

# RECAP DOCKER 101

## DOCKER 102



# DOCKER 102

- Goal:
  - Practical 102 Docker
    - Tell / Show / **DIY**
- Key take away:
  - What Docker is and can do for you
  - 1 DockerHost with multiple containers
  - Multiple DockerHosts

Audience: DEV colleagues

# DISCLAIMER

- Our view and way of working
- Docker is changing constantly
  - Version CE 17.06.2.-ce

# CONTENT DOCKER 102

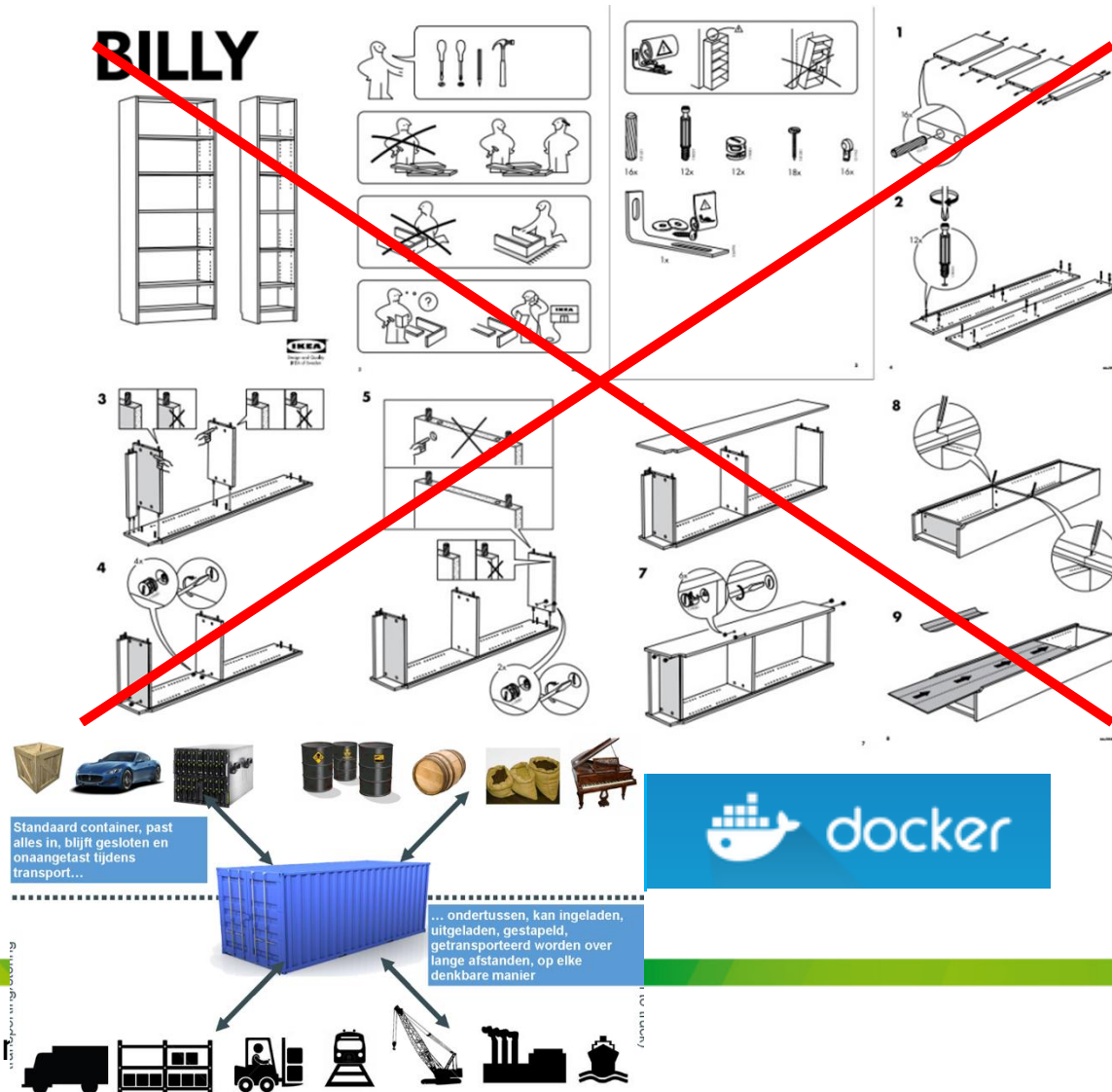
- **Summary Docker 101**
- **Multi-stage build**
- **Docker compose**
- **Multi container app cats & dogs**
- **Some Topics**

