ING DevSchool DevOps

Kubernetes

Trainers: Claudia Ciontu & Wouter Ligtenberg

May 2022

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Content

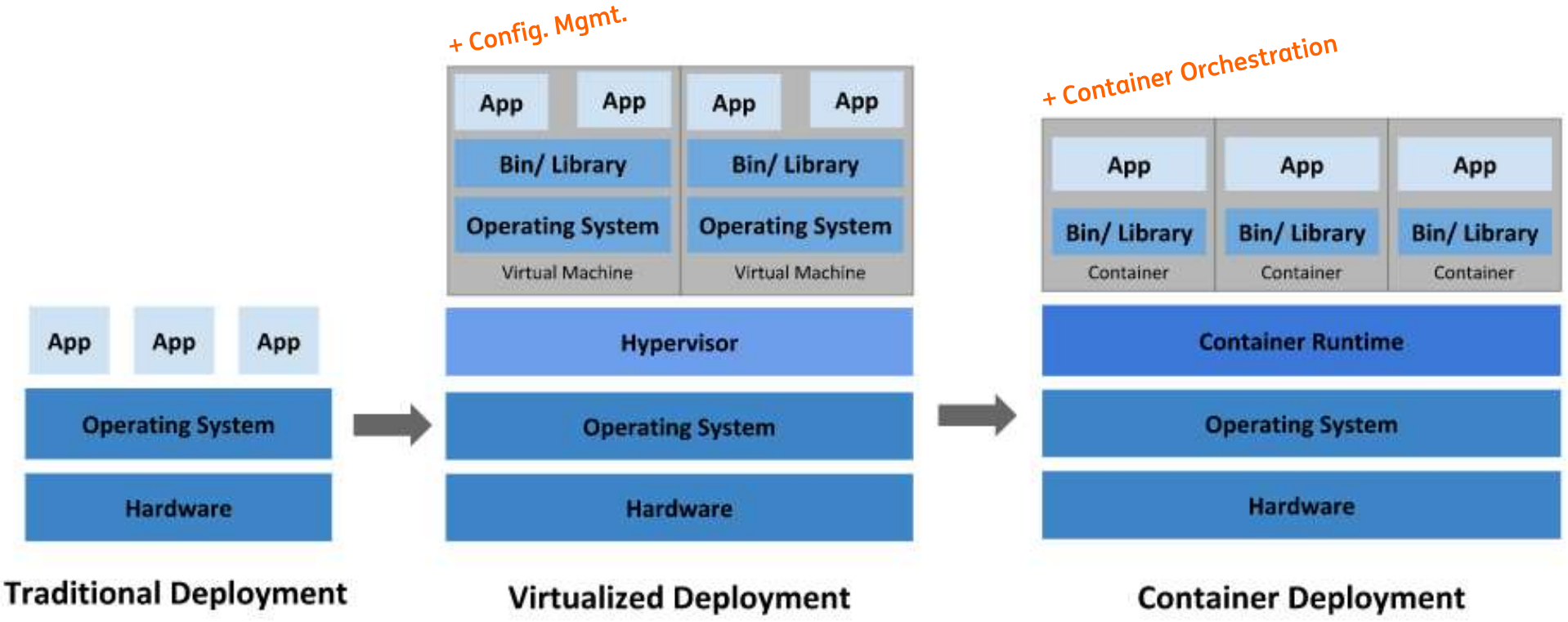
1. What is Kubernetes and why to use it
2. Cluster architecture
3. Kubernetes objects & resources
4. How to create a Kubernetes cluster
5. Let’s deploy an application

What is Kubernetes?

- open-source system for automating deployment, scaling, and mgmt. of containerized apps
- started by Google in 2014
- name originates from Greek = helmsman or pilot
- k8s - abbreviation derived by replacing the 8 letters between the "K" and the "s“
- written in Go

The evolution of operational service models

Pets vs. Cattle



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Advantages of adopting Kubernetes

From an Ops perspective

Common software concerns:

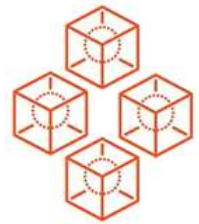
-Download
-Install/Uninstall
-License
-Trust
-Configuration
-Dependencies
-Start/Stop/Restart
-Update
-Security
...

