boinc-server-docker images on Docker Hub

My point: people find boinc-server-docker helpful and actually use it.

How it works

- Containers
  - MySQL
  - Apache
  - Makeproject
    - During build: BOINC server compiled && ./make_project
    - During run: Files copies to project volume && ./update_versions
- Volumes (which store data)
  - Results (/results)
  - Database (/var/lib/mysql)
  - Project (/root/project)

makeproject Dockerfile

```
Dockerfile
1    FROM debian:jessie
2
3    MAINTAINER Marius Millea <mariusmillea@gmail.com>
4
5    # install necessary packages
6    RUN apt-get update && apt-get install -y \
7            curl \
8            dh-autoreconf \
9            git \
10           libcurl4-gnutls-dev \
11           libmysqlclient-dev \
12           libssl-dev \
13           m4 \
14           make \
15           php5-cli \
16           php5-mysql \
17           pkg-config \
18           python \
19           python-mysqldb
20
21
22   # get source and compile server
23   COPY boinc /root/boinc
24   RUN cd /root/boinc && ./_autosetup && ./configure --disable-client --disable-manager && make
25
26   # build configuration
27   ENV USER=root PROJHOME=/root/project
```

makeproject Dockerfile (cont'd)

```
29  # make project
30  RUN cd /root/boinc/tools \
31      && ./make_project --url_base http://127.0.0.1 \
32                         --project_host boincserver \
33                         --db_host mysql \
34                         --db_user root \
35                         --no_db \
36                         --no_query \
37                         --project_root $PROJHOME \
38                         boincserver \
39      && sed -i -e 's/Deny from all/Require all denied/g' \
40              -e 's/Allow from all/Require all granted/g' \
41              -e '/Order/d' $PROJHOME/boincserver.httpd.conf \
42      && echo "admin:zJiQQ3OoIfehM" > $PROJHOME/html/ops/.htpasswd \
43      && chmod g+w $PROJHOME/download \
44      && rm -r $PROJHOME/log_boincserver
45
46  # project files
47  RUN mkdir $PROJHOME/html/stats_archive
48  COPY db_dump_spec.xml $PROJHOME/
49  COPY html $PROJHOME/html
50  COPY bin $PROJHOME/bin
51
52  # finish up
53  WORKDIR $PROJHOME
54  COPY postbuild.py /root/
55  CMD /root/postbuild.py
```

So how do I make my own project?

(most people I've seen do this on GitHub have done it "wrong")

demo2

Advantages of boinc-server-docker

- "Batteries included but replacable"
- Super fast to spin up and delete servers
- Test locally => put in production confidently
- Server configuration is under version control
- Can run server on Windows and Mac via Docker Toolbox

Challenges

- The server needs a release schedule

- Multiple hosts not currently supported
  - Docker is *built* for this thanks to `docker scale` and multi-host networking, I just haven't implemented it yet

Uses for BOINC

- My opinion: When a user searches for "how do I run my own server" this should be *the* solution presented

- Maybe boinc-server-docker can be used in creating tests