1. Pod - Lifecycle

Pending

- ReadinessProbe
- Policy

Running

- LivenessProbe
- Qos

Succeeded

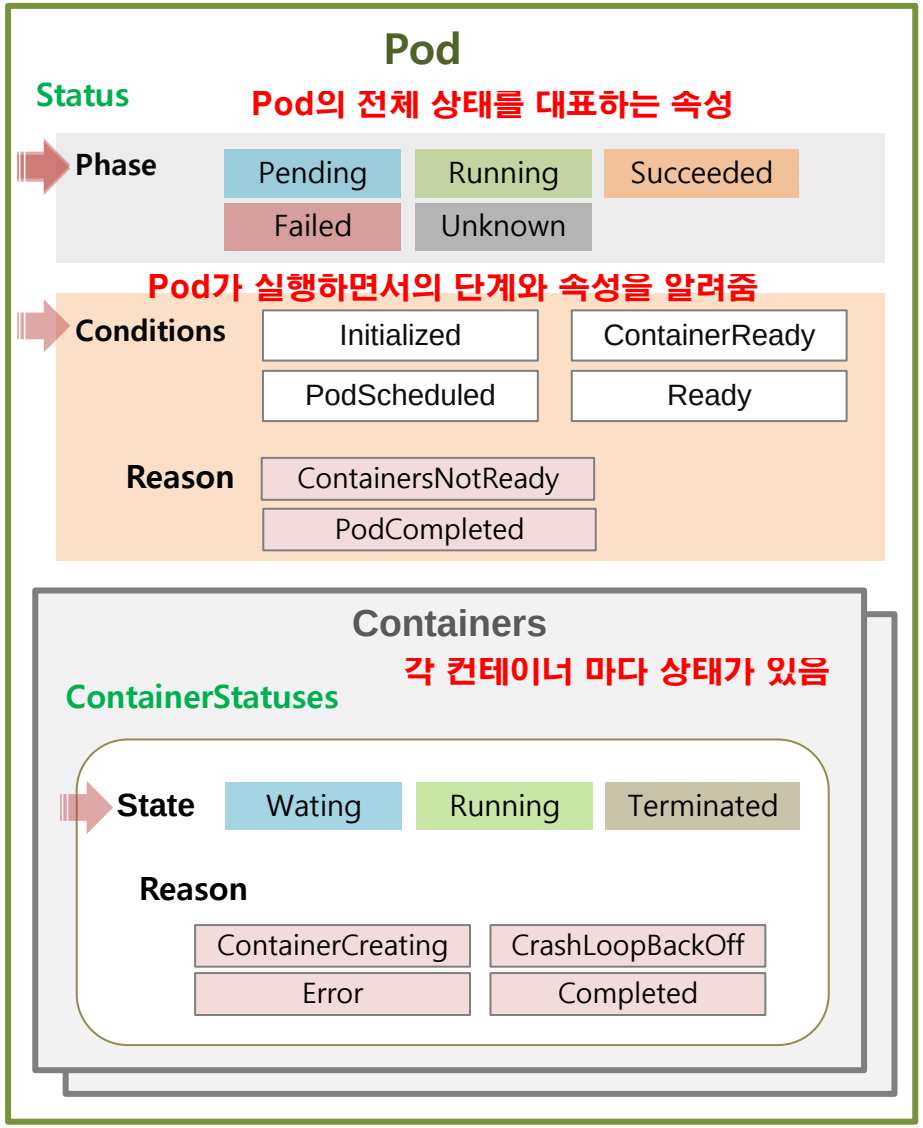
- Policy

Failed

1. Pod - Lifecycle

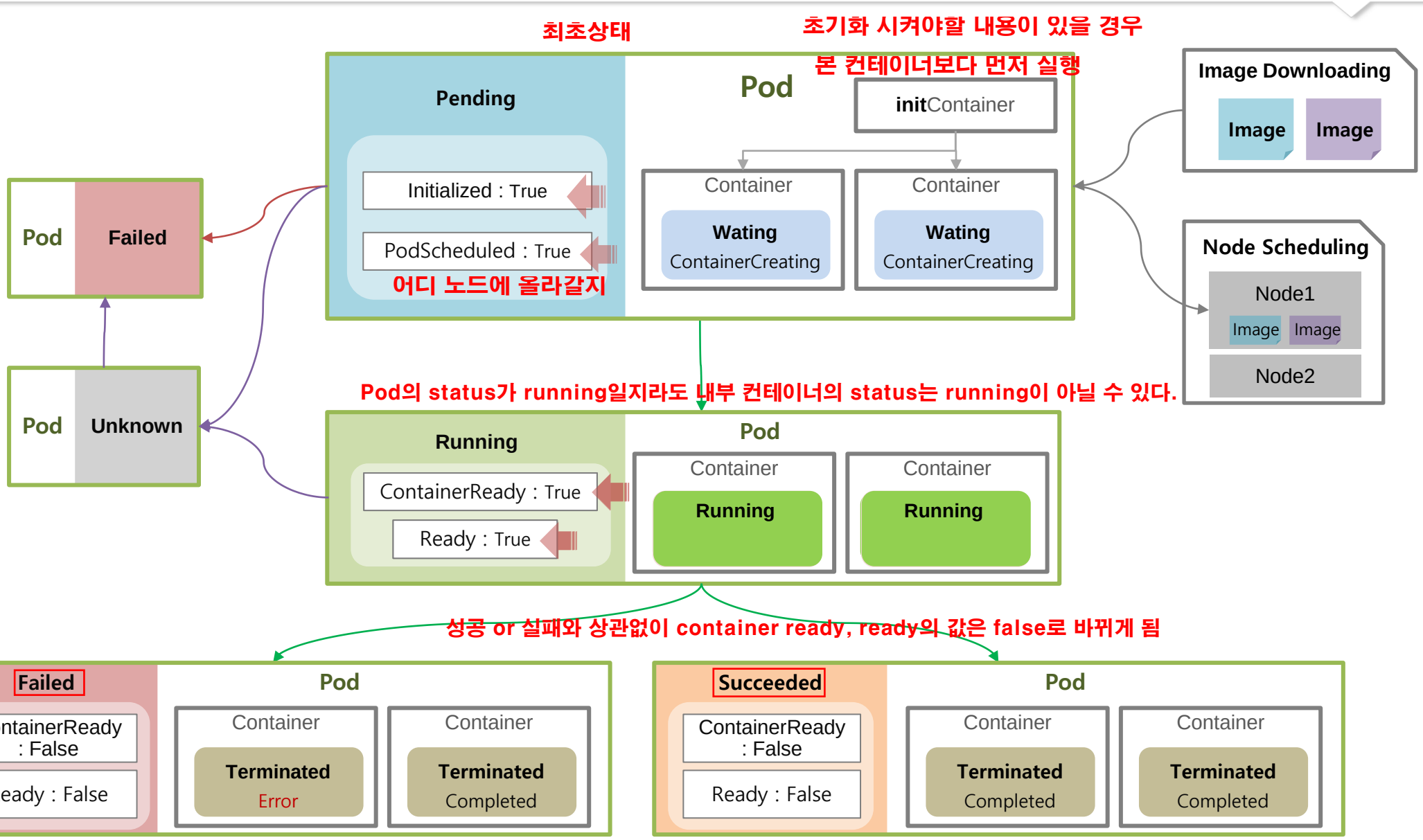
```
status:
  phase: Pending
  conditions:
    - type: Initialized
      status: 'True'
      lastProbeTime: null
      lastTransitionTime: '2019-09-26T22:07:56Z'

    - type: PodScheduled
      status: 'True'
      lastProbeTime: null
      lastTransitionTime: '2019-09-26T22:07:56Z'

    - type: ContainersReady
      status: 'False'
      lastProbeTime: null
      lastTransitionTime: '2019-09-26T22:08:11Z'
      reason: ContainersNotReady
    - type: Ready
      status: 'False'
      lastProbeTime: null
      lastTransitionTime: '2019-09-26T22:08:11Z'
      reason: ContainersNotReady

  containerStatuses:
    - name: container
      state:
        waiting:
          reason: ContainerCreating
      lastState: {}
      ready: false
      restartCount: 0
      image: tmkube/init
      imageID: ''
      started: false
```

