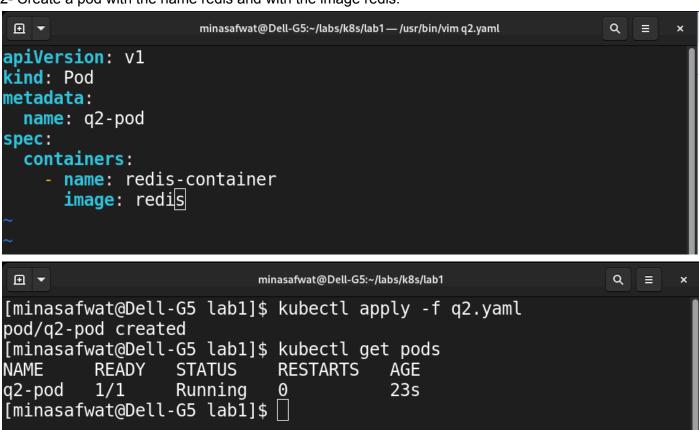
1- Install k8s cluster (minikube) (optional you can use https://www.katacoda.com/courses/kubernetes/playground)



2- Create a pod with the name redis and with the image redis.



3- Create a pod with the name nginx and with the image "nginx123" Use a pod-denition YAML le.

```
minasafwat@Dell-G5:~/labs/k8s/lab1—/usr/bin/vim q3.yaml

apiVersion: V1
kind: Pod
metadata:
    name: q3-pod
spec:
    containers:
    - name: nginx-container
    image: nginx123
```

[minasafwat@Dell-G5 lab1]\$ kubectl apply -f q3.yaml
pod/q3-pod created

4- What is the nginx pod status?

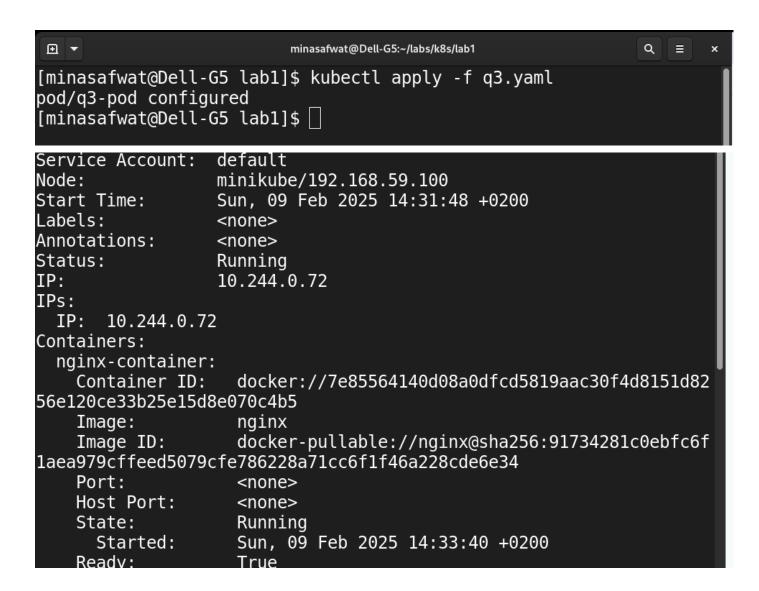
[minasafwat@Dell-G5 lab1]\$ kubectl describe pod q3-pod

```
Containers:
 nginx-container:
    Container ID:
    Image:
                     nginx123
    Image ID:
    Port:
                     <none>
    Host Port:
                     <none>
    State:
                     Waiting
                     ErrImagePull
      Reason:
    Ready:
                     False
    Restart Count:
    Environment:
                     <none>
```

5- Change the nginx pod image to "nginx" check the status again

```
minasafwat@Dell-G5:~/labs/k8s/lab1—/usr/bin/vim q3.yaml

apiVersion: v1
kind: Pod
metadata:
    name: q3-pod
spec:
    containers:
    - name: nginx-container
    image: nginx
~
```



