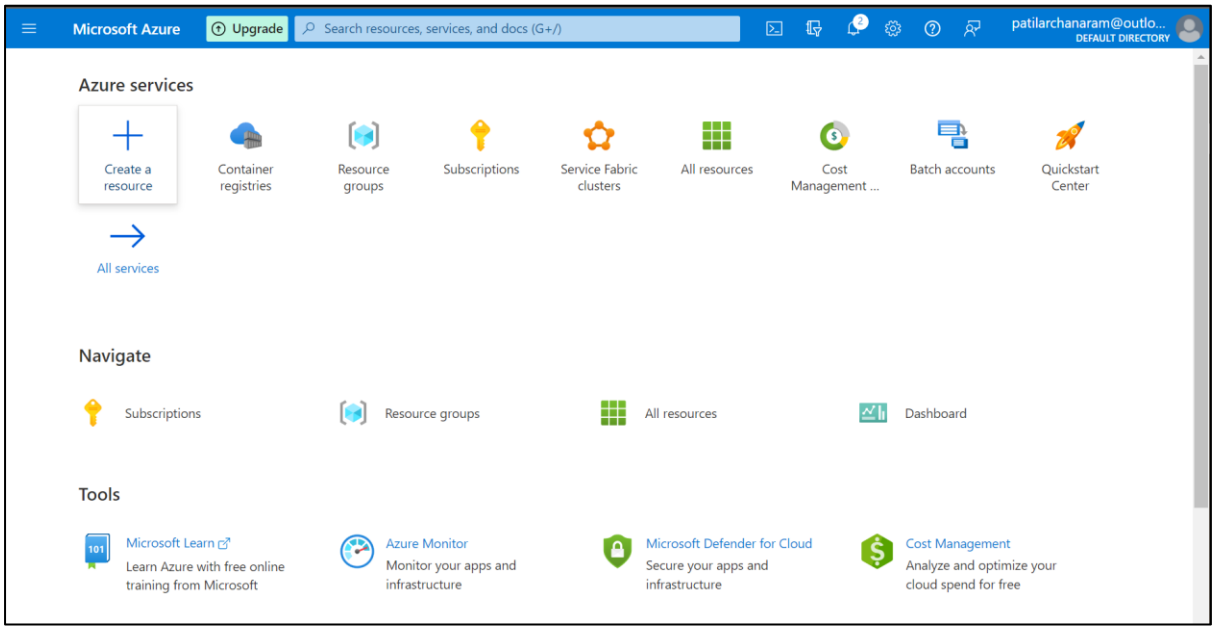
PRACTICAL NO - 03

A) Create an Azure Kubernetes Service Cluster

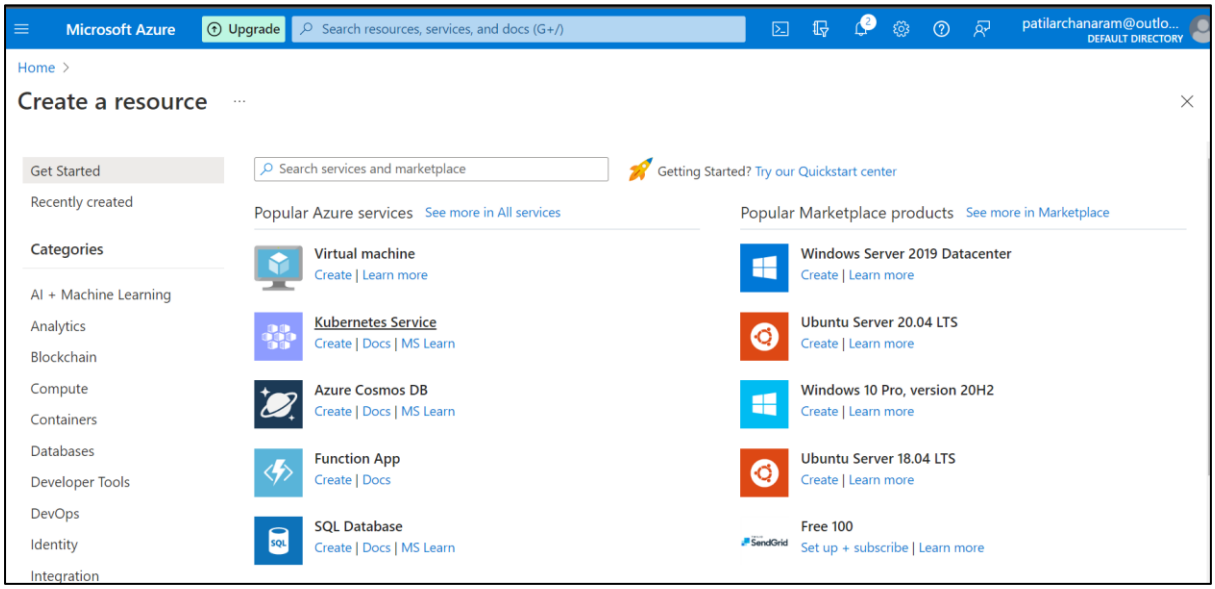
