Overview
Containerization with Microsoft Azure

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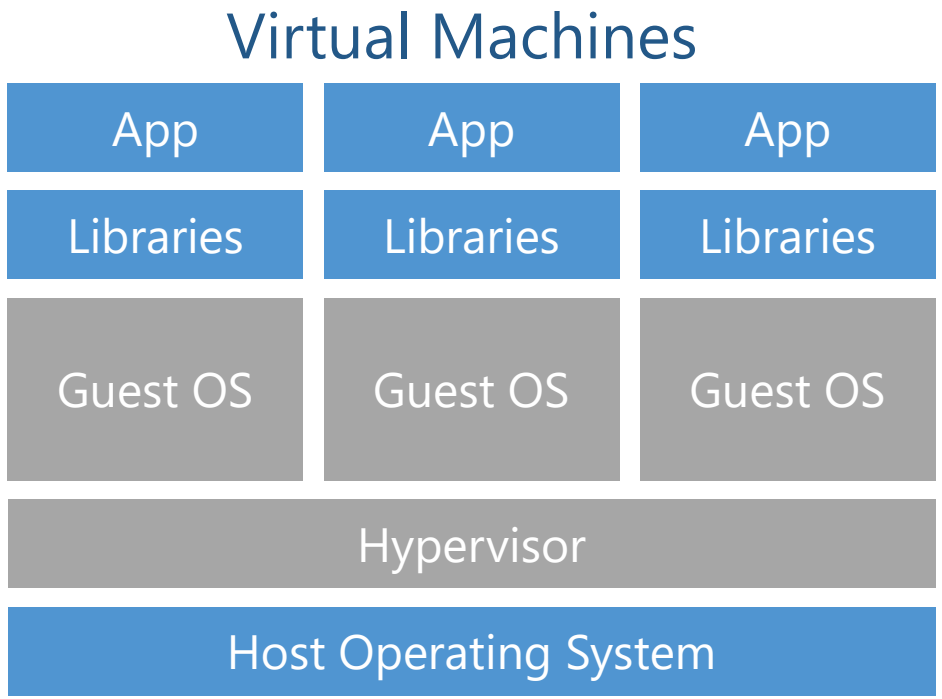
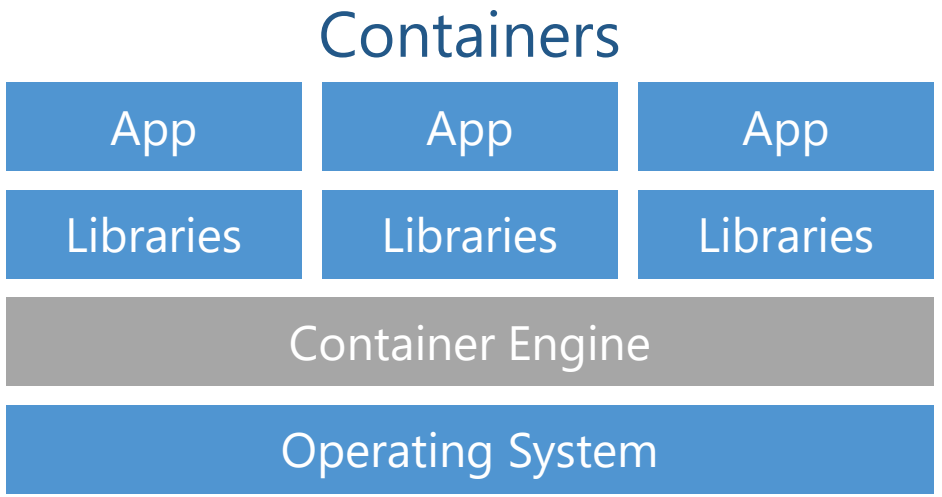
Containers

- Lightweight alternative to virtual machines
- Smaller, less expensive, faster to start up, and self-contained



