Kubernetes
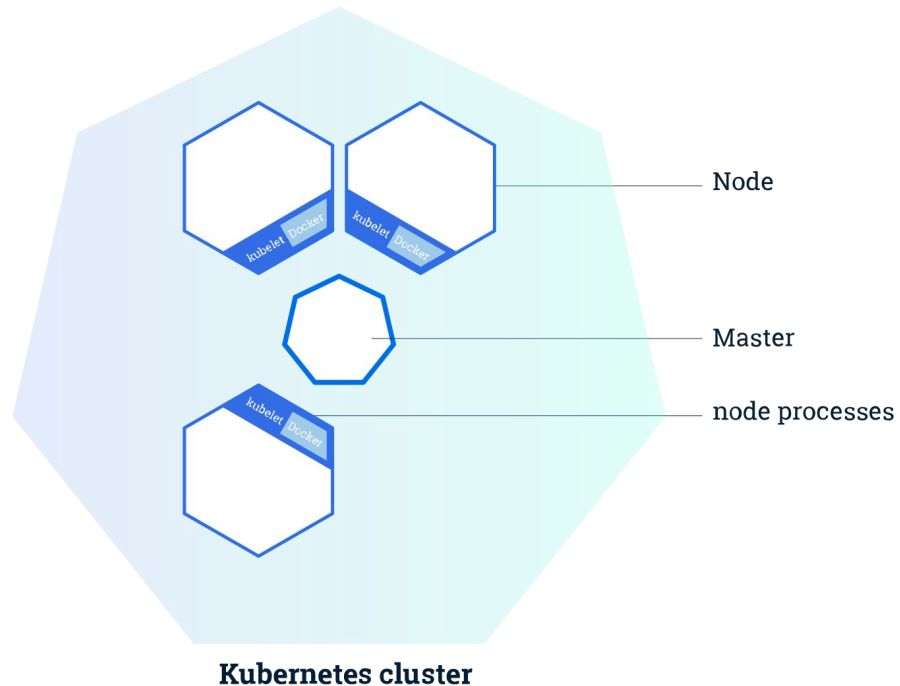
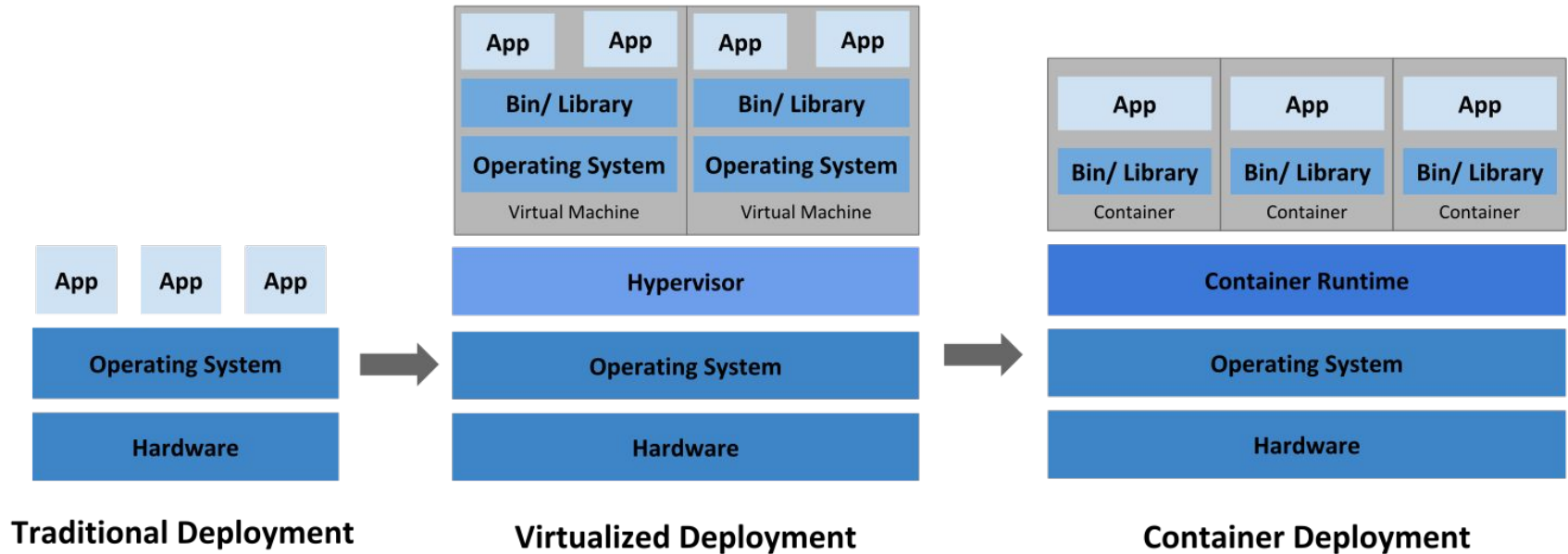# What is Kubernetes

