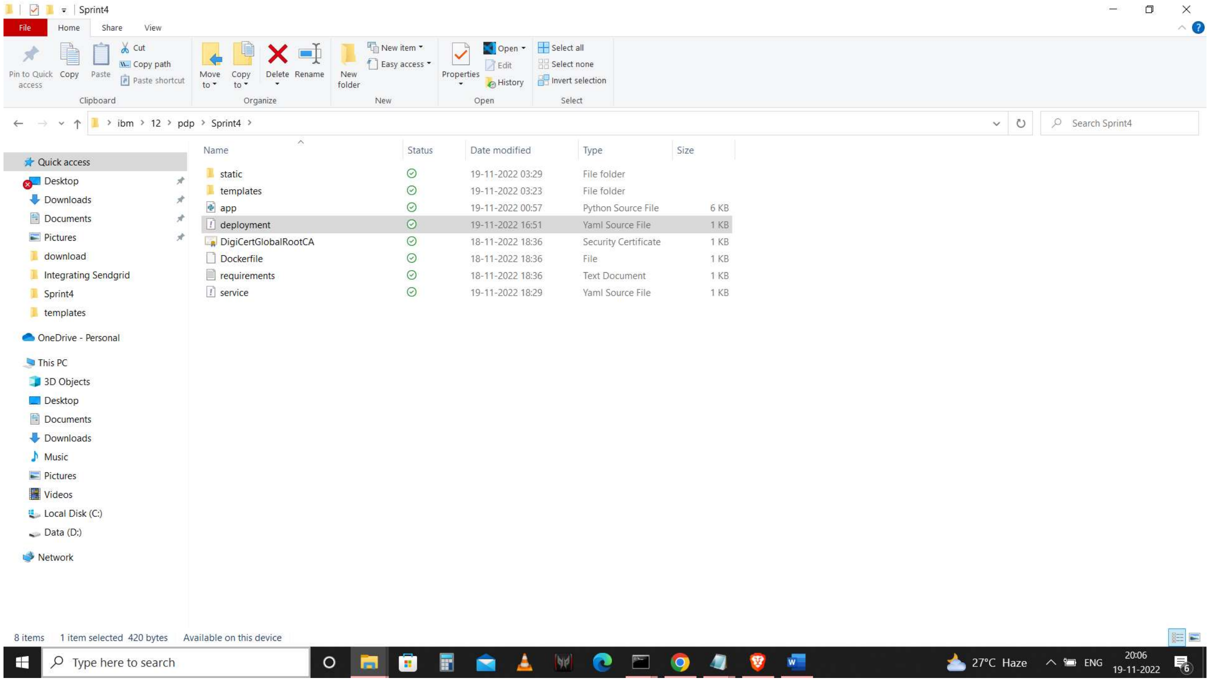
Deploy on Kubernetes Cluster Deploy on Kubernetes

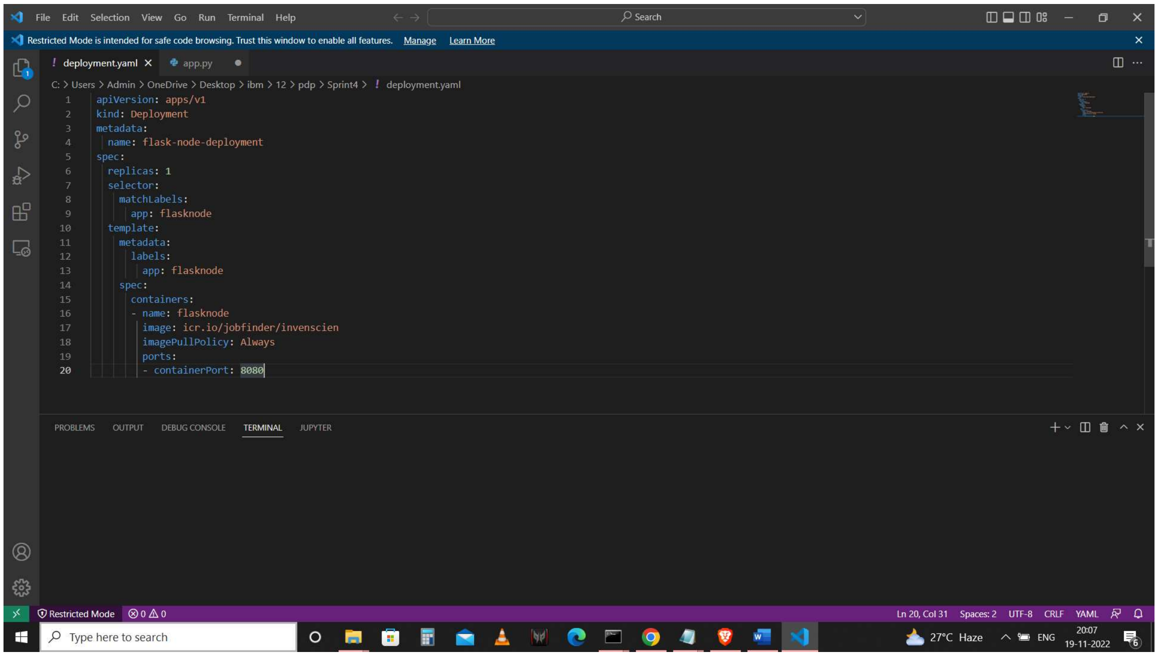
Team ID	PNT2022TMID27335
Project Name	Skill/Job Recommender Application

