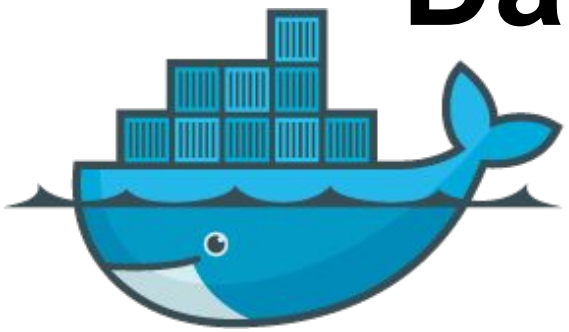
Docker II - Judgement Day



docker

PUG Challenge Americas
2016

Thomas Hansen
whoGloo, Inc.

Introduction

Thomas Hansen

CEO & Co-Founder of whoGloo, Inc.

Working with OpenEdge since 1995

Working with Docker since 2014 :-)

- Core part of the nodeSpeed development platform and application runtime environments
- Used for internal OpenEdge projects

What is Docker?

DOCKER PROJECTS

Specialized tools to help developers build modern, distributed applications.

DOCKER ENGINE

Create and runs Docker Containers

Learn More

DOCKER COMPOSE

Define multi-container applications

Learn More

DOCKER REGISTRY

Open source Docker image distribution (not included)