### 6- How many ReplicaSets exist on the system? zero



7- create a ReplicaSet with name= replica-set-1 image= busybox replicas= 2

```
⊕ ▼
                      minasafwat@Dell-G5:~/labs/k8s/lab1 — /usr/bin/vim q7.yaml
                                                                   Q
                                                                      ≡
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name : replica-set-1
spec:
  template:
    metadata:
      name: busybox-pod
      labels:
         label: busybox
    spec:
      containers:
         - name: busybox-container
           image: busybox
  replicas: 2
  selector:
    matchLabels:
      label: busybox
 ⊕ ▼
                            minasafwat@Dell-G5:~/labs/k8s/lab1
                                                                   Q
                                                                       ≣
[minasafwat@Dell-G5 lab1]$ kubectl apply -f q7.yaml
replicaset.apps/replica-set-1 created
[minasafwat@Dell-G5 lab1]$ kubectl get rs
NAME
                  DESIRED
                             CURRENT
                                        READY
                                                 AGE
replica-set-1
                  2
                                        0
                                                 12s
[minasafwat@Dell-G5 lab1]$
```

8- Scale the ReplicaSet replica-set-1 to 3 PODs.

```
minasafwat@Dell-G5:~/labs/k8s/lab1 — /usr/bin/vim q7.yaml
                                                                       apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name : replica-set-1
spec:
  template:
    metadata:
      name: busybox-pod
      labels:
         label: busybox
    spec:
      containers:

    name: busybox-container

           image: busybox
  replicas: 3
  selector:
    matchLabels:
      label: busybox
                            minasafwat@Dell-G5:~/labs/k8s/lab1
                                                                   Q ≣
[minasafwat@Dell-G5 lab1]$ vi q7.yaml
[minasafwat@Dell-G5 lab1]$ kubectl apply -f q7.yaml
replicaset.apps/replica-set-1 configured
[minasafwat@Dell-G5 lab1]$ kubectl get rs
NAME
                 DESIRED
                            CURRENT
                                        READY
                                                 AGE
                                                 62s
replica-set-1
                  3
                             3
                                        0
[minasafwat@Dell-G5 lab1]$||
```

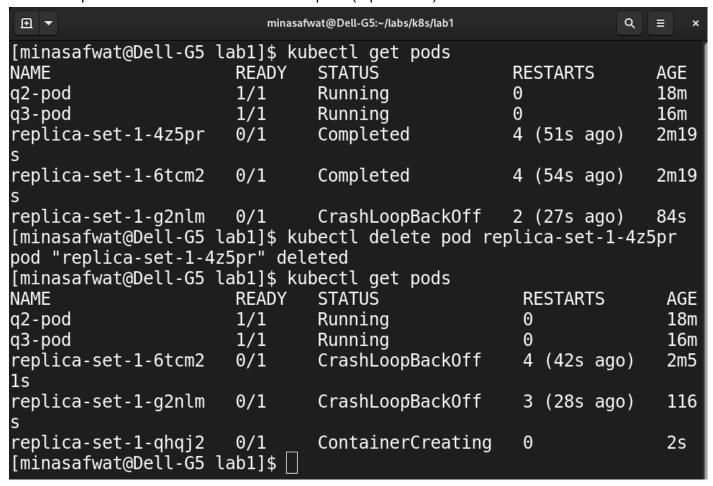
9- How many PODs are READY in the replica-set-1? Zero

```
⊕ ▼
                           minasafwat@Dell-G5:~/labs/k8s/lab1
                                                                    ≡
[minasafwat@Dell-G5 lab1]$ vi q7.yaml
[minasafwat@Dell-G5 lab1]$ kubectl apply -f q7.yaml
replicaset.apps/replica-set-1 configured
[minasafwat@Dell-G5 lab1]$ kubectl get rs
NAME
                 DESIRED
                            CURRENT
                                       READY
                                                AGE
replica-set-1
                 3
                                       0
                                                62s
[minasafwat@Dell-G5 lab1]$ 🗌
```

