Lab Exercise 12 - Start and Access Kubernetes Dashboard

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Objective

To enable Kubernetes in Docker Desktop, deploy the Kubernetes Dashboard, and access it securely using a web browser on Windows.

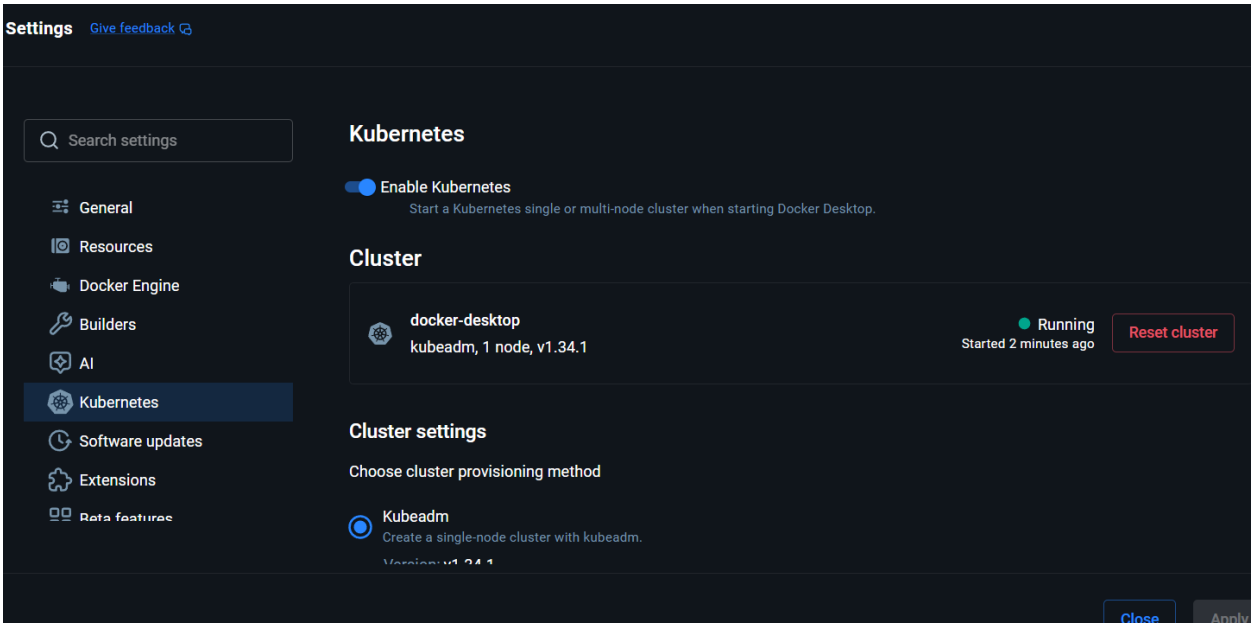
Prerequisites

- Windows 10 / 11
- Docker Desktop installed
- Docker Desktop Kubernetes enabled
- Internet connection
- kubectl (comes bundled with Docker Desktop)

Step 1: Enable Kubernetes in Docker Desktop

1. Open **Docker Desktop**
2. Go to **Settings**
3. Select **Kubernetes**
4. Check **Enable Kubernetes**
5. Click **Apply & Restart**

Wait until Kubernetes status shows **Running** (green).



Step 2: Verify Kubernetes Cluster

Open **PowerShell** or **Command Prompt** and run:

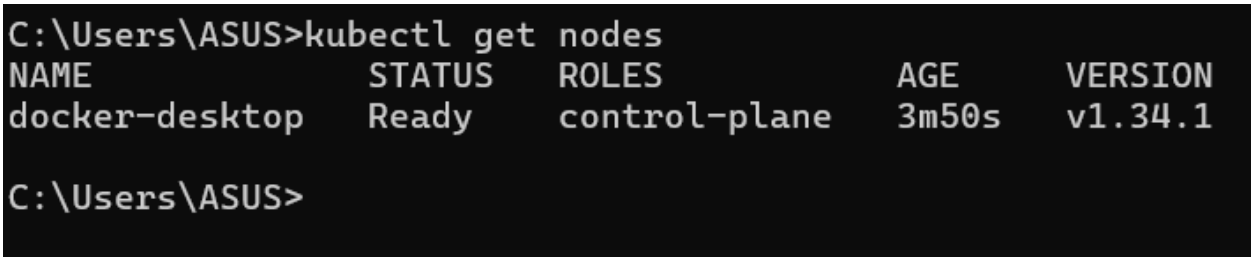
- kubectl version --client
- Check cluster status:
- kubectl cluster-info

