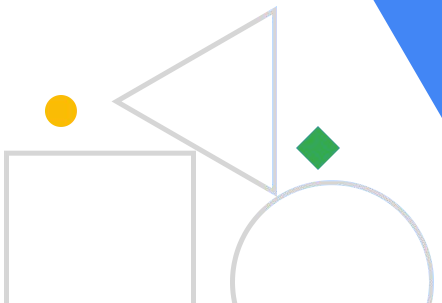
Introduction to Kubernetes

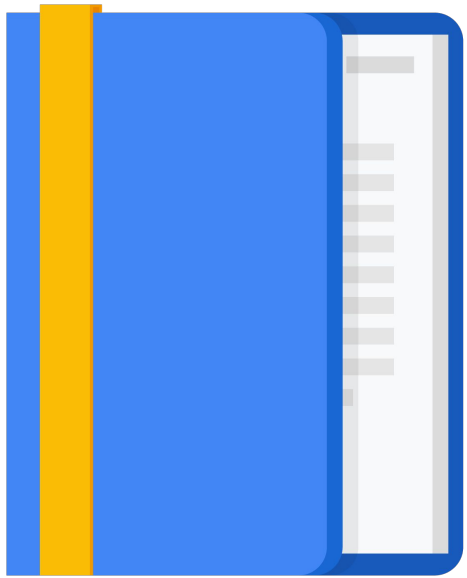


Agenda

What is Kubernetes

Why should I care

How does it work



What is Kubernetes?

Kubernetes is a platform for working with containers

- portable, open-source, **container-centric** management platform
- Built-in primitives for **deployments, scaling, monitoring, and more**
- Inspired by **Google's internal systems**

What is Kubernetes?

At its core Kubernetes gives three things:

