

# QoS-k8s LAB

Monday, January 4, 2021 10:36 PM

Kubernetes uses QoS classes to make decision about scheduling and evicting pods.

3 type of classes:

- Guaranteed : Memory and CPU limit and request must be same
- Burstable : Pod doesn't meet the criteria for QoS class Guaranteed.  
At least one container pod has a memory and cpu request.
- Best Effort (by default) : Container in Pod must not have any memory and cpu limit or request

NOTE: If a pod has two containers, one container is either guaranteed or burstable and second container is besteffort , then QoS is either guaranteed or burstable

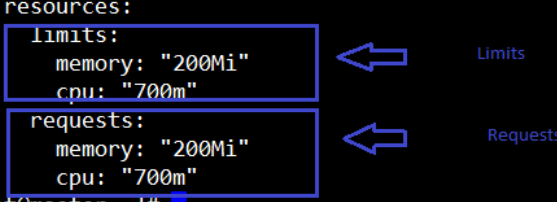
## LAB: Guaranteed

Configuration file for a Pod that has one Container.

memory limit and a memory request, both equal to 200 MiB.

CPU limit and a CPU request, both equal to 700 milliCPU.

```
[root@master ~]# cat qos-pod-guaranteed.yml
apiVersion: v1
kind: Pod
metadata:
  name: qos-guaranteed
spec:
  containers:
  - name: qos-demo-ctr
    image: nginx
    resources:
      limits:
        memory: "200Mi"
        cpu: "700m"
      requests:
        memory: "200Mi"
        cpu: "700m"
[root@master ~]#
```



Create a Pod


```
# kubectl apply -f qos-pod-guaranteed.yml
```

```
[root@master ~]# kubectl apply -f qos-pod-guaranteed.yml
pod/qos-guaranteed created
```

Detailed information about Pod

```
# kubectl get pods qos-guaranteed --output=yaml
```

```
type: ContainersReady
- lastProbeTime: null
  lastTransitionTime: "2021-01-04T17:30:01Z"
  status: "True"
type: PodScheduled
containerStatuses:
- containerID: docker://78c81d8923db68e201a95abb12f50efdf2aaf50aa93e2678eaa
  image: nginx:latest
  imageID: docker-pullable://nginx@sha256:4cf620a5c81390ee209398ecc18e5fb9d
  lastState: {}
  name: qos-demo-ctr
  ready: true
  restartCount: 0
  started: true
  state:
    running:
      startedAt: "2021-01-04T17:27:52Z"
hostIP: 192.168.85.123
phase: Running
podIP: 10.44.0.2
podIPs:
- ip: 10.44.0.2
qosClass: Guaranteed
startTime: "2021-01-04T17:27:47Z"
```



## LAB : Burstable

Configuration file for a Pod that has one Container.  
memory limit and a memory request, both are different.

```
[root@master ~]# cat qos-pod-burstable.yml
apiVersion: v1
kind: Pod
metadata:
  name: qos-burstable
spec:
  containers:
  - name: qos-demo-2-ctr
    image: nginx
    resources:
      limits:
        memory: "200Mi"
      requests:
        memory: "100Mi"
```

Create a Pod

```
# kubectl apply -f qos-pod-burstable.yml
```

```
[root@master ~]# kubectl apply -f qos-pod-burstable.yml
pod/qos-burstable created
```

Detailed information about Pod

```
# kubectl get pod qos-burstable --output=yaml
```

```
type: ContainersReady
- lastProbeTime: null
  lastTransitionTime: "2021-01-04T17:35:31Z"
  status: "True"
  type: PodScheduled
containerStatuses:
- containerID: docker://383eeb2ed4e31c17fd6d0a880a1bc91bd53a2673d59c608b165ec2d07b3dfccb
  image: nginx:latest
  imageID: docker-pullable://nginx@sha256:4cf620a5c81390ee209398ecc18e5fb9dd0f5155cd82adcba
  lastState: {}
  name: qos-demo-2-ctr
  ready: true
  restartCount: 0
  started: true
  state:
    running:
      startedAt: "2021-01-04T17:33:23Z"
hostIP: 192.168.85.123
phase: Running
podIP: 10.44.0.3
podIPs:
- ip: 10.44.0.3
qosClass: Burstable
startTime: "2021-01-04T17:33:17Z"
```

## LAB: BestEffort

Container doesn't have any memory and cpu limit.

```
[root@master ~]# cat qos-pod-besteffort.yml
apiVersion: v1
kind: Pod
metadata:
  name: qos-besteffort
spec:
  containers:
  - name: qos-demo-3-ctr
    image: nginx
```

Create a Pod

```
# kubectl apply -f qos-pod-besteffort.yml
```

```
[root@master ~]# kubectl apply -f qos-pod-besteffect.yml
pod/qos-besteffect created
```

#### Detailed information about Pod

```
# kubectl get pod qos-besteffect --output=yaml
```

```
type: ContainersReady
- lastProbeTime: null
  lastTransitionTime: "2021-01-04T17:44:47Z"
  status: "True"
  type: PodScheduled
containerStatuses:
- containerID: docker://3fab5d9be1a1692dba4cc0e40ccd2423e622abeb7e5eb06
  image: nginx:latest
  imageID: docker-pullable://nginx@sha256:4cf620a5c81390ee209398ecc18e5
  lastState: {}
  name: qos-demo-3-ctr
  ready: true
  restartCount: 0
  started: true
  state:
    running:
      startedAt: "2021-01-04T17:42:38Z"
hostIP: 192.168.85.123
phase: Running
podIP: 10.44.0.4
podIPs:
- ip: 10.44.0.4
  qosClass: BestEffort
startTime: "2021-01-04T17:42:33Z"
[root@master ~]#
```

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