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Dockerizing ASP.NET Core Applications

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About Me

- **Status:** Married, three children
- **Locations:** Los Angeles, Dallas, Slovakia
- **Blog:** blog.tonysneed.com
- **Software developer, instructor, author**
- **Open Source Frameworks:**
Trackable Entities, Simple MVVM Toolkit



Get the Bits



[github.com](https://github.com/tonysneed) / **tonysneed** /

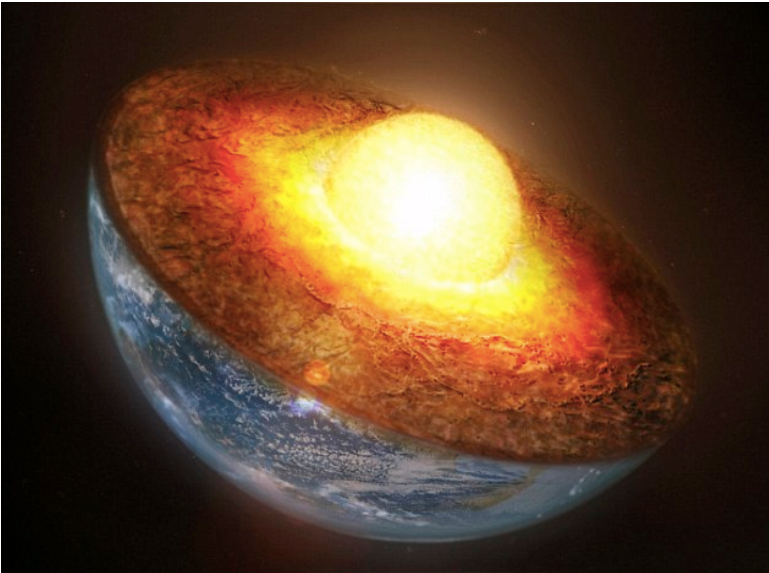
DevWeek.2016.AspNetCore-Docker

Agenda



- **ASP.NET Core** overview
- Introduction to **Docker**
- Docker toolbox, basic **commands**
- Defining Docker images with a **Dockerfile**
- Mapping containers to **source code**
- Linking containers with **Docker Compose**

What is ASP.NET Core*?



- Open-source, **cross-platform**
- **Modular**, cloud-friendly
- Highly **performant**, lightweight

