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What is Docker

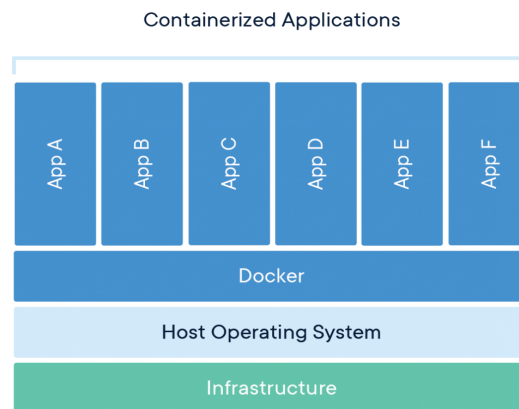Docker is a tool designed to make it easier to create, deploy, and run applications by using containers.

Figure 1 Containerized Concept

What is Container

A container is a standard unit of software that packages up code and all its dependencies so the application runs quickly and reliably from one computing environment to another.

Containers and virtual machines have similar resource isolation and allocation benefits, but function differently because containers virtualize the operating system instead of hardware. Containers are more portable and efficient.
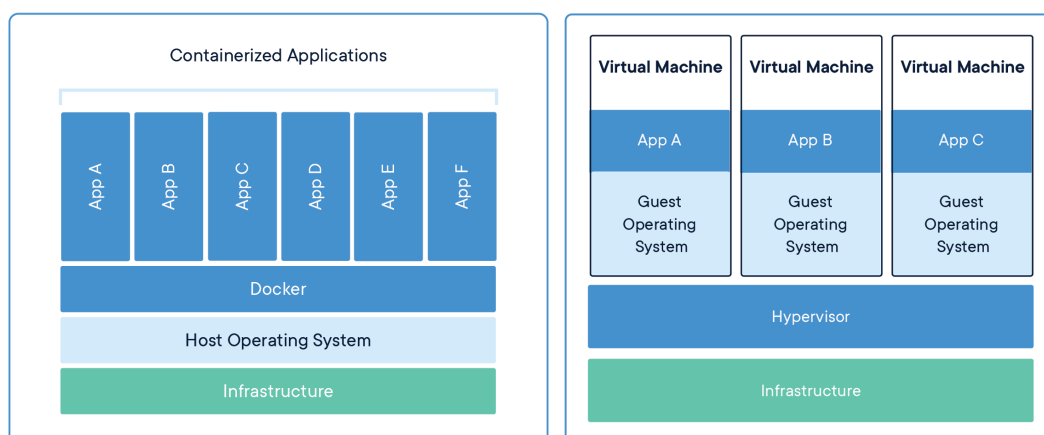

Figure 2 Comparing Containers and Virtual Machines

How to use Docker

Docker on Mac

You can download docker at

https://docs.docker.com/docker-for-mac/install/

Docker on Windows

You can download docker at

https://docs.docker.com/docker-for-windows/install/

Docker on Linux (Ubuntu)

You can just run this script on ubuntu terminal :

```
$ sudo apt-get update

$ sudo apt-get install \
    apt-transport-https \
    ca-certificates \
    curl \
    gnupg-agent \
    software-properties-common

$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add
-

$ sudo apt-key fingerprint 0EBFCD88

$ sudo add-apt-repository \
  "deb [arch=amd64] https://download.docker.com/linux/ubuntu \
  $(lsb_release -cs) \
  stable"

$ sudo apt-get update

$ sudo apt-get install docker-ce docker-ce-cli containerd.io

$ sudo apt-get install docker-compose
```

