Introduction to Docker

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Some Info

- Also available as PDF, EPUB and MOBI formats.
- Hosted at Github.
- Mistakes? Improvements? Make me a pull request.

What is Docker?

Pretty much a lightweight Virtual Machine

- Own process space
- Own network interface
- Can run stuff as root
- Implemented using LXD - new "hypervisor"

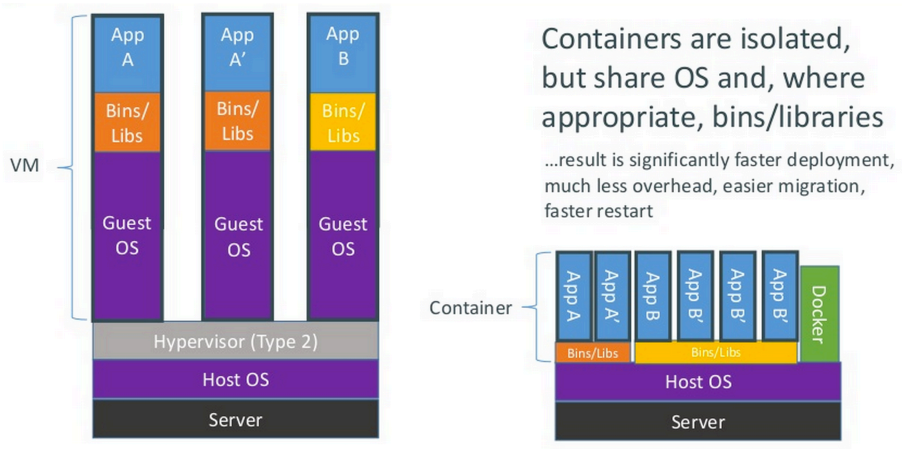

Figure 1: VM vs Container - From Docker

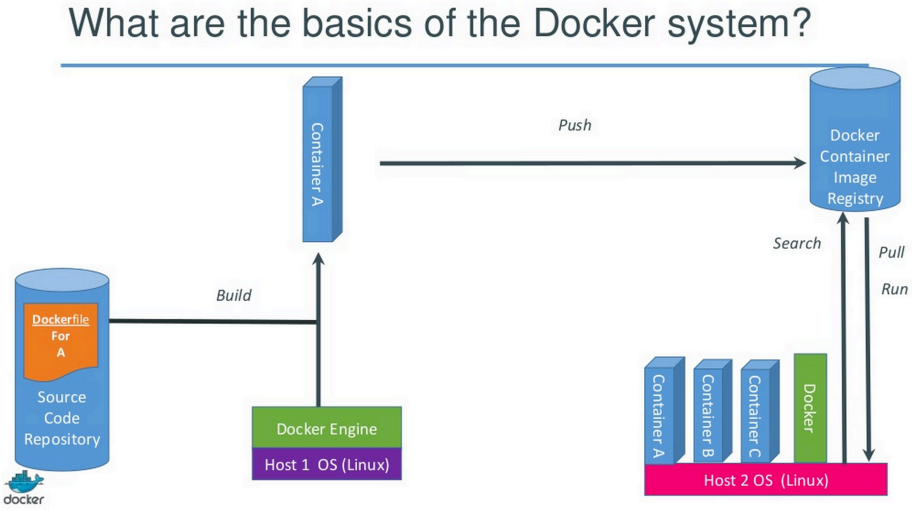

Figure 2: Docker System - From Docker

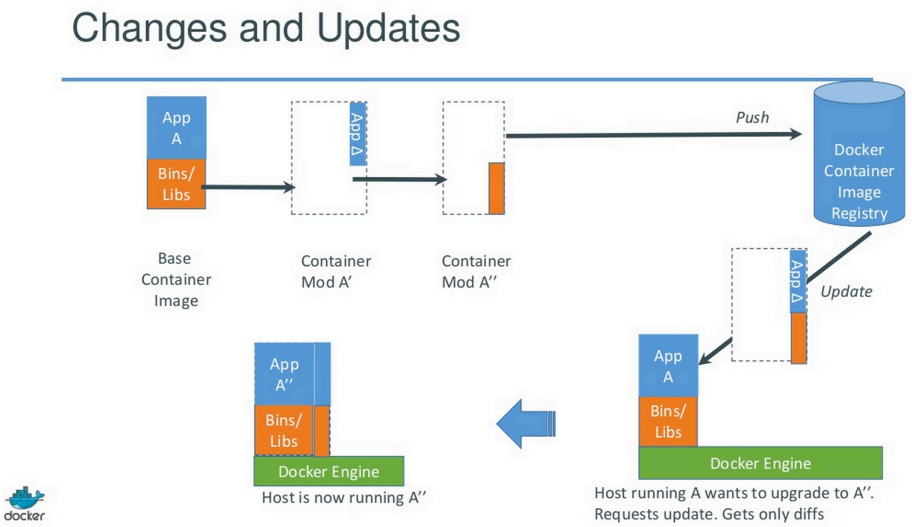

Figure 3: Changes and Update - From Docker

What the big fuss?

Shipment

- Works on my machine
- Works on your machine
- Works on staging
- Works on production

How would you treat code?

- Push your source code on Github/Stash/Bitbucket?
- Peer review on your code?
- Share your source code?

Docker works like Git

- Push your `Dockerfile` to Dockerhub (or your private Docker registry)
- Peer review your Docker arhictecture.
- Share your Dockefile via Dockerhub/private Docker registry or build yourself from SCM

Run everywhere

- Ubuntu/CentOS/Debian/BusyBox
- Physical or Virtual, chould or onpremise

Run anything

- Anything that you can run on Linux
- In other words, if you can install stuff on your Linux box, you can install on Docker

Pulling busybox and play with it

```
docker search busybox

https://registry.hub.docker.com/search?q=busybox
```

```
docker pull busybox

docker pull node:latest
```

```
docker images
```

```
docker run busybox ps aux

docker run -i -t busybox /bin/sh
```

Build Hello World in NodeJS

Running node:

```
docker run -it --rm --name hello-world-node node:latest node
```

```
mkdir helloworld

touch helloworld/index.js

var express = require('express');
var app = express();

app.get('/', function (req, res) {
  res.send('Hello World!')
});

var server = app.listen(3000, function () {
  var host = server.address().address;
  var port = server.address().port;
  console.log('Example app listening at http://%s:%s', host, port);
});
```

```
touch helloworld/Dockerfile

FROM       node:latest
MAINTAINER Mohd Faiz Hasim

ENV APP_PATH /user/src/myapp

EXPOSE 3000

ADD index.js $APP_PATH/index.js
RUN npm install --save express

WORKDIR $APP_PATH

CMD node index.js
```

```
docker build -t faizhasim/helloworld helloworld/
```

```
docker run -p=80:3000 -ti --rm --name hello-world-node faizhasim/helloworld
```

Orchestration with Fig

```
touch fig.yml
```

```
helloworld:
  build: helloworld/.
  ports:
    - "80:3000"
```

```
fig build
```

```
fig up
```

Where should I go next?

For motivation...

Checkout How we orchestrates 8 Docker containers to support our Learndot build pipeline?

Going forward

- Try to `link` your hello world container to read value from `redis` container.
- Checkout examples from Fig website.
- Ask Shuaib to demo to you.

Recommended reads

- The Docker Book by James Turnbull
- Docker documentation website

Some interesting facts

- This slides is build using docker!
- Fig will be part of official Docker orchestration tool
- You can deploy Docker using Amazon Elastic Beanstalk

> Docker is not magic. You create magic around Docker.