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 ~]#
```

Limits

Requests

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-besteffort.yml
pod/qos-besteffort created
```

Detailed information about Pod

kubectl get pod qos-besteffort --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 ~]#
```

-