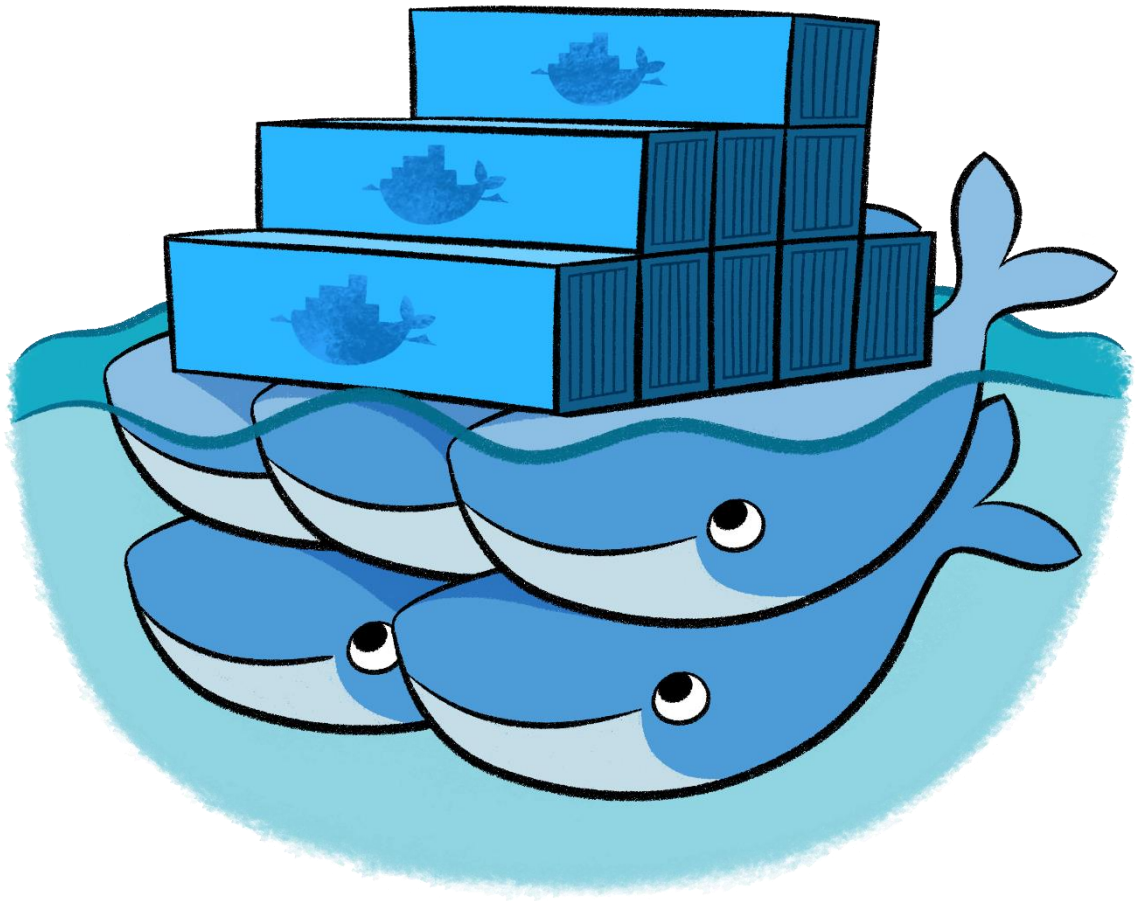


Docker

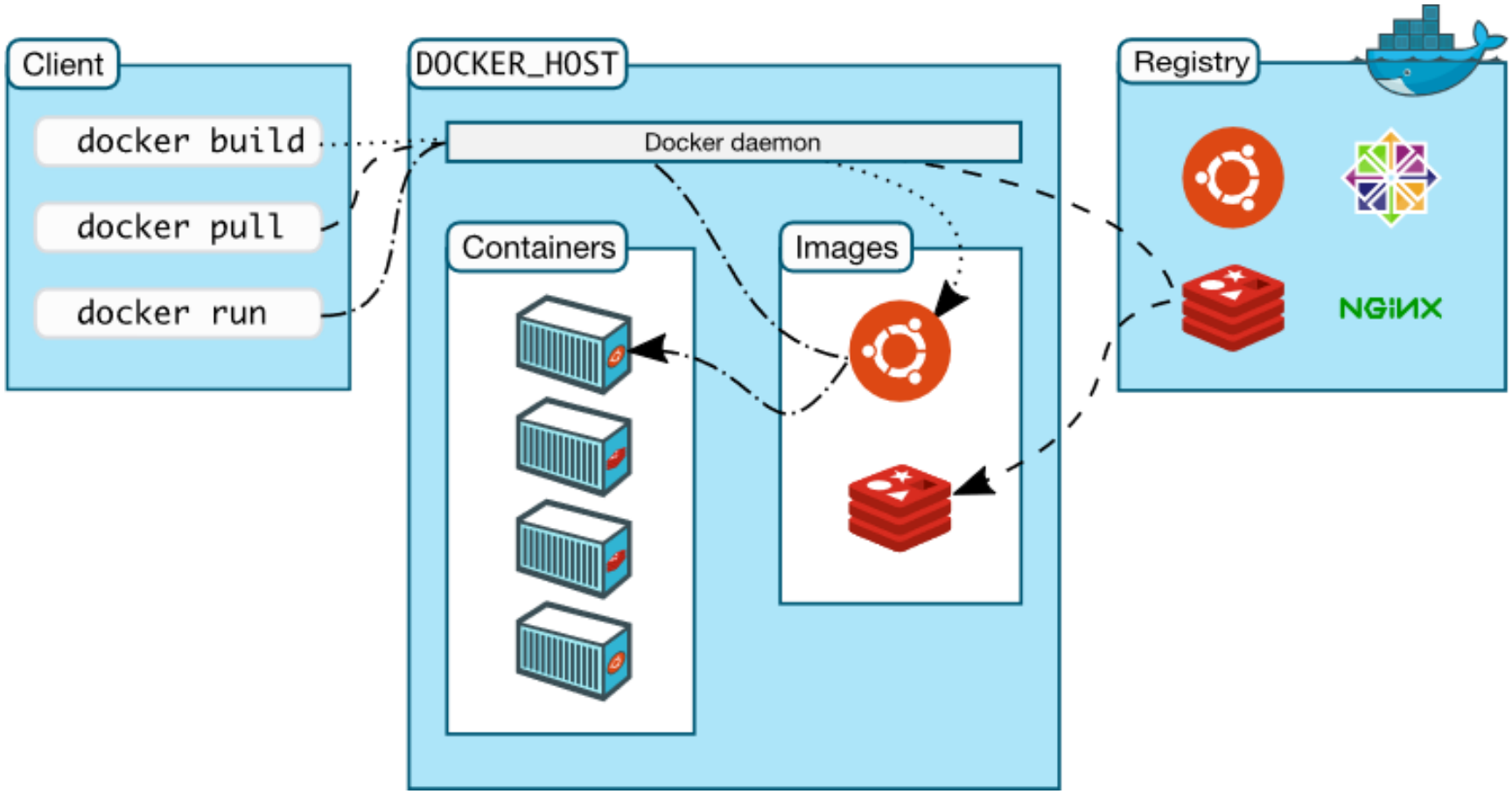
- Leading open-source containerization platform

  Docker containers wrap up a piece of software in a complete filesystem that contains everything it needs to run: code, runtime, system tools, system libraries – anything you can install on a server. This guarantees that it will always run the same, regardless of the environment it is running in