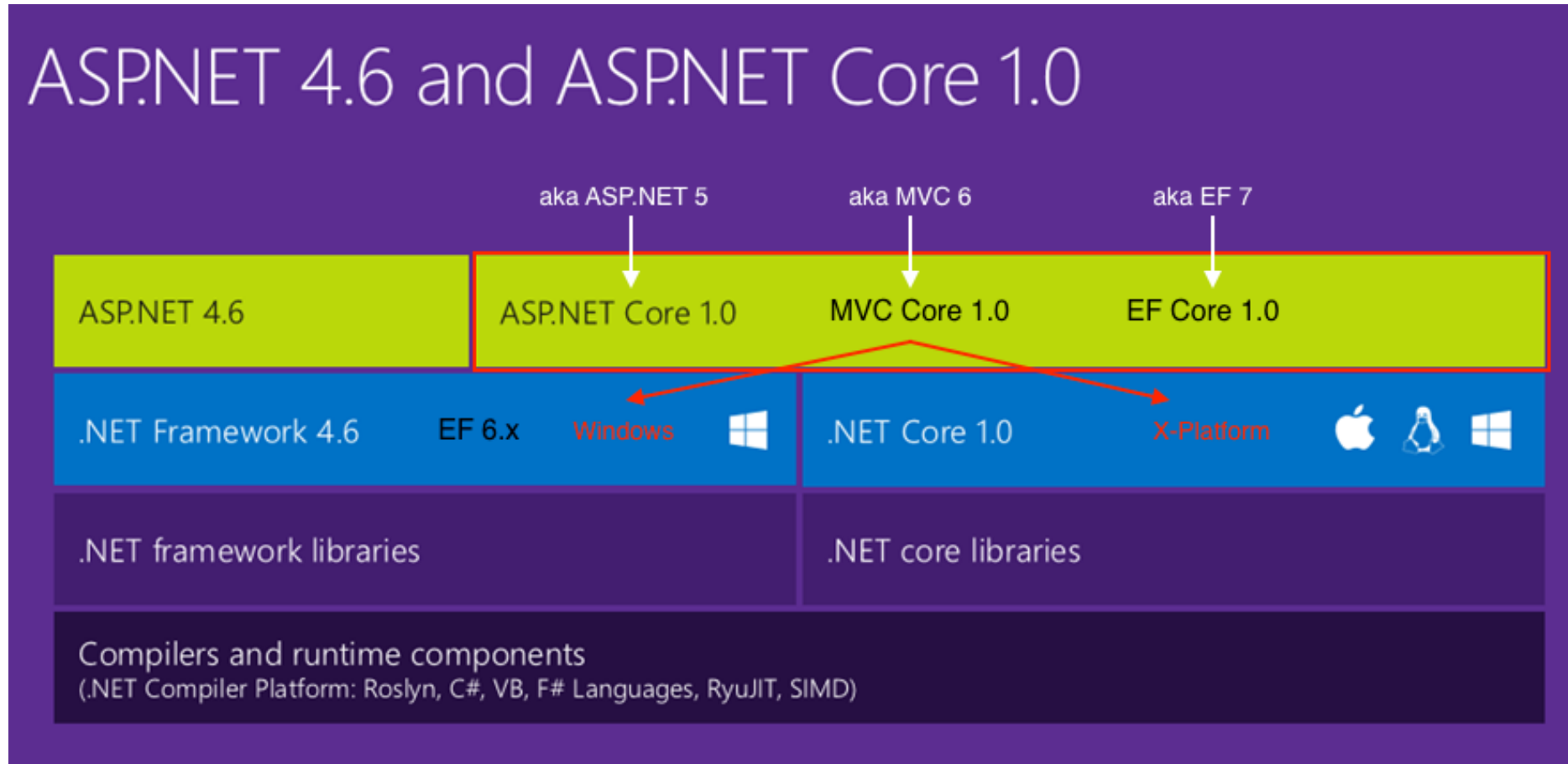
** Formerly named ASP.NET 5*

ASP.NET Core: Why Should I Care?



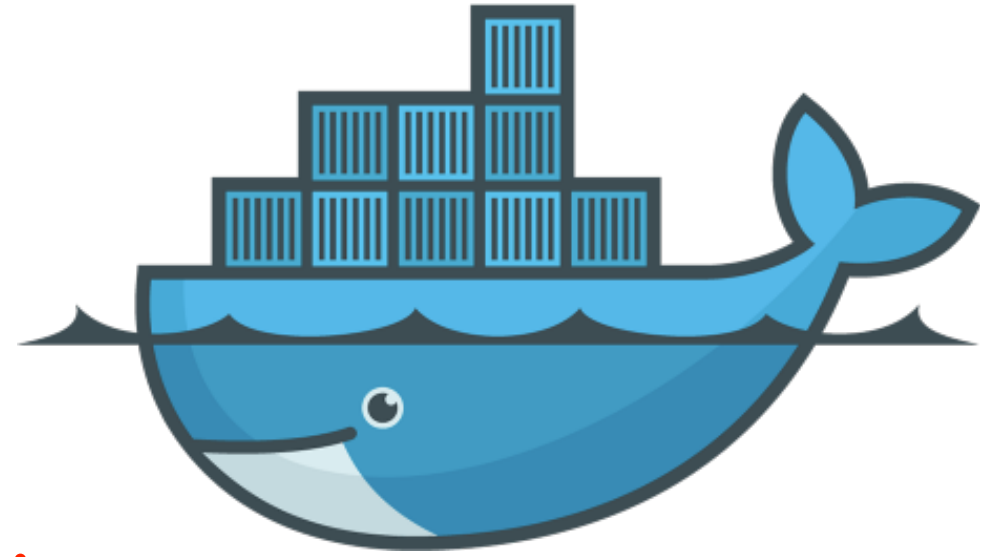
- No longer **shackled** to one tool chain
- Easily **mix and match** web frameworks
- Enables **cloud-first** development

ASP.NET Core Architecture



What is Docker?