Distribution
Installation
Operation

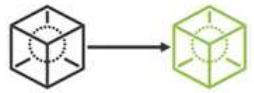
Images

Containers

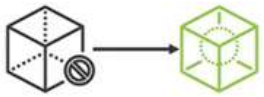
From a Dev perspective



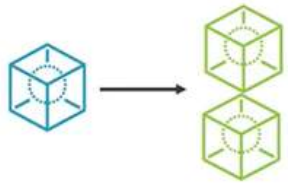
Orchestrate Containers



Zero-Downtime Deployments

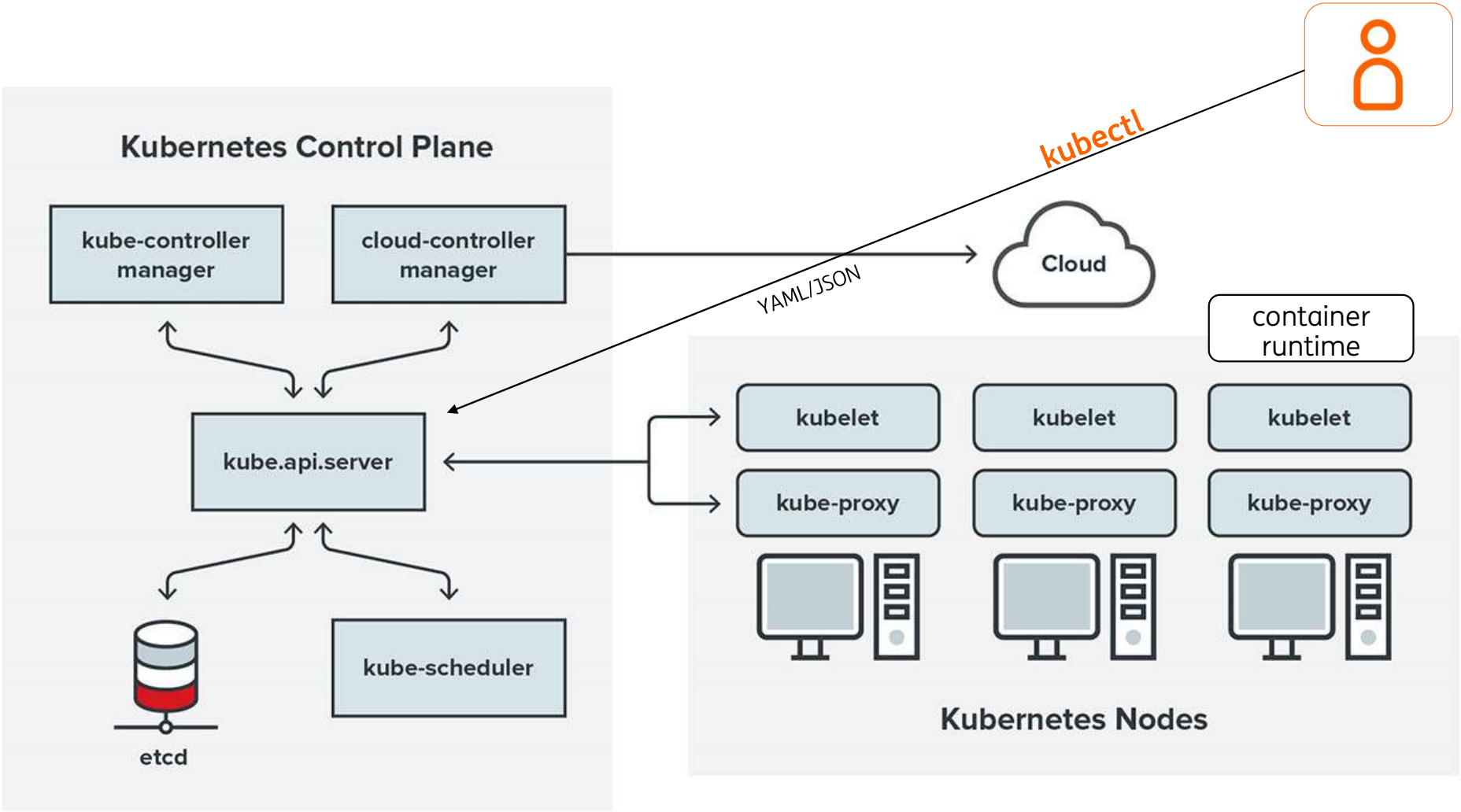


Self Healing (superpowers)



Scale Containers

Cluster architecture



K8s object mgmt.

