Docker image creation:

https://github.com/aramaraj/docks-python-image

Minikube Start

minikube start

Get Kubernetes cluster info :

1. kubectl cluster-info

Kubernetes master is running at https://192.168.99.100:8443
KubeDNS is running at https://192.168.99.100:8443/api/v1/proxy/namespaces/kube-system/services/kube-dns
kubernetes-dashboard is running at https://192.168.99.100:8443/api/v1/proxy/namespaces/kube-system/services/kubernetes-dashboard

2. The above address would give unauthorized so you need to proxy with the

kubectl proxy --address="0.0.0.0" --port=9090

1. in Broswer access the port using local host
2. http://127.0.0.1:9090/api/v1/proxy/namespaces/kube-system/services/kubernetes-dashboard/#/pod?namespace=default

Create the Deployment:

```
kubectl run docker-python-app --image=aramaraj/docker-python-app --port=5000
(this is very important and you might break your head. Make sure the application port exposed and this is same)
```

kubectl get deployments

```
m-C02S23PLG8WM:docker-python-app aramar1$ kubectl get deployments
NAME                DESIRED   CURRENT   UP-TO-DATE   AVAILABLE   AGE
docker-python-app   1         1         1            1           3m
```

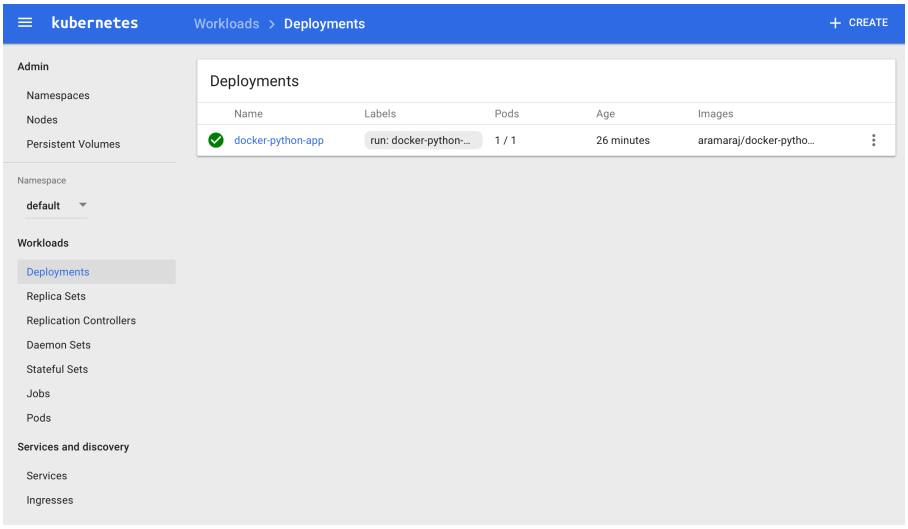
check the status of the pod created:

```
m-C02S23PLG8WM:docker-python-app aramar1$ kubectl get pods -o wide
NAME                                 READY     STATUS    RESTARTS   AGE       IP
NODE
docker-python-app-3657222991-
t5kb9   1/1       Running   0          3m        172.17.0.4   minikube
```

Check the Events: (event log)

```
kubectl get events
```

Check the Deployment in Dash board:



Check the configuration:

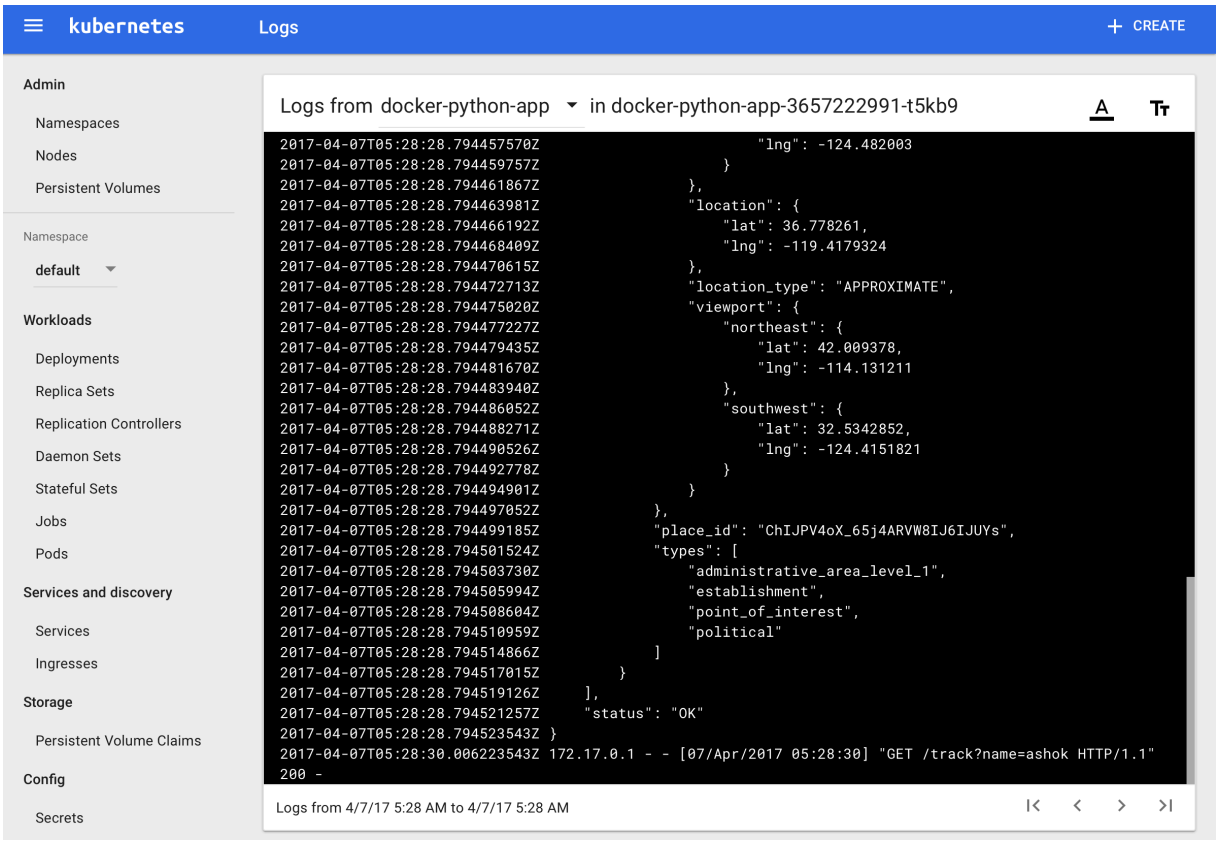
kubectl config view

```
m-C02S23PLG8WM:docker-python-app aramar1$ kubectl config view
apiVersion: v1
clusters:
- cluster:
    certificate-authority: /Users/aramar1/.minikube/ca.crt
    server: https://192.168.99.100:8443
  name: minikube
contexts:
- context:
    cluster: minikube
    user: minikube
  name: minikube
current-context: minikube
kind: Config
preferences: {}
users:
- name: minikube
  user:
    client-certificate: /Users/aramar1/.minikube/apiserver.crt
    client-key: /Users/aramar1/.minikube/apiserver.key
```

Check if the application runs on the POD:

```
m-C02S23PLG8WM:docker-python-app aramar1$ minikube ssh
```

```
$ curl 172.17.0.4:5000/track?name=6612
Location of the Delivery truck number 6612  is  315-317 N 10th St, San Jose, CA 95112, USA
and Map URL is http://maps.google.com/?q=37.345622600,-121.884722400
```

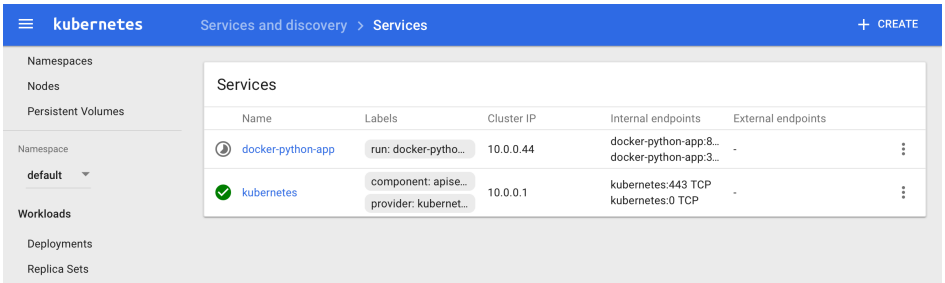


Create a Service to expose the service outside:

Note we must use the *type=NodePort* because *minikube* doesn't support the *LoadBalancer* service. We can check if the service was exposed by listing services:

```
m-C02S23PLG8WM:docker-python-app aramar1$ kubectl expose deployment docker-python-app  --
type=NodePort
service "docker-python-app" exposed
m-C02S23PLG8WM:docker-python-app aramar1$

Get the services:
       kubectl get svc
Services Dash board:
```




```
m-C02S23PLG8WM:kubernetes aramar1$ kubectl get svc
       NAME         CLUSTER-IP   EXTERNAL-IP   PORT(S)        AGE
       kubernetes   10.0.0.1     <none>        443/TCP        8h
```

```
       web          10.0.0.34     <nodes>       80:30940/TCP    3m
```

Get the Exposed Service URL:

```
minikube service -n default --url docker-python-app
http://192.168.99.100:30587
```

Kubernetes Scale:

Scale the deployment pod:

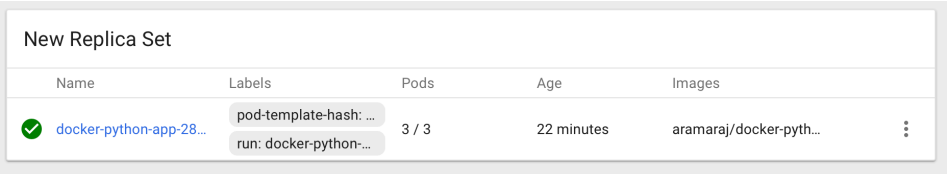
```
m-C02S23PLG8WM:docker-python-app aramar1$ kubectl scale deployments/docker-python-app --
replicas=3
deployment "docker-python-app" scaled
```

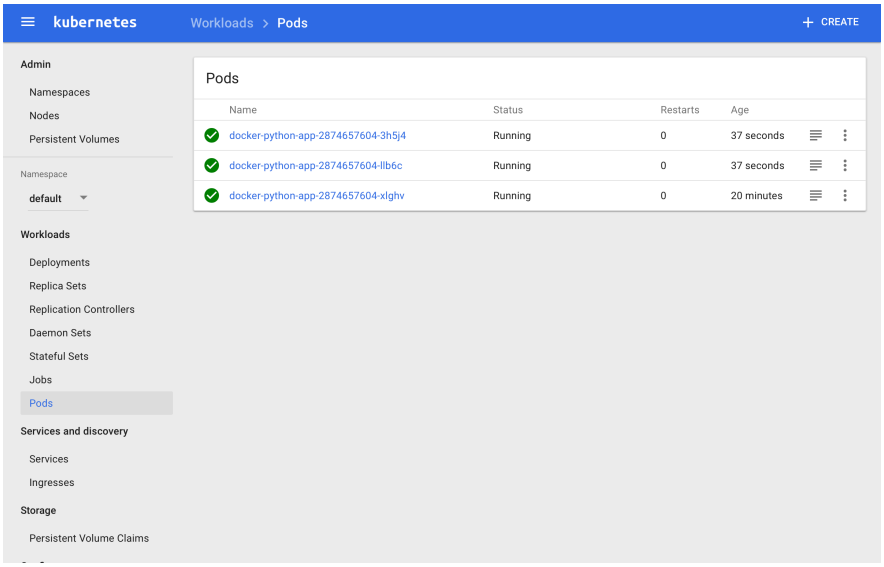
get the deployments:

```
m-C02S23PLG8WM:docker-python-app aramar1$ kubectl get deployments
NAME                DESIRED   CURRENT   UP-TO-DATE   AVAILABLE   AGE
docker-python-app   3         3         3            3           23m
```

get pods

```
m-C02S23PLG8WM:docker-python-app aramar1$ kubectl get pods -o wide
NAME                                 READY     STATUS    RESTARTS   AGE       IP
NODE
docker-python-app-2874657604-
3h5j4   1/1       Running   0          4m        172.17.0.2   minikube
docker-python-app-2874657604-
llb6c   1/1       Running   0          4m        172.17.0.5   minikube
docker-python-app-2874657604-
xlghv   1/1       Running   0          24m       172.17.0.6   minikube
```