Step 1. Create configuration files for Kubernetes



Name	Status	Date modified	Type	Size
static	✓	19-11-2022 03:29	File folder	
templates	✓	19-11-2022 03:23	File folder	
app	✓	19-11-2022 00:57	Python Source File	6 KB
deployment	✓	19-11-2022 16:51	Yaml Source File	1 KB
DigiCertGlobalRootCA	✓	18-11-2022 18:36	Security Certificate	1 KB
Dockerfile	✓	18-11-2022 18:36	File	1 KB
requirements	✓	18-11-2022 18:36	Text Document	1 KB
service	✓	19-11-2022 18:29	Yaml Source File	1 KB

Step 2: In the deployment.yaml file , add the following information

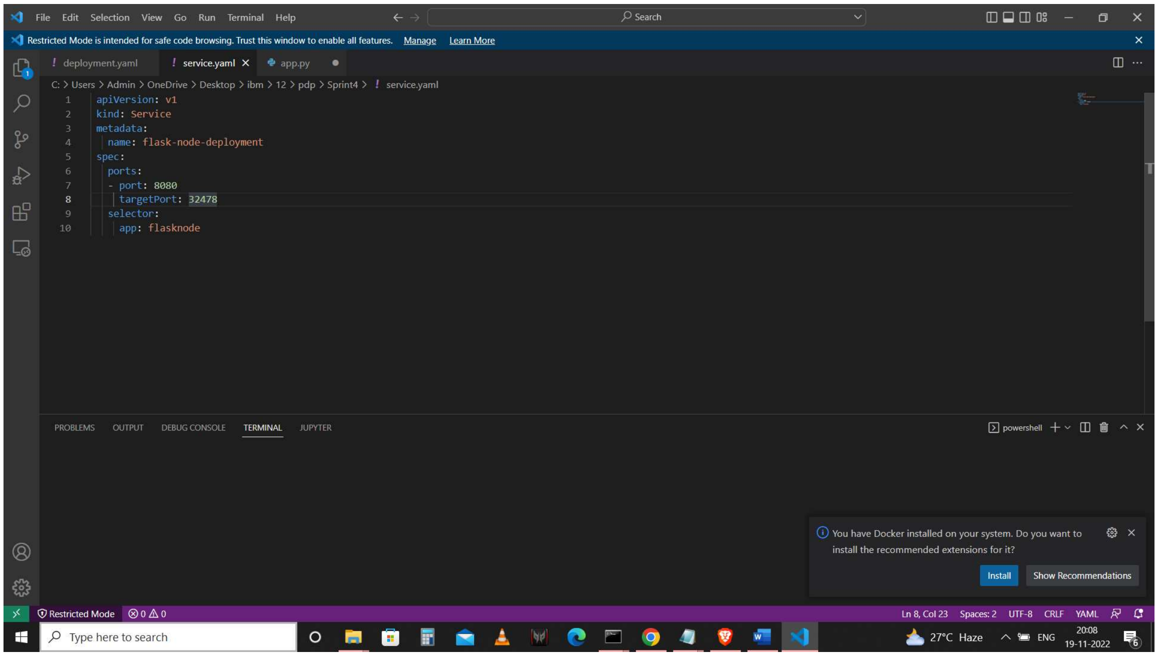


File Edit Selection View Go Run Terminal Help
Search
deployment.yaml
app.py
C: > Users > Admin > OneDrive > Desktop > ibm > 12 > pdp > Sprint4 > deployment.yaml
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
Restricted Mode
Ln 20, Col 31 Spaces: 2 UTF-8 CRLF YAML
Type here to search
27°C Haze ENG 20:07 19-11-2022

Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: flask-node-deployment
spec:
  replicas: 1
  selector:
    matchLabels:
      app: flasknode
  template:
    metadata:
      labels:
        app: flasknode
    spec:
      containers:
      - name: flasknode
        image: icr.io/jobfinder/invenscien
        imagePullPolicy: Always
        ports:
        - containerPort: 8080
```

Step 3: In the service.yaml file , add the following details



File Edit Selection View Go Run Terminal Help
Search
deployment.yaml
service.yaml
app.py
C: > Users > Admin > OneDrive > Desktop > ibm > 12 > pdp > Sprint4 > service.yaml
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
powershell
Install
Show Recommendations
Restricted Mode
Ln 8, Col 23 Spaces: 2 UTF-8 CRLF YAML
Type here to search
27°C Haze ENG 20:08 19-11-2022

Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More

```yaml
apiVersion: v1
kind: Service
metadata:
  name: flask-node-deployment
spec:
  ports:
  - port: 8080
    targetPort: 32478
  selector:
    app: flasknode
```

You have Docker installed on your system. Do you want to install the recommended extensions for it?

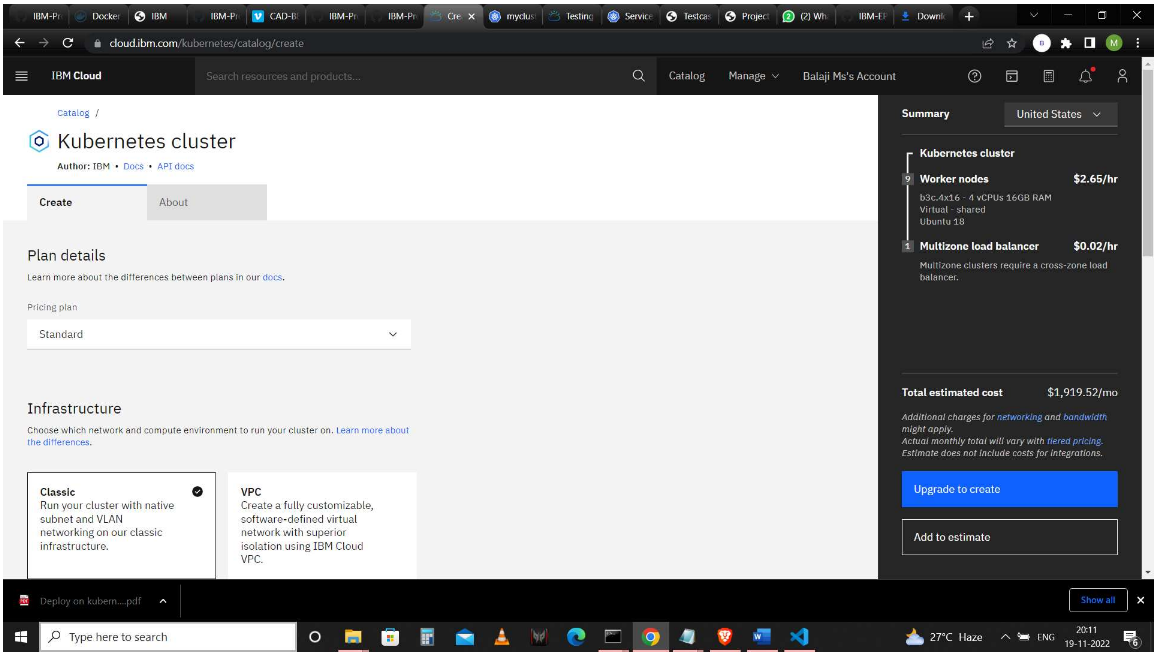
Explanation and breakdown of the deployment.yaml code

1. A deployment named flask-node-deployment is created, indicated by the .metadata.name field.
2. The deployment creates one replicated pod, indicated by the replicas field.
3. The selector field defines how the Deployment finds which Pods to manage. In this case, we simply select on one label defined in the Pod template (app: flasknode). However, more sophisticated selection rules are possible, as long as the Pod template itself satisfies the rule.
4. The pod template's specification, .template.spec, indicates that the pods run one container, flasknode, which runs the app private registry image.
5. The deployment opens port 8080 for use by the Pods.

Explanation and breakdown of the service.yaml code

1. The service.yaml's specification will create a new service object named flask-nodedeployment which targets TCP port 8080 on any Pod with the "app=flasknode" label. This Service will also be assigned an IP address (sometimes called the cluster IP), which is used by the service proxies (see below). The Service's selector will be evaluated continuously and the results will be POSTed to an Endpoints object also named flask-node-deployment.