<pre>[minasafwat@Dell-G5 lab1]\$ kubectl get pods</pre>								
NAME	READY	STATUS	RESTARTS	AGE				
q2-pod	1/1	Running	0	17m				
q3-pod	1/1	Running	0	15m				
replica-set-1-4z5pr	0/1	CrashLoopBackOff	2 (47s ago)	83s				
replica-set-1-6tcm2		CrashLoopBackOff	2 (56s ago)	83s				
replica-set-1-g2nlm	0/1 _	ContainerCreating	0	28s				
[minasafwat@Dell-G5	lah1l¢							

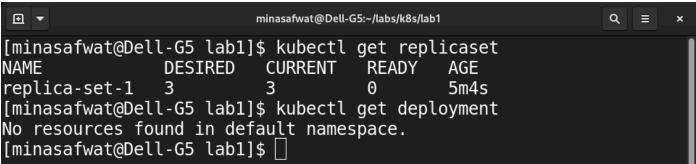
10- Delete any one of the 3 PODs then check How many PODs exist now? Why are there still 3 PODs, even after you deleted one?

Because replicaSet will maintain the number of pods (replicas = 3) even if one of them deleted.

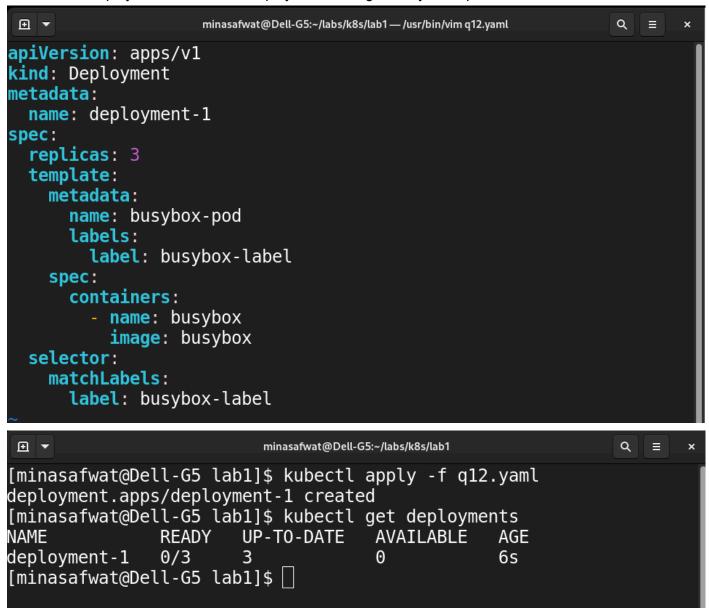


11- How many Deployments and ReplicaSets exist on the system?