Describe the Deployment:

```
m-C02S23PLG8WM:docker-python-app aramar1$ kubectl describe deployments/docker-python-app
Name:                   docker-python-app
Namespace:              default
CreationTimestamp:      Fri, 07 Apr 2017 01:30:37 -0700
Labels:                 run=docker-python-app
Annotations:            deployment.kubernetes.io/revision=3
Selector:               run=docker-python-app
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:      1 max unavailable, 1 max surge
Pod Template:
  Labels:     run=docker-python-app
  Containers:
   docker-python-app:
    Image:              aramaraj/docker-python-app
    Port:               5000/TCP
    Environment:        <none>
    Mounts:             <none>
  Volumes:              <none>
Conditions:
  Type        Status Reason
  ----        ------ ------
  Available   True   MinimumReplicasAvailable
OldReplicaSets:      <none>
NewReplicaSet:<none>
Events:
  FirstSeen   LastSeen      Count  From                SubObjectPath Type          Reason
              Message
  ---------   --------      -----  ----                ------------- --------      ------
              -------
  26m         26m           1      deployment-controller             Normal
       ScalingReplicaSet    Scaled up replica set docker-python-app-2874657604 to 1
  26m         26m           1      deployment-controller             Normal
       ScalingReplicaSet    Scaled down replica set docker-python-app-3657222991 to 0
  5m          5m            1      deployment-controller             Normal
       ScalingReplicaSet    Scaled up replica set docker-python-app-2874657604 to 3
```

Load Balancing Kubernetes

Show the service hit by the URL

```
kubectl logs docker-python-app-2874657604-3h5j4
```

```
minikube stop
```

Running in Cloud:

Before you begin

1. Select or create a Cloud Platform project -
2. Enable billing for your project.
3. Enable the Cloud Datastore, Cloud Storage, and Cloud Pub/Sub APIs.
    1. https://console.cloud.google.com/apis/dashboard?project=kuernetes-java&duration=PT1H
4. Install and initialize the Cloud SDK. https://cloud.google.com/sdk/docs/

```
m-C02S23PLG8WM:Downloads aramar1$ cd google-cloud-sdk/
m-C02S23PLG8WM:google-cloud-sdk aramar1$ ls
LICENSE              VERSION              completion.zsh.inc   install.sh
       path.fish.inc        properties
README               bin                  help                 lib
       path.zsh.inc
RELEASE_NOTES        completion.bash.inc  install.bat          path.bash.inc
       platform
m-C02S23PLG8WM:google-cloud-sdk aramar1$ ./google-cloud-sdk/install.sh
-bash: ./google-cloud-sdk/install.sh: No such file or directory
m-C02S23PLG8WM:google-cloud-sdk aramar1$ ./install.
-bash: ./install.: No such file or directory
m-C02S23PLG8WM:google-cloud-sdk aramar1$ ./install.sh
Welcome to the Google Cloud SDK!

To help improve the quality of this product, we collect anonymized usage data
and anonymized stacktraces when crashes are encountered; additional information
is available at <https://cloud.google.com/sdk/usage-statistics>. You may choose
to opt out of this collection now (by choosing 'N' at the below prompt), or at
any time in the future by running the following command:

    gcloud config set disable_usage_reporting true

Do you want to help improve the Google Cloud SDK (Y/n)?  Y


Your current Cloud SDK version is: 150.0.0
The latest available version is: 150.0.0

┌──────────────────────────────────────────────────────────────────────────────
──────────────────────────┐
│                                   Components
                         │
├──────────────┬──────────────────────────────────────────────────────┬────────
──────────────┤
│    Status    │                         Name                         │
  ID           │    Size   │
├──────────────┼──────────────────────────────────────────────────────┼────────
──────────────┤
| Not Installed | App Engine Go Extensions                            | app-
engine-go            |  47.7 MiB |
| Not Installed | Bigtable Command Line Tool                          |
cbt                  |   3.9 MiB |
| Not Installed | Cloud Datalab Command Line Tool                     |
datalab              |   < 1 MiB |
| Not Installed | Cloud Datastore Emulator                            | cloud-
datastore-emulator |  15.4 MiB |
| Not Installed | Cloud Datastore Emulator (Legacy)                   | gcd-
emulator            |  38.1 MiB |
| Not Installed | Cloud Pub/Sub Emulator                              | pubsub-
emulator          |  21.0 MiB |
```

```
| Not Installed | Emulator Reverse Proxy                                    | emulator-
reverse-proxy    |  56.8 MiB |
| Not Installed | Google Container Registry's Docker credential helper | docker-
credential-gcr    |   3.4 MiB |
| Not Installed | gcloud Alpha Commands                                     |
alpha                    |   < 1 MiB |
| Not Installed | gcloud Beta Commands                                      |
beta                     |   < 1 MiB |
| Not Installed | gcloud app Java Extensions                                | app-
engine-java          | 128.6 MiB |
| Not Installed | gcloud app PHP Extensions (Mac OS X)                | app-
engine-php-darwin    |  21.9 MiB |
| Not Installed | gcloud app Python Extensions                              | app-
engine-python        |   6.1 MiB |
| Not Installed | kubectl                                                   |
kubectl                  |  14.8 MiB |
| Installed     | BigQuery Command Line Tool                                |
bq                       |   < 1 MiB |
| Installed     | Cloud SDK Core Libraries                                  |
core                     |   5.8 MiB |
| Installed     | Cloud Storage Command Line Tool                           |
gsutil                   |   2.9 MiB |
| Installed     | Default set of gcloud commands                            |
gcloud                   |           |
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To install or remove components at your current SDK version [150.0.0], run:
  $ gcloud components install COMPONENT_ID
  $ gcloud components remove COMPONENT_ID

To update your SDK installation to the latest version [150.0.0], run:
  $ gcloud components update


Modify profile to update your $PATH and enable shell command
completion? (Y/n)?  Y

The Google Cloud SDK installer will now prompt you to update an rc
file to bring the Google Cloud CLIs into your environment.

Enter a path to an rc file to update, or leave blank to use
[/Users/aramar1/.bash_profile]:
Backing up [/Users/aramar1/.bash_profile] to
[/Users/aramar1/.bash_profile.backup].
[/Users/aramar1/.bash_profile] has been updated.

==> Start a new shell for the changes to take effect.


For more information on how to get started, please visit:
  https://cloud.google.com/sdk/docs/quickstarts


m-C02S23PLG8WM:google-cloud-sdk aramar1$ ./google-cloud-sdk/bin/gcloud init
-bash: ./google-cloud-sdk/bin/gcloud: No such file or directory
m-C02S23PLG8WM:google-cloud-sdk aramar1$ ./bin/gcloud init
Welcome! This command will take you through the configuration of gcloud.

Your current configuration has been set to: [default]

You can skip diagnostics next time by using the following flag:
  gcloud init --skip-diagnostics

Network diagnostic detects and fixes local network connection issues.
```
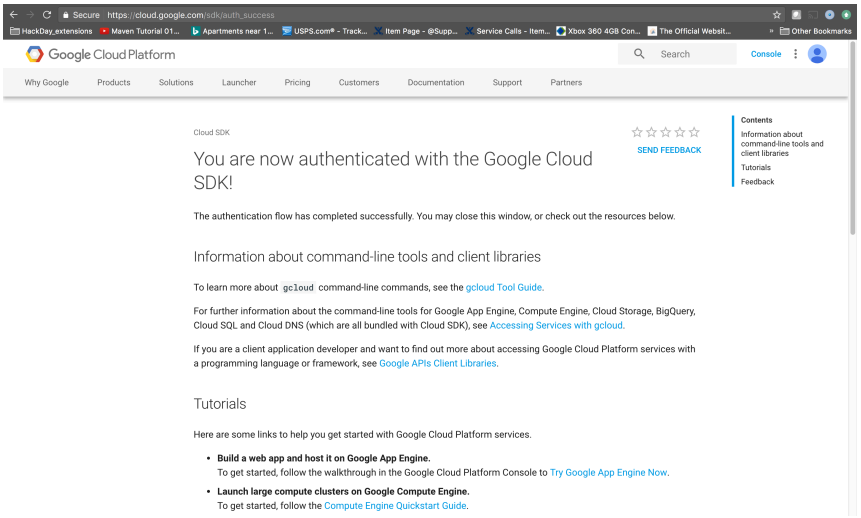
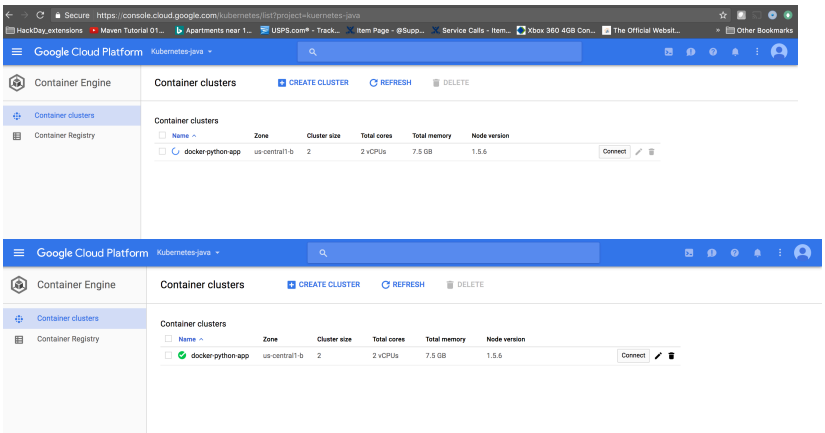

```
Checking network
connection...done.

Reachability Check passed.
Network diagnostic (1/1 checks) passed.

You must log in to continue. Would you like to log in (Y/n)?  Y

Your browser has been opened to visit:

    https://accounts.google.com/o/oauth2/auth?redirect_uri=http%3A%2F%2Flocalhost%
3A8085%2F&prompt=select_account&response_type=code&client_id=32555940559.apps.goog
leusercontent.com&scope=https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email+h
ttps%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-
platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fw
ww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccou
nts.reauth&access_type=offline


You are logged in as: [ashok.ramaraj@gmail.com].

Pick cloud project to use:
 [1] crack-case-134420
 [2] culverttracker-1473314615838
 [3] daring-harmony-142406
 [4] inbound-object-131706
 [5] kuernetes-java
 [6] sammydemo-154906
 [7] trackerdemojs-1473447840777
Please enter numeric choice or text value (must exactly match list
item):  5

Your current project has been set to: [kuernetes-java].

Not setting default zone/region (this feature makes it easier to use
[gcloud compute] by setting an appropriate default value for the
--zone and --region flag).
See https://cloud.google.com/compute/docs/gcloud-compute section on how to set
default compute region and zone manually. If you would like [gcloud init] to be
able to do this for you the next time you run it, make sure the
Compute Engine API is enabled for your project on the
https://console.developers.google.com/apis page.

Created a default .boto configuration file at [/Users/aramar1/.boto]. See this
file and
[https://cloud.google.com/storage/docs/gsutil/commands/config] for more
information about configuring Google Cloud Storage.
Your Google Cloud SDK is configured and ready to use!

* Commands that require authentication will use ashok.ramaraj@gmail.com by default
* Commands will reference project `kuernetes-java` by default
Run `gcloud help config` to learn how to change individual settings

This gcloud configuration is called [default]. You can create additional
configurations if you work with multiple accounts and/or projects.
Run `gcloud topic configurations` to learn more.

Some things to try next:

* Run `gcloud --help` to see the Cloud Platform services you can interact with.
And run `gcloud help COMMAND` to get help on any gcloud command.
* Run `gcloud topic -h` to learn about advanced features of the SDK like arg files
and output formatting
m-C02S23PLG8WM:google-cloud-sdk aramar1$
```



