

# LAB GUIDE

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Lab: Deploy an Azure Kubernetes Service (AKS) cluster using the Azure portal

## Learning Objectives

- How to deploy an AKS cluster using the Azure portal.

## Pre-requisites

- Microsoft Azure Account: You'll need a valid and active Azure account for the Azure labs.

## Length

50 minutes

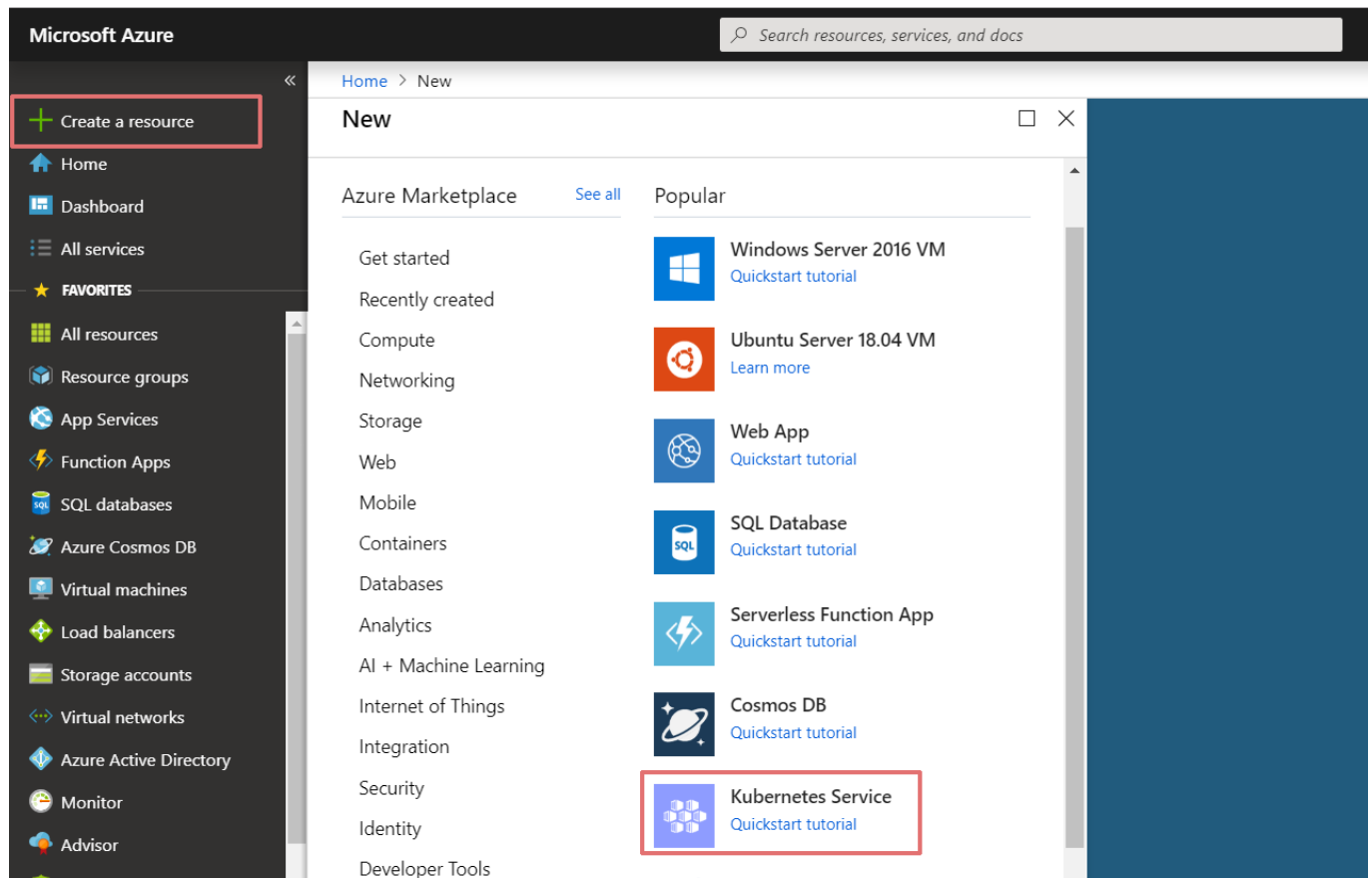
## Before you begin

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1. Sign in into the [Azure Portal](#) and follow the instructions

