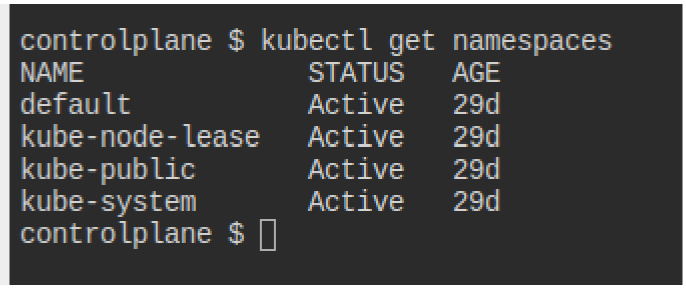
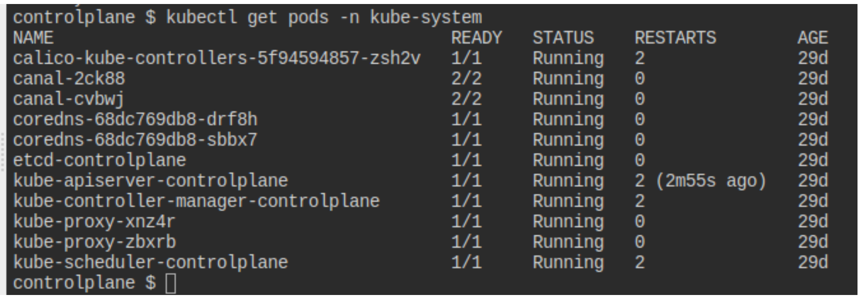
1- How many Namespaces exist on the system? 4 namespaces



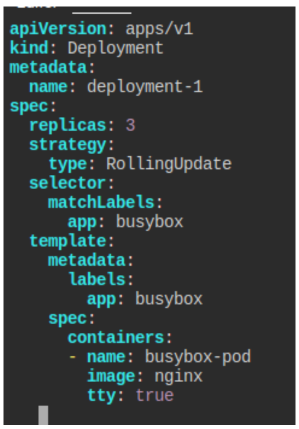
```
controlplane $ kubectl get namespaces
NAME              STATUS   AGE
default           Active   29d
kube-node-lease   Active   29d
kube-public       Active   29d
kube-system       Active   29d
controlplane $ 
```

2-How many pods exist in the kube-system namespace?
11 pods



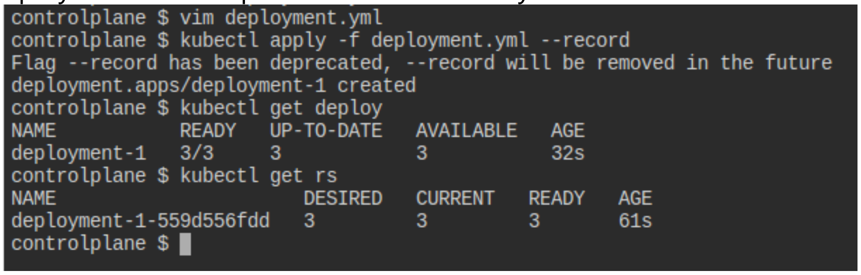
```
controlplane $ kubectl get pods -n kube-system
NAME                                       READY   STATUS    RESTARTS        AGE
calico-kube-controllers-5f94594857-zsh2v   1/1     Running   2               29d
canal-2ck88                                2/2     Running   0               29d
canal-cvbwj                                2/2     Running   0               29d
coredns-68dc769db8-drf8h                   1/1     Running   0               29d
coredns-68dc769db8-sbbx7                   1/1     Running   0               29d
etcd-controlplane                          1/1     Running   0               29d
kube-apiserver-controlplane                1/1     Running   2 (2m55s ago)   29d
kube-controller-manager-controlplane       1/1     Running   2               29d
kube-proxy-xnz4r                           1/1     Running   0               29d
kube-proxy-zbxrb                           1/1     Running   0               29d
kube-scheduler-controlplane                1/1     Running   2               29d
controlplane $ 
```

3- create a Deployment with
name= deployment-1
image= busybox
replicas= 3



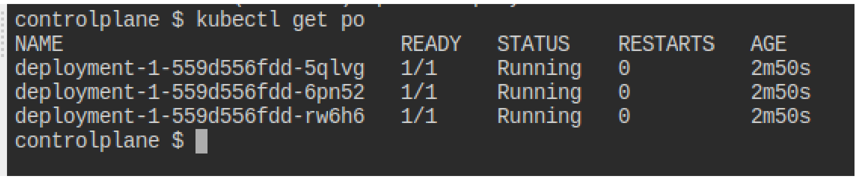
```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: deployment-1
spec:
  replicas: 3
  strategy:
    type: RollingUpdate
  selector:
    matchLabels:
      app: busybox
  template:
    metadata:
      labels:
        app: busybox
    spec:
      containers:
      - name: busybox-pod
        image: nginx
        tty: true
```

4- How many Deployments and ReplicaSets exist on the system now?