status가 false일 경우 reason이 추가됨

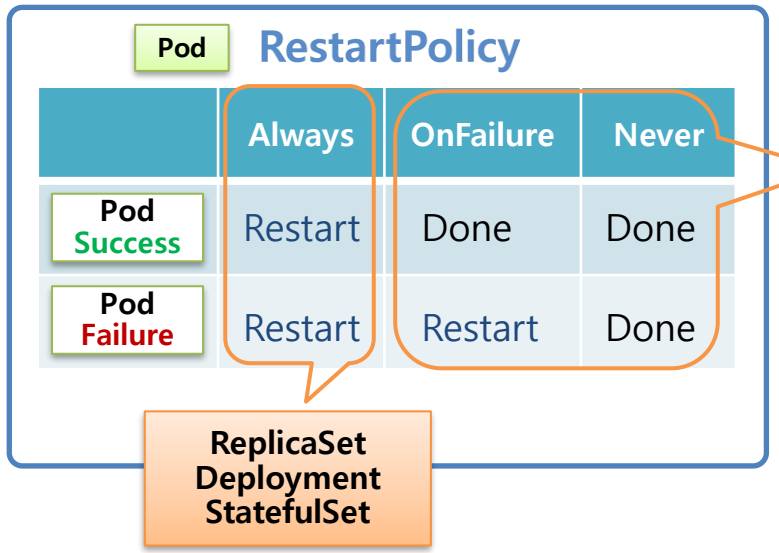


1. Pod - Lifecycle

이미지를 다운받는 동안
status : waiting
reason: container creating



1. Pod - RestartPolicy

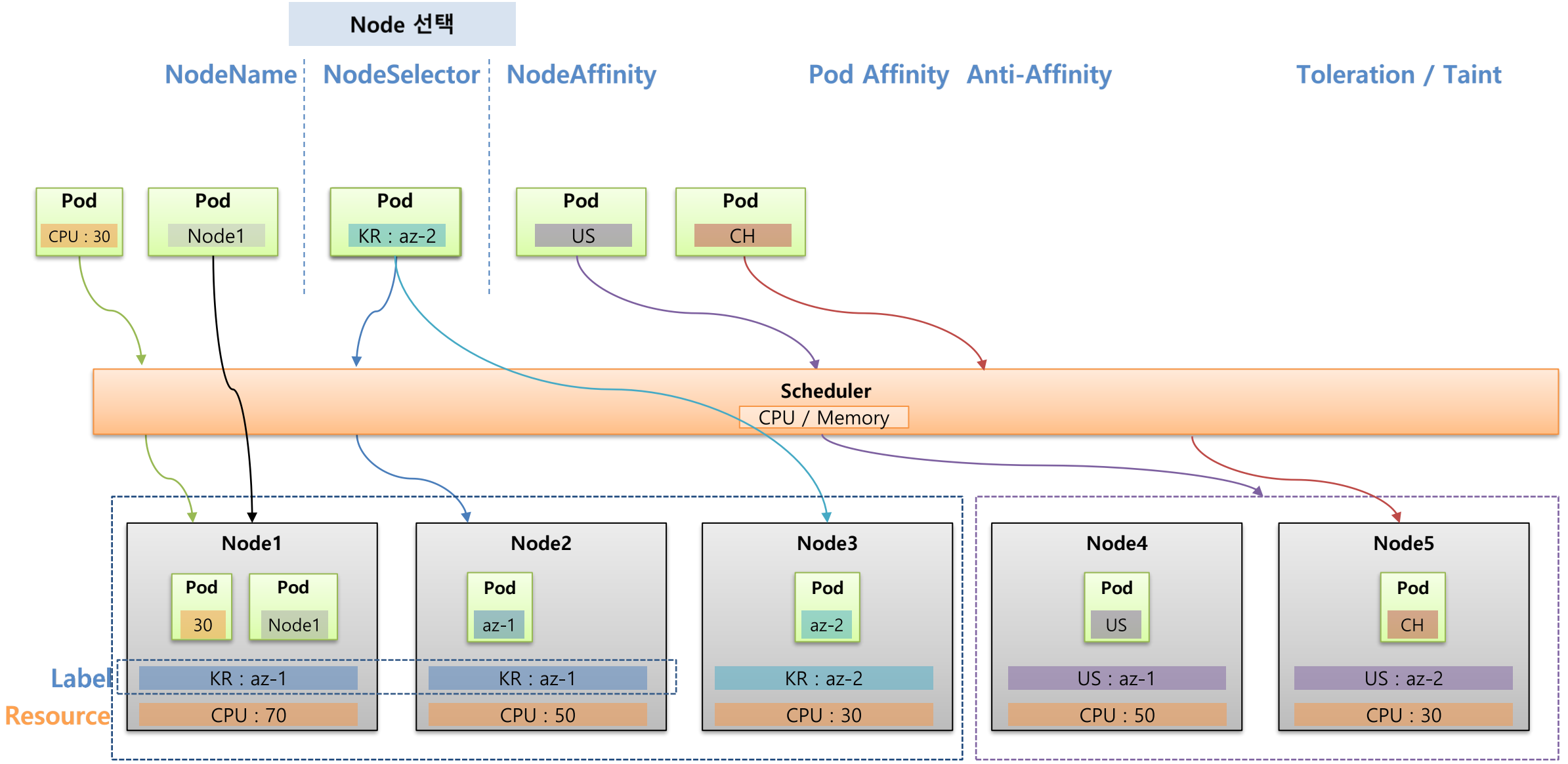


- **Always로만 세팅가능**
- **Always** : Pod가 Teminated([Success], [Failure]) 시 재시작

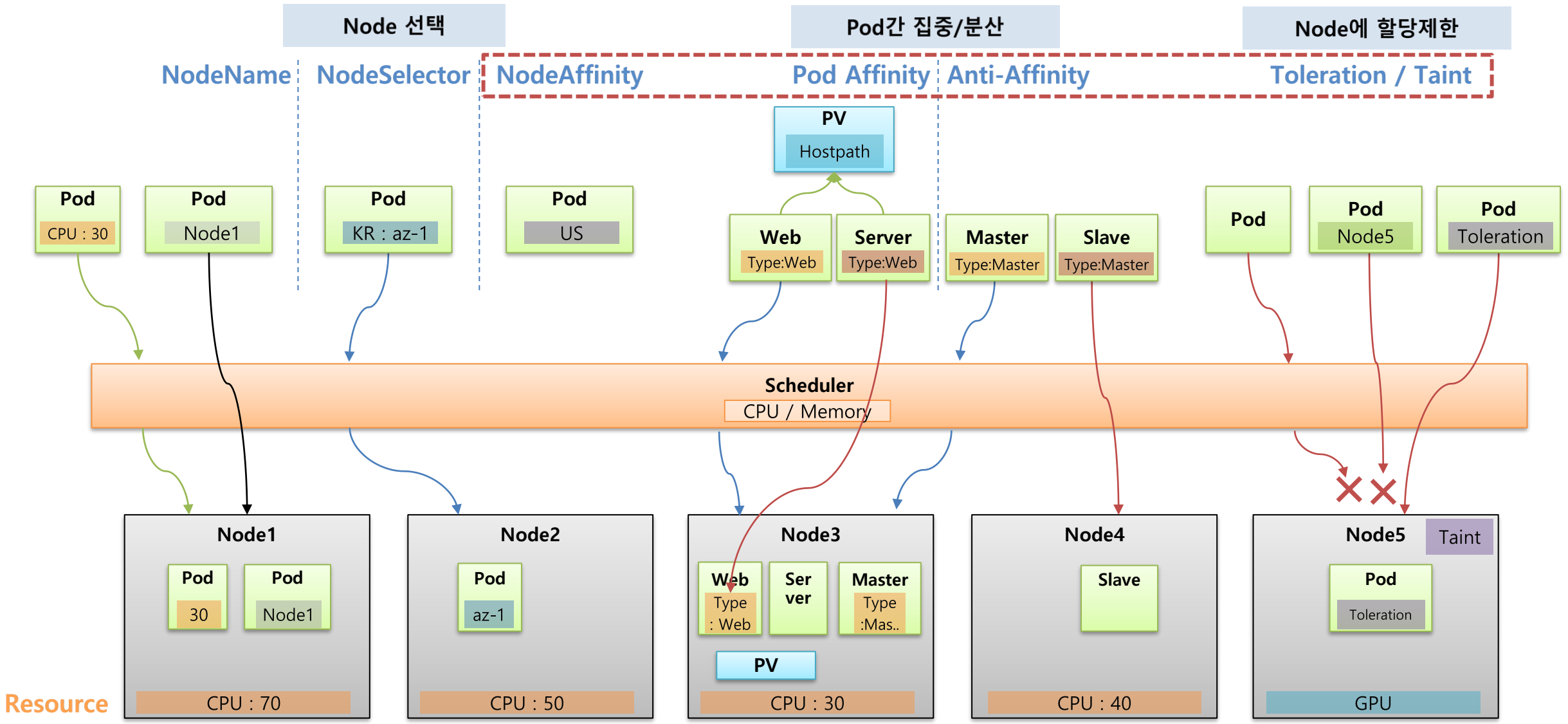
Job/CronJob

- **OnFailure와 Never로만 세팅가능**
- **Never** : Pod가 Teminated([Success], [Failure]) 시 재시작 안함
- **OnFailure** : Pod가 Teminated([Success]) 시 재시작 안함
  Pod가 Teminated([Failure]) 시 재시작

- Pod (Node Scheduling)



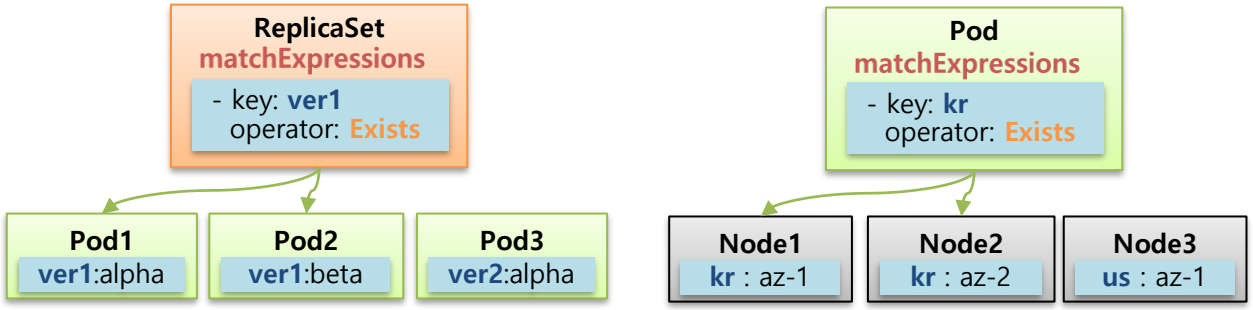
- Pod (Node Scheduling)