# OUR DOCKER DEFINITION

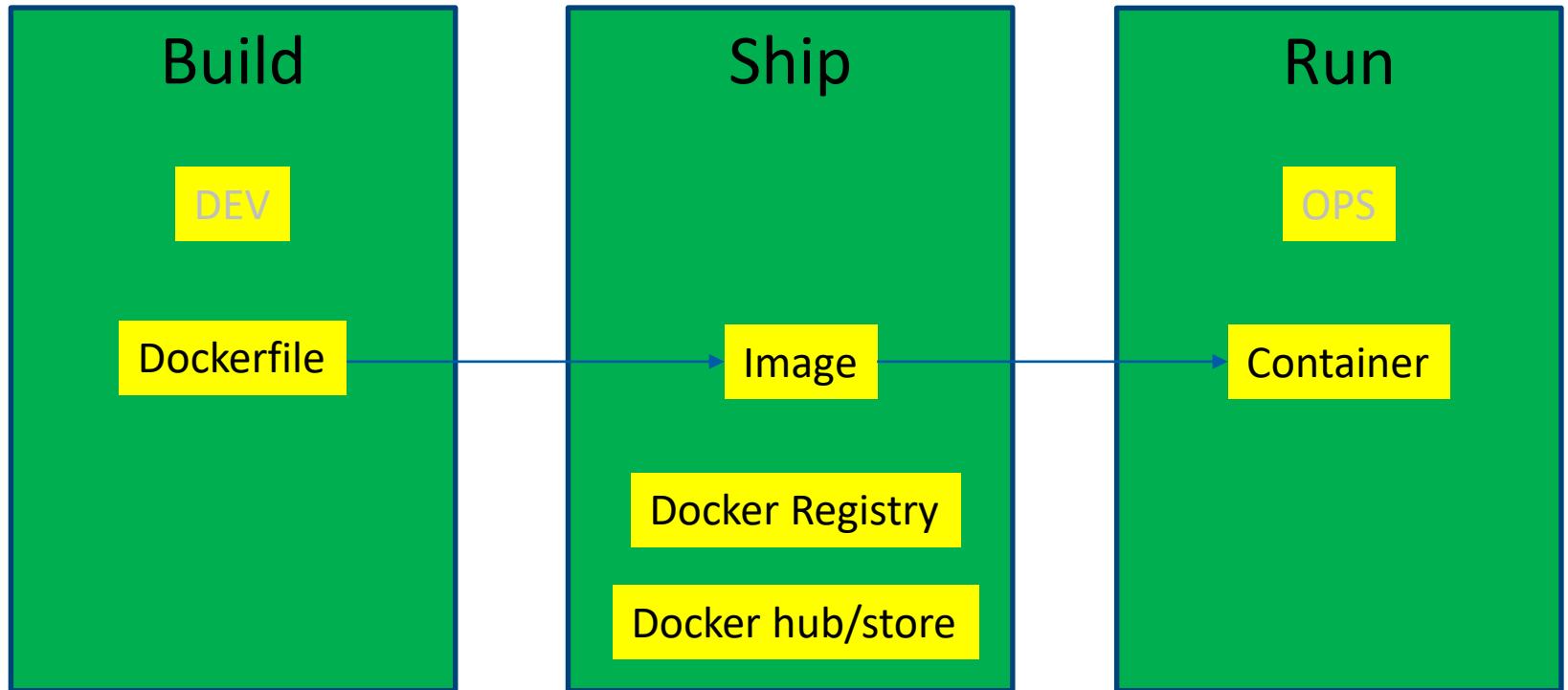
FOUND ON INTERNET

is the world's leading software container platform  
available for developers, ops and businesses  
to **build, ship and run**  
any app  
on any infrastructure.