Deployments : zero Replicasets : 1



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



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

Deployment: 1 Replicasets: 2

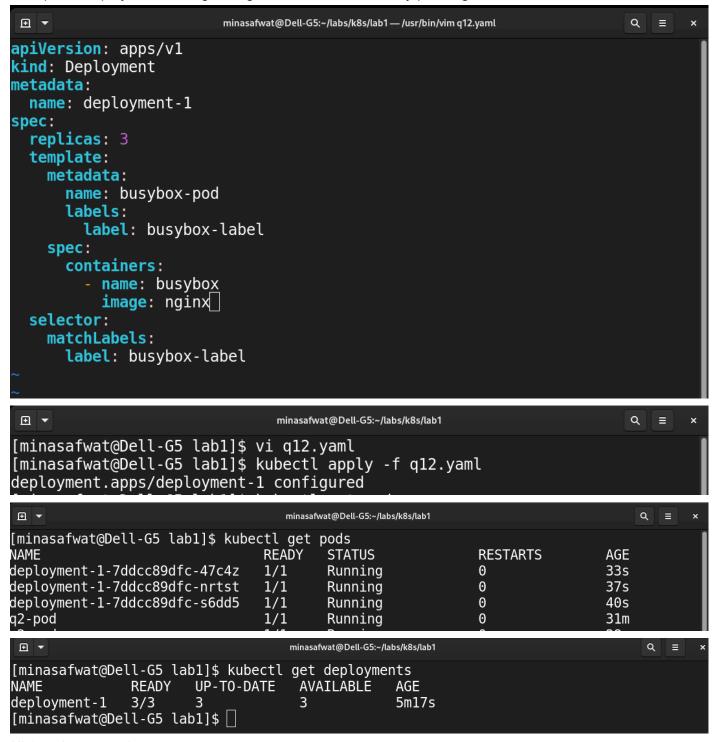
```
⊕ ▼
                           minasafwat@Dell-G5:~/labs/k8s/lab1
                                                                  Q
                                                                      ≣
[minasafwat@Dell-G5 lab1]$ kubectl get deployments
                         UP-TO-DATE
NAME
                READY
                                        AVAILABLE
                                                     AGE
deployment-1
                0/3
                                                     28s
                         3
[minasafwat@Dell-G5 lab1]$ kubectl get replicasets
NAME
                           DESIRED
                                       CURRENT
                                                  READY
                                                           AGE
deployment-1-68884945f
                           3
                                       3
                                                  0
                                                           39s
                                       3
replica-set-1
                                                  0
                                                           10m
[minasafwat@Dell-G5 lab1]$
```

## 14- How many pods are ready with the deployment-1?

zero

```
⊕ ▼
                                              minasafwat@Dell-G5:~/labs/k8s/lab1
[minasafwat@Dell-G5 lab1]$ kubectl get pods
                                  READY
                                           STATUS
                                                                RESTARTS
                                                                                  AGE
deployment-1-68884945f-7scmd
                                           CrashLoopBackOff
                                                                                  118s
                                  0/1
                                                                3 (44s ago)
                                                                4 (61s ago)
deployment-1-68884945f-tfxlb
                                  0/1
                                           Completed
                                                                                  118s
deployment-1-68884945f-zdjp2
                                           Completed
                                                                                  118s
                                  0/1
                                                                   (52s ago)
                                           Running
                                                                                  28m
```

