
April 10, 2019
SF Python Meetup
Learn Kubernetes (k8s)
the Fun and EASY way
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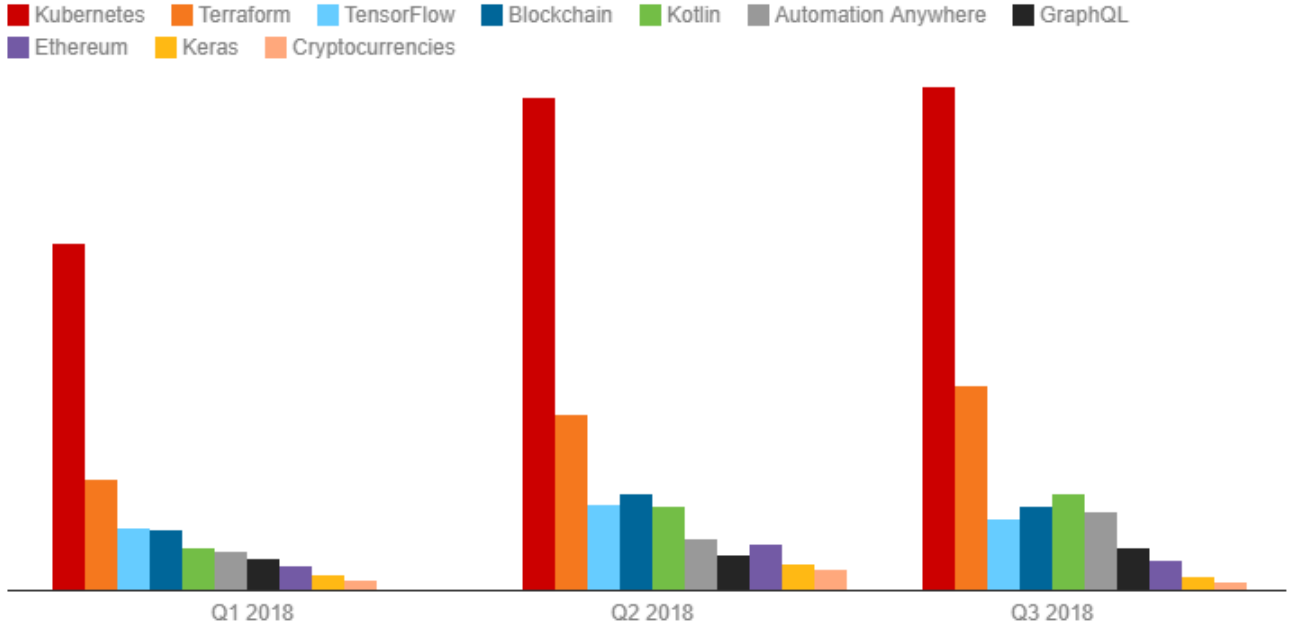
Who am I ?

- ~15 years at Sun Microsystems/Oracle
- ~4+ years at Wells Fargo Bank now
- Like to learn and publish a lot at my LinkedIn
- Learned Kubernetes the HARD way

Kubernetes is very important !