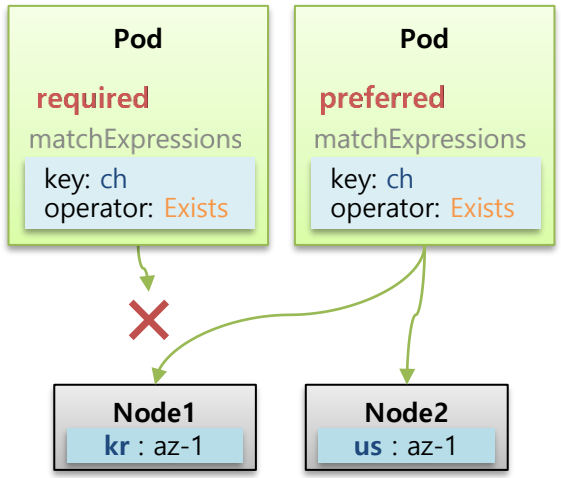
- Pod (Node Scheduling)

Node Affinity

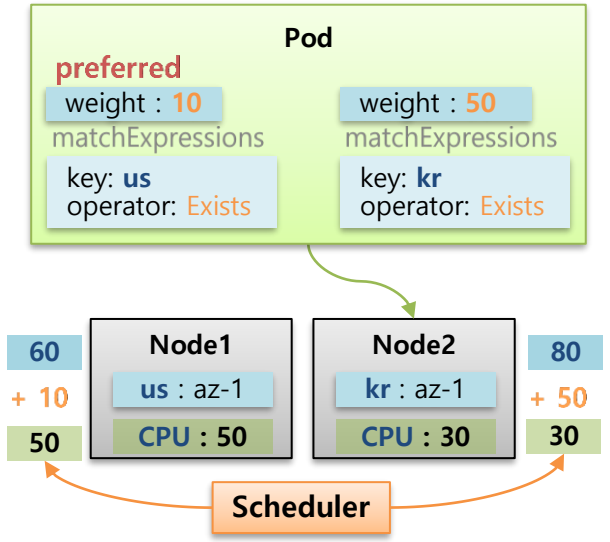
matchExpressions



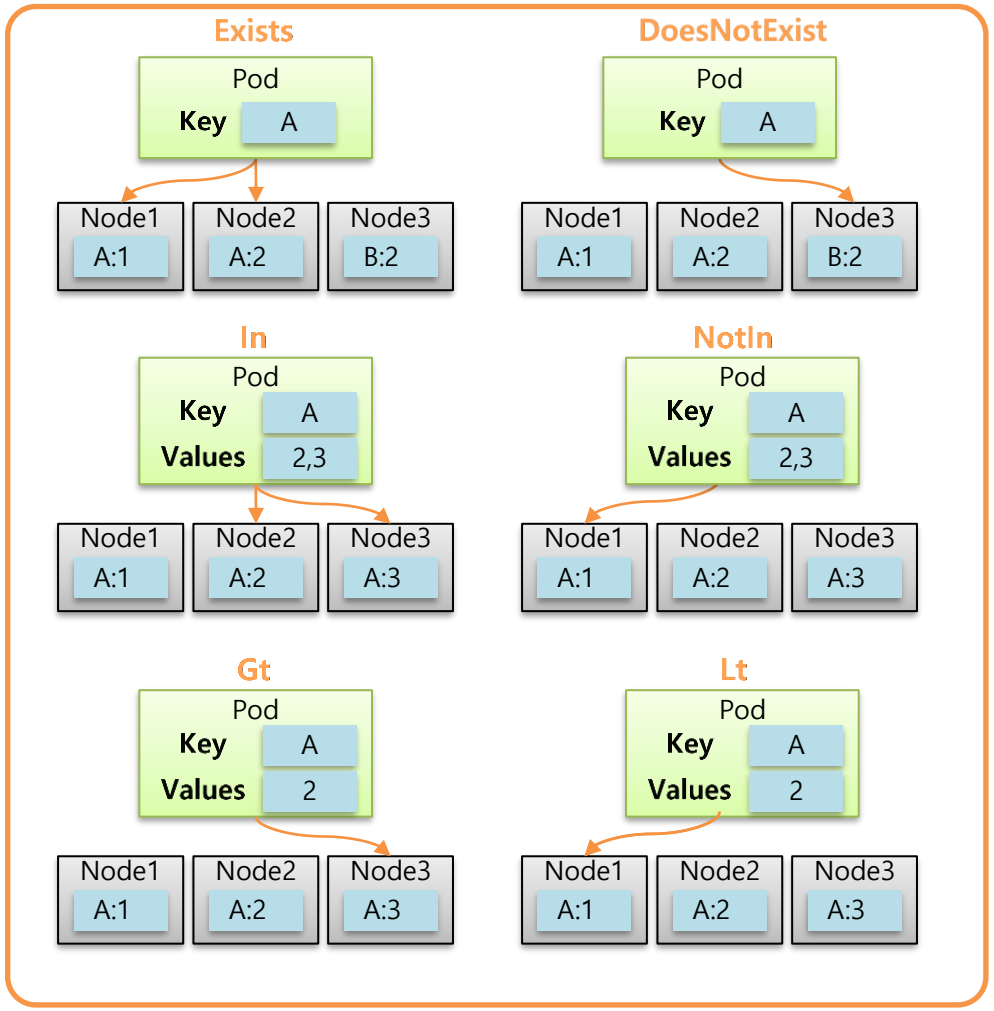
required vs preferred



preferred weight



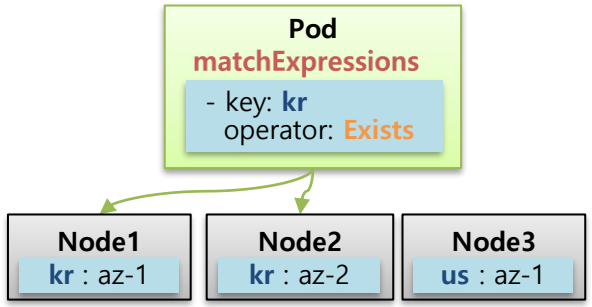
operator



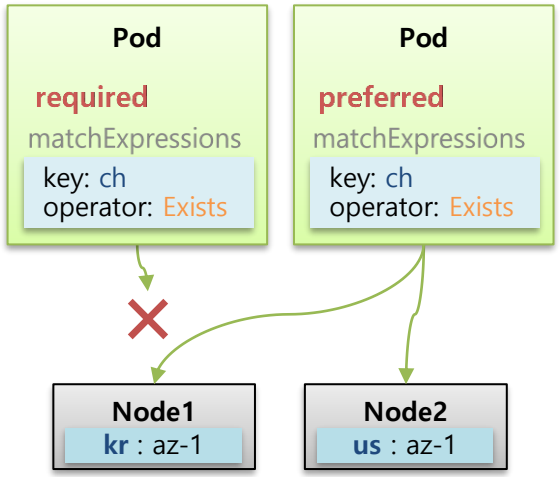
- Pod (Node Scheduling)

