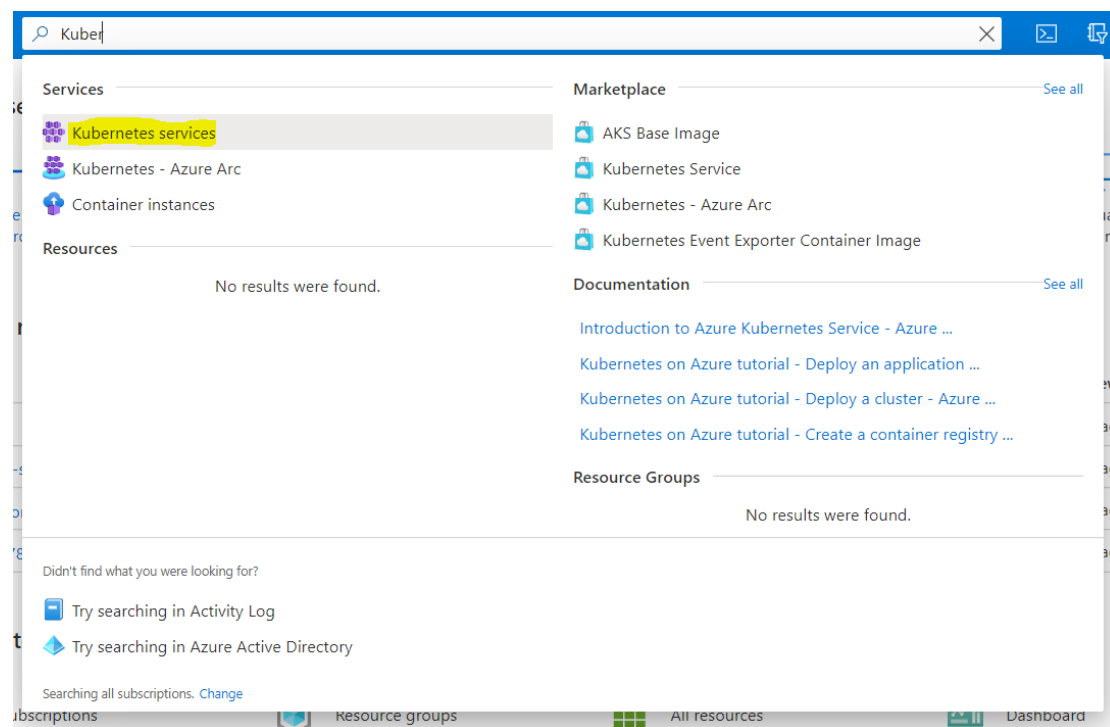


AZURE KUBERNETES SERVICE (AKS)

Azure Kubernetes Service (AKS) is a managed Kubernetes service that lets you quickly deploy and manage clusters.

