Install and setting up k8.

Steps

1. Install k8
2. Install kubectl.exe
3. Installing one image in pod
4. Deletion of the pod
5. DEPLOYEMNT CONTROLLER PROGRAM
6. Check every step of pod management
7. GUI interface of Minikube
8. Exposing the IP of pod to outside world.
9. Creating replica of a pod
10. Checking deletion and automatic relaunching of Pod

COMMANDS USED

1. cd "C:\Program Files\Kubernetes\Minikube"

2. minikube.exe start --driver=virtualbox --kubernetes-version=v1.20.0

3. minikube status

4. curl -LO https://storage.googleapis.com/kubernetes-release/release/v1.20.0/bin/windows/amd64/kubectl.exe - download kubectl

5. kubectl.exe get pods

6. kubectl.exe run myweb1 --image=vimal13/apache-webserver-php

7. kubectl.exe delete pod myweb1

8. kubectl.exe create deployment myweb1 --image=vimal13/apache-webserver-php

9. kubectl delete -n default deployment myweb1

10. kubectl.exe describe pods

11. minikube dashboard

12. minikube.exe start/stop

13. kubectl.exe expose deployments myweb1 --port=80 --type=NodePort - expose the pod to public -PATing

14. minikube service myweb1 --url

15. kubectl.exe scale deployment myweb1 --replicas=4

16. kubectl.exe get deployments

17. minikube delete all --all

Install and setting up k8.

1.

Install k8

1st: , intall minikube.exe from interneta and install it.

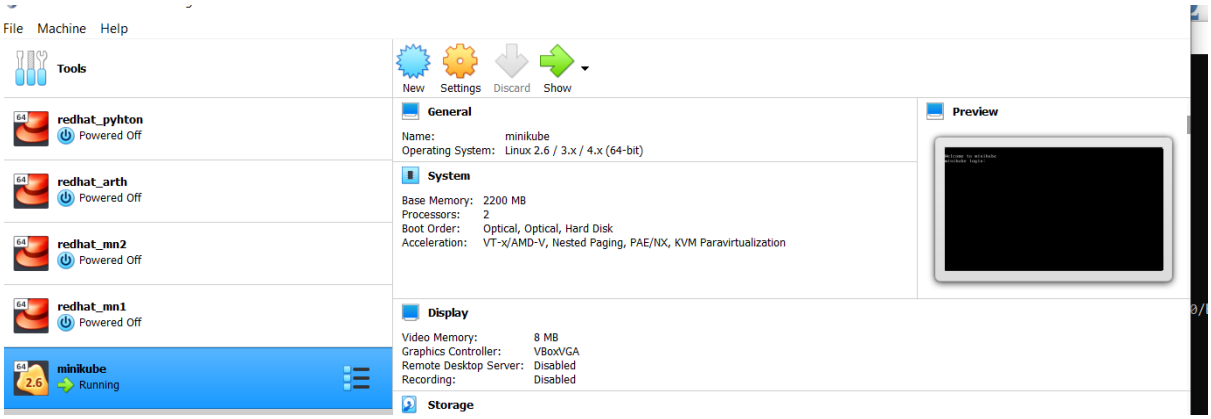
Opne cmd prompt : go to the installed dir. A.cd "C:\Program Files\Kubernetes\Minikube"

2nd:

B. minikube.exe start --driver=virtualbox --kubernetes-version=v1.20.0 : it will install the k8 automatically in Virtula box.

3rd: check the status

C . minikube status




```
C:\Program Files\Kubernetes\Minikube>minikube.exe start --driver=virtualbox --kubernetes-version=v1.20.0
* minikube v1.16.0 on Microsoft Windows 10 Home Single Language 10.0.18363 Build 18363
* Using the virtualbox driver based on existing profile
* Starting control plane node minikube in cluster minikube
* virtualbox "minikube" VM is missing, will recreate.
* Creating virtualbox VM (CPUs=2, Memory=2200MB, Disk=20000MB) ...
! This VM is having trouble accessing https://k8s.gcr.io
* To pull new external images, you may need to configure a proxy: https://minikube.sigs.k8s.io/docs/reference/networking
/proxy/
* Preparing Kubernetes v1.20.0 on Docker 20.10.0 ...
  - Generating certificates and keys ...
  - Booting up control plane ...
  - Configuring RBAC rules ...
* Verifying Kubernetes components...
* Enabled addons: storage-provisioner, default-storageclass
* kubectl not found. If you need it, try: 'minikube kubectl -- get pods -A'
* Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default

C:\Program Files\Kubernetes\Minikube>minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured
timeToStop: Nonexistent


C:\Program Files\Kubernetes\Minikube>
```

