First Step towards Learning Kubernetes

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kubernetes

What is Kubernetes

- The name Kubernetes originates from Greek, meaning helmsman or pilot. Google open-sourced the Kubernetes project in 2014.
- Kubernetes is an application for automation deployment, scaling and management of container-based applications

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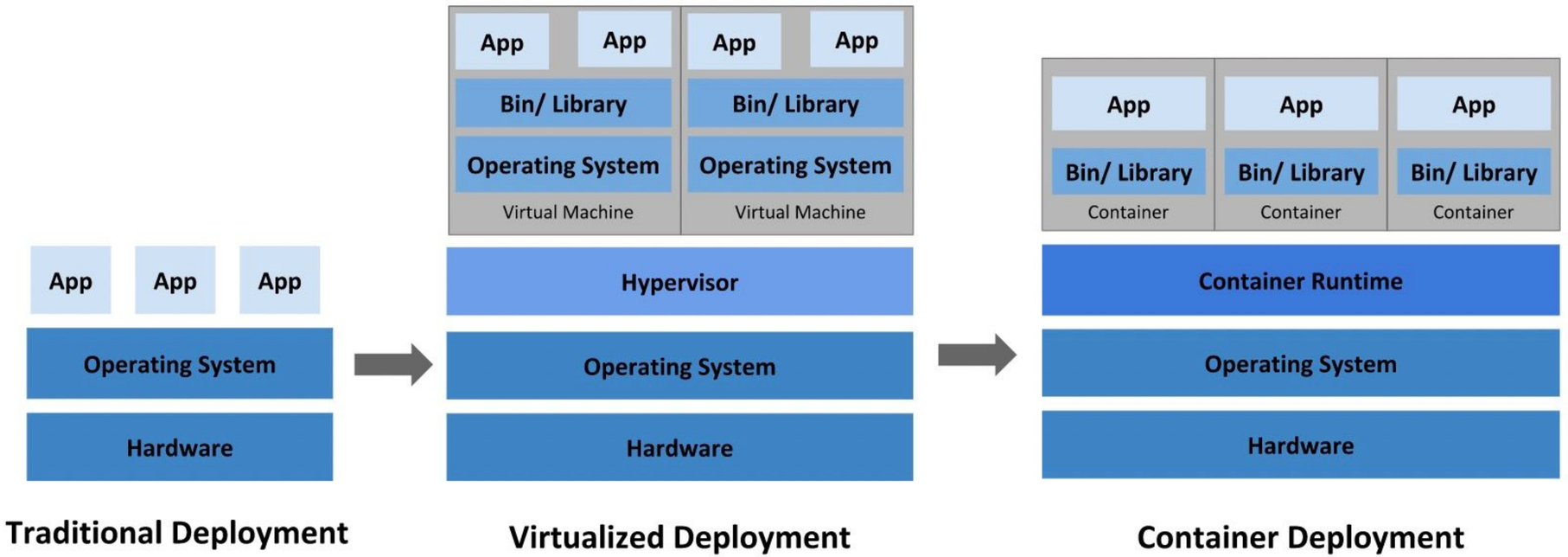
Going back in time

Let’s take a look at why Kubernetes is so useful by going back in time.



Workflow Using Kubernetes

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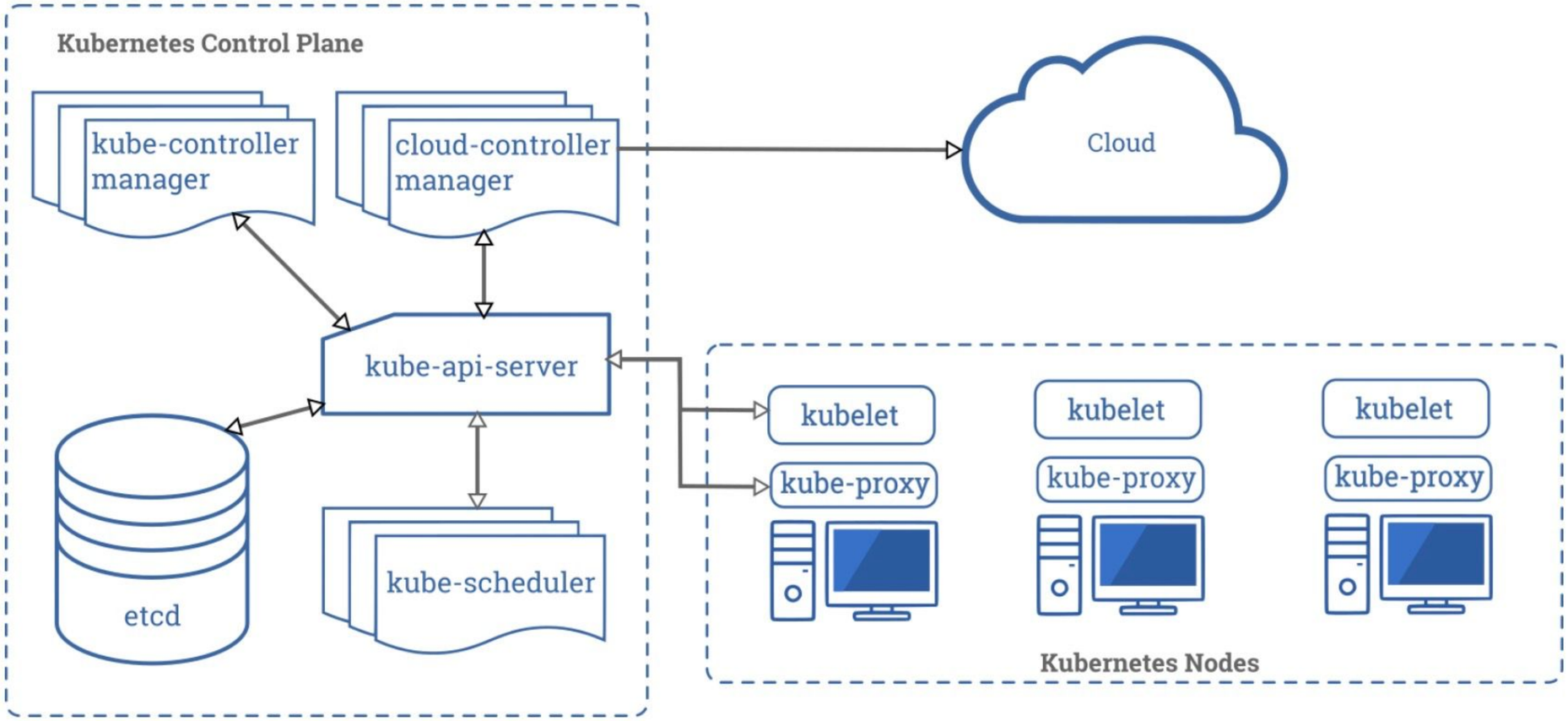
Kubernetes Architecture