## Exercise 1: Create an AKS Cluster

1. First, click on **Create a resource** then click on **Kubernetes Service** button to initiate the configuration



2. Set the next options in **PROJECT DETAILS** and **CLUSTER DETAILS** sections and then click on **Next: Authentication >**

- Subscription: Select the subscription you are using for this lab.
- Version: Select the default version
- Resource group: Select the Module-03-XXXXX resource group, where XXXXX is the number generated for this lab
- Kubernetes cluster name: Enter a cluster name, for example myAKSCluster
- DNS name prefix: This field is automatically filled when typing the cluster name, if not, set a DNS name prefix, for example myAKSCluster-dns

## PROJECT DETAILS

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

\* Subscription ⓘ

\* Resource group ⓘ  [Create new](#)

## CLUSTER DETAILS

\* Kubernetes cluster name ⓘ  ✓

\* Region ⓘ

\* Kubernetes version ⓘ

\* DNS name prefix ⓘ  ✓

## SCALE

The number and size of nodes in your cluster. For production workloads, at least 3 nodes are recommended for resiliency. For development or test workloads, only one node is required. You will not be able to change the node size after cluster creation, but you will be able to change the number of nodes in your cluster after creation. [Learn more about scaling in Azure Kubernetes Service](#)

\* Node size ⓘ **Standard DS2 v2**  
2 vcpus, 7 GB memory  
[Change size](#)

\* Node count ⓘ

Virtual nodes (preview) ⓘ

[Review + create](#)
[Previous](#)
[Next : Authentication >](#)

- Click on **Configure service principal** then check the **Use Existing**, On Service principal client ID, enter the Application/Client ID obtained for this lab, and in the Service principal client secret, enter the Application Secret Key obtained for this lab, this both settings could be founded at the screen presented at the beginning of the labs, then click on **Ok**

Service Principal Details

Application/Client Id	<input type="text" value="db70c46a-4a8a-4add-89b9-4ac3977b599c"/>	
Application Display Name	<input type="text" value="https://odl_user_sp_55693"/>	
Application Secret Key	<input type="text" value="mxxm32YLE*ya"/>	
Subscription Id	<input type="text" value="4f31fe58-0344-43f6-a029-e2e6e2354c3c"/>	
Tenant Id	<input type="text" value="cefc8e7-ee30-49b8-b190-133f1daafd85"/>	
Tenant Domain Name	<input type="text" value="msazurelabs.onmicrosoft.com"/>	

- click on **Yes** on **Enable RBAC** option for Kubernetes role-based access controls (RBAC)

Home > New > Create Kubernetes cluster

## Create Kubernetes cluster

Basics Authentication Networking Monitoring Tags Review + create

The **cluster infrastructure** service principal is used by the Kubernetes cluster to manage cloud resources attached to the cluster. [Learn more](#)

**Kubernetes authentication and authorization** is used by the Kubernetes cluster to control user access to the cluster as well as what the user may do once authenticated. [Learn more](#)

CLUSTER INFRASTRUCTURE

\* Service principal ⓘ (new) default service principal  
[Configure service principal](#)

KUBERNETES AUTHENTICATION AND AUTHORIZATION

Enable RBAC ⓘ No Yes

5. Go to Monitoring Tab and Set **No** for Enable container monitoring

Create Kubernetes cluster

Basics Authentication Networking Monitoring Tags Review + create

With Azure Kubernetes Service, you will get CPU and memory usage metrics for each node. In addition, you can enable container monitoring capabilities and get insights into the performance and health of your entire Kubernetes cluster. You will be billed based on the amount of data ingested and your data retention settings.