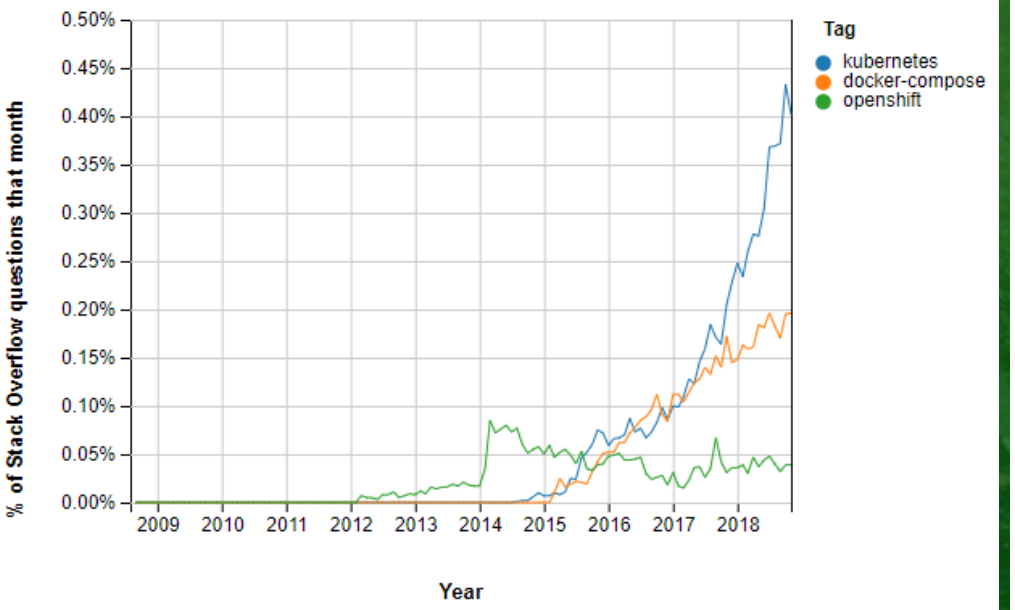
The Top Tech Skills of 2018

Recruiters and hiring managers want developers skilled in Kubernetes and Terraform, but upstart skills like Kotlin are also in high demand.

