Kubernetes/AKS

1. Create a Kubernetes cluster using minikube

```
ayush@ayush:~$ minikube version
minikube version: v1.36.0
commit: f8f52f5de11fc6ad8244afac475e1d0f96841df1-dirty
ayush@ayush:~$ kubectl version --client
Client Version: v1.32.6
Kustomize Version: v5.5.0
ayush@ayush:~$ docker --version
Docker version 28.2.2, build e6534b4
ayush@ayush:~$ minikube start --driver=docker
😄  minikube v1.36.0 on Ubuntu 22.04
✨  Using the docker driver based on existing profile
👍  Starting "minikube" primary control-plane node in "minikube" cluster
🚜  Pulling base image v0.0.47 ...
🔄  Restarting existing docker container for "minikube" ...
🐳  Preparing Kubernetes v1.33.1 on Docker 28.1.1 ...
🔎  Verifying Kubernetes components...
    ▪ Using image docker.io/kubernetesui/dashboard:v2.7.0
    ▪ Using image docker.io/kubernetesui/metrics-scraper:v1.0.8
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
💡  Some dashboard features require the metrics-server addon. To enable all features please run:

        minikube addons enable metrics-server

🌟  Enabled addons: default-storageclass, storage-provisioner, dashboard
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
ayush@ayush:~$ minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured
```

```
ayush@ayush:~$ kubectl get nodes
NAME       STATUS   ROLES           AGE    VERSION
minikube   Ready    control-plane   2d5h   v1.33.1
ayush@ayush:~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS        AGE
mongo-express-5dd87b9fcf-gpr78      1/1     Running   2 (4h42m ago)   10h
mongodb-deployment-6d9d7c68f6-mqz4j   1/1     Running   2 (4h42m ago)   11h
```

```
ayush@ayush:~$ kubectl create deployment hello-minikube --image=registry.k8s.io/echoserver:1.10
deployment.apps/hello-minikube created
```

```
ayush@ayush:~$ kubectl expose deployment hello-minikube --type=NodePort --port=8080
service/hello-minikube exposed
```

```
ayush@ayush:~$ kubectl get service hello-minikube
NAME             TYPE       CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
hello-minikube   NodePort   10.104.129.19   <none>        8080:31429/TCP   7m29s
```

```
ayush@ayush:~$ minikube service hello-minikube
|-----------|----------------|-------------|---------------------------|
| NAMESPACE |      NAME      | TARGET PORT |            URL            |
|-----------|----------------|-------------|---------------------------|
| default   | hello-minikube |        8080 | http://192.168.49.2:31429 |
|-----------|----------------|-------------|---------------------------|
🎉  Opening service default/hello-minikube in default browser...
ayush@ayush:~$ Opening in existing browser session.
```

```
ayush@ayush:~$ WARNING: All log messages before absl::InitializeLog() is called are written to STDERR
I0000 00:00:1750532224.767007   45762 voice_transcription.cc:58] Registering VoiceTranscriptionCapability
Warning: remove_all_non_valid_override_layers: Failed to get executable path and name
Warning: loader_get_json: Failed to open JSON file virtio_icd.x86_64.json
Warning: /usr/lib/x86_64-linux-gnu/libvulkan_intel.so: cannot open shared object file: Permission denied
Warning: /usr/lib/x86_64-linux-gnu/libvulkan_radeon.so: cannot open shared object file: Permission denied
Warning: loader_get_json: Failed to open JSON file intel_hasvk_icd.x86_64.json
Warning: loader_get_json: Failed to open JSON file lvp_icd.x86_64.json
Warning: vkCreateInstance failed with VK_ERROR_INCOMPATIBLE_DRIVER
    at CheckVkSuccessImpl (../../third_party/dawn/src/dawn/native/vulkan/VulkanError.cpp:106)

Warning: Couldn't load Vulkan. Searched libvk_swiftshader.so.
    at operator() (../../third_party/dawn/src/dawn/native/vulkan/BackendVk.cpp:374)

[45762:45762:0622/002704.860540:ERROR:services/on_device_model/ml/gpu_blocklist.cc:120] Unable to get gpu adapter
[40005:40005:0622/002704.861272:ERROR:services/on_device_model/public/cpp/service_client.cc:36] Unexpected on_device_model service disconnect: The device
's GPU is not supported.
```

2. Create a Kubernetes cluster using kubeadm

```
ayush@ayush:~$ sudo apt update && sudo apt upgrade -y
[sudo] password for ayush:
Hit:1 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:2 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:3 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.32/deb  InRelease
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:5 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Get:6 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Get:7 http://security.ubuntu.com/ubuntu jammy-security/main amd64 DEP-11 Metadata [54.5 kB]
Get:8 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 DEP-11 Metadata [208 B]
Get:9 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 DEP-11 Metadata [125 kB]
Get:10 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 DEP-11 Metadata [208 B]
Get:11 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease [127 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 DEP-11 Metadata [114 kB]
Get:13 http://in.archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 DEP-11 Metadata [212 B]
Get:14 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 DEP-11 Metadata [359 kB]
Get:15 http://in.archive.ubuntu.com/ubuntu jammy-updates/multiverse amd64 DEP-11 Metadata [940 B]
Get:16 http://in.archive.ubuntu.com/ubuntu jammy-backports/main amd64 DEP-11 Metadata [7,052 B]
Get:17 http://in.archive.ubuntu.com/ubuntu jammy-backports/restricted amd64 DEP-11 Metadata [212 B]
Get:18 http://in.archive.ubuntu.com/ubuntu jammy-backports/universe amd64 DEP-11 Metadata [24.2 kB]
Get:19 http://in.archive.ubuntu.com/ubuntu jammy-backports/multiverse amd64 DEP-11 Metadata [212 B]
Fetched 1,070 kB in 3s (326 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
1 package can be upgraded. Run 'apt list --upgradable' to see it.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
```

```
ayush@ayush:~$ sudo apt install -y apt-transport-https ca-certificates curl gnupg lsb-release
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
lsb-release is already the newest version (11.1.0ubuntu4).
ca-certificates is already the newest version (20240203~22.04.1).
curl is already the newest version (7.81.0-1ubuntu1.20).
gnupg is already the newest version (2.2.27-3ubuntu2.3).
apt-transport-https is already the newest version (2.4.14).
The following packages were automatically installed and are no longer required:
  docker-ce-rootless-extras libslirp0 pigz slirp4netns
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ayush@ayush:~$ sudo swapoff -a
ayush@ayush:~$ sudo sed -i '/ swap / s/^\(.*\)$/#\1/g' /etc/fstab
ayush@ayush:~$ sudo swapon --show
ayush@ayush:~$ cat <<EOF | sudo tee /etc/modules-load.d/k8s.conf
> overlay
> br_netfilter
> EOF
overlay
br_netfilter
ayush@ayush:~$ sudo modprobe overlay
ayush@ayush:~$ sudo modprobe br_netfilter
ayush@ayush:~$ cat <<EOF | sudo tee /etc/sysctl.d/k8s.conf
> net.bridge.bridge-nf-call-iptables = 1
> net.bridge.bridge-nf-call-ip6tables = 1
> net.ipv4.ip_forward                 = 1
> EOF
net.bridge.bridge-nf-call-iptables = 1
net.bridge.bridge-nf-call-ip6tables = 1
net.ipv4.ip_forward                 = 1
```

```
ayush@ayush:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /
File '/' exists. Overwrite? (y/N) y
gpg: can't create '/': Is a directory
gpg: no valid OpenPGP data found.
gpg: dearmoring failed: Is a directory
ayush@ayush:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg
ayush@ayush:~$ echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] https://download.docker.com/linux/u
buntu $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
```

```
ayush@ayush:~$ sudo apt install -y containerd.io
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  docker-ce-rootless-extras libslirp0 pigz slirp4netns
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  containerd runc
The following NEW packages will be installed:
  containerd.io
0 upgraded, 1 newly installed, 2 to remove and 0 not upgraded.
Need to get 0 B/30.5 MB of archives.
After this operation, 47.4 MB disk space will be freed.
(Reading database ... 219075 files and directories currently installed.)
Removing containerd (1.7.27-0ubuntu1~22.04.1) ...
Removing runc (1.2.5-0ubuntu1~22.04.1) ...
Selecting previously unselected package containerd.io.
(Reading database ... 219013 files and directories currently installed.)
Preparing to unpack .../containerd.io_1.7.27-1_amd64.deb ...
Unpacking containerd.io (1.7.27-1) ...
Setting up containerd.io (1.7.27-1) ...
Processing triggers for man-db (2.10.2-1) ...
ayush@ayush:~$ sudo mkdir -p /etc/containerd
ayush@ayush:~$ containerd config default | sudo tee /etc/containerd/config.toml
```