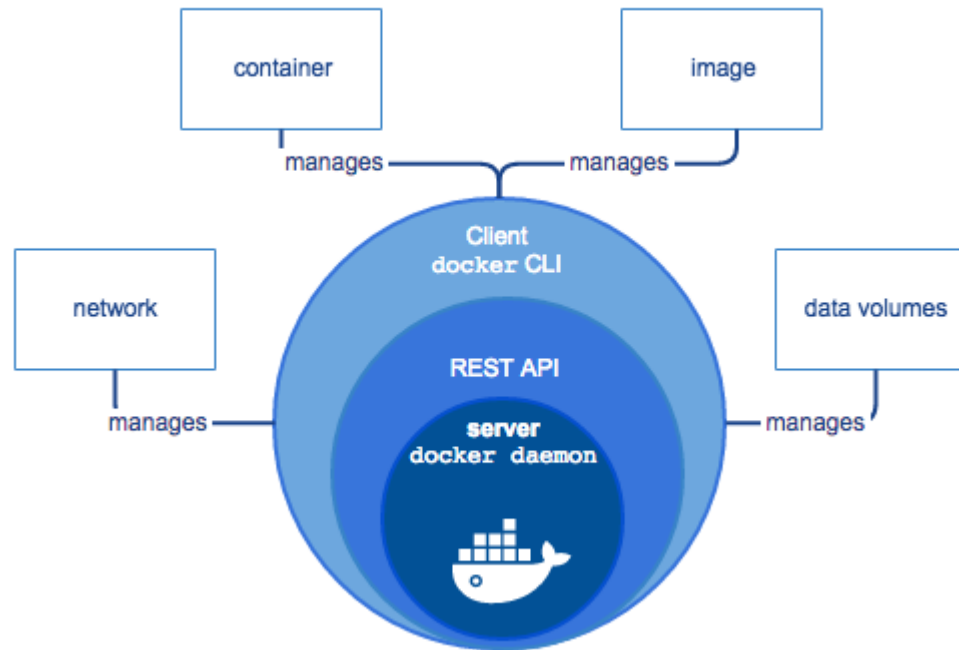
# WORKS IN MY MACHINE APP IN A CONTAINER