Check nodes:

```
kubectl get nodes
```

Expected output:

Node status should be **Ready**



Step 3: Deploy Kubernetes Dashboard

Apply the official Kubernetes Dashboard manifest:

```
kubectl apply -f https://raw.githubusercontent.com/kubernetes/dashboard/v2.7.0/aio/deploy/recommended.yaml
```

```
C:\Users\ASUS>kubectl apply -f https://raw.githubusercontent.com/kubernetes/dashboard/v2.7.0/aio/deploy/recommended.yaml
namespace/kubernetes-dashboard created
serviceaccount/kubernetes-dashboard created
service/kubernetes-dashboard created
secret/kubernetes-dashboard-certs created
secret/kubernetes-dashboard-csrf created
secret/kubernetes-dashboard-key-holder created
configmap/kubernetes-dashboard-settings created
role.rbac.authorization.k8s.io/kubernetes-dashboard created
clusterrole.rbac.authorization.k8s.io/kubernetes-dashboard created
rolebinding.rbac.authorization.k8s.io/kubernetes-dashboard created
clusterrolebinding.rbac.authorization.k8s.io/kubernetes-dashboard created
deployment.apps/kubernetes-dashboard created
service/dashboard-metrics-scraper created
deployment.apps/dashboard-metrics-scraper created
```

Verify namespace creation:

```
kubectl get ns
```

```
C:\Users\ASUS>kubectl get ns
NAME                   STATUS   AGE
default                Active   5m1s
kube-node-lease        Active   5m1s
kube-public            Active   5m1s
kube-system            Active   5m1s
kubernetes-dashboard   Active   26s
```

You should see:

```
kubernetes-dashboard
```

```
C:\Users\ASUS>kubectl get pods -n kubernetes-dashboard
NAME                                         READY   STATUS    RESTARTS   AGE
dashboard-metrics-scraper-5ffb7d645f-j5bl7   1/1     Running   0          76s
kubernetes-dashboard-6c7b75ffc-q68cn         1/1     Running   0          76s
```

Step 4: Verify Dashboard Pods

Check dashboard pods:

```
kubectl get pods -n kubernetes-dashboard
```

Expected status:

Running

```
C:\Users\ASUS>kubectl get pods -n kubernetes-dashboard
NAME                                         READY   STATUS    RESTARTS   AGE
dashboard-metrics-scraper-5ffb7d645f-j5bl7   1/1     Running   0          76s
kubernetes-dashboard-6c7b75ffc-q68cn         1/1     Running   0          76s
```

Step 5: Create Admin User for Dashboard Access

Create a service account:

```
kubectl create serviceaccount dashboard-admin  -n kubernetes-dashboard
```

```
C:\Users\ASUS>kubectl create serviceaccount dashboard-admin -n kubernetes-das
hboard
serviceaccount/dashboard-admin created
```

Create cluster role binding:

```
kubectl create clusterrolebinding dashboard-admin-binding --clusterrole=cluster-admin
--serviceaccount=kubernetes-dashboard:dashboard-admin
```

```
C:\Users\ASUS>kubectl create clusterrolebinding dashboard-admin-binding --clu
sterrole=cluster-admin --serviceaccount=kubernetes-dashboard:dashboard-admin
clusterrolebinding.rbac.authorization.k8s.io/dashboard-admin-binding created
```

Step 6: Generate Dashboard Login Token

Run the following command to get the token:

```
kubectl -n kubernetes-dashboard create token dashboard-admin
```