Imperative

- Tell k8s what to do
- Ideal for learning
- kubectl + verb (run/create/delete)

Declarative

- Tell k8s what you want
- Ideal for automated deployments
- kubectl apply + YAML

kubectl Cheat Sheet: https://kubernetes.io/docs/reference/kubectl/cheatsheet/

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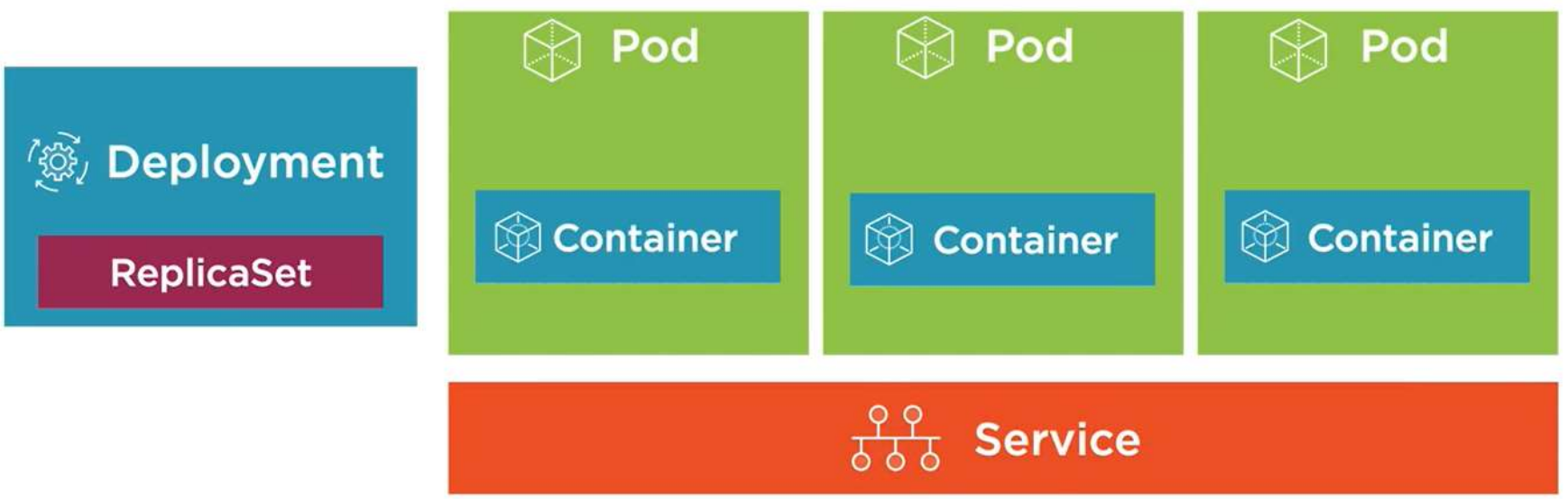
Kubernetes objects