Node Affinity

matchExpressions

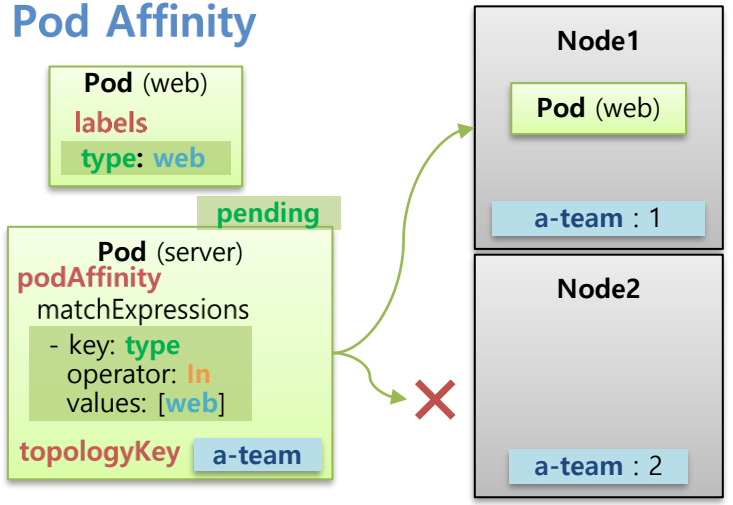


required vs preferred

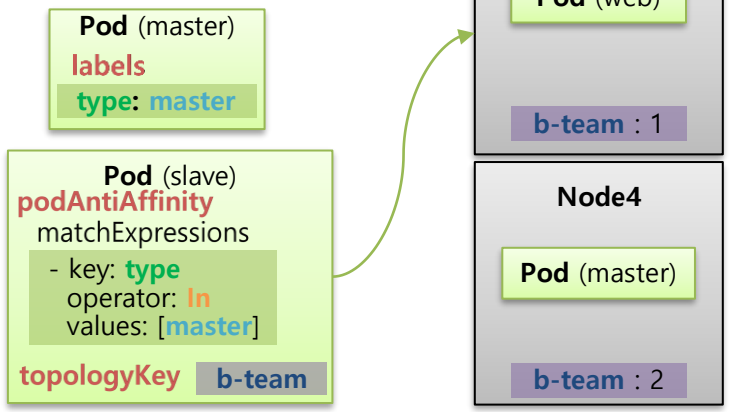


Pod Affinity

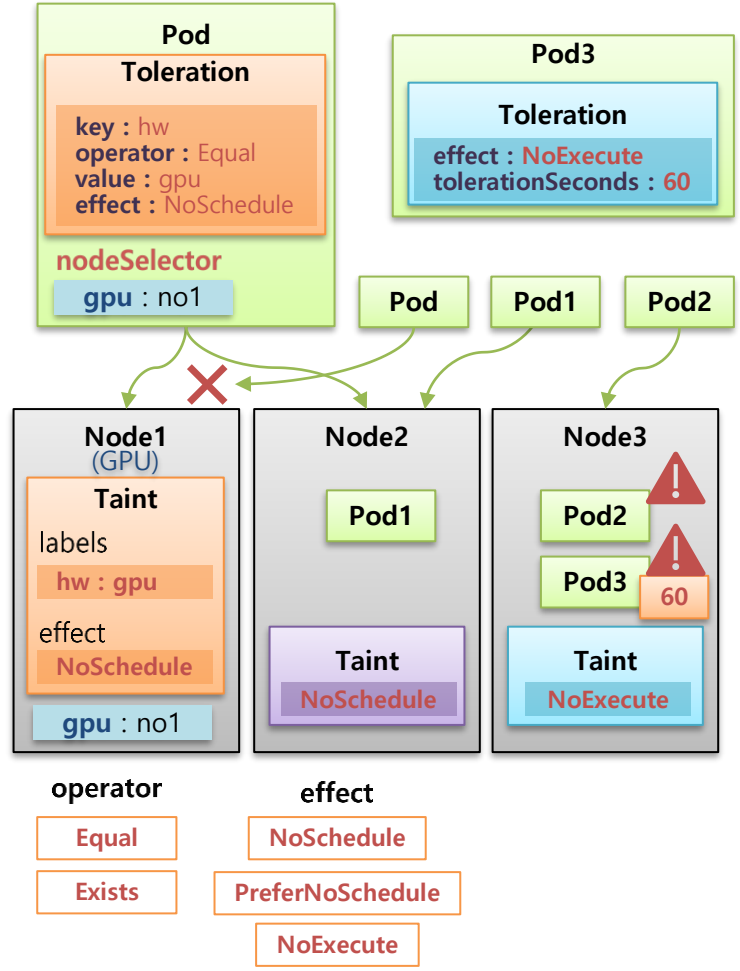
Pod Affinity



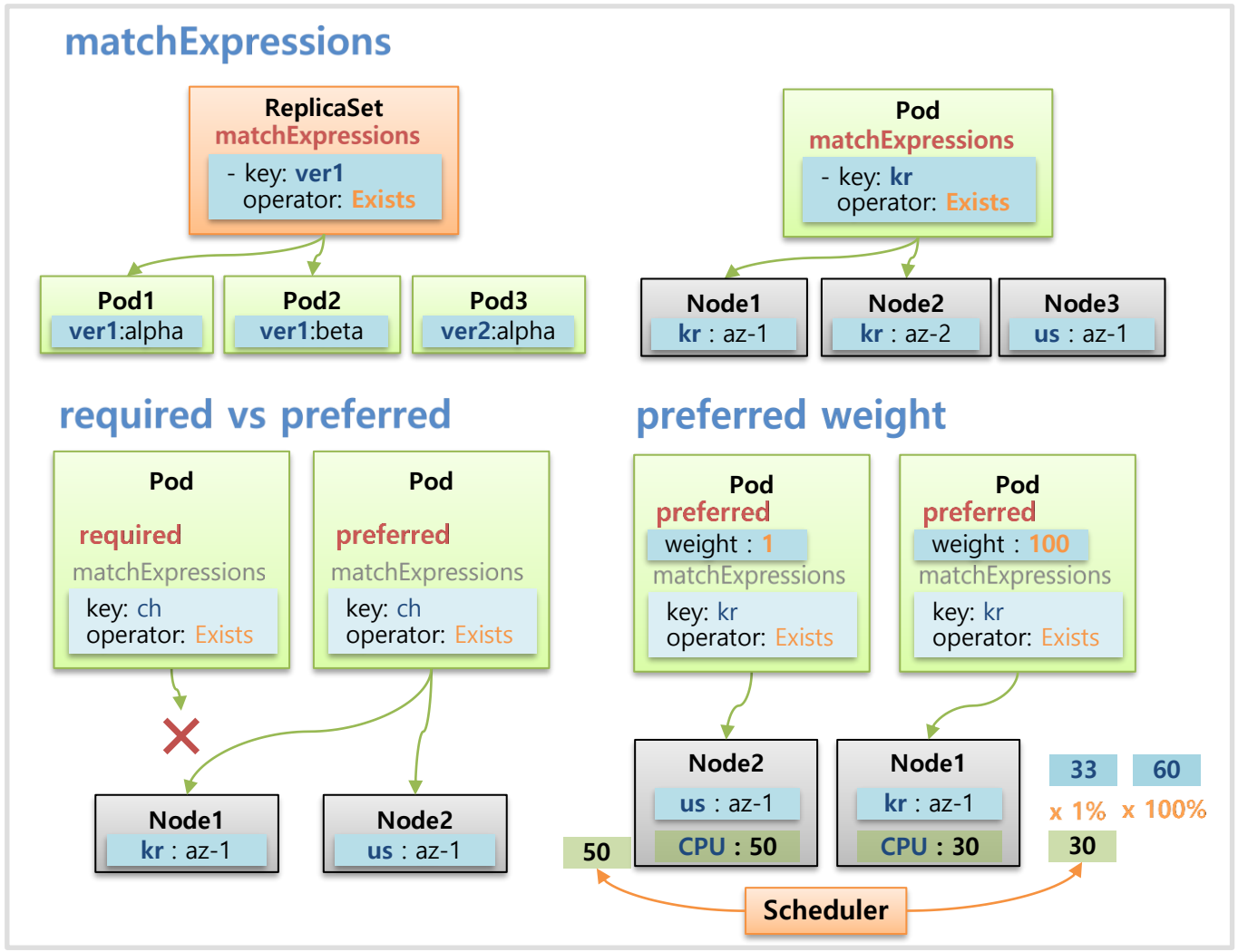
Pod Anti-Affinity

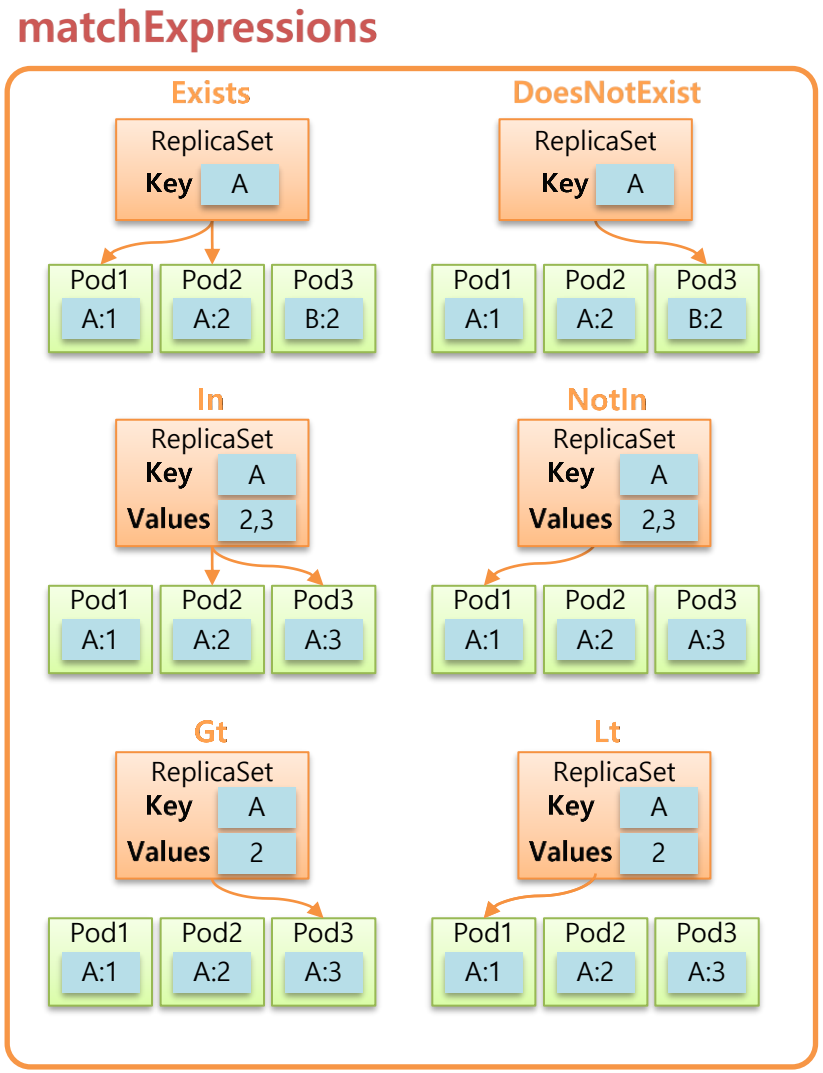


Taint, Toleration



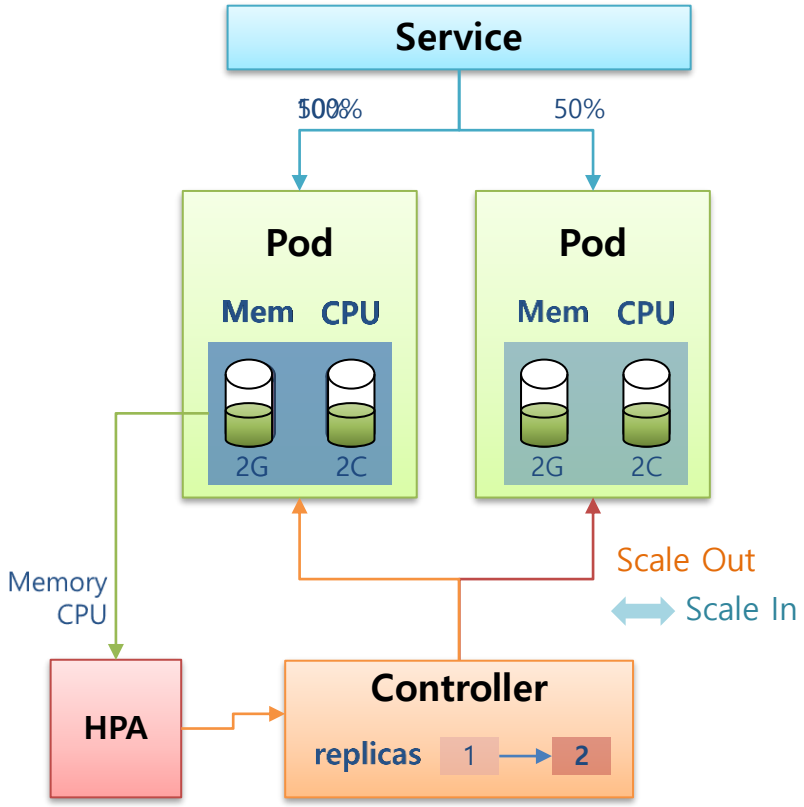
- Pod (Node Scheduling)





