

FROM CAVEMEN TO KUBERNETES

AN INTRODUCTION TO CLOUD VIRTUALIZATION, CONTAINERS, AND KUBERNETES

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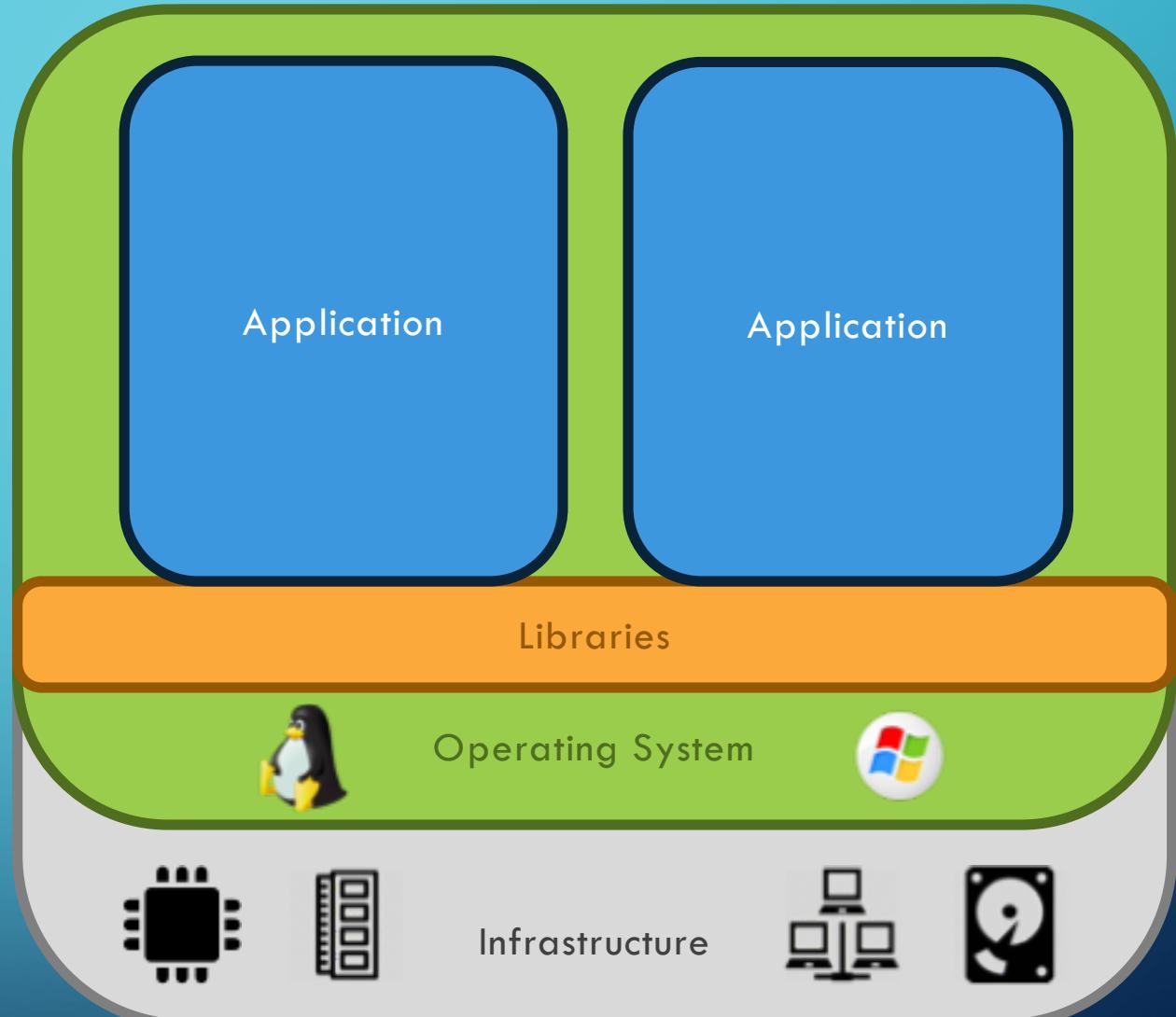
- Bare metal servers
- Cloud virtualization and VMs
- Docker
- Kubernetes



