Managing Kubernetes

2021-05-01
written by whatwant

Agenda

Chapter1. Kubernetes Overview

1주차: **Docker and Kubernetes**

Chapter2. Kubernetes Core

2주차: **Environment & POD**

3주차: **Replication and other controllers**

4주차: **Services**

5주차: **Volumes (Service 보충 수업 포함)**

6주차: **ConfigMaps and Secrets & Kubernetes REST API**

7주차: **Deployment & StatefulSet**

Chapter3. Kubernetes Managing

8주차: **Authentication and User Management & Authorization & Admission Control**

9주차: **Networking**

10주차: **Monitoring**

11주차: **Disaster Recovery**

※ 참고 : https://home.modulabs.co.kr/product/managing-kubernetes/

4 week
Services

Supplementary Lessons

Job - 1/2

- 고정적(fixed)인 완료 횟수 를 가진 병렬 Job

  . .spec.completions 에 0이 아닌 양수 값을 지정

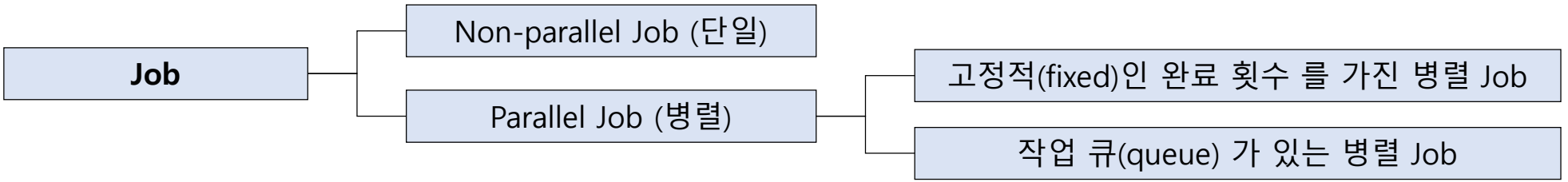
  . Job은 전체 작업을 나타내며 1에서 .spec.completions 까지의 범위의 각 값에 대해 한 개씩 성공한 Pod가 있으면 완료

- 작업 큐(queue) 가 있는 병렬 Job

  . .spec.completions 를 지정하지 않고, .spec.parallelism 에 양수 값 설정

  . Job의 모든 Pod가 성공적으로 종료되면, 새로운 Pod는 생성되지 않음

  . 하나 이상의 Pod가 성공적으로 종료되고, 모든 Pod가 종료되면 Job은 성공적으로 완료



※ 참고 : https://kubernetes.io/ko/docs/concepts/workloads/controllers/job/

Job - 2/2

- **completions** : 몇 번의 Completed가 나올 때까지
- **parallelism** : 한 번에 몇 개씩
- **backoffLimit** : 최대 실행 횟수

job-parallel.yaml

```yaml
apiVersion: batch/v1
kind: Job
metadata:
  name: throw-dice-job
spec:
  completions: 3
  parallelism: 3
  backoffLimit: 25
  template:
    spec:
      containers:
        - name: math-add
          image: kodekloud/throw-dice
      restartPolicy: Never
```

