

K8s in the Cloud

Google Kubernetes Engine on Google Cloud Platform

Simply start with 300\$ for a new registration.

<https://console.cloud.google.com/kubernetes>

Install Google Cloud SDK and initialize

<https://cloud.google.com/sdk/install>

<https://cloud.google.com/sdk/docs/initializing>

```
gcloud init
```

Create a K8s Cluster

First you need to create a new project and then start creation a cluster.

```
gcloud container clusters create my-cluster
```

Then just get the credentials and play around with your fresh K8s cluster

```
gcloud container clusters get-credentials my-cluster --zone europe-west3-c --  
project code-and-play
```

```
kubectl get all
```

Install Istio

see also: <https://istio.io/docs/setup/kubernetes/quick-start/>

```
kubectl create clusterrolebinding cluster-admin-binding --  
clusterrole=cluster-admin --user=$(gcloud config get-value core/account)
```

```
// Install Istio's Custom Resource Definitions  
cd $ISTIO_HOME  
kubectl apply -f install/kubernetes/helm/istio/templates/crds.yaml
```

```
// Deploy Istio

### install istio FULL DEMO
kubectl apply -f install/kubernetes/istio-demo.yaml

### install istio SMALL Setup
>> run in WSL!
cd /mnt/c/Progs/istio-1.0.4

helm template install/kubernetes/helm/istio --name istio --namespace istio-
system \
  --set security.enabled=false \
  --set ingress.enabled=false \
  --set gateways.istio-ingressgateway.enabled=true \
  --set gateways.istio-egressgateway.enabled=false \
  --set galley.enabled=false \
  --set sidecarInjectorWebhook.enabled=true \
  --set mixer.enabled=false \
  --set prometheus.enabled=true \
  --set grafana.enabled=true \
  --set global.proxy.envoyStatsd.enabled=false \
  --set pilot.sidecar=false > $HOME/istio-minimal.yaml

>> namespace definition was missing in renderd template istio-minimal.yaml, I
added:
...
apiVersion: v1
kind: Namespace
metadata:
  name: istio-system
  labels:
    istio-injection: disabled
---
...

kubectl apply -f istio-minimal.yaml

// Observe how your Istio is starting up
kubectl get all -n istio-system
```

You can also check this in <https://console.cloud.google.com/kubernetes/workload>

Google Cloud Platform Code and Play

Kubernetes Engine

Workloads REFRESH + DEPLOY

Workloads are deployable units of computing that can be created and managed in a cluster.

Is system object : False Filter workloads Columns

Name ^	Status	Type	Pods	Namespace	Cluster
grafana	OK	Deployment	1/1	istio-system	service
istio-citadel	OK	Deployment	1/1	istio-system	service
istio-cleanup-secrets	OK	Job	0/0	istio-system	service
istio-egressgateway	OK	Deployment	1/1	istio-system	service
istio-galley	OK	Deployment	1/1	istio-system	service
istio-grafana-post-install	OK	Job	0/0	istio-system	service
istio-ingressgateway	OK	Deployment	1/1	istio-system	service
istio-pilot	OK	Deployment	1/1	istio-system	service
istio-policy	OK	Deployment	1/1	istio-system	service
istio-security-post-install	OK	Job	0/0	istio-system	service
istio-sidecar-injector	OK	Deployment	1/1	istio-system	service
istio-telemetry	OK	Deployment	1/1	istio-system	service
istio-tracing	OK	Deployment	1/1	istio-system	service
prometheus	OK	Deployment	1/1	istio-system	service
servicegraph	OK	Deployment	1/1	istio-system	service

Rows per page: 50 1 - 15 of 15

And you overall Cloud status at <https://console.cloud.google.com/home/dashboard>

Google Cloud Platform Code and Play

Home Dashboard ACTIVITY CUSTOMIZE

Project info

Project name: Code and Play

Project ID: code-and-play

Project number: 566818502618

Go to project settings

Resources

Compute Engine: 3 instances

Trace

No trace data from the past 7 days

Get started with Stackdriver Trace

Getting Started

Enable APIs and get credentials like keys

Deploy a prebuilt solution

Add dynamic logging to a running application

Compute Engine

CPU (%)

Instance/cpu utilization: 0.314

Go to the Compute Engine dashboard

APIs

Requests (requests/sec)

API/request_count/consumer_api/REDUCE_SUM(code-and-play)

Google Cloud Platform status

All services normal

Go to Cloud status dashboard

Billing

Estimated charges: EUR 43.00

For the billing period Dec 1 - 7, 2018

View detailed charges

Error Reporting

No sign of any errors. Have you set up Error Reporting?