Learn More

DOCKER MACHINE

Automated Docker Provisioning

Learn More

DOCKER SWARM

Host clustering and container scheduling

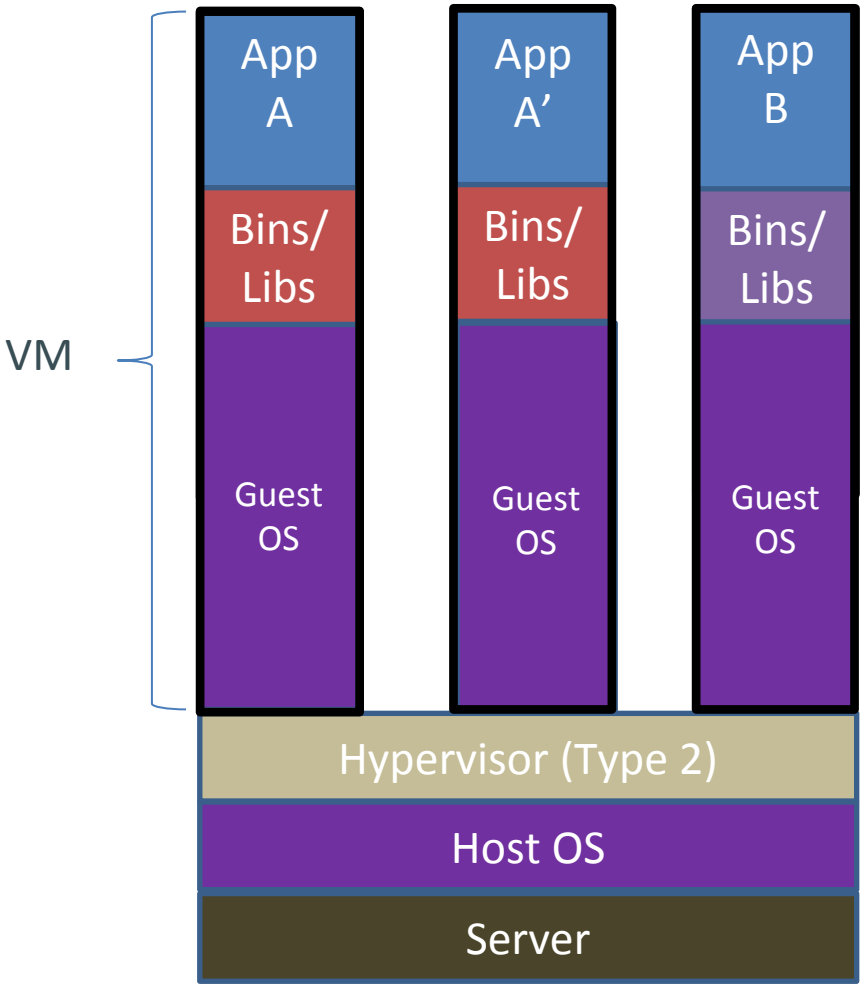
Learn More

KITEMATIC

Desktop User Interface for Docker

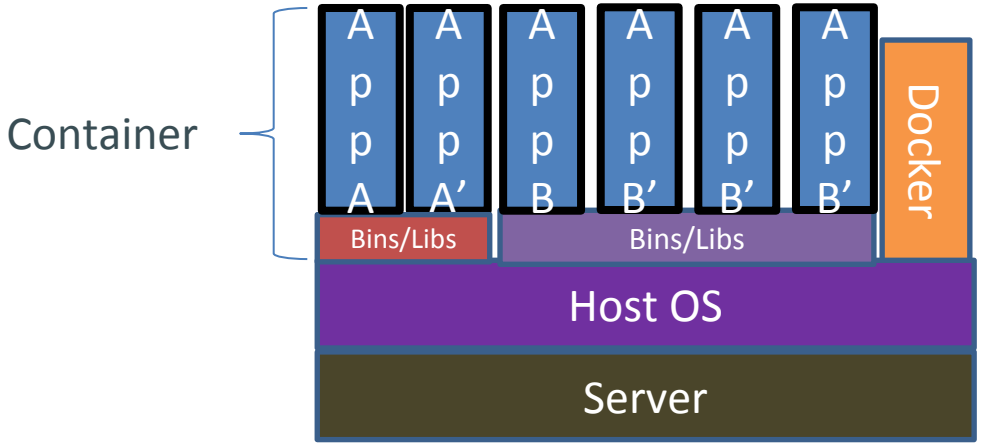
Learn More

Containers vs. VMs