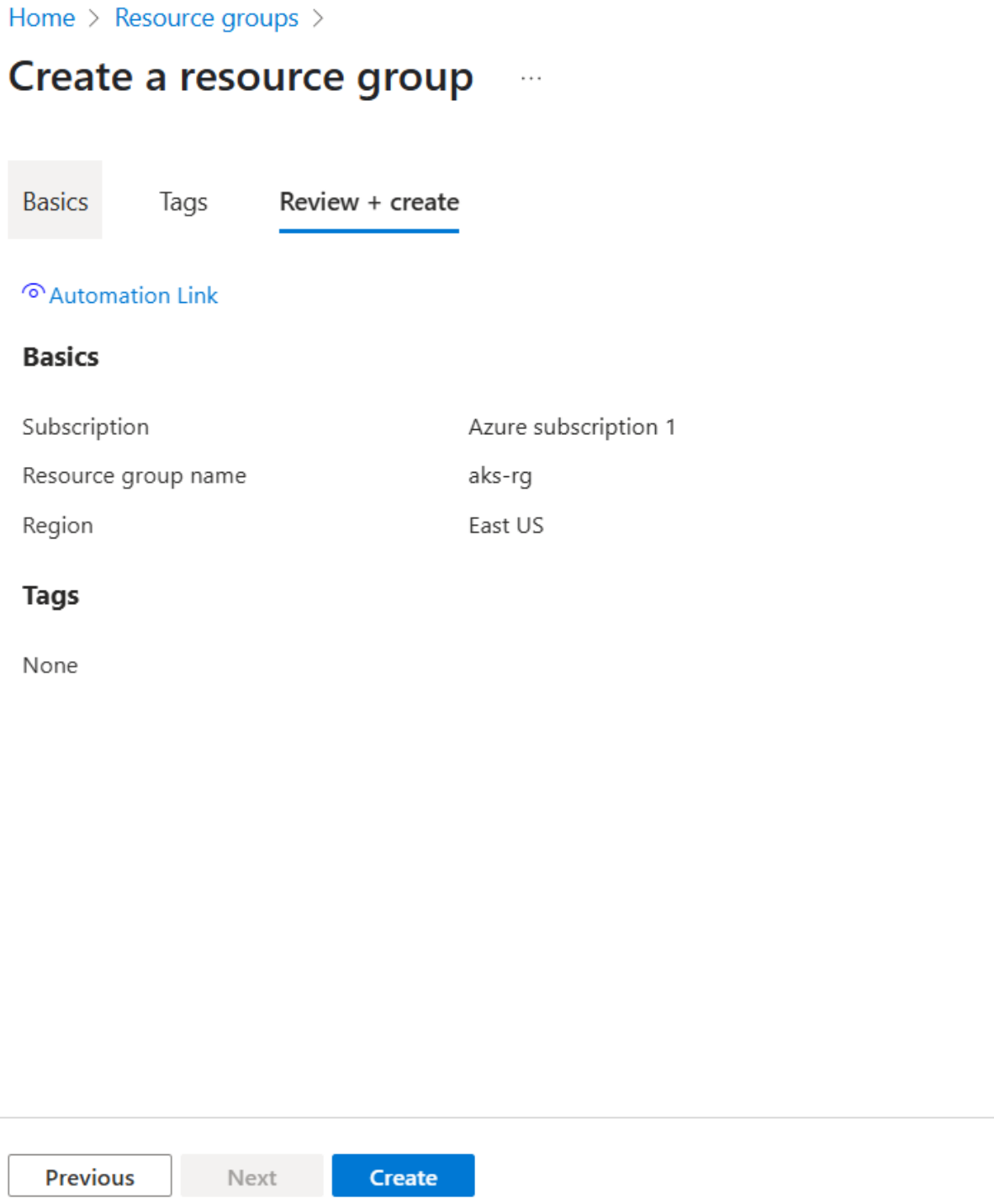
```
ayush@ayush:~$ sudo sed -i 's/SystemdCgroup \= false/SystemdCgroup \= true/g' /etc/containerd/config.toml
ayush@ayush:~$ sudo systemctl restart containerd
ayush@ayush:~$ sudo systemctl enable containerd
ayush@ayush:~$ curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.28/deb/Release.key | sudo gpg --dearmor -o /etc/apt/keyrings/kubernetes-apt-keyring.gpg
File '/etc/apt/keyrings/kubernetes-apt-keyring.gpg' exists. Overwrite? (y/N) y
ayush@ayush:~$ echo 'deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyring.gpg] https://pkgs.k8s.io/core:/stable:/v1.28/deb/ /' | sudo tee /etc/apt/sou
rces.list.d/kubernetes.list
deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyring.gpg] https://pkgs.k8s.io/core:/stable:/v1.28/deb/ /
ayush@ayush:~$ sudo apt update
Hit:1 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:2 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Get:3 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.28/deb  InRelease [1,192 B]
Hit:5 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:6 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:7 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:8 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/core:/stable:/v1.28/deb  Packages [21.3 kB]
Fetched 22.5 kB in 1s (20.0 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
```

```
ayush@ayush:~$ sudo apt install -y kubelet kubeadm kubectl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
kubeadm is already the newest version (1.32.6-1.1).
kubectl is already the newest version (1.32.6-1.1).
kubelet is already the newest version (1.32.6-1.1).
The following packages were automatically installed and are no longer required:
  docker-ce-rootless-extras libslirp0 pigz slirp4netns
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ayush@ayush:~$ sudo apt-mark hold kubelet kubeadm kubectl
kubelet was already set on hold.
kubeadm was already set on hold.
kubectl was already set on hold.
ayush@ayush:~$ sudo systemctl enable kubelet
```

```
ayush@ayush:~$ sudo kubeadm init \
  --pod-network-cidr=10.244.0.0/16 \
  --apiserver-advertise-address=192.168.41.130
[sudo] password for ayush:
I0622 17:33:36.528703    6935 version.go:261] remote version is much newer: v1.33.2; falling back to: stable-1.32
[init] Using Kubernetes version: v1.32.6
[preflight] Running pre-flight checks
        [WARNING Service-Kubelet]: kubelet service is not enabled, please run 'systemctl enable kubelet.service'
[preflight] Pulling images required for setting up a Kubernetes cluster
[preflight] This might take a minute or two, depending on the speed of your internet connection
[preflight] You can also perform this action beforehand using 'kubeadm config images pull'
W0622 17:33:37.746661    6935 checks.go:846] detected that the sandbox image "registry.k8s.io/pause:3.8" of the container runtime is inconsistent with th
at used by kubeadm.It is recommended to use "registry.k8s.io/pause:3.10" as the CRI sandbox image.
[certs] Using certificateDir folder "/etc/kubernetes/pki"
[certs] Generating "ca" certificate and key
[certs] Generating "apiserver" certificate and key
[certs] apiserver serving cert is signed for DNS names [ayush kubernetes kubernetes.default kubernetes.default.svc kubernetes.default.svc.cluster.local]
and IPs [10.96.0.1 192.168.41.130]
[certs] Generating "apiserver-kubelet-client" certificate and key
[certs] Generating "front-proxy-ca" certificate and key
[certs] Generating "front-proxy-client" certificate and key
[certs] Generating "etcd/ca" certificate and key
[certs] Generating "etcd/server" certificate and key
[certs] etcd/server serving cert is signed for DNS names [ayush localhost] and IPs [192.168.41.130 127.0.0.1 ::1]
[certs] Generating "etcd/peer" certificate and key
[certs] etcd/peer serving cert is signed for DNS names [ayush localhost] and IPs [192.168.41.130 127.0.0.1 ::1]
[certs] Generating "etcd/healthcheck-client" certificate and key
[certs] Generating "apiserver-etcd-client" certificate and key
[certs] Generating "sa" key and public key
[kubeconfig] Using kubeconfig folder "/etc/kubernetes"
[kubeconfig] Writing "admin.conf" kubeconfig file
[kubeconfig] Writing "super-admin.conf" kubeconfig file
[kubeconfig] Writing "kubelet.conf" kubeconfig file
```

```
[kubeconfig] Writing "super-admin.conf" kubeconfig file
[kubeconfig] Writing "kubelet.conf" kubeconfig file
[kubeconfig] Writing "controller-manager.conf" kubeconfig file
[kubeconfig] Writing "scheduler.conf" kubeconfig file
[etcd] Creating static Pod manifest for local etcd in "/etc/kubernetes/manifests"
[control-plane] Using manifest folder "/etc/kubernetes/manifests"
[control-plane] Creating static Pod manifest for "kube-apiserver"
[control-plane] Creating static Pod manifest for "kube-controller-manager"
[control-plane] Creating static Pod manifest for "kube-scheduler"
[kubelet-start] Writing kubelet environment file with flags to file "/var/lib/kubelet/kubeadm-flags.
```