[Learn more about container performance and health monitoring](#)  
[Learn more about pricing](#)

AZURE MONITOR

Enable container monitoring No Yes

6. click on **Review + create**, after Azure completes the review click on create

# Create Kubernetes cluster

✓ Validation passed

Basics

Authentication

Networking

Monitoring

Tags

Review + create

BASICS

Subscription

Resource group

Region

Kubernetes cluster name

Kubernetes version

DNS name prefix

Node count

Node size

Virtual nodes (preview)

East US

3

Standard\_DS2\_v2

Disabled

AUTHENTICATION

Enable RBAC

Yes

NETWORKING

HTTP application routing

Network configuration

No

Basic

MONITORING

Enable container monitoring

Yes

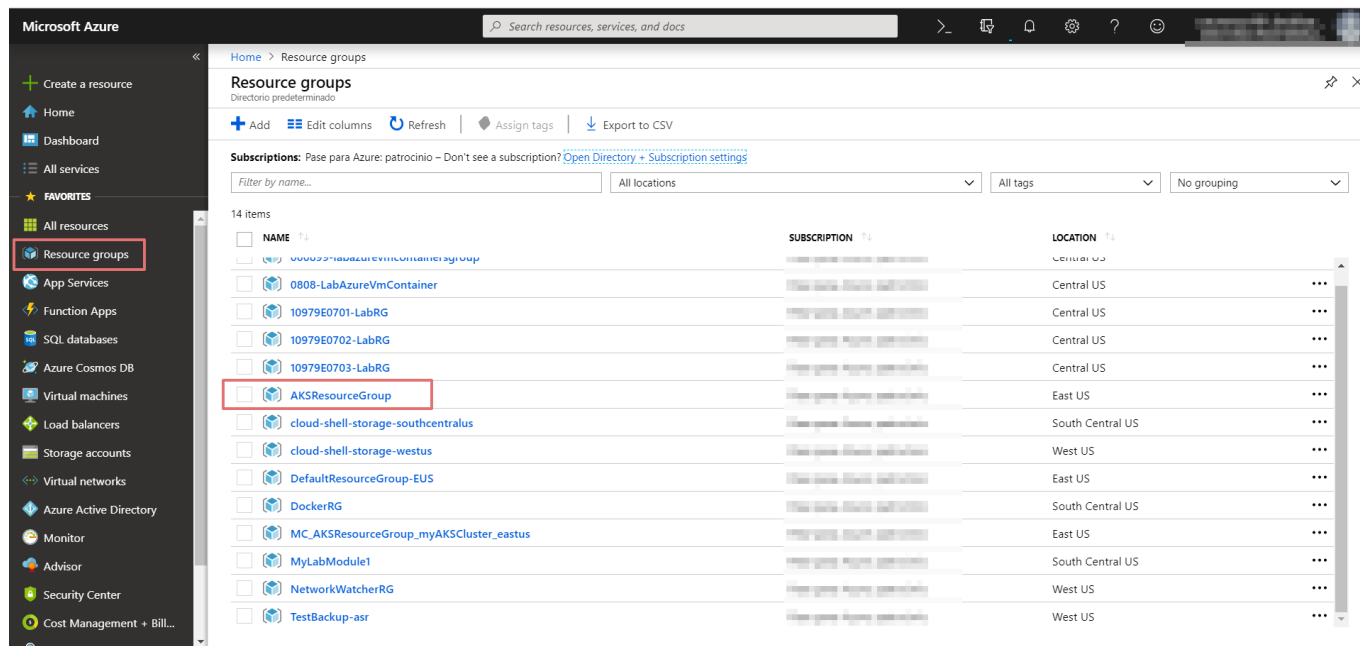
Create

Previous

Next

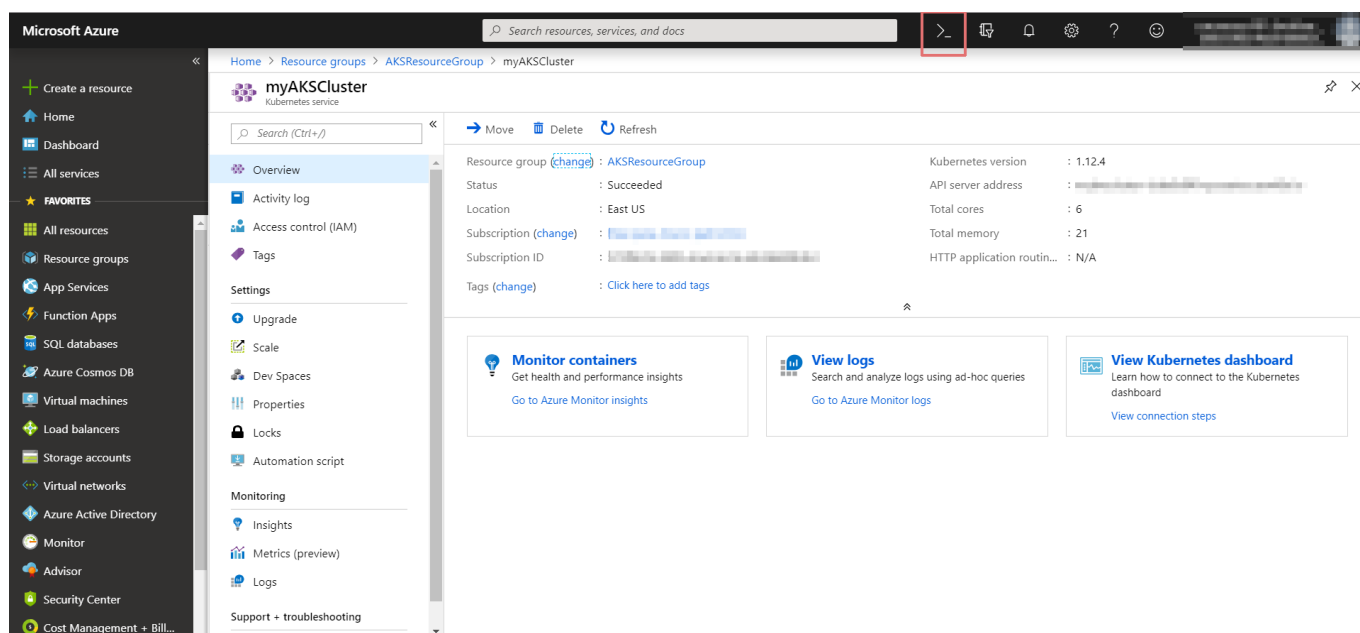
Download a template for automation

**note** It takes a few minutes to create the AKS cluster and to be ready for use. When finished, browse to the AKS cluster resource group, such as Module-03-XXXXX, and select the AKS resource, such as myAKSCluster. The AKS cluster dashboard is shown.