# BUILD – SHIP - RUN



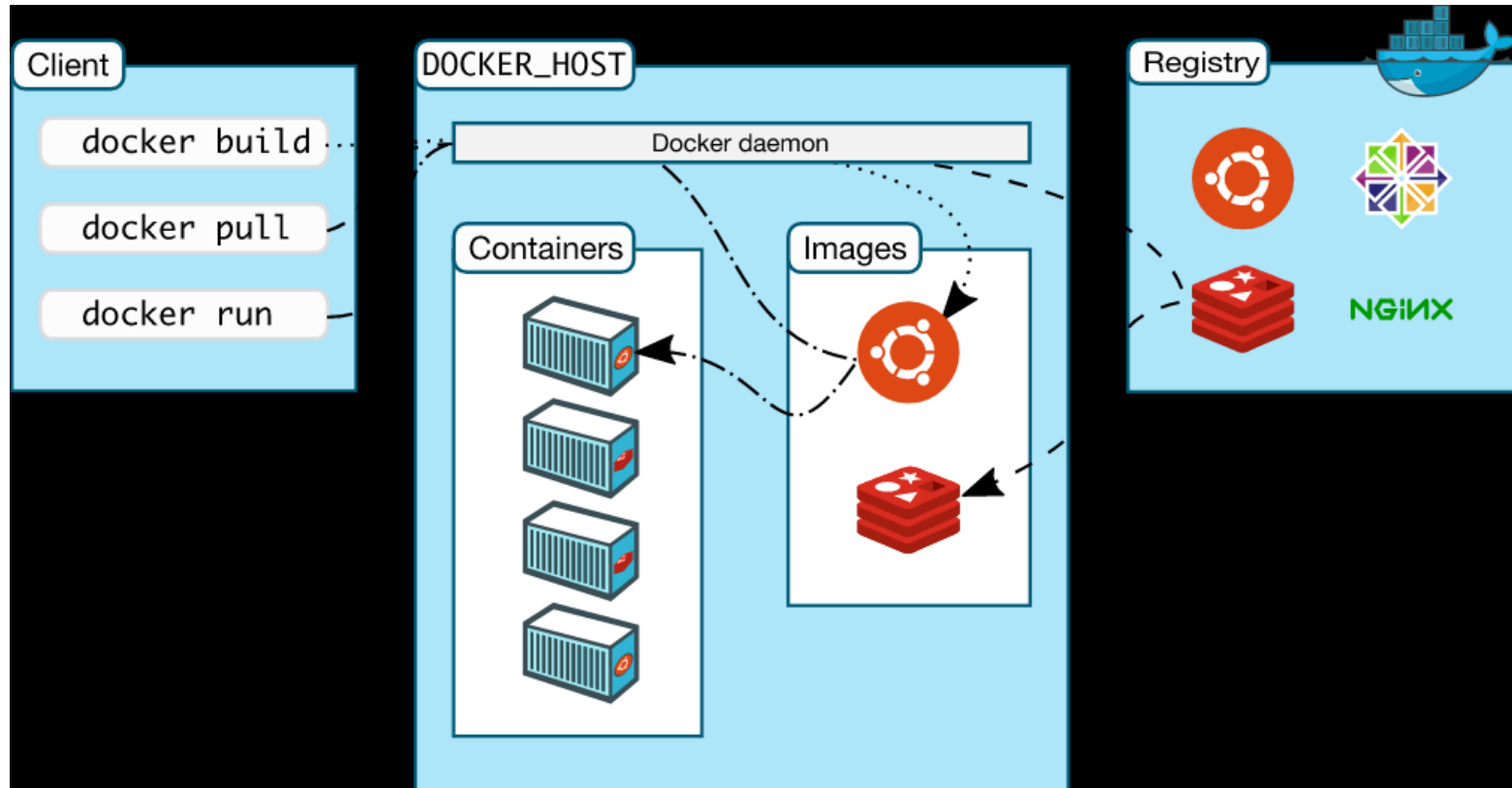
# TOPIC: DOCKER ARCHITECTURE HIGH LEVEL



<https://docs.docker.com/engine/docker-overview/>



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# DOCKER COMMAND

## Build

Docker image ls

Docker image rm

Docker build

## Ship

Docker pull

Docker push

## Run

Docker container run

Docker container ls

Docker container rm

Docker container exec

Docker container start

Docker container stop

Docker system info

Docker version

Docker system prune


# LOGGING

Docker container logs <containername>

```
PS C:\SimProjects\ShowCase\microcontainer\StaticWS> docker container logs 8d
172.18.0.1 - - [08/Nov/2017:14:53:43 +0000] "GET / HTTP/1.1" 200 230 "-" "Mozilla/5.0 (Windows NT 10.0; Win64;
x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/61.0.3163.100 Safari/537.36" "-"
2017/11/08 14:53:43 [error] 7#7: *1 open() "/usr/share/nginx/html/favicon.ico" failed (2: No such file or direc
tory), client: 172.18.0.1, server: localhost, request: "GET /favicon.ico HTTP/1.1", host: "localhost:4200", ref
errer: "http://localhost:4200/"
172.18.0.1 - - [08/Nov/2017:14:53:43 +0000] "GET /favicon.ico HTTP/1.1" 404 571 "http://localhost:4200/" "Mozil
la/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/61.0.3163.100 Safari/537.36"
"-"
```