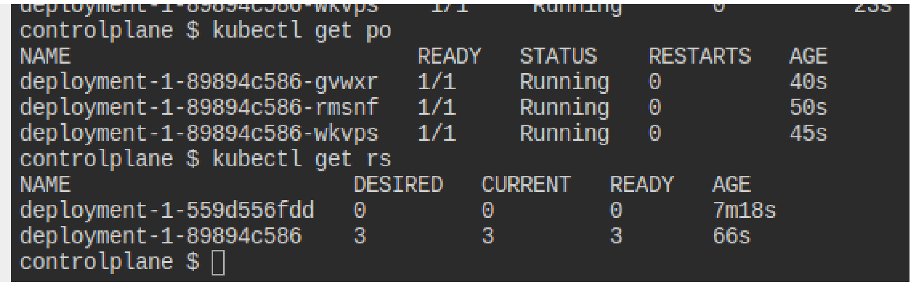
```
controlplane $ vim deployment.yml
controlplane $ kubectl apply -f deployment.yml --record
Flag --record has been deprecated, --record will be removed in the future
deployment.apps/deployment-1 created
controlplane $ kubectl get deploy
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
deployment-1   3/3     3            3           32s
controlplane $ kubectl get rs
NAME                      DESIRED   CURRENT   READY   AGE
deployment-1-559d556fdd   3         3         3       61s
controlplane $ 
```

5- How many pods are ready with the deployment-1?



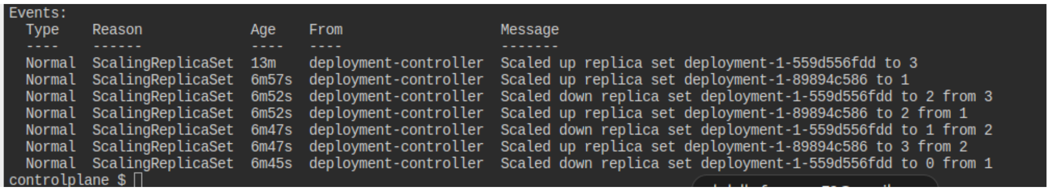
```
controlplane $ kubectl get po
NAME                          READY   STATUS    RESTARTS   AGE
deployment-1-559d556fdd-5qlvg   1/1     Running   0          2m50s
deployment-1-559d556fdd-6pn52   1/1     Running   0          2m50s
deployment-1-559d556fdd-rw6h6   1/1     Running   0          2m50s
controlplane $ 
```

6- Update deployment-1 image to nginx then check the ready pods again

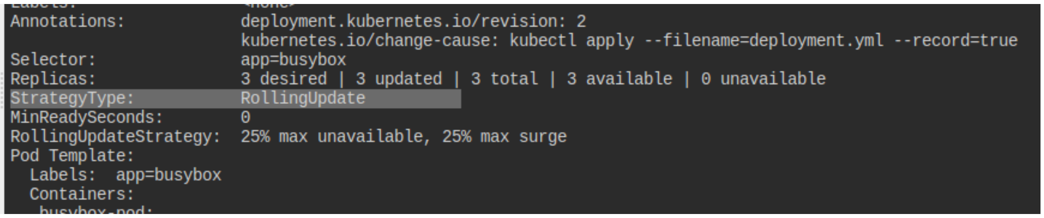


```
deployment-1-89894c586-wkvps   1/1     Running   0          23s
controlplane $ kubectl get po
NAME                         READY   STATUS    RESTARTS   AGE
deployment-1-89894c586-gvwxr   1/1     Running   0          40s
deployment-1-89894c586-rmsnf   1/1     Running   0          50s
deployment-1-89894c586-wkvps   1/1     Running   0          45s
controlplane $ kubectl get rs
NAME                      DESIRED   CURRENT   READY   AGE
deployment-1-559d556fdd   0         0         0       7m18s
deployment-1-89894c586    3         3         3       66s
controlplane $ 
```

7- Run kubectl describe deployment deployment-1 and check events
What is the deployment strategy used to upgrade the deployment-1?RollingUpdate