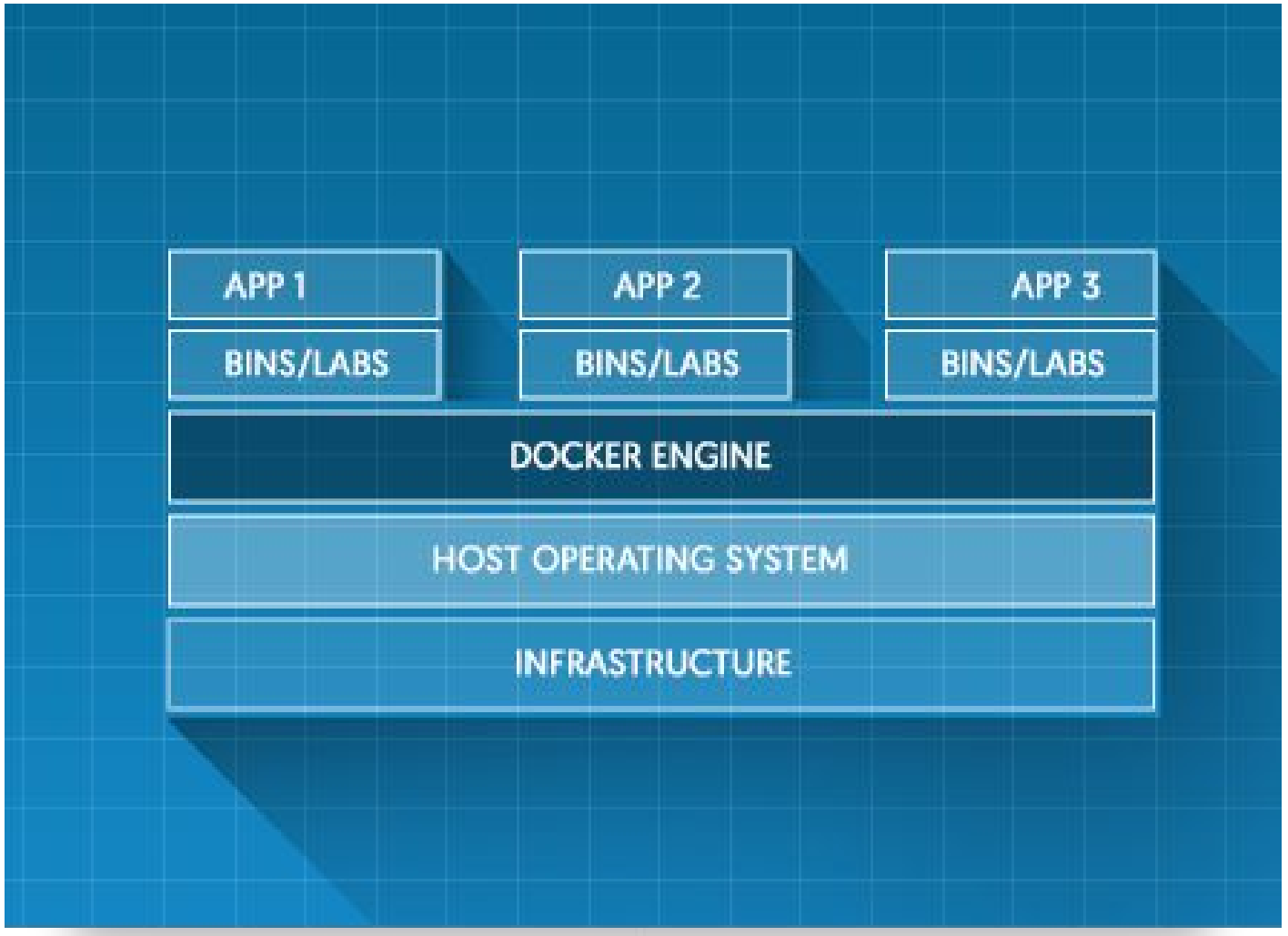


Containers are isolated, but share OS and, where appropriate, bins/libraries

…result is significantly faster deployment, much less overhead, easier migration, faster restart

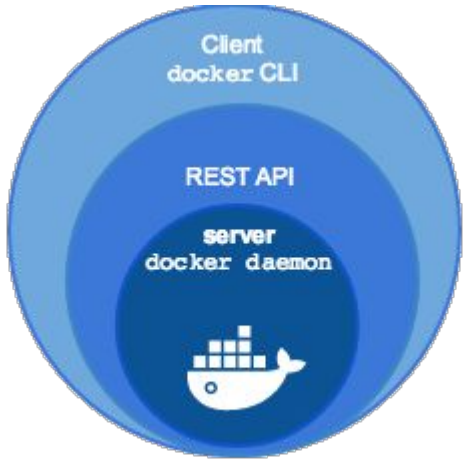


Docker Engine



DOCKER ENGINE