- Deployment
- Scaling
- Monitoring

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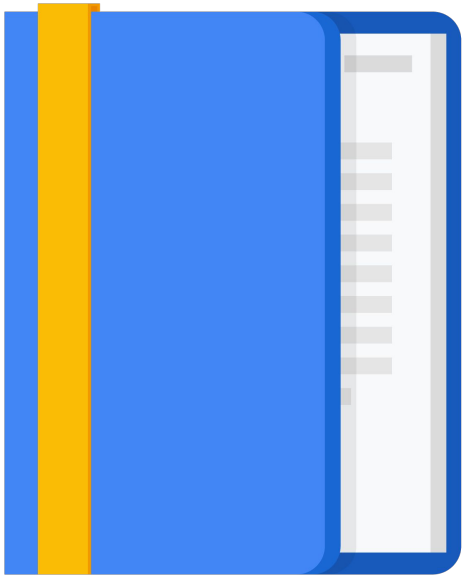
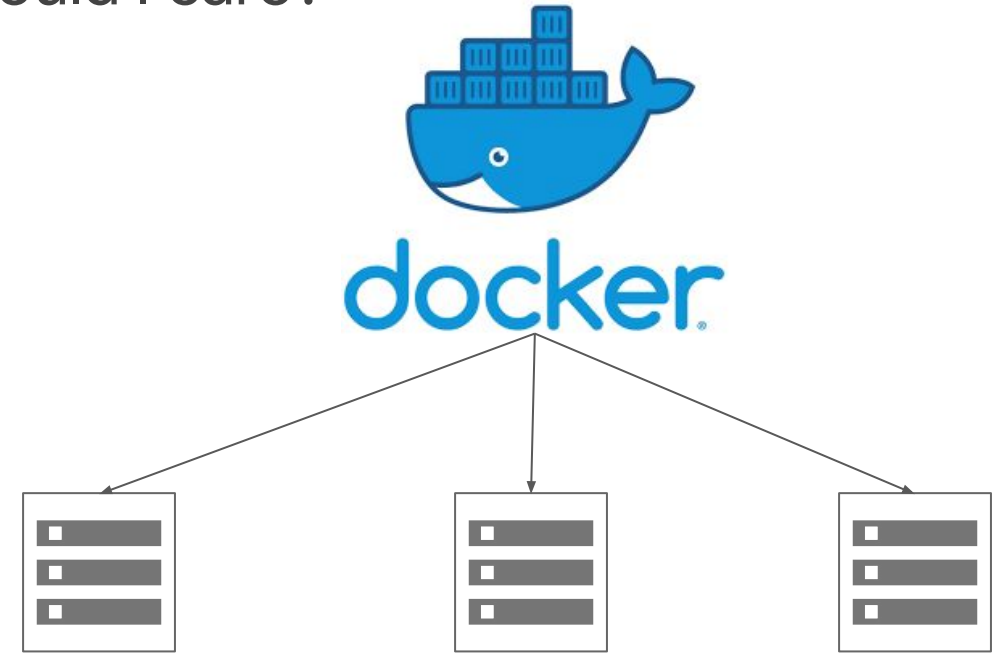
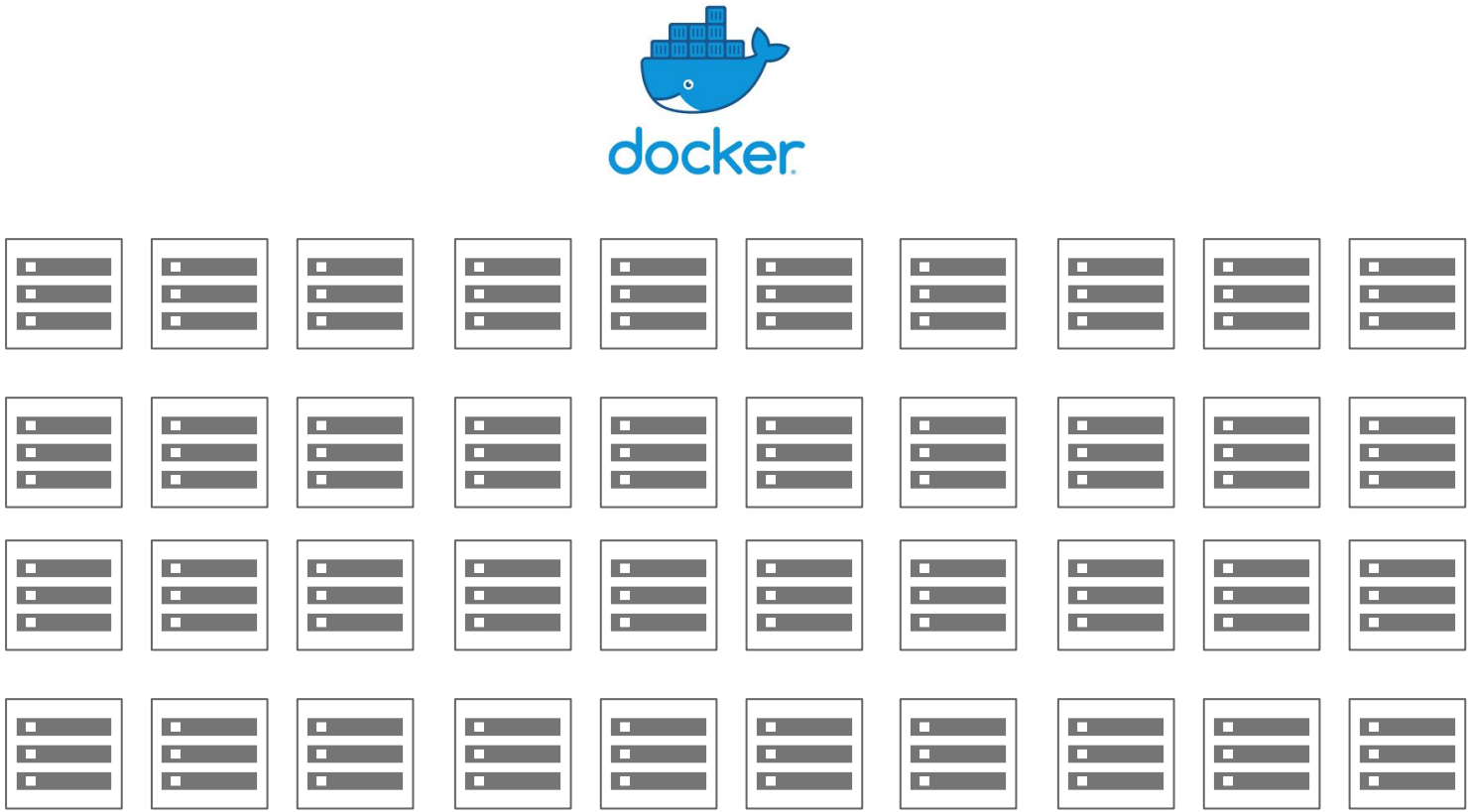