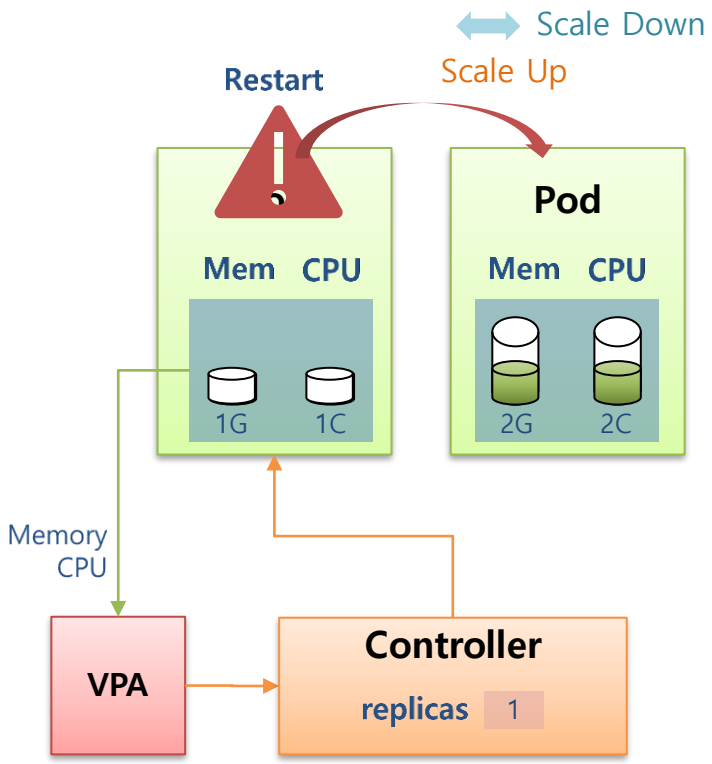
- Autoscaler

HPA (Horizontal Pod Autoscaler)



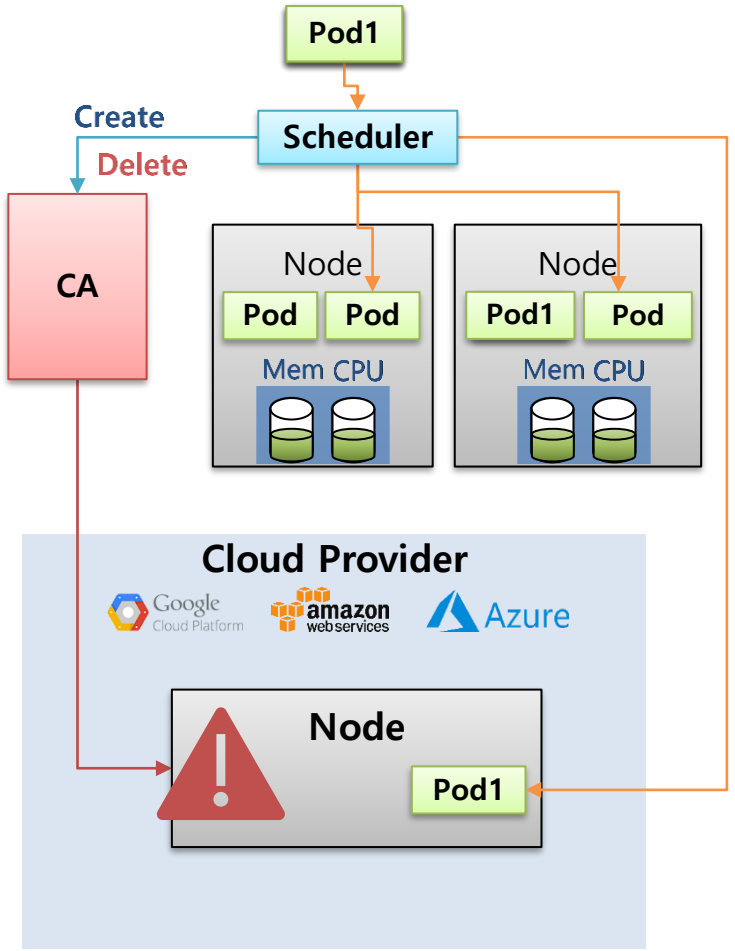
- 기동이 빠르게 되는 App
- Stateless App

VPA (Vertical Pod Autoscaler)

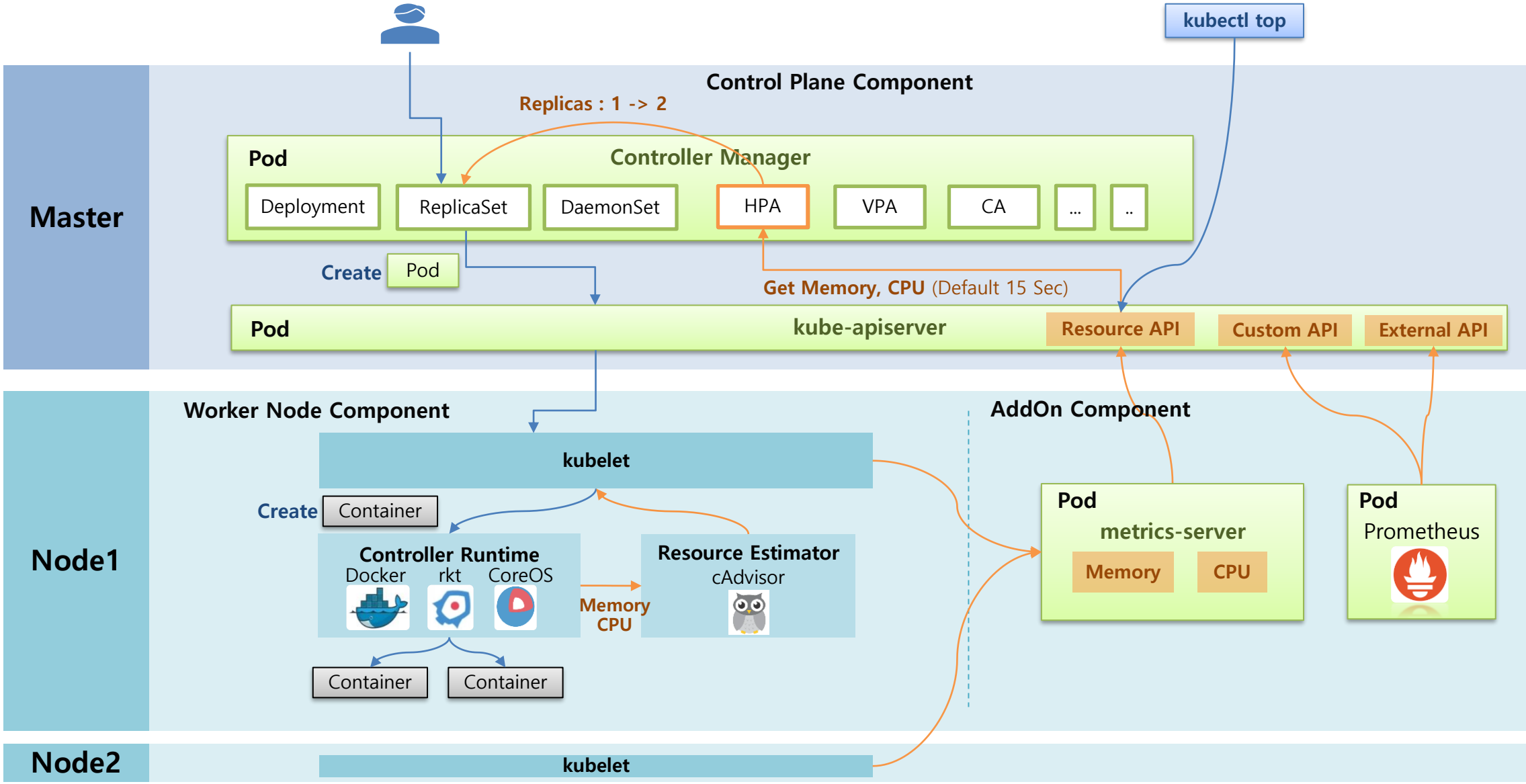


- Stateful App
- 한 Controller에 HPA와 함께 사용안됨

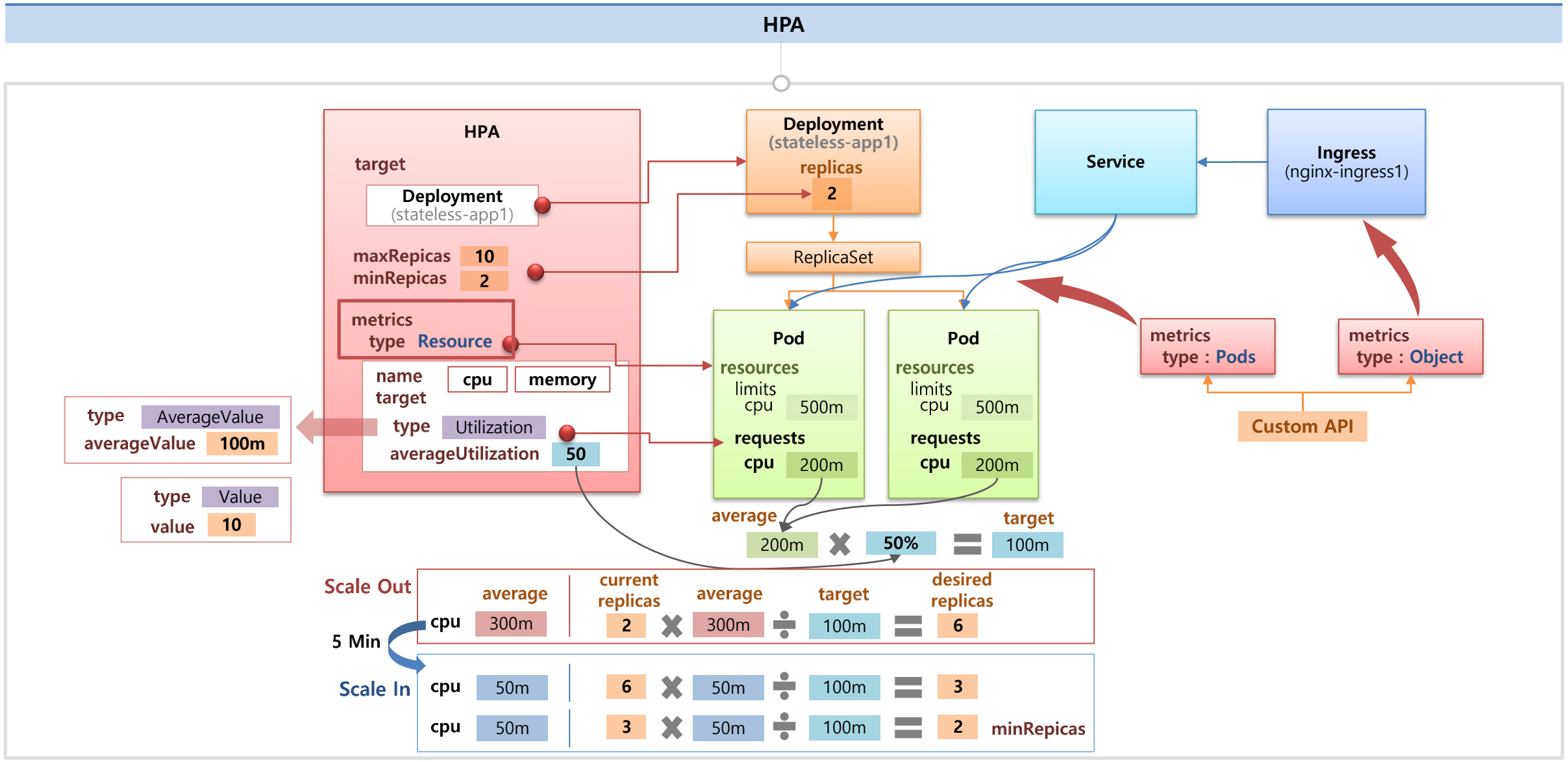
CA (Cluster Autoscaler)



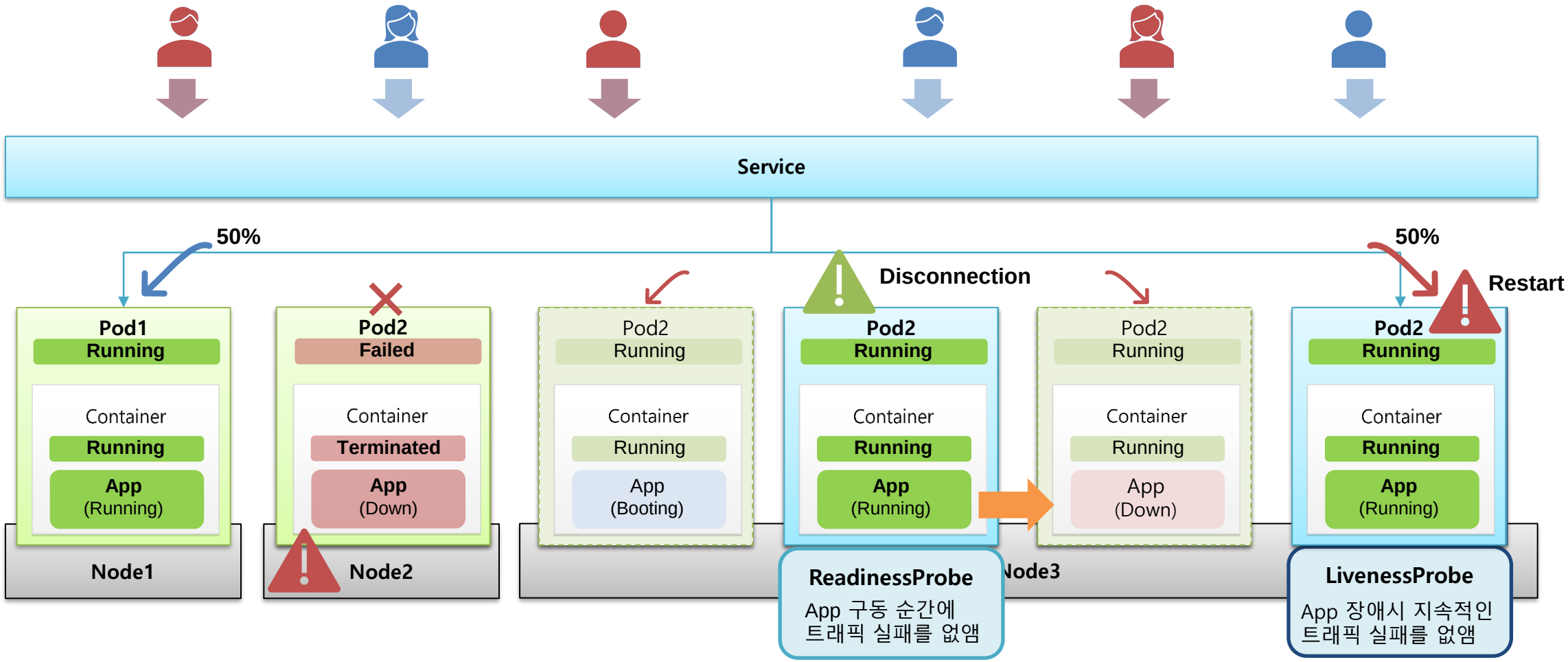
- HPA Architecture



- HPA (Horizontal Pod Autoscaler)

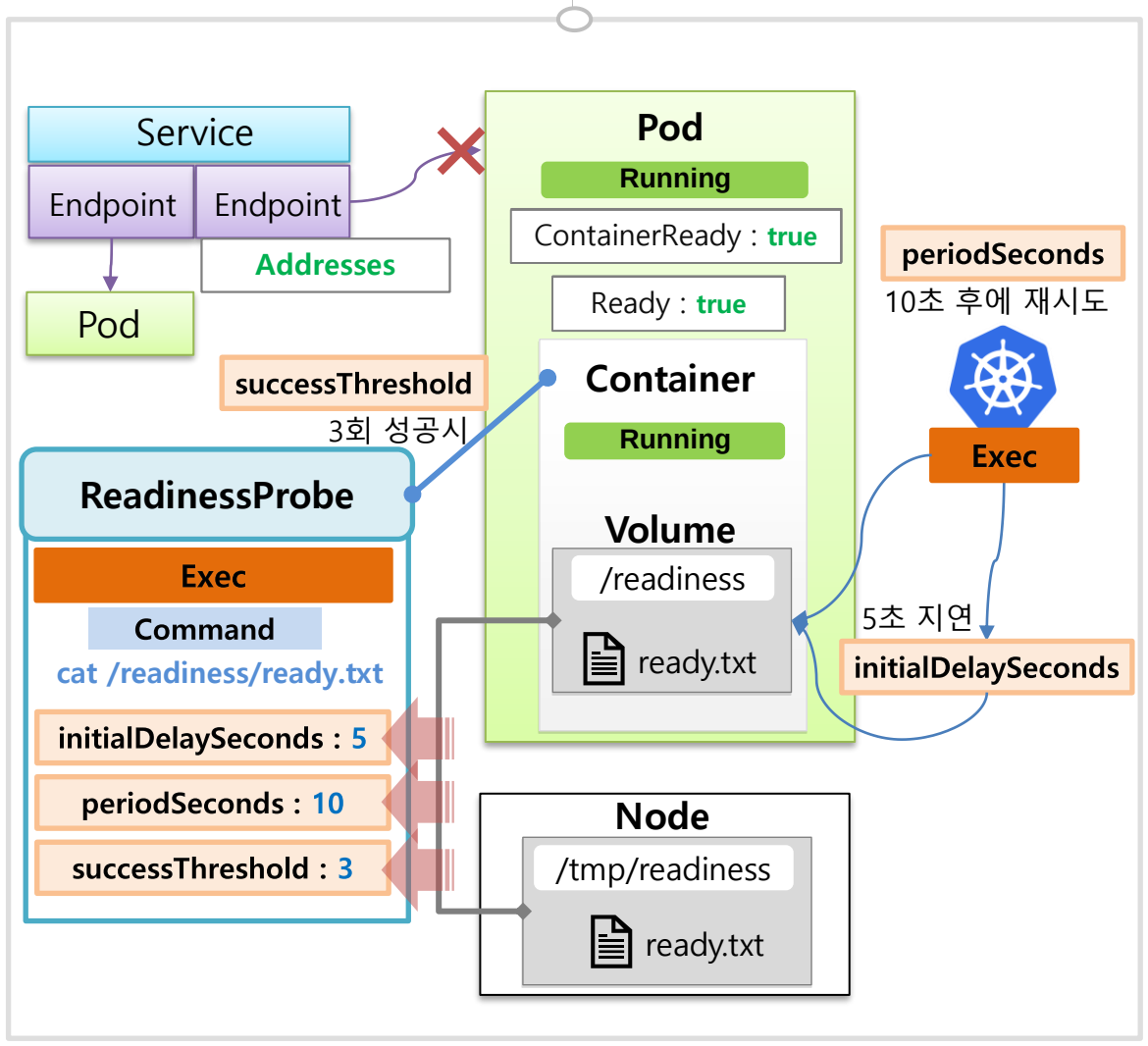


- Pod (ReadinessProbe, LivenessProbe)

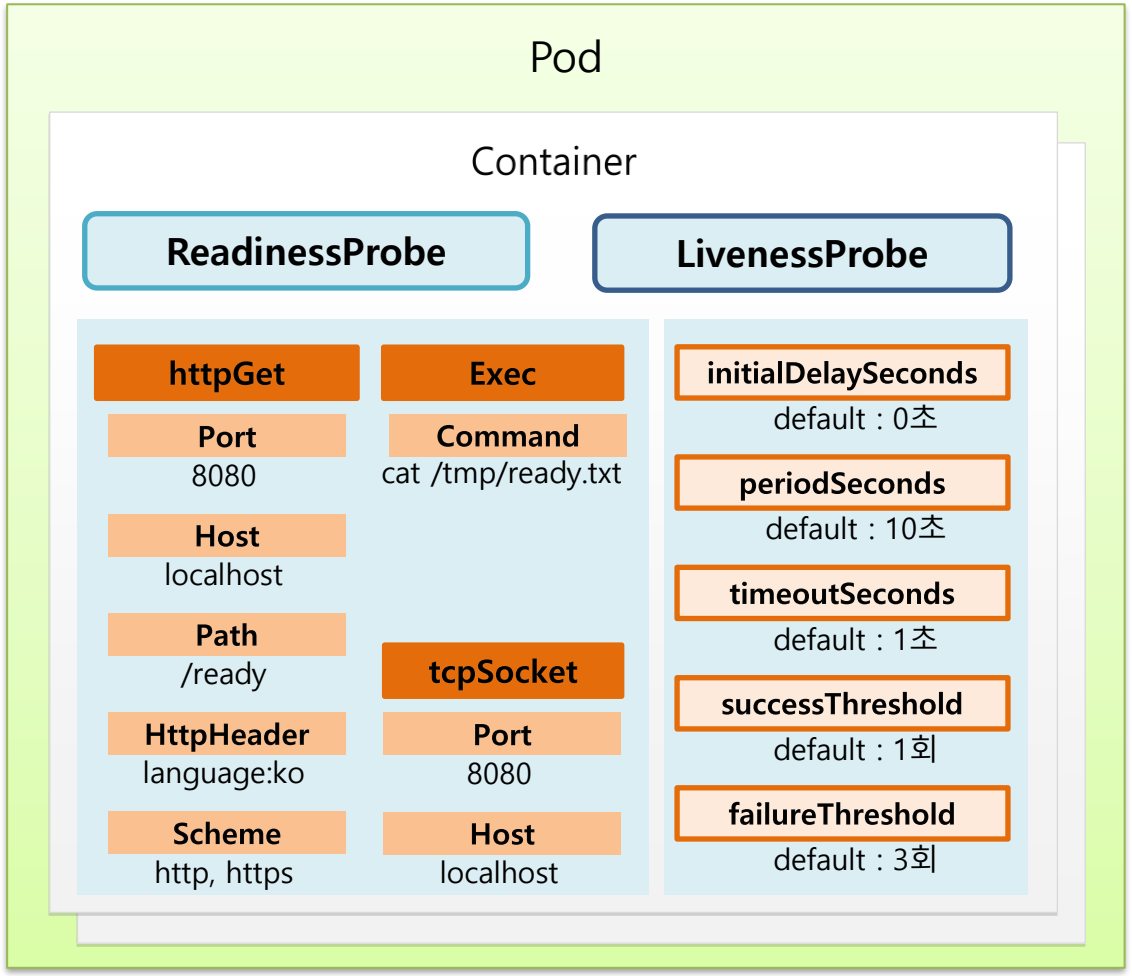


- Pod

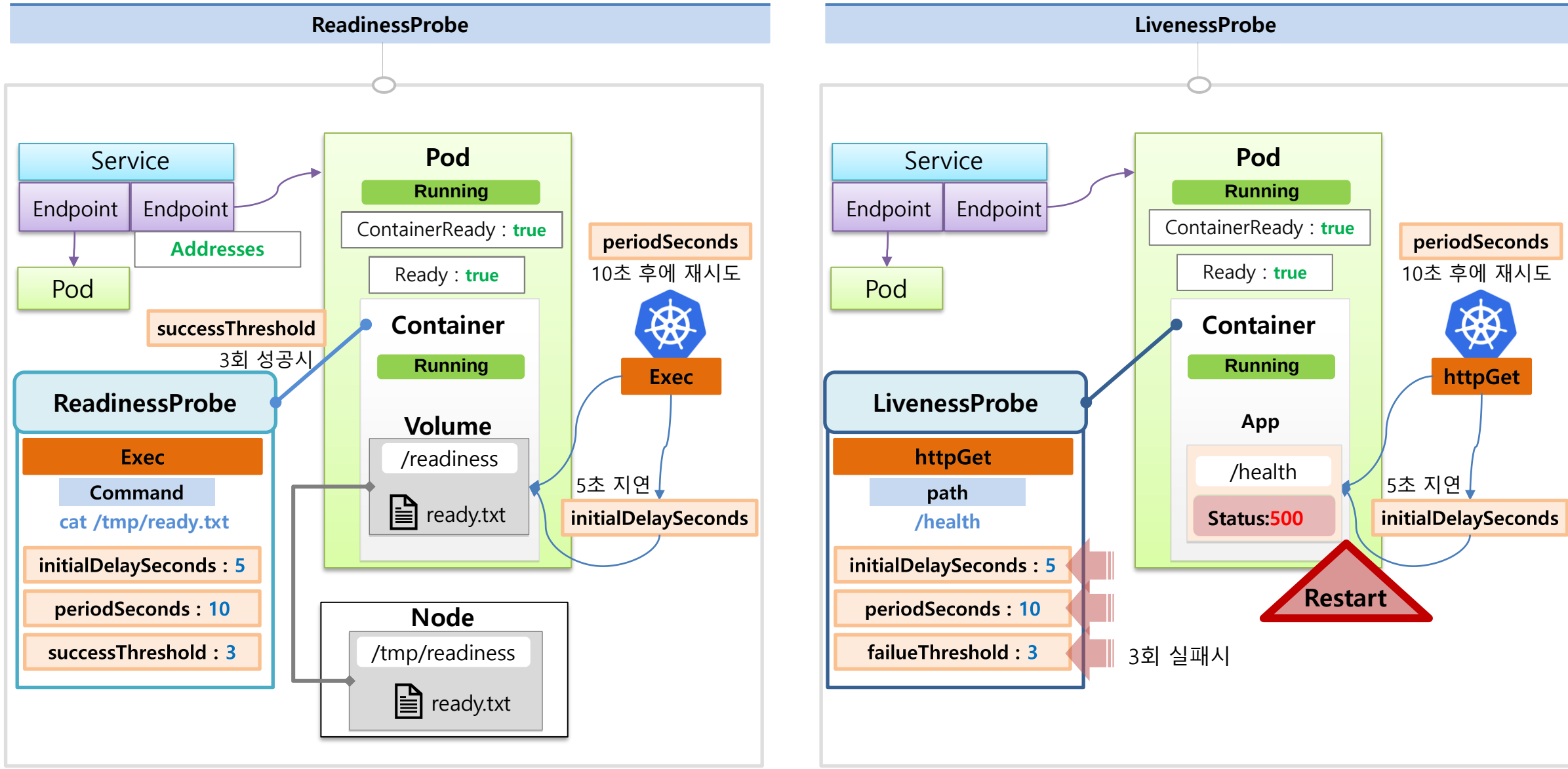
ReadinessProbe



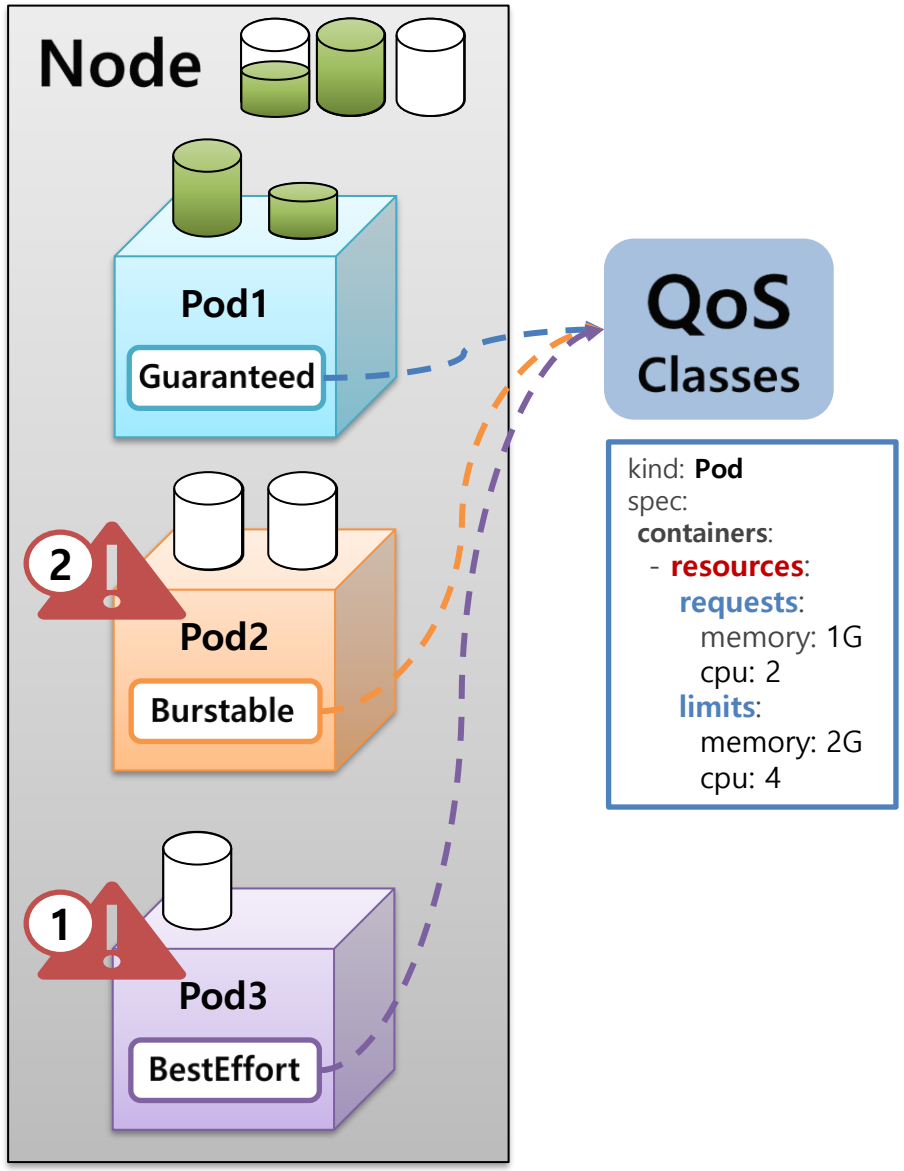
LivenessProbe



- Pod



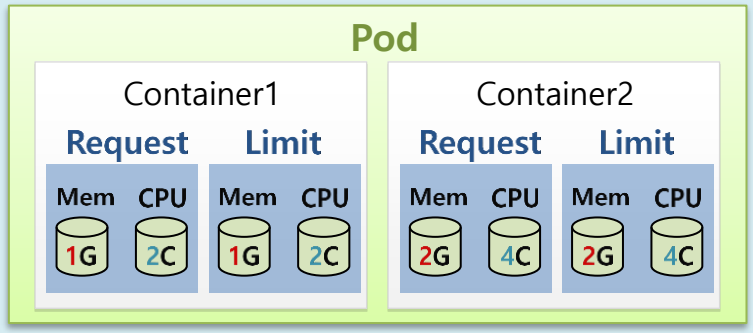
- QoS classes (Guaranteed, Burstable, BestEffort)



QoS Classes

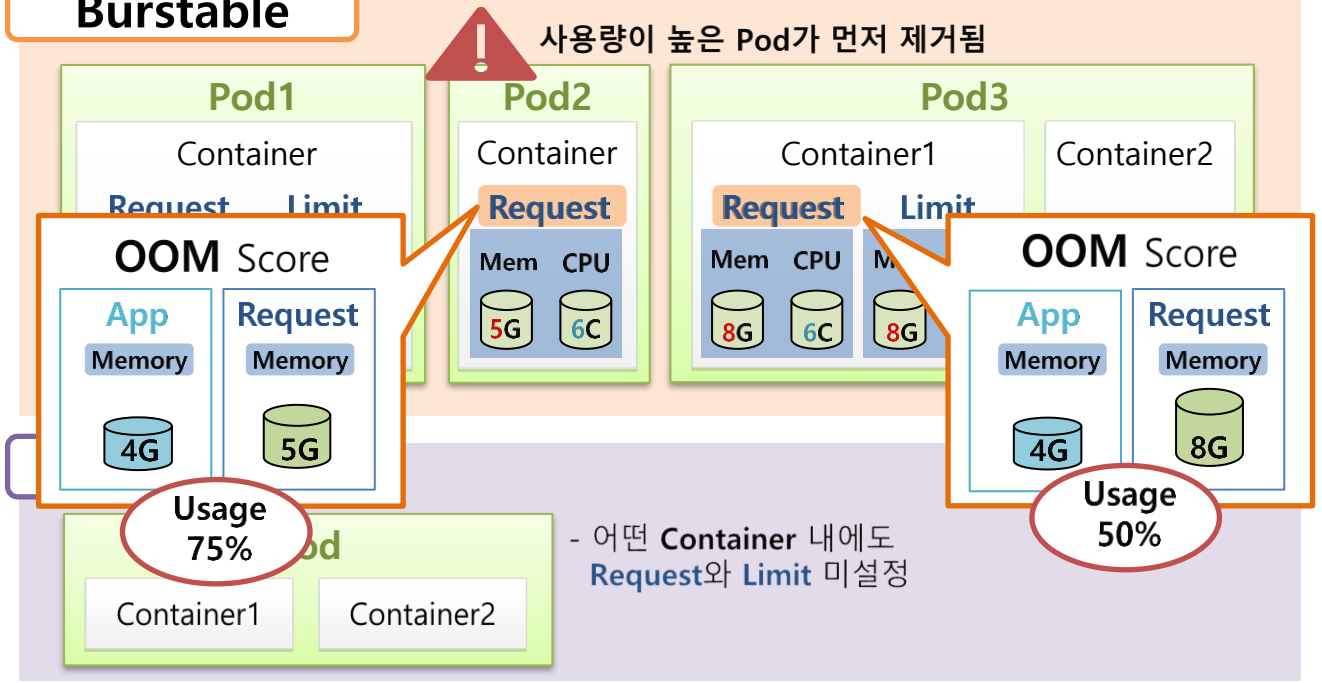
```
kind: Pod
spec:
 containers:
  - resources:
     requests:
       memory: 1G
       cpu: 2
     limits:
       memory: 2G
       cpu: 4
```

Guaranteed



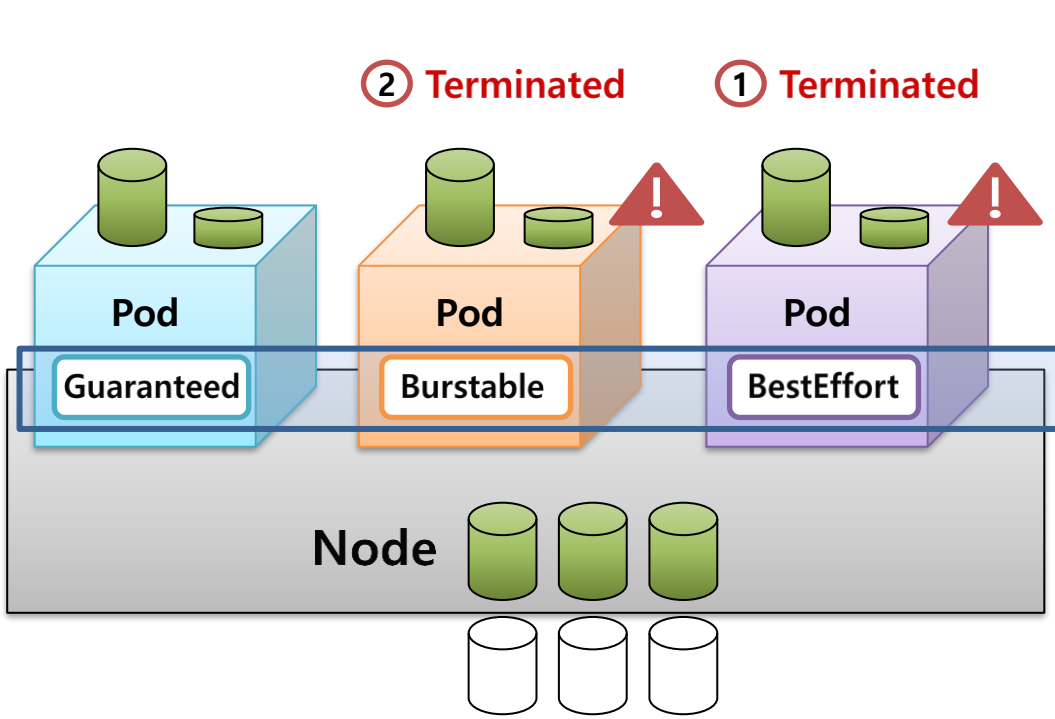
- 모든 **Container**에 **Request**와 **Limit**가 설정
- **Request**와 **Limit**에는 **Memory**와 **CPU**가 모두 설정
- 각 **Container** 내에 **Memory**와 **CPU**의 **Request**와 **Limit**의 값이 같음

Burstable



- 어떤 **Container** 내에도 **Request**와 **Limit** 미설정

- QoS classes (Guaranteed, Burstable, BestEffort)



Guaranteed

Pod

Container1		Container2	
Request	Limit	Request	Limit
Mem CPU	Mem CPU	Mem CPU	Mem CPU

Burstable

Pod

Container	
Request	Limit
Mem CPU	Mem CPU

Pod

Container	
Request	
Mem CPU	

Pod

Container1		Container2
Request	Limit	
Mem CPU	Mem CPU	

BestEffort

Pod

Container1	Container2