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Kubernetes Master

- kube-apiserver The API server is a component of the Kubernetes control plane that exposes the Kubernetes API. The API server is the front end for the Kubernetes control plane
- Etcd Consistent and highly-available key value store used as Kubernetes' backing store for all cluster data
- kube-scheduler Control Plane component that watches for newly created pods with no assigned node, and selects a node for them to run on
- kube-controller-manager Control of the Kubernetes Cluster
- Cloud-controller-manager runs controllers that interact with the underlying cloud providers.

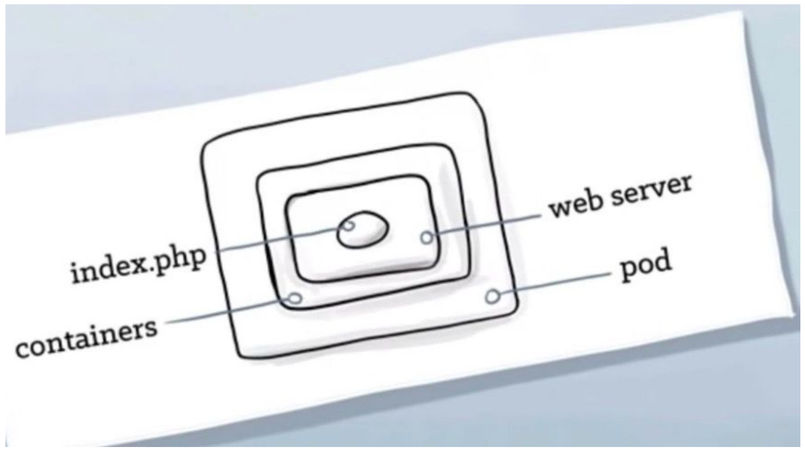
Kubernetes Node/Worker

- kubelet An agent that runs on each node in the cluster. It makes sure that containers are running in a pod
- kube-proxy is a network proxy that runs on each node in your cluster, implementing part of the Kubernetes Service concept
- Container Runtime The container runtime is the software that is responsible for running containers.

Kubernetes supports several container runtimes: Docker, containerd, cri-o, rktlet and any implementation of the Kubernetes CRI (Container Runtime Interface).

Pods

- A pod can hold any number of containers, but usually it only holds two
- We prentend one of those containers doesn’t exist
- So it “usually only has one
- A pod is connected via an overlay network to the rest of the environment



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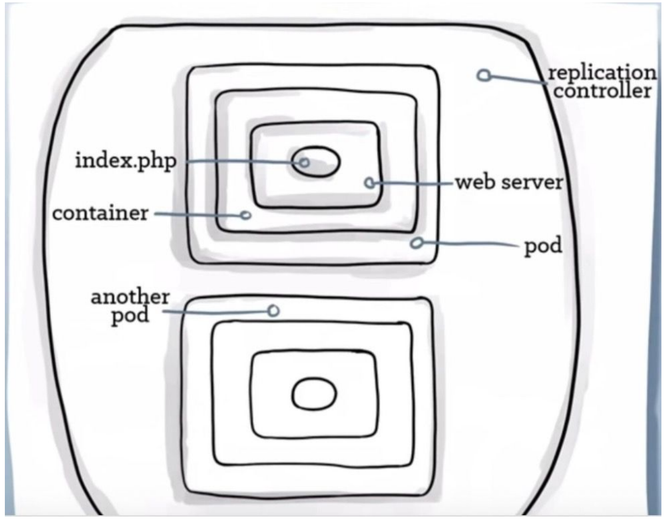
Replication Controller / Set

- Provides a pod template for creating any number of pod copies
- Provides logic for scaling the pod up or down
- Can be used for rolling deploys.