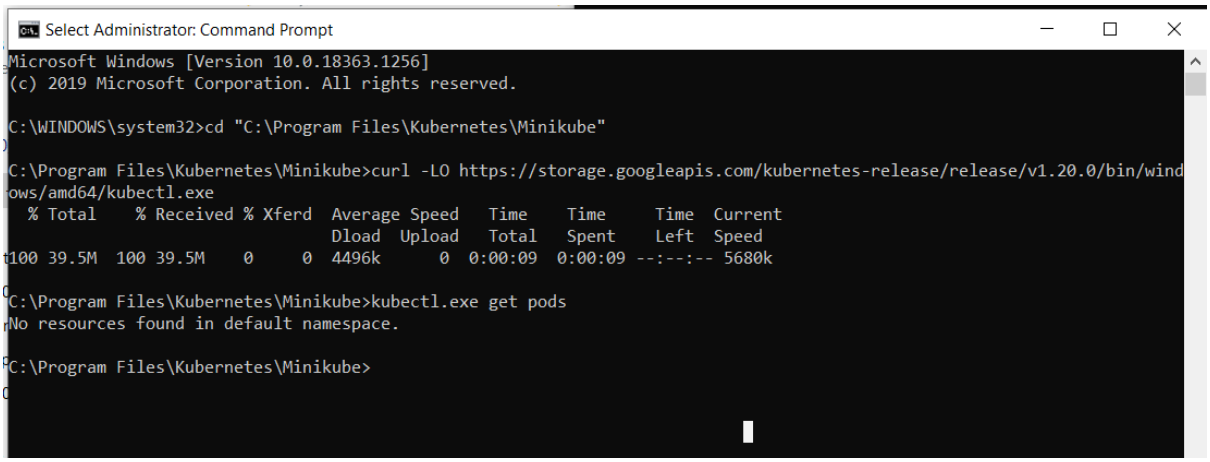
Install and setting up k8.

2.

Open command prompt as admin: as we have to add a command in windows we need admin power.

```
#D. curl -LO https://storage.googleapis.com/kubernetes-release/release/v1.20.0/bin/windows/amd64/kubectl.exe

E. kubectl.exe get pods  : right now there are none.
```



3.

- > Installing one image in pod:
- > It asks k8 server, I have one images, download this images and launch the container close the container in a pod.

F. kubectl.exe run myweb1 –image=vimal13/apache-webserver-php

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe run myweb1 --image=vimal13/apache-webserver-php
pod/myweb1 created
```

-> check the status of pod: E.

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe get pods
NAME     READY   STATUS    RESTARTS   AGE
myweb1   1/1     Running   0          4m58s
```

4.

Now, we will delete the pod and see if the k8 launches the pod again or not.

F. kubectl.exe delete pod myweb1

Install and setting up k8.

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe delete pod myweb1
pod "myweb1" deleted
```

Checking the status to see if it launches it again or not.

E.

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe get pods
No resources found in default namespace.
```

Still behaving like a docker…..

5.

What to do?

Y k8 is not behaving its way?

- ➔ Ask k8 to go and connect to this CE->DE and your duty is to manage.
  So ask the DE to launch the container, and since k8 is asking the launched container will be known as pod.

- ➔ And K8 will have the program to control this ndoe…CONTROLLER PROGRAM.
  As the pod goes down, it will launch it again => DEPLOYEMNT CONTROLLER PROGRAM which monitors the management of pod.