Step I - Sign in to the Azure portal

Step II - Create AKS Cluster

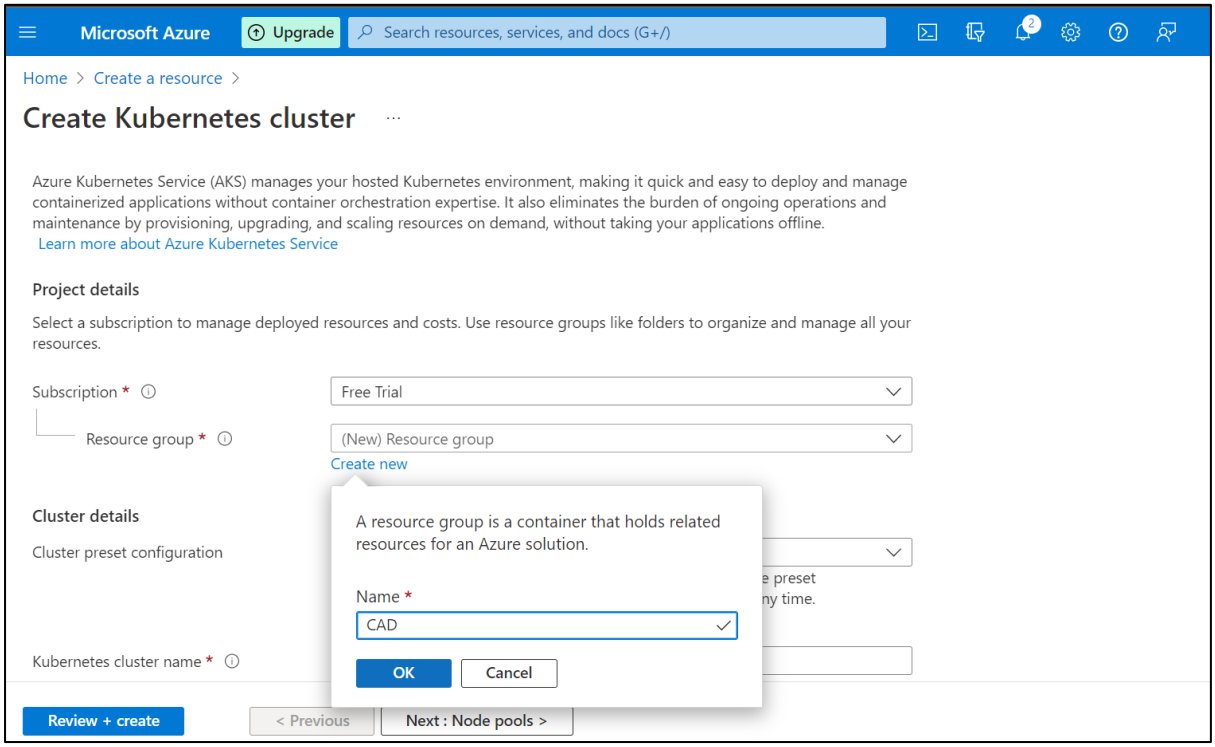
- Select + *Create a resource* from the Microsoft Azure Home page.