Create and runs Docker Containers



Docker Engine

docker create: create new container from image

docker run: run container

docker exec: execute a program inside a running container

docker stop / start / restart

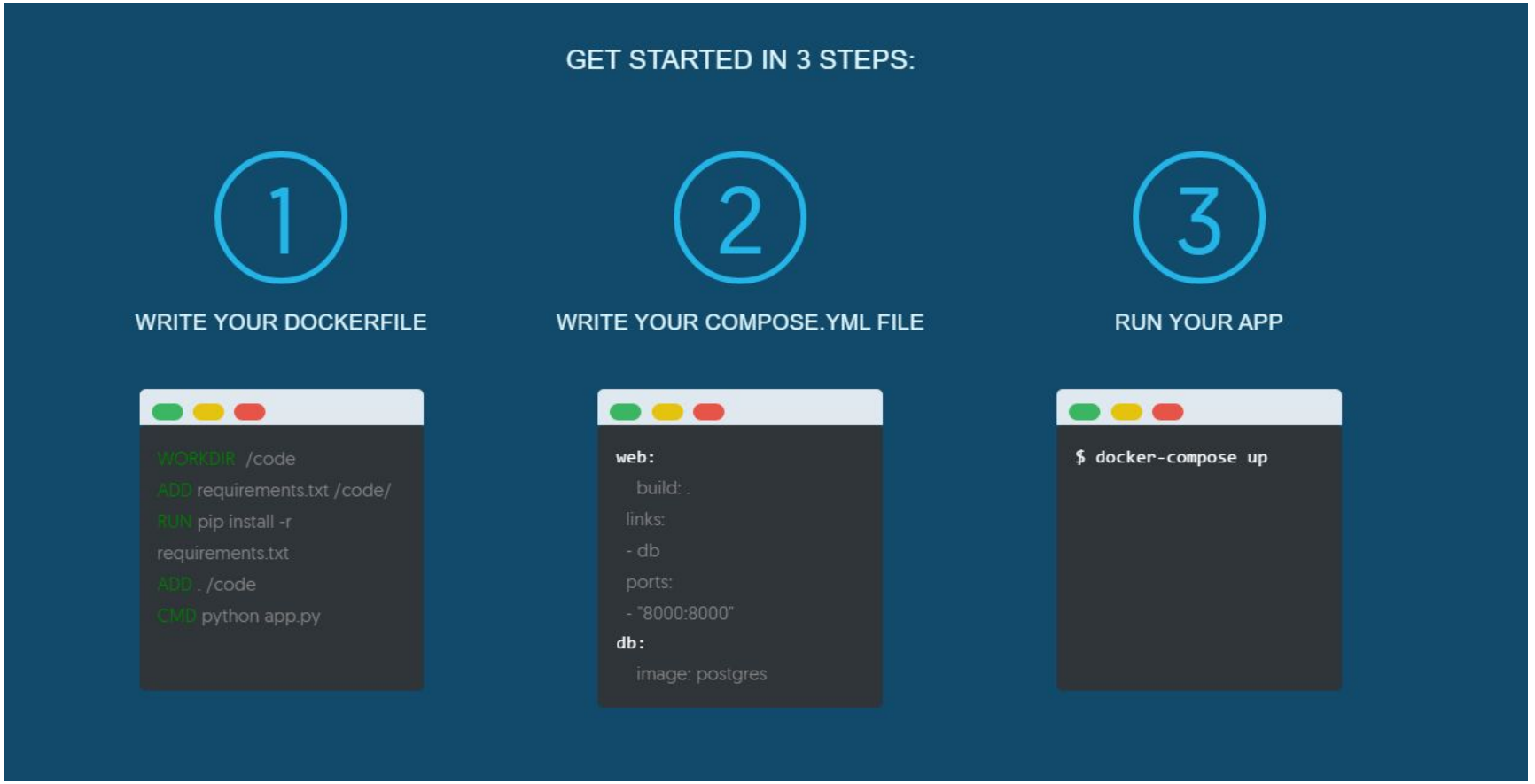
docker inspect: inspect the structure of a container