- ➔ So using the same images… and don't directly launch instead use a deployment program ..lets see .
- ➔ It launches the container, again it launch the pod and will under the supervision of DEPLOYMENT PROGRAM/

G. kubectl.exe create deployment myweb1 --image=vimal13/apache-webserver-php

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe create deployment myweb1 --image=vimal13/apache-webserver-php
deployment.apps/myweb1 created
```

Now, checking the status

E.

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe get pods
NAME                      READY   STATUS    RESTARTS   AGE
myweb1-55dbb57599-2pn5q   1/1     Running   0          24s
```

Now, let's delete E. , It will take some time and check it again. It should launch another immediately. F.

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe delete pod myweb1-55dbb57599-2pn5q
pod "myweb1-55dbb57599-2pn5q" deleted

C:\Program Files\Kubernetes\Minikube>
C:\Program Files\Kubernetes\Minikube>kubectl.exe get pods
NAME                      READY   STATUS    RESTARTS   AGE
myweb1-55dbb57599-89pz2   1/1     Running   0          12s
```

Install and setting up k8.

Yup….. it launched again….k8 is working fine….

6.

To check every step if creating and deletion of pods, and all the info regarding the pods will get from.

G. kubectl.exe describe pods

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe describe pods
Name:         myweb1-55dbb57599-89pz2
Namespace:    default
Priority:     0
Node:         minikube/192.168.99.101
Start Time:   Tue, 12 Jan 2021 14:01:37 +0530
Labels:       app=myweb1
              pod-template-hash=55dbb57599
Annotations:  <none>
Status:       Running
IP:           172.17.0.4
IPs:
  IP:           172.17.0.4
Controlled By:  ReplicaSet/myweb1-55dbb57599
Containers:
  apache-webserver-php:
    Container ID:   docker://44247bb4033555e1ce8b9223606fc2cd6abe59efd9a3f99084ff5772cf25c098
    Image:          vimal13/apache-webserver-php
    Image ID:       docker-pullable://vimal13/apache-webserver-php@sha256:faed0a5afaf9f04b6915d73f7247f6f5a71db9274ca44118d38f4601c0080a91
    Port:           <none>
    Host Port:      <none>
    State:          Running
      Started:      Tue, 12 Jan 2021 14:01:43 +0530
    Ready:          True
    Restart Count:  0
    Environment:    <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from default-token-9lpnf (ro)
Conditions:
  Type              Status
  Initialized       True
  Ready             True
  ContainersReady   True
  PodScheduled      True
Volumes:
  default-token-9lpnf:
    Type:        Secret (a volume populated by a Secret)
    SecretName:  default-token-9lpnf
    Optional:    false
QoS Class:       BestEffort
Node-Selectors:  <none>
Tolerations:     node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
                 node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
```

