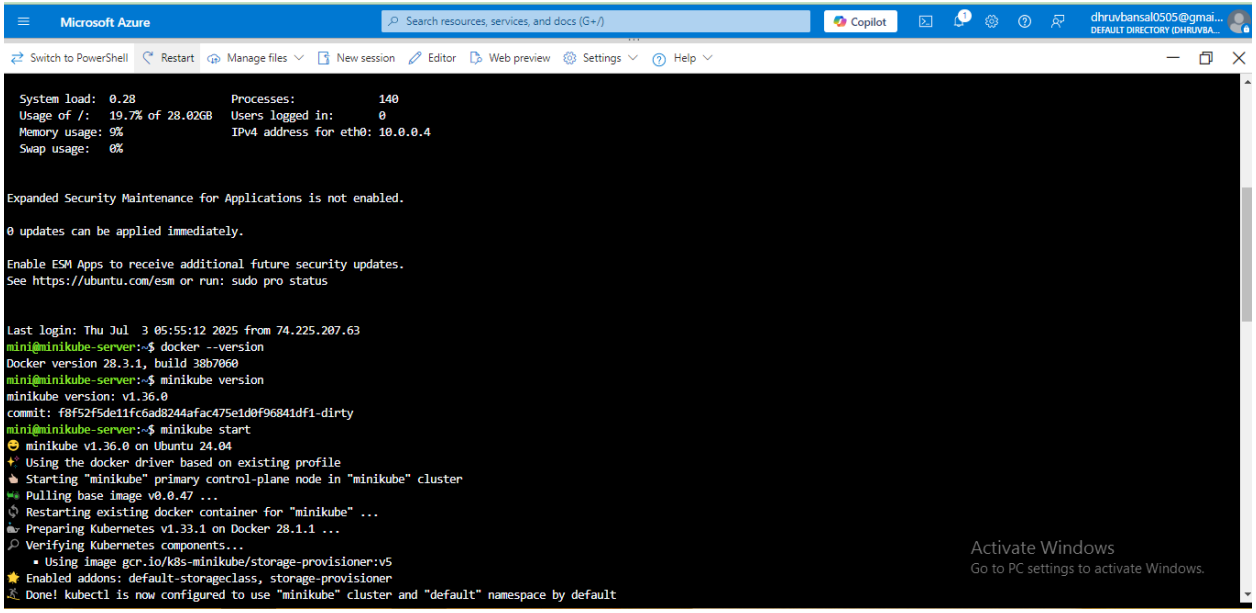
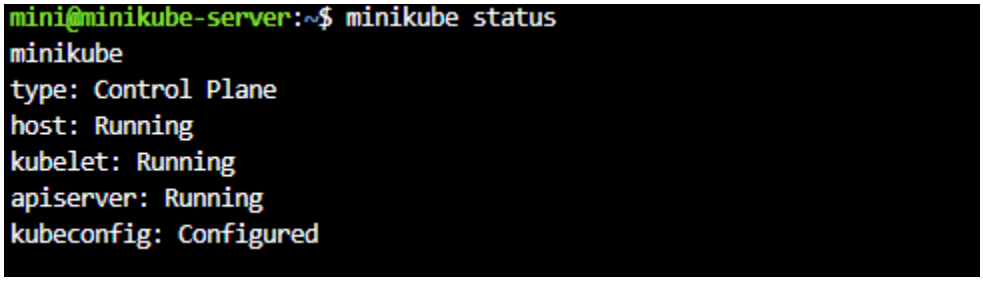
1. Create a Kubernetes cluster using minikube.