docker cp: copy data between host and containers

docker rm: remove docker container

docker rmi: remove docker image

Docker Compose



Docker Compose

"Recipes" for projects with multiple containers


```
openedge:
  image: whogloo/openedge116
  volumes_from:
    - openedge_dev_data
  ports:
    - 9090:9090
openedge_dev_data:
  image: busybox
  volumes:
    - /data
```

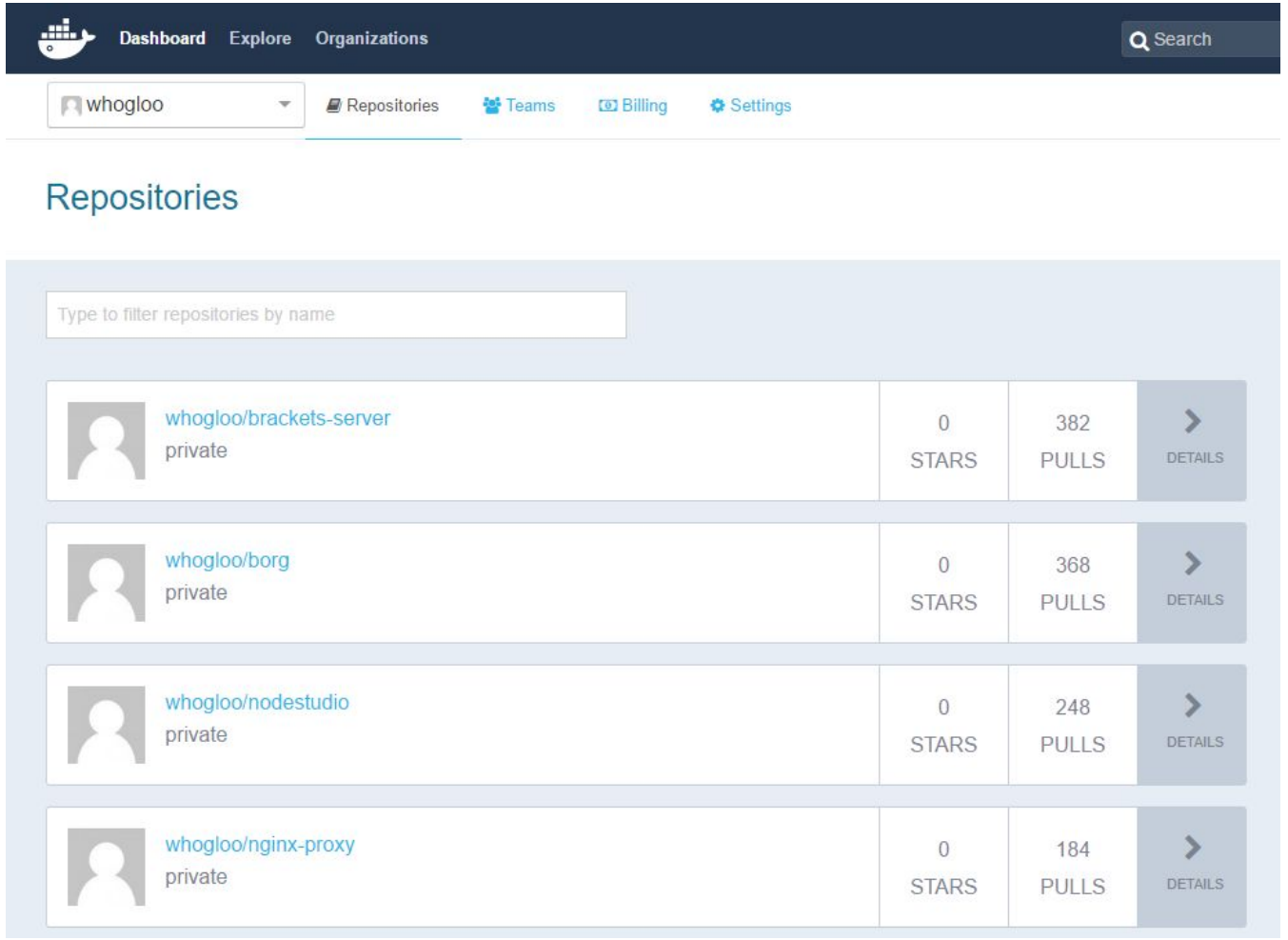
Docker Hub

Cloud service (registry)

Share Applications

Automate workflows

Assemble apps from components



Docker Registry

DOCKER REGISTRY

Open source Docker image distribution [not included]

“The Registry is a stateless, highly scalable server side application that stores and lets you distribute Docker images.”

You should use the Registry if you want to:

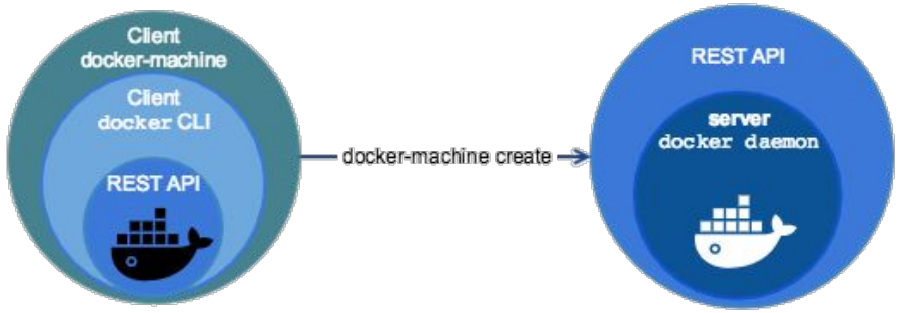
- Tightly control where your images are being stored
- Fully own your images distribution pipeline
- Integrate image storage and distribution tightly into your in-house development workflow

(Source: docker.com)

Docker Machine

Automates all the provisioning and installation tasks for a single Docker host

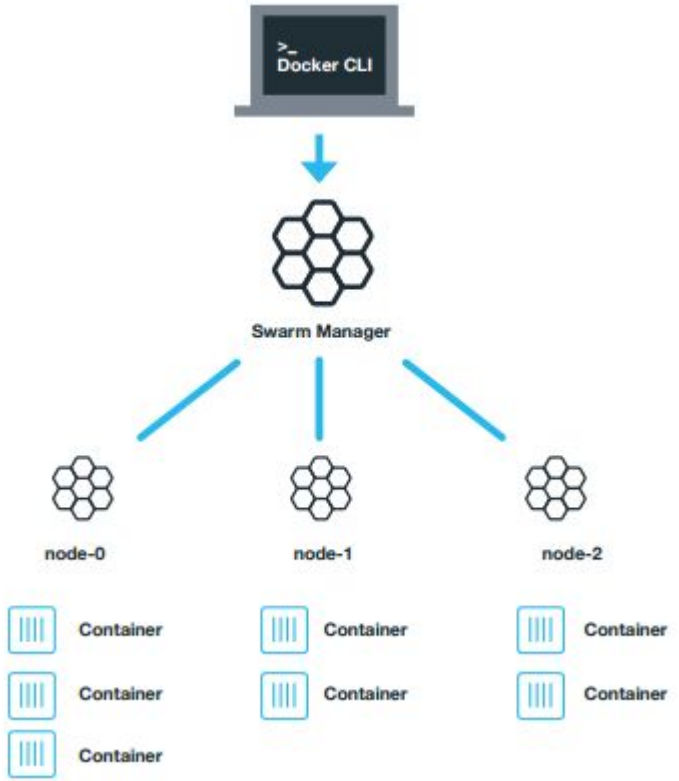
```
$ docker-machine create -d virtualbox dev
$ docker-machine create --driver amazonec2 aws-sandbox
```



Docker Swarm

DOCKER SWARM

Host clustering and container scheduling



Docker Swarm

Create a swarm

DOCKER SWARM

Host clustering and container scheduling

```
docker-machine create -d virtualbox \
  --swarm --swarm-master \
  --swarm-discovery token:// swarm-master
```

Create more docker hosts for swarm

```
docker-machine create -d virtualbox \
  --swarm --swarm-discovery token://  swarm-node-00
```


Docker Cloud

"Docker Cloud is a hosted service that provides a Registry with build and testing facilities for Dockerized application images, tools to help you set up and manage your host infrastructure, and deployment features to help you automate deploying your images to your infrastructure."