Copy the generated token (you will paste it in the browser later).

```
C:\Users\ASUS>kubectl -n kubernetes-dashboard create token dashboard-admin
eyJhbGciOiJSUzI1NiIsImtpZCI6IlhneE9GNElxOWJCYTlGdkpmZks3TlNsdXROcE9yUDVTS0ItM
U41TC13SDAifQ.eyJhdWQiOlsiaHR0cHM6Ly9rdWJlcm5ldGVzLmRlZmF1bHQuc3ZjLmNsdXN0ZXI
ubG9jYWwiXSwiZXhwIjoxNzcxNzU0Mzc5LCJpYXQiOjE3NzE3NTA3NzksImlzcyI6Imh0dHBzOi8v
a3ViZXJuZXRlcy5kZWZhdWx0LnN2Yy5jbHVzdGVyLmxvY2FsIiwianRpIjoiNDJiZGE2Y2UtNWRkM
C00MzZiLTliNTktOGNhNWRjMzZiNzU1Iiwia3ViZXJuZXRlcy5pbyI6eyJuYW1lc3BhY2UiOiJrdW
Jlcm5ldGVzLWRhc2hib2FyZCIsInNlcnZpY2VhY2NvdW50Ijp7Im5hbWUiOiJkYXNoYm9hcmQtYWR
taW4iLCJ1aWQiOiJjNTkxN2MyNy1kZDE3LTRmYTEtYmIyZi1kNTI0ZjA4ZTFhY2UifX0sIm5iZiI6
MTc3MTc1MDc3OSwic3ViIjoic3lzdGVtOnNlcnZpY2VhY2NvdW50Omt1YmVybmV0ZXMtZGFzaGJvY
XJkOmRhc2hib2FyZC1hZG1pbiJ9.S852ZaDAOr1F1LkshotOBEQGH_KhAc1A-XA0qd2RaSQStAfZ2
xSP_BFnxH-SffCnYVvZ2imeXe5Trag2CQ9eznz2T3g3bKmXlN_W4mVoA64vJP3Nv3L79_2GAdK06f
SY3gCJWW572SBixvx3oYOnoV6tj2cznqooDrhaj3wHODv6Yxed5ZHkJM2CxCw4Fmq4AMMxEVyREm-
Q50qsnmk7K66jfl6l8FI2fi0nV_Hyb2KIzKqTJxhRNWDlo6oThvyazsMbWojkfDHGoqN-bMbFBZ0z
8omffr0cQg7vZ9YqHxRbxwrR-bA_QQuRMhOywNpYulSfdXqbHRw-Z3j9v2ac_A
```

Step 7: Start Kubernetes Dashboard

Run the proxy command:

```
kubectl proxy
```

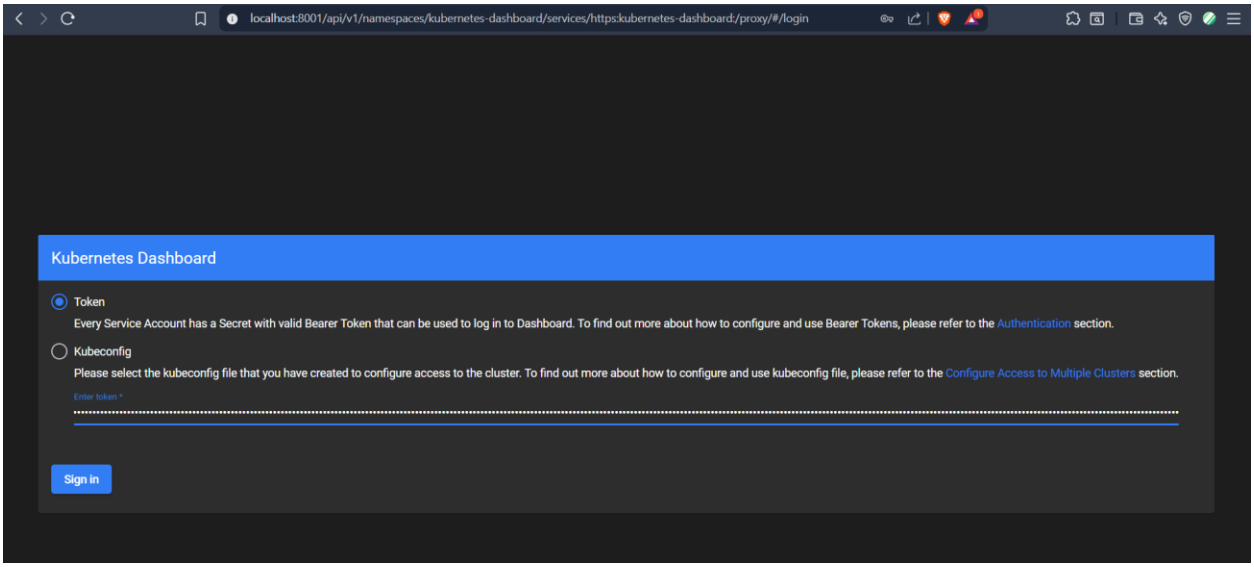
```
C:\Users\ASUS>kubectl proxy
Starting to serve on 127.0.0.1:8001
```