- *"Open-source system for automating deployment, scaling, and management of containerized applications."*

Kubernetes cluster

Node

Master

node processes

Back in time

Traditional Deployment

Virtualized Deployment

Container Deployment

Motivation

- High Availability

- Service Discovery

- Scalability, Modularity

- Declarative System

- Secret and Configuration Management

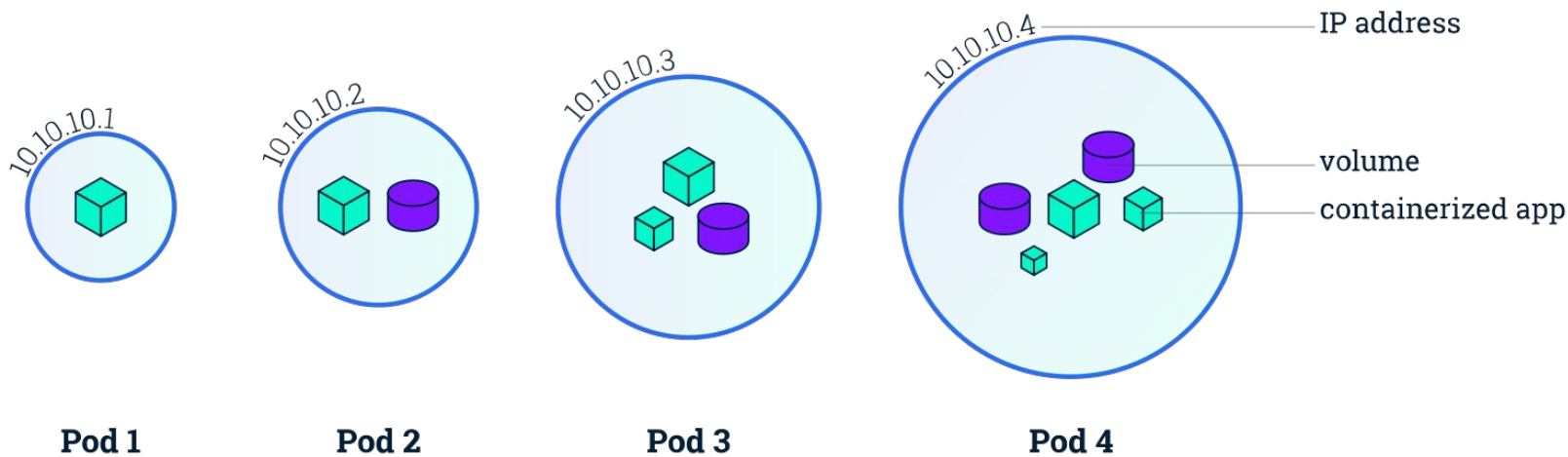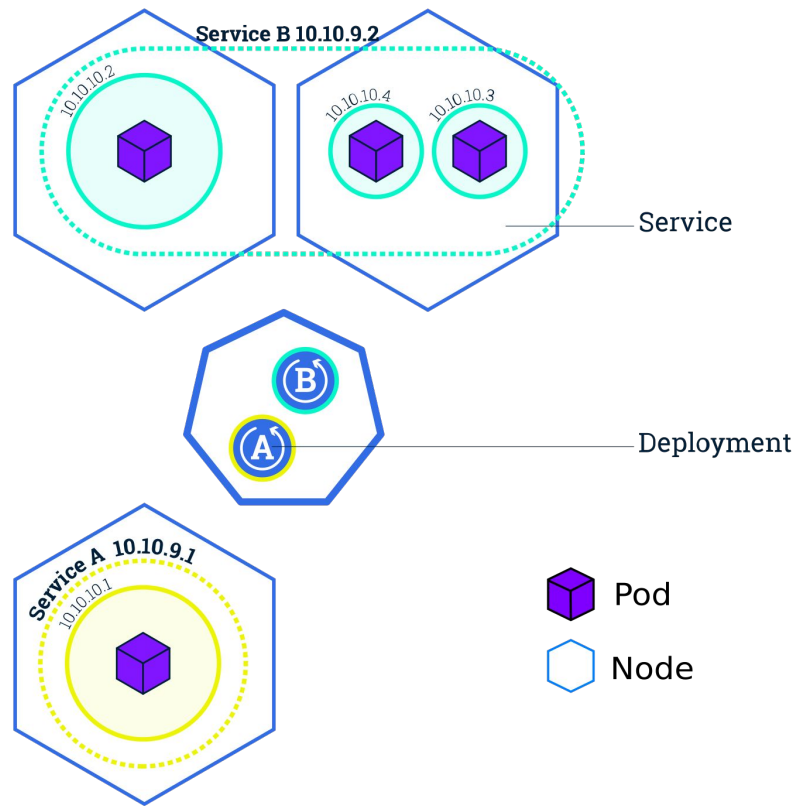# Kubernetes resources