# MULTISTAGE BUILD


- Goal: small compact container



```
FROM microsoft/aspnetcore-build:2.0 AS build-env
WORKDIR /app
```

```
# Copy csproj and restore as distinct layers
COPY *.csproj ./
RUN dotnet restore
```

```
# Copy everything else and build
COPY . ./
RUN dotnet publish -c Release -o out
```



```
# Build runtime image
FROM microsoft/aspnetcore:2.0
WORKDIR /app
COPY --from=build-env /app/out .
ENTRYPOINT ["dotnet", "aspnetapp.dll"]
```

<https://docs.docker.com/engine/examples/dotnetcore/>

# DOCKER COMPOSE

- Ease of use for application – command line
- One command for application with multiple containers
- YAML file – version control
- Same file for dev and ops

# DOCKER COMPOSE EXAMPLE

```
1  version: '3'
2  services:
3    webapp:
4      image: centricms/staticws:$WebVersion
5      ports:
6        - 4200:80
```

.env

```
1  WebVersion=latest
```

# DOCKER-COMPOSE UP

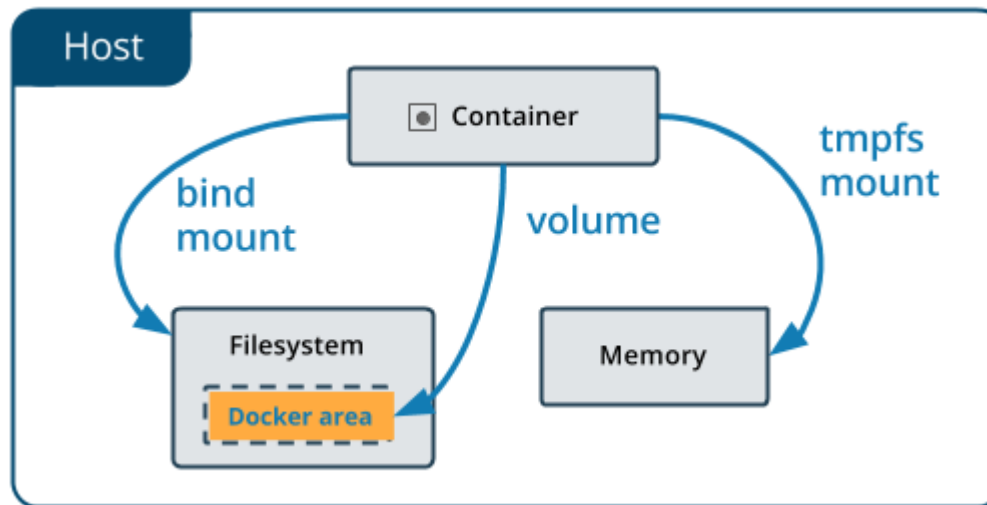
```
docker-compose up -d  
Creating staticws_webapp_1 ...  
Creating staticws_webapp_1 ... done  
PS C:\SimProjects\ShowCase\microcontainer\StaticWS>
```

# NEW DOCKER BRIDGE NETWORK

- Works only on 1 host
  - DNS name
    - Default bridge has no DNS due backwards compatible
- Docker network create --driver bridge <network-name>
- Run with: --net <name>
- Check with:
  - Docker network inspect
  - Docker container exec --it <container-name> ping <container-name>

