Kubectl

Launch one instance ubuntu **sudo su -**

Update the ubuntu **apt udate –y**

Install docker **sudo curl -fsSL** https://get.docker.com **-o get-docker.sh**

Permissions **chmod 700 get-docker.sh**

Execute permissions **./get-docker.sh**

See the version **docker version**

Check the status **systemctl status docker**

```
● docker.service - Docker Application Container E
     Loaded: loaded (/usr/lib/systemd/system/dock
     Active: active (running) since Mon 2024-11-1
TriggeredBy: ● docker.socket
       Docs: https://docs.docker.com
   Main PID: 2840 (dockerd)
      Tasks: 9
     Memory: 20.9M (peak: 23.6M)
        CPU: 292ms
     CGroup: /system.slice/docker.service
```

Install minikube

curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64

sudo install minikube-linux-amd64 /usr/local/bin/minikube

sudo mv minikube-linux-amd64 /usr/local/bin/minikube

sudo chmod +x /usr/local/bin/minikube

Check the version **sudo minikube version**

```
root@ip-172-31-80-28:/usr/local/bin# ll
total 101396
drwxr-xr-x  2 root root       4096 Nov 18 14:00 ./
drwxr-xr-x 10 root root       4096 Sep 27 08:36 ../
-rwxr-xr-x  1 root root 103820392 Nov 18 13:58 minikube*
```

Install kubectl:

curl -LO "https://dl.k8s.io/release/$(curl -L -s https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl"

sudo install -o root -g root -m 0755 kubectl /usr/local/bin/kubectl

```
root@ip-172-31-80-28:~# cd /usr/local/bin
root@ip-172-31-80-28:/usr/local/bin# ll
total 156460
drwxr-xr-x  2 root root      4096 Nov 18 14:16 ./
drwxr-xr-x 10 root root      4096 Sep 27 08:36 ../
-rwxr-xr-x  1 root root  56381592 Nov 18 14:16 kubectl*
-rwxr-xr-x  1 root root 103820392 Nov 18 13:58 minikube*
```

chmod +x minikube

Start the minikube **./minikube start --force**

Udate **minikube start --driver=docker –force**

Minikube status

```
root@ip-172-31-80-28:/usr/local/bin# minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubeconfig: Configured
```

Cd

chmod +x kubectl

mv kubectl /usr/local/bin/kubectl ,ll

```
root@ip-172-31-80-28:~# kubectl version --client
Client Version: v1.31.2
Kustomize Version: v5.4.2
```

Create the pods :

kubectl run anu --image=nginx

See the pod container create are not

Kubectl get pods

Delete pod kubectl delete pod pod

See the full information pods IP kubectl get po –o wide

```
root@ip-172-31-80-28:~# kubectl get po -o wide
NAME    READY   STATUS    RESTARTS   AGE     IP           NODE       NOMINATED NODE   READINESS GAT
anu     1/1     Running   0          6m28s   10.244.0.4   minikube   <none>           <none>
anu1    1/1     Running   0          103s    10.244.0.6   minikube   <none>           <none>
root@ip-172-31-80-28:~#
```

all pods infromation kubectl discribe po

```
 Initialized                 True
 Ready                       True
 ContainersReady             True
 PodScheduled                True
olumes:
 kube-api-access-w8tj5:
   Type:                     Projected (a volume that contains injected data from multi
   TokenExpirationSeconds:   3607
   ConfigMapName:            kube-root-ca.crt
   ConfigMapOptional:        <nil>
   DownwardAPI:              true
oS Class:                    BestEffort
ode-Selectors:               <none>
olerations:                  node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
                             node.kubernetes.io/unreachable:NoExecute op=Exists for 300
vents:
 Type    Reason     Age    From               Message
 ----    ------     ----   ----               -------
 Normal  Scheduled  6m24s  default-scheduler  Successfully assigned default/anu1 to mi
 Normal  Pulling    6m24s  kubelet            Pulling image "nginx"
 Normal  Pulled     6m24s  kubelet            Successfully pulled image "nginx" in 158
 Normal  Created    6m24s  kubelet            Created container anu1
 Normal  Started    6m24s  kubelet            Started container anu1
```