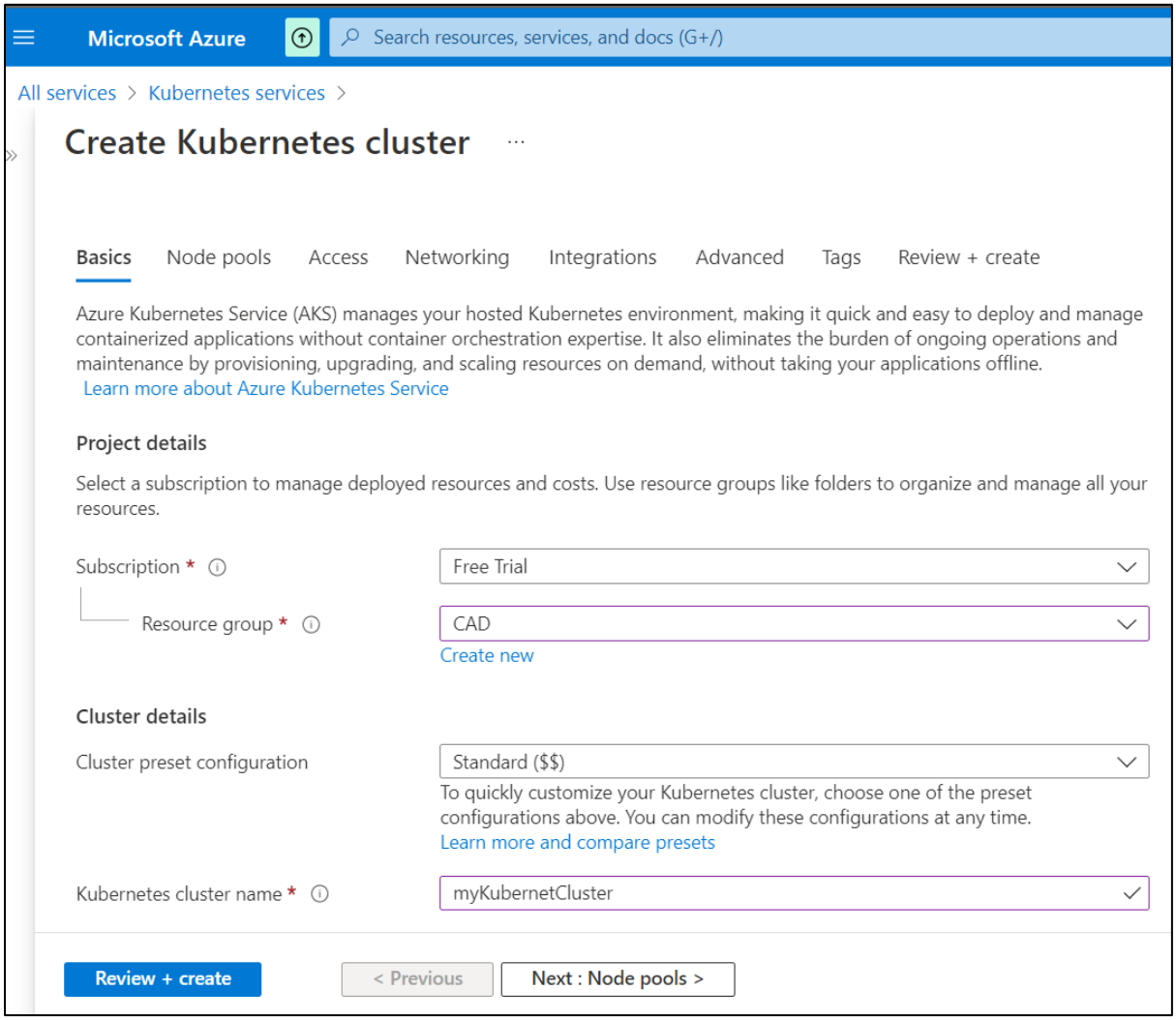
- Select Kubernetes Service



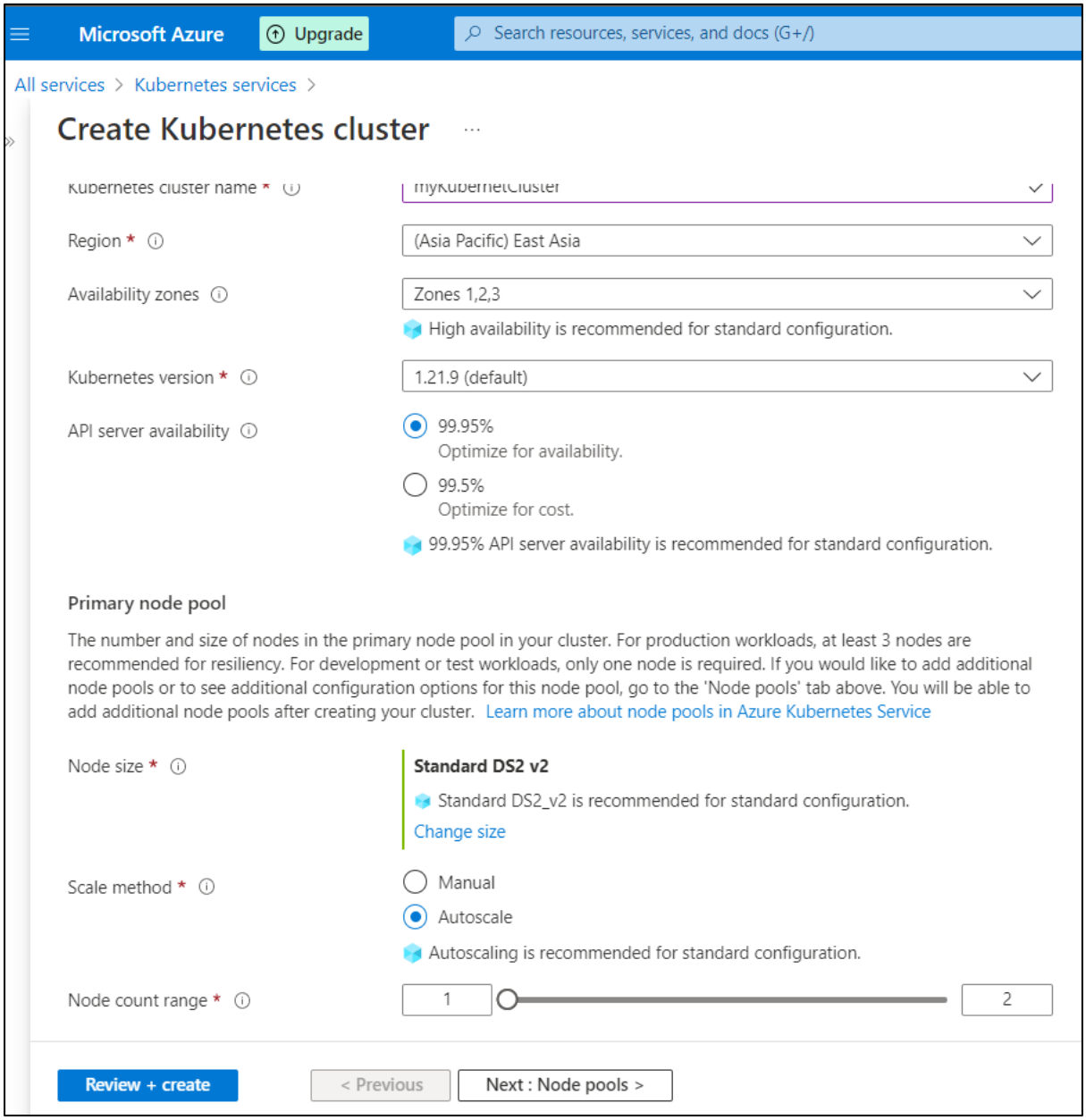
- Enter the subscription. Select resource group. If a resource group is not created then click Create new ➤ Name it ➤ Ok.