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



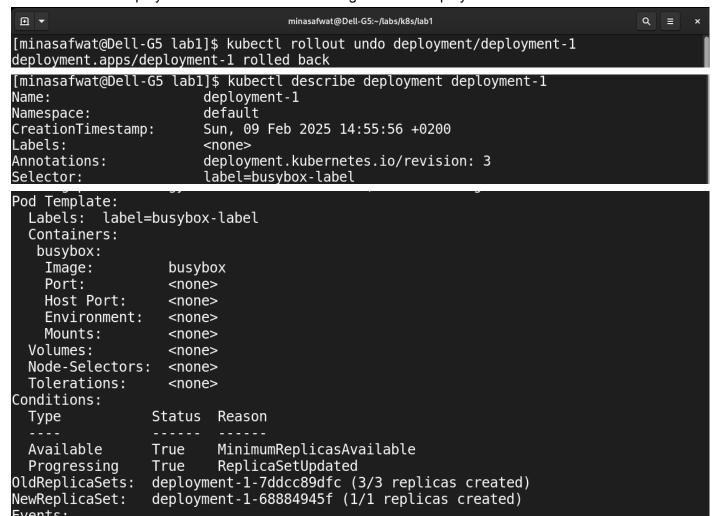
All 3 pods are ready now

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



Rolling update

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

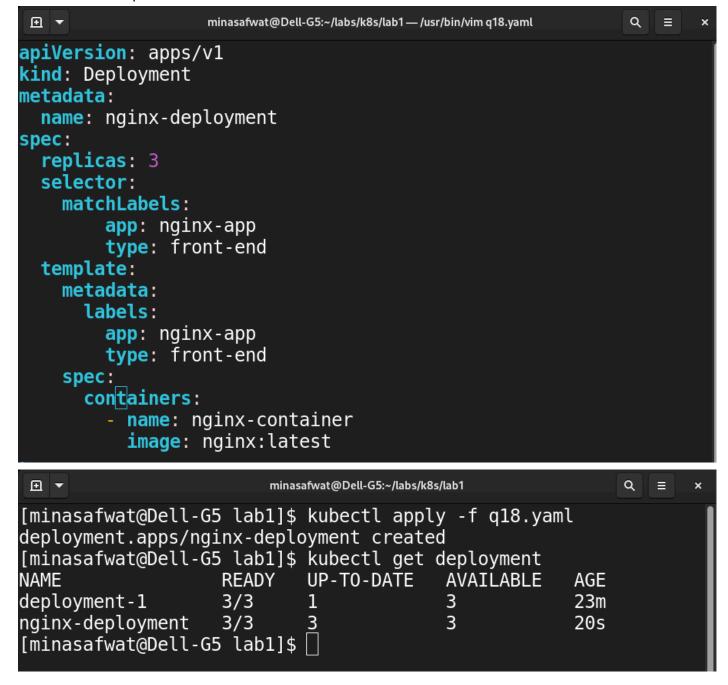


18- Create a deployment using nginx image with latest tag only and remember to mention tag i.e nginx:latest name it as nginx-deployment.

App labels should be app: nginx-app and type: front-end.

The container should be named as nginx-container;

also make sure replica counts are 3.



# 19- How many static pods exist in this cluster? Currently 1

```
minasafwat@Dell-G5:-/labs/k8s/lab1

minasafwat@Dell-G5:-/labs/k8s/lab1

minasafwat@Dell-G5:-/labs/k8s/lab1

x

minasafwat@Dell-G5:-/labs/k8s/lab1

x

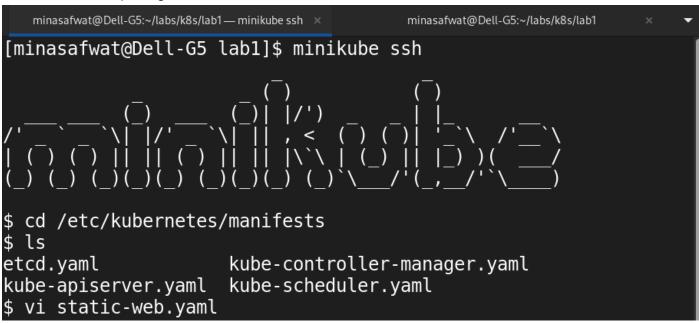
[minasafwat@Dell-G5 lab1]$ kubectl get pods | grep "minikube"

static-pod-minikube

[minasafwat@Dell-G5 lab1]$ [

##85
```

