

Introduction to DevOps

Lecture 6

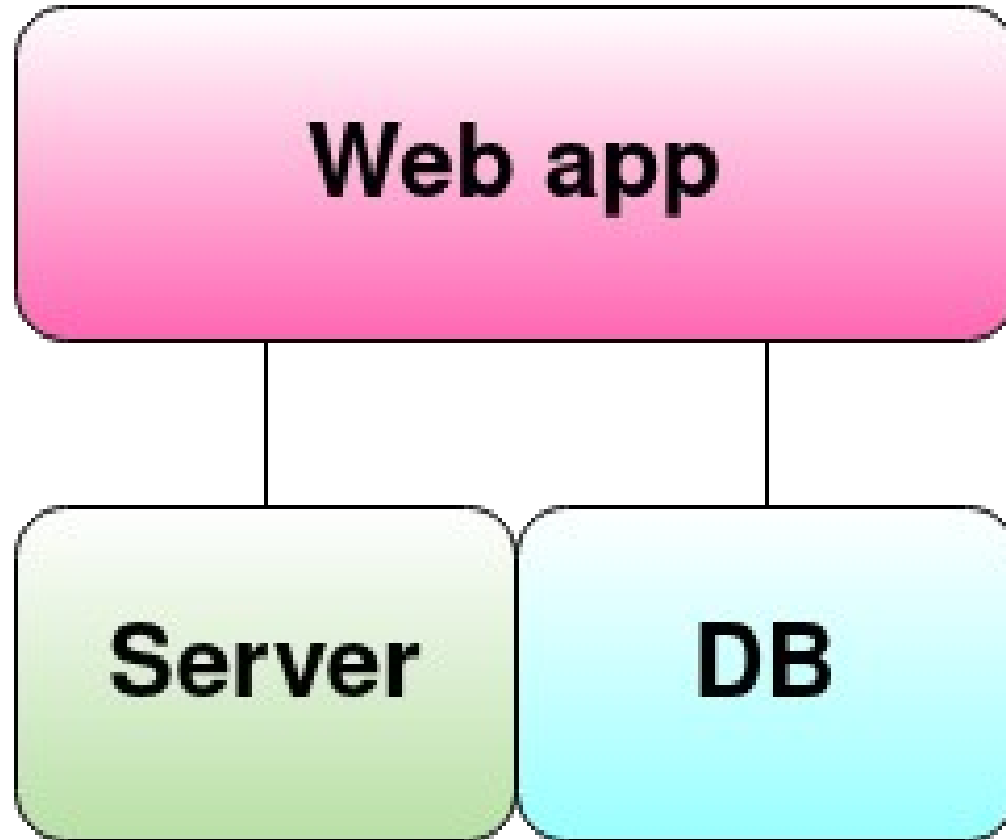
Containers and Docker

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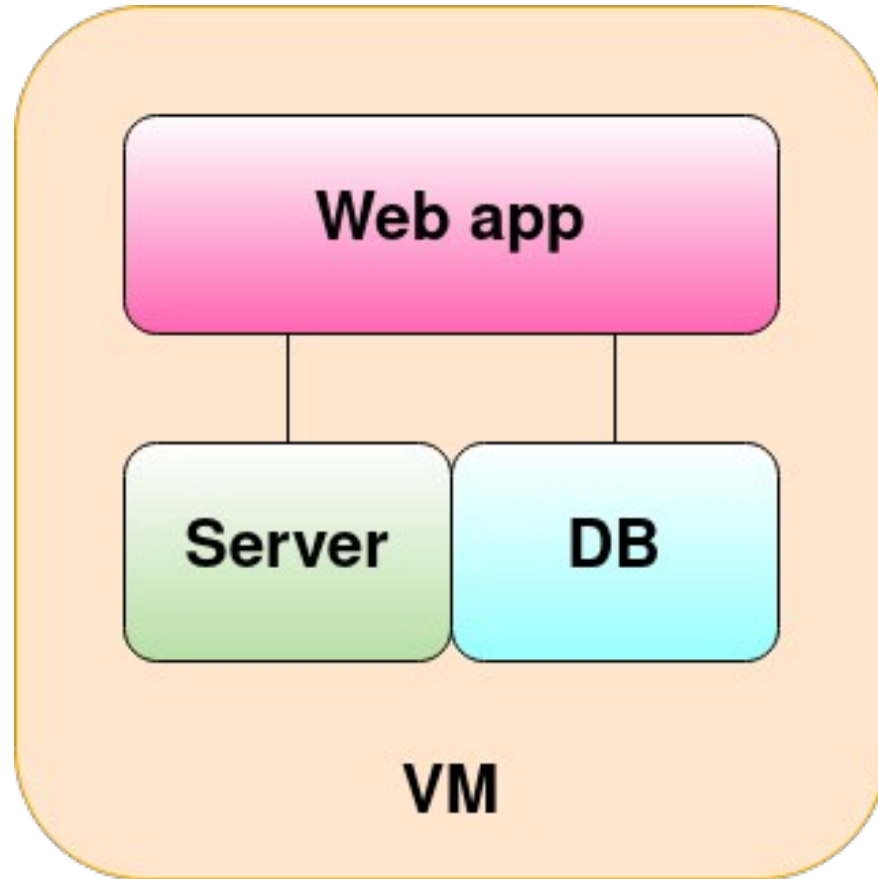
Virtualisation vs. Emulation