Goto -> Search -> Kubernetes services -> Add Kubernetes cluster

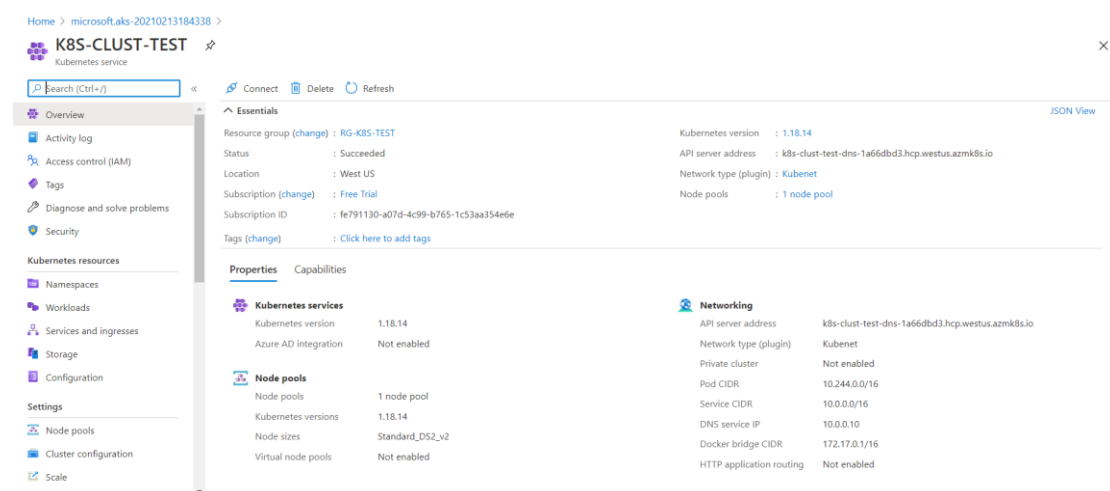


Resource group : RG-K8S-TEST

Kubernetes cluster name : K8S-CLUST-TEST

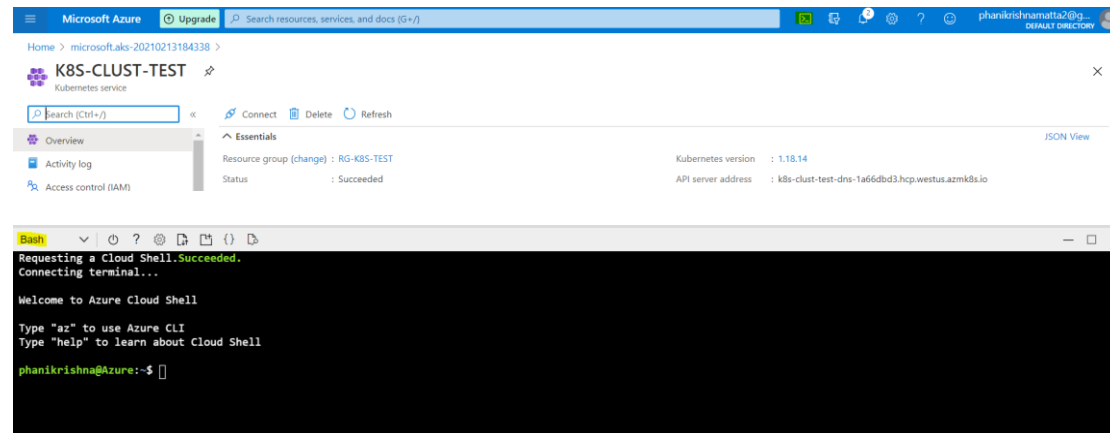
Region : West US

REST ALL LEAVE AS DEFAULTS AND CLICK REVIEW & CREATE.



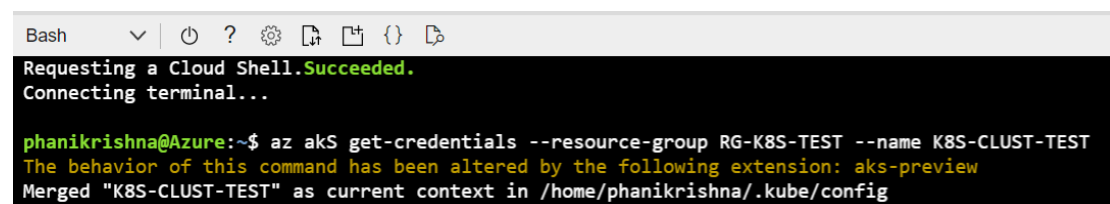
There's nothing much to see in GUI all the play hides in CLI.

Goto -> Azure Cloud Shell -> Bash



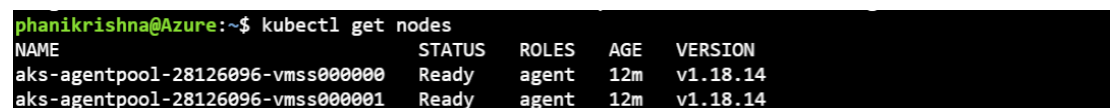
Give the below command to connect to AKS cluster.

```
az aks get-credentials --resource-group RG-K8S-TEST --name K8S-CLUST-TEST
```