Keywords



Namespace

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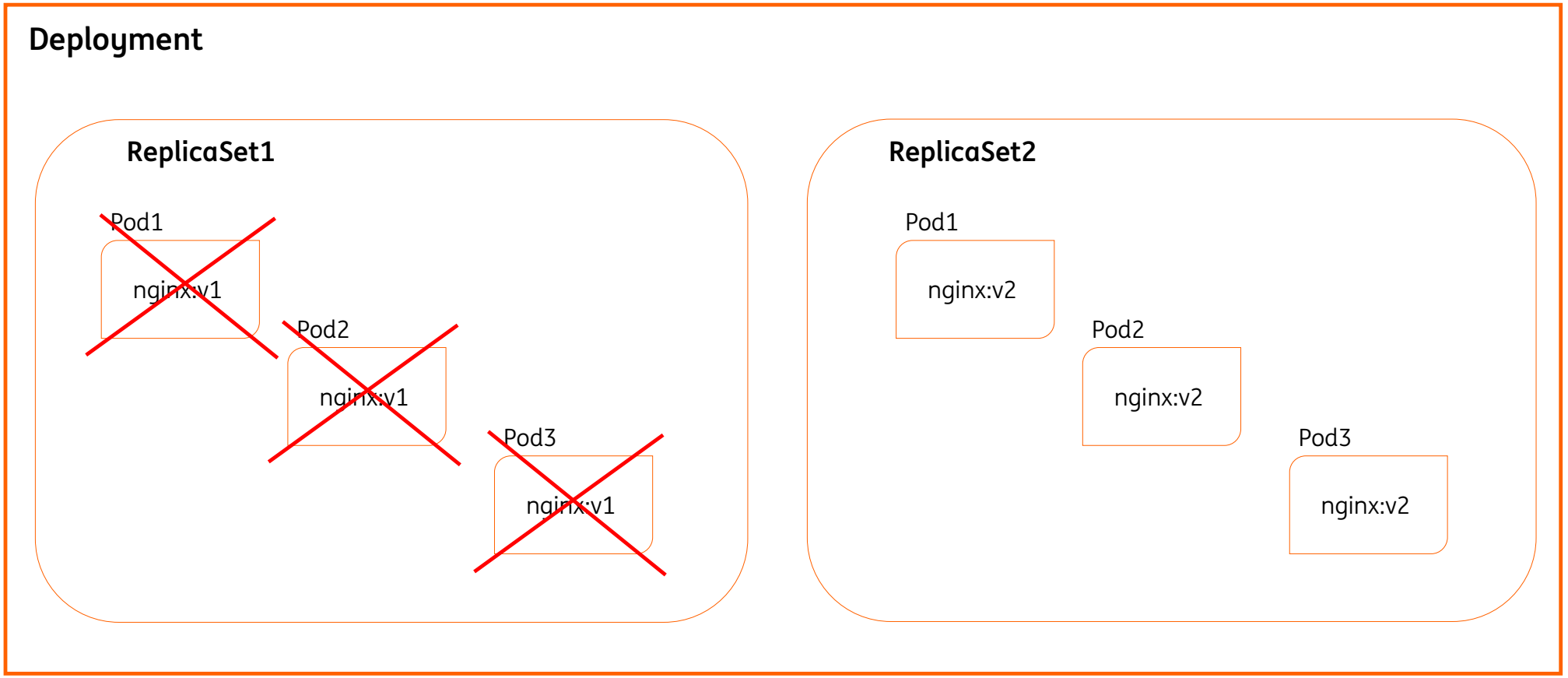
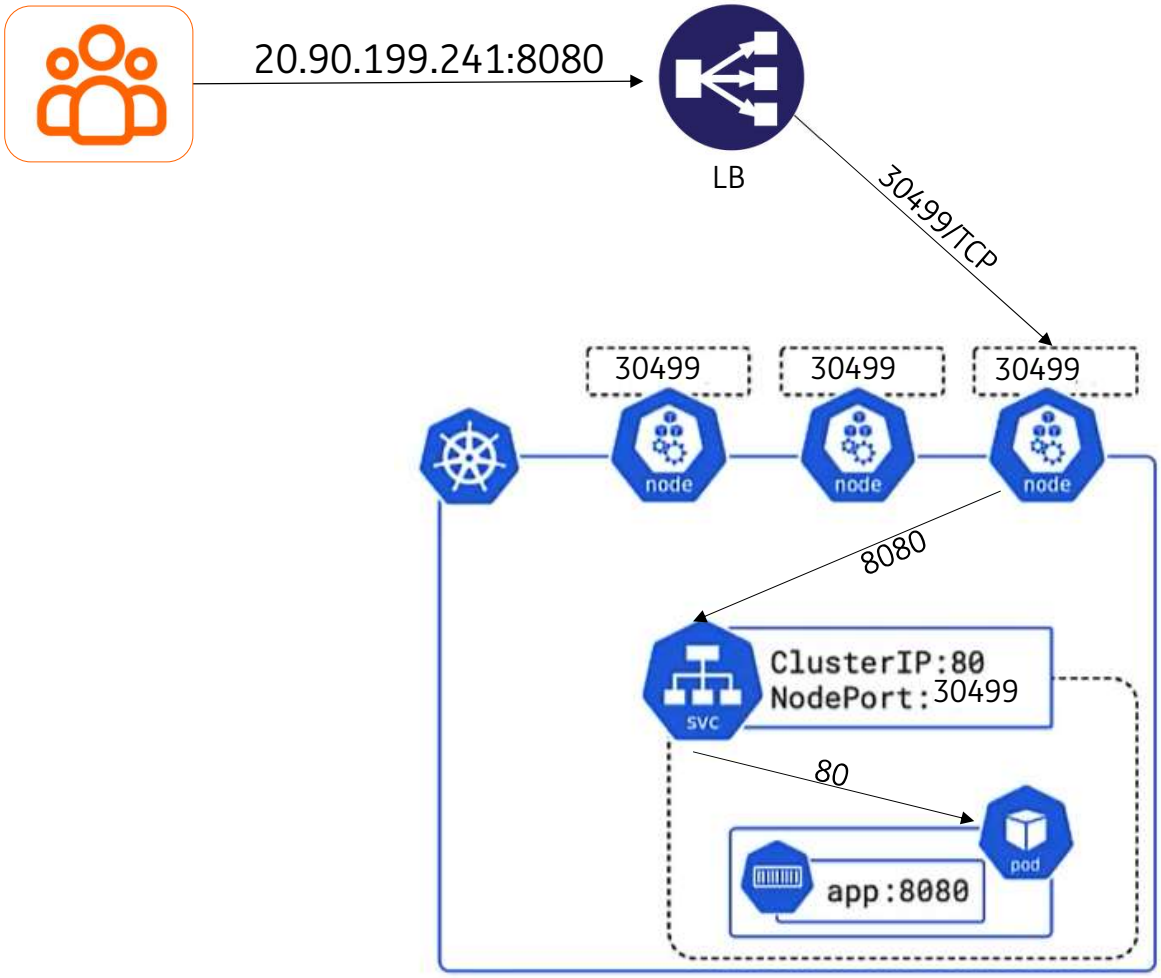
RollingUpdate deployment