Can we run Laravel on Docker

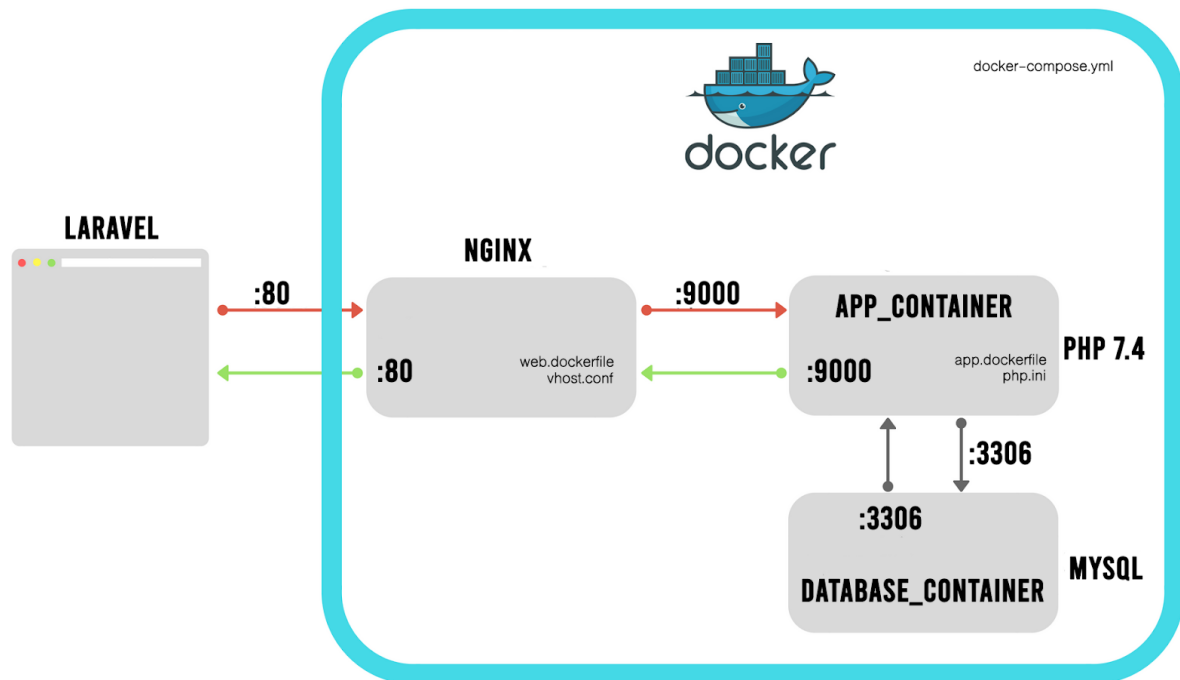Are you kidding me? Simple Setup Docker for Laravel :

Figure 3 Docker Laravel Setup

```
docker_laravel/
├── docker-compose.yml
├── app.dockerfile
├── web.dockerfile
├── vhost.conf
├── php.ini
└── http/
    └── laravel/
```

After the setup ready, you can run the Docker Container with this command,

$ cd **docker_laravel**

$ cd **http**

$ composer create-project --prefer-dist laravel/laravel **laravel** "6.*"

$ docker-compose up --build

docker-compose.yml

```yaml
version: "2"
services:
  web:
    container_name: WEB_CONTAINER
    build:
      context: ./
      dockerfile: web.dockerfile
    volumes:
      - ./http/:/var/www
    ports:
      - "80:80"
    links:
      - app
      - database
  app:
    container_name: APP_CONTAINER
    build:
      args:
        user: laravel
        uid: 1000
      context: ./
      dockerfile: app.dockerfile
    volumes:
      - ./http/:/var/www
    links:
      - database
    environment:
      DB_PORT: 3306
      DB_HOST: database
  database:
    container_name: DATABASE_CONTAINER
    image: mariadb
    environment:
      MYSQL_ROOT_PASSWORD: your_password
      MYSQL_DATABASE: laravel
    ports:
      - "3306:3306"
```

app.dockerfile

```dockerfile
FROM php:7.4-fpm
ARG user
ARG uid
RUN apt-get update && apt-get install -y \
    git \
    curl \
    libpng-dev \
    libonig-dev \
    libxml2-dev \
    zip \
    libzip-dev \
    unzip \
&& docker-php-ext-install zip
RUN apt-get clean && rm -rf /var/lib/apt/lists/*
RUN docker-php-ext-install pdo_mysql mysqli mbstring json exif pcntl bcmath gd
COPY --from=composer:latest /usr/bin/composer /usr/bin/composer
RUN mv "$PHP_INI_DIR/php.ini-production" "$PHP_INI_DIR/php.ini"
ADD ./php.ini /usr/local/etc/php/conf.d/additions.ini
RUN useradd -G www-data,root -u $uid -d /home/$user $user
RUN mkdir -p /home/$user/.composer && \
    chown -R $user:$user /home/$user
WORKDIR /var/www
USER $user
```

web.dockerfile

```dockerfile
FROM nginx:1.10
ADD ./vhost.conf /etc/nginx/conf.d/default.conf
WORKDIR /var/www
```

vhost.conf

```
server {
    index index.php index.html;
    listen  80;
    server_name localhost;
    root /var/www/laravel/public;
    try_files $uri $uri/ /index.php;
    location ~ \.php$ {
        fastcgi_split_path_info ^(.+\.php)(/.+)$;
        fastcgi_pass app:9000;
        fastcgi_index index.php;
        include fastcgi_params;
        fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
        fastcgi_param PATH_INFO $fastcgi_path_info;
    }
    client_max_body_size 10m;

}
```

php.ini

```
file_uploads = On
memory_limit = 64M
upload_max_filesize = 64M
post_max_size = 64M
max_execution_time = 600
```

DON'T FORGET TO LEAVE A MESSAGE
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