2. Note that a service can map an incoming port to any targetPort. By default the targetPort will be set to the same value as the port field. Perhaps more interesting is that targetPort can be a string, referring to the name of a port in the backend Pods. The actual port number assigned to that name can be different in each backend Pod. This offers a lot of flexibility for deploying and evolving your Services. For example, you can change the port number that pods expose in the next version of your backend software, without breaking clients.

Step 4: Login to ibmcloud and in the Catalog , search for the Kubernetes Service and create one cluster



cloud.ibm.com/kubernetes/catalog/create

Catalog /

Kubernetes cluster

Author: IBM • Docs • API docs

Create | About

Plan details

Learn more about the differences between plans in our docs.

Pricing plan: Standard

Infrastructure

Choose which network and compute environment to run your cluster on. Learn more about the differences.

Classic ✓ — Run your cluster with native subnet and VLAN networking on our classic infrastructure.

VPC — Create a fully customizable, software-defined virtual network with superior isolation using IBM Cloud VPC.

Summary — United States

Kubernetes cluster

9 Worker nodes $2.65/hr
b3c.4x16 - 4 vCPUs 16GB RAM
Virtual - shared
Ubuntu 18

1 Multizone load balancer $0.02/hr
Multizone clusters require a cross-zone load balancer.

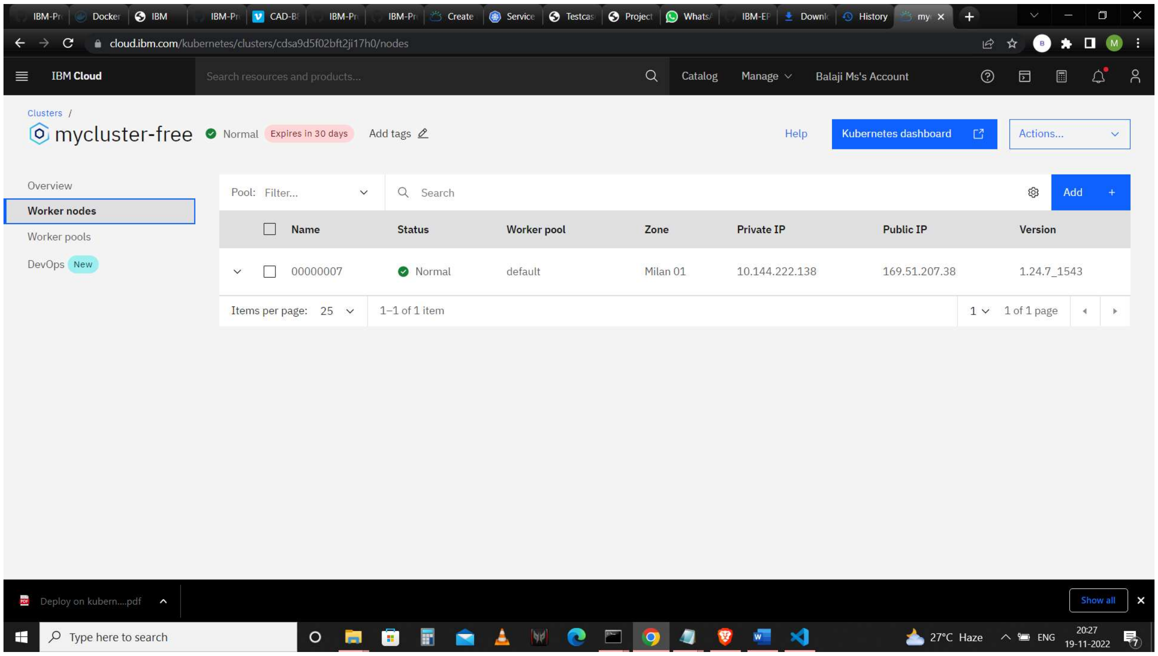
Total estimated cost $1,919.52/mo

Additional charges for networking and bandwidth might apply.
Actual monthly total will vary with tiered pricing.
Estimate does not include costs for integrations.

Upgrade to create

Add to estimate

Step 5: When the Kubernetes cluster is opened , you see the page which contains Workerernodes, click the workernodes , Note the public Ip



cloud.ibm.com/kubernetes/clusters/cdsa9d5f02bft2ji17h0/nodes

Clusters /

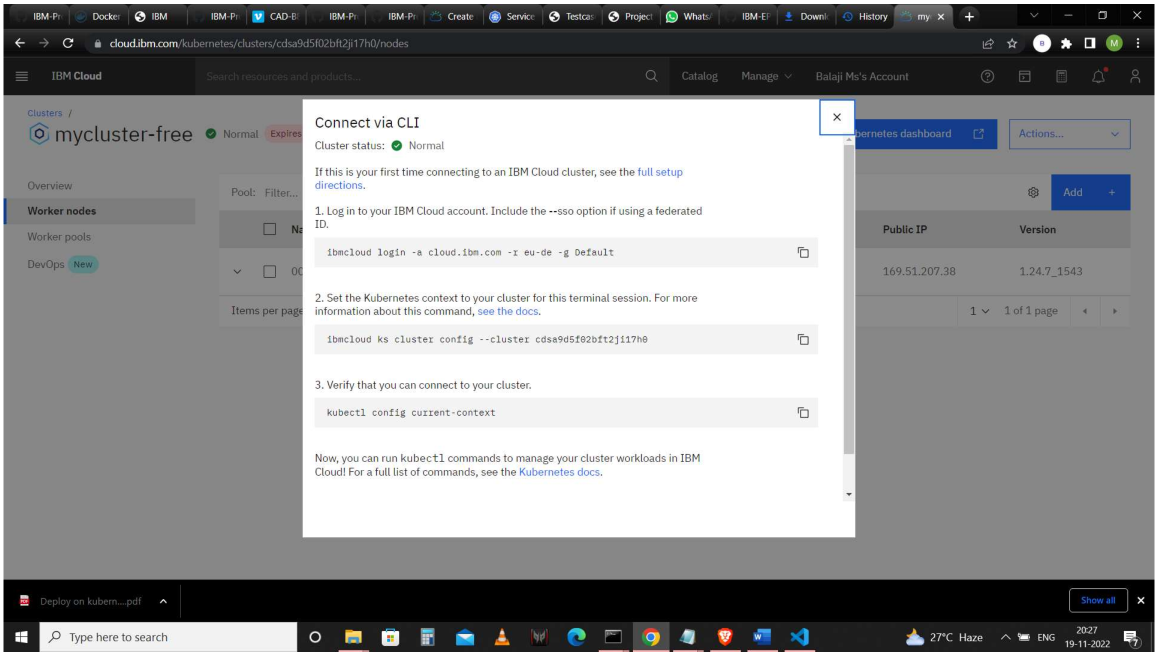
mycluster-free — Normal — Expires in 30 days — Add tags

Overview | **Worker nodes** | Worker pools | DevOps New

	Name	Status	Worker pool	Zone	Private IP	Public IP	Version
□	00000007	Normal	default	Milan 01	10.144.222.138	169.51.207.38	1.24.7_1543

Items per page: 25 — 1–1 of 1 item — 1 — 1 of 1 page

Step 6: Click the Actions and click Connect via CLI



Connect via CLI

Cluster status: ● Normal

If this is your first time connecting to an IBM Cloud cluster, see the full setup directions.

1. Log in to your IBM Cloud account. Include the --sso option if using a federated ID.