Types of Kubernetes services

- ClusterIP
- NodePort
- LoadBalancer
- ExternalName

How does a service work?



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Bonus: Helm

The package manager for Kubernetes

- Helm is a tool for managing K8s packages called *charts*
- Helm charts help define & install even the most complex K8s apps
- Charts are easy to create, version & publish

How to create a Kubernetes cluster

Manually

- Using Minikube
- Using the Azure portal

Automatically

- Using Azure CLI
- Using Azure PowerShell
- ARM templates
- Terraform

Summary

What we learned

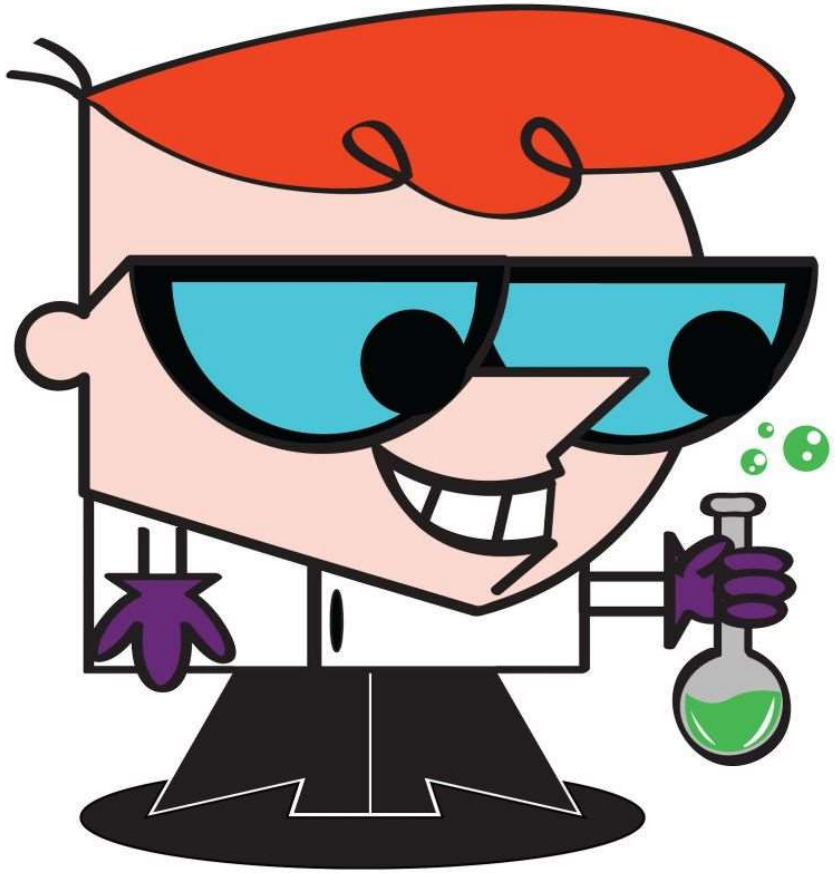
Kubernetes is a container orchestrator with a wide range of features

K8s clusters are comprised of one master node and a number of worker nodes

How to create a k8s cluster

How to work with k8s objects and create a deployment

Lab time!



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