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



Create Kubernetes cluster ···

Review + create ···

View automation template

Basics

Subscription	Azure subscription 1
Resource group	aks-rg
Region	East US
Kubernetes cluster name	aks-demo
Kubernetes version	1.31.9
Automatic upgrade	patch
Automatic upgrade scheduler	Every week on Sunday (recommended)
Node security channel type	NodeImage
Security channel scheduler	Every week on Sunday (recommended)

Node pools

Node pools	1
Enable virtual nodes	Disabled

Access

Access

Resource identity	System-assigned managed identity
Local accounts	Enabled
Authentication and Authorization	Local accounts with Kubernetes RBAC
Encryption type	(Default) Encryption at-rest with a platform-managed key

Networking

Private cluster	Disabled
Authorized IP ranges	Disabled
Network configuration	Azure CNI Overlay
DNS name prefix	aks-demo-dns
Network policy	None
Load balancer	Standard

Integrations

Container registry	None
Service mesh	Disabled
Azure Policy	Disabled

Monitoring

Enable Container Logs	Disabled
Enable Prometheus metrics	Enabled
Azure Monitor workspace	(new) defaultazuremonitorworkspace-eus
Enable Grafana	Disabled
Alert rules	2 rules

Advanced

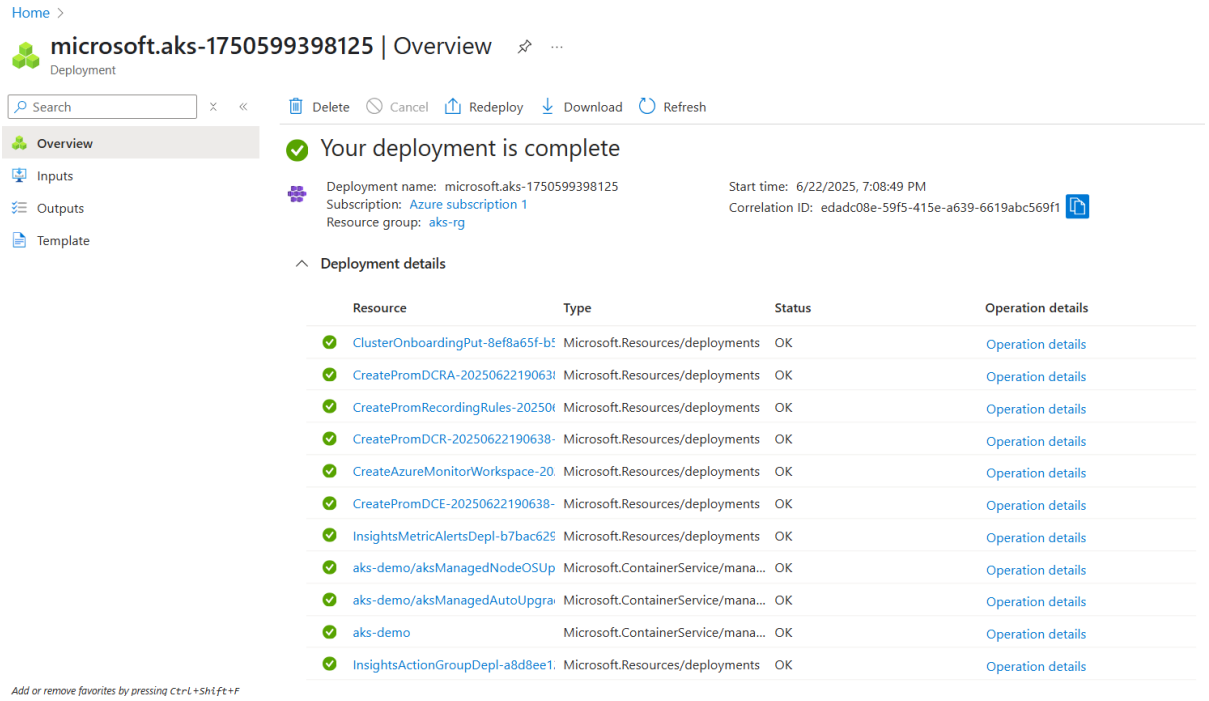
Infrastructure resource group	MC_aks-rg_aks-demo_eastus