kubernetes

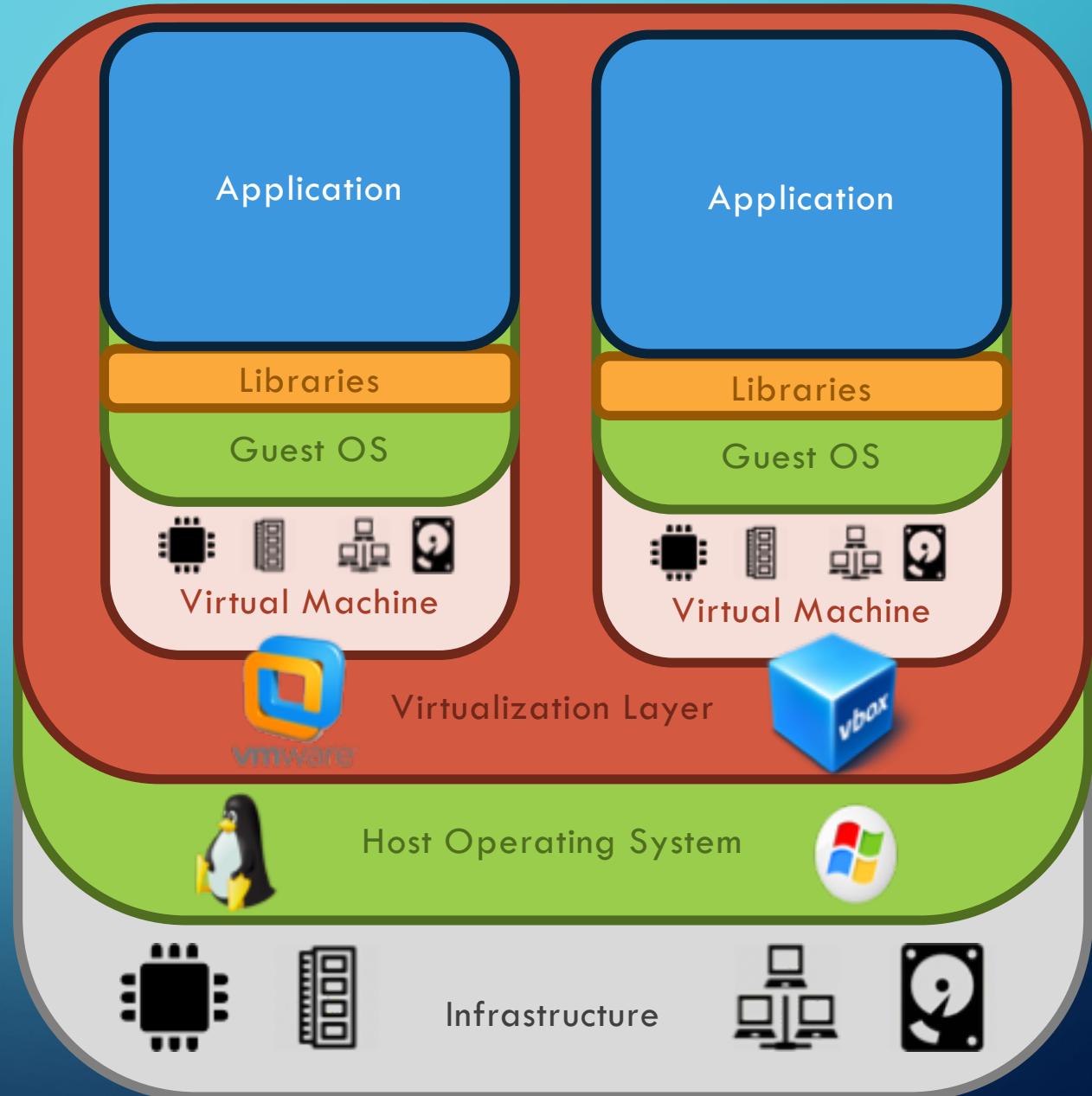
BARE METAL SERVERS

- Company maintains and controls all aspects of hardware and software
- Hardware includes CPUs, memory, networking, and disks
- Software includes Operating system, applications, libraries, languages, and tools
- Company is required to keep all hardware and software secure
- Performance updates may require updated existing or purchasing additional hardware