- Isolated like a **virtual machine**
- But more **lightweight**
- Easily deploy and scale **microservices**



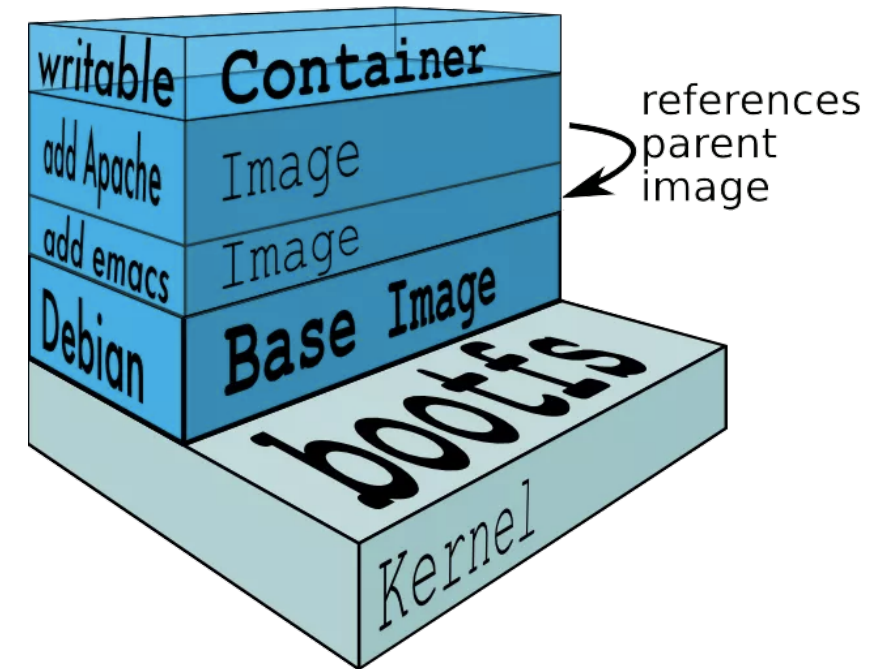
Docker: Why Should I Care?



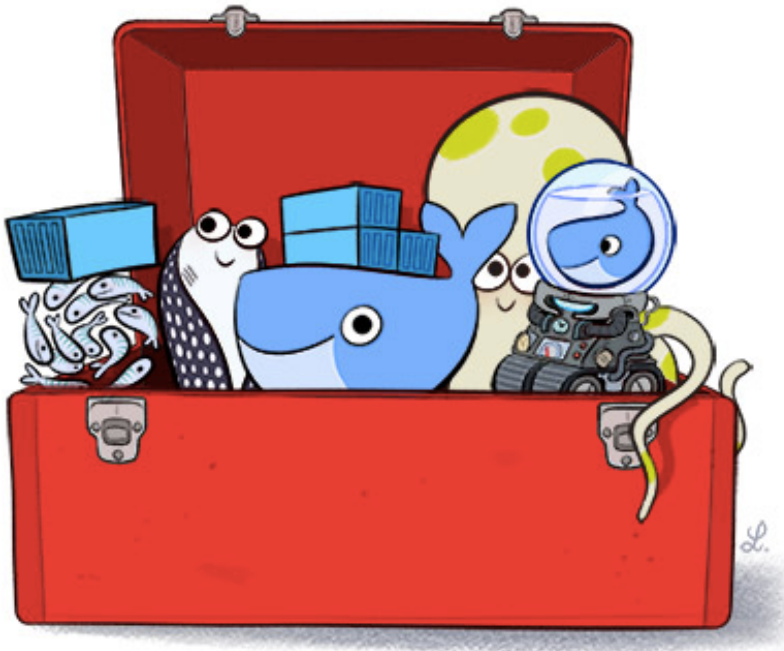
- Containers **isolated** from dev machine
- Dev environment **matches** production
- Link containers together with **docker compose**

Docker Concepts

- Images
 - Read-only: *environment + app*
 - Layered on top of **other images**
- Containers
 - Read-write: *instance* of an image
 - **Isolated** from other containers



Getting Started with Docker



- Go to **docker.com** and click **Get Started**
- Install the **Docker Toolbox**
 - Oracle Virtual Box
 - CLI and GUI clients
 - docker-machine
 - docker-compose