Keep this terminal **running**.

Step 8: Access Kubernetes Dashboard in Browser

Open a web browser and paste the following URL:

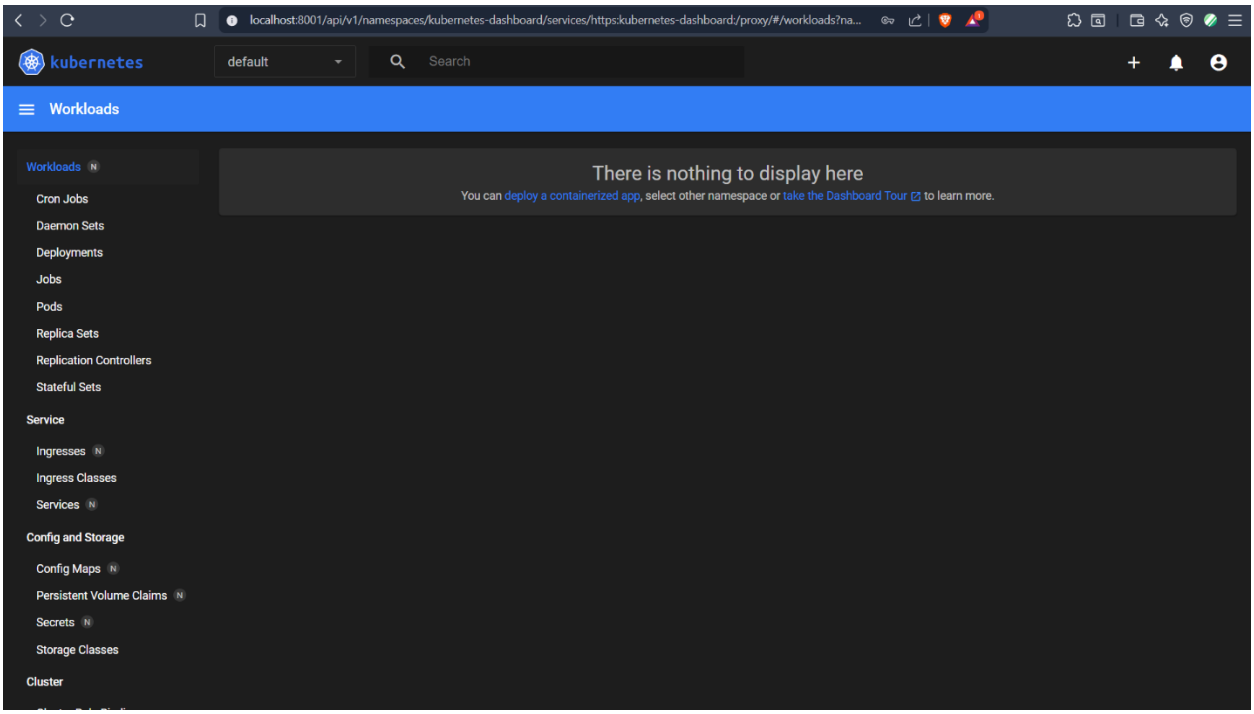
```
http://localhost:8001/api/v1/namespaces/kubernetes-dashboard/services/https:kubernetes-dashboard:/proxy/
```