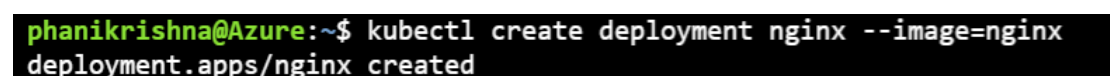
To verify the connection, execute the below command to get the list of nodes running in the cluster.

```
kubectl get nodes
```



Run the below command to deploy nginx image from Docker Hub.

```
kubectl create deployment nginx --image=nginx
```



To check the status of the pod, use the below command.

kubectl get pods

```
phanikrishna@Azure:~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
nginx-f89759699-blqjh              1/1     Running   0           103s
```

To know the details of the pod use below command, you'll get pretty large output showcasing every details about pod.

kubectl describe pod nginx-f89759699-blqjh

```
phanikrishna@Azure:~$ kubectl describe pod nginx-f89759699-blqjh
Name:          nginx-f89759699-blqjh
Namespace:     default
Priority:       0
Node:          aks-agentpool-28126096-vmss000001/10.240.0.5
Start Time:    Sat, 13 Feb 2021 13:44:48 +0000
Labels:        app=nginx
               pod-template-hash=f89759699
Annotations:   <none>
```

phanikrishna@Azure:~\$ kubectl describe pod nginx-f89759699-blqjh

```
Name:          nginx-f89759699-blqjh
Namespace:     default
Priority:       0
Node:          aks-agentpool-28126096-vmss000001/10.240.0.5
Start Time:    Sat, 13 Feb 2021 13:44:48 +0000
Labels:        app=nginx
               pod-template-hash=f89759699
Annotations:   <none>
Status:        Running
IP:            10.244.0.6
IPs:
  IP:          10.244.0.6
Controlled By: ReplicaSet/nginx-f89759699
Containers:
  nginx:
    Container ID:
docker://cdd1ca7f185c1ff4dfe519a9ff003f7bcf73a3217790e246bdfae86
6eee370af
    Image:       nginx
```

Image ID: docker-
pullable://nginx@sha256:8e10956422503824ebb599f37c26a90fe70541
942687f70bbdb744530fc9eba4

Port: <none>

Host Port: <none>

State: Running

Started: Sat, 13 Feb 2021 13:44:56 +0000

Ready: True

Restart Count: 0

Environment: <none>

Mounts:

/var/run/secrets/kubernetes.io/serviceaccount from default-token-
l5ghc (ro)

Conditions:

Type	Status
Initialized	True
Ready	True
ContainersReady	True
PodScheduled	True

Volumes:

default-token-l5ghc:

Type: Secret (a volume populated by a Secret)

SecretName: default-token-l5ghc

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	3m29s	default-scheduler	Successfully assigned default/nginx-f89759699-blqjh to aks-agentpool-28126096-vmss000001
Normal	Pulling	3m29s	kubelet	Pulling image "nginx"
Normal	Pulled	3m25s	kubelet	Successfully pulled image "nginx"
Normal	Created	3m21s	kubelet	Created container nginx
Normal	Started	3m21s	kubelet	Started container nginx

To see the replica created for the pod, use

kubectl get replicaset

```
phanikrishna@Azure:~$ kubectl get replicaset
NAME          DESIRED  CURRENT  READY  AGE
nginx-f89759699 1         1         1      15m
```

Use below command to scale the pods.

kubectl scale --replicas=3 deployment/nginx

```
phanikrishna@Azure:~$ kubectl scale --replicas=3 deployment/nginx
deployment.apps/nginx scaled
```

To check the pods distribution over various nodes, use below command.

kubectl get pods -o wide

```
phanikrishna@Azure:~$ kubectl get pods -o wide
NAME          READY  STATUS   RESTARTS  AGE  IP            NODE                                     NOMINATED NODE  READINESS GATES
nginx-f89759699-866gv 1/1    Running  0          57s  10.244.0.7    aks-agentpool-28126096-vmss000001    <none>          <none>
nginx-f89759699-blqjh 1/1    Running  0          24m  10.244.0.6    aks-agentpool-28126096-vmss000001    <none>          <none>
nginx-f89759699-v6fph 1/1    Running  0          57s  10.244.1.6    aks-agentpool-28126096-vmss000000    <none>          <none>
```