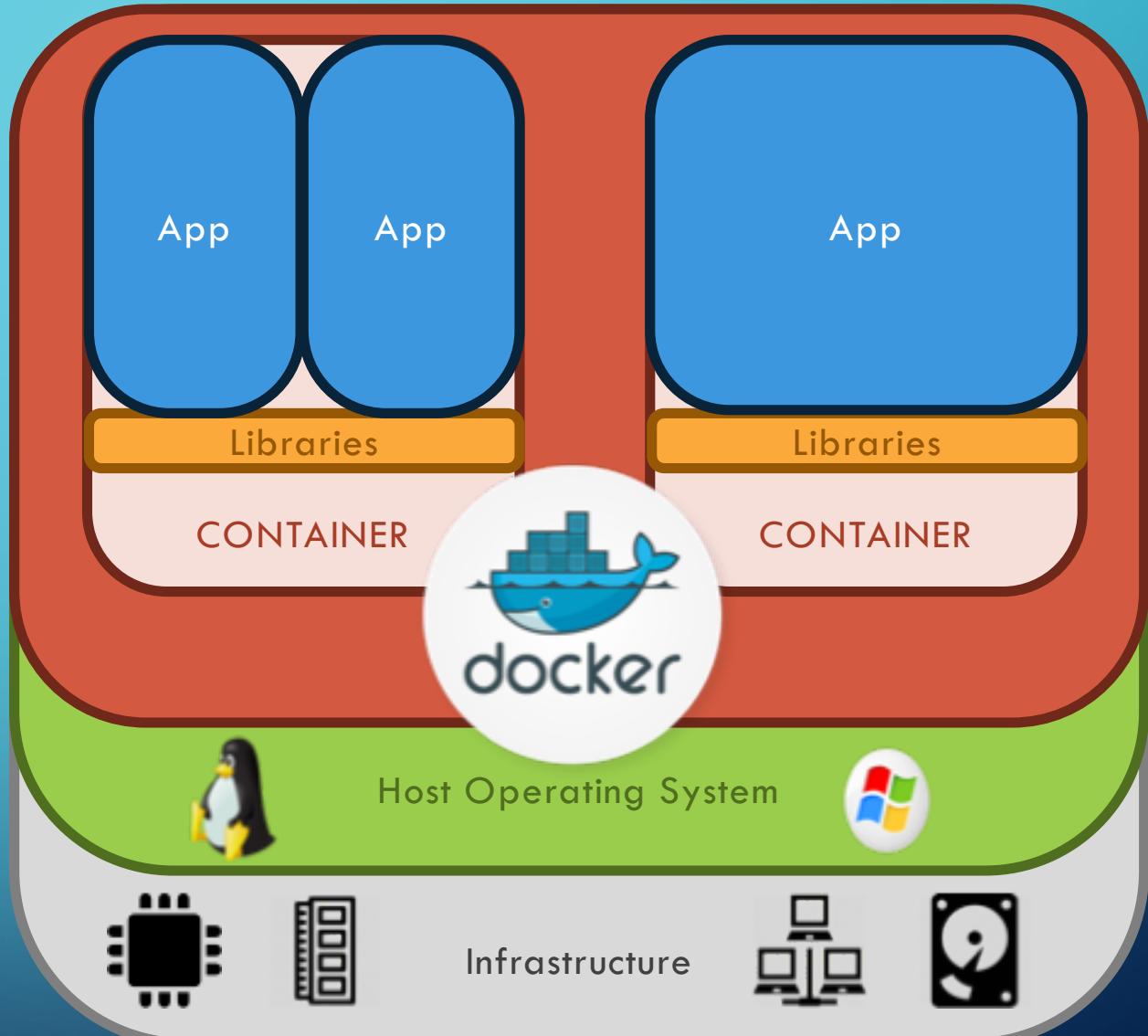
CLOUD VIRTUALIZATION

- Providers maintain the underlying bare metal hardware
- Users are provisioned a virtual machine with allotted hardware and operating system
- VM hardware can be scaled dynamically
- VMs are isolated from each other
- Users maintain the software
- Access to VMs is similar to bare metal