- Supported natively in Azure

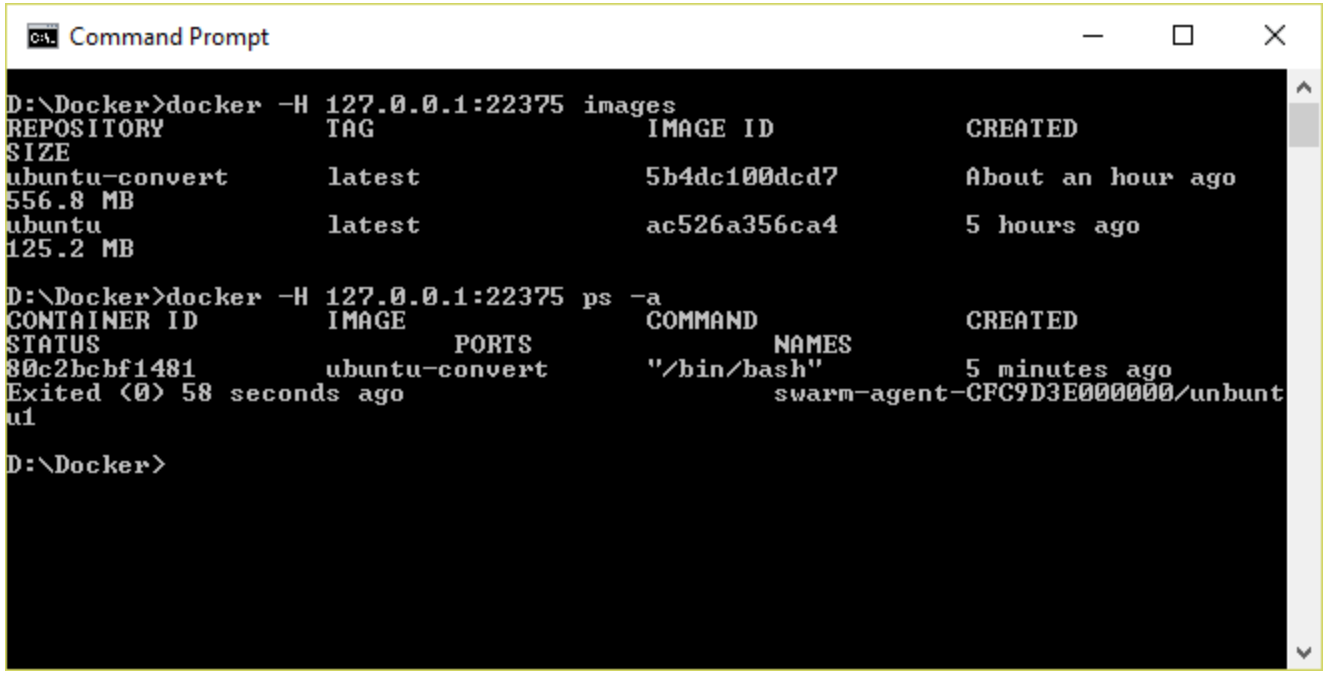


Docker Architecture

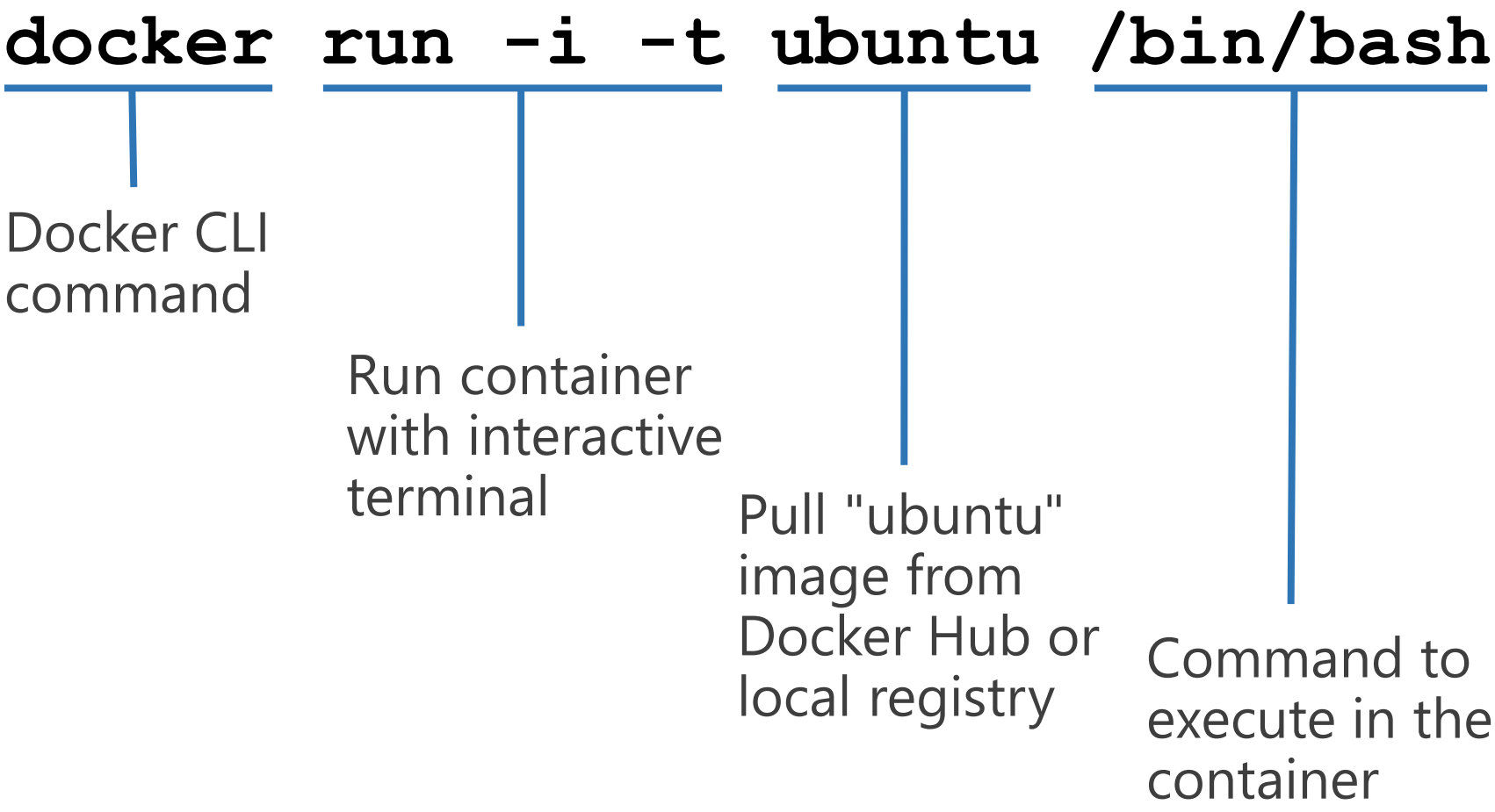


Docker CLI

- Command-line interface for Docker, available for Linux, OS X, and Windows (available separately or as part of Docker Toolbox)