Security

Microsoft Defender for Cloud	Free
OpenID Connect (OIDC)	Enabled
Workload Identity	Enabled
Image Cleaner	Enabled

Tags

None




```
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.
ayush [ ~ ]$ az account show
{
  "environmentName": "AzureCloud",
  "homeTenantId": "34bd8bed-2ac1-41ae-9f08-4e0a3f11706c",
  "id": "4af928af-144b-44ea-a5ad-9fe8d622bd21",
  "isDefault": true,
  "managedByTenants": [],
  "name": "Azure subscription 1",
  "state": "Enabled",
  "tenantId": "34bd8bed-2ac1-41ae-9f08-4e0a3f11706c",
  "user": {
    "cloudShellID": true,
    "name": "22BDO10038@cuchd.in",
    "type": "user"
  }
}
ayush [ ~ ]$ az aks get-credentials --resource-group aks-rg --name aks-demo
Merged "aks-demo" as current context in /home/ayush/.kube/config
```

```
ayush [ ~ ]$ kubectl get nodes
NAME                                STATUS   ROLES    AGE   VERSION
aks-agentpool-43610949-vmss000000   Ready    <none>   17m   v1.31.9
aks-agentpool-43610949-vmss000001   Ready    <none>   17m   v1.31.9
ayush [ ~ ]$ 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
ayush [ ~ ]$ nano admin-user.yaml
ayush [ ~ ]$ kubectl apply -f admin-user.yaml
serviceaccount/admin-user created
clusterrolebinding.rbac.authorization.k8s.io/admin-user created
```

```
ayush [ ~ ]$ cat admin-user.yaml
apiVersion: v1
kind: ServiceAccount
metadata:
  name: admin-user
  namespace: kubernetes-dashboard
---
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRoleBinding
metadata:
  name: admin-user
roleRef:
  kind: ClusterRole
  name: cluster-admin
  apiGroup: rbac.authorization.k8s.io
subjects:
- kind: ServiceAccount
  name: admin-user
  namespace: kubernetes-dashboard
ayush [ ~ ]$ kubectl -n kubernetes-dashboard create token admin-user
eyJhbGciOiJSUzI1NiIsImtpZCI6InZJOHEtWWp4T29GTElsWFhYTkxrRjFJUWU2bFVRZy1DLV9ZaEo3c2NXUW8ifQ.eyJhdWQiOlsiaHR0cHM6Ly9lYXN0dXMub2ljLnByb2QtYWtzLmF6dXJlLmNvbS8zNGJkOGJlZC0yYWMx
LTQxYWUtOWYwOC00ZTBhM2YxMTcwNmMvNmRjNWZlZjctZTQ0My00N2YzLThkNWEtYzkxMzAwOTU0ZTkxLyIsImh0dHBzOi8vYWtzLWRlbW8tZG5zLWtxdDg1dW44LmhjcC5lYXN0dXMuYXptazhzLmlvIiwiXCJha3MtZGVtby1
kbnMta3F0ODV1bjguaGNwLmVhc3R1cy5hem1rOHMuaW9cIiJdLCJleHAiOjE3NTA2MDQlNzYsImlhdCI6MTc1MDYwMDk3NiwiaXNzIjoiaHR0cHM6Ly9lYXN0dXMub2ljLnByb2QtYWtzLmF6dXJlLmNvbS8zNGJkOGJlZC0yYW
MxLTQxYWUtOWYwOC00ZTBhM2YxMTcwNmMvNmRjNWZlZjctZTQ0My00N2YzLThkNWEtYzkxMzAwOTU0ZTkxLyIsImp0aSI6IjhiZjY3MTAwLTc3Y2YtNGY4NC05ZGQ0LTFlOWM1MGM2MzgxNyIsImtlYmVybmV0ZXMuaW8iOnsib
mFtZXNwYWNlIjoia3ViZXJuZXRlcy1kYXNoYm9hcmQiLCJzZXJ2aWNlYWNjb3VudCI6eyJuYW1lIjoiYWRtaW4tdXNlciIsInVpZCI6IjE4NGExZGIwLWU5MDgtNDA1MS1hZjQ0LWIyMDEzNDdmMjU1YyJ9fSwibmJmIjoxNzUw
NjAwOTc2LCJzdWIiOiJzeXN0ZW06c2VydmljZWFjY291bnQ6a3ViZXJuZXRlcy1kYXNoYm9hcmQ6YWRtaW4tdXNlciJ9.xPlOV1ppPMCsG7CbzQIQiirt-gnYeUWf9o60cmzCvuAnx5B6WX1RHlkPIpk_TVL3YXXgchM0tJsTsr
wfLa3C2w9j3vmiWbyTLJds_6qnjOKK6c5qjWQ76q4ObjVvTihzQmeYeHrha_qYBtoAV3FlUOXhn9nXOoxZZdemd0Dps_PDwqEbWcT8dYCXkEGSKU6kfnxa6Dv4hv3bYdZ319mjjzZ5-BOXKzrSV9t44uvFa5svGlLPdgZj3_-5M
0HXAwI5oKml54x-UpSCkYZLQRymyI5mr2dR6WoM65qXpgKKWggalkNm8gbjT7Ch-Zp2Ur4c94pfMKjmJXmGiylSzuNjCMk5rVUXph0m9_4qgHuLLno48B8XyFFUccE4K2h6gWUkrD8vrRdcsfE8lvhjWxrjZtYskc7DbfeKn6Qt
2hAyw22nNiR65JSGzmMNhHOXGbHox0n3uuUtaLMID9Ydjr9ekYTe2aUSK6lZgqtzHwzf9DQAZgCKvkHj_yJrJosdhIdgvt_uIRwRRwEpGiecQ_5OIjd5mo3eSPTcQtaOzN0R0gAEzt2kpXAEILhoPWOGaxFsLiwFL76YAYpayYT
OvIP_Fe41ol_LaAl8cEiW88_LM3AWahn5k6eZZgXgmsUttF8JDnKcQnwZ6_DuY_Sx1LIQbALU1em85UmxQauj-WAD3GI
ayush [ ~ ]$ kubectl proxy
Starting to serve on 127.0.0.1:8001
```

4. Deploy a microservice application on AKS cluster and access it using public internet

Note – Continued from the previous deployment of the Kubernetes Cluster.