```
ibmcloud login -a cloud.ibm.com -r eu-de -g Default
```

2. Set the Kubernetes context to your cluster for this terminal session. For more information about this command, see the docs.

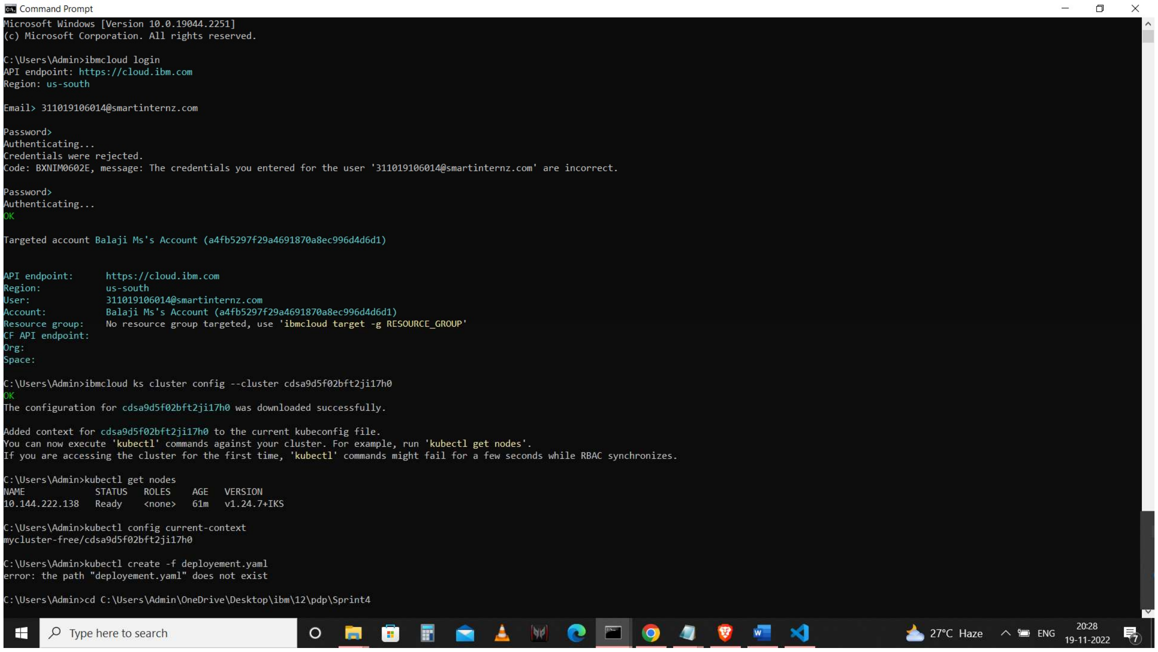
```
ibmcloud ks cluster config --cluster cdsa9d5f02bft2ji17h0
```

3. Verify that you can connect to your cluster.