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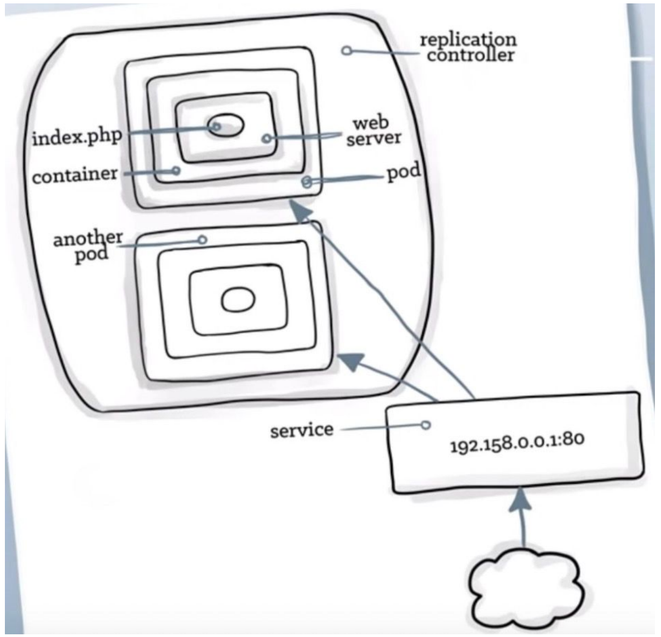
Service

- Service adalah resource di Kubernetes yang digunakan untuk membuat satu gerbang untuk mengakses satu atau lebih Pod
- Service memiliki IP address dan Port yang tidak pernah berubah selama service itu ada
- Client bisa mengakses service tersebut, dan secara otomatis akan meneruskan ke Pod yang ada dibelakang service tersebut
- Dengan begini Client tidak perlu tahu lokasi tiap Pod, dan Pod bisa bertambah, berkurang, atau berpindah, tanpa harus mengganggu Client



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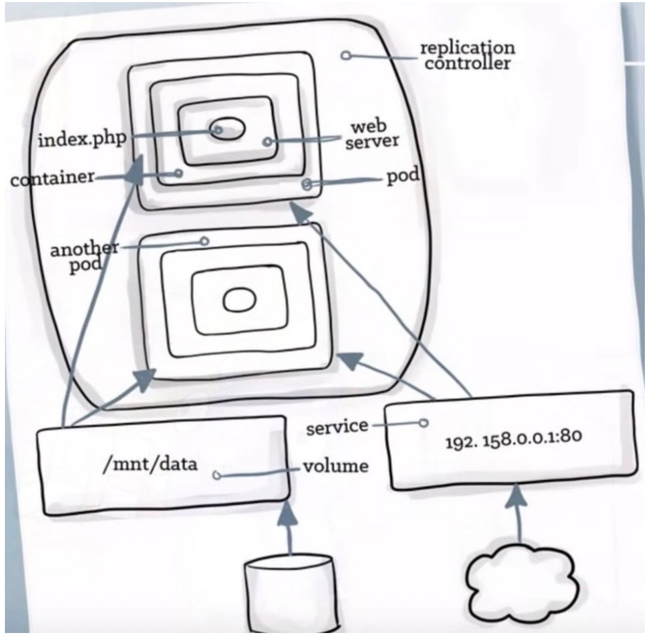
Volumes

- Providers expose both persistent and ephemeral storage
- Pods can mount volumes like filesystems



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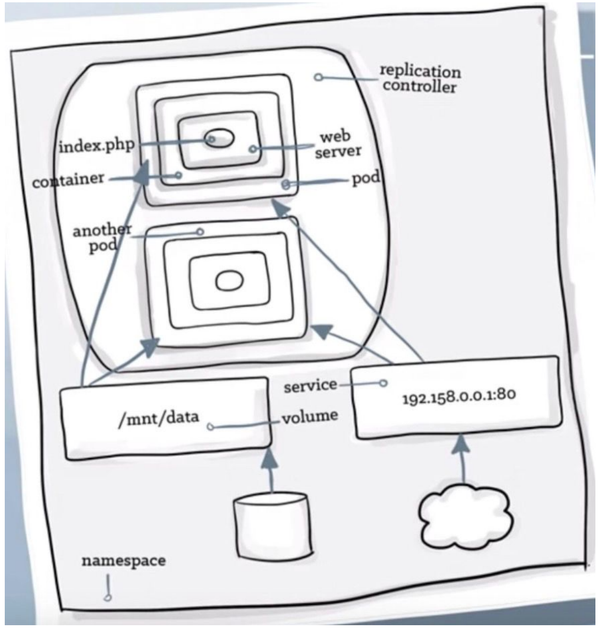
Namespace

- Segment pods, rcs, volumes & secret from each other
- Grouping mechanism



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Demo

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Thank You

We are Hiring

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