#### 20- create a static pod nginx





Thinks and the content of the cont	[minasafwat@Dell_G5 lab1] kubectl	delete r	nod static-pod-minil	kuhe						
[minasafwat@Dell-G5 lab1]\$ kubectl get pods         NAME       READY       STATUS       RESTARTS       AGE         deployment-1-68884945f-dm6dv       0/1       CrashLoopBackOff       12 (30s ago)       24m         deployment-1-7ddcc89dfc-47c4z       1/1       Running       0       32m         deployment-1-7ddcc89dfc-nrtst       1/1       Running       0       32m         deployment-1-7ddcc89dfc-s6dd5       1/1       Running       0       32m         nginx-deployment-69b966d577-5txc6       1/1       Running       0       13m         nginx-deployment-69b966d577-mg7z9       1/1       Running       0       13m         nginx-deployment-69b966d577-vnd7d       1/1       Running       0       13m         q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m	<pre>[minasafwat@Dell-G5 lab1]\$ kubectl delete pod static-pod-minikube pod "static-pod-minikube" deleted</pre>									
NAME       READY       STATUS       RESTARTS       AGE         deployment-1-68884945f-dm6dv       0/1       CrashLoopBackOff       12 (30s ago)       24m         deployment-1-7ddcc89dfc-47c4z       1/1       Running       0       32m         deployment-1-7ddcc89dfc-nrtst       1/1       Running       0       32m         deployment-1-7ddcc89dfc-s6dd5       1/1       Running       0       32m         nginx-deployment-69b966d577-stxc6       1/1       Running       0       13m         nginx-deployment-69b966d577-mg7z9       1/1       Running       0       13m         q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m										
deployment-1-7ddcc89dfc-47c4z       1/1       Running       0       32m         deployment-1-7ddcc89dfc-nrtst       1/1       Running       0       32m         deployment-1-7ddcc89dfc-s6dd5       1/1       Running       0       32m         nginx-deployment-69b966d577-5txc6       1/1       Running       0       13m         nginx-deployment-69b966d577-mg7z9       1/1       Running       0       13m         nginx-deployment-69b966d577-vnd7d       1/1       Running       0       63m         q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m				RESTARTS	AGE					
deployment-1-7ddcc89dfc-nrtst       1/1       Running       0       32m         deployment-1-7ddcc89dfc-s6dd5       1/1       Running       0       32m         nginx-deployment-69b966d577-5txc6       1/1       Running       0       13m         nginx-deployment-69b966d577-mg7z9       1/1       Running       0       13m         nginx-deployment-69b966d577-vnd7d       1/1       Running       0       63m         q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m	deployment-1-68884945f-dm6dv	0/1	CrashLoopBackOff	12 (30s ago)	24m					
deployment-1-7ddcc89dfc-s6dd5       1/1       Running       0       32m         nginx-deployment-69b966d577-5txc6       1/1       Running       0       13m         nginx-deployment-69b966d577-mg7z9       1/1       Running       0       13m         nginx-deployment-69b966d577-vnd7d       1/1       Running       0       13m         q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m		1/1	Running	0	32m					
nginx-deployment-69b966d577-5txc6       1/1       Running       0       13m         nginx-deployment-69b966d577-mg7z9       1/1       Running       0       13m         nginx-deployment-69b966d577-vnd7d       1/1       Running       0       13m         q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m		1/1	Running	0	32m					
nginx-deployment-69b966d577-mg7z9       1/1       Running       0       13m         nginx-deployment-69b966d577-vnd7d       1/1       Running       0       13m         q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m			Running	0	32m					
nginx-deployment-69b966d577-vnd7d       1/1       Running       0       13m         q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m		1/1	Running	0	13m					
q2-pod       1/1       Running       0       63m         q3-pod       1/1       Running       0       61m         replica-set-1-6tcm2       0/1       CrashLoopBackOff       16 (24s ago)       47m         replica-set-1-g2nlm       0/1       CrashLoopBackOff       16 (26s ago)       46m				0	13m					
q3-pod 1/1 Running 0 61m replica-set-1-6tcm2 0/1 CrashLoopBackOff 16 (24s ago) 47m replica-set-1-g2nlm 0/1 CrashLoopBackOff 16 (26s ago) 46m	nginx-deployment-69b966d577-vnd7d		Running	0	13m					
replica-set-1-6tcm2 0/1 CrashLoopBackOff 16 (24s ago) 47m replica-set-1-g2nlm 0/1 CrashLoopBackOff 16 (26s ago) 46m	q2-pod		Running	0	63m					
replica-set-1-g2nlm 0/1 CrashLoopBackOff 16 (26s ago) 46m					61m					
					47m					
replica-set-1-qhqj2                     0/1     CrashLoopBackOff   16 (29s ago)   44m				, ,						
				` ,						
static-pod-minikube 0/1 Pending 0 2s		0/1	Pending	0	2s					