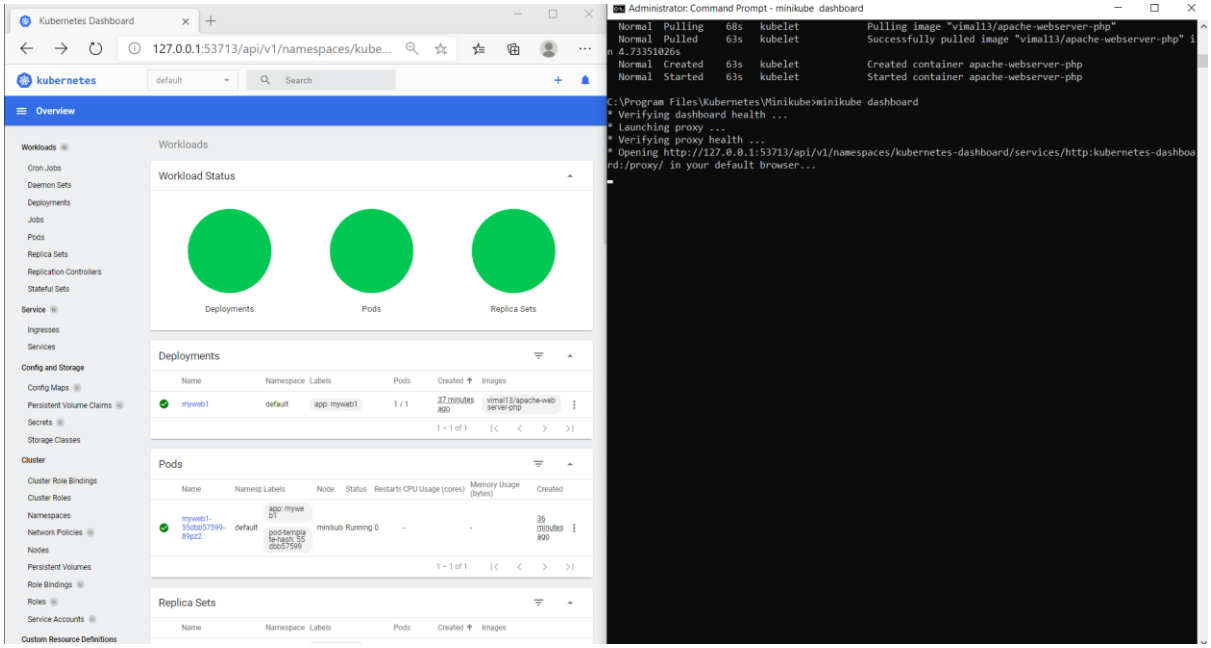
```
Events:
  Type    Reason     Age   From               Message
  ----    ------     ----  ----               -------
  Normal  Scheduled  69s   default-scheduler  Successfully assigned default/myweb1-55dbb57599-89pz2 to minikube
  Normal  Pulling    68s   kubelet            Pulling image "vimal13/apache-webserver-php"
  Normal  Pulled     63s   kubelet            Successfully pulled image "vimal13/apache-webserver-php" in 4.73351026s
  Normal  Created    63s   kubelet            Created container apache-webserver-php
  Normal  Started    63s   kubelet            Started container apache-webserver-php
```

7.

Minikube also offers the GUI interface use …

minikube dashboard

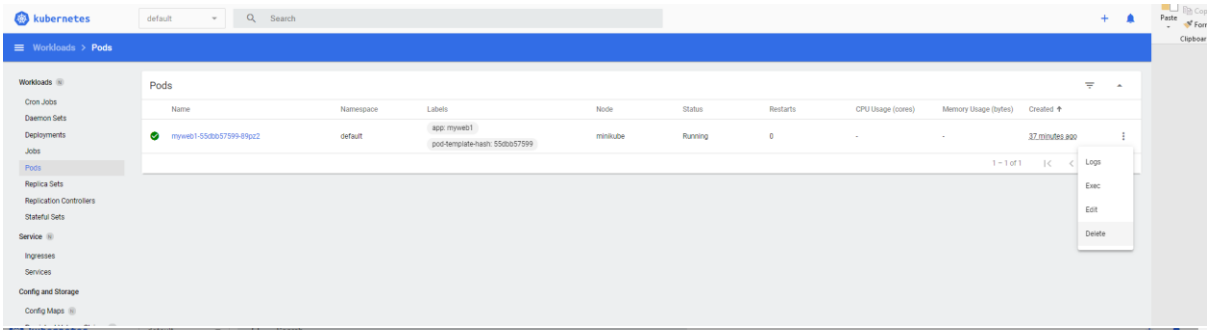
Install and setting up k8.