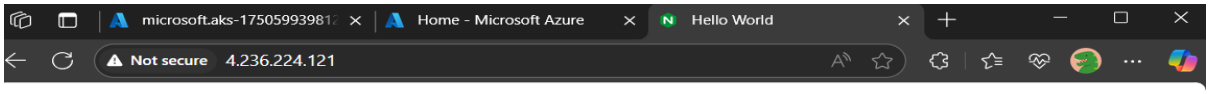
```
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.
ayush [ ~ ]$ vim deployment.yaml
ayush [ ~ ]$ cat deployemtn.yaml
cat: deployemtn.yaml: No such file or directory
ayush [ ~ ]$ cat deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: hello-app
spec:
  replicas: 2
  selector:
    matchLabels:
      app: hello-app
  template:
    metadata:
      labels:
        app: hello-app
    spec:
      containers:
      - name: hello-app
        image: nginxdemos/hello
        ports:
        - containerPort: 80
```

```
ayush [ ~ ]$ kubectl apply -f deployment.yaml
deployment.apps/hello-app created
ayush [ ~ ]$ vim service.yaml
ayush [ ~ ]$ cat service.yaml
apiVersion: v1
kind: Service
metadata:
  name: hello-app-service
spec:
  type: LoadBalancer
  selector:
    app: hello-app
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80

ayush [ ~ ]$ kubectl apply -f service.yaml
service/hello-app-service created
ayush [ ~ ]$ kubectl get service hello-app-service
NAME                TYPE           CLUSTER-IP     EXTERNAL-IP     PORT(S)          AGE
hello-app-service   LoadBalancer   10.0.124.175   4.236.224.121   80:30960/TCP     26s
ayush [ ~ ]$ kubectl detele -f service.yaml
error: unknown command "detele" for "kubectl"

Did you mean this?
        delete
ayush [ ~ ]$ kubectl delete -f service.yaml
service "hello-app-service" deleted
ayush [ ~ ]$ kubectl delete -f deployment.yaml
deployment.apps "hello-app" deleted
ayush [ ~ ]$
```



NGINX
Part of F5

Server address:	10.244.0.196:80
Server name:	hello-app-5565c5f99c-bfvqd
Date:	22/Jun/2025:14:16:26 +0000
URI:	/