Step 9: Login to Dashboard

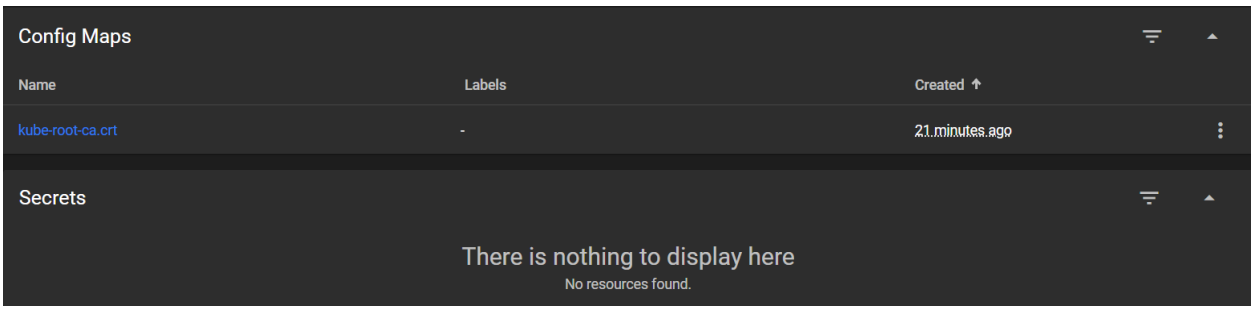
1. Select **Token** authentication
2. Paste the token generated earlier
3. Click **Sign In**

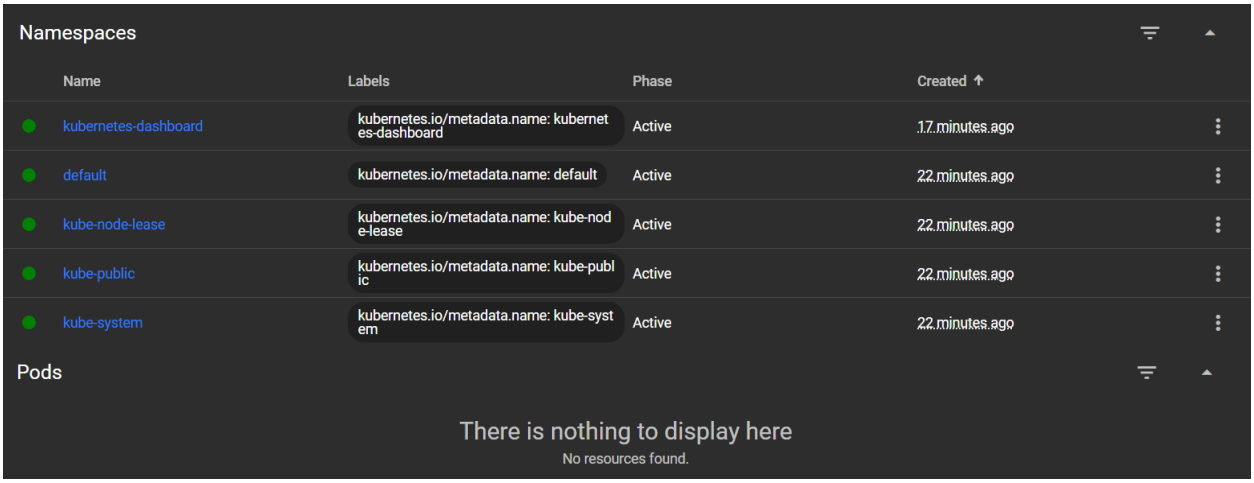
You should now see the **Kubernetes Dashboard UI**.



Step 10: Explore Dashboard

You can now view:

- Nodes
- Pods
- Deployments
- Services
- Namespaces
- ConfigMaps and Secrets
- 

- 
Namespaces
Name
Labels
Phase
Created
kubernetes-dashboard
kubernetes.io/metadata.name: kubernetes-dashboard
Active
17 minutes ago
default
kubernetes.io/metadata.name: default
Active
22 minutes ago
kube-node-lease
kubernetes.io/metadata.name: kube-node-lease
Active
22 minutes ago
kube-public
kubernetes.io/metadata.name: kube-public
Active
22 minutes ago
kube-system
kubernetes.io/metadata.name: kube-system
Active
22 minutes ago
Pods
There is nothing to display here
No resources found.