Why should I care?




docker

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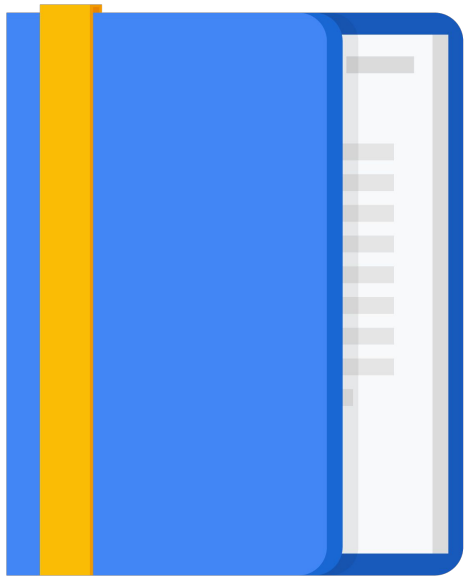

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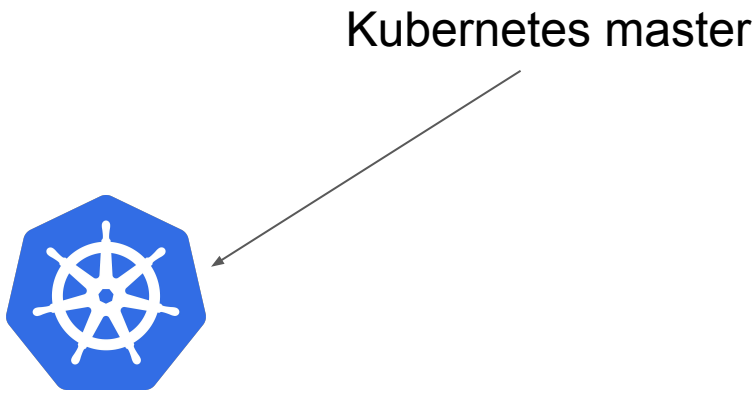

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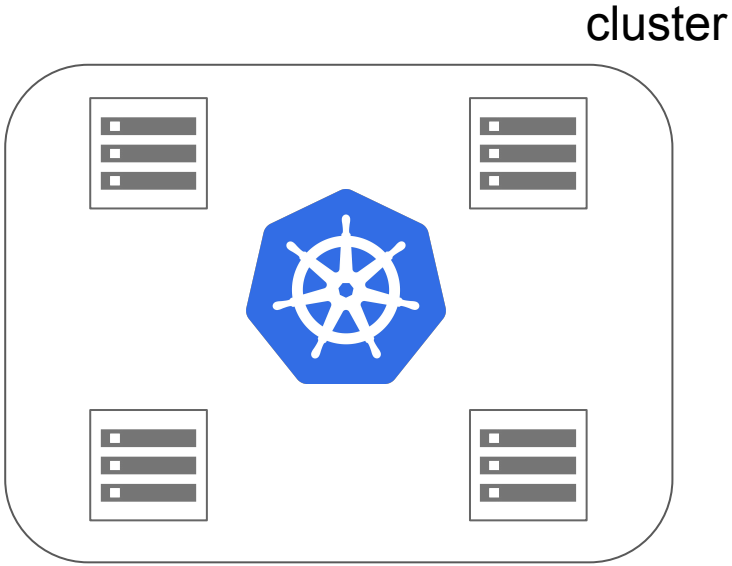