Pod details in yaml formate:

kubectl get pod anu -o yaml

```
imageID: docker-pullable://ng
lastState: {}
name: anu
ready: true
restartCount: 0
started: true
state:
  running:
    startedAt: "2024-11-18T14
volumeMounts:
- mountPath: /var/run/secrets
  name: kube-api-access-zhz7t
  readOnly: true
  recursiveReadOnly: Disabled
ostIP: 192.168.49.2
ostIPs:
ip: 192.168.49.2
ase: Running
odIP: 10.244.0.4
odIPs:
ip: 10.244.0.4
osClass: BestEffort
tartTime: "2024-11-18T14:45:29
```

Kubectl logs anu

```
root@ip-172-31-80-28:~# kubectl logs anu
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt t
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-b
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/ngi
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.e
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-temp
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-proc
/docker-entrypoint.sh: Configuration complete; ready for start up
2024/11/18 14:45:35 [notice] 1#1: using the "epoll" event method
2024/11/18 14:45:35 [notice] 1#1: nginx/1.27.2
2024/11/18 14:45:35 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14)
2024/11/18 14:45:35 [notice] 1#1: OS: Linux 6.8.0-1016-aws
2024/11/18 14:45:35 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:10485
2024/11/18 14:45:35 [notice] 1#1: start worker processes
2024/11/18 14:45:35 [notice] 1#1: start worker process 29
2024/11/18 14:45:35 [notice] 1#1: start worker process 30
```

Inside of the pod create the container, then application run inside of the container.

Vi pod.yml

```yaml
apiVersion: V1
Kind: Pod
metadata:
  name: pod1
spec:
  containers:
   - name: nginx-container
     image: nginx:latest
     ports:
     - containerport: 80
~
```

Kubectl apply –f pod.yml

Add the replication:

Mv pod.yml replicaset.yaml

vi replicaset.yaml

Kubectl api-resources

```
cronjobs                        cj          batch/v1                             true         CronJob
jobs                                        batch/v1                             true         Job
certificatesigningrequests      csr         certificates.k8s.io/v1               false        CertificateSigningRequest
leases                                      coordination.k8s.io/v1               true         Lease
endpointslices                              discovery.k8s.io/v1                  true         EndpointSlice
events                          ev          events.k8s.io/v1                     true         Event
flowschemas                                 flowcontrol.apiserver.k8s.io/v1      false        FlowSchema
prioritylevelconfigurations                 flowcontrol.apiserver.k8s.io/v1      false        PriorityLevelConfiguration
ingressclasses                              networking.k8s.io/v1                 false        IngressClass
ingresses                       ing         networking.k8s.io/v1                 true         Ingress
networkpolicies                 netpol      networking.k8s.io/v1                 true         NetworkPolicy
runtimeclasses                              node.k8s.io/v1                       false        RuntimeClass
poddisruptionbudgets            pdb         policy/v1                            true         PodDisruptionBudget
clusterrolebindings                         rbac.authorization.k8s.io/v1         false        ClusterRoleBinding
clusterroles                                rbac.authorization.k8s.io/v1         false        ClusterRole
rolebindings                                rbac.authorization.k8s.io/v1         true         RoleBinding
roles                                       rbac.authorization.k8s.io/v1         true         Role
priorityclasses                 pc          scheduling.k8s.io/v1                 false        PriorityClass
csidrivers                                  storage.k8s.io/v1                    false        CSIDriver
csinodes                                    storage.k8s.io/v1                    false        CSINode
csistoragecapacities                        storage.k8s.io/v1                    true         CSIStorageCapacity
storageclasses                  sc          storage.k8s.io/v1                    false        StorageClass
volumeattachments                           storage.k8s.io/v1                    false        VolumeAttachment
```

Kubectl get pods.

vi replicaset.yaml

kubectl apply -f replicaset.yaml

```
root@ip-172-31-80-28:~# kubectl get pods
NAME           READY   STATUS             RESTARTS   AGE
anu            1/1     Running            0          84m
anu1           1/1     Running            0          79m
cms-rs         1/1     Running            0          14s
example-pod    1/1     Running            0          28m
pod            0/1     ImagePullBackOff   0          35m
```