



Kubernetes

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docker

Laurel

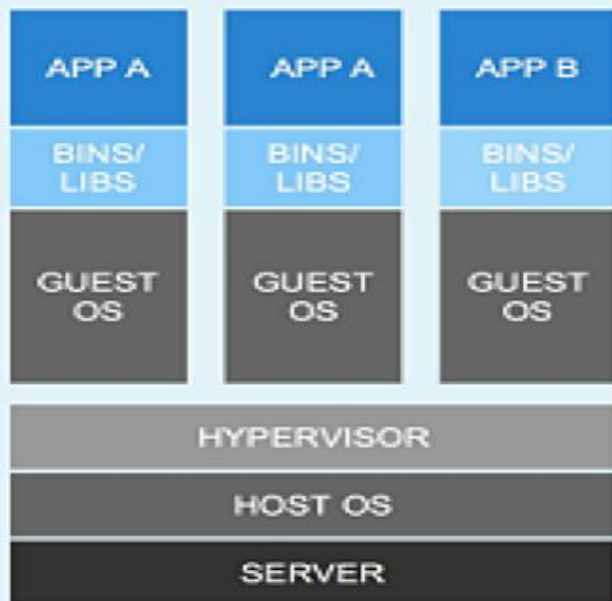
AGENDA



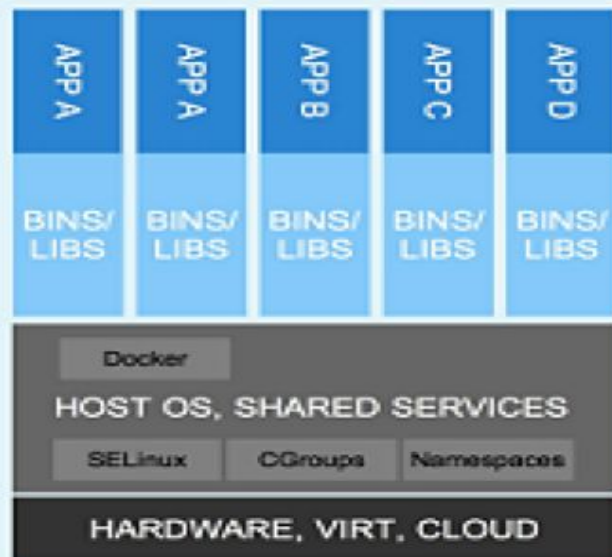
1. Containers
2. Windows and linux containers
3. Docker
4. Kubernetes
5. Kubernetes Demo