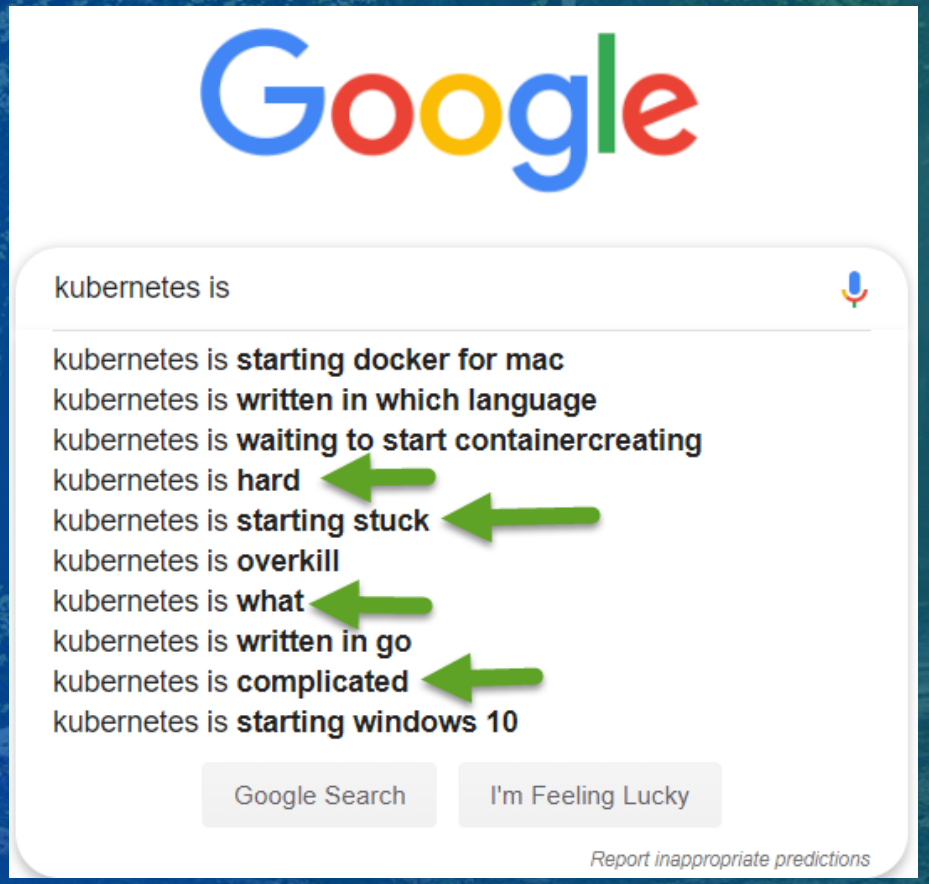


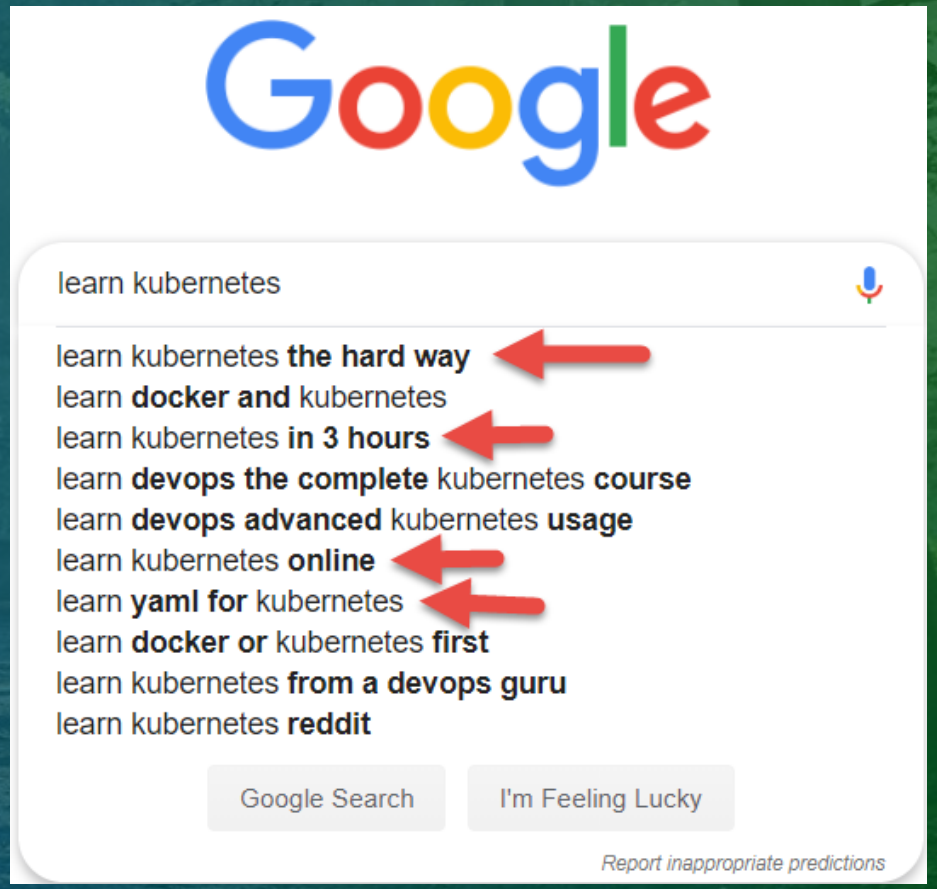
All data gathered via the Dice jobs database

Source: Dice



Kubernetes is what ?



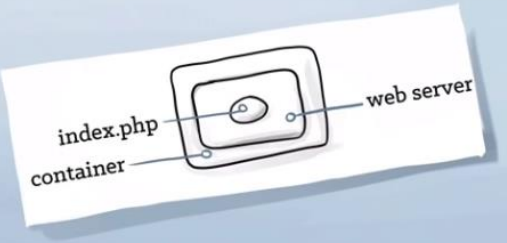


Learn it the EASY way ?

1/ YouTube – The Illustrated Children's Guide to Kubernetes (FUN)
https://youtu.be/4ht22ReBjno

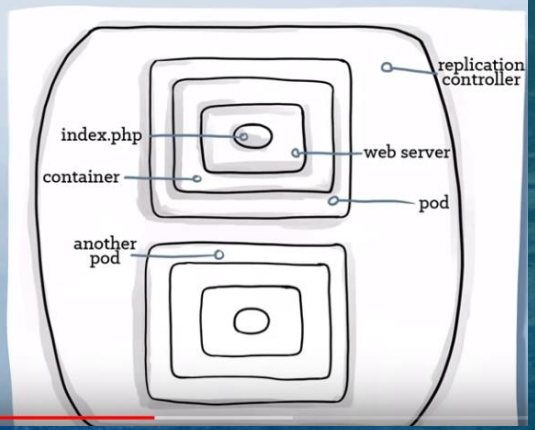
Containers

- It needs to be managed
- Networking is hard
- Containers must be scheduled, distributed, and load balanced
- And the data's got to persist *somewhere*



Replication Controllers

- 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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Learn it the EASY way ?