Learn how to set up Error Reporting

News

ClearDATA: Running Forseti the serverless way

17 hours ago

Workforce segmentation in the new era of cloud workers

17 hours ago

Bringing Smart Reply to Hangouts Chat

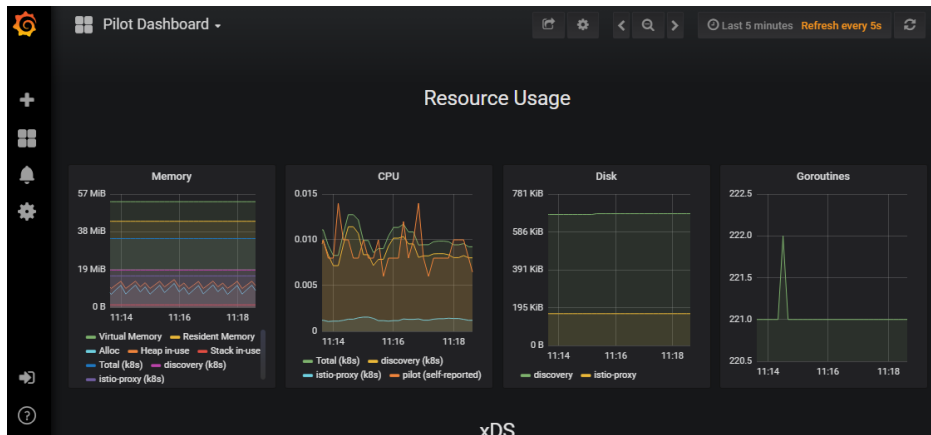
17 hours ago

Read all news

Access Grafana

Istio contains also some tools, e.g. Grafana for monitoring. They are only accessible cluster internal by default. You can access them via kube proxy or port forwarding.

```
// Do a port forwarding to access Grafana via http://localhost:3000
kubectl -n istio-system port-forward $(kubectl -n istio-system get pod -l app=grafana -o jsonpath='{.items[0].metadata.name}') 3000:3000 &
```



Billing

Check out <https://console.cloud.google.com/billing> and setup an Budget (which sets also alerts for 50%, 90% and 100%).

Billing	Budgets & alerts	My Billing Account	CREATE BUDGET	DELETE
Overview	Budgets track expenses within a Google Cloud Platform project or billing account. Your budget can be a specified amount or based on previous spend. You can set alerts to notify billing admins and users when a budget goes over a specified amount.			
Budgets & alerts				
Transactions				
Billing export				
Payment settings				
	<input type="checkbox"/> Budget name ^	Budget type	Applies to	Trigger alerts at
	<input type="checkbox"/> First Test	Specified amount	This billing account	50%, 90%, and 100%
				Spend and budget amount
				£2.48 / €80.00
				Includes £2.48 in credit usage

MicroK8s on v-Server

Another possible solution is to use <https://microk8s.io>. The setup is pretty simple and brings a lot of features like Istio, Docker Registry, Ingress with it. However, microk8s only works on Linux machines, since it is based on snap. So the setup basically just looks like this:

```
sudo snap install microk8s --classic
```

And that's all! It also brings a kubectl with it, which you can use like this:

```
microk8s.kubectl
```

```
# Or by aliasing it
snap alias microk8s.kubectl kubectl
```

For example you can simply install/enable Istio with the following command:

Install istio on microk8s
`microk8s.enable istio`

The same works for DNS, Dashboard, Ingress and other fancy stuff.

Container Registry

Google Container Registry

<https://cloud.google.com/container-registry/>

Googles provides a container registry. Pricing is 0,026 \$ per GB per month plus downstream traffic. But it's free to pull images from the registry to a cluster if they are both in the same region.