Running a Container



Common Docker CLI Commands

`docker run` - Use an image to run a container

`docker pull` - Pull an image from a registry

`docker build` - Build a Docker image

`docker images` - List available Docker images

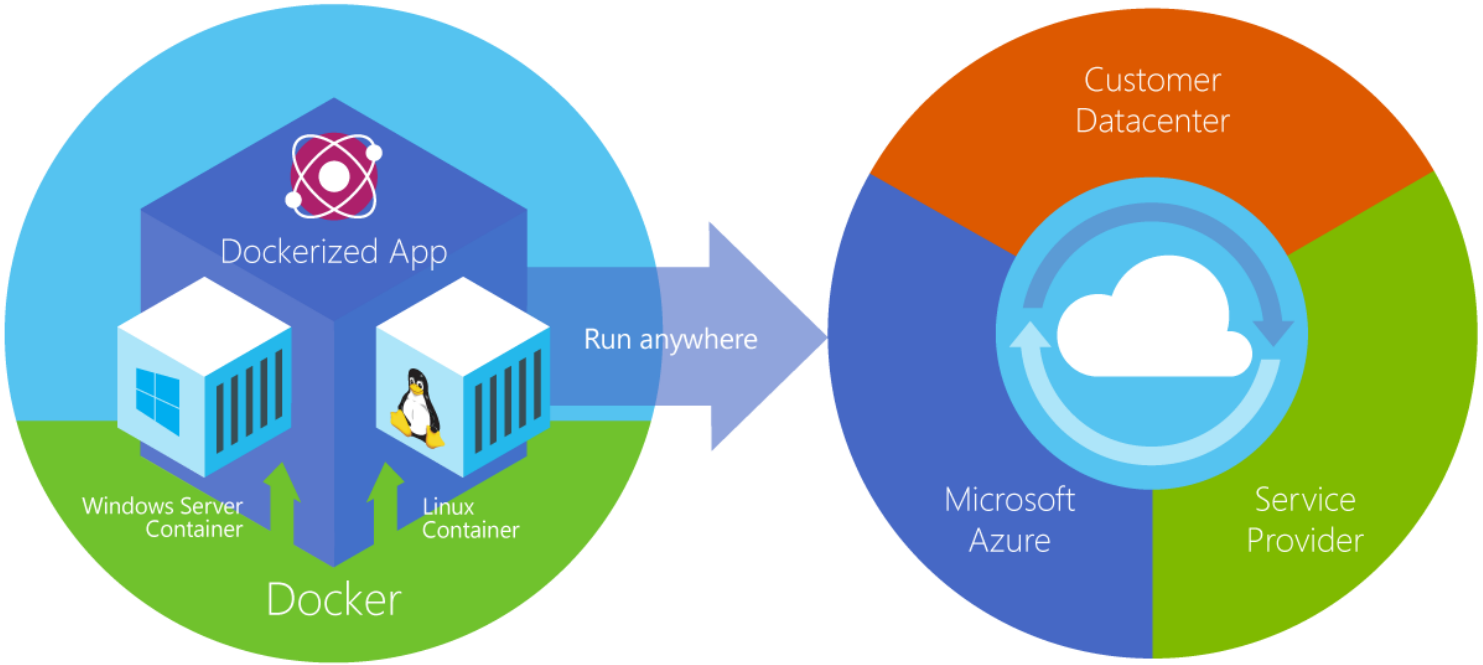
`docker ps` - List running Docker containers

`docker exec` - Execute a command in a container

`docker stop` - Stop a running container

Azure Container Service

- Provides robust, ready-to-use Docker hosting environment
- Uses open-source orchestration tools (DC/OS and Swarm)