2/ Coursera course - Getting Started with Google Kubernetes Engine (Qwiklabs included) ~5 hours

https://www.coursera.org/learn/google-kubernetes-engine

Google Cloud

About **Syllabus** Reviews Instructors Enrollment Options FAQ

2 hours to complete

Kubernetes Basics

Deploy an application with microservices in a Kubernetes cluster.

4 videos (Total 14 min), 2 quizzes SEE ALL

1 hour to complete

Deploying to Kubernetes

Create and manage Kubernetes deployments.

3 videos (Total 7 min), 2 quizzes SEE ALL

2 hours to complete

Creating a Continuous Delivery Pipeline

Build a continuous delivery pipeline.

3 videos (Total 8 min), 3 quizzes SEE ALL

3 videos

Deployments and Rolling Updates 4m

Canary and Blue-Green Deployments 2m

Deploying to Kubernetes Summary 7s

1 practice exercise

Deploying to Kubernetes Quiz 6m

2 hours to complete

Creating a Continuous Delivery Pipeline

Build a continuous delivery pipeline.

3 videos (Total 8 min), 3 quizzes SEE LESS

3 videos

Creating a Continuous Delivery Pipeline - Part 1 41s

Creating a Continuous Delivery Pipeline - Part 2 6m

Course Summary 25s

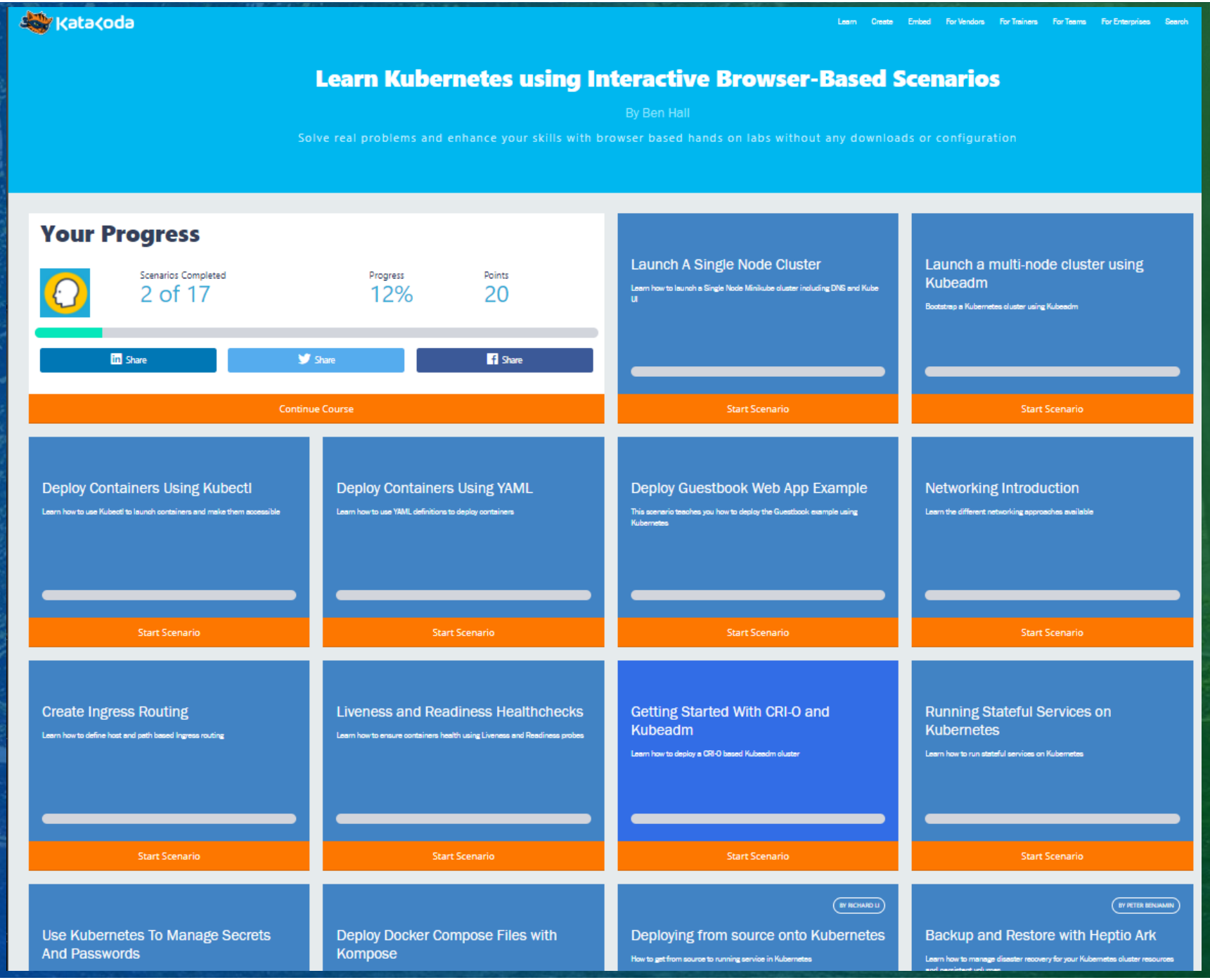
Learn it the EASY way ?