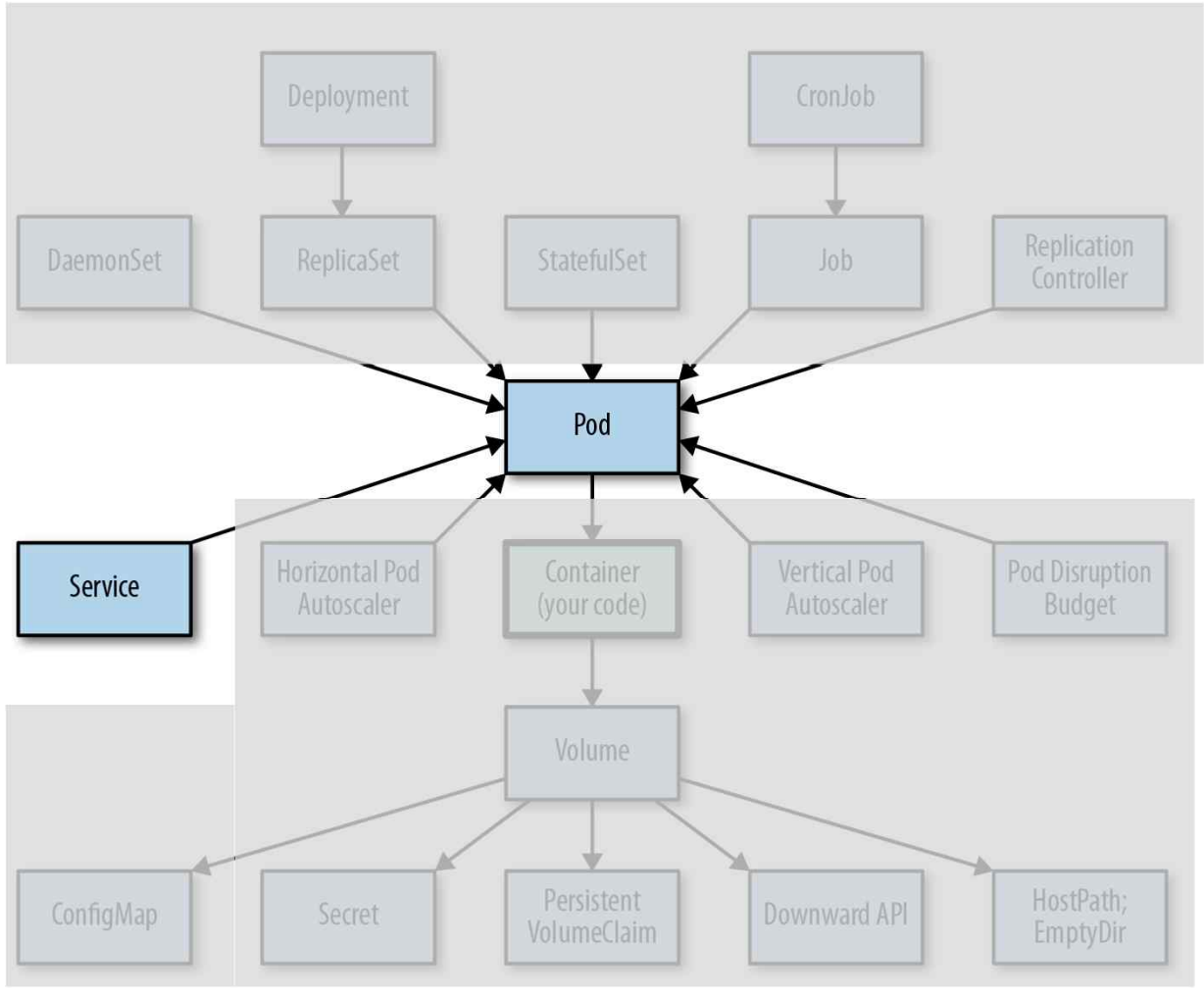
```
❯ kubectl create -f job-parallel.yaml
job.batch/throw-dice-job created

❯ kubectl get jobs
NAME             COMPLETIONS   DURATION   AGE
throw-dice-job   3/3           52s        57s

❯ kubectl get pods
NAME                   READY   STATUS      RESTARTS   AGE
throw-dice-job-5mclr   0/1     Error       0          60s
throw-dice-job-9pfp8   0/1     Error       0          60s
throw-dice-job-p56gc   0/1     Error       0          60s
throw-dice-job-ll8c6   0/1     Error       0          56s
throw-dice-job-7bjsk   0/1     Error       0          46s
throw-dice-job-9rq5g   0/1     Error       0          46s
throw-dice-job-m7qtf   0/1     Error       0          46s
throw-dice-job-mg29n   0/1     Completed   0          26s
throw-dice-job-nb8xv   0/1     Error       0          26s
throw-dice-job-q5cgg   0/1     Error       0          26s
throw-dice-job-hl7lz   0/1     Error       0          22s
throw-dice-job-85nl5   0/1     Completed   0          12s
throw-dice-job-zppnx   0/1     Completed   0          12s
```

※ 참고 : https://github.com/chandramgc/kubernetes-snippets/blob/f0eca649f7e41e2c9143b4c6d5e92b211ea50d94/Certification/Code/01.%20Imperative.yaml

Today

Today ...