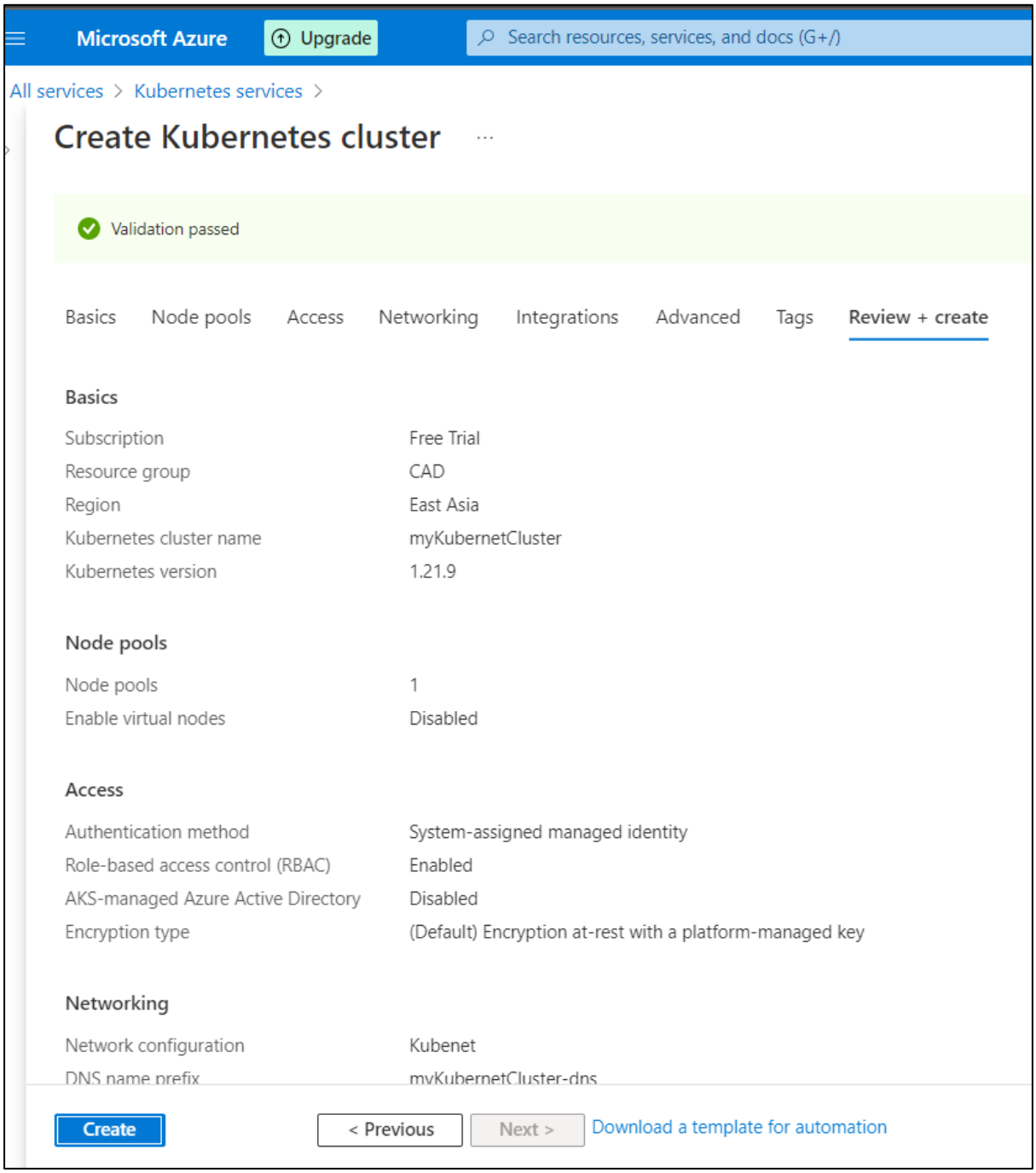
- Select Cluster preset configuration.
- Enter cluster name.



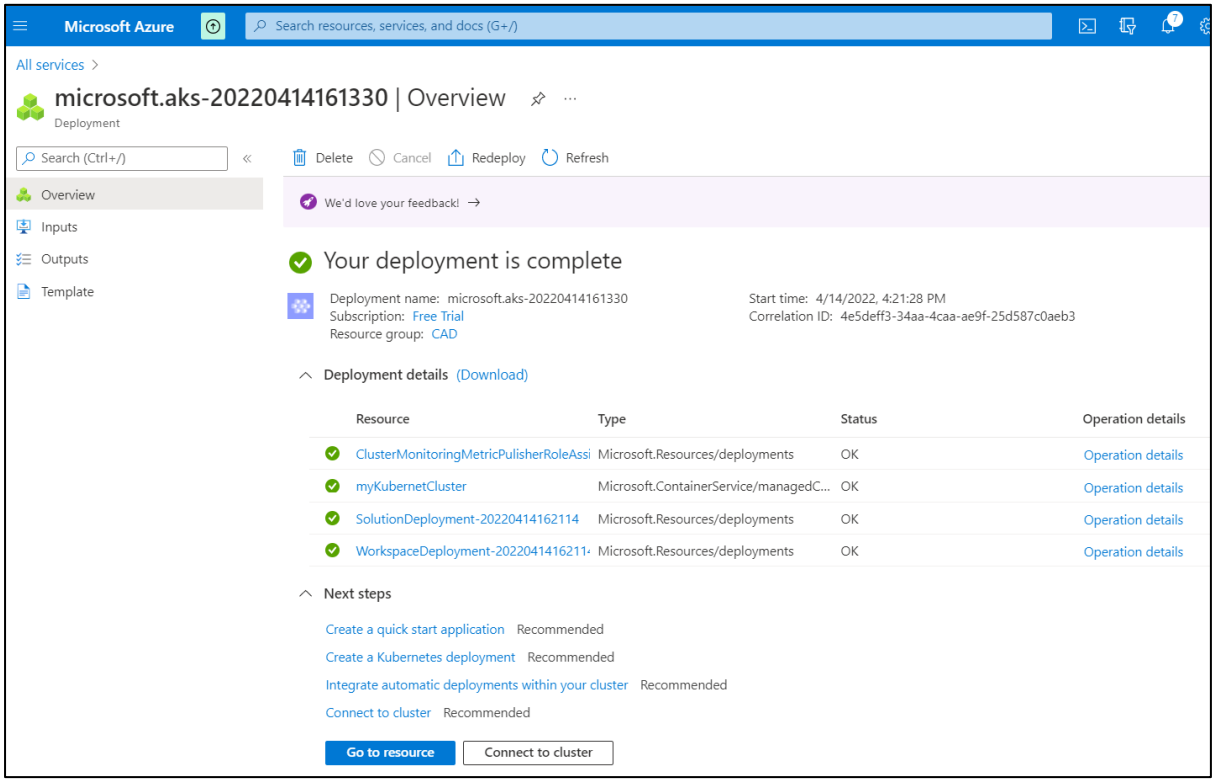
- Select region, Kubernetes version, Node count range, and scale method, as shown in the Figure below ➤ Click on Review + create