3/ Hands on labs – (total 17 labs x 10min each ~ 3 hours)

(I hear and I forget. I see and I remember. I do and I understand. – Confucius)

(I hear and I forget. I see and I still forget!– Walter Lee)

https://www.katacoda.com/courses/kubernetes



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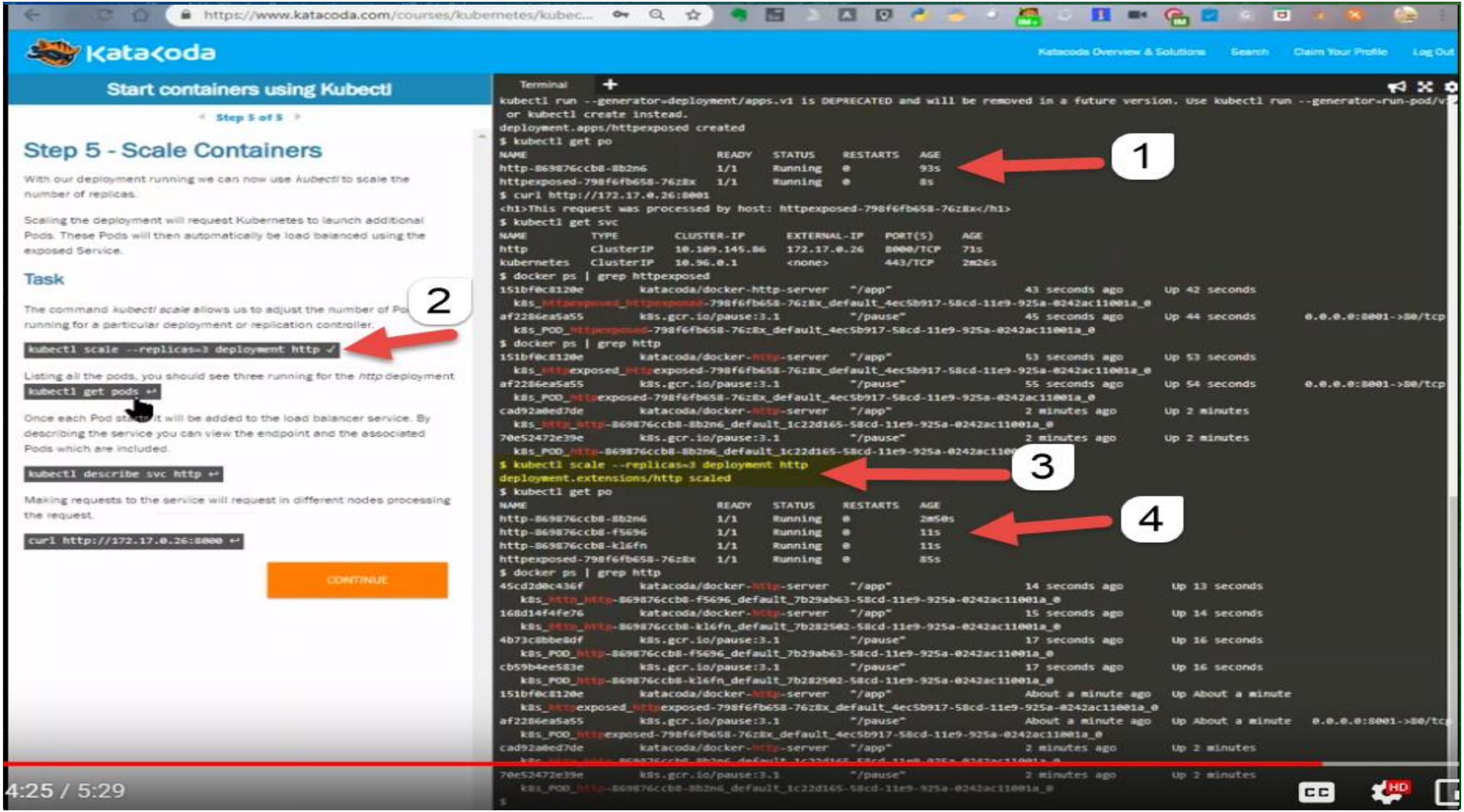
https://www.katacoda.com/courses/kubernetes/kubec...
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Start containers using Kubectl
Step 5 of 5
Step 5 - Scale Containers
With our deployment running we can now use kubectl to scale the number of replicas.
Scaling the deployment will request Kubernetes to launch additional Pods. These Pods will then automatically be load balanced using the exposed Service.
Task
The command kubectl scale allows us to adjust the number of Po running for a particular deployment or replication controller.
kubectl scale --replicas=3 deployment http
Listing all the pods, you should see three running for the http deployment
kubectl get pods
Once each Pod st it will be added to the load balancer service. By describing the service you can view the endpoint and the associated Pods which are included.
kubectl describe svc http
Making requests to the service will request in different nodes processing the request.
curl http://172.17.0.26:8000
CONTINUE
2
Terminal
kubectl run --generator=deployment/apps.v1 is DEPRECATED and will be removed in a future version. Use kubectl run --generator=run-pod/v1 or kubectl create instead.
deployment.apps/httpexposed created
$ kubectl get po
NAME READY STATUS RESTARTS AGE
http-869876ccb8-8b2n6 1/1 Running 0 93s
httpexposed-798f6fb658-76z8x 1/1 Running 0 8s
1
$ curl http://172.17.0.26:8001
<h1>This request was processed by host: httpexposed-798f6fb658-76z8x</h1>
$ kubectl get svc
NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
http ClusterIP 10.109.145.86 172.17.0.26 8000/TCP 71s
kubernetes ClusterIP 10.96.0.1 <none> 443/TCP 2m26s
$ docker ps | grep httpexposed
151bf0c8120e katacoda/docker-http-server "/app" 43 seconds ago Up 42 seconds