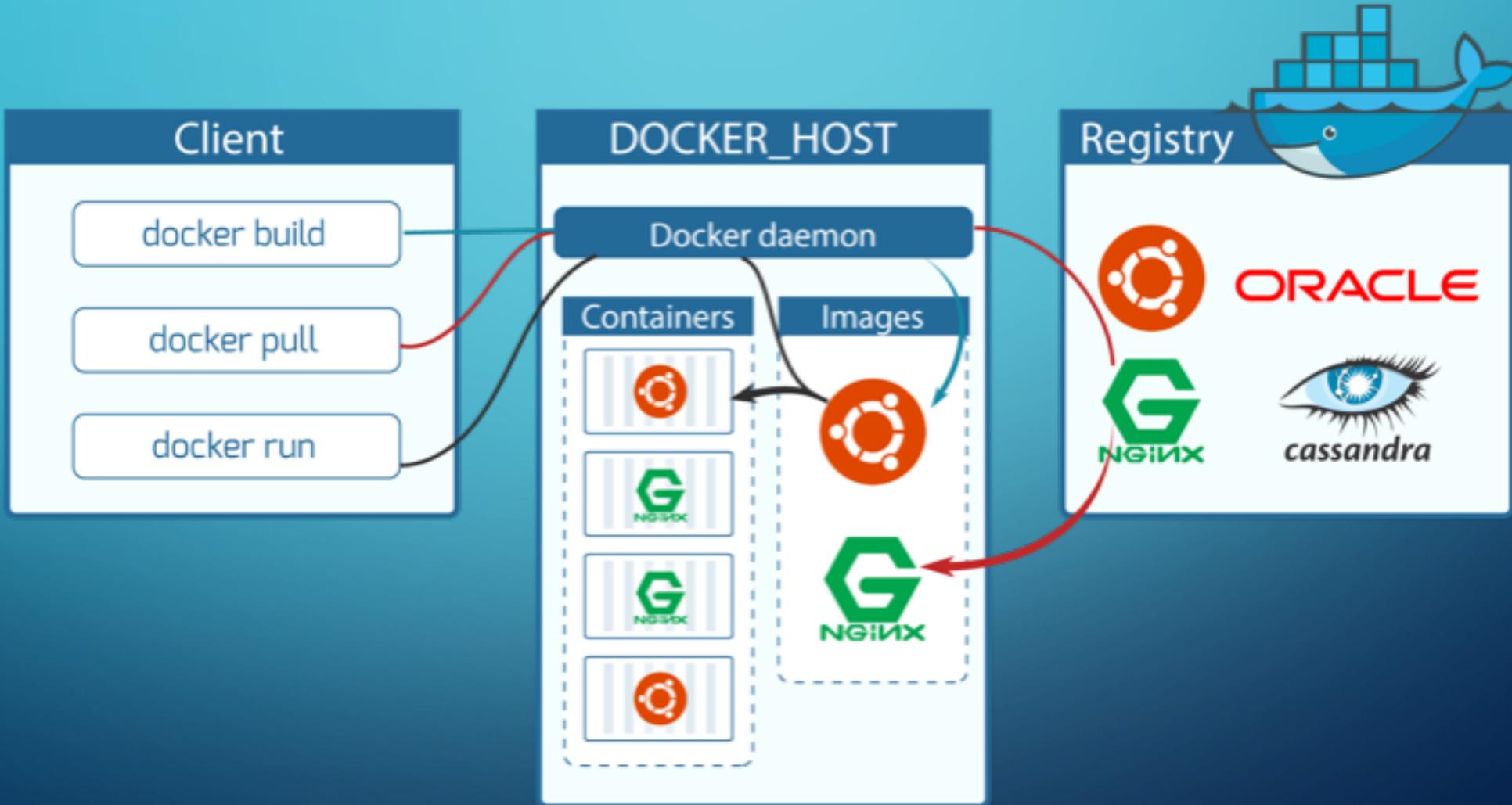


DOCKER

- Docker is a **computer program that performs operating-system-level virtualization also known as containerization.** - Wikipedia
- Aka the Docker engine
- Containers share host infrastructure and resources
- Containers are isolated from the host OS and each other