Containers

Traditional Virtualization



Linux Containers

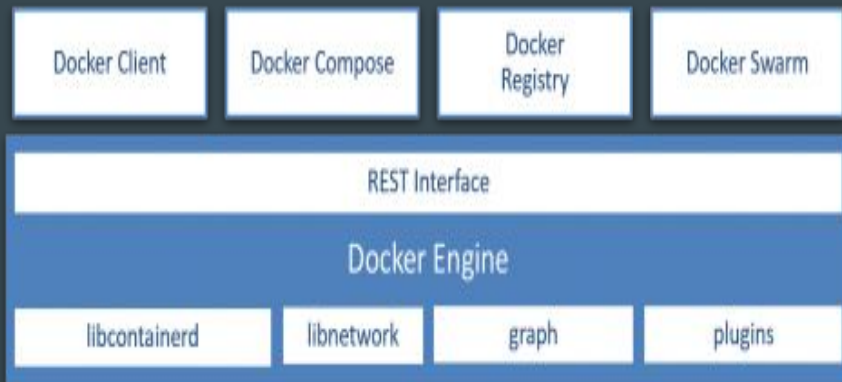


Containers

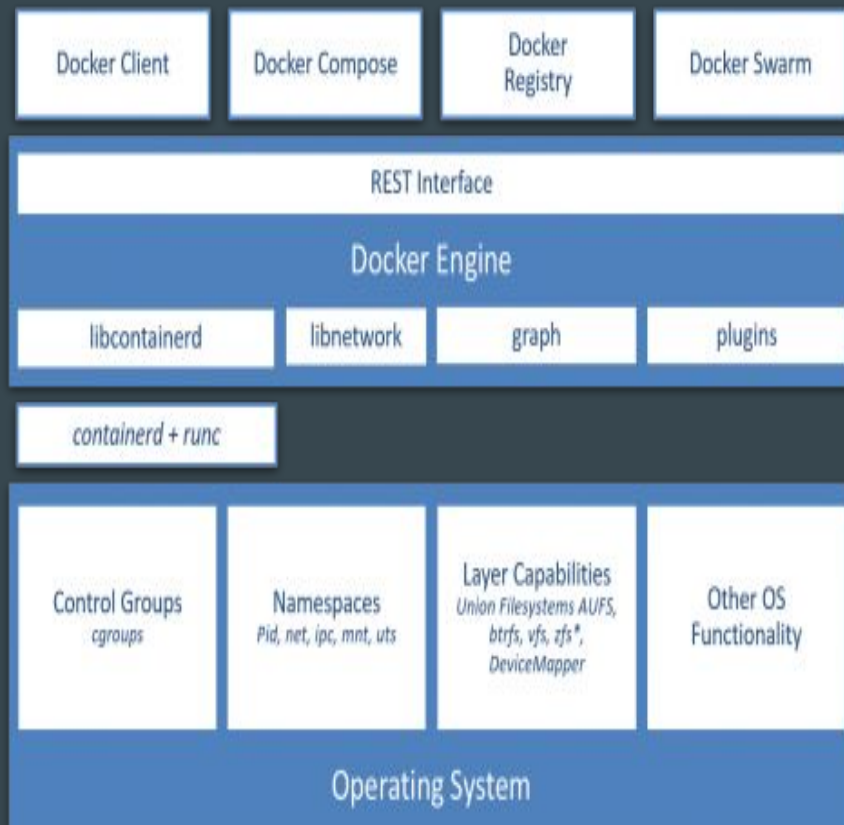
Linux containers are technologies that allow you to package and isolate applications with their entire runtime environment—all of the files necessary to run. This makes it easy to move the contained application between environments (dev, test, production, etc.) while retaining full functionality.

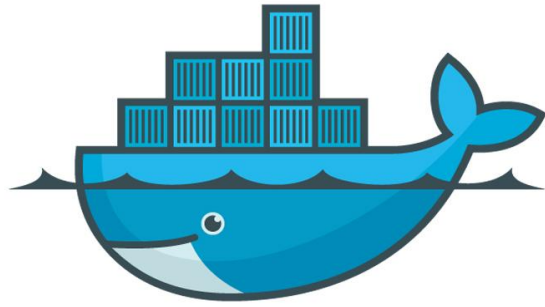
Linux containers help reduce conflicts between your development and operations teams by separating areas of responsibility. Developers can focus on their apps and operations can focus on the infrastructure. And, because Linux containers are based on open source technology, you get the latest and greatest advancement as soon as they're available. Container technologies—including CRI-O, Kubernetes, and Docker—help your team simplify, speed up, and orchestrate application development and deployment.