Docker Machine Commands



`docker-machine ls`

`docker-machine start [machine name]`

`docker-machine stop [machine name]`

`docker-machine env [machine name]`

`docker-machine ip [machine name]`

Docker Image Commands

`docker pull [image name]`

`docker build [current dir]`

`docker images`

`docker rmi [image ID]`



Docker Container Commands



`docker run [image name]`

`docker ps -a [list containers]`

`docker inspect [container id / name]`

`docker rm [container id / name]`

Demo: Getting Started with Docker



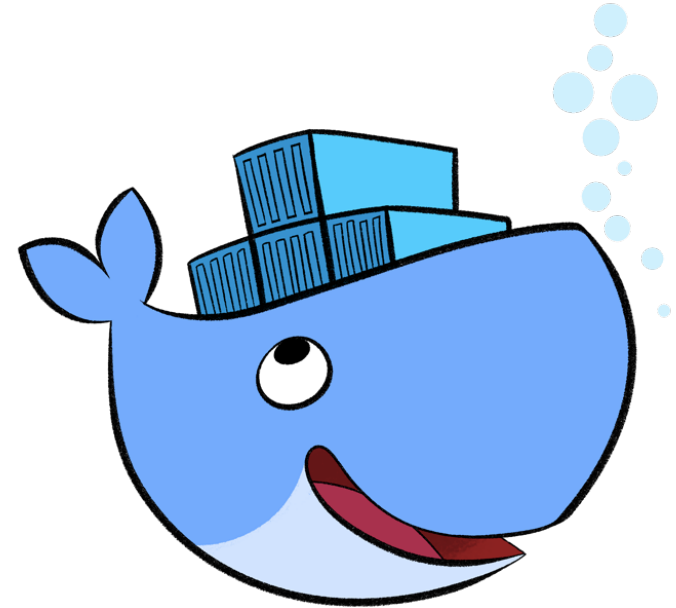
Dockerfile: Image Definition



Dockerfile



Build



Docker Image

Dockerfile: Sample Commands

FROM [base image]

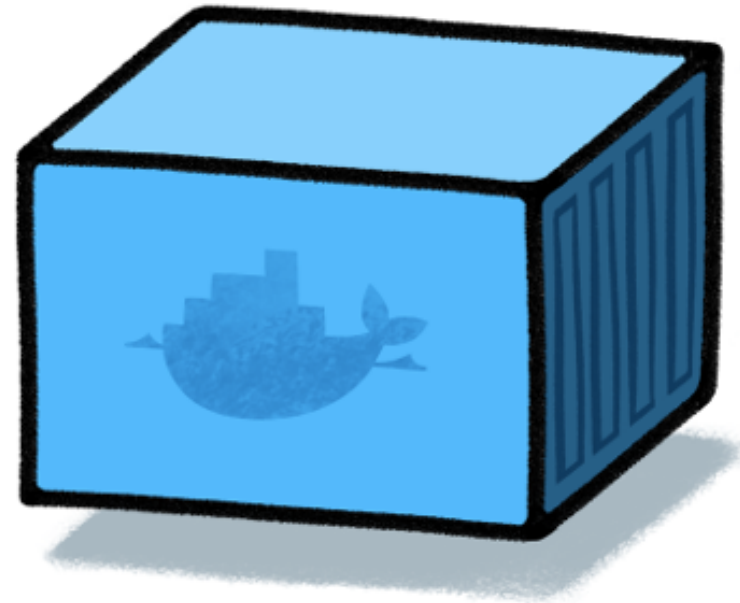
MAINTAINER [author]

COPY, **WORKDIR**

RUN [command, args]

EXPOSE [port]