DOCKER COMPONENTS



KUBERNETES (K8S)

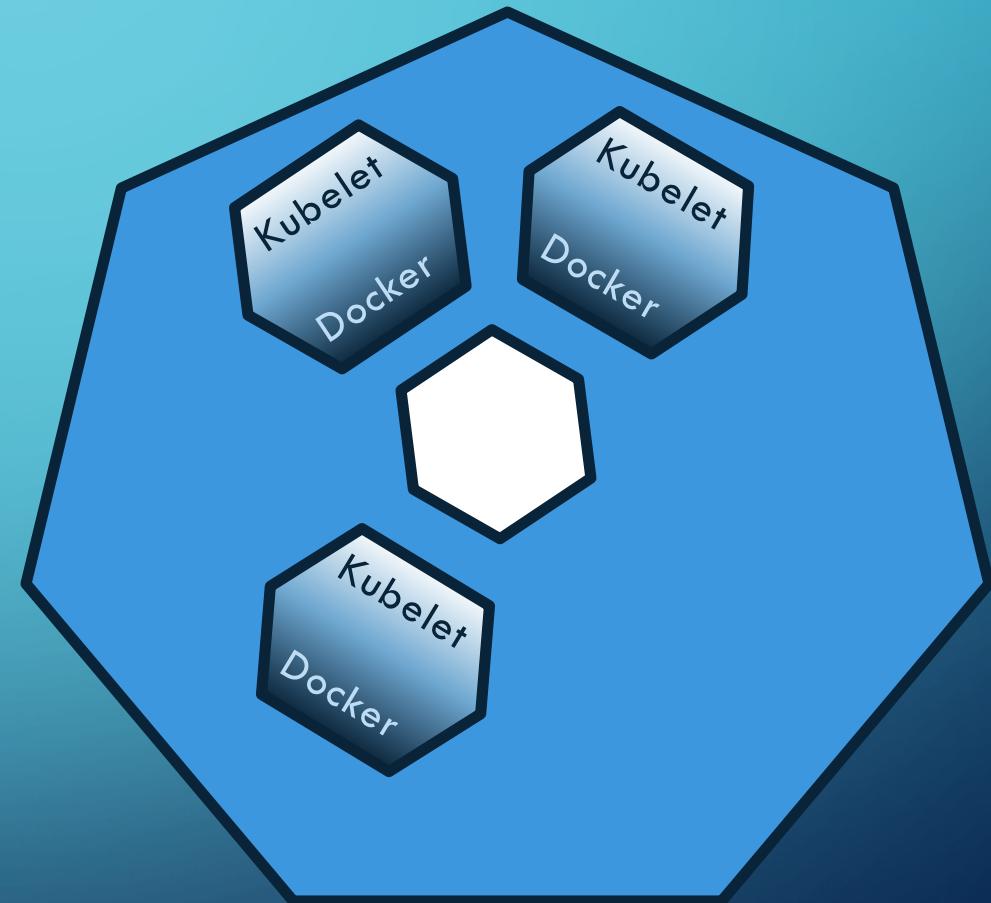
Kubernetes is an open-source container-orchestration system for automating deployment, scaling and management of containerized applications. It was originally designed by Google and is now maintained by the Cloud Native Computing Foundation. - *Wikipedia*