- Pod

- Deployment, ReplicaSet
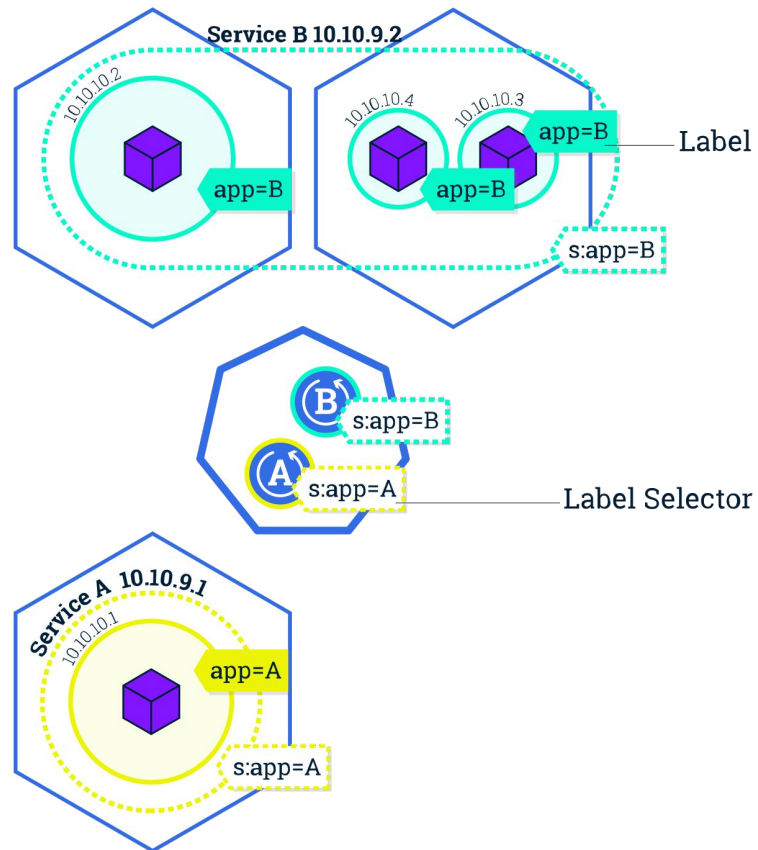
- Service

- 70+ built-in resources

Pod

10.10.10.1

10.10.10.2

10.10.10.3

10.10.10.4 —————— IP address

volume

containerized app

Pod 1

Pod 2

Pod 3

Pod 4

Deployment, ReplicaSet

Service B 10.10.9.2

10.10.10.2

10.10.10.4   10.10.10.3

Service

B

A

Deployment

Service A 10.10.9.1

10.10.10.1

Pod

Node

Service

Rolling update

Service A 10.3.250.236

10.0.0.5

10.0.2.4