```
kubectl config current-context
```

Now, you can run kubectl commands to manage your cluster workloads in IBM Cloud! For a full list of commands, see the Kubernetes docs.

Step 7: Deploy your application to Kubernetes

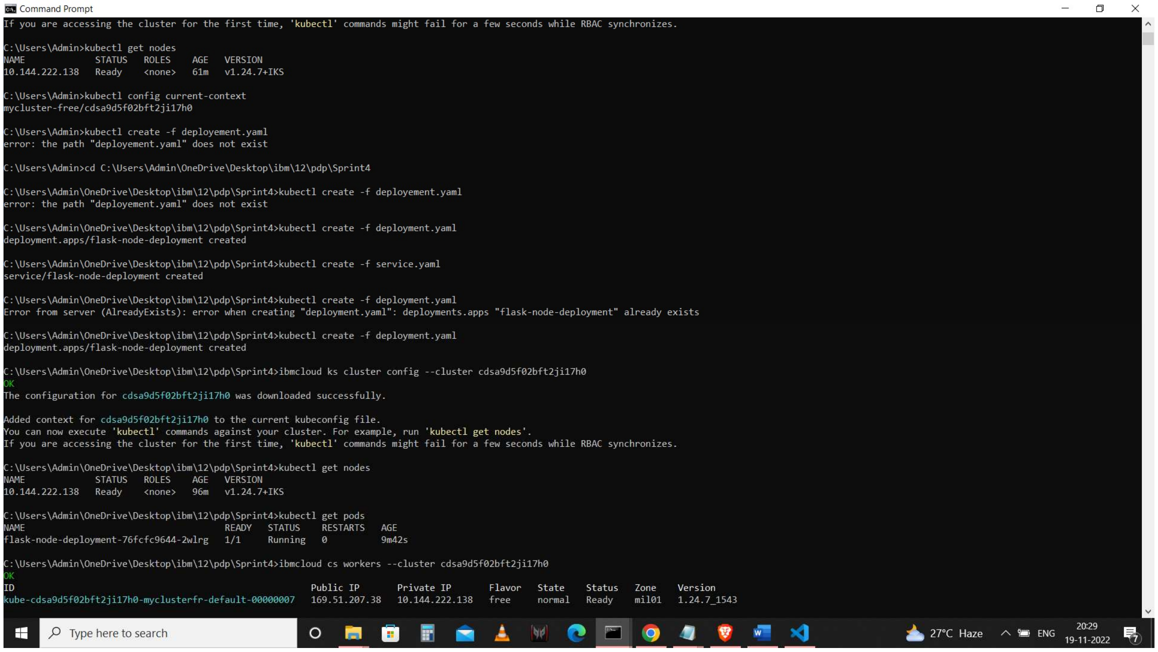


Command Prompt

