

Kubernetes Lab 1

- 1- How many pods exist on the system?
In the current(default) namespace.

```
Editor  Tab 1  +
controlplane $ kubectl get pods
No resources found in default namespace.
controlplane $
```

- 2- How many Nodes exist on the system?

```
Editor  Tab 1  +
controlplane $ kubectl get nodes
NAME          STATUS    ROLES          AGE    VERSION
controlplane  Ready     control-plane  9d     v1.26.0
node01        Ready     <none>         9d     v1.26.0
controlplane $
```

- 3- Create a new pod with the nginx image.
Image name: nginx

```
Editor  Tab 1  +
controlplane $ kubectl run newpod --image nginx
pod/newpod created
controlplane $ kubectl get pods
NAME          READY   STATUS             RESTARTS   AGE
newpod        0/1     ContainerCreating   0           8s
controlplane $ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
newpod        1/1     Running   0           31s
controlplane $
```

- 4- Which nodes are these pods placed on?

```
Editor  Tab 1  +
controlplane $ kubectl get pods -o wide
NAME          READY   STATUS    RESTARTS   AGE    IP           NODE     NOMINATED NODE   READINESS GATES
newpod        1/1     Running   0           3m38s  192.168.1.3  node01   <none>            <none>
controlplane $
```

5- Create pod from the below yaml using kubectl apply command

```
Editor  Tab 1  +
apiVersion: v1
kind: Pod
metadata:
  name: webapp
  namespace: default
spec:
  containers:
  - image: nginx
    imagePullPolicy: Always
    name: nginx
  - image: agentx
    imagePullPolicy: Always
    name: agentx
```

```
Editor  Tab 1  +
controlplane $ vim pod.yaml
controlplane $ kubectl apply -f pod.yaml
pod/webapp created
controlplane $ kubectl get pods
NAME      READY   STATUS              RESTARTS   AGE
newpod    1/1     Running             0          9m38s
webapp    1/2     ImagePullBackOff    0          30s
controlplane $ kubectl get pods
NAME      READY   STATUS              RESTARTS   AGE
newpod    1/1     Running             0          10m
webapp    1/2     ImagePullBackOff    0          58s
controlplane $ █
```

6- How many containers are part of the pod webapp

```
Editor  Tab1  +
controlplane $ kubectl get pods webapp
NAME      READY   STATUS             RESTARTS   AGE
webapp    1/2     ImagePullBackOff    0           8m49s
controlplane $
```

```
Editor  Tab1  +
controlplane $ kubectl describe pod/webapp
Name:      webapp
Namespace: default
Priority:   0
Service Account: default
Node:      node01/172.30.2.2
Start Time: Sun, 01 Jan 2023 11:16:07 +0000
Labels:    <none>
Annotations: cni.projectcalico.org/containerID: ff48d9eaa86412311f233f83f427b7d13132f3cfb7002760ad2b9838dfe02b28
              cni.projectcalico.org/podIP: 192.168.1.4/32
              cni.projectcalico.org/podIPs: 192.168.1.4/32
Status:    Pending
IP:        192.168.1.4
IPs:
  IP: 192.168.1.4
Containers:
  nginx:
    Container ID:   containerd://ff708808d71aed2c170c2f84f743e9c4ef1a5a8864343b99774746ebbe88dd7b
    Image:          nginx
    Image ID:       docker.io/library/nginx@sha256:0047b729188a15da49380d9506d65959cce6d40291ccfb4e039f5dc7efd33286
    Port:          <none>
    Host Port:     <none>
    State:         Running
      Started:     Sun, 01 Jan 2023 11:16:12 +0000
    Ready:         True
    Restart Count:  0
    Environment:   <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-l7pn5 (ro)
  agentx:
    Container ID:   agentx
    Image:          agentx
    Image ID:       <none>
    Port:          <none>
    Host Port:     <none>
    State:         Waiting
      Reason:      ImagePullBackOff
    Ready:         False
    Restart Count:  0
    Environment:   <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-l7pn5 (ro)
Conditions:
  Type              Status
  Initialized       True
  Ready             False
  ContainersReady   False
  PodScheduled      True
```

7- What images are used in the new webapp pod?

```
Editor  Tab 1  +
controlplane $ kubectl describe pod/webapp
Name:          webapp
Namespace:     default
Priority:       0
Service Account: default
Node:          node01/172.30.2.2
Start Time:    Sun, 01 Jan 2023 11:16:07 +0000
Labels:        <none>
Annotations:   cni.projectcalico.org/containerID: ff48d9eaa86412311f233f83f427b7d13132f3cfb7002760ad2b9838dfe02b28
               cni.projectcalico.org/podIP: 192.168.1.4/32
               cni.projectcalico.org/podIPs: 192.168.1.4/32
Status:        Pending
IP:            192.168.1.4
IPs:           IP: 192.168.1.4
Containers:
  nginx:
    Container ID:   containerd://ff708808d71aed2c170c2f84f743e9c4ef1a5a8864343b99774746ebbe88dd7b
    Image:          nginx
    Image ID:       docker.io/library/nginx@sha256:0047b729188a15da49380d9506d65959cce6d40291ccfb4e039f5dc7efd33286
    Port:           <none>
    Host Port:      <none>
    State:          Running
      Started:      Sun, 01 Jan 2023 11:16:12 +0000
      Ready:        True
      Restart Count: 0
    Environment:    <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-l7pn5 (ro)
  agentx:
    Container ID:   containerd://ff708808d71aed2c170c2f84f743e9c4ef1a5a8864343b99774746ebbe88dd7b
    Image:          agentx
    Image ID:       <none>
    Port:           <none>
    Host Port:      <none>
    State:          Waiting
      Reason:       ImagePullBackOff
      Ready:        False
      Restart Count: 0
    Environment:    <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-l7pn5 (ro)
Conditions:
  Type            Status
  Initialized      True
  Ready            False
  ContainersReady  False
  PodScheduled     True
```