Architecture In Windows



Architecture In Linux





docker



docker

Docker

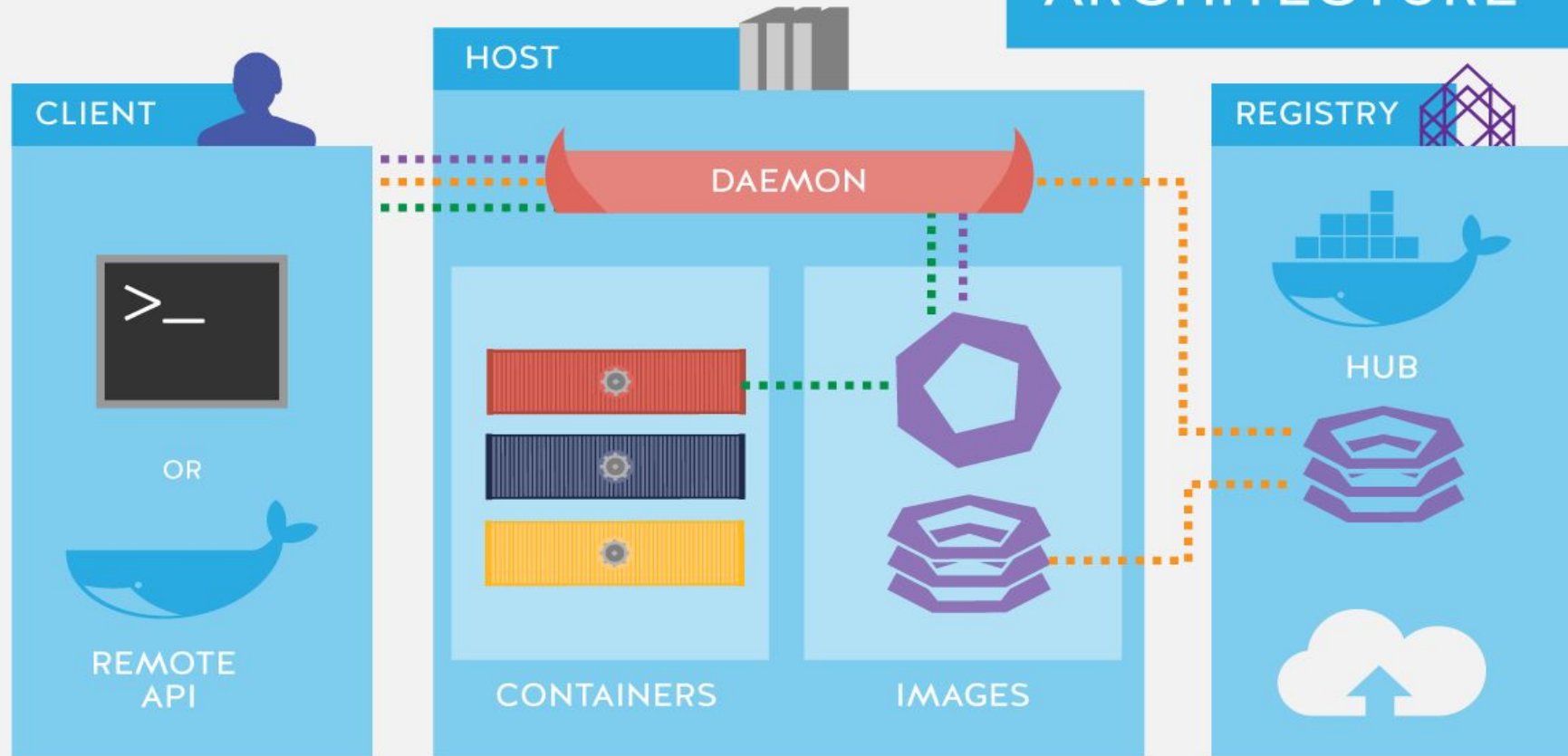
1. Docker is a tool designed to make it easier to create, deploy, and run applications by using containers
2. The open source Docker community works to improve these technologies to benefit all users—freely
3. The company, Docker Inc., builds on the work of the Docker community, makes it more secure, and shares those advancements back to the greater community. It then supports the improved and hardened technologies for enterprise customers.