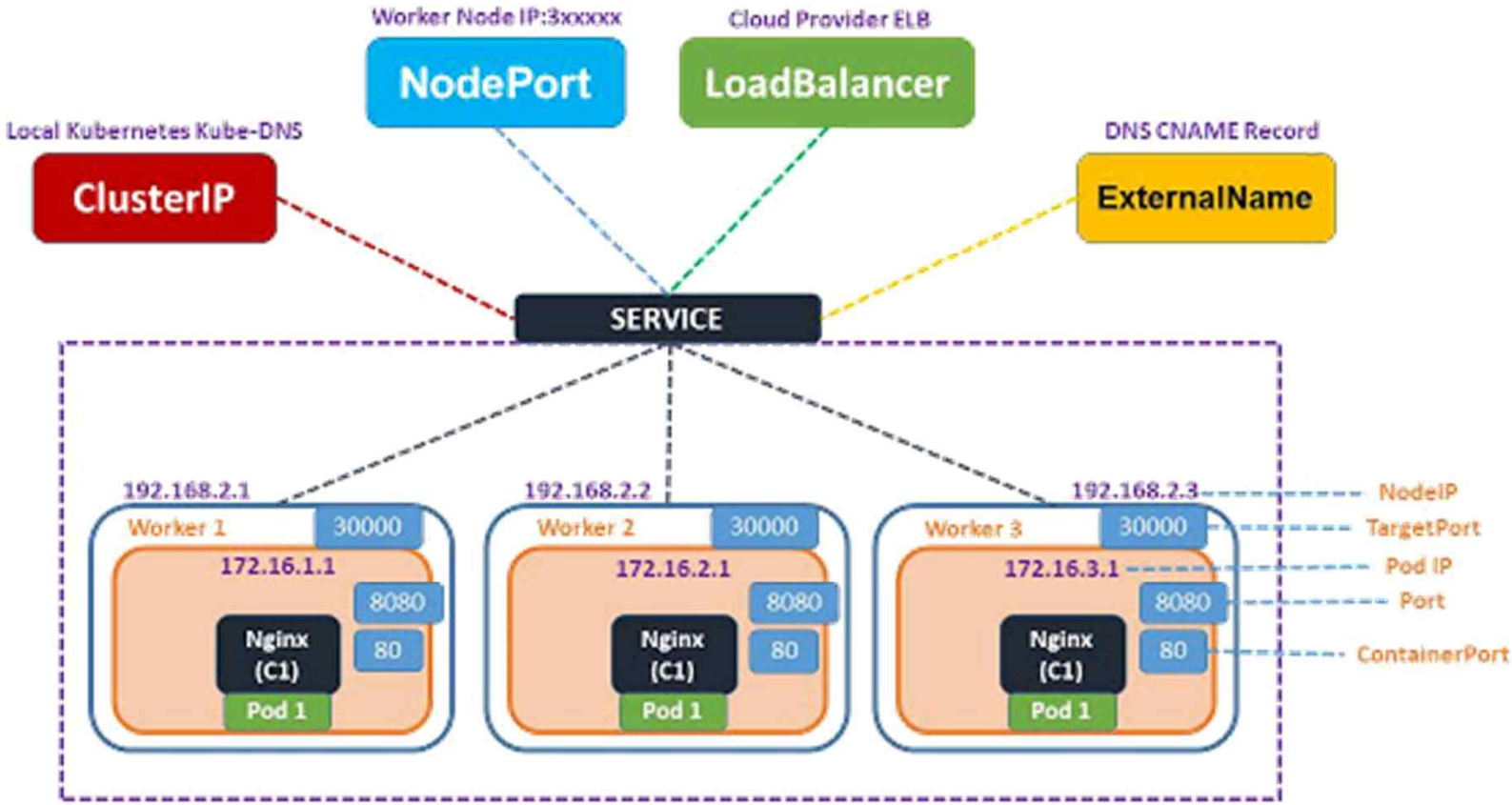
Service



Service

Service is

- 동일한 서비스를 제공하는 Pod 그룹에 지속적인 난일 접점을 반들려고 할 때 생성하는 리소스



※ 참고 : https://www.learnitguide.net/2020/05/kubernetes-services-explained-examples.html

Pod Network 실습 - 1/3

① 실습에 사용할 Container Image 설명 

② 실습에 사용할 ReplicaSet YAML

③ 실행

```
❯ kubectl create -f rs-node-web.yaml
replicaset.apps/rs-node-web created

❯ kubectl get replicasets
NAME          DESIRED   CURRENT   READY   AGE
rs-node-web   3         3         3       9s

❯ kubectl get pods -o wide
NAME                READY   STATUS    RESTARTS   AGE   IP            NODE      NOMINATED NODE   READINESS GATES
rs-node-web-dk4hd   1/1     Running   0          15m   10.244.2.21   worker2   <none>           <none>
rs-node-web-gjs8m   1/1     Running   0          15m   10.244.1.87   worker1   <none>           <none>
rs-node-web-j2q8s   1/1     Running   0          17m   10.244.1.82   worker1   <none>           <none>
```