kubernetes

THE CLUSTER

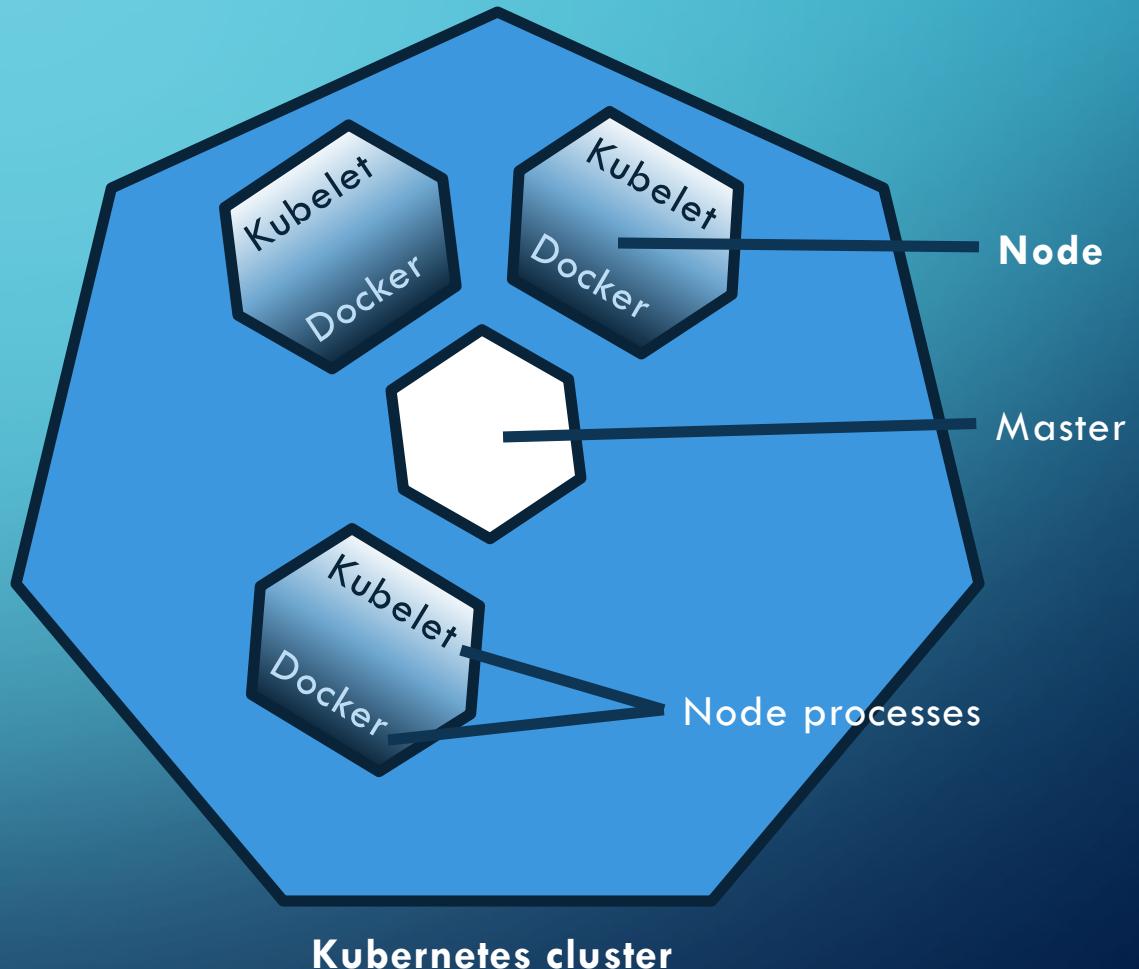
- Kubernetes coordinates a highly available cluster of computers that are connected to work as a single unit.
- Kubernetes automates the distribution and scheduling of application containers across a cluster in a more efficient way.