## Task 2: Connect to the cluster

1. Click on the marked to open Cloud Shell



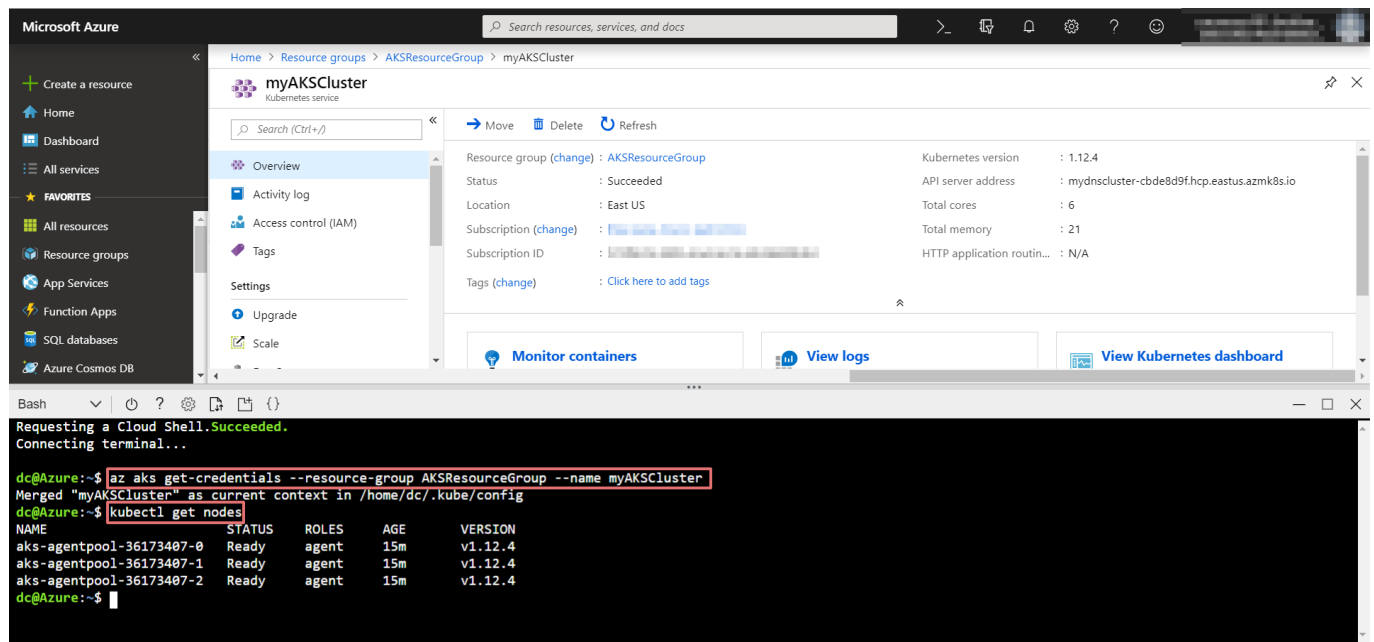
2. Write the next command to obtain the credentials to your Kubernetes cluster, replace the XXXXX on the resource group to match the with the number generated for your lab, and replace the myAKSCluster with the name you specified on the past task.

```
az aks get-credentials --resource-group Module-03-XXXXX --name myAKSCluster
```

3. Write the next command to configure kubectl to connect to your Kubernetes cluster

```
kubectl get nodes
```

**note** This command downloads credentials and configures the Kubernetes CLI to use them



The screenshot shows the Azure portal interface for a Kubernetes cluster named 'myAKSCluster'. The cluster is in the 'AKSResourceGroup' and is 'Succeeded'. The overview page displays various details such as the resource group, status, location, subscription, and tags. Below the overview, a terminal window shows the execution of the following commands:

```
dc@Azure:~$ az aks get-credentials --resource-group AKSResourceGroup --name myAKSCluster
Merged "myAKSCluster" as current context in /home/dc/.kube/config
dc@Azure:~$ kubectl get nodes
```

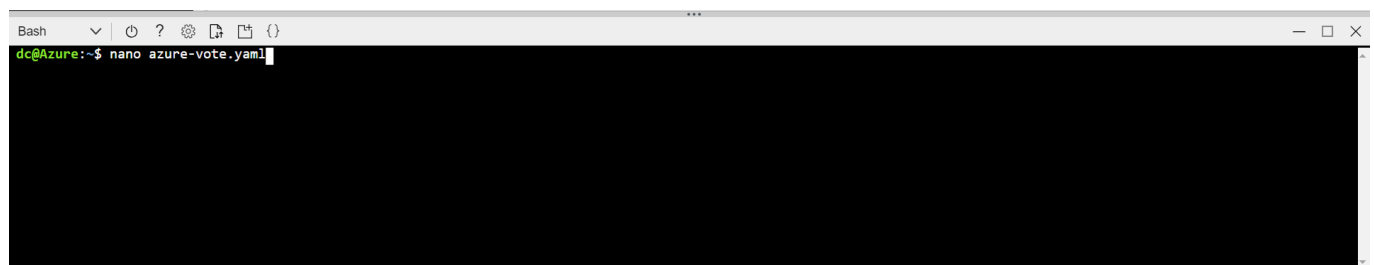
The output of the 'kubectl get nodes' command is as follows:

NAME	STATUS	ROLES	AGE	VERSION
aks-agentpool-36173407-0	Ready	agent	15m	v1.12.4
aks-agentpool-36173407-1	Ready	agent	15m	v1.12.4
aks-agentpool-36173407-2	Ready	agent	15m	v1.12.4

## Exercise 2: Run the application

1. Write the next command to create a new file named **azure-vote.yaml**

```
nano azure-vote.yaml
```



The screenshot shows a terminal window with the command 'nano azure-vote.yaml' being executed. The prompt is 'dc@Azure:~\$'.