To get the services, use below command.

kubectl get services

```
phanikrishna@Azure:~$ kubectl get services
NAME          TYPE          CLUSTER-IP    EXTERNAL-IP  PORT(S)    AGE
kubernetes    ClusterIP     10.0.0.1      <none>       443/TCP    54m
```

Use the below command to check the logs of pod after deployment.

kubectl logs hello-world-fc6775f84-m4ssk

```
phanikrishna@Azure:~$ kubectl logs hello-world-fc6775f84-m4ssk
Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
   (amd64)
3. The Docker daemon created a new container from that image which runs the
   executable that produces the output you are currently reading.
4. The Docker daemon streamed that output to the Docker client, which sent it
   to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
$ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
```

DEPLOYING A TEST APPLICATION

Copy the below code and save it in the cloud storage as azure-test.yaml

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: azure-vote-back
spec:
  replicas: 1
  selector:
    matchLabels:
      app: azure-vote-back
  template:
    metadata:
      labels:
        app: azure-vote-back
    spec:
      nodeSelector:
        "beta.kubernetes.io/os": linux
      containers:
        - name: azure-vote-back
          image: mcr.microsoft.com/oss/bitnami/redis:6.0.8
          env:
            - name: ALLOW_EMPTY_PASSWORD
              value: "yes"
          resources:
            requests:
              cpu: 100m
              memory: 128Mi
            limits:
              cpu: 250m
              memory: 256Mi
          ports:
            - containerPort: 6379
              name: redis
---
apiVersion: v1
kind: Service
metadata:
```

```
    name: azure-vote-back
spec:
  ports:
    - port: 6379
  selector:
    app: azure-vote-back
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: azure-vote-front
spec:
  replicas: 1
  selector:
    matchLabels:
      app: azure-vote-front
  template:
    metadata:
      labels:
        app: azure-vote-front
    spec:
      nodeSelector:
        "beta.kubernetes.io/os": linux
      containers:
        - name: azure-vote-front
          image: mcr.microsoft.com/azuredocs/azure-vote-front:v1
          resources:
            requests:
              cpu: 100m
              memory: 128Mi
            limits:
              cpu: 250m
              memory: 256Mi
          ports:
            - containerPort: 80
          env:
            - name: REDIS
              value: "azure-vote-back"
---
apiVersion: v1
```

kind: Service
metadata:
 name: azure-vote-front
spec:
 type: LoadBalancer
ports:
 - port: 80
selector:
 app: azure-vote-front

```
Bash
UID":null,"namespace":"config.system.sessions","index":"lsidTTLIndex","commitTimestamp":{"timestamp":{"t":0,"i":0}}}}
phanikrishna@Azure:~$ kubectl create deployment hello-world --image=hello-world
deployment.apps/hello-world created
phanikrishna@Azure:~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
hello-world-fc6775f84-m4ssk         0/1     CrashLoopBackOff   1          8s
mongo-55557d48d7-hnfft              1/1     Running        0          3m38s
nginx-f89759699-866gv               1/1     Running        0          15m
nginx-f89759699-b1qjh               1/1     Running        0          39m
nginx-f89759699-v6fph               1/1     Running        0          15m
phanikrishna@Azure:~$ kubectl logs hello-world-fc6775f84-m4ssk
```

```
Bash
FILES
> azure
> Azure
> .cache
> .kube
> .local
> clouddrive
  .bash_history
  .bash_logout
  .bashrc
  .profile
  .tmux.conf
  .viminfo
  .vimrc
  azure-test.yaml
  demo-kubernetes-components_mongo.yaml
  mongo-configmap.yaml
  mongo-express.yaml
  mongo.yaml
  secrets.yaml
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    name: azure-vote-back
5  spec:
6    replicas: 1
7    selector:
8      matchLabels:
9        app: azure-vote-back
10   template:
11     metadata:
12       labels:
13         app: azure-vote-back
14     spec:
15       nodeSelector:
16         "beta.kubernetes.io/os": linux
17     containers:
18       - name: azure-vote-back
19         image: mcr.microsoft.com/oss/bitnami/redis:6.0.8
20         env:
21           - name: ALLOW_EMPTY_PASSWORD
22             value: "yes"
23         resources:
24           requests:
25             cpu: 100m
26             memory: 128Mi
```