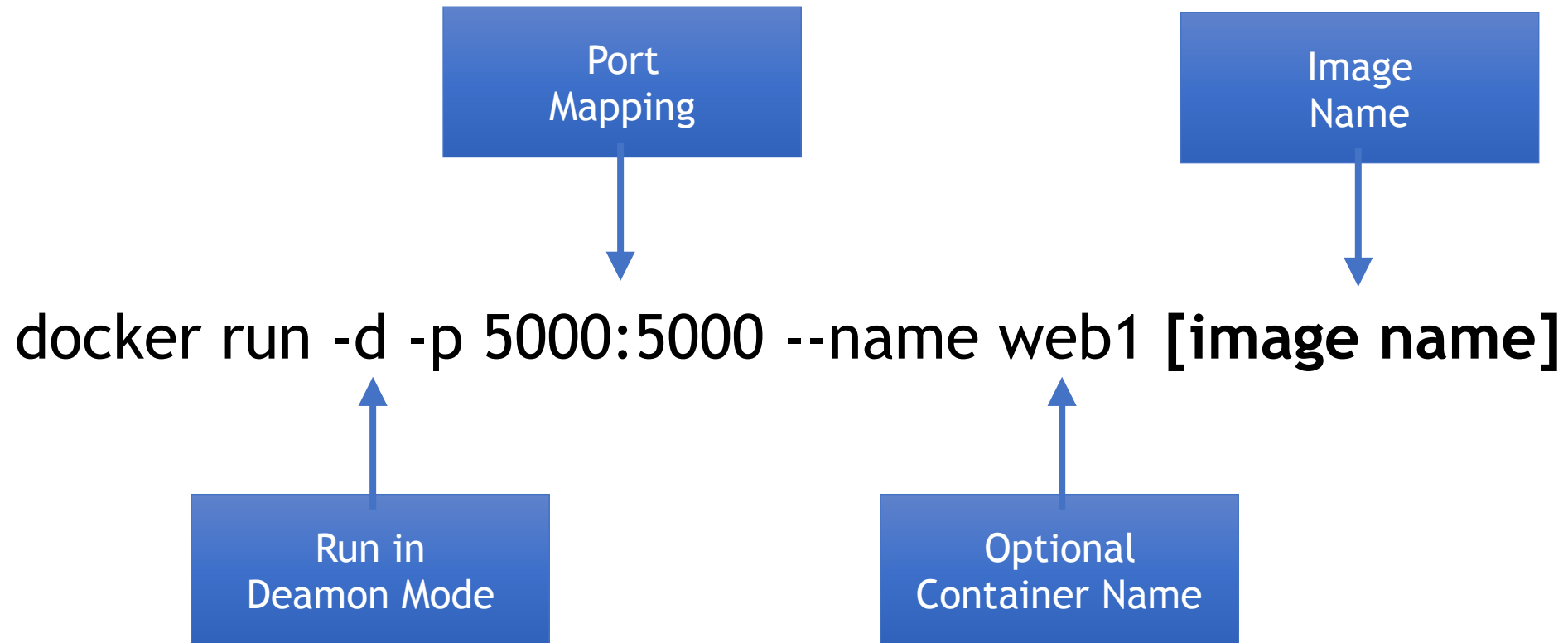
ENTRYPOINT [command, args]



Sample Dockerfile: ASP.NET Core

```
FROM      microsoft/aspnet:1.0.0-rc1-update1-coreclr
MAINTAINER Anthony Sneed
COPY      . /app
WORKDIR   /app
RUN        ["dnu", "restore"]
ENV        "ASPNET_ENV=Staging"
EXPOSE     5000
ENTRYPOINT ["dnx", "web"]
```