**note** you can use **nano** or **vi** to create the file

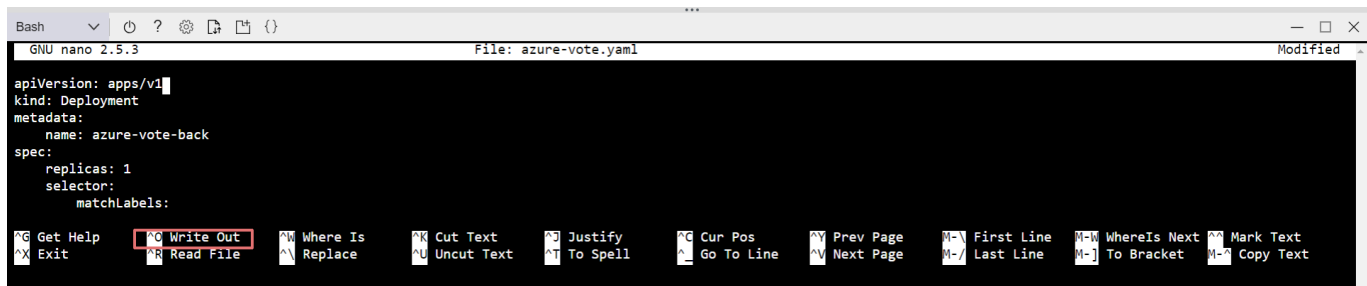
2. Copy the next content and paste in your new file

```
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:
  containers:
  - name: azure-vote-back
    image: redis
    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:
      containers:
      - name: azure-vote-front
        image: microsoft/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"
```

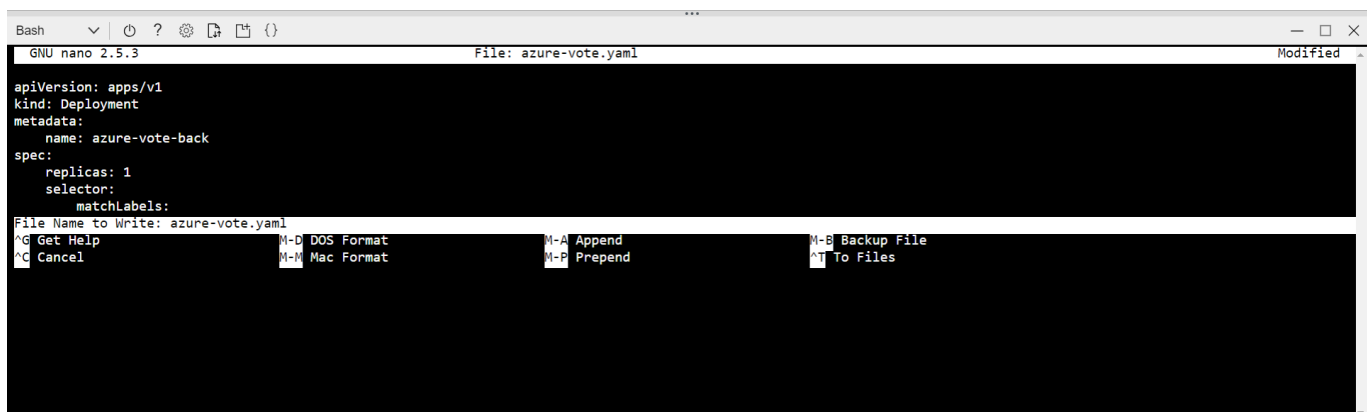


```
---
apiVersion: v1
kind: Service
metadata:
  name: azure-vote-front
spec:
  type: LoadBalancer
  ports:
  - port: 80
  selector:
    app: azure-vote-front
```