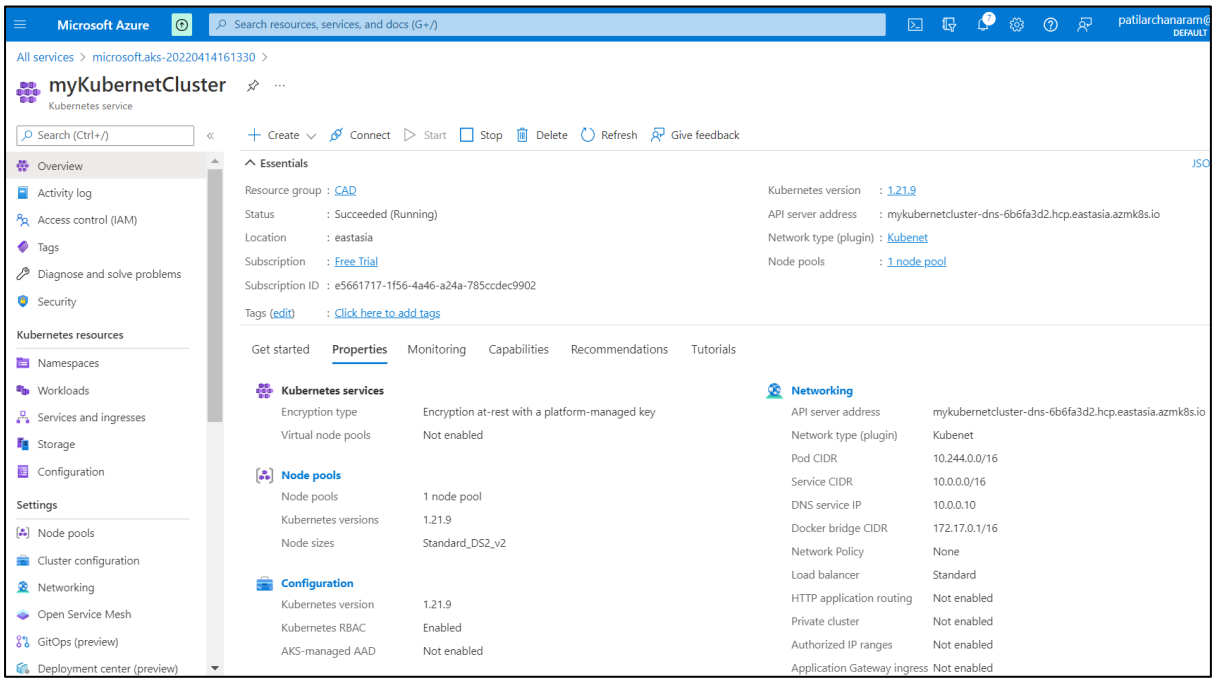
- If will get a message as *Validation Passed* as shown below ➤ click on Create.



- Deployment will get started. Wait for a few minutes. Once deployment is completed ➤ click on '*Go to resource*'.