k8s_httpexposed_httpexposed-798f6fb658-76z8x_default_4ec5b917-58cd-11e9-925a-0242ac11001a_0
af2286ea5a55 k8s.gcr.io/pause:3.1 "/pause" 45 seconds ago Up 44 seconds 0.0.0.0:8001->80/tcp
k8s_POD_httpexposed-798f6fb658-76z8x_default_4ec5b917-58cd-11e9-925a-0242ac11001a_0
$ docker ps | grep http
151bf0c8120e katacoda/docker-http-server "/app" 53 seconds ago Up 53 seconds
k8s_httpexposed_httpexposed-798f6fb658-76z8x_default_4ec5b917-58cd-11e9-925a-0242ac11001a_0
af2286ea5a55 k8s.gcr.io/pause:3.1 "/pause" 55 seconds ago Up 54 seconds 0.0.0.0:8001->80/tcp
k8s_POD_httpexposed-798f6fb658-76z8x_default_4ec5b917-58cd-11e9-925a-0242ac11001a_0
cad92a0ed7de katacoda/docker-http-server "/app" 2 minutes ago Up 2 minutes
k8s_http_http-869876ccb8-8b2n6_default_1c22d165-58cd-11e9-925a-0242ac11001a_0
70e52472e39e k8s.gcr.io/pause:3.1 "/pause" 2 minutes ago Up 2 minutes
k8s_POD_http-869876ccb8-8b2n6_default_1c22d165-58cd-11e9-925a-0242ac110
$ kubectl scale --replicas=3 deployment http
3
deployment.extensions/http scaled
$ kubectl get po
NAME READY STATUS RESTARTS AGE
http-869876ccb8-8b2n6 1/1 Running 0 2m50s
http-869876ccb8-f5696 1/1 Running 0 11s
http-869876ccb8-kl6fn 1/1 Running 0 11s
httpexposed-798f6fb658-76z8x 1/1 Running 0 85s
4
$ docker ps | grep http
45cd2d0c436f katacoda/docker-http-server "/app" 14 seconds ago Up 13 seconds
k8s_http_http-869876ccb8-f5696_default_7b29ab63-58cd-11e9-925a-0242ac11001a_0
168d14f4fe76 katacoda/docker-http-server "/app" 15 seconds ago Up 14 seconds
k8s_http_http-869876ccb8-kl6fn_default_7b282502-58cd-11e9-925a-0242ac11001a_0
4b73c8bbe8df k8s.gcr.io/pause:3.1 "/pause" 17 seconds ago Up 16 seconds
k8s_POD_http-869876ccb8-f5696_default_7b29ab63-58cd-11e9-925a-0242ac11001a_0
cb59b4ee583e k8s.gcr.io/pause:3.1 "/pause" 17 seconds ago Up 16 seconds
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151bf0c8120e katacoda/docker-http-server "/app" About a minute ago Up About a minute
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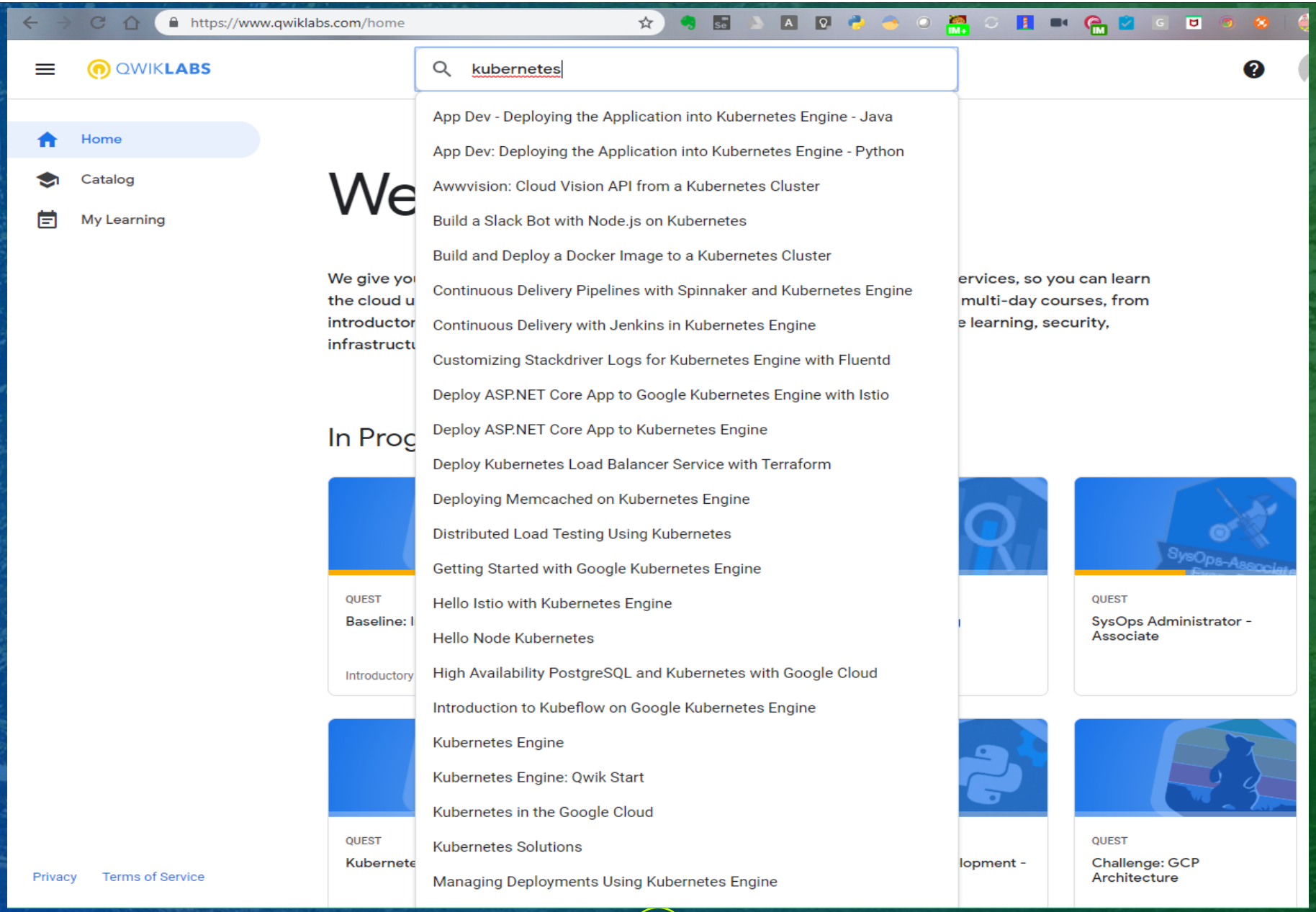
af2286ea5a55 k8s.gcr.io/pause:3.1 "/pause" About a minute ago Up About a minute 0.0.0.0:8001->80/tcp