```
Microsoft Windows [Version 10.0.19044.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: us-south

Email> 311019106014@smartinternz.com

Password>
Authenticating...
Credentials were rejected.
Code: BXNIM0602E, message: The credentials you entered for the user '311019106014@smartinternz.com' are incorrect.

Password>
Authenticating...
OK

Targeted account Balaji Ms's Account (a4fb5297f29a4691870a8ec996d4d6d1)


API endpoint:      https://cloud.ibm.com
Region:            us-south
User:              311019106014@smartinternz.com
Account:           Balaji Ms's Account (a4fb5297f29a4691870a8ec996d4d6d1)
Resource group:    No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:

C:\Users\Admin>ibmcloud ks cluster config --cluster cdsa9d5f02bft2ji17h0
OK
The configuration for cdsa9d5f02bft2ji17h0 was downloaded successfully.

Added context for cdsa9d5f02bft2ji17h0 to the current kubeconfig file.
You can now execute 'kubectl' commands against your cluster. For example, run 'kubectl get nodes'.
If you are accessing the cluster for the first time, 'kubectl' commands might fail for a few seconds while RBAC synchronizes.

C:\Users\Admin>kubectl get nodes
NAME             STATUS   ROLES    AGE   VERSION
10.144.222.138   Ready    <none>   61m   v1.24.7+IKS

C:\Users\Admin>kubectl config current-context
mycluster-free/cdsa9d5f02bft2ji17h0

C:\Users\Admin>kubectl create -f deployement.yaml
error: the path "deployement.yaml" does not exist

C:\Users\Admin>cd C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4
```

Verify that you can connect to your cluster by listing your worker nodes.

```
kubectl get nodes
```



```
If you are accessing the cluster for the first time, 'kubectl' commands might fail for a few seconds while RBAC synchronizes.

C:\Users\Admin>kubectl get nodes
NAME             STATUS   ROLES    AGE   VERSION
10.144.222.138   Ready    <none>   61m   v1.24.7+IKS

C:\Users\Admin>kubectl config current-context
mycluster-free/cdsa9d5f02bft2ji17h0

C:\Users\Admin>kubectl create -f deployement.yaml
error: the path "deployement.yaml" does not exist

C:\Users\Admin>cd C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>kubectl create -f deployement.yaml
error: the path "deployement.yaml" does not exist

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>kubectl create -f deployment.yaml
deployment.apps/flask-node-deployment created

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>kubectl create -f service.yaml
service/flask-node-deployment created

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>kubectl create -f deployment.yaml
Error from server (AlreadyExists): error when creating "deployment.yaml": deployments.apps "flask-node-deployment" already exists

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>kubectl create -f deployment.yaml
deployment.apps/flask-node-deployment created

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>ibmcloud ks cluster config --cluster cdsa9d5f02bft2ji17h0
OK
The configuration for cdsa9d5f02bft2ji17h0 was downloaded successfully.