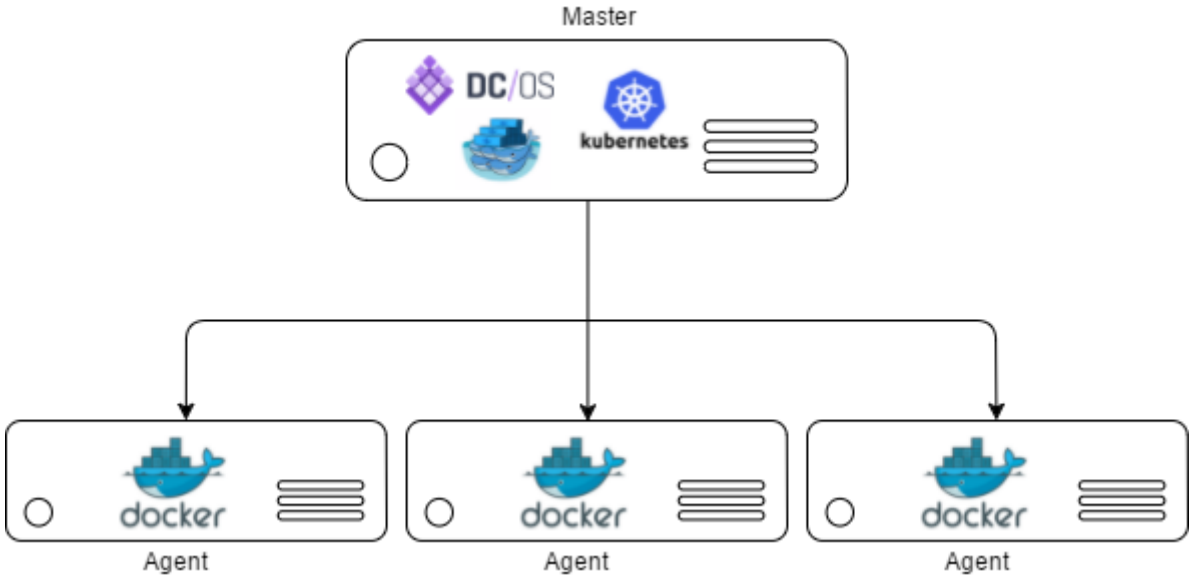


Container Orchestration

- Facilitates deployment and management of containers
- Containers by design are intended to be deployed in large volumes with some applications using dozens to even thousands of containers
- With this type of scale, automating container deployment and management with orchestration software becomes necessary
- Azure Container service supports Kubernetes, DC/OS, and Docker Swarm

Container Clusters

- Facilitate load balancing, scalability, and high availability
- A cluster is composed of master nodes which control the orchestration, and agent nodes that host the containers



Kubernetes

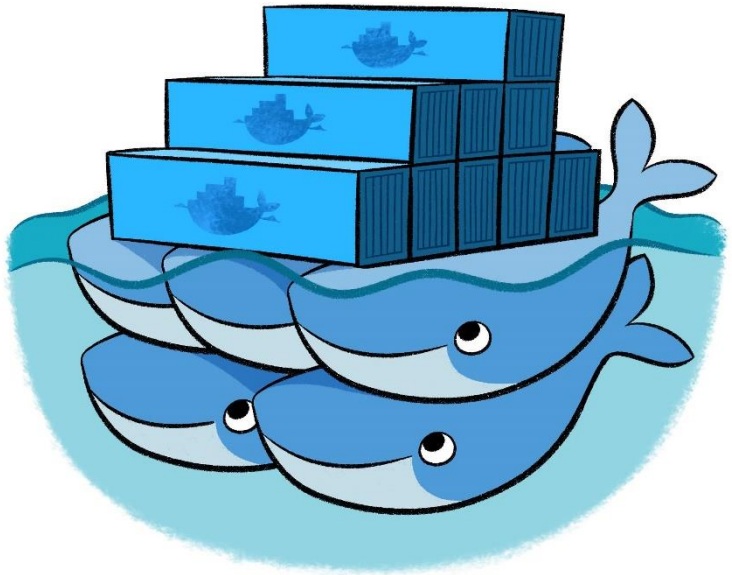
- Open-source orchestration engine from Google
- Provides a robust framework for container orchestration, yet remains lightweight and scalable
- Supported by Azure Container Service and tightly integrated with ACS, allowing Kubernetes to modify deployments

DC/OS

- Datacenter Operating System built on Apache Mesos
- Creates logical data centers and abstracts underlying hardware
- Provides resources traditionally provided by infrastructure, including networking, DNS, and load balancing
- Natively supported by Azure Container Service

Docker Swarm

- Docker’s own orchestration engine
- Current releases of the Docker engine have “Swarm Mode” built in and can many of the same things that other orchestration engines do
- Lacks a GUI, but makes up for it with tight integration with Docker
- Natively supported by Azure Container Service



Demo

Azure Containers: Manage ASP.NET Core WebAPI via containers

//TODO: github repository link here

References

- https://azure.microsoft.com/en-us/overview/containers/
- https://docs.microsoft.com/en-us/dotnet/standard/microservices-architecture/container-docker-introduction/
- https://azure.microsoft.com
- https://docs.microsoft.com

Let’s connect

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