Assignments

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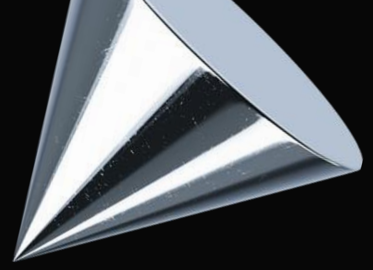
Dockers Lab1



Duration - 15 mins

1. Run a container with below parameters

   Image Info

   Repo name: navjoy220161
   Image name: python_flask
   tag: 1.0.0

   Container Info

   Container name: python-c
   Mode: Detached
   Forward 8081 of host -> port 5000 of container

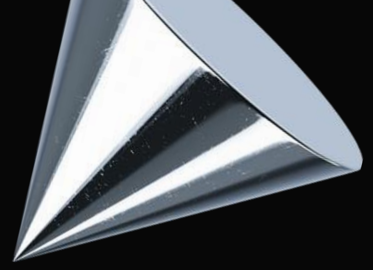
2. Check the output on host:8081

3. Now enter inside the container and change the content of main.py and rm the file main.py and access the page at host:8081 again

4. Now stop the container

5. Now start the container and check logs

Dockers Lab2



Duration - 20 mins

1. Create an index.html with content -> “My image Version”

2. Create a docker file with below steps

   from image navjoy220161/python_flask:1.0.0
   remove index.html from container located at /usr/local/apache2/htdocs

   copy the index.html created by you inside the container

   Finally run the command “httpd-foreground”

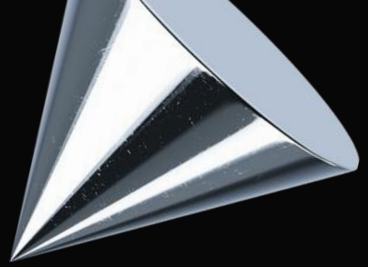
3. Create an image from above docker file with tag <your_repo_name>/my-httpd:1.0.0

4. Run a container from above image and expose the port on 8081 , use host properly

5. Now curl the host:8081

5. Now push the above image in your repo

6. Check your repository in dockerhub



Pods Assignment

Duration - 20 mins

1. Create a new pod with the nginx image and name nginx-pod without using a yaml file.

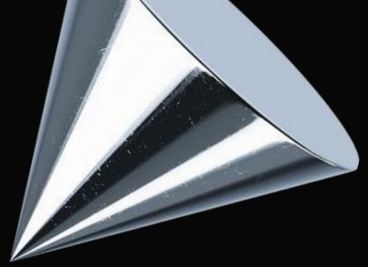
2. Create a new pod using yaml file with below configuration :
   pod name : nginx-pod-1
   Label: type=loadbalancer, country=us
   Container name: nginx-container
   Container image: nginx, tag 1.21.1-alpine

3. Create a new pod by running below command
kubectl run httpd-pod --image httpd-new

4. There is some issue in the above Pod. Fix the issue in above pod and apply the changes.

(Hint: get yaml file from running pod, delete pod, change yaml file and apply the changes using kubectl apply -f <name>.yaml)

Replica Set Assignment



Duration - 20 mins

1. Create below replicaset using yaml file with below configuration :
   Replicaset name: nginx-rs
   Labels: type:loadbalancer-replica

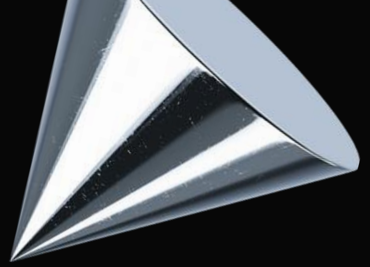
   Container spec
   pod name : nginx-pod
   Label: type=loadbalancer, country=us
   Container name: nginx-container
   Container image: nginx, tag 1.21.1-alpine

   Replicas: 3

2. Delete one of the pod created by replicaset and check the pod status

3. Add one more replica in the replicaset and check the pods

Deployment Assignment



Duration - 20 mins

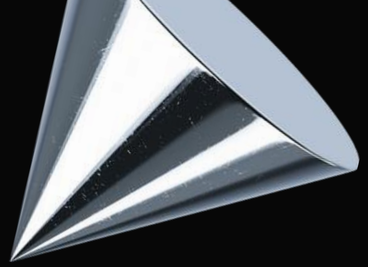
1. Create a new deployment with below configuration :
   deployment name : nginx-deployment
   label: country=us
   Container name: nginx-container
   Container image: nginx, tag 1.21.1-alpine
   Container label: type=loadbalancer
   Replicas: 3

2. Edit the deployment and change its update Strategy to “Recreate”

3. In above deployment , set the image to nginx-junk and check the status

4. Now check the history of all rollouts

5. Now rollback to previous version and check status



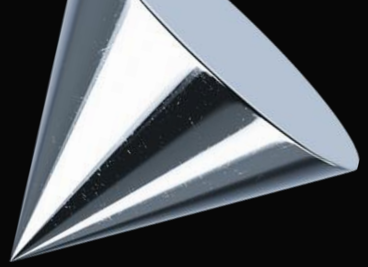
ConfigMaps

Duration - 20 mins

1. Create a configmap for a gaming app using command with below properties
   name: gameconfigmap
   data:
   enemies=aliens
   lives=3

2. Create a second configmap for the same app but this time using yaml.
   name: uiconfigmap
   data:
   theme=black
   badplayer=red
   goodplayer=purple

3. Create a pod defination and inject the configs from above two configMap in it.
   pod name – httpd-game-pod
   image – httpd
   `ENEMIES_TYPE` -> map config from gameconfigmap with key “enemies”
   `TOTAL_LIVES ->` map config from gameconfigmap with key “lives”
   Also Inject the whole uiconfigmap at one go



Secrets

Duration - 25 mins

1. Create a secret for the same gaming app using command with below properties

    name: dbsecret
    data:
        db_host=mongoDB
        db_user=root
        db_pass=mongo123

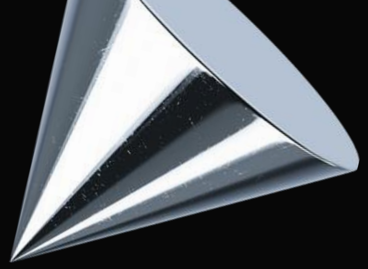
3. Now Create a second secret for the same gaming app using yaml file

    name: gamesecret
    data:
        game_user= admin
        game_pass=admin123

3. Now create a pod with name httpd-pod and image httpd and inject secret

MONGO_HOST -> db_host from secret dbsecret
MONGO_USER -> db_user from secret dbsecret
MONGO_PASS -> db_pass from secret dbsecret
Inject gamesecret as it is

4. Modify the existing pod named httpd-pod and mount the gamesecret as a volume mounted at /opt/secret



Taints & Tolerations/

Node Affinity

Duration - 25 mins

1. There are two pods httpd-test and httpd-prod.

2. First make sure that httpd-test does not run on docker-desktop by adding taint on node "env:prod"

3. Then make sure that httpd-prod does is able to run on docker-desktop by adding toleration for taint "env:prod"

4. Also label your docker desktop with label "gpu:yes"

5. Add affinity in httpd-prod for a node that provides gpu capabiltiy

6. Check the status of both the pods