5. Install Docker. Docker is used to build container images locally.

Creating a Container Engine cluster

```
m-C02S23PLG8WM:bin aramar1$ ./gcloud container clusters create docker-python-app --scopes
"cloud-platform" --num-nodes 2
Creating cluster docker-python-app...|

m-C02S23PLG8WM:bin aramar1$ ./gcloud container clusters create docker-python-app --scopes
"cloud-platform" --num-nodes 2
Creating cluster docker-python-
app...done.

Created [https://container.googleapis.com/v1/projects/kuernetes-java/zones/us-central1-
b/clusters/docker-python-app].
kubeconfig entry generated for docker-python-app.
NAME                ZONE           MASTER_VERSION  MASTER_IP     MACHINE_TYPE   NODE_VERSION
  NUM_NODES  STATUS
docker-python-app  us-central1-b  1.5.6           35.188.71.99  n1-standard-
1  1.5.6         2          RUNNING
```



Get the credentials for the cluster:

```
./gcloud container clusters get-credentials docker-python-app
Fetching cluster endpoint and auth data.
kubeconfig entry generated for docker-python-app.
```

Status

```
m-C02S23PLG8WM:bin aramar1$ kubectl cluster-info
Kubernetes master is running at https://35.188.71.99
GLBCDefaultBackend is running at https://35.188.71.99/api/v1/proxy/namespaces/kube-system/services/default-http-backend
Heapster is running at https://35.188.71.99/api/v1/proxy/namespaces/kube-system/services/heapster
KubeDNS is running at https://35.188.71.99/api/v1/proxy/namespaces/kube-system/services/kube-dns
kubernetes-dashboard is running at https://35.188.71.99/api/v1/proxy/namespaces/kube-system/services/kubernetes-dashboard
```