Kubernetes cluster

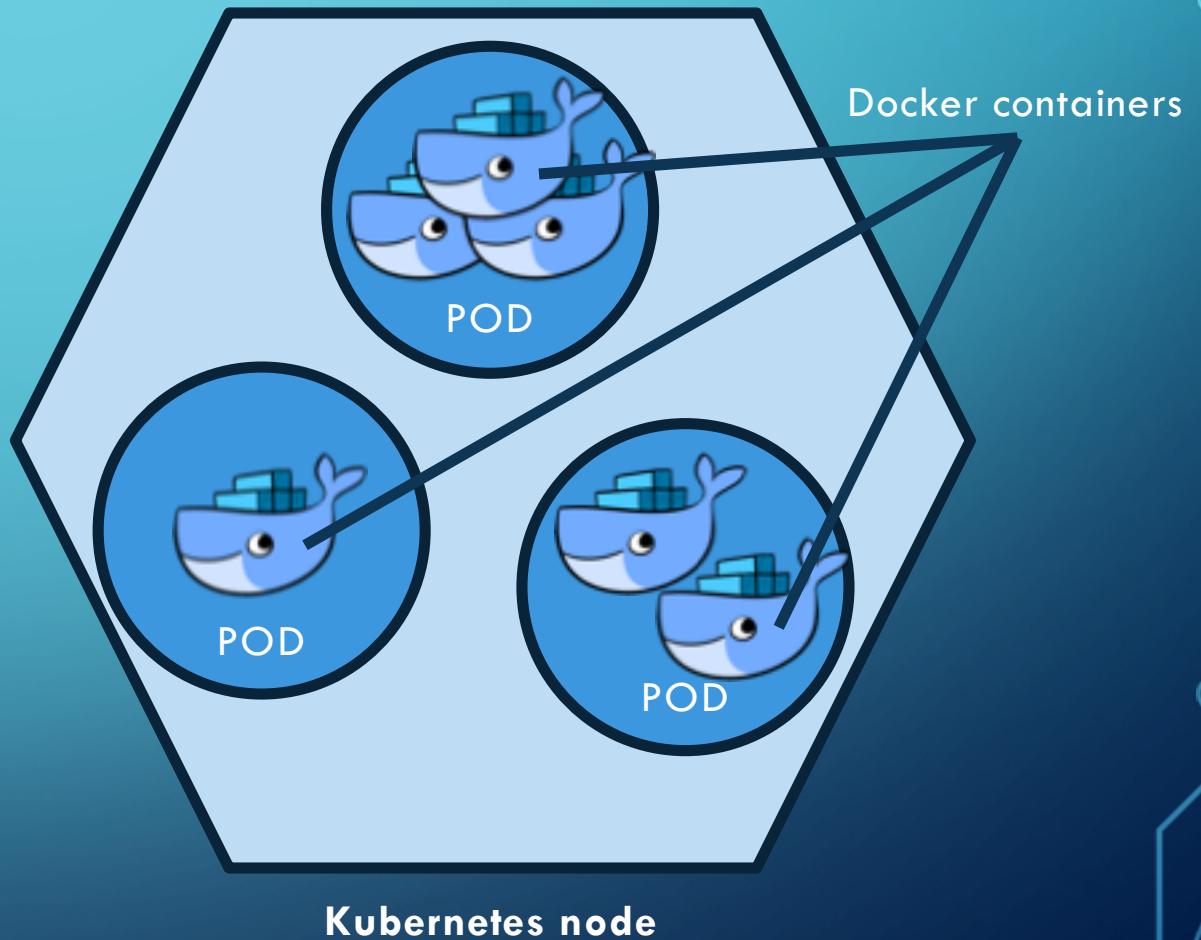
THE NODE

- A node is a VM or a physical computer that serves as a worker machine in a Kubernetes cluster.
- The Kubernetes node has the services necessary to run application containers and be managed from the master systems.
- The Master is responsible for managing the cluster.
- The nodes communicate with the master using the Kubernetes API