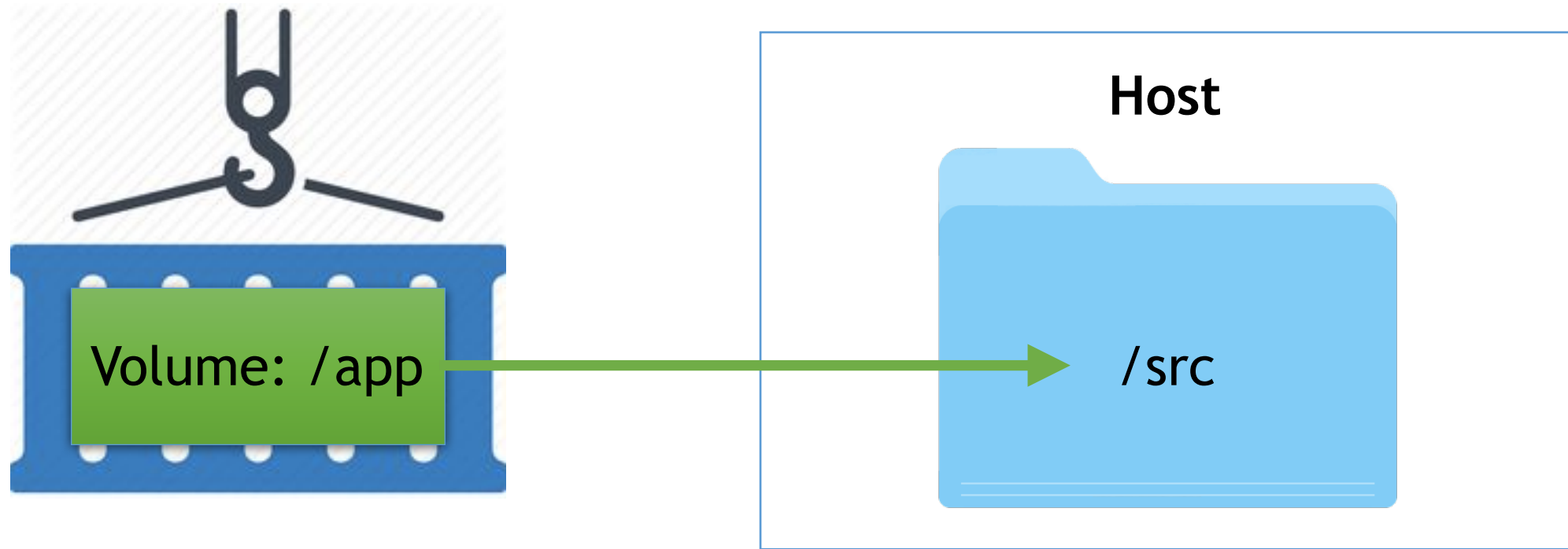
Start Containers: Docker run command



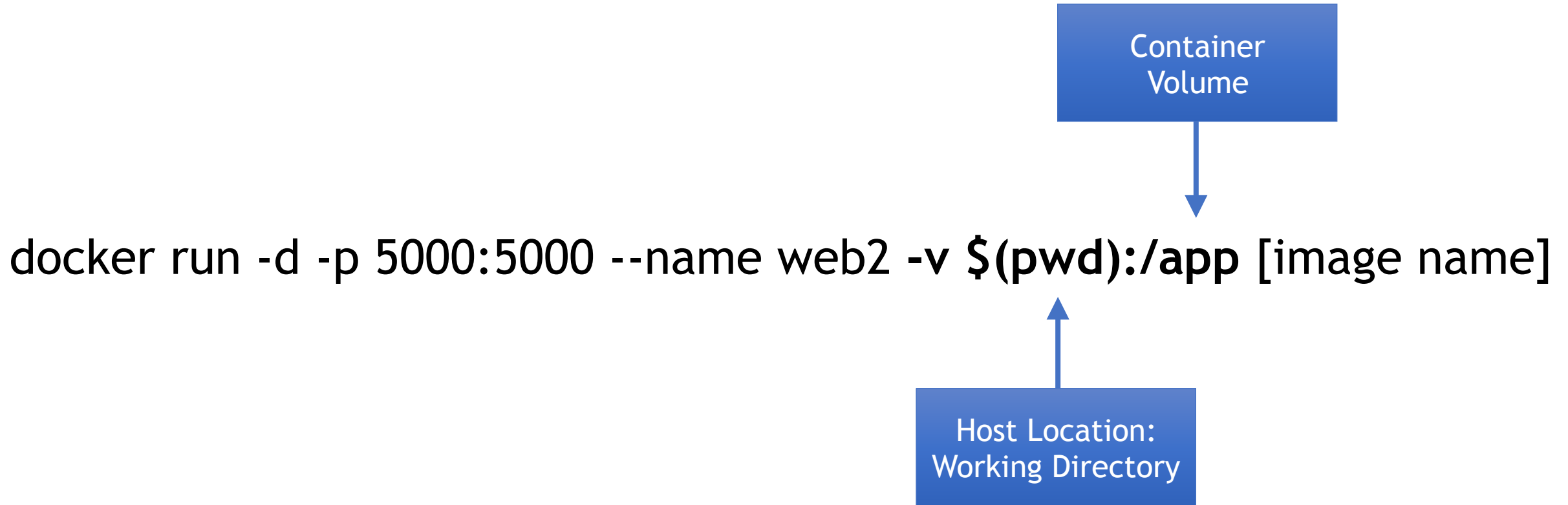
Demo: Building a Docker Image



Volumes: Mapping to Source Code



Volumes: Docker run command



Demo: Mapping to Source Code



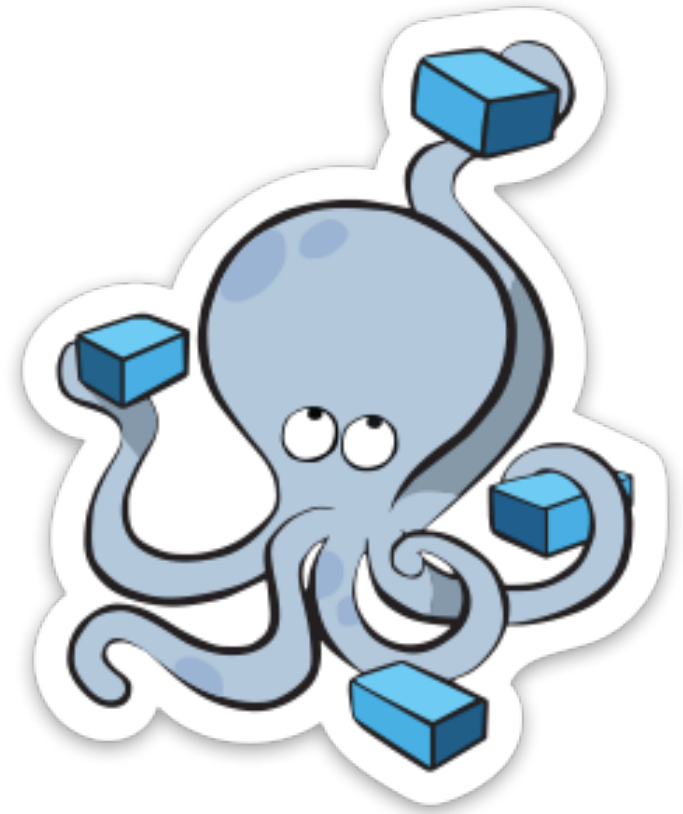
Docker Orchestration Tools



- Docker **Compose**
 - Link multiple containers
- Docker **Cloud**
 - Deploy stacks of services
- Docker **Swarm**
 - Scaling, high availability

Docker Compose

- Define **multi-container** app
- Use **docker-compose.yml** file
- Link multiple containers
- Use **commands** to manage whole app
- Build, start and tear down services



Sample: docker-compose.yml

```
version: '2'
```

```
services:
```

```
  my-mongodb:
```

```
    image: mongo:latest
```

```
    networks:
```

```
      - aspnetcore-network