Docker Volumes

Volume drivers exist for

- AWS S3
- GlusterFS
- Flocker
- Azure File Storage
- VMWare
- NFS
- ….

Complete list:

https://github.com/docker/docker/blob/master/docs/extend/plugins.md

Docker for Windows

- Docker for Windows and Kitematic currently in beta
- Download and test today

Docker Store

- “a marketplace for trusted and validated dockerized software – free, open source and commercial”
- Private Beta just launched

Docker & OpenEdge

The following slides contain information of a highly sensitive nature - of which you will have no recollection when you leave...

Need OpenEdge?

Need OpenEdge to run databases, AppServer, WebSpeed?

- Install Docker
- Build images
- Push images
- Pull images to any machine
- Configure containers
- Run

OpenEdge & Docker

Quickly pull and use OpenEdge on any supported platform

No installation on host required!

- Run & maintain databases
- Run AppServers
- Run WebSpeed
- Execute ad-hoc OpenEdge jobs

OpenEdge & Docker

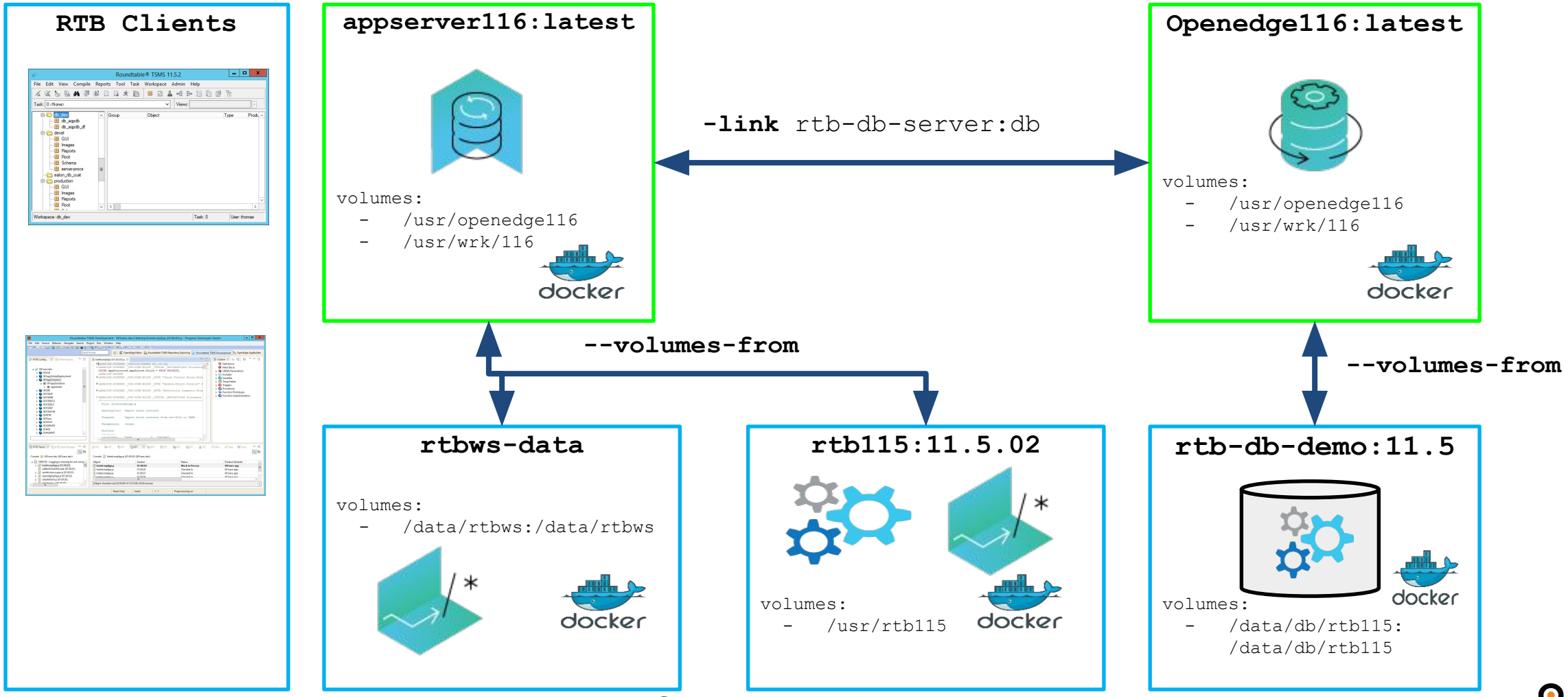
- Test applications on multiple OpenEdge versions/platforms - **on one host without installing** - just pull and run