☐ Auto Refresh

Request ID: f1acde0b9c963a77ddf1f2687f6ee793

5. Expose services in the cluster with node port, cluster IP, load balancer

```
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.
ayush [ ~ ]$ vim app-deployment.yaml
ayush [ ~ ]$ vat app-deployment.yaml
bash: vat: command not found
ayush [ ~ ]$ cat app-deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: my-app
spec:
  replicas: 2
  selector:
    matchLabels:
      app: my-app
  template:
    metadata:
      labels:
        app: my-app
    spec:
      containers:
      - name: my-app
        image: nginxdemos/hello
        ports:
        - containerPort: 80
```

```
ayush [ ~ ]$ az aks get-credentials --resource-group aks-rg --name aks-demo
Merged "aks-demo" as current context in /home/ayush/.kube/config
ayush [ ~ ]$ kubectl get nodes
NAME                                STATUS   ROLES    AGE   VERSION
aks-agentpool-43610949-vmss000000   Ready    <none>   48m   v1.31.9
aks-agentpool-43610949-vmss000001   Ready    <none>   48m   v1.31.9
ayush [ ~ ]$ kubectl apply -f app-deployment.yaml
deployment.apps/my-app created
ayush [ ~ ]$ vim clusterip-service.yaml
ayush [ ~ ]$ cat clusterip-service.yaml
apiVersion: v1
kind: Service
metadata:
  name: my-app-clusterip
spec:
  selector:
    app: my-app
  ports:
  - port: 80
    targetPort: 80
  type: ClusterIP

ayush [ ~ ]$ kubectl apply -f clusterip-service.yaml
service/my-app-clusterip created
```

```
ayush [ ~ ]$ kubectl run curlpod --image=radial/busyboxplus:curl -i --tty --rm
If you don't see a command prompt, try pressing enter.
[ root@curlpod:/ ]$ curl http://my-app-clusterip
<!DOCTYPE html>
<html>
<head>
<title>Hello World</title>
```

```
<link href="
mpEyoejJipouUBcgsinhwUKKKJ8PD3vnzsxuLv35Q644+Ue9mwH3P3f5/d7n6/3/3+OEJ/4xCc+8YQYtQuJwB0kIp+JrzUTB7iJuweBf4baTlJ5oCqw11C/JHp+tnqBb1ngT4z8WgReTUGbWCBGq0qvKRFcHf4eT/ZFBKoLvMBG
IbhiYkaQIjcAfLAK+D8z9YhjxMgsVUGc84+gyx9AYD0khXcMfLCmUBL68HMZ+PnHxyFw3Uwi8B8hgJYh7j4c7c8PV5CEbUTUzBoHcU78iIl/FYFXWmPaNeC3q4mz5YcqJPI1JGKql2Z3hkcjD5EUznmcu6qiNT+Y2CPEoH3Wm4A
/QERWQFe9QQ0caeCDlSZJrht1HxG0D3sOuCEiCA1aj4ZY3Ipzl8LiVtn8hxi5zRgWM8YYPBODF/9zxOLcVRVs+YGtwFzxCs1Bo9y+avBiOTQeUzwI3F5+kOwxsXkkmWNHHrjUokqtqtSyysW5gUHV4mtmZEHSdRkl+aELvcFIRN
397gPPXD4ZgbxJW1S5OJdA6OMgUAyHu1KfAz+pfCUtwr+HuQc8ORQ1jK4ZgGsTvcY5uQP5oYkY2HfcK5sGLpS6l1xZQwNn7Xkedp3OgMrWC1DX0Qwnms/A1rK9cF9atNVo18DP/3o5fF99BGo7LFDRWgMJJQaYQv/PyOcHySP0T
ITrBIhYb+WSHLrlNGEx5NeXgj2paW8C5rs46h3Dc3kt3G2Ogr9aqoes+f5RvbL1aJ5iXnKnxkfIEoB3N/zHeHAmF9ovwryvYvC9TysnICkEonPX212vvOU8+As6eS+QCDAw0aNLABq6LO8DkJMSSznMMEfScFFGwCJYXbDV7lq1
7RYIQu+QTYpjRUBM3gZQIt+cOwyTpWRpYBQRsKrgU4ceNS4JkCSxLI1+ZsIS0NvXB6sLE/tL5EQkQJKOm52YON9y7glqJkCSOqzrD6Uvc1wZ1EBA07V/IafmN4ckHG+ugJkSEHuVQQ0ENFy9BLP3R0NR4ymHJGRWFWBnZ6fPVwM
BF9EDgrD2z0USqtoaHJKw49SBoZ2dWggIxmcEsvspYLLi4PKNDrvv68OfuKLt/68MqiJAan4Q0IpDm6G7r8fue692X4fI7PiByqA6AqygNh0XHIaClDOkpz9aGVRJABo8CTP+3sqfHZJQeqkSgvHZn+xaqEICKAlhECSGO60MWd
VF4IcesDL/ExUSYN3okCrD31fqHZLwcWkq5owPVUoA3UcIgdBv10BrV7vdz3b39kBhw0kVE2BNirG/bqRghyPqIcBKQkKJcVgE1LQ1wR3S5ooqCDBKlSEUzGdyFBNwvq1RTQT0b4BOF5+BgoayCUqAtTLMSXsRzl6uHX8EONoUt
XS2KCfAusOsyVwFLV1tznNAuzflAGxb+R/esGuodDcD0bUVbYLelhRf/mWD08ogdYtTjNwYbIsrORhBIwJMPOTWHh1i6Lriz107FUKviivcZvfp8WZvN8TmbVS2rtsHI8mMtn9gSe50KAz79yWw8490OGYpp8lsTUGictd3EA6P
HVwB20+mYUNURo/aMs4dhqjsdcoOWGxH5yYu0g0P0EzFBd7DxZoVHY7aHmWtB6VunwhLB6P0gFULk6zhJnvnBw5HW9D9N5GkpQEjMBcQOg+JMBNxjMZgHISawvGZHiKw+0mybv5ozP0txgvk07AQvWxAoh98sXsur3RmwMStxIu
d9fiIzMAIXTV6yNqxHaH7gg1GA7bgxVvHfEjq1hAl10ZM/A46gO0x0bOPoiHpSEDvsMZhXVVbVRL4TLz2E140EK1dgsnnd9mBaHcmwuigJHeCGLkXvHNaNHOBP4J/HYmoGbGwsJU1ka0nAvM2ht40758ZNmvvRRJ2413roMa7Mx
Vq4jpRdyMRc8bh9wR0TyIRWdR9hzNXaJs3Ftif6KDWuBcBH0hErky2bNraV5E9jcBjiapE1ExHkO8iEY1OvjLTjAkugezh7ySqFUPoXHTtZAR7ncY4rRrYYgtcCtGHPUgmjEhPmiKXjXc/l4g6HfGJT3ziEw/If86JzB/YMku9A
AAAAElFTkSuQmCC" rel="icon" type="image/png" />
```

```
<style>
body {
  margin: 0px;
  font: 20px 'RobotoRegular', Arial, sans-serif;
  font-weight: 100;
  height: 100%;
  color: #0f1419;
}
div.info {
  display: table;
  background: #e8eaec;
  padding: 20px 20px 20px 20px;
  border: 1px dashed black;
  border-radius: 10px;
  margin: 0px auto auto auto;
}
```


```
AsMCwwLS41OTExNC0uMDc3MzRoLS43NTQzN1ptMS4wODQzNC0xLjE2NDM5YS45ODY0Mi45ODY0MiwwLDAsMS0uMzYyNjIuMDQ4MTloLS4zNDA0NXYtLjc4NjI0aC4zMjQ5MWEuOTU5MDcuOTU5MDcsMCwwLDEsLjQ1ODIyLjA4N
DM0LjMyNzEzLjMyNzEzLDAsMCwxLC4xNDM0Mi4zMTUxOS4zMzI3NS4zMzI3NSwwLDAsMS0uMjIzNDguMzM4NTJtMS4xMDcyNi0xLjI5ODA5YTEuOTE1NjMsMS45MTU2MywwLDAsMC0xLjQwMDMtLjU3MjQ4LDEuOTY5NjgsMS45
Njk2OCwwLDAsMCwwLDMuOTM5MzQsMS45NzMxOCwxLjk3MzE4LDAsMCwwLDEuNDAwMy0zLjM2Njg2bS0uMjAwMTUuMTk1NDlhMS42MTMyNSwxLjYxMzI1LDAsMCwxLC40OTQzNSwxLjE5ODIsMS42OTI2MywxLjY5MjYzLDAsMCw
xLTIuODkzMSwxLjIwNCwxLjY3MSwxLjY3MSwwLDAsMS0uNDkyLTEuMjA0LDEuNjk4NDYsMS42OTg0NiwwLDAsMSwxLjY5MDYzLTEuNzAxMTEsMS42MTUyLDEuNjE1MiwwLDAsMSwxLjIwMDE1LjUwMjkxIiB0cmFuc2Zvcm09In
RyYW5zbGF0ZSgtNy4xOTc4NCAtMC4zNTg5MikiLz48L3N2Zz4="/>
```

```
<div class="info">
<p><span>Server address:</span> <span>10.244.1.17:80</span></p>
<p><span>Server name:</span> <span>my-app-6b6464f995-lr2hf</span></p>
<p class="smaller"><span>Date:</span> <span>22/Jun/2025:14:33:47 +0000</span></p>
<p class="smaller"><span>URI:</span> <span>/</span></p>
</div>
<div class="check"><input type="checkbox" id="check" onchange="changeCookie()"> Auto Refresh</div>
    <div id="footer">
        <div id="center" align="center">
            Request ID: 4b5592206f0a0ccldd4afb727ce929b2<br/>
            &copy; F5, Inc. 2020 - 2024
        </div>
    </div>
</body>
</html>
```

```
[ root@curlpod:/ ]$ Session ended, resume using 'kubectl attach curlpod -c curlpod -i -t' command when the pod is running
pod "curlpod" deleted
ayush [ ~ ]$ vim nodeport-service.yaml
ayush [ ~ ]$ cat nodeport-service.yaml
apiVersion: v1
kind: Service
metadata:
  name: my-app-nodeport
spec:
  selector:
    app: my-app
  type: NodePort
  ports:
  - port: 80
    targetPort: 80
    nodePort: 30036  # choose a port between 30000-32767

ayush [ ~ ]$ vim nodeport-service.yaml
ayush [ ~ ]$ cat nodeport-service.yaml
apiVersion: v1
kind: Service
metadata:
  name: my-app-nodeport
spec:
  selector:
    app: my-app
  type: NodePort
  ports:
  - port: 80
    targetPort: 80
    nodePort: 30036
```

```
ayush [ ~ ]$ kubectl apply -f nodeport-service.yaml
service/my-app-nodeport created
ayush [ ~ ]$ kubectl get nodes
NAME                                STATUS   ROLES    AGE   VERSION
aks-agentpool-43610949-vmss000000   Ready    <none>   54m   v1.31.9
aks-agentpool-43610949-vmss000001   Ready    <none>   54m   v1.31.9
```

```
ayush [ ~ ]$ az aks show --resource-group aks-rg --name aks-demo --query nodeResourceGroup -o tsv
MC_aks-rg_aks-demo_eastus
ayush [ ~ ]$ kubectl get svc
NAME              TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)        AGE
kubernetes        ClusterIP   10.0.0.1       <none>        443/TCP        62m
my-app-clusterip  ClusterIP   10.0.34.105    <none>        80/TCP         10m
my-app-nodeport   NodePort    10.0.96.40     <none>        80:30036/TCP   7m27s
```

```
ayush [ ~ ]$ vim my-app-service.yaml
ayush [ ~ ]$ kubectl apply -f my-app-service.yaml