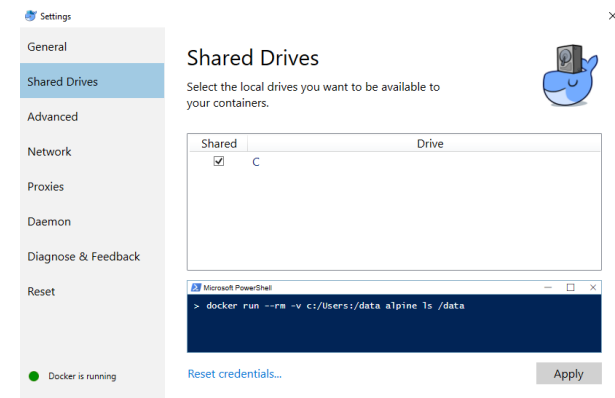


# DOCKER VOLUME



# DOCKER VOLUME

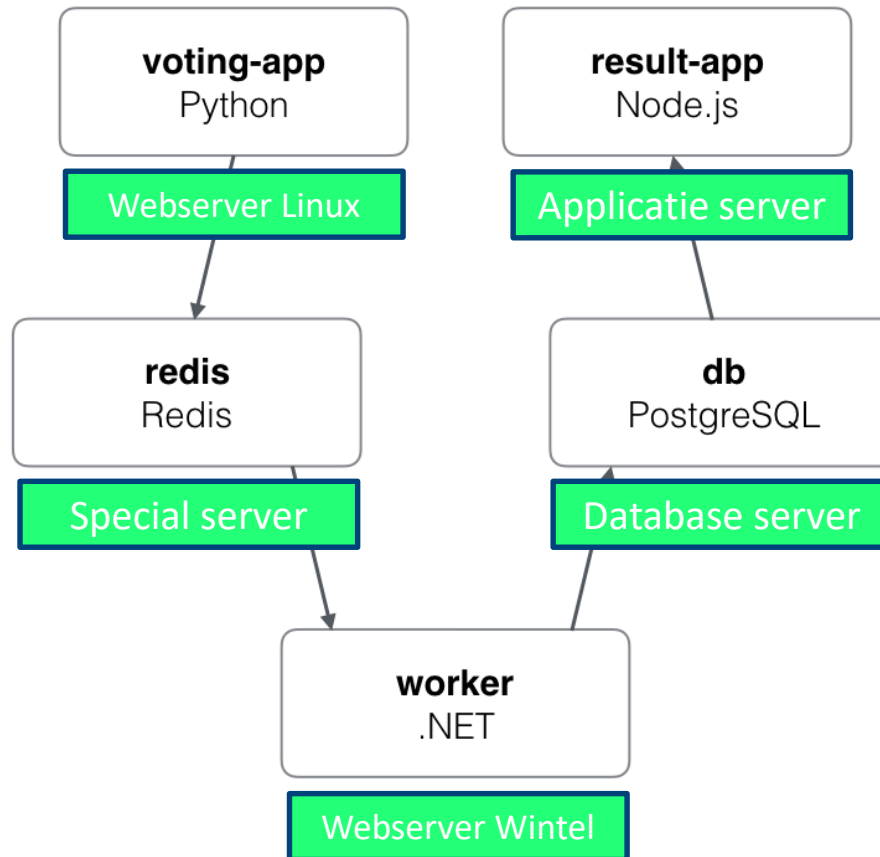
- Delen van de schijf Docker for Windows
- `docker create volume <name>`
- `docker volume inspect`
- Use with `--v <name>:<directory of data>`
- `docker container run --name staticws -d -p 4200:80 -v <windows path>:/usr/share/nginx/html/centricms/staticws:latest`