10.0.2.5

Service

10.0.1.5

Deployment

Rolling update

Service A 10.3.250.236

new IP address

updated app

Service

10.0.0.5

10.0.0.6

10.0.2.4

10.0.2.5

Deployment

10.0.1.5

Rolling update

Rolling update

Service A 10.3.250.236

new IP address

updated app

10.0.2.6

10.0.2.7

10.0.0.6

Service

Deployment

A

10.0.1.6

Traffic from outside of the cluster
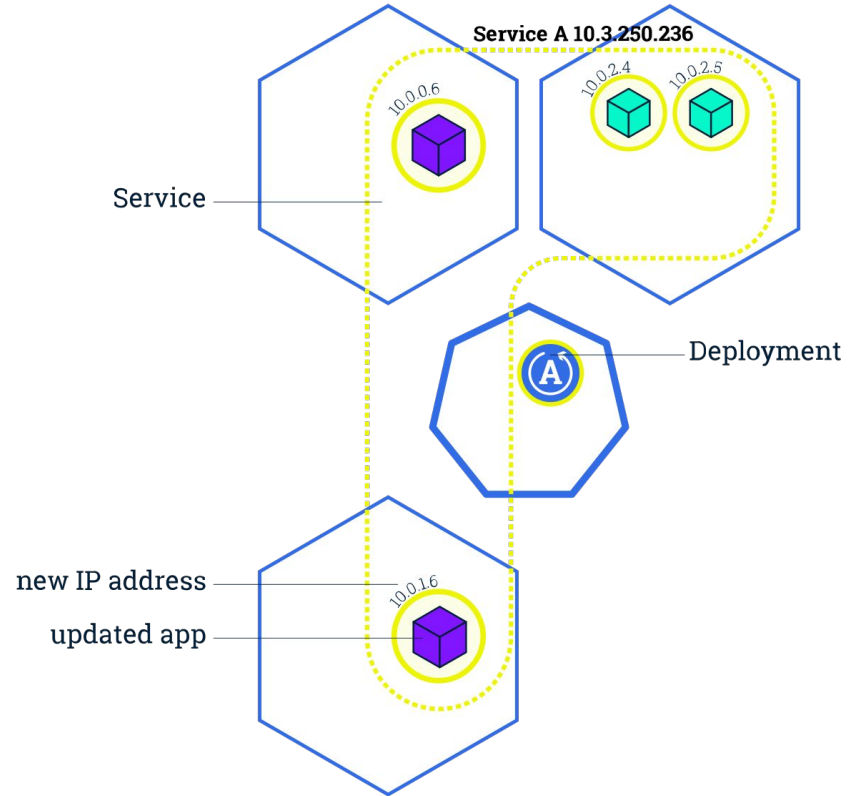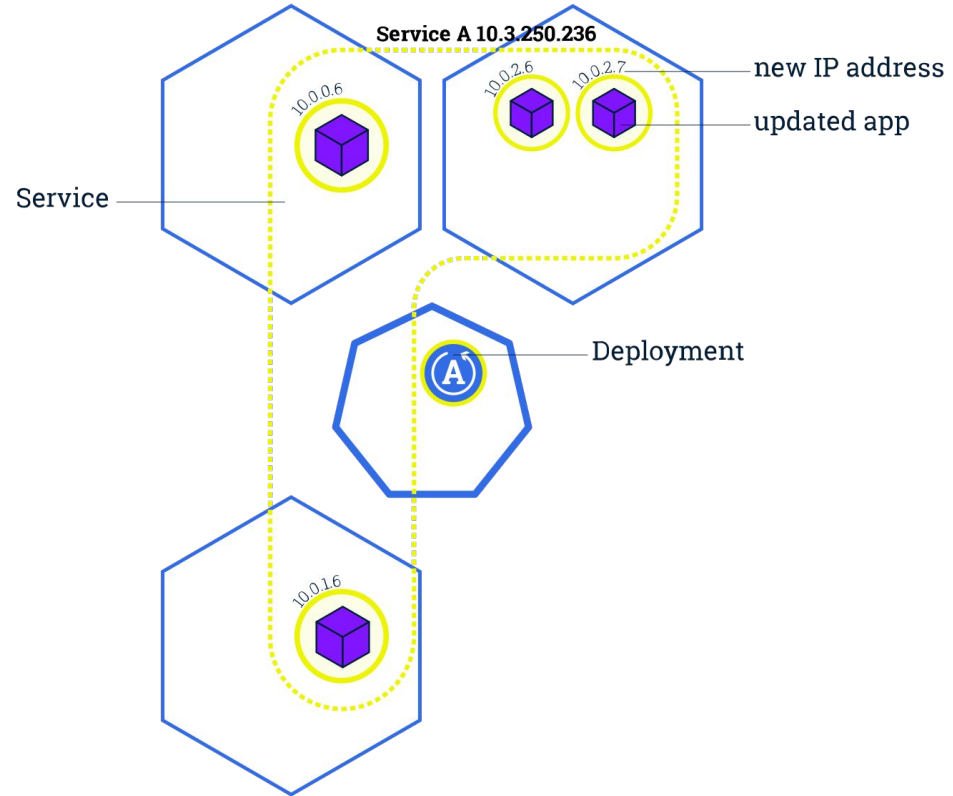
Cloud environment