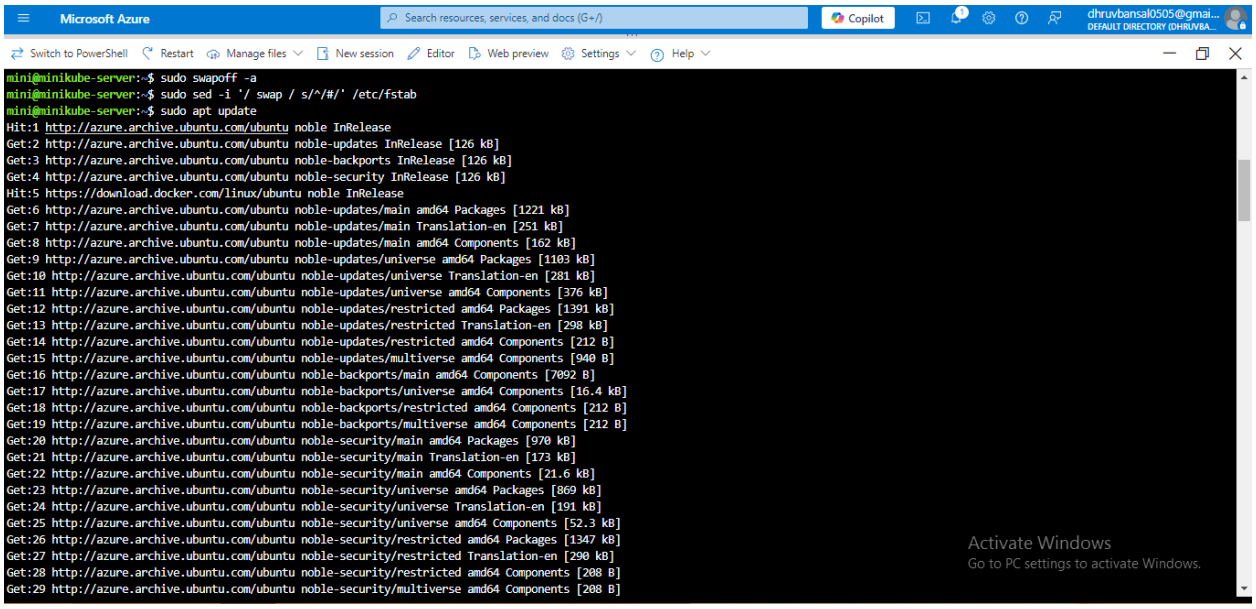
Answer: Cluster using MiniKube:

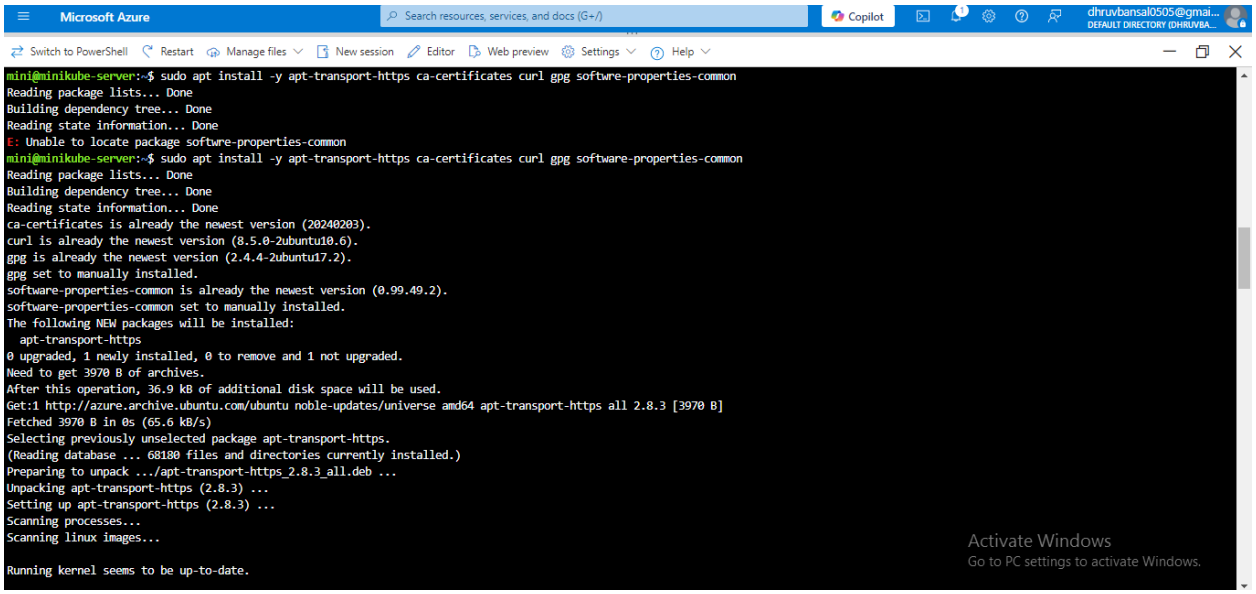


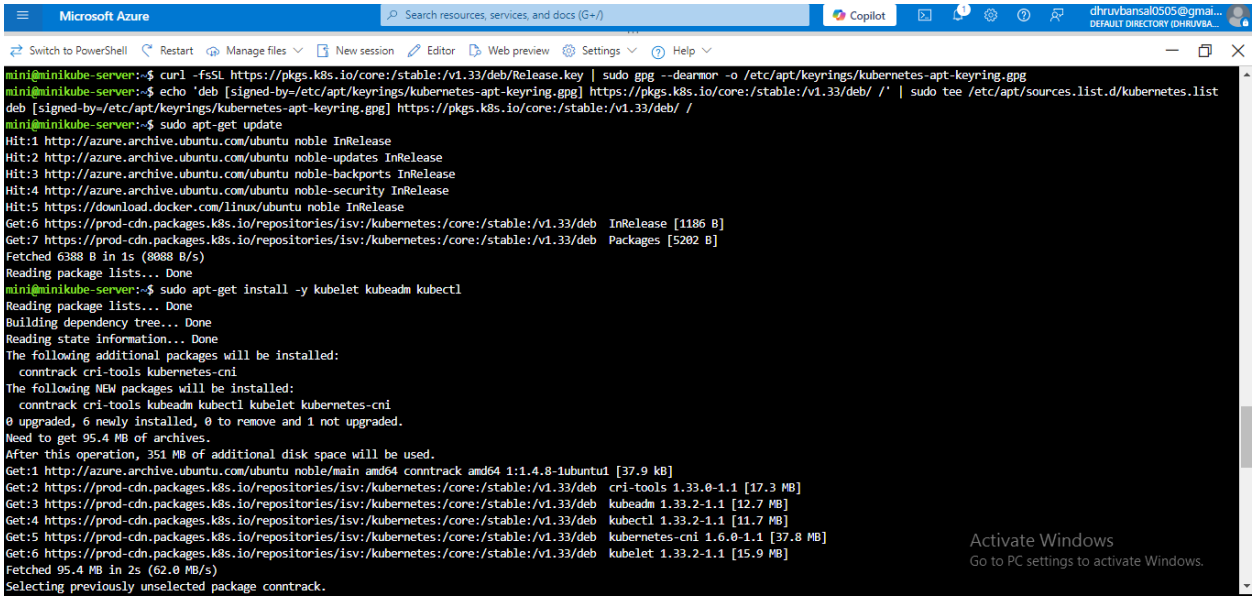


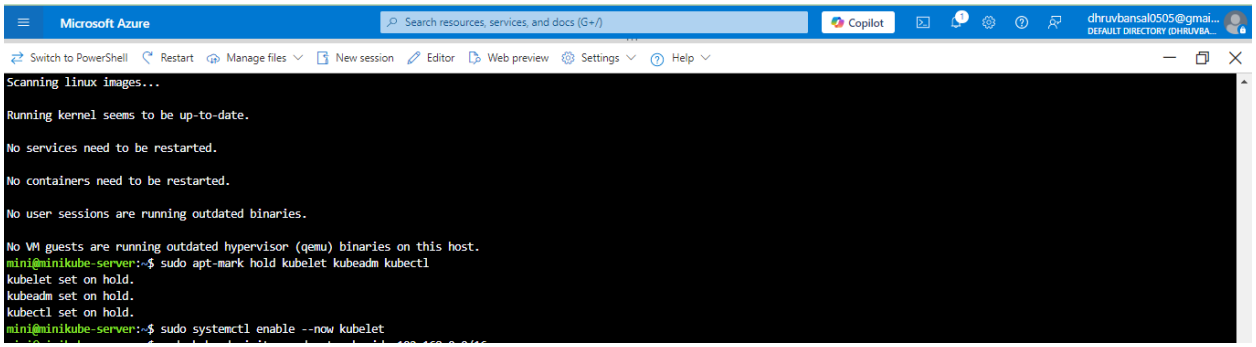
2. Create a Kubernetes cluster using kubeadm.