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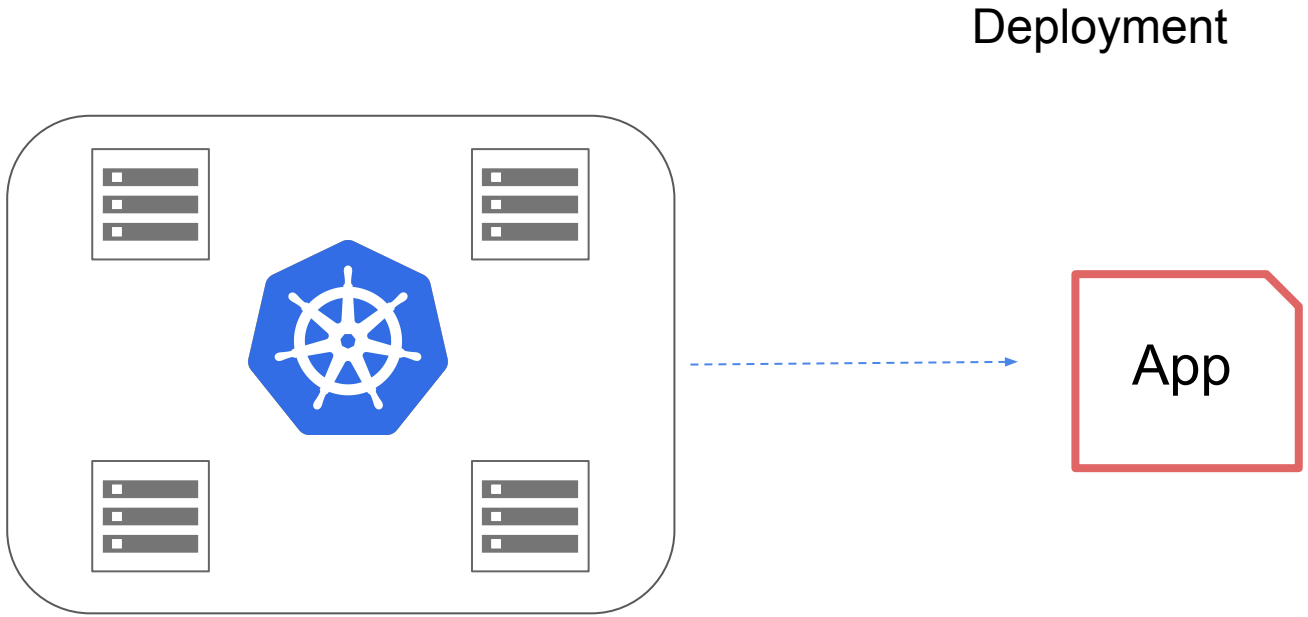
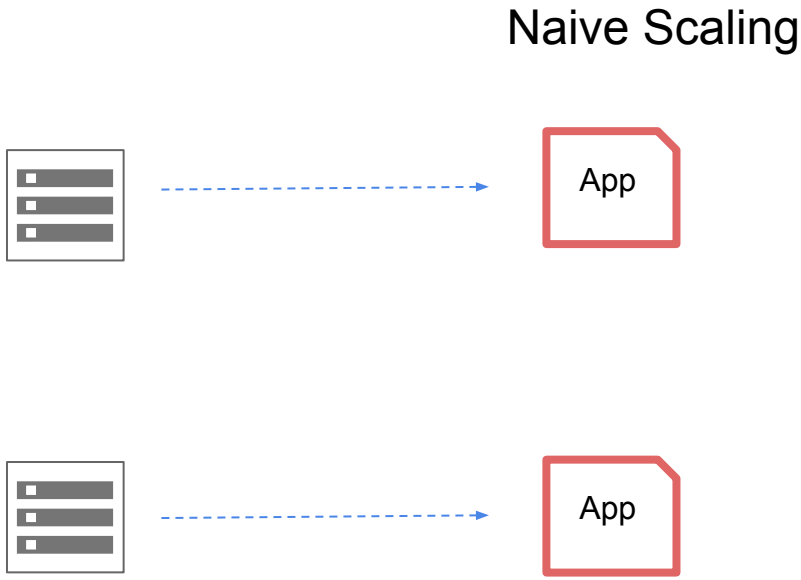