OpenEdge & Docker

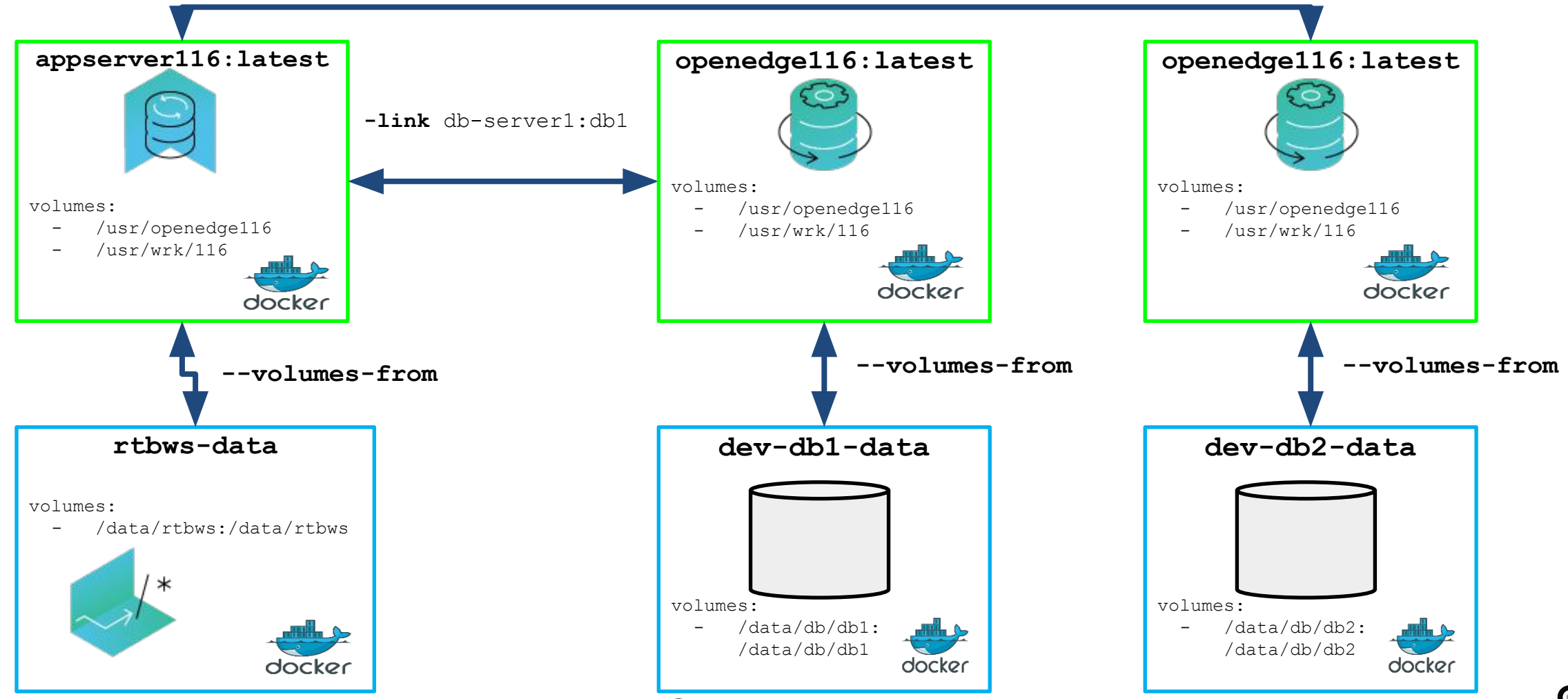
- Develop
- Test
- Build
- Deploy
- Install

OpenEdge in Docker examples

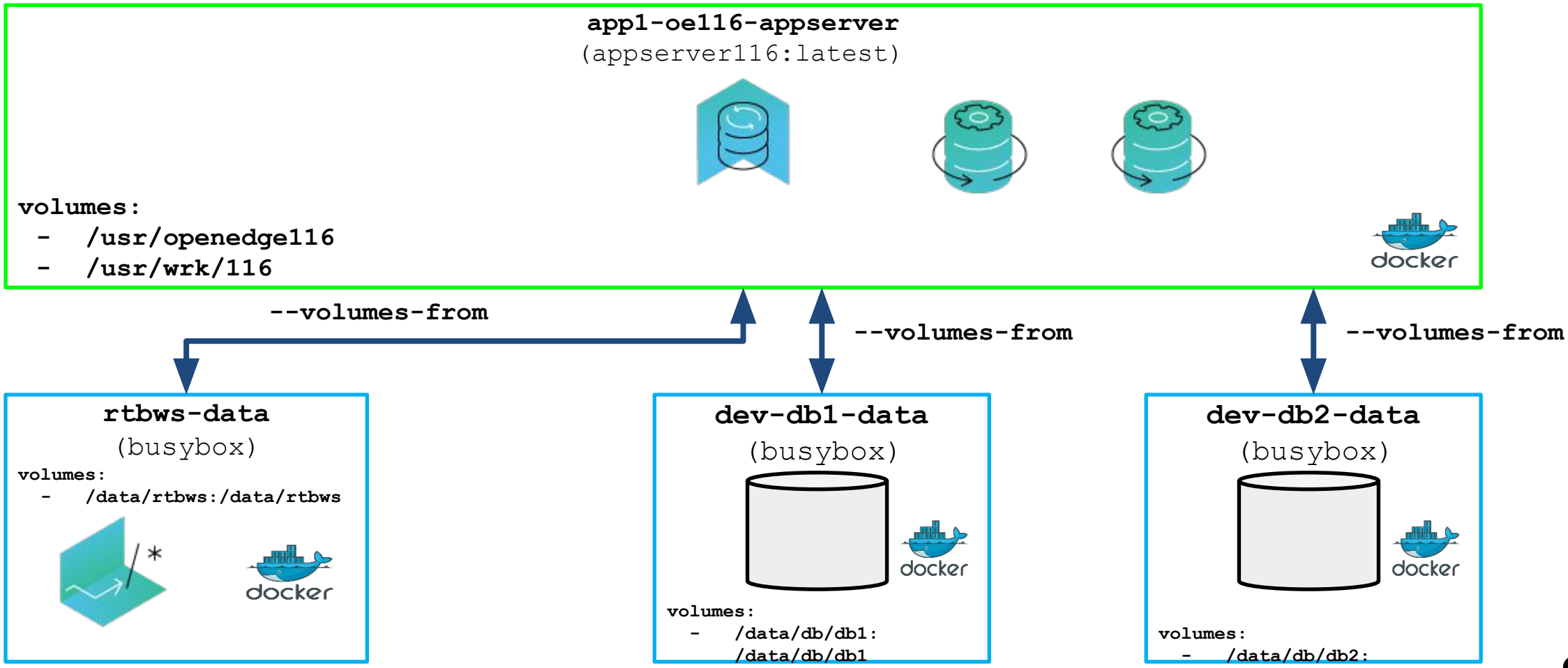
Roundtable TSMS in Docker



Development Containers



Shared memory



OpenEdge Demo

Docker Build

After application deployment and build - put it into a container

```
echo "Deleting existing server dirs..."
rm -fr server-runtime

echo "Copying new server dirs..."
cp -R ${buildRootDir}/ server-runtime
dos2unix server/*.sh

echo "Building docker image..."
docker build -t ${imageName} .
```


Docker Build

```
# Dockerfile TO CREATE App Runtime container.

FROM busybox

COPY ./server-runtime /data/app/runtime

VOLUME /data/app
```


Use

```
# Pull app runtime images from repo
docker pull whogloo/app:03.00.10

# Create data container from tagged image
docker create \
  --name=cust1-app-runtime-data \                    nodeable/app-server-runtime:
03.00.10

# Start runtime containers using data container
docker run \
  …
  --volumes-from cust1-app-runtime-data
  …
  whogloo/appserver116
```


Docker Pros

- Fast, flexible & scalable
- Huge traction – changes and tools coming out all the time
- Abstraction of services into micro services
- Image layers
- Runs on many platforms – even Raspberry Pi!
- Content and hardware agnostic
- Separation of duties

Docker Cons

- Keep an eye on disk space!
- Concepts can be complicated to start with
- ~~Lack of graphical tools – command line~~
- Lack of dynamic port exposure
- Many containers to keep track of
- ~~Not available on Windows - yet~~
- Lack of OpenEdge support

Learning about Docker

- https://www.docker.com
- https://docs.docker.com
- What You Need to Know about Docker - Free eBook (*until 7 pmt EDT june 27 2016*) https://www.packtpub.com/packt/offers/free-learning

Questions

Email: thomas@whogloo.com

Twitter: @whogloo

LinkedIn: https://www.linkedin.com/company/whogloo

Facebook: https://www.facebook.com/whogloo