Answer: Cluster using Kubeadm:



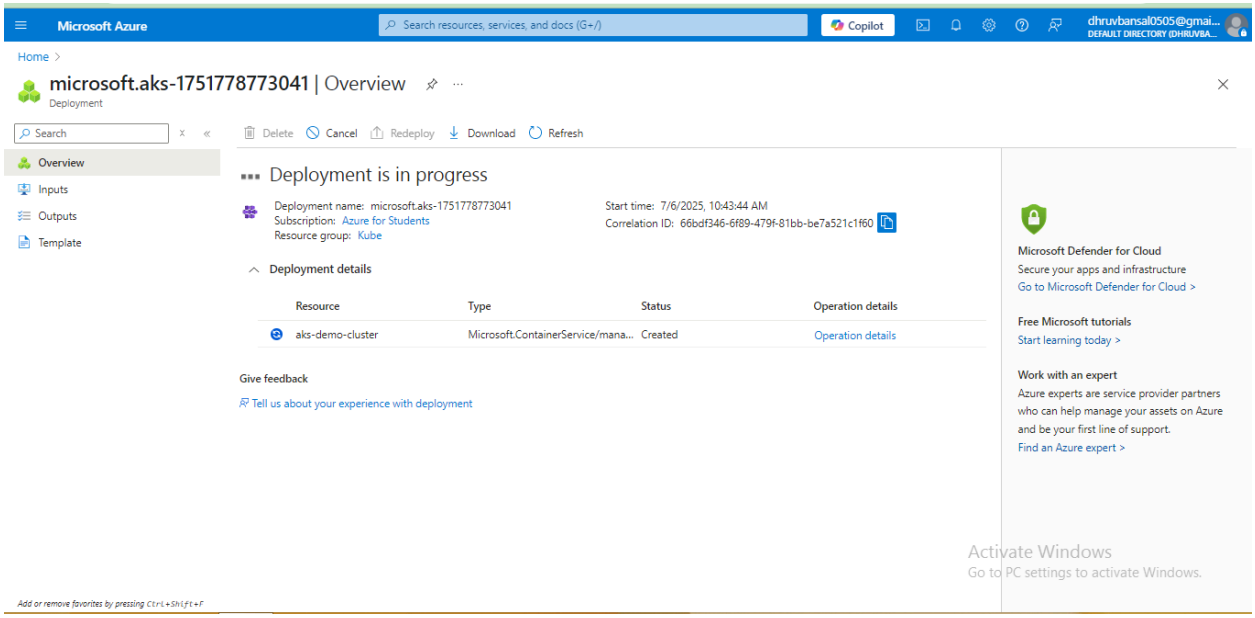


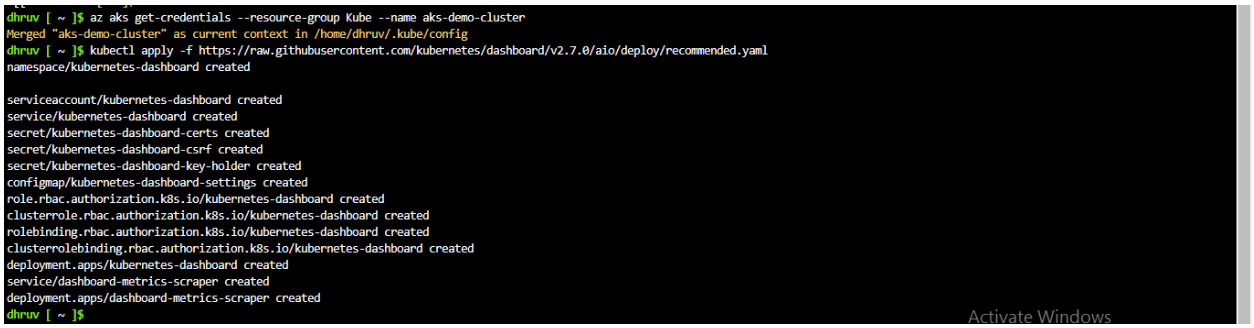

Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
dhruvbansal0505@gmai...
DEFAULT DIRECTORY (DHRUVBA...
Switch to PowerShell
Restart
Manage files
New session
Editor
Web preview
Settings
Help
mini@minikube-server:~$ curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.33/deb/Release.key | sudo gpg --dearmor -o /etc/apt/keyrings/kubernetes-apt-keyring.gpg
mini@minikube-server:~$ echo 'deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyring.gpg] https://pkgs.k8s.io/core:/stable:/v1.33/deb/ /' | sudo tee /etc/apt/sources.list.d/kubernetes.list
deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyring.gpg] https://pkgs.k8s.io/core:/stable:/v1.33/deb/ /
mini@minikube-server:~$ sudo apt-get update
Hit:1 http://azure.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://azure.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu noble-security InRelease
Hit:5 https://download.docker.com/linux/ubuntu noble InRelease
Get:6 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.33/deb InRelease [1186 B]
Get:7 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.33/deb Packages [5202 B]
Fetched 6388 B in 1s (8088 B/s)
Reading package lists... Done
mini@minikube-server:~$ sudo apt-get install -y kubelet kubeadm kubectl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
conntrack cri-tools kubernetes-cni
The following NEW packages will be installed:
conntrack cri-tools kubeadm kubectl kubelet kubernetes-cni
0 upgraded, 6 newly installed, 0 to remove and 1 not upgraded.
Need to get 95.4 MB of archives.
After this operation, 351 MB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu noble/main amd64 conntrack amd64 1:1.4.8-1ubuntu1 [37.9 kB]
Get:2 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.33/deb cri-tools 1.33.0-1.1 [17.3 MB]
Get:3 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.33/deb kubeadm 1.33.2-1.1 [12.7 MB]
Get:4 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.33/deb kubectl 1.33.2-1.1 [11.7 MB]
Get:5 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.33/deb kubernetes-cni 1.6.0-1.1 [37.8 MB]
Get:6 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.33/deb kubelet 1.33.2-1.1 [15.9 MB]
Fetched 95.4 MB in 2s (62.0 MB/s)
Selecting previously unselected package conntrack.
Activate Windows
Go to PC settings to activate Windows.


Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
dhruvbansal0505@gmai...
DEFAULT DIRECTORY (DHRUVBA...
Switch to PowerShell
Restart
Manage files
New session
Editor
Web preview
Settings
Help
Scanning linux images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
mini@minikube-server:~$ sudo apt-mark hold kubelet kubeadm kubectl
kubelet set on hold.
kubeadm set on hold.
kubectl set on hold.
mini@minikube-server:~$ sudo systemctl enable --now kubelet

3. Deploy an AKS cluster using the portal. Access the dashboard and create roles for multiple users.

Answer: AKS Cluster using Portal:





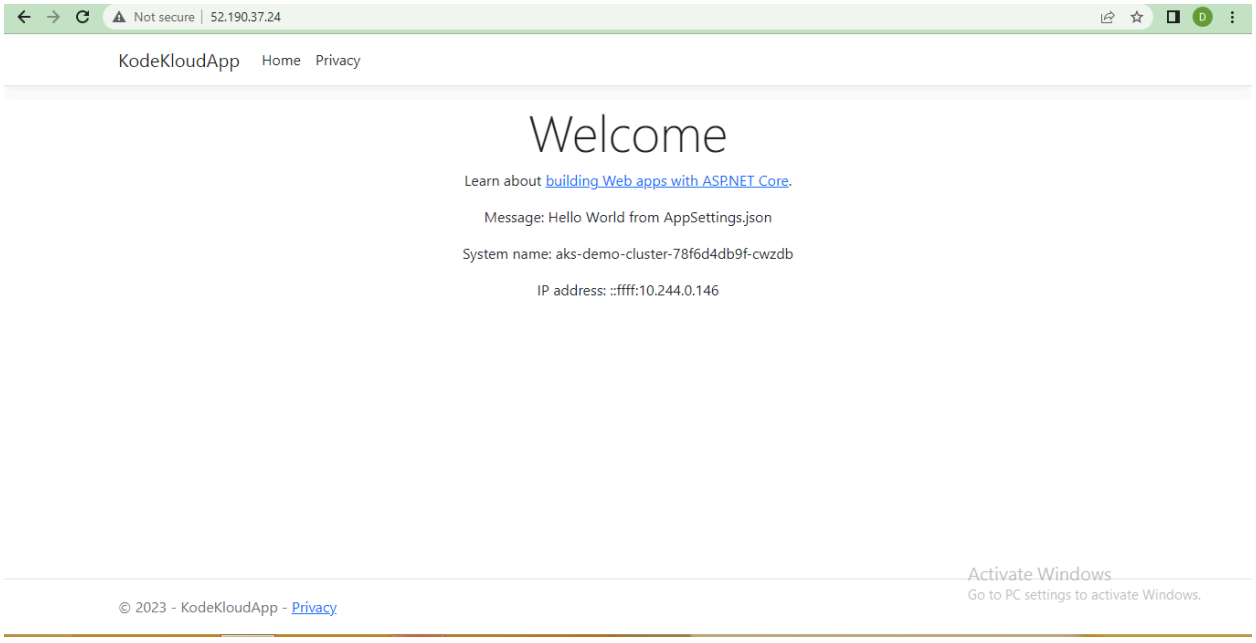
4. Deploy a microservice application on AKS cluster and access it using public internet.
Answer: Deploy image of Application On AKS cluster:

```
dhruv [ ~ ]$ kubectl config current-context
aks-demo-cluster
dhruv [ ~ ]$ kubectl get nodes
NAME                                STATUS   ROLES    AGE   VERSION
aks-agentpool-25777836-vmss000000   Ready    <none>   21m   v1.32.5
aks-agentpool-25777836-vmss000001   Ready    <none>   21m   v1.32.5
dhruv [ ~ ]$ kubectl create deployment aks-demo-cluster --image=hpranav/kodekloudappcs:v1 --replicas=1
deployment.apps/aks-demo-cluster created
dhruv [ ~ ]$ kubectl get deployment
NAME              READY   UP-TO-DATE   AVAILABLE   AGE
aks-demo-cluster   1/1     1            1           19s
dhruv [ ~ ]$ kubectl get podds
error: the server doesn't have a resource type "podds"
dhruv [ ~ ]$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
aks-demo-cluster-78f6d4db9f-cwzdb   1/1     Running   0          35s
dhruv [ ~ ]$
```

Creating Public IP Address:

```
dhruv [ ~ ]$ kubectl expose deployment aks-demo-cluster --type=LoadBalancer --port=80 --target-port=80
service/aks-demo-cluster exposed
dhruv [ ~ ]$ kubectl get service
NAME              TYPE           CLUSTER-IP    EXTERNAL-IP    PORT(S)        AGE
aks-demo-cluster   LoadBalancer   10.0.48.127   52.190.37.24   80:32164/TCP   31s
kubernetes        ClusterIP      10.0.0.1      <none>         443/TCP        30m
dhruv [ ~ ]$
```

Output Of APPLICATION on Public IP Address:



5. Expose services in the cluster with node port, cluster IP, load balancer.
Answer: Expose Service and Creating Public Ip Address:

```
dhruv [ ~ ]$ kubectl expose deployment aks-demo-cluster --type=LoadBalancer --port=80 --target-port=80
service/aks-demo-cluster exposed
dhruv [ ~ ]$ kubectl get service
NAME              TYPE           CLUSTER-IP    EXTERNAL-IP    PORT(S)        AGE
aks-demo-cluster  LoadBalancer   10.0.48.127   52.190.37.24   80:32164/TCP   31s
kubernetes        ClusterIP      10.0.0.1      <none>         443/TCP        30m
dhruv [ ~ ]$
```