

그림으로 배우는 쿠버네티스 (Kubernetes)

조 훈 (Hoon Jo)

- CCIE DC, CKA&D, VCIX-NV6, RHCE, GCPx4

 <https://github.com/SysNet4Admin>

 <https://app.vagrantup.com/SysNet4Admin>

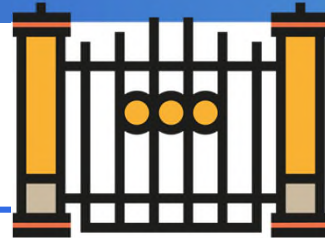


kubernetes

파드는 언제라도 죽는 존재라고
했는데, 어피니티가 되나요?



파드는 죽지만 레이블(label)은 그대로



쿠버네티스 클러스터



마스터 노드
(m-k8s)



run=sleepy



워커 노드#1
(w1-k8s)



gpupool=nvidia
accelerator=tesla-a100



run=sleepy



워커 노드#2
(w2-k8s)



gpupool=nvidia
accelerator=tesla-v100

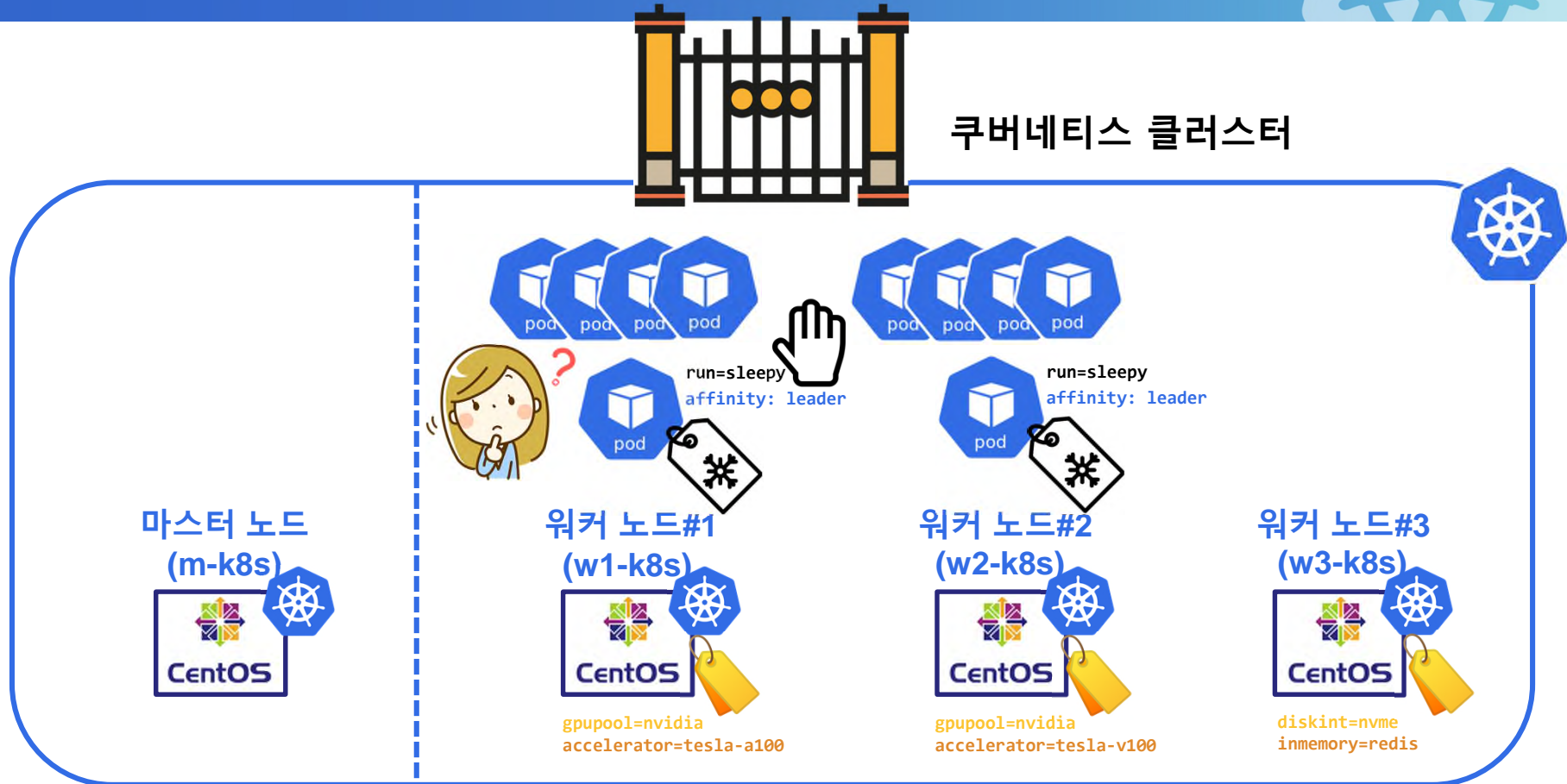
워커 노드#3
(w3-k8s)



diskint=nvme
inmemory=redis

기준 파드를 잡아서 어피니티를 설정

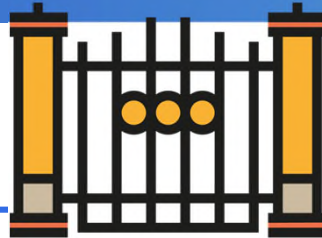
쿠버네티스 클러스터



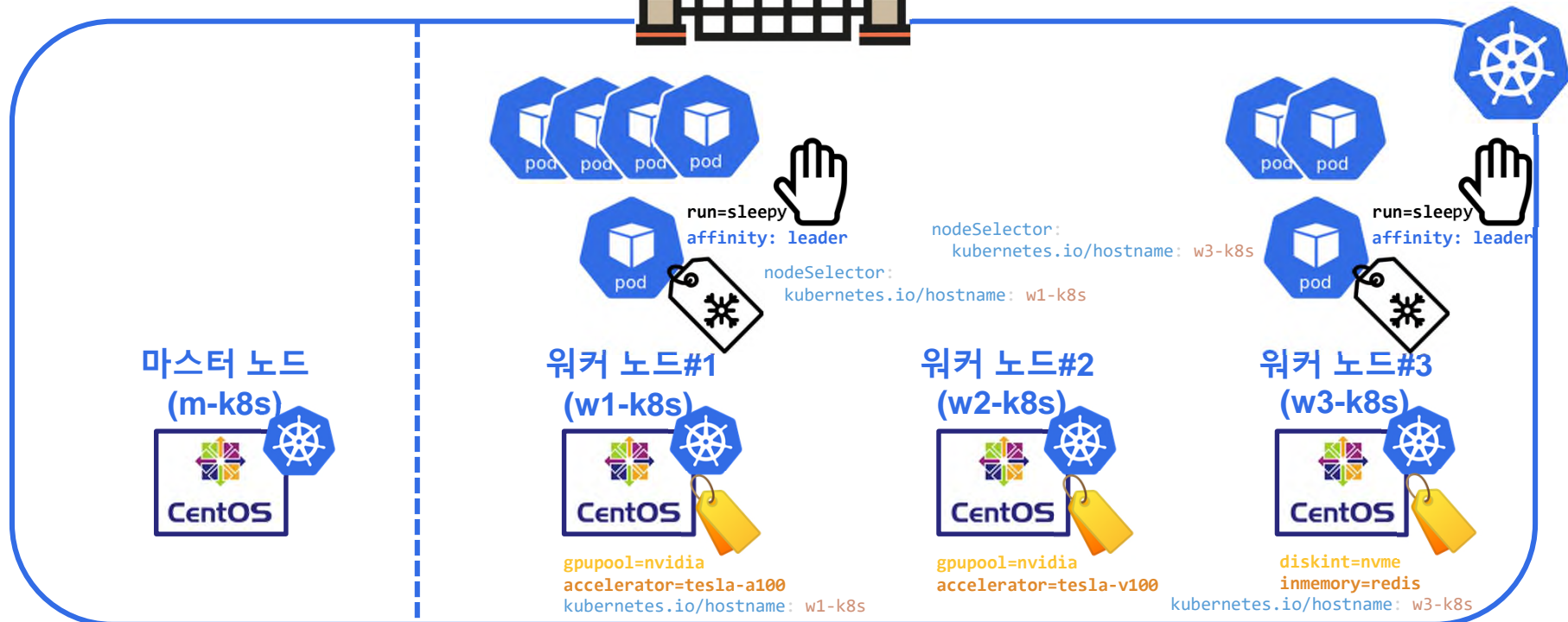
기준 파드를 고정하고 싶다면?



기준 파드의 레이블을 이용한 파드 로드밸런싱



쿠버네티스 클러스터



w1-affinity-leader.yaml, deployment-podAffinity.yaml

```
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    labels:
5      run: sleepy
6      affinity: leader
7    name: w1-affinity-leader
8  spec:
9    containers:
10     - image: sysnet4admin/sleepy
11       name: sleepy
12     nodeSelector:
13       kubernetes.io/hostname: w1-k8s
```

```
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    labels:
5      app: deploy-podaffinity
6    name: deploy-podaffinity
7  spec:
8    replicas: 4
9    selector:
10     matchLabels:
11       app: deploy-podaffinity
12  template:
13    metadata:
14      labels:
15        app: deploy-podaffinity
16    spec:
17      containers:
18        - image: nginx
```

```
20      affinity:
21        podAffinity:
22          requiredDuringSchedulingIgnoredDuringExecution:
23            - labelSelector:
24              matchExpressions:
25                - key: affinity
26                  operator: In
27                  values:
28                    - leader
29            # If you want to change topologyKey,
30            # modify the admission controller, or disable.
31            topologyKey: kubernetes.io/hostname
```


w3-affinity-leader.yaml 추가



```
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    labels:
5      run: sleepy
6      affinity: leader
7  name: w1-affinity-leader
```

```
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    labels:
5      run: sleepy
6      affinity: leader
7  name: w3-affinity-leader
8  spec:
9    containers:
10   - image: sysnet4admin/sleepy
11     name: sleepy
12   nodeSelector:
13     kubernetes.io/hostname: w3-k8s
```

```
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    labels:
5      app: deploy-podaffinity
6    name: deploy-podaffinity
7  spec:
8    replicas: 4
9    selector:
10     matchLabels:
11       app: deploy-podaffinity
12  template:
13    metadata:
14      labels:
15        app: deploy-podaffinity
16    spec:
17      containers:
18        - image: nginx
```

```
20  affinity:
21    podAffinity:
22      requiredDuringSchedulingIgnoredDuringExecution:
23        - labelSelector:
24            matchExpressions:
25              - key: affinity
26                operator: In
27                values:
28                  - leader
29          # If you want to change topologyKey,
30          # modify the admission controller, or disable.
31          topologyKey: kubernetes.io/hostname
```


deployment-anti-podAffinity.yaml



```
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    labels:
5      run: sleepy
6      affinity: leader
7  name: w1-affinity-leader
```



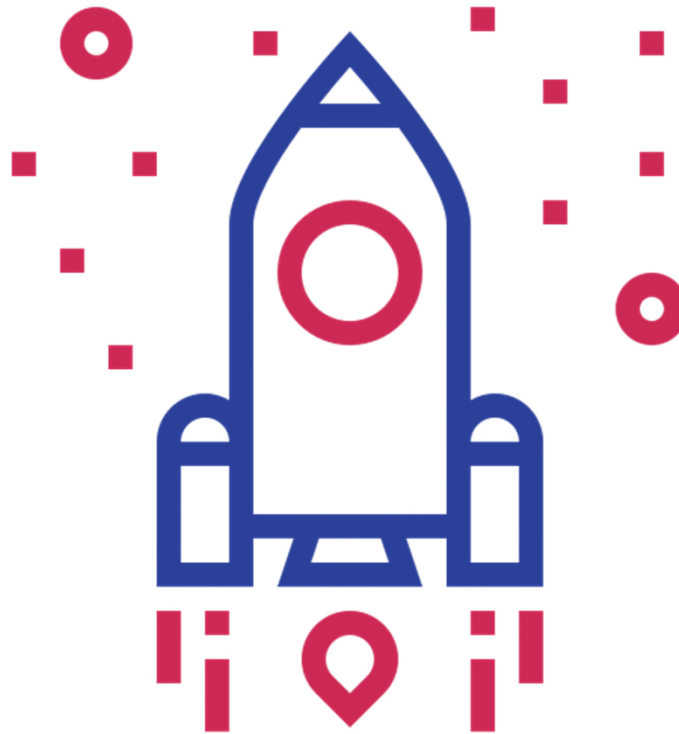
```
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    labels:
5      run: sleepy
6      affinity: leader
7  name: w3-affinity-leader
8  spec:
9    containers:
10   - image: sysnet4admin/sleepy
11     name: sleepy
12   nodeSelector:
13     kubernetes.io/hostname: w3-k8s
```



```
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    labels:
5      app: deploy-anti-podaffinity
6    name: deploy-anti-podaffinity
7  spec:
8    replicas: 4
9    selector:
10     matchLabels:
11       app: deploy-anti-podaffinity
12  template:
13    metadata:
14      labels:
15        app: deploy-anti-podaffinity
16    spec:
17      containers:
18        - image: nginx
```

```
20  affinity:
21    podAffinity:
22      requiredDuringSchedulingIgnoredDuringExecution:
23        - labelSelector:
24            matchExpressions:
25              - key: affinity
26                operator: NotIn
27                values:
28                  - leader
29      # If you want to change topologyKey,
30      # modify the admission controller, or disable.
31      topologyKey: kubernetes.io/hostname
```

파드 어피니티와 안티 어피니티 동작 확인



다음 강좌에는...



1. 토폴로지 분배 제약 조건(topologySpreadConstraints)



kubernetes