BUILD

PULL

RUN

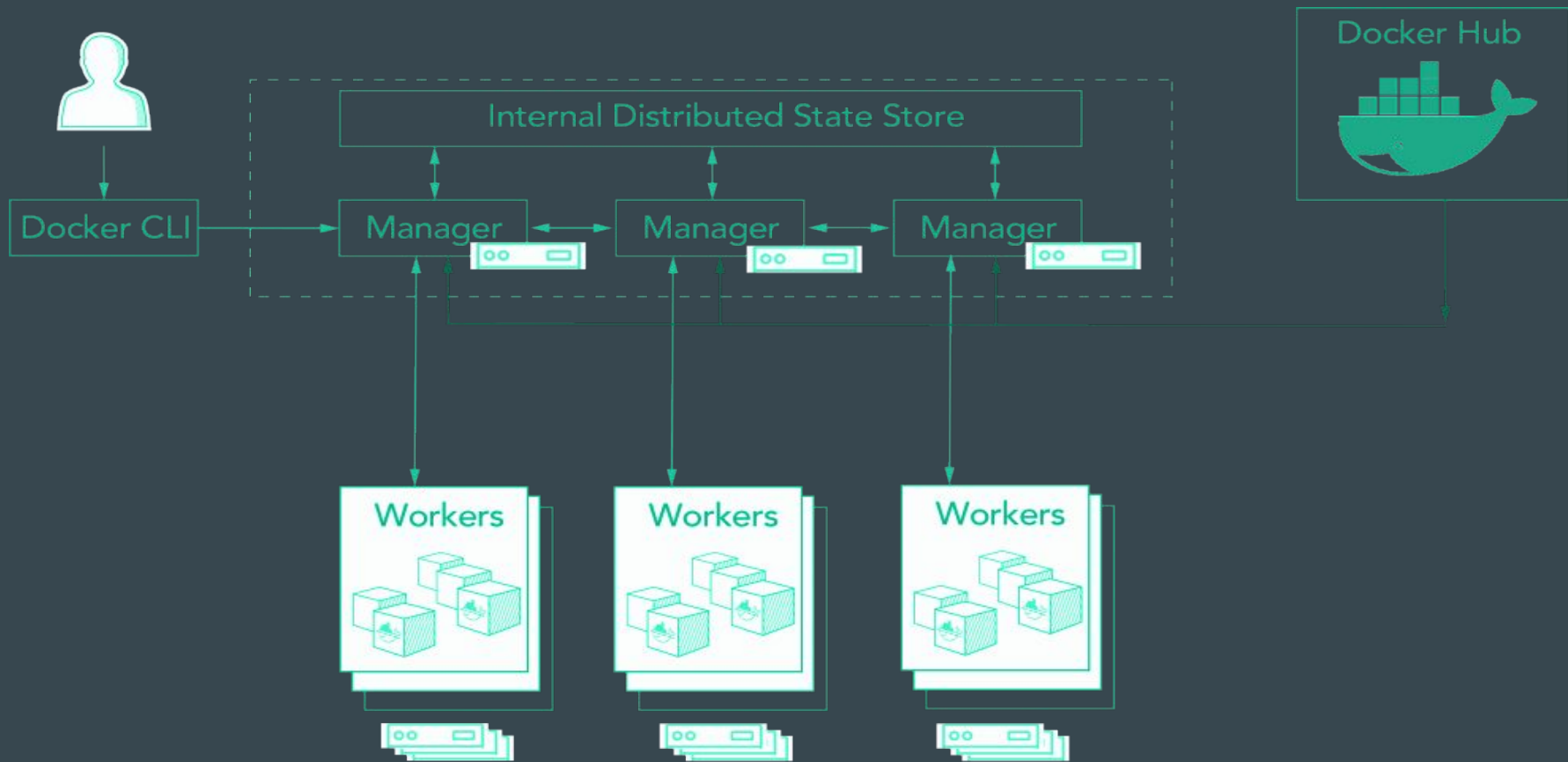
DOCKER ARCHITECTURE



Docker Swarm

Docker Engine v1.12.0 and later allow developers to deploy containers in Swarm mode. A Swarm cluster consists of Docker Engine deployed on multiple nodes. Manager nodes perform orchestration and cluster management. Worker nodes receive and execute tasks from the manager nodes.

A service, which can be specified declaratively, consists of tasks that can be run on Swarm nodes. Services can be replicated to run on multiple nodes. In the replicated services model, ingress load balancing and internal DNS can be used to provide highly available service endpoints. (Source: [Docker Docs: Swarm mode](#))



Manager: a node that dispatches tasks

Worker: a node that executes tasks provided by a Manager

Internal Distributed Store: used to maintain cluster state

Docker CLI: User interacts with the swarm using Docker CLI, for example "docker service"