service/my-app-service created
ayush [ ~ ]$ kubectl get svc
NAME              TYPE           CLUSTER-IP     EXTERNAL-IP    PORT(S)        AGE
kubernetes        ClusterIP      10.0.0.1       <none>         443/TCP        65m
my-app-clusterip  ClusterIP      10.0.34.105    <none>         80/TCP         13m
my-app-nodeport   NodePort       10.0.96.40     <none>         80:30036/TCP   10m
my-app-service    LoadBalancer   10.0.232.113   <pending>      80:32708/TCP   10s
ayush [ ~ ]$ kubectl get svc
NAME              TYPE           CLUSTER-IP     EXTERNAL-IP      PORT(S)        AGE
kubernetes        ClusterIP      10.0.0.1       <none>           443/TCP        65m
my-app-clusterip  ClusterIP      10.0.34.105    <none>           80/TCP         13m
my-app-nodeport   NodePort       10.0.96.40     <none>           80:30036/TCP   10m
my-app-service    LoadBalancer   10.0.232.113   52.226.59.158    80:32708/TCP   25s
ayush [ ~ ]$ kubectl run curlpod --image=radial/busyboxplus:curl -i --tty --rm
If you don't see a command prompt, try pressing enter.
```

```
[ root@curlpod:/ ]$ curl http://52.226.59.158
<!DOCTYPE html>
<html>
<head>
<title>Hello World</title>
<link href="
mpEyoejJipouUBcgsinhwUKKKJ8PD3vnzsxuLv35Q644+Ue9mwH3P3f5/d7n6/3/3+OEJ/4xCc+8YQYtQuJwB0kIp+JrzUTB7iJuweBf4baTlJ5oCqw1lC/JHp+tnqBblnqT4z8WgReTUGbWCBGq0qvKRFcHf4eT/ZFBKoLvMBG
IbhiYkaQIjcAfLAK+D8z9YhjxMgsVUGc84+gyx9AYD0khXcMfLCmUBL68HMZ+PnHxyFw3Uwi8B8hgJYh7j4c7c8PV5CEbUTUzBoHcU78iIl/FYFXWmPaNeC3q4mz5YcqJPI1JGKql2Z3hkcjD5EUznmcu6qiNT+Y2CPEoH3Wm4A
/QERWQFe9QQ0caeCDlSZJrht1HxG0D3sOuCEiCAlaj4ZY3Ipzl8LiVtn8hxi5zRgWM8YYPBODF/9zxOLcVRVs+YGtwFzxCs1Bo9y+avBiOTQeUzwI3P5+kOwxsXkkmWNHHrjUokqtqtSyysW5gUHV4mtmZEHSdRkl+aELvcFIRN
897gPPXD4ZgbxJW1S5OJdA60MgUAyHulKfAz+pfCUtwr+HuQc8ORQ1jK4ZgGsTvcY5uQP5oYkY2HfcK5sGLpS6llxZQwNn7Xkedp3OgMrWC1DX0Qwnms/AlrK9cF9atNVol8DP/3o5fF99BGo7LFDRWgMJJQaYQv/PyOcHySP0T
ITrBIhYb+WSHLrlNGEx5NeXgj2paW8C5rs46h3Dc3kt3G2Ogr9aqoes+f5RvbLlaJ5iXnKnxkfIEoB3N/zHeHAmF9ovwryvYvC9TysnICkEonPX212vvOU8+As6eS+QCDAw0aNLABq6LO8DkJMSSznMMBfScFFGwCJYXbDV7lql
7RYIQu+QTYpjRUBM3gZQIt+cOwyTpWRpYBQRsKrgU4ceNS4JkCSxLI1+ZsIS0NvXB6sLE/tL5EQkQJKOm52YON9y7glqJkCSOqzrD6Uvc1wZlEBA07V/IafmN4ckHG+ugJkSEHuVQQ0ENFy9BLP3R0NR4ymHJGRWFWBnZ6fPVwM
BF9EDgrD2z0USqtoaHJKw49SBoZ2dWggIxmcEsvspYLLi4PKNDrvv68OfuKLt/68MqiJAan4Q0IpDm6G7r8fue692X4fI7PiByqA6AqygNh0XHIaClDOkpz9aGVRJABo8CTP+3sqfHZJQeqkSgvHZn+xaqEICKAlhECSGO60MWd
VF4IcesDL/ExUSYN3okCrD31fqHZLwcWkq5owPVUoA3UcIgdBv10BrV7vdz3b39kBhw0kVE2BNirG/bqRghyPqIcBKQkKJcVgElLQ1wR3S5ooqCDBKlSEUzGdyFBNwvqlRTQT0b4BOF5+BgoayCUqAtTLMSXsRzl6uHX8EONoUt
XS2KCfAusOsyVwFLV1tznNAuzflAGXb+R/esGuodDcD0bUVbYLelhRf/mWD08ogdYtTjNwYbIsrORhBIwJMPOTWHhli6Lriz107FUKviivCZvfp8WZvN8TmbVS2rtsHI8mMtn9gSe50KAz79yWw84900GYpp8lsTUGictd3EA6P
HVwB20+mYUNURo/aMs4dhqjsdcoOWGxH5yYu0g0P0EzFBd7DxZoVHY7aHmWtB6VunwhLB6P0gFULk6zhJnvnBw5HW9D9N5GkpQEjMBcQOg+JMBNxjMZgHISawvGZHiKw+0mybv5ozP0txgvk07AQvWxAoh98sXsur3RmwMStxIu
d9fiIzMAIXTV6yNqxHaH7gg1GA7bgxVvHfEjglhAl10ZM/A46g0Ox0bOPoiHpSEDvsMZhXVVbVRL4TLz2E140EK1dgsnnd9mBaHcmwuigJHeCGLkXvHNaNHOBP4J/HYmoGbGwsJU1ka0nAvM2ht40758ZNmvVRRJ2413roMa7Mx
Vq4jpRdyMRc8bh9wR0TyIRWdR9hzNXaJs3Ftif6KDWuBcBH0hErky2bNraV5E9jcBjiapElExHkO8iEY1OvjLTjAkugezh7ySqFUPoXHTtZAR7ncY4rRrYYgtcCtGHPUgmjEhPmiKXjXc/14g6HfGJT3ziEw/If86JzB/YMku9A
AAAAElFTkSuQmCC" rel="icon" type="image/png" />
<style>
body {
  margin: 0px;
  font: 20px 'RobotoRegular', Arial, sans-serif;
  font-weight: 100;
  height: 100%;
  color: #0f1419;
}
div.info {
  display: table;
  background: #e8eaec;
  padding: 20px 20px 20px 20px;
  border: 1px dashed black;
  border-radius: 10px;
  margin: 0px auto auto auto;
}
div.info p {
   display: table-row;
```

```
AsMCwwLS41OTExNC0uMDc3MzRoLS43NTQzN1ptMS4wODQzNC0xLjE2NDM5YS45ODY0Mi45ODY0MiwwLDAsMS0uMzYyNjIuMDQ4MTloLS4zNDA0NXYtLjc4NjI0aC4zMjQ5MWEuOTU5MDcuOTU5MDcsMCwwLDEsLjQ1ODIyLjA4N
DM0LjMyNzEzLjMyNzEzLDAsMCwxLC4xNDM0Mi4zMTUxOS4zMzI3NS4zMzI3NSwwLDAsMS0uMjIzNDguMzM4NTJtMS4xMDcyNi0xLjI5ODA5YTEuOTE1NjMsMS45MTU2MywwLDAsMC0xLjQwMDMtLjU3MjQ4LDEuOTY5NjgsMS45
Njk2OCwwLDAsMCwwLDMuOTM5MzQsMS45NzMxOCwxLjk3MzE4LDAsMCwwLDEuNDAwMy0zLjM2Njg2bS0uMjAwMTUuMTk1NDlhMS42MTMyNSwxLjYxMzI1LDAsMCwxLC40OTQzNSwxLjE5ODIsMS42OTI2MywxLjY5MjYzLDAsMCw
xLTIuODkzMSwxLjIwNCwxLjY3MSwxLjY3MSwwLDAsMS0uNDkyLTEuMjA0LDEuNjk4NDYsMS42OTg0NiwwLDAsMSwxLjY5MDYzLTEuNzAxMTEsMS42MTUyLDEuNjE1MiwwLDAsMSwxLjIwMDE1LjUwMjkxIiB0cmFuc2Zvcm09In
RyYW5zbGF0ZSgtNy4xOTc4NCAtMC4zNTg5MikiLz48L3N2Zz4="/>
<div class="info">
<p><span>Server address:</span> <span>10.244.1.17:80</span></p>
<p><span>Server name:</span> <span>my-app-6b6464f995-lr2hf</span></p>
<p class="smaller"><span>Date:</span> <span>22/Jun/2025:14:47:35 +0000</span></p>
<p class="smaller"><span>URI:</span> <span>/</span></p>
</div>
<div class="check"><input type="checkbox" id="check" onchange="changeCookie()"> Auto Refresh</div>
    <div id="footer">
        <div id="center" align="center">
            Request ID: a15607c34d7d5f7148369ef86e6feefb<br/>
            &copy; F5, Inc. 2020 - 2024
        </div>
    </div>
</body>
</html>

[ root@curlpod:/ ]$
[ root@curlpod:/ ]$ Session ended, resume using 'kubectl attach curlpod -c curlpod -i -t' command when the pod is running
pod "curlpod" deleted
```

```
ayush [ ~ ]$ vim loadbalancer-service.yaml
ayush [ ~ ]$ cat loadbalancer-service.yaml
apiVersion: v1
kind: Service
metadata:
  name: my-app-loadbalancer
spec:
  selector:
    app: my-app
  type: LoadBalancer
  ports:
  - port: 80
    targetPort: 80

ayush [ ~ ]$ kubectl apply -f loadbalancer-service.yaml
service/my-app-loadbalancer created
ayush [ ~ ]$ kubectl get service my-app-loadbalancer
NAME                  TYPE           CLUSTER-IP     EXTERNAL-IP     PORT(S)        AGE
my-app-loadbalancer   LoadBalancer   10.0.210.221   128.203.120.7   80:32306/TCP   19s
```

```
ayush [ ~ ]$ curl http://128.203.120.7
<!DOCTYPE html>
<html>
<head>
<title>Hello World</title>
<link href="
mpEyoejJipouUBcgsinhwUKKKJ8PD3vnzsxuLv35Q644+Ue9mwH3P3f5/d7n6/3/3+OEJ/4xCc+8YQYtQuJwB0kIp+JrzUTB7iJuweBf4baTlJ5oCqw11C/JHp+tnqBb1ngT4z8WgReTUGbWCBGq0qvKRFcHf4eT/ZFBKoLvMBG
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body {
  margin: 0px;
  font: 20px 'RobotoRegular', Arial, sans-serif;
  font-weight: 100;
  height: 100%;
  color: #0f1419;
}
div.info {
  display: table;
  background: #e8eaec;
  padding: 20px 20px 20px 20px;
  border: 1px dashed black;
  border-radius: 10px;
  margin: 0px auto auto auto;
}
div.info p {
    display: table-row;
```

```
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<div class="info">
<p><span>Server address:</span> <span>10.244.1.17:80</span></p>
<p><span>Server name:</span> <span>my-app-6b6464f995-lr2hf</span></p>
<p class="smaller"><span>Date:</span> <span>22/Jun/2025:14:49:30 +0000</span></p>
<p class="smaller"><span>URI:</span> <span>/</span></p>
</div>
<div class="check"><input type="checkbox" id="check" onchange="changeCookie()"> Auto Refresh</div>
    <div id="footer">
        <div id="center" align="center">
            Request ID: d60a2e074915fe0b1eeb70b5c6fe246b<br/>
            &copy; F5, Inc. 2020 - 2024
        </div>
    </div>
</body>
</html>
```