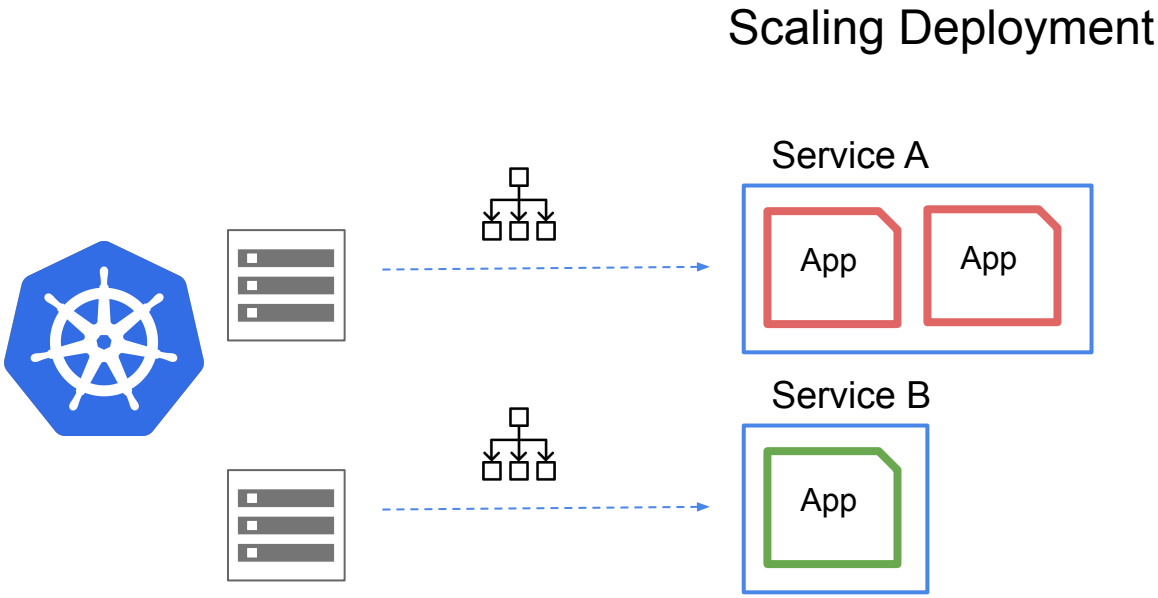
How does scaling work?