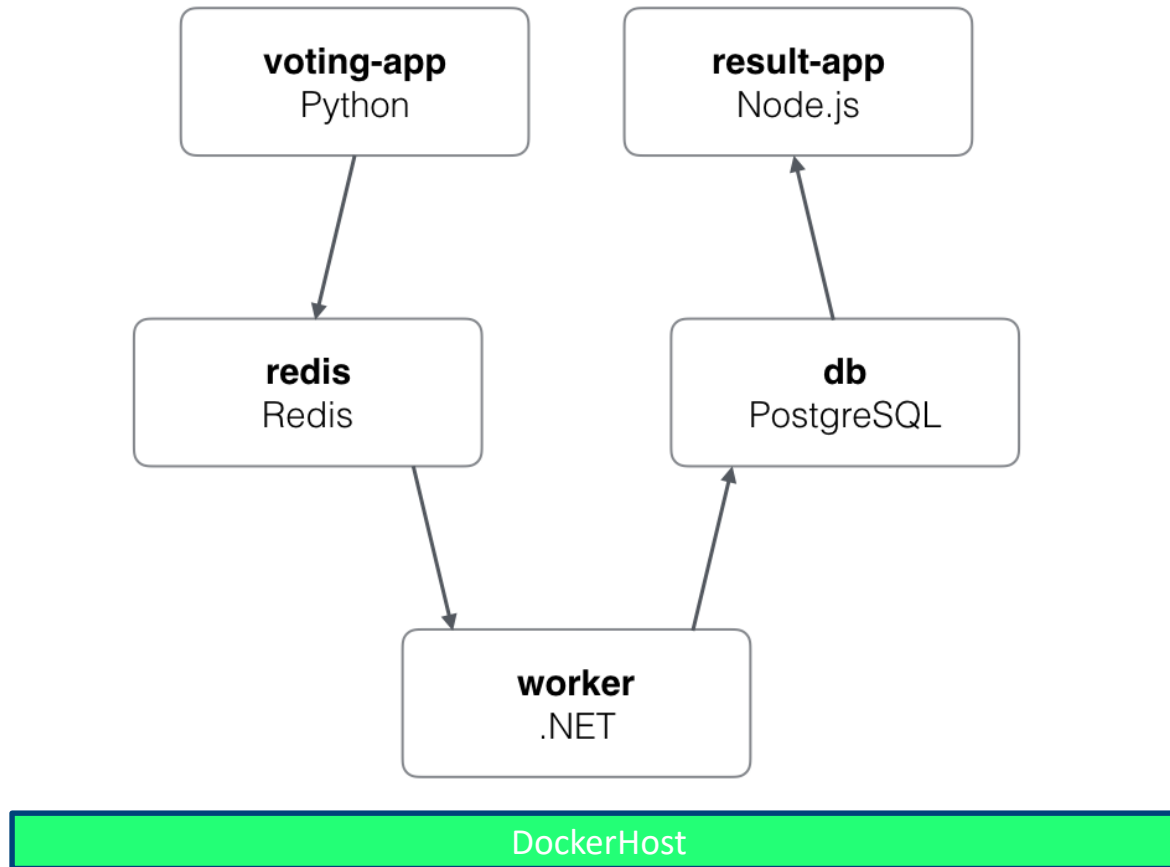
# EASE OF DOCKER VOTING APPLICATION

- Why
  - Example from Docker
  - Start with 1 Docker-compose command
  - Also with build command
- What:
  - Voting app
  - 5 Microservices
    - Python
    - NodeJS
    - .Net
    - Redis
    - PostgreSQL
- <https://github.com/dockersamples/example-voting-app>