```

Sample: docker-compose.yml (cont.)

mongoose:

build:

context: `./MongooseExpress`

dockerfile: `mongoose.dockerfile`

networks:

- `aspnetcore-network`

Sample: docker-compose.yml (cont.)

aspnetcore3:

build:

context: `./DockerComposeDemo`

dockerfile: `aspnetcore.dockerfile`

ports:

- `"5000:5000"`

networks:

- `aspnetcore-network`

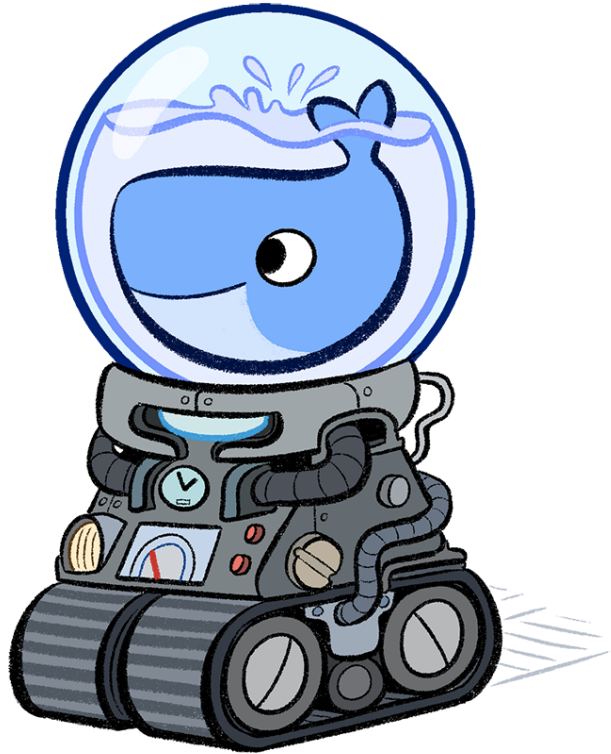
Sample: docker-compose.yml (cont.)

networks:

aspnetcore-network:

driver: bridge

Docker Compose Commands



`docker-compose build`

`docker-compose up, down`

`docker-compose start, stop`

`docker-compose ps -a`

`docker-compose logs`

`docker-compose rm`

Demo: Docker Compose



Questions?



Thank You!

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DevWeek.2016.AspNetCore-Docker

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