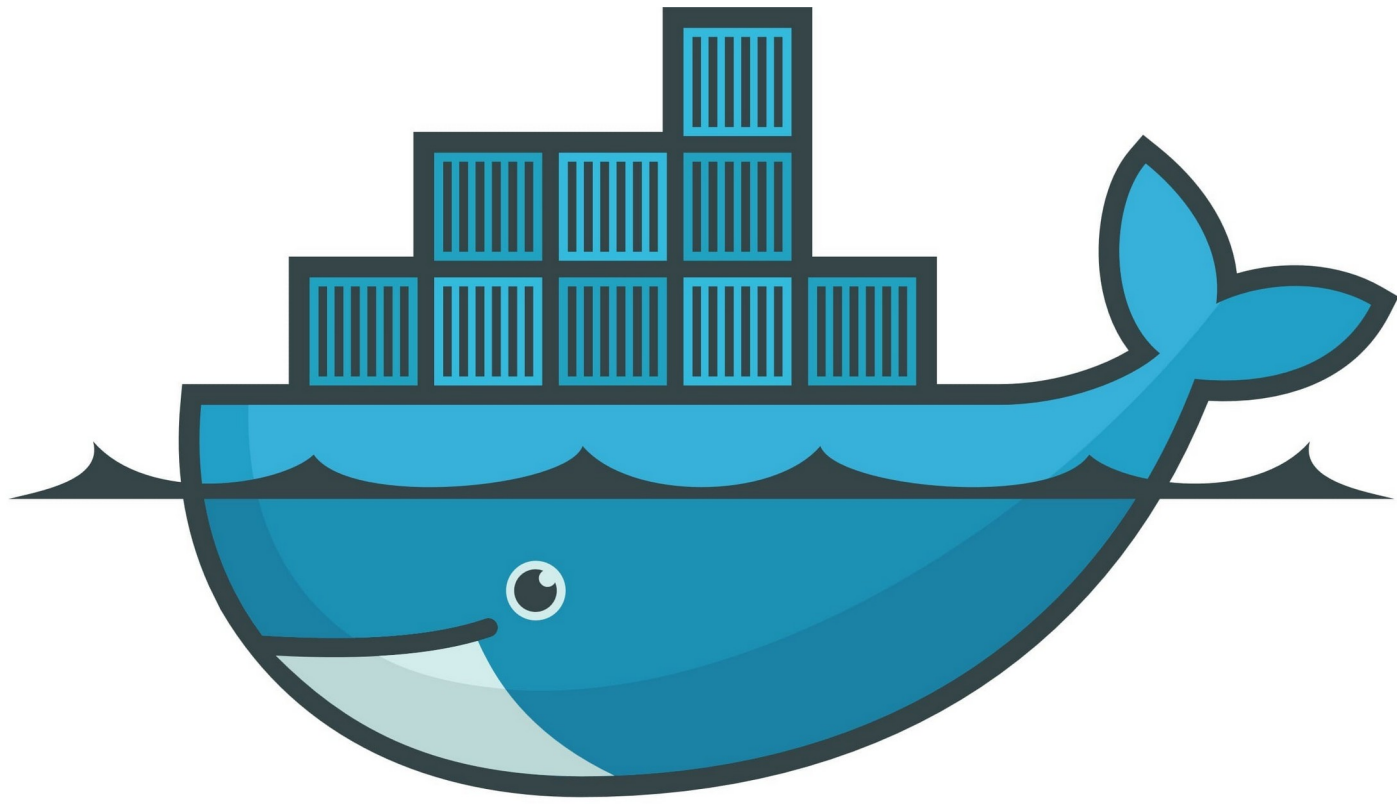
- **Emulation** – Simulating the behaviour of a computer using software (i.e. software implementation of hardware)
- **Virtualisation** – Like emulation, but with hardware acceleration (which makes it much faster!)