8- What is the state of the container agentx in the pod webapp

```
agentx:
  Container ID:   containerd://ff708808d71aed2c170c2f84f743e9c4ef1a5a8864343b99774746ebbe88dd7b
  Image:          agentx
  Image ID:       <none>
  Port:           <none>
  Host Port:      <none>
  State:          Waiting
    Reason:       ImagePullBackOff
  Ready:          False
  Restart Count:  0
  Environment:    <none>
  Mounts:
    /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-l7pn5 (ro)
```

9- Why do you think the container agentx in pod webapp is in error?

```
node.kubernetes.io/unreachable:NoExecute-Op=Exists for 300s
Events:
Type      Reason      Age      From      Message
----      -
Normal    Scheduled   13m      default-scheduler    Successfully assigned default/webapp to node01
Normal    Pulling     13m      kubelet    Pulling image "nginx"
Normal    Pulled      13m      kubelet    Successfully pulled image "nginx" in 1.35731718s (1.357322912s including waiting)
Normal    Created     13m      kubelet    Created container nginx
Normal    Started     13m      kubelet    Started container nginx
Warning   Failed      12m (x3 over 13m)    kubelet    Error: ErrImagePull
Warning   Failed      11m (x5 over 13m)    kubelet    Error: ImagePullBackOff
Normal    Pulling     11m (x4 over 13m)    kubelet    Pulling image "agentx"
Warning   Failed      11m (x4 over 13m)    kubelet    Failed to pull image "agentx": rpc error: code = Unknown desc = failed to pull and unpack image "docker.io/library/agentx:latest": failed to resolve reference "docker.io/library/agentx:latest": pull access denied, repository does not exist or may require authorization: server message: insufficient_scope: authorization failed
Normal    BackOff     3m5s (x41 over 13m)    kubelet    Back-off pulling image "agentx"
controlplane $
```

failed to pull the image, there is no images with this name agentx

10- Delete the webapp Pod.

```
Editor  Tab 1  +
controlplane $ kubectl delete pod/webapp
pod "webapp" deleted
controlplane $ kubectl get pods
NAME      READY   STATUS    RESTARTS   AGE
newpod    1/1     Running   0           28m
controlplane $
```

11- Create a new pod with the name redis and with the image redis123.

Name: redis

Image Name: redis123

```
Editor  Tab 1  +
controlplane $ kubectl run redis --image redis123
pod/redis created
controlplane $ kubectl get pods
NAME      READY   STATUS             RESTARTS   AGE
newpod    1/1     Running            0           34m
redis     0/1     ImagePullBackOff   0           4m23s
controlplane $
```

12- Now change the image on this pod to redis. Once done, the pod should be in a running state.

```
Editor  Tab 1  +
controlplane $ kubectl edit pod redis
pod/redis edited
controlplane $ kubectl get pods
NAME      READY   STATUS              RESTARTS   AGE
newpod    1/1     Running             0           38m
redis     0/1     ImagePullBackOff    0           7m53s
controlplane $ kubectl get pods
NAME      READY   STATUS   RESTARTS   AGE
newpod    1/1     Running  0           38m
redis     1/1     Running  0           8m28s
controlplane $
```

```
spec:
  containers:
  - image: redis
    imagePullPolicy: Always
    name: redis
    resources: {}
    terminationMessagePath: /dev/termination-log
    terminationMessagePolicy: File
    volumeMounts:
    - mountPath: /var/run/secrets/kubernetes.io/serviceaccount
      name: kube-api-access-jrwc2
      readOnly: true
```

13- Create a pod called my-pod of image nginx:alpine

```
Editor  Tab 1  +
controlplane $ kubectl run my-pod --image nginx:alpine
pod/my-pod created
controlplane $ kubectl get pods
NAME      READY   STATUS   RESTARTS   AGE
my-pod    1/1     Running  0           21s
newpod    1/1     Running  0           41m
redis     1/1     Running  0           10m
controlplane $
```

14- Delete the pod called my-pod

```
Editor  Tab 1  +
controlplane $ kubectl delete pod my-pod
pod "my-pod" deleted
controlplane $ kubectl get pods
NAME      READY   STATUS   RESTARTS   AGE
newpod    1/1     Running  0           42m
redis     1/1     Running  0           12m
controlplane $
```