k8s_POD_httpexposed-798f6fb658-76z8x_default_4ec5b917-58cd-11e9-925a-0242ac11001a_0
cad92a0ed7de katacoda/docker-http-server "/app" 2 minutes ago Up 2 minutes
70e52472e39e k8s.gcr.io/pause:3.1 "/pause" 2 minutes ago Up 2 minutes
k8s_POD_http-869876ccb8-8b2n6_default_1c22d165-58cd-11e9-925a-0242ac11001a_0
$
4:25 / 5:29
CC
HD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My Learning
App Dev - Deploying the Application into Kubernetes Engine - Java
App Dev: Deploying the Application into Kubernetes Engine - Python
Awwvision: Cloud Vision API from a Kubernetes Cluster
Build a Slack Bot with Node.js on Kubernetes
Build and Deploy a Docker Image to a Kubernetes Cluster
Continuous Delivery Pipelines with Spinnaker and Kubernetes Engine
Continuous Delivery with Jenkins in Kubernetes Engine
Customizing Stackdriver Logs for Kubernetes Engine with Fluentd
Deploy ASP.NET Core App to Google Kubernetes Engine with Istio
Deploy ASP.NET Core App to Kubernetes Engine
Deploy Kubernetes Load Balancer Service with Terraform
Deploying Memcached on Kubernetes Engine
Distributed Load Testing Using Kubernetes
Getting Started with Google Kubernetes Engine
Hello Istio with Kubernetes Engine
Hello Node Kubernetes
High Availability PostgreSQL and Kubernetes with Google Cloud
Introduction to Kubeflow on Google Kubernetes Engine
Kubernetes Engine
Kubernetes Engine: Qwik Start
Kubernetes in the Google Cloud
Kubernetes Solutions
Managing Deployments Using Kubernetes Engine
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References

https://insights.stackoverflow.com/trends?tags=kubernetes%2Cdocker-compose%2Copenshift

https://insights.dice.com/2019/01/02/top-tech-skills-2018-kotlin-kubernetes/

https://www.coursera.org/learn/google-kubernetes-engine (good intro course)

https://youtu.be/4ht22ReBjno (The Illustrated Children's Guide to Kubernetes)

https://www.katacoda.com/courses/kubernetes (17 hands on labs)

https://youtu.be/TKajx7-YNoM (my demo -Learn Kubernetes the EASY way part 2)

https://www.qwiklabs.com/catalog?keywords=kubernetes (many labs , need $)

THANK YOU!

@WalterLee16