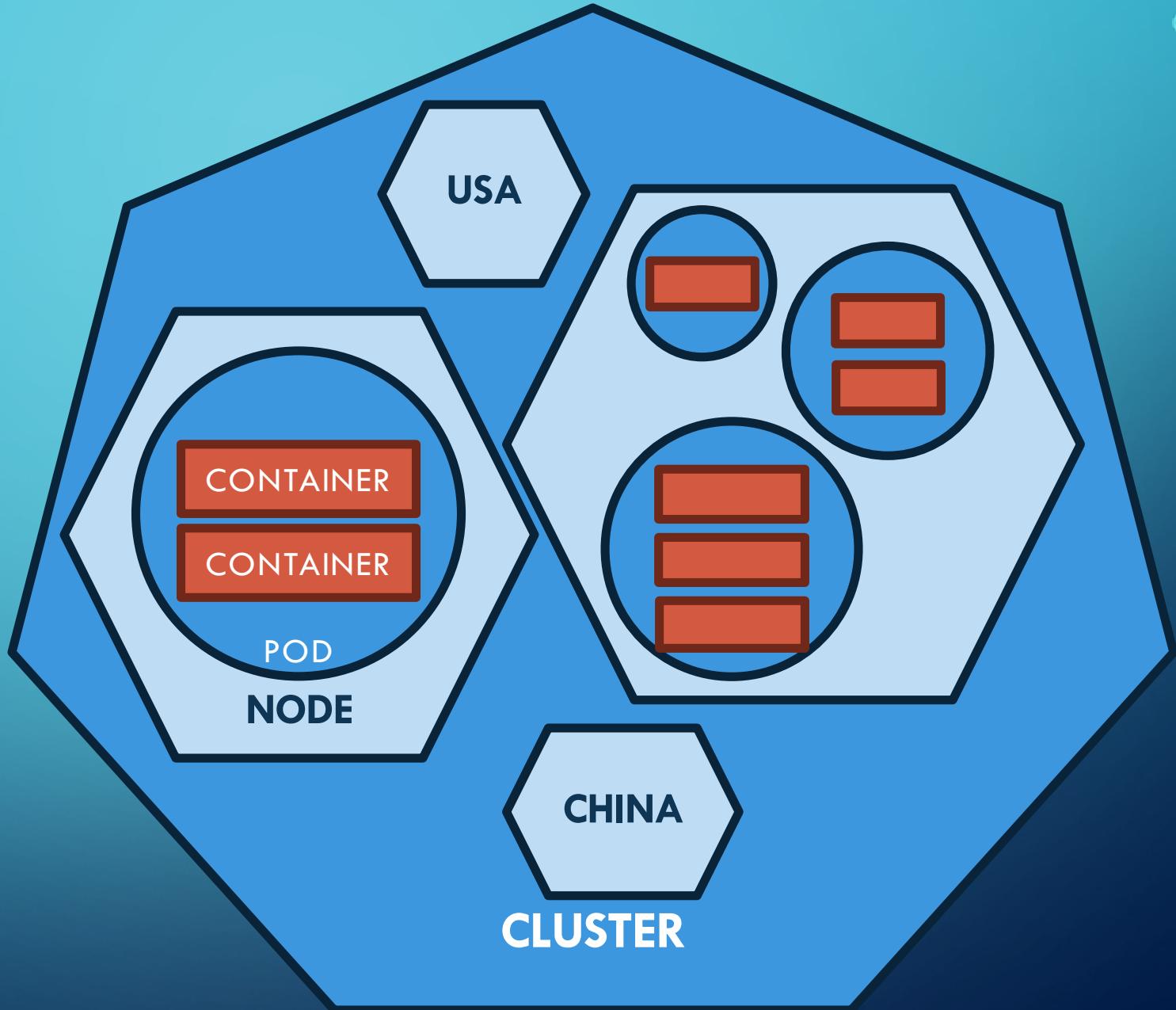
THE POD

- Kubernetes provides Pods that can host multiple containers and storage volumes
- A *pod* (as in a pod of whales or pea pod) is a group of one or more containers (such as Docker containers), with shared storage/network, and a specification for how to run the containers.
- Pods are scheduled to run on any available node



ALL TOGETHER NOW

- Clusters manage nodes
- Nodes manage pods
- Pods manage containers
- Nodes can be spread across physical locations
- Pods can be scheduled on any available node



QUESTIONS