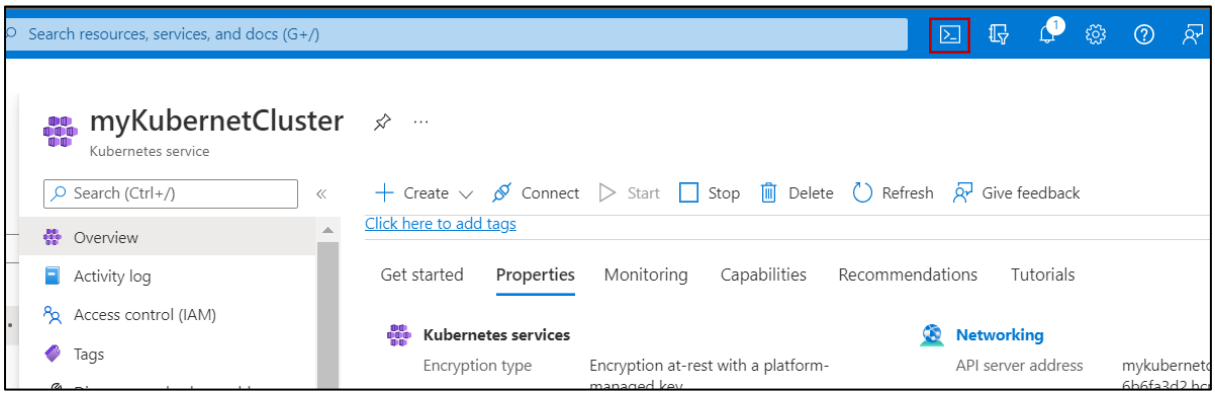


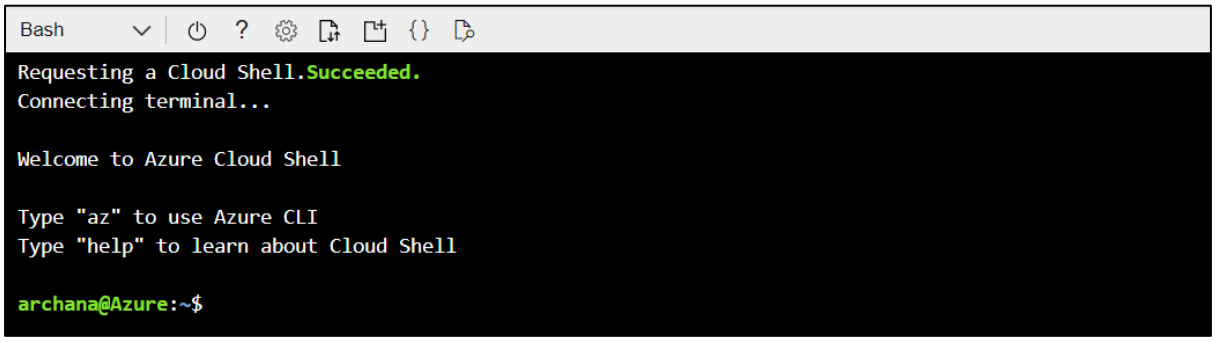
- You will get navigated to the newly created Azure Kubernetes Service Cluster.



Step III - Connect to the cluster

- To manage a Kubernetes cluster, use the Kubernetes command-line client, kubectl. The kubectl is already installed if you use Azure Cloud Shell.
- Open *Cloud Shell* using the >_ button on the top of the Azure portal. ➤ *Bash*





- Configure *kubectl* to connect to your Kubernetes cluster using the *az aks get-credentials* command. The following command downloads credentials and configures the Kubernetes CLI to use them.

az aks get-credentials -g [Resource Group] -n [Name of Azure Kubernetes Service]

```
archana@Azure:~$ az aks get-credentials -g CAD -n myKubernetCluster
Merged "myKubernetCluster" as current context in /home/archana/.kube/config
archana@Azure:~$
```

- Verify the connection to your cluster using *kubectl get* to return a list of the cluster nodes.

kubectl get nodes

```
archana@Azure:~$ kubectl get nodes
NAME                                STATUS   ROLES   AGE   VERSION
aks-agentpool-14713057-vmss000001   Ready    agent   10h   v1.21.9
```

B) Deploy Application on AKS

Step I – Create *myfile.yaml* file

- Copy the following code and save the file as *myfile.yaml* and save it to Desktop. We will use this file to deploy an app to the AKS cluster using Azure CLI.
- There are two deployments and two services.

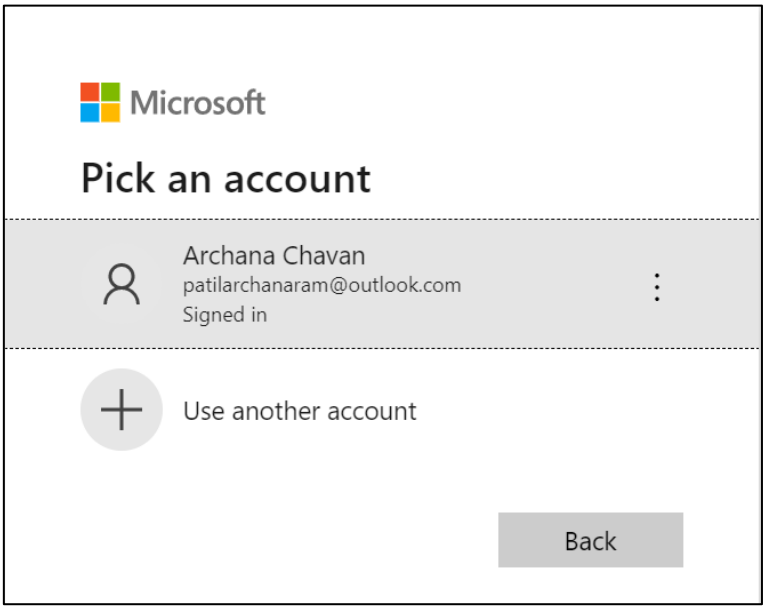
```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: azure-vote-back
spec:
  replicas: 1
  selector:
    matchLabels:
      app: azure-vote-back
  template:
    metadata:
      labels:
        app: azure-vote-back
    spec:
      nodeSelector:
        "kubernetes.io/os": linux
      containers:
      - 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:
        "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
```