Cloud Load Balancer

master   node   node   node
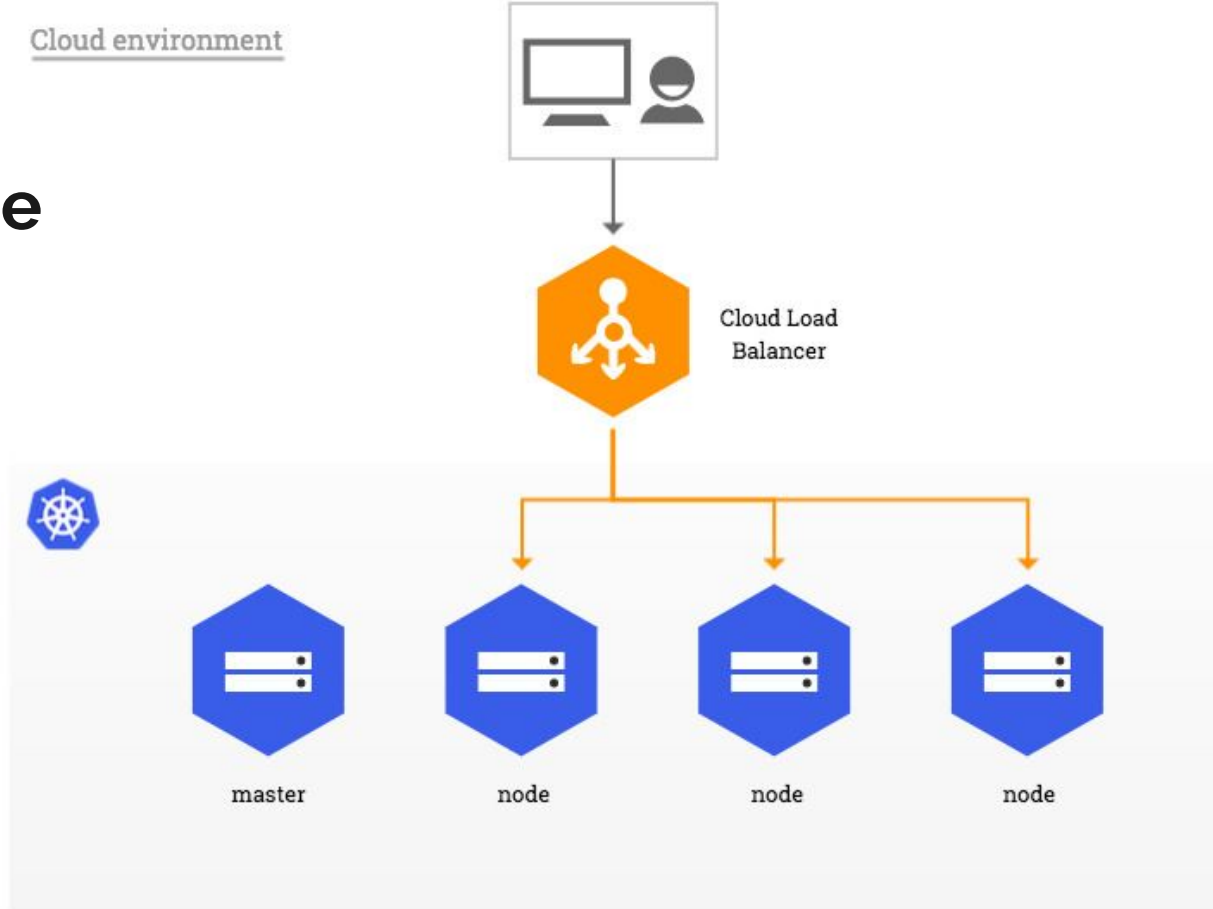
Example

- MiniKube used to run k8s locally

  - https://github.com/kubernetes/minikube

- K9S - Kubernetes CLI

  - https://github.com/derailed/k9s

- kubectl apply -f <filename>

- https://github.com/volfpe/s9y-k8s