# VOTING APPLICATION ARCHITECTURE – INFRASTRUCTURE



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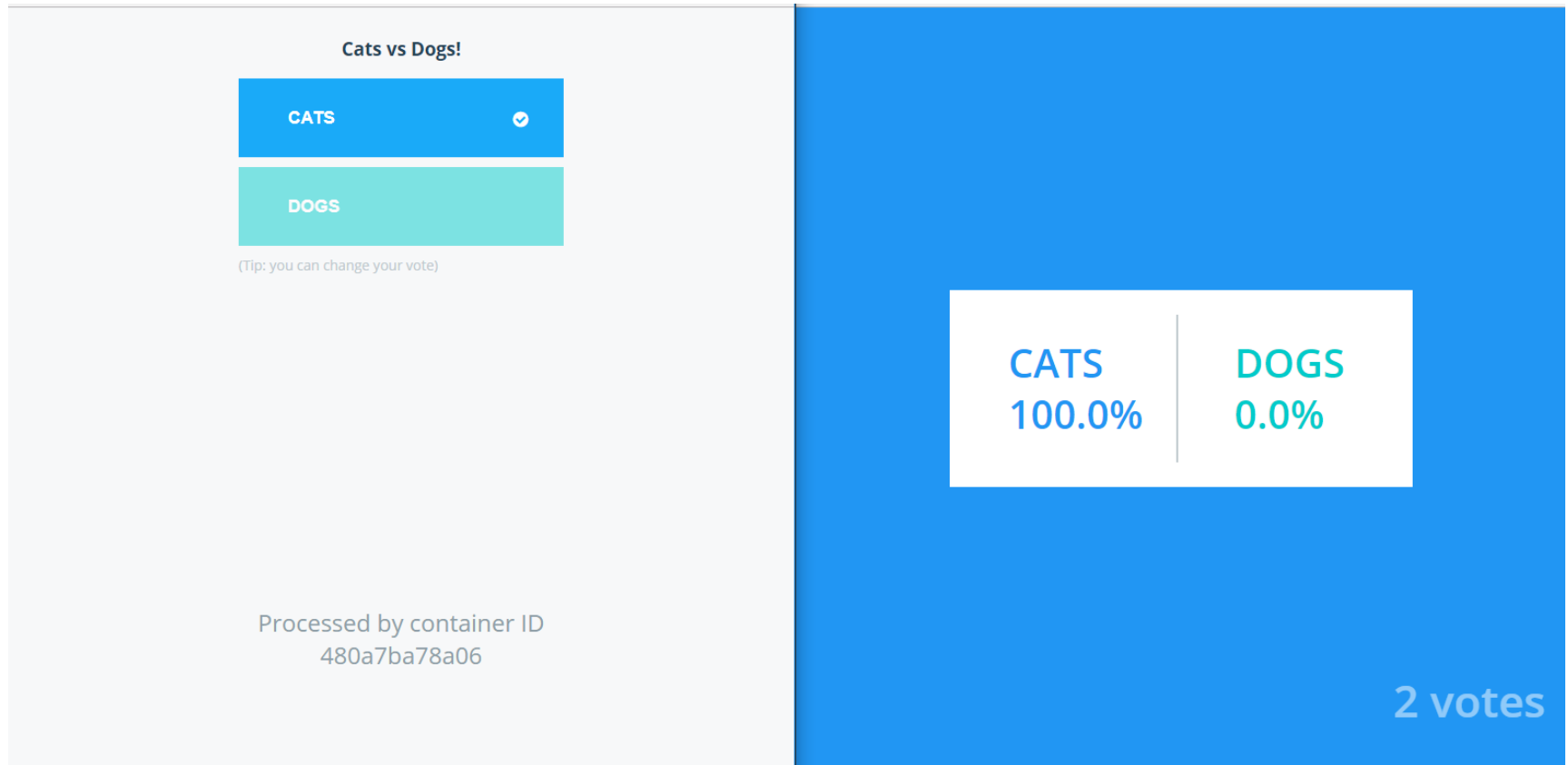


# VOTING APP

- Start with 1 command:

```
docker-compose up --build
```

# VOTING APP



# VOTING APP

## WHICH CONTAINER ARE RUNNING

```
PS C:\SimProjects\ShowCase\example-voting-app> docker container ls
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS                                NAMES
480a7ba78a06   examplevotingapp_vote               "python app.py"         42 minutes ago Up 42 minutes 0.0.0.0:5000->80/tcp                examplevotingapp_vote_1
27841f02b9e0   examplevotingapp_result             "nodemon --debug s..." 42 minutes ago Up 42 minutes 0.0.0.0:5858->5858/tcp, 0.0.0.0:5001->80/tcp  examplevotingapp_result_1
23b0bacbfa2b   postgres:9.4                        "docker-entrypoint..." 42 minutes ago Up 42 minutes 5432/tcp                             db
1cb921fcd476   examplevotingapp_worker             "/bin/sh -c 'dotne..." 42 minutes ago Up 42 minutes                                examplevotingapp_worker_1
29c0d7855152   redis:alpine                        "docker-entrypoint..." 42 minutes ago Up 42 minutes 0.0.0.0:32768->6379/tcp              redis
PS C:\SimProjects\ShowCase\example-voting-app> |
```



# TIPS

- <https://www.docker.com/>
- <https://dockercon.docker.com/> - video's
- Workshop:
  - <https://github.com/sixeyed/docker-windows-workshop> (Windows containers)