Added context for cdsa9d5f02bft2ji17h0 to the current kubeconfig file.
You can now execute 'kubectl' commands against your cluster. For example, run 'kubectl get nodes'.
If you are accessing the cluster for the first time, 'kubectl' commands might fail for a few seconds while RBAC synchronizes.

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>kubectl get nodes
NAME             STATUS   ROLES    AGE   VERSION
10.144.222.138   Ready    <none>   96m   v1.24.7+IKS

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>kubectl get pods
NAME                                     READY   STATUS    RESTARTS   AGE
flask-node-deployment-76fcfc9644-2wlrg   1/1     Running   0          9m42s

C:\Users\Admin\OneDrive\Desktop\ibm\12\pdp\Sprint4>ibmcloud cs workers --cluster cdsa9d5f02bft2ji17h0
OK
ID                                                     Public IP       Private IP       Flavor   State    Status   Zone    Version
kube-cdsa9d5f02bft2ji17h0-myclusterfr-default-00000007   169.51.207.38   10.144.222.138   free     normal   Ready    mil01   1.24.7_1543
```

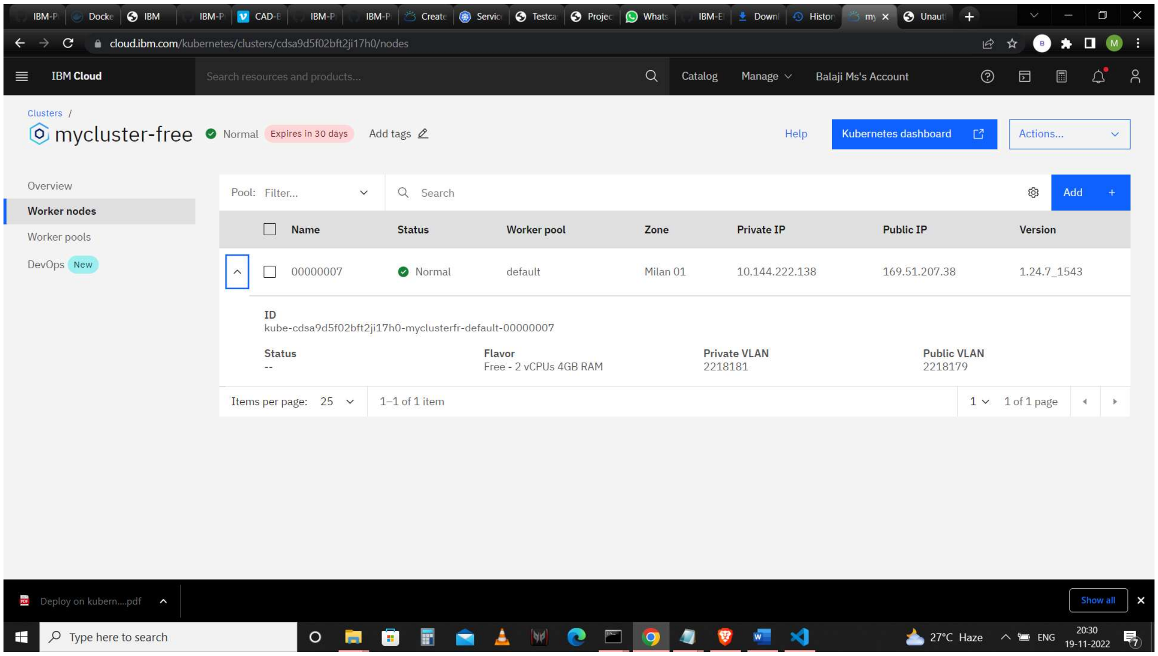
Create the deployment.

```
kubectl create -f deployment.yaml
```

Create the service.

```
kubectl create -f service.yaml
```

Step 8: Look at the Kubernetes dashboard from the IBM Kubernetes Service overview page.



mycluster-free ● Normal Expires in 30 days Add tags

	Name	Status	Worker pool	Zone	Private IP	Public IP	Version
□	00000007	Normal	default	Milan 01	10.144.222.138	169.51.207.38	1.24.7_1543

ID
kube-cdsa9d5f02bft2ji17h0-myclusterfr-default-00000007

Status	Flavor	Private VLAN	Public VLAN
--	Free - 2 vCPUs 4GB RAM	2218181	2218179

Step 9 : Finally, go to your browser and ping the Public IP of your worker node.