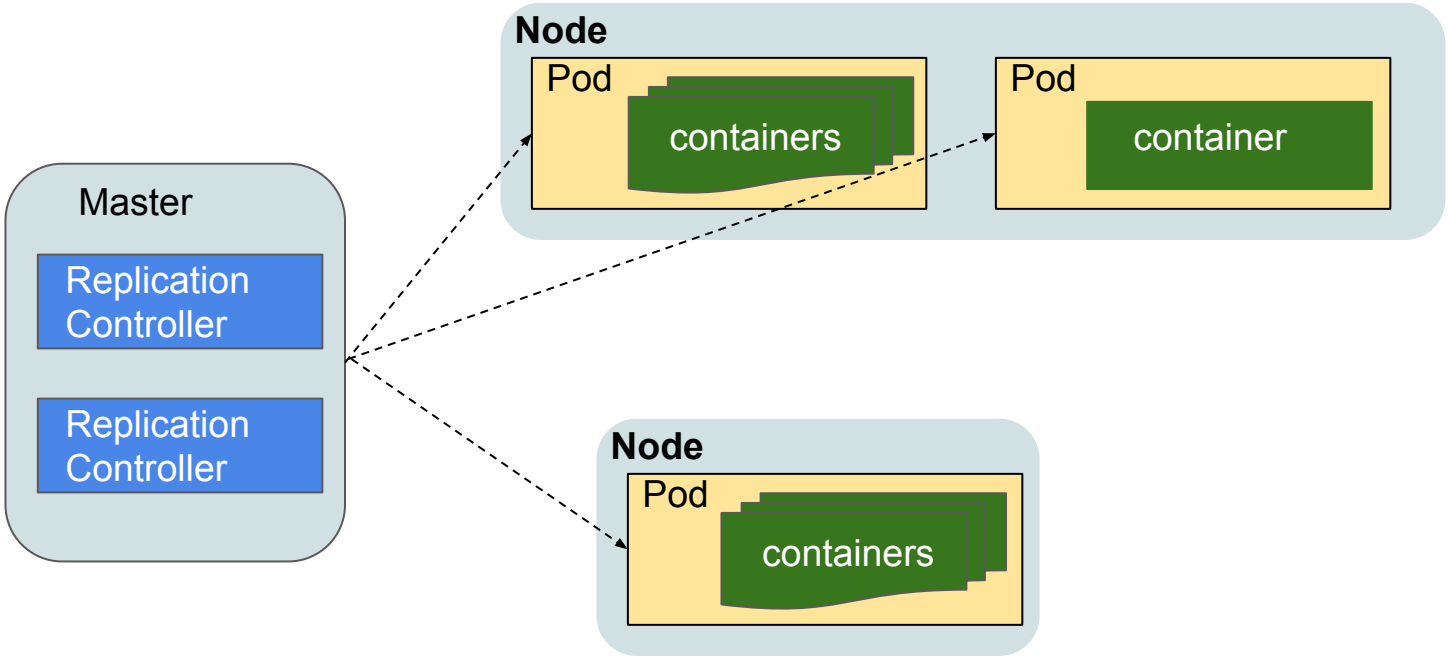


How does scaling work?

Scaling Deployment

How does scaling work?




Node
Pod
containers
Pod
container
Master
Replication Controller
Replication Controller
Node
Pod
containers

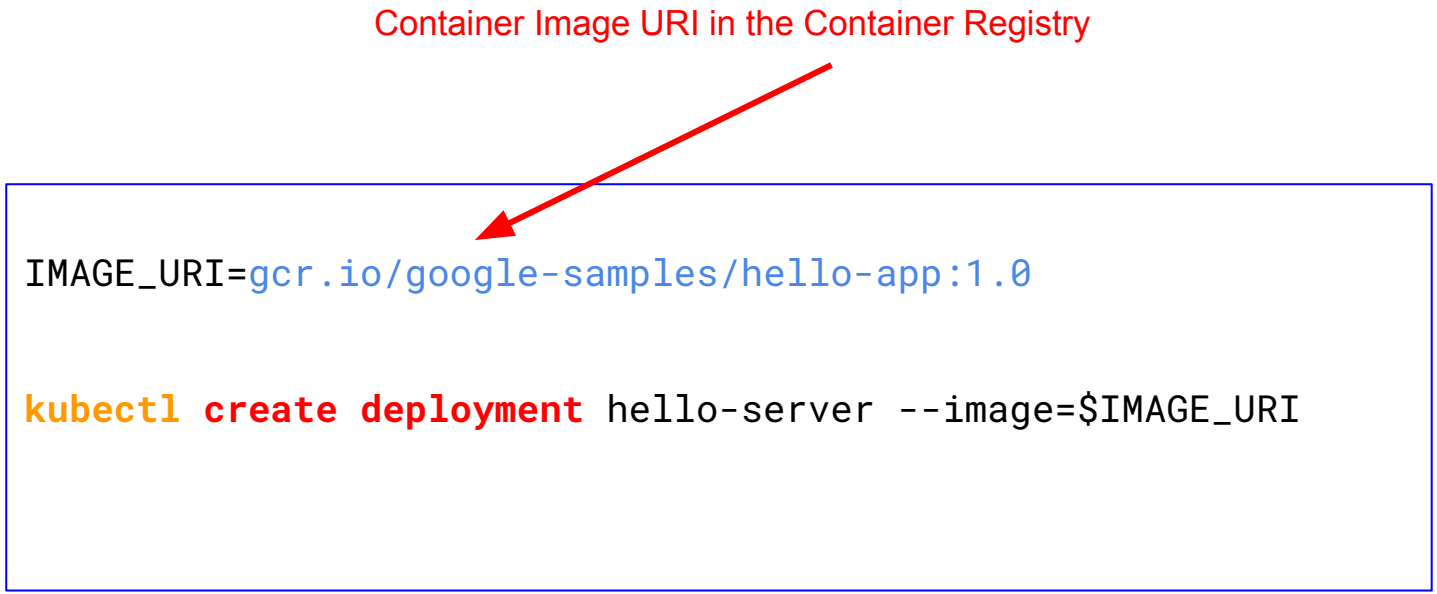
Creating a Kubernetes cluster on Google Cloud

```
gcloud container clusters create $CLUSTER_NAME
gcloud container clusters get-credentials $CLUSTER_NAME
```

```
!gcloud container clusters list
```

```
NAME         LOCATION       MASTER_VERSION   MASTER_IP       MACHINE_TYPE   NODE_VERSION      NUM_NODES  STATUS
asl-cluster  us-central1-a  1.16.13-gke.401  35.192.170.194  n1-standard-1  1.16.13-gke.401  3          RUNNING
```