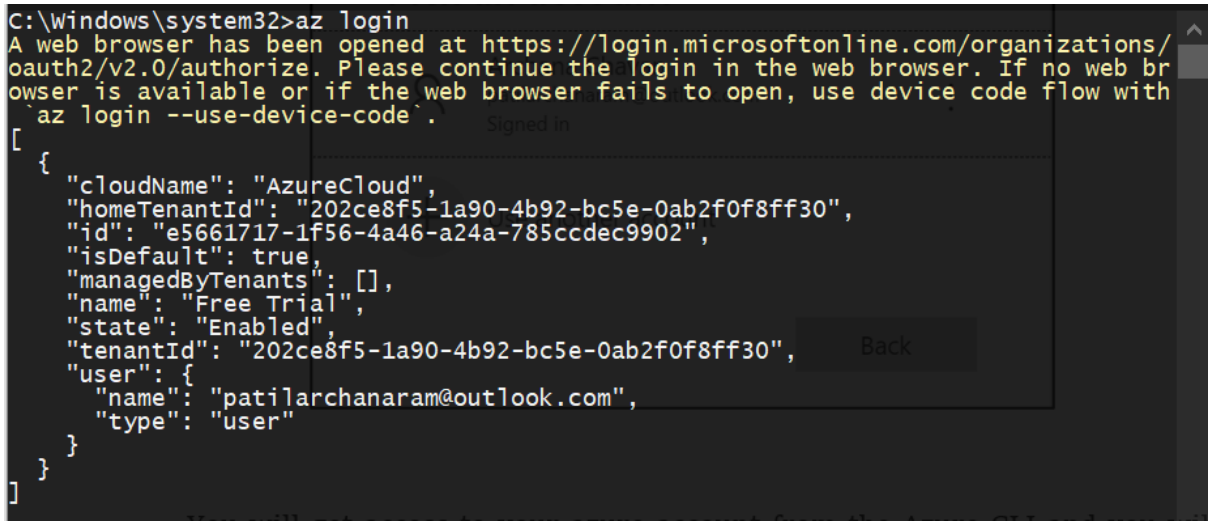
Step II – Deploy app using Azure CLI

- Now open a command prompt as an administrator. Login to your azure account by using *az login* command as shown in the figure below.

- It will redirect you to another page. Select your Microsoft account here.



- You will get access to your azure account from the Azure CLI and you will get the following screen.



- Now navigate to the desktop where the myfile.yaml file is saved.
- Now run the following command to deploy the app on AKS cluster.

kubectl apply -f myfile.yaml

```
C:\Windows>cd system32

C:\Windows\System32>cd /

C:\>cd users/patil/Desk*

C:\Users\patil\Desktop>kubectl apply -f myfile.yaml
deployment.apps/azure-vote-back created
service/azure-vote-back created
deployment.apps/azure-vote-front created
service/azure-vote-front created
```

- Here we can see that there are 2 deployments and 2 services created successfully.
- Now run command

kubectl get pods

```
C:\Users\patil\Desktop>kubectl get pods
NAME                              READY   STATUS    RESTARTS   AGE
azure-vote-back-6c4dd64bdf-9bfpx  1/1     Running   0          6m7s
azure-vote-front-85b4df594d-zzfrg 1/1     Running   0          6m7s
```

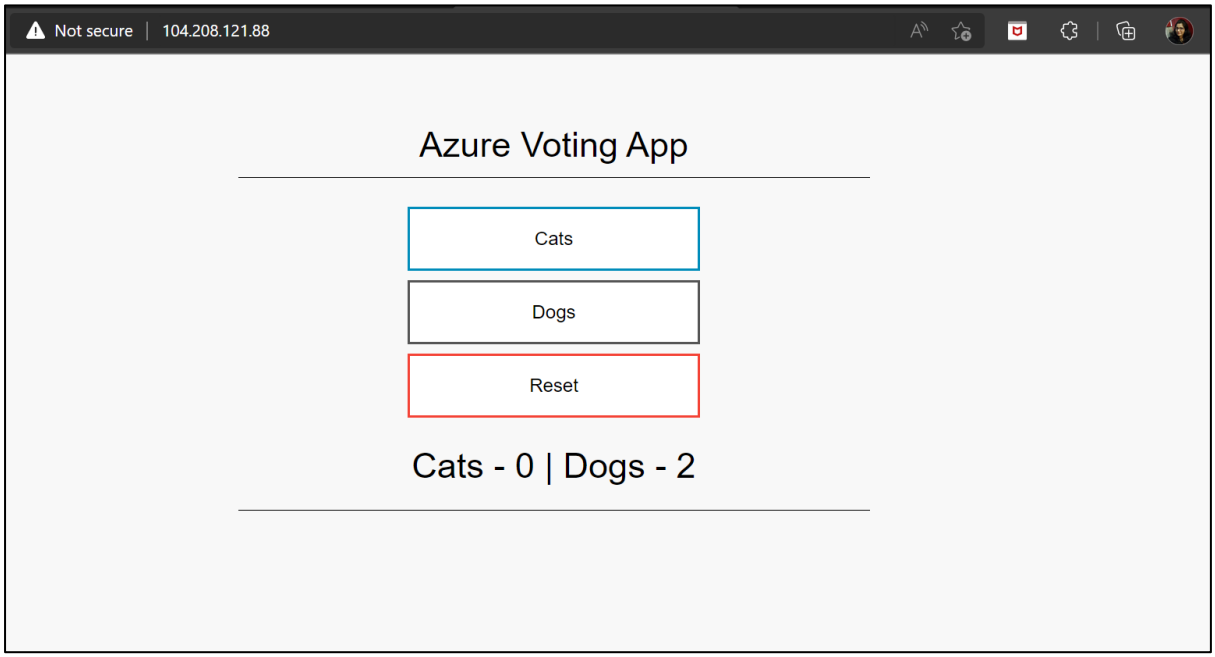
- We can see there are 2 pods running successfully.
- Now to see services run command