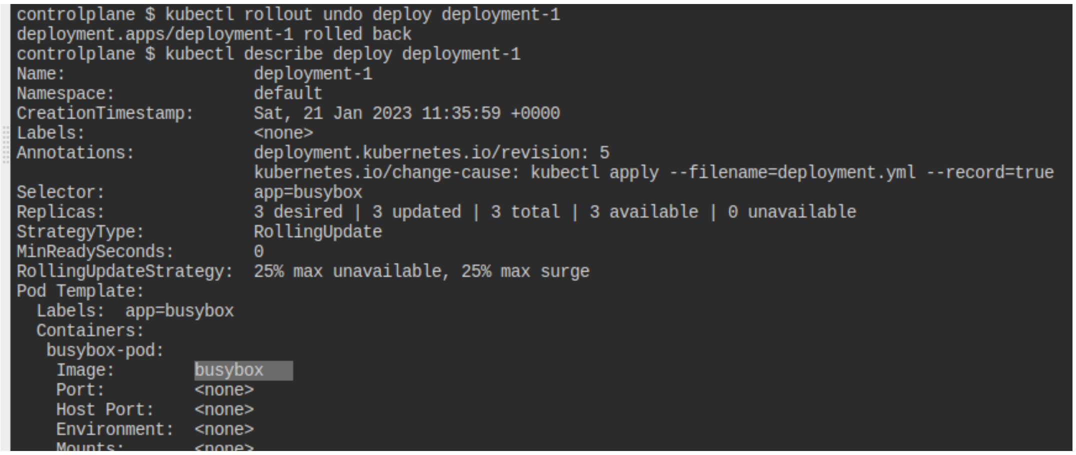


```
Events:
  Type    Reason             Age    From                   Message
  ----    ------             ----   ----                   -------
  Normal  ScalingReplicaSet  13m    deployment-controller  Scaled up replica set deployment-1-559d556fdd to 3
  Normal  ScalingReplicaSet  6m57s  deployment-controller  Scaled up replica set deployment-1-89894c586 to 1
  Normal  ScalingReplicaSet  6m52s  deployment-controller  Scaled down replica set deployment-1-559d556fdd to 2 from 3
  Normal  ScalingReplicaSet  6m52s  deployment-controller  Scaled up replica set deployment-1-89894c586 to 2 from 1
  Normal  ScalingReplicaSet  6m47s  deployment-controller  Scaled down replica set deployment-1-559d556fdd to 1 from 2
  Normal  ScalingReplicaSet  6m47s  deployment-controller  Scaled up replica set deployment-1-89894c586 to 3 from 2
  Normal  ScalingReplicaSet  6m45s  deployment-controller  Scaled down replica set deployment-1-559d556fdd to 0 from 1
controlplane $ 
```



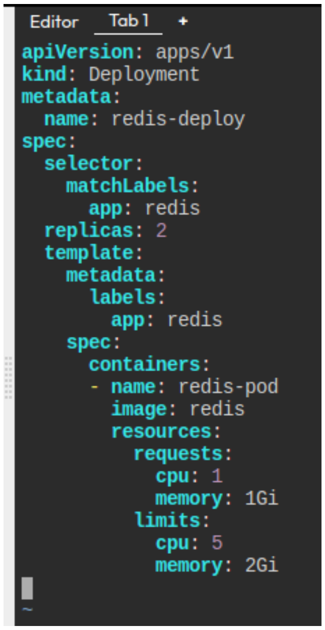
```
Labels:                 <none>
Annotations:            deployment.kubernetes.io/revision: 2
                        kubernetes.io/change-cause: kubectl apply --filename=deployment.yml --record=true
Selector:               app=busybox
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=busybox
  Containers:
   busybox-pod:
```

8- Rollback the deployment-1
What is the used image with the deployment-1?



```
controlplane $ kubectl rollout undo deploy deployment-1
deployment.apps/deployment-1 rolled back
controlplane $ kubectl describe deploy deployment-1
Name:                   deployment-1
Namespace:              default
CreationTimestamp:      Sat, 21 Jan 2023 11:35:59 +0000
Labels:                 <none>
Annotations:            deployment.kubernetes.io/revision: 5
                        kubernetes.io/change-cause: kubectl apply --filename=deployment.yml --record=true
Selector:               app=busybox
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=busybox
  Containers:
   busybox-pod:
    Image:        busybox
    Port:         <none>
    Host Port:    <none>
    Environment:  <none>
    Mounts:       <none>
```

10- Create a deployment with
Name: dev-deploy
Image: redis
Replicas: 2
Namespace: dev
Resources Requests:
CPU: .5 vcpu
Mem: 1G
Resources Limits:
CPU: 1 vcpu
Mem: 2G



```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: redis-deploy
spec:
  selector:
    matchLabels:
      app: redis
  replicas: 2
  template:
    metadata:
      labels:
        app: redis
    spec:
      containers:
      - name: redis-pod
        image: redis
        resources:
          requests:
            cpu: 1
            memory: 1Gi
          limits:
            cpu: 5
            memory: 2Gi

~
```