Docker Hub: contains repositories for downloading and sharing container images



kubernetes

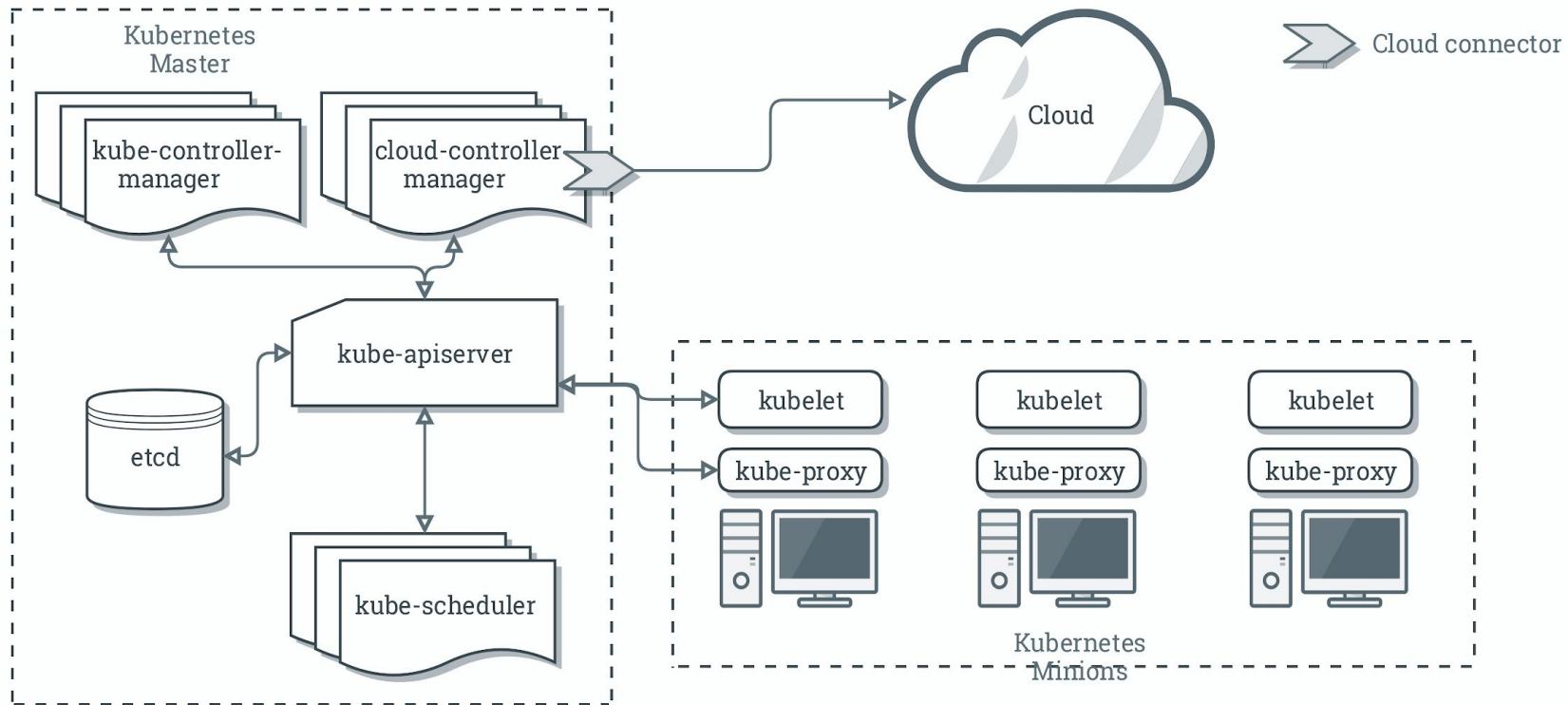
What is kubernetes ?

Kubernetes is a portable, extensible open-source platform for managing containerized workloads and services, that facilitates both declarative configuration and automation. It has a large, rapidly growing ecosystem. Kubernetes services, support, and tools are widely available.

Google open-sourced the Kubernetes project in 2014. Kubernetes builds upon a decade and a half of experience that Google has with running production workloads at scale, combined with best-of-breed ideas and practices from the community.