Imagine you're running a web app...



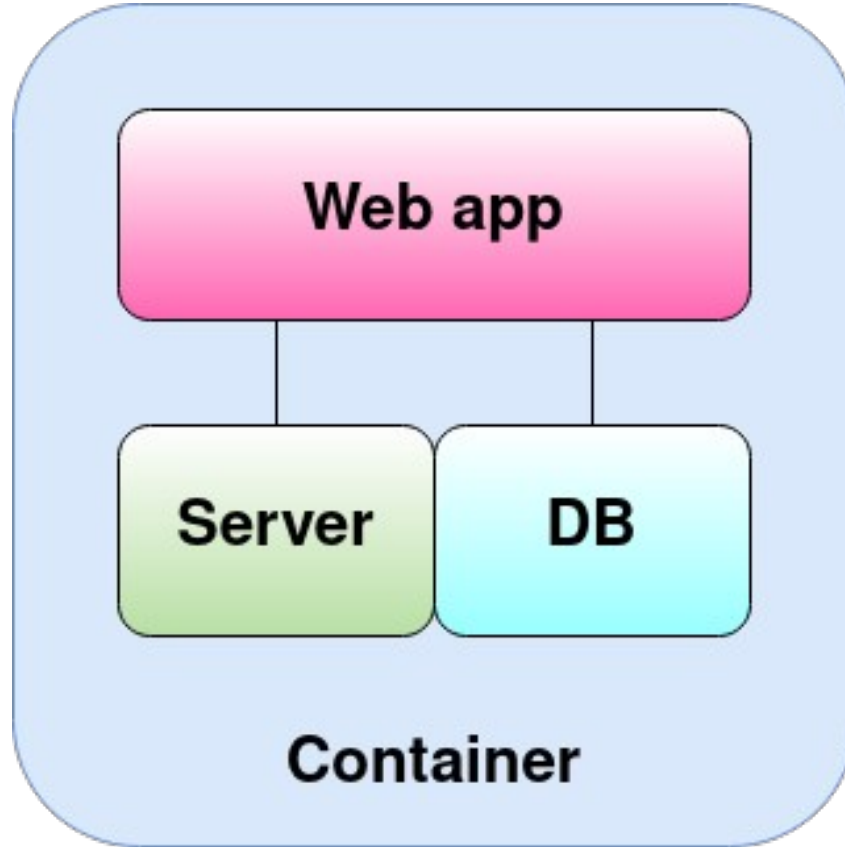
Web app on a VM





docker

Containerise your application



Some terminology

- An image is a container on disk which isn't running
- So the difference between a container and an image is a bit like the difference between a process and a program

Docker commands

- **docker build** makes an image
- **docker run** launches a built image
- **docker stop** shuts down a container
- **docker rm** deletes an image

**To create a container image, we use a script
called a **Dockerfile****

Dockerfile command

COMMAND args

Dockerfile command

COMMAND args



Not case sensitive, but
conventionally written in uppercase

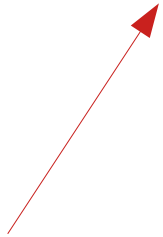
Some Dockerfile commands...

Derive one Dockerfile from another...

FROM ubuntu:22.04

Image

Tag



Some Dockerfile commands...

Run a command on a container during buildtime

RUN `sudo apt install jenkins`

Some Dockerfile commands...

Set an environment variable in the image

```
ENV VAR="this is a variable"
```

Some Dockerfile commands...

Set a variable within the Dockerfile

```
ARG VAR="this is a variable"
```

Some Dockerfile commands...

Require the user to specify a value when building the Dockerfile

ARG VAR

Some Dockerfile commands...

Copy a file from the host to the image

COPY my_file.txt files/

Some Dockerfile commands...

Tell Docker what command must be run when the container starts up

CMD my_app

Some Dockerfile commands...

Add metadata to an image

LABEL version="1.0"

Some Dockerfile commands...

Open a port on the container

EXPOSE 8080/tcp

Some Dockerfile commands...

Create and cd to a directory to work in

WORKDIR hello/world

That's all for this week!

Thanks for your attention!