Using kubectl to deploy a container



Creating a service to reach the deployed container

```
kubectl expose deployment hello-server --type=LoadBalancer --port 8080
```

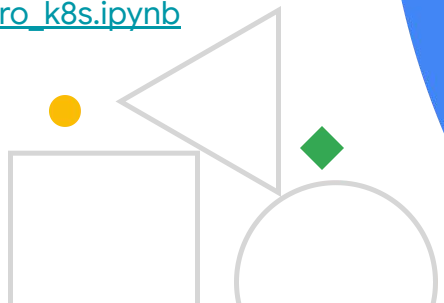
```
!kubectl get service
```

```
NAME           TYPE           CLUSTER-IP     EXTERNAL-IP   PORT(S)          AGE
hello-server   LoadBalancer   10.3.241.199   35.192.87.8   8080:31625/TCP   68s
kubernetes     ClusterIP      10.3.240.1     <none>        443/TCP          5m44s
```

Lab 1

In this lab, you get hands on practice with container creation and application deployment with GKE.

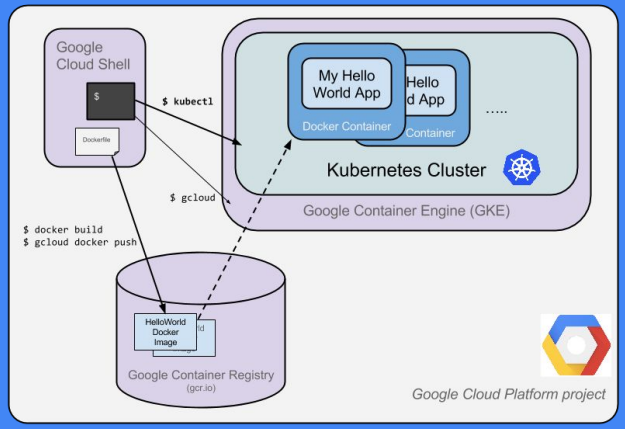
docker_and_kubernetes/labs/2_intro_k8s.ipynb



Lab 2 (Optional)

In this lab, you'll

- Create a Node.js server.
- Create a Docker container image.
- Create a container cluster.
- Create a Kubernetes pod.
- Scale up your services.



docker_and_kubernetes/labs/3_k8s_hello_node.ipynb

cloud.google.com