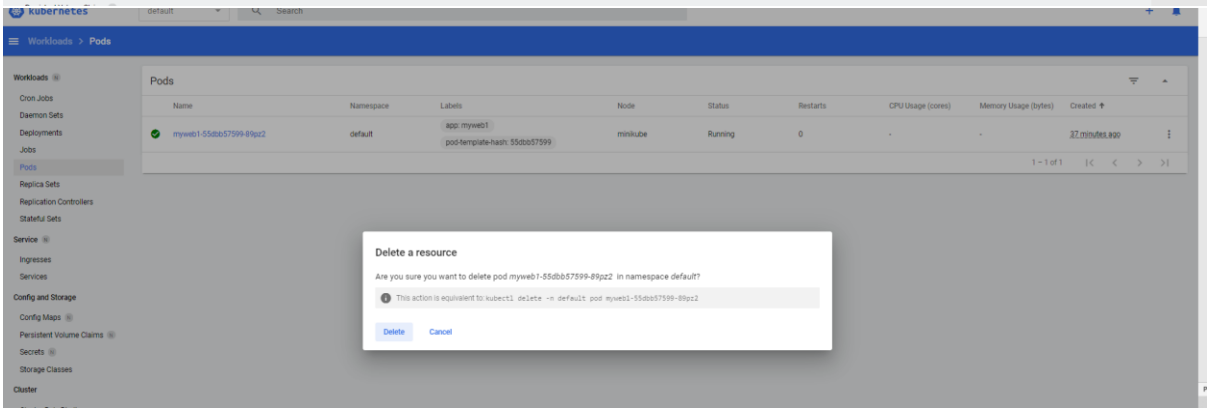


Go to Pods -> delete it. it will launch again…

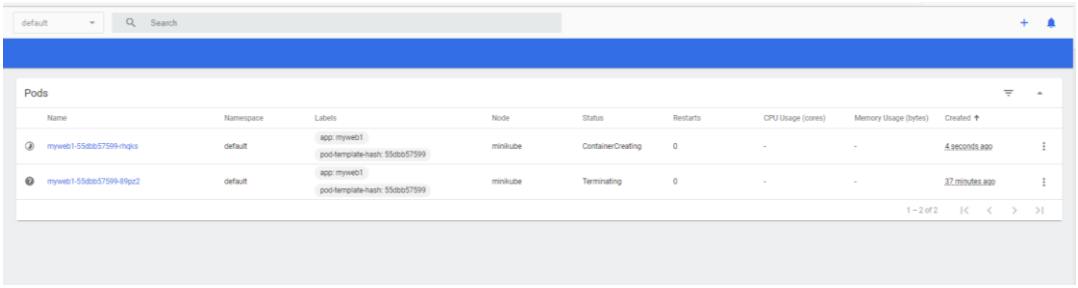
Terminating and creating happens simultaneously and finally one is deleted and exact same pod is created.

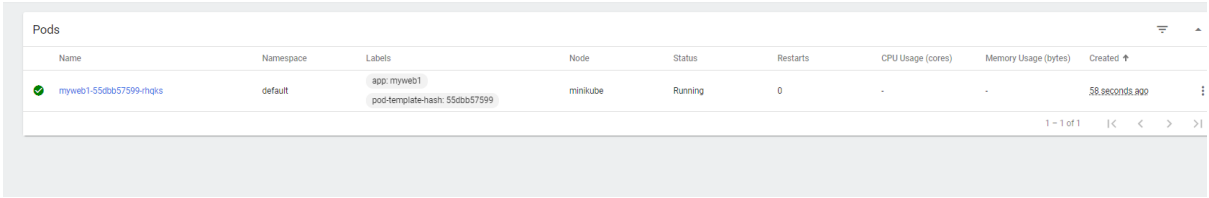
Note: but if deleted through deployment section ,it will not launch again.



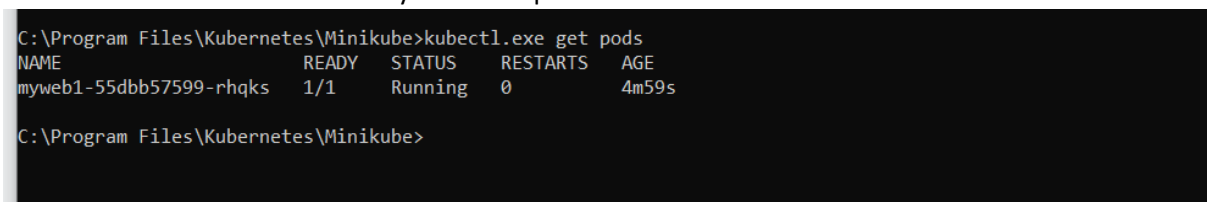


Install and setting up k8.

- 

- 

can also match the name of newly launched pod on CLI



8.

Expose the Ip to outside world.