kubectl get services

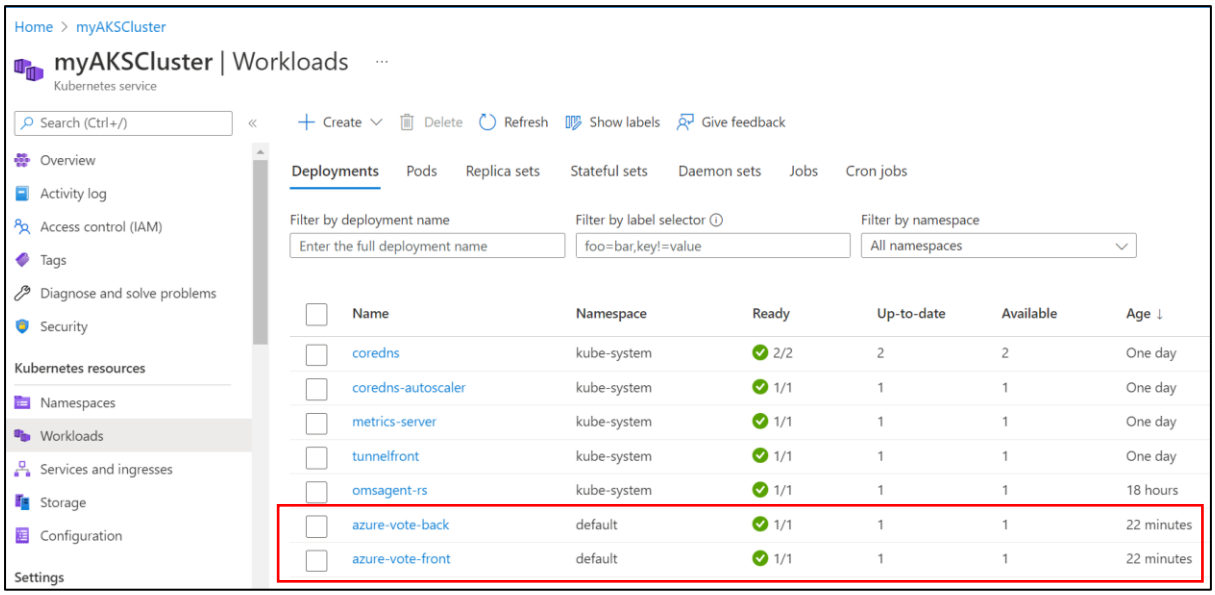
```
C:\Users\patil\Desktop>kubectl get services
NAME              TYPE           CLUSTER-IP     EXTERNAL-IP      PORT(S)
AGE
azure-vote-back   ClusterIP      10.0.64.248    <none>           6379/TCP
8m44s
azure-vote-front  LoadBalancer   10.0.91.173    104.208.121.88   80:30588/TCP
8m43s
kubernetes        ClusterIP      10.0.0.1       <none>           443/TCP
5h24m
```

- We can see the azure-vote-back and azure-vote-front services with their corresponding Type, Custer-IP and Ports. The azure-vote-front service has External-IP that we use in the browser to run the app.

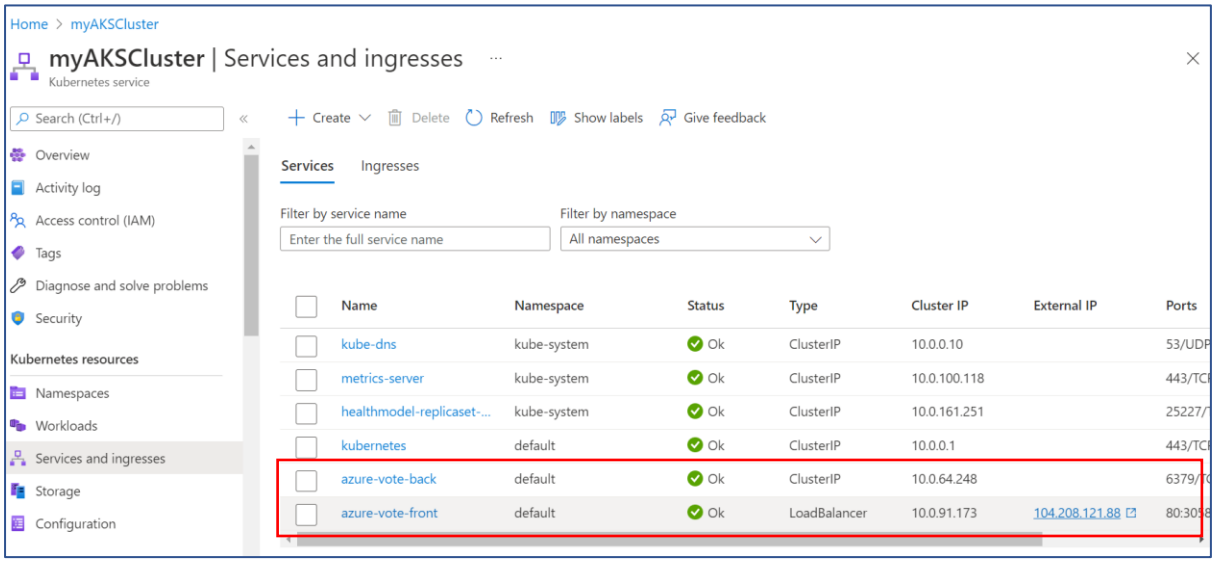
- Now copy this External-IP and paste it in the browser to run app.



- Now login to your azure portal account. > Go to your kubernet service cluster > from the left pane click on *workloads*.
- Here in the Deployment tab you can see your current deployment



- Now click on Services and ingresses from the left pane. We can see the azure-vote-back and azure-vote-front services.



- You can see the External IP of azure-vote-front service. Just click on that ip address your app will run the browser.