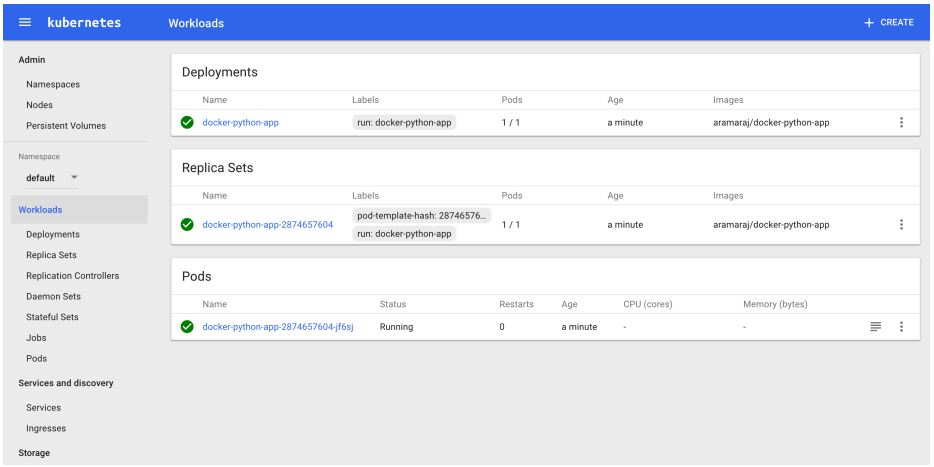
Accesss the Dash board:

```
m-C02S23PLG8WM:bin aramar1$ kubectl proxy
Starting to serve on 127.0.0.1:8001
```

```
http://127.0.0.1:8001/api/v1/proxy/namespaces/kube-system/services/kubernetes-dashboard/#/workload?namespace=default
```

Create the deployment :

```
m-C02S23PLG8WM:bin aramar1$ kubectl run docker-python-app --image=aramaraj/docker-python-app --port=5000
deployment "docker-python-app" created
```

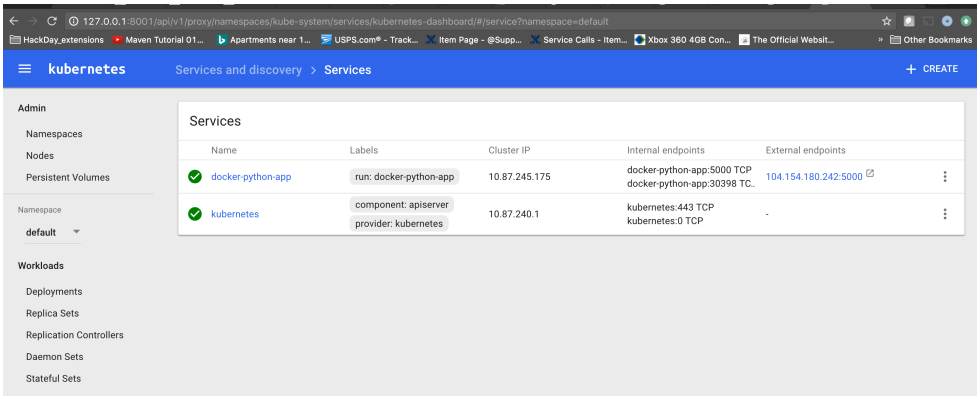


Create the services

```
m-C02S23PLG8WM:bin aramar1$ kubectl expose deployment docker-python-app --type=LoadBalancer
service "docker-python-app" exposed
```

Get the Service details:

```
m-C02S23PLG8WM:bin aramar1$ kubectl get svc
NAME                CLUSTER-IP      EXTERNAL-IP       PORT(S)          AGE
docker-python-app   10.87.245.175   104.154.180.242   5000:30398/TCP   1m
kubernetes          10.87.240.1     <none>            443/TCP          40m
```



http://104.154.180.242:5000/

http://104.154.180.242:5000/track?name=samsclub6612

Location of the Delivery truck number samsclub6612 is 5000 Estate Enighed, Independence, KS 67301, USA and Map URL is http://maps.google.com/?q=37.089160400,-95.713197900