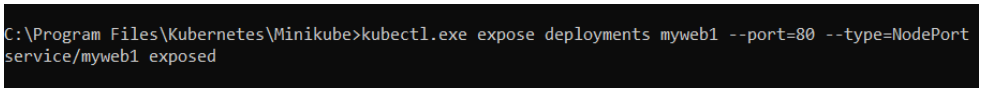
In docker – pAting – port address transalation….

Whenever we launc a acontaoner, it doesn't hav the connectivity to outiside world by default. And have to do the patting ,and then app can be accessed from outside..

But now its inside the pod…

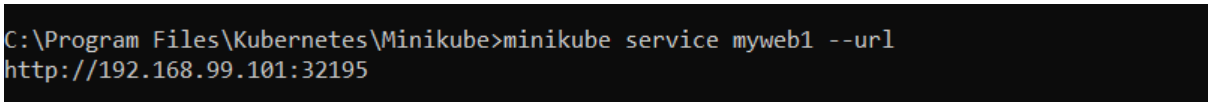
So, aksing k8 , there is one deployment. And name is myweb1 and want to expse this deployment…

kubectl.exe expose myweb1 --port=80 --type=NodePort



Getting the IP of server.

minikube service myweb1 --url



Install and setting up k8.

Verifying:

9.

Creating replica of myweb1

kubectl.exe scale deployment myweb1 --replicas=4

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe scale deployment myweb1 --replicas=4
deployment.apps/myweb1 scaled
```

Checking the status

kubectl.exe get pods

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe get pods
NAME                      READY   STATUS    RESTARTS   AGE
myweb1-55dbb57599-cxb64   1/1     Running   0          66s
myweb1-55dbb57599-jfncp   1/1     Running   0          66s
myweb1-55dbb57599-rhqks   1/1     Running   0          34m
myweb1-55dbb57599-vmblj   1/1     Running   0          66s
```