Why do I need Kubernetes and what can it do

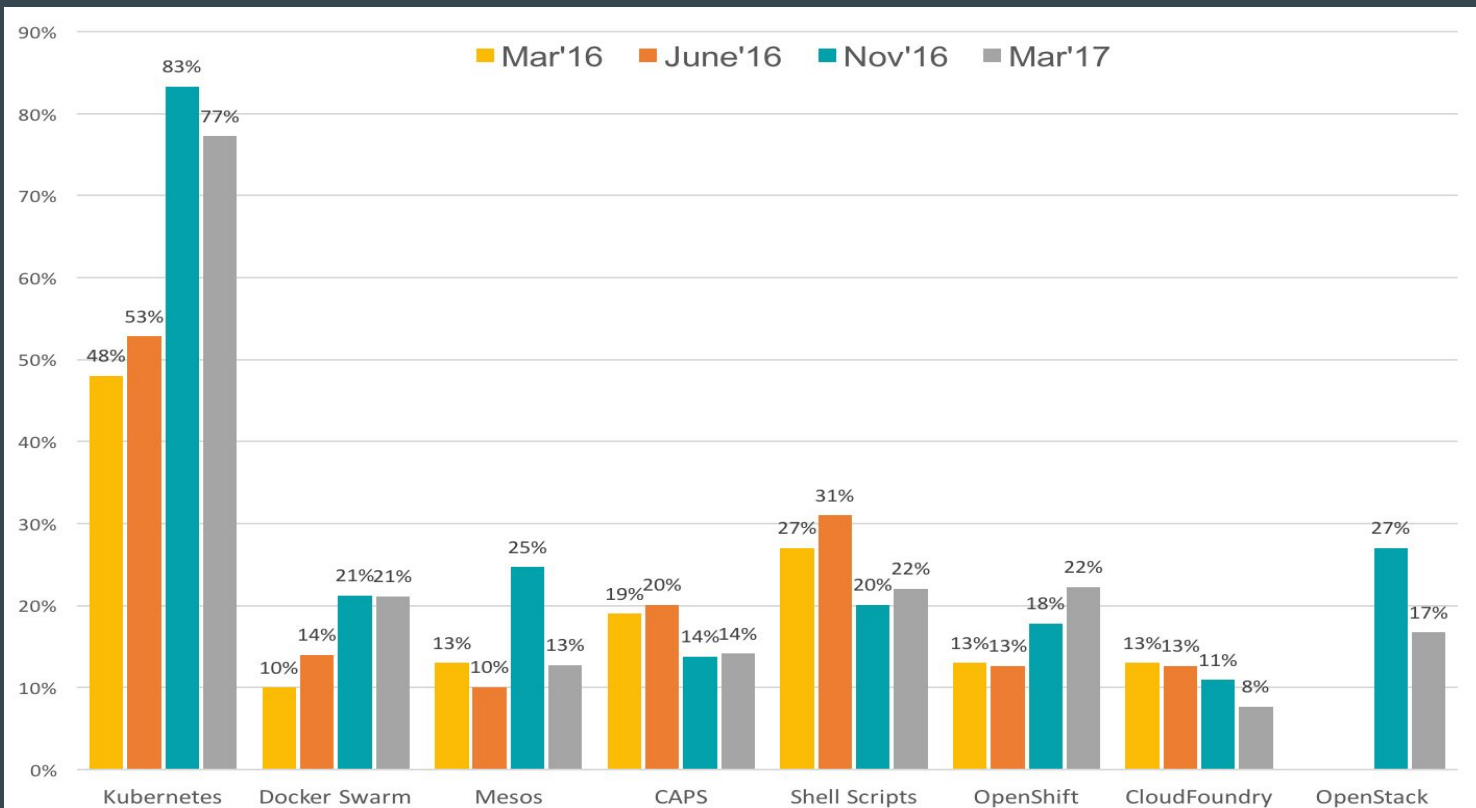
1. a container platform
2. a microservices platform
3. a portable cloud platform and a lot more



kubernetes key components

1. Master and worker Nodes
2. Controllers
3. Services
4. Pod of containers
5. Namespace and Quotas
6. Network and policies
7. Storage

The Evolving Landscape of Cloud Management Platforms



Kubernetes VS Docker Swarm

Docker Swarm	Kubernetes
Easy and fast to install and configure	Takes some work to get up and running
Functionality is provided and limited by the Docker API	Client, API and YAML definitions are unique to Kubernetes
Quick container deployment and scaling even in very large clusters	Provides strong guarantees to cluster states at the expense of speed
Automated internal load balancing through any node in the cluster	Enabling load balancing requires manual service configuration

STANDARD
STANDARD
STANDARD