```
FILES
> azure
> Azure
> .cache
> .kube
> .local
> clouddrive
  .bash_history
  .bash_logout
  .bashrc
  .profile
  .tmux.conf
  .viminfo
  .vimrc
  azure-test.yaml
  demo-kubernetes-components_mongo.yaml
  mongo-configmap.yaml
  mongo-express.yaml
  mongo.yaml
  secrets.yaml
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    name: azure-vote-back
5  spec:
6    replicas: 1
7    selector:
8      matchLabels:
9        app: azure-vote-back
10   template:
11     metadata:
12       labels:
13         app: azure-vote-back
14     spec:
15       nodeSelector:
16         "beta.kubernetes.io/os": linux
17     containers:
18       - name: azure-vote-back
19         image: mcr.microsoft.com/oss/bitnami/redis:6.0.8
20         env:
21           - name: ALLOW_EMPTY_PASSWORD
22             value: "yes"
23         resources:
24           requests:
25             cpu: 100m
26             memory: 128Mi
```

```
FILES
> .azure
> .Azure
> .cache
> .kube
> .local
> clouddrive
  .bash_history
  .bash_logout
  .bashrc
  .profile
  .tmux.conf
  .viminfo
  .vimrc
  azure-test.yaml
  demo-kubernetes-components_mongo.yaml
  mongo-configmap.yaml
  mongo-express.yaml
  mongo.yaml
  secrets.yaml
```


Deploy the application from the yaml file using below command.

kubectl apply -f azure-test.yaml

```
phanikrishna@Azure:~$ kubectl apply -f azure-test.yaml
deployment.apps/azure-vote-back created
service/azure-vote-back created
deployment.apps/azure-vote-front created
service/azure-vote-front created
```

To check the pods deployed and distribution of pods over nodes, use below command.

kubectl get pods -o wide

```
phanikrishna@Azure:~$ kubectl get pods -o wide
NAME                                READY   STATUS    RESTARTS   AGE   IP            NODE                                NOMINATED NODE   READINESS GATES
azure-vote-back-798985f86b-rlrgx    1/1     Running   0           2m52s  10.244.0.9    aks-agentpool-28126096-vmss000001 <none>           <none>
azure-vote-front-84c8bf64fc-j2mqg   1/1     Running   0           2m51s  10.244.1.8    aks-agentpool-28126096-vmss000000 <none>           <none>
hello-world-fc6775f84-m4ssk        0/1     CrashLoopBackOff   8       28m    10.244.1.7    aks-agentpool-28126096-vmss000000 <none>           <none>
mongo-55557d48d7-hnfft             1/1     Running   0           23m    10.244.0.8    aks-agentpool-28126096-vmss000001 <none>           <none>
nginx-f89759699-866gv              1/1     Running   0           35m    10.244.0.7    aks-agentpool-28126096-vmss000001 <none>           <none>
nginx-f89759699-blqjh              1/1     Running   0           59m    10.244.0.6    aks-agentpool-28126096-vmss000001 <none>           <none>
nginx-f89759699-v6fph              1/1     Running   0           35m    10.244.1.6    aks-agentpool-28126096-vmss000000 <none>           <none>
```

To check the external ip address of the pod azure-vote-front, use below command.

kubectl get service azure-vote-front --watch

```
phanikrishna@Azure:~$ kubectl get service azure-vote-front --watch
NAME                TYPE           CLUSTER-IP   EXTERNAL-IP   PORT(S)          AGE
azure-vote-front    LoadBalancer  10.0.57.12   104.210.50.255  80:31295/TCP     3m31s
```

Copy the external ip address and paste it in browser and you should see the below web page.