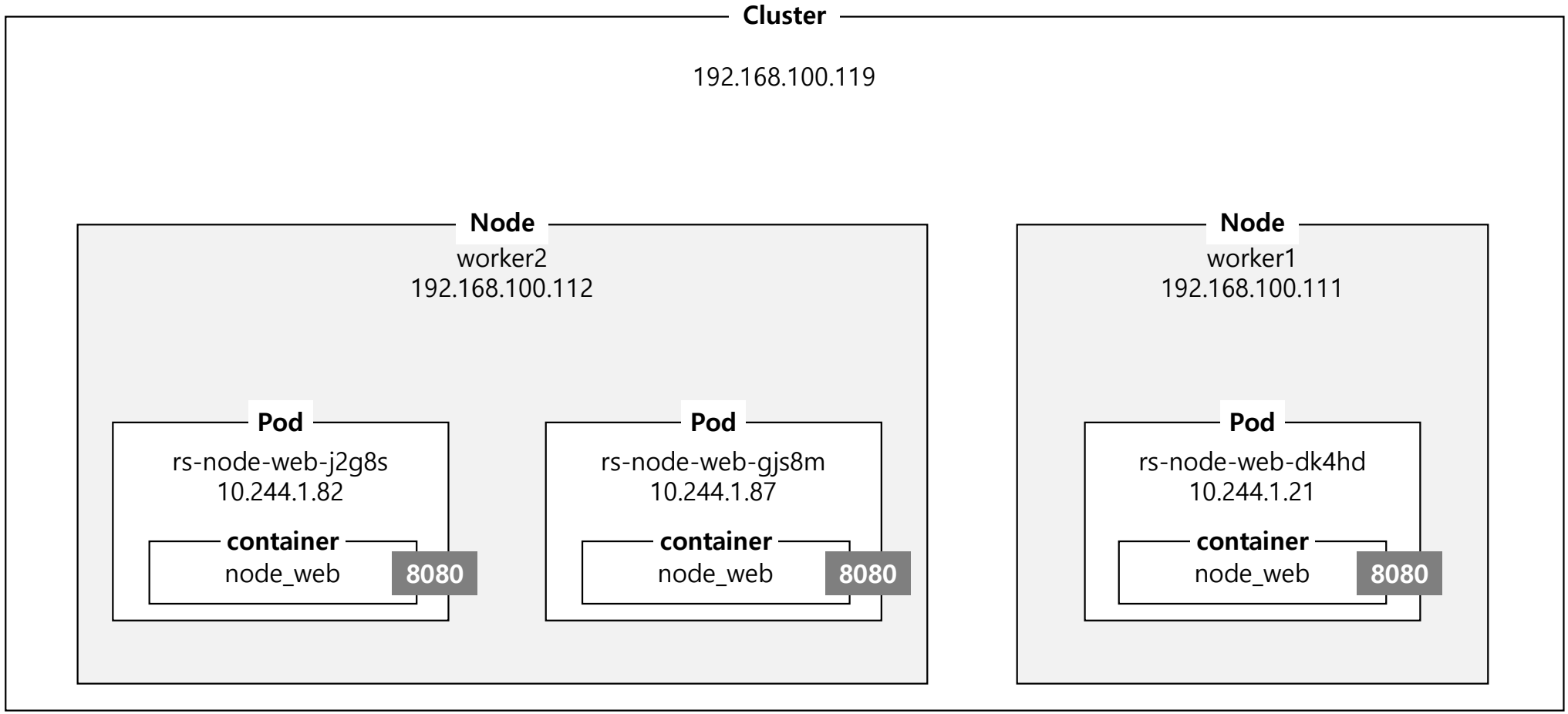
rs-node-web.yaml

```yaml
apiVersion: apps/v1
kind: ReplicaSet

metadata:
  name: rs-node-web
spec:
  replicas: 3

  selector:
    matchExpressions:
      - key: app
        operator: In
        values:
          - node-web

  template:
    metadata:
      labels:
        app: node-web

    spec:
      containers:
      - name: node-web
        image: whatwant/node-web:1.0
        ports:
        - containