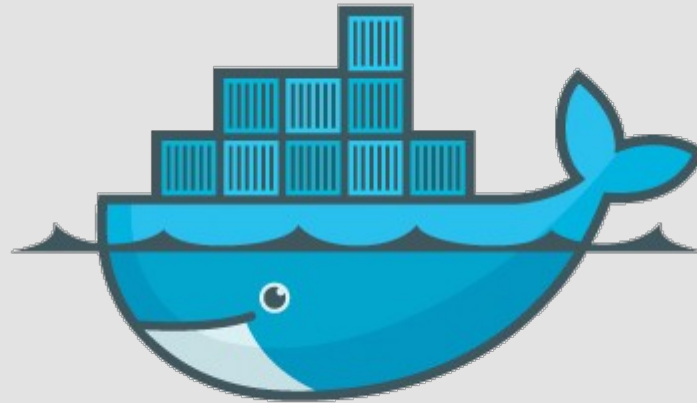


Introduction to Docker



BUILD, SHIP, RUN

Outline

What is Docker?

Why Docker?

Docker Concepts

- Container

- Container vs VM

- Image

- Dockerfile

- Registry / Dockerhub

- Docker Engine

Demo

Questions / Comments

What is Docker?

“Docker is an open source project to pack, ship and run any application as a lightweight container.”

<https://github.com/docker/docker>

Docker allows you to package a piece of software in a standardized unit for software development, containing everything the software needs to run

Why Docker?

Consistent

Build once, run anywhere

Isolation and repeatability, eliminate inconsistencies between dev, test, prod environments

Scalable

Docker containers share the host's OS which makes them much more scalable than VMs

Simple

Simplifies the build, test, deploy process

Docker Concepts - Container

Docker Container

Self contained runtime environment

Runs in isolated process on the host's OS

Contains software and dependencies

Code, runtime, system tools, system libraries, etc

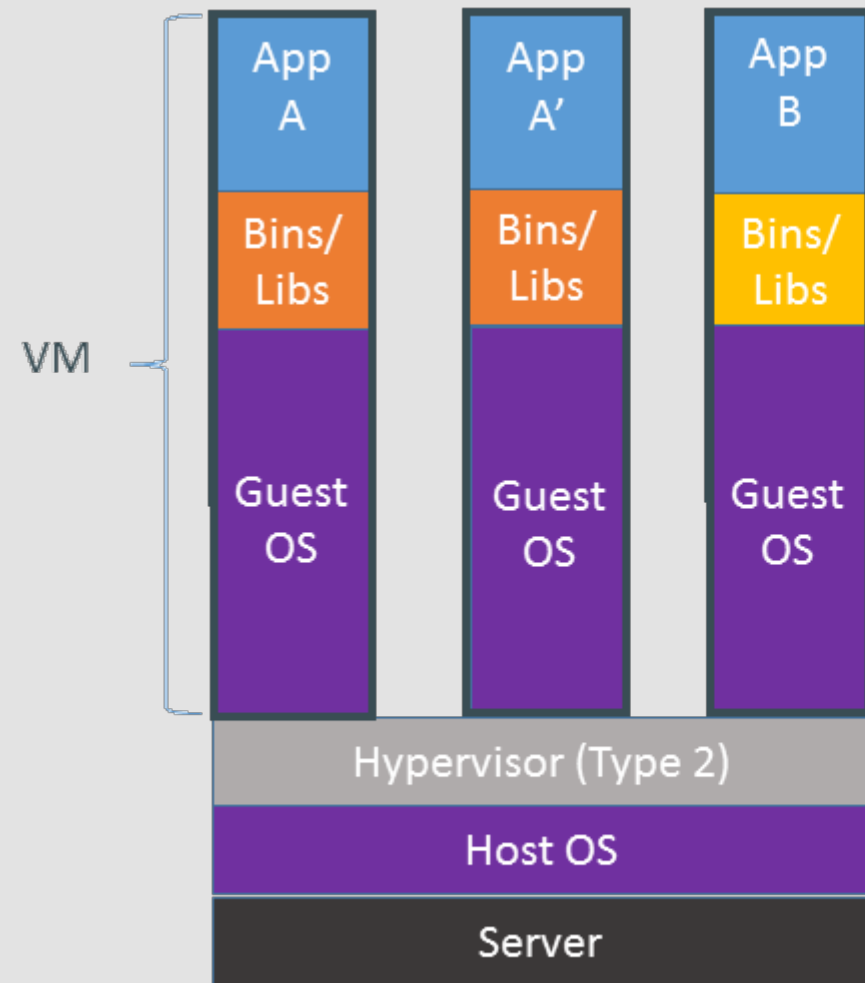
Uses host machine's Linux Kernel

Shares host's kernel with other containers

If running windows or mac, then containers run on a lightweight Linux VM

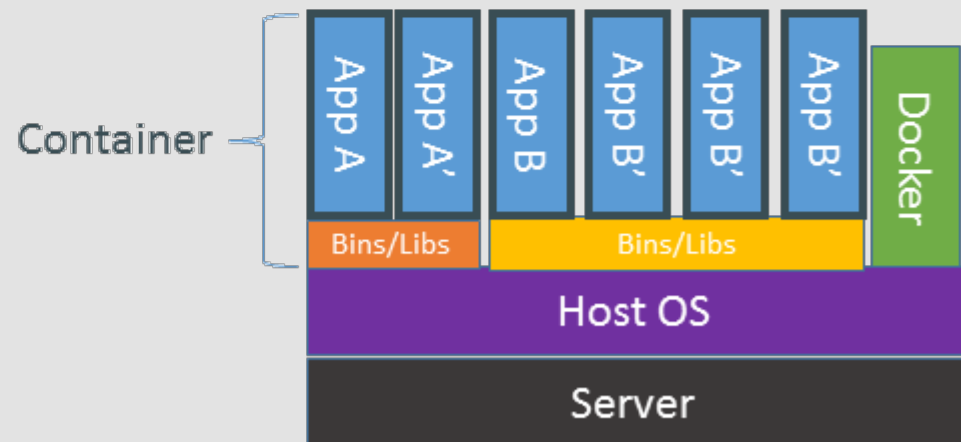
Runnable instance of a Docker image

Docker Container vs Virtual Machine



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

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



Docker Concepts - Image

Docker Image

Read-only template with instructions for creating a Docker container

Immutable

Images do not change

Snapshot of a container

Created via the **docker commit** command

Images can also be created from a Dockerfile

Docker Concepts - Dockerfile

Dockerfile

Describes a docker image

- List of instructions to assemble an image

Simple, well-defined syntax

- Starts with a base image

- Additional commands to customize the image

The **docker build** command is used to create an image from a Dockerfile

Docker Concepts - Registry

Docker Registry

Public or private servers that host docker images

You can upload, download, or search for images on a registry

Docker Hub

Public Docker registry which serves a huge collection of existing images and allows you to contribute your own

Centralized resource for container image discovery, distribution and change management, collaboration, and workflow automation throughout the development pipeline

<https://hub.docker.com/>

Docker Concepts - Docker Engine

Server

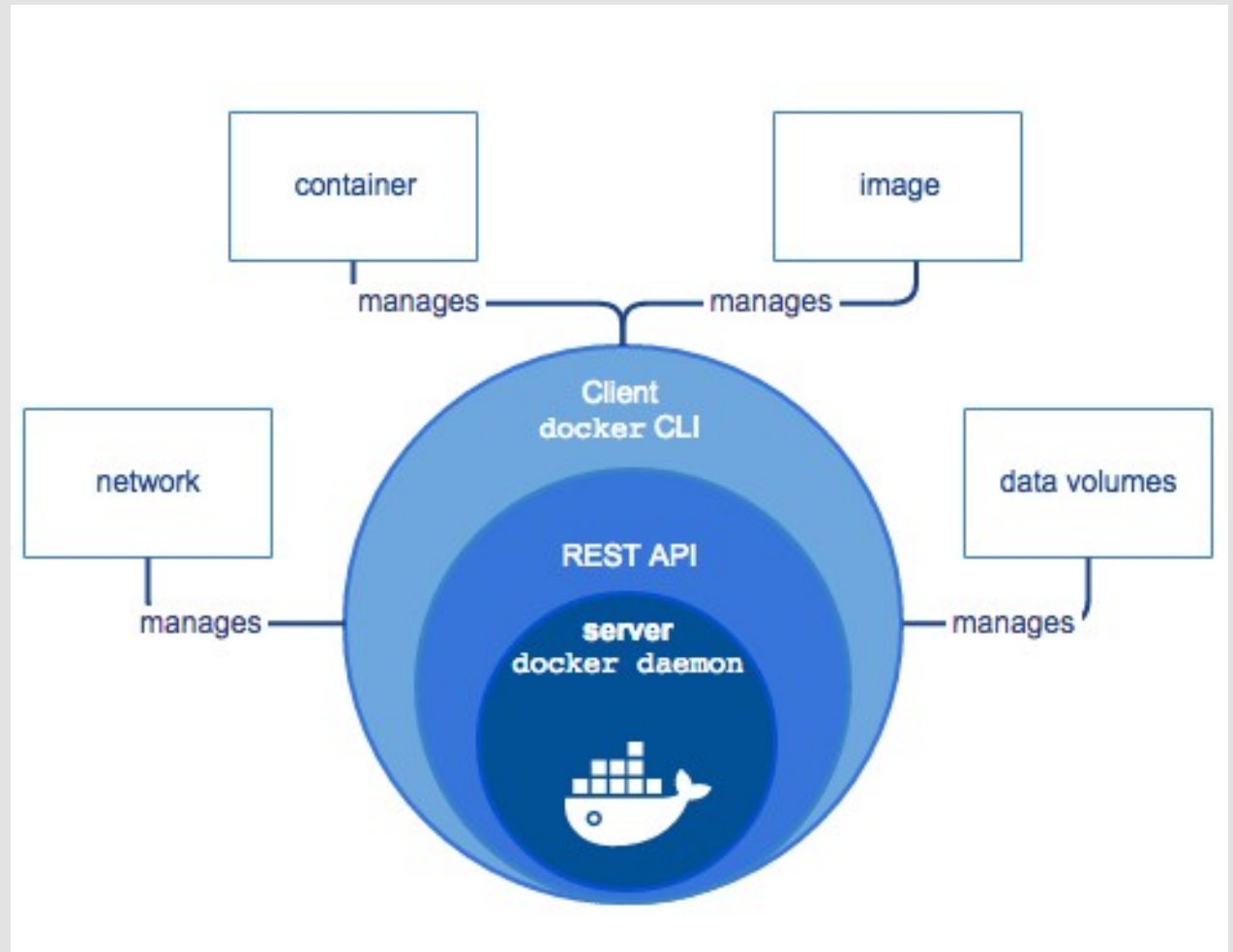
Daemon process that creates and manages Docker objects, such as images, containers, networks, and data volumes

REST API

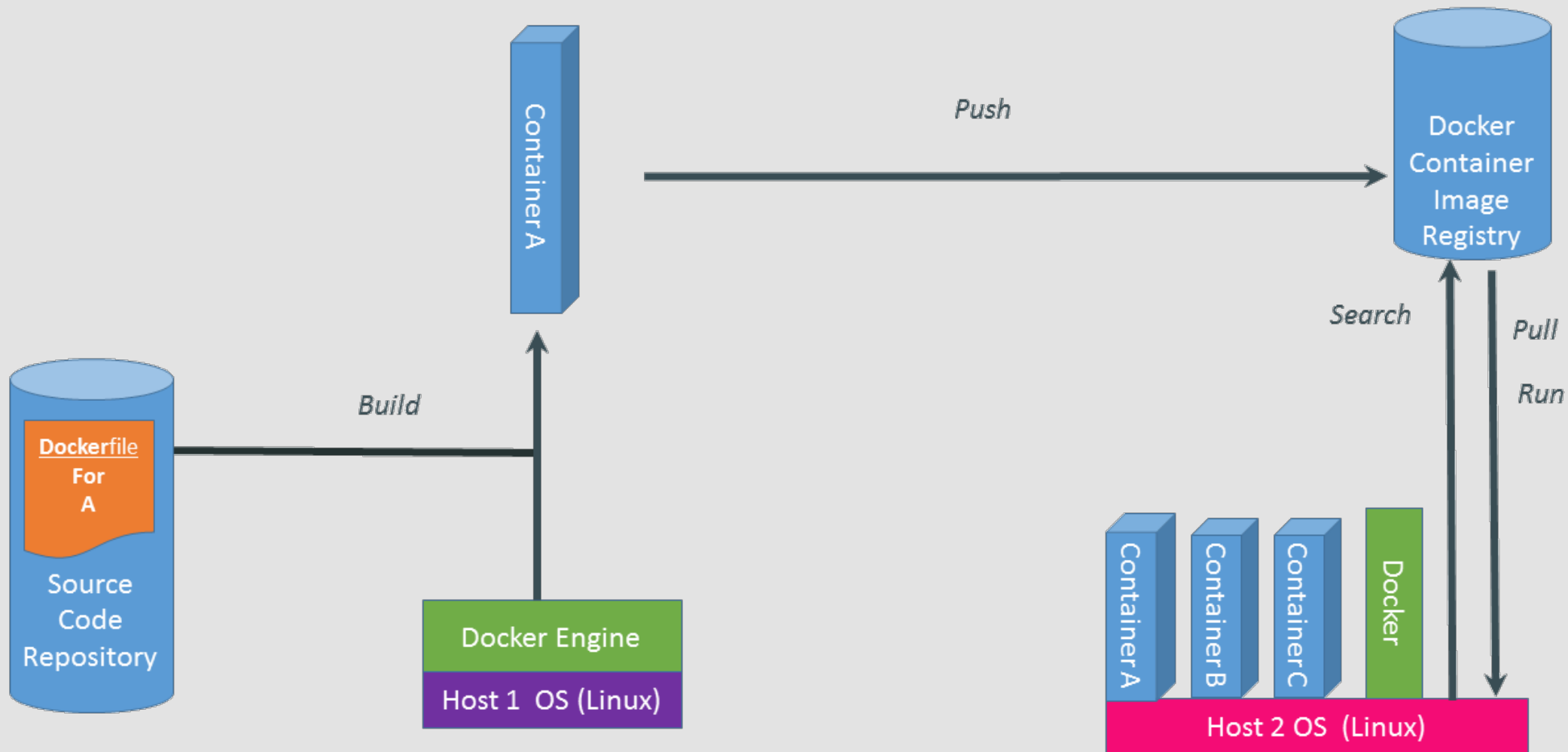
Interfaces with daemon process

CLI Client

Command-line interface for executing Docker commands



Docker Concepts - Overview



Demo

```
{~/gitrepos/github/docker-presentation} (master) *  
[mike@mintbook] $ docker run docker/whalesay cowsay "Docker demo time!"
```

< Docker demo time! >

\$ docker stop presentation

Questions or Comments?

References

<https://www.docker.com/>

<https://github.com/docker/docker>

<https://hub.docker.com/>

<https://github.com/dgageot/dockercon16>

<https://www.youtube.com/watch?v=SK0sqfVn7Is>

<https://github.com/mjsmith1028/docker-presentation>