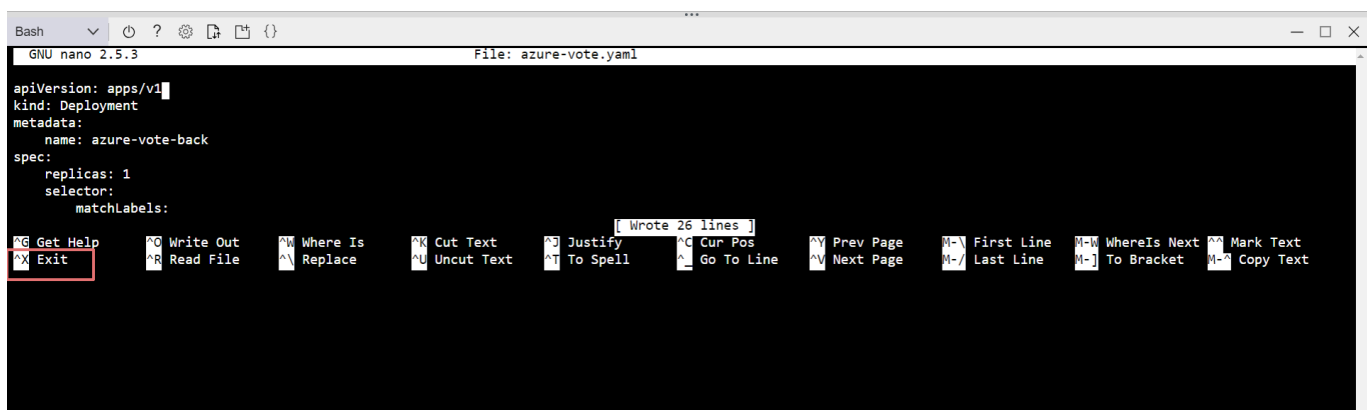
The screenshot shows the GNU nano 2.5.3 text editor with the file 'azure-vote.yaml'. The content of the file is the same as the previous block. The bottom menu is visible, and the 'Write Out' option (represented by a disk icon) is highlighted with a red box.

## 2. Press ctrl+O



The screenshot shows the GNU nano 2.5.3 text editor with the file 'azure-vote.yaml'. The content of the file is the same as the previous block. The bottom menu is visible, and the 'File Name to Write: azure-vote.yaml' prompt is shown, indicating that the user has pressed ctrl+O.

## 3. Press Enter



The screenshot shows the GNU nano 2.5.3 text editor with the file 'azure-vote.yaml'. The content of the file is the same as the previous block. The bottom menu is visible, and the 'Wrote 26 lines' message is shown, indicating that the user has pressed Enter to save the file.

## 4. Press ctrl+X

## 5. Type the next command to deploy the application

```
kubectl apply -f azure-vote.yaml
```

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

**note** When you complete this exercise your application will be deployed

## Exercise 3: Test the application

1. Run the next command to monitor the progress

```
kubectl get service azure-vote-front --watch
```

```
dc@Azure:~$ kubectl get service azure-vote-front --watch
NAME                TYPE          CLUSTER-IP    EXTERNAL-IP    PORT(S)          AGE
azure-vote-front    LoadBalancer 10.0.22.149    40.121.95.100  80:31149/TCP     3m
```

**note** If **EXTERNAL-IP** is **pending** wait until the value changes to an actual **public IP**

2. When the **EXTERNAL-IP** address changes from pending to an actual public IP address, use **CTRL+C** to stop the **kubectl** watch process
3. Open a new tab on your browser, enter your external-IP, and you'll see your service running

# Azure Voting App

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Cats

Dogs

Reset

Cats - 0 | Dogs - 0

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**note** your application is now online

4. Close the Cloud Shell Window.

End of the lab