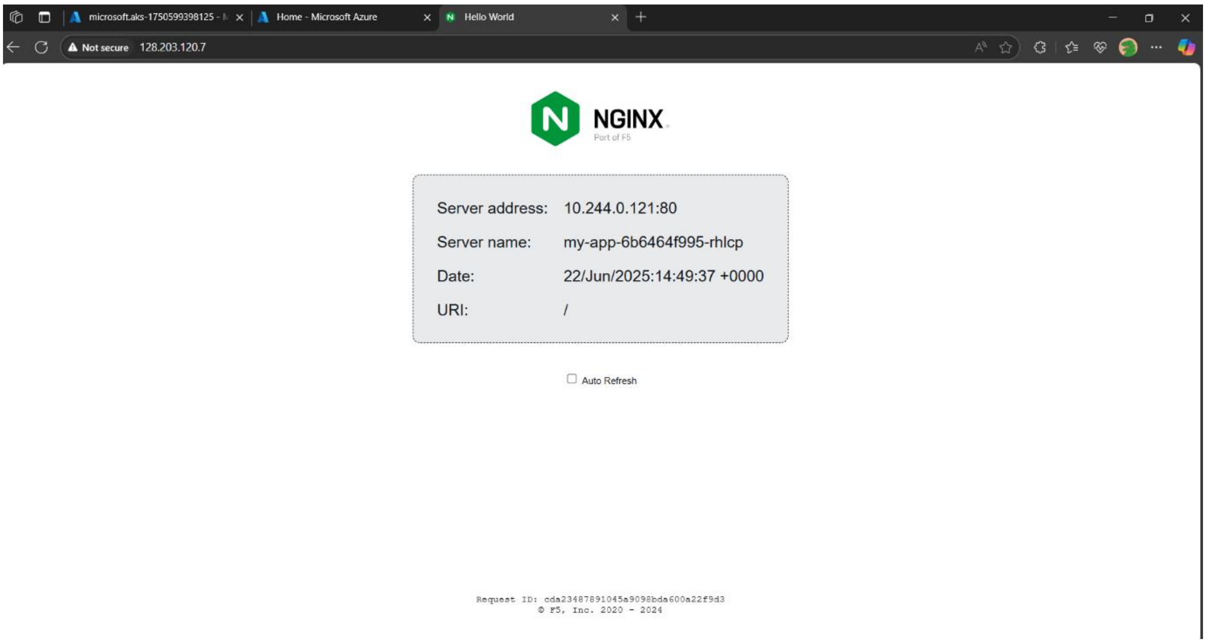


```
ayush [ ~ ]$ kubectl delete -f clusterip-service.yaml
service "my-app-clusterip" deleted
ayush [ ~ ]$ kubectl delete -f nodeport-service.yaml
service "my-app-nodeport" deleted
ayush [ ~ ]$ kubectl delete -f loadbalancer-service.yaml
service "my-app-loadbalancer" deleted
ayush [ ~ ]$ kubectl delete -f app-deployment.yaml
deployment.apps "my-app" deleted
ayush [ ~ ]$ kubectl delete -f my-app-service.yaml
service "my-app-service" deleted
ayush [ ~ ]$
```