These 4 replicas: Every OS has the same copy

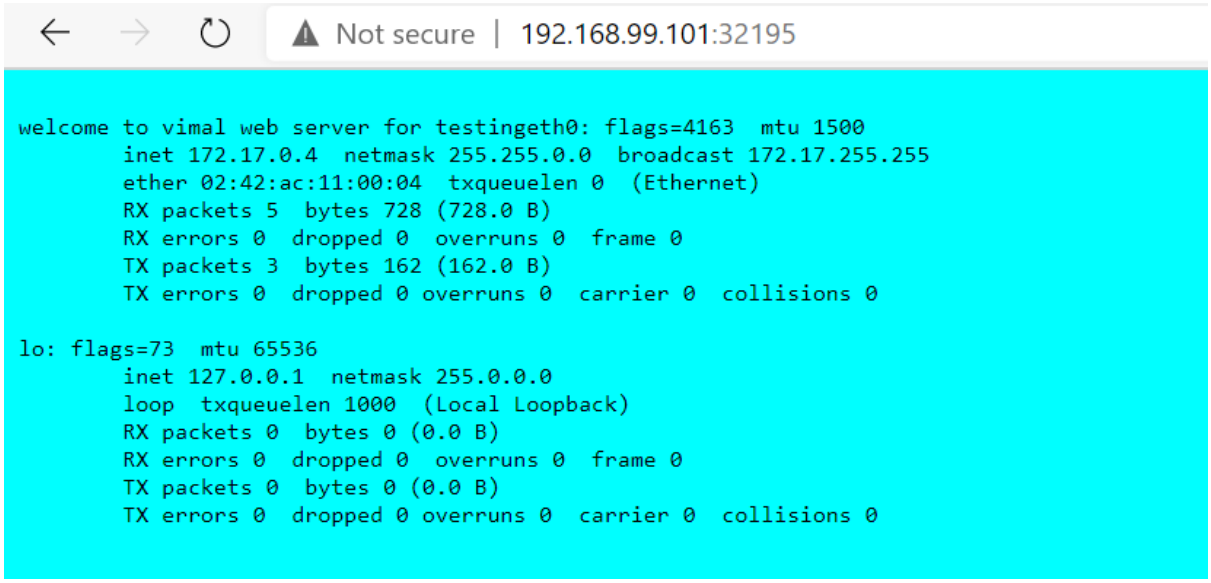
kubectl.exe get deployments

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe get deployments
NAME     READY   UP-TO-DATE   AVAILABLE   AGE
myweb1   4/4     4            4           74m
```

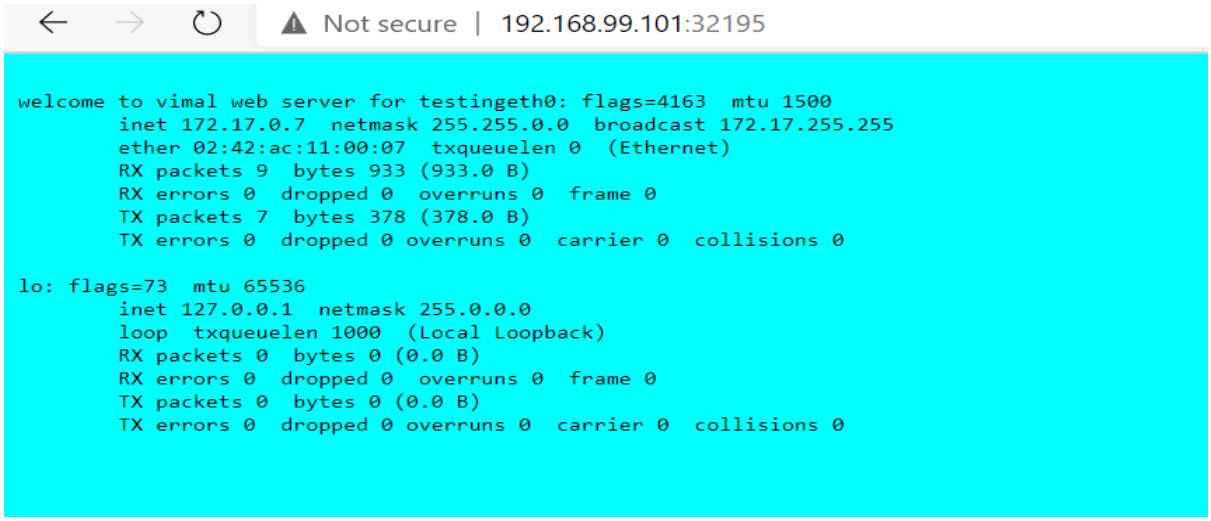
Install and setting up k8.

Note: K8 has preconfigured LOAD BALANCER:

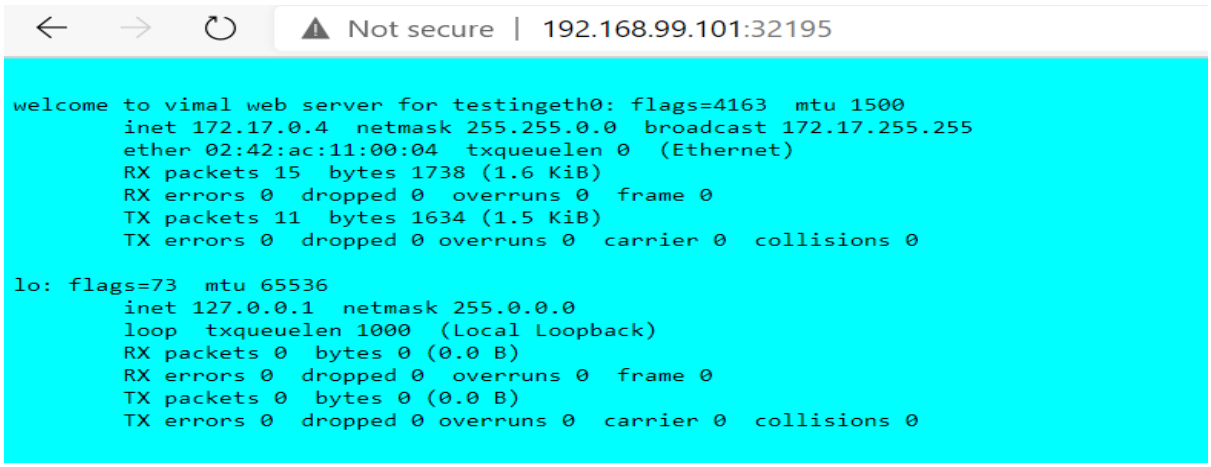
Everytime, you refersh or access as different client it will show different IP of replicas.



REFRESH

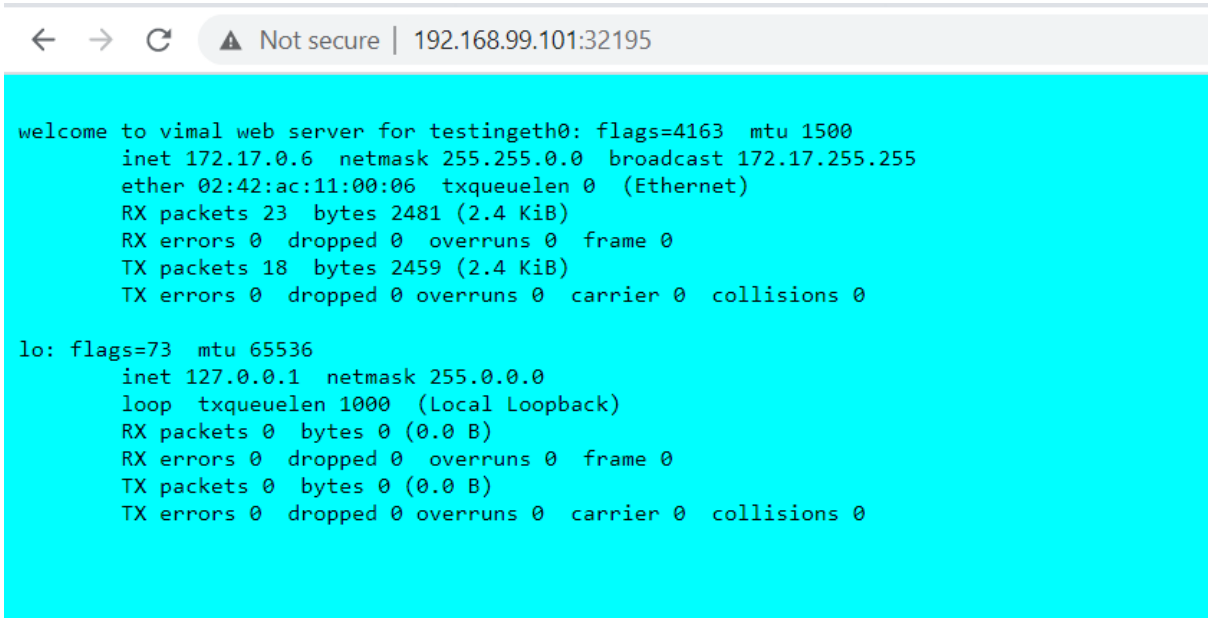


REFRESH



Install and setting up k8.

Open another browser and search the same url:



10.

Let’s delete one of the pod and verify it launches again or not. It must relaunch.

```
C:\Program Files\Kubernetes\Minikube>kubectl.exe delete pod myweb1-55dbb57599-cxb64
pod "myweb1-55dbb57599-cxb64" deleted

C:\Program Files\Kubernetes\Minikube>
C:\Program Files\Kubernetes\Minikube>
C:\Program Files\Kubernetes\Minikube>
C:\Program Files\Kubernetes\Minikube>kubectl.exe get deployments
NAME     READY   UP-TO-DATE   AVAILABLE   AGE
myweb1   4/4     4            4           84m

C:\Program Files\Kubernetes\Minikube>kubectl.exe get pods
NAME                     READY   STATUS    RESTARTS   AGE
myweb1-55dbb57599-jfncp  1/1     Running   0          12m
myweb1-55dbb57599-rhqks  1/1     Running   0          45m
myweb1-55dbb57599-szvgn  1/1     Running   0          30s
myweb1-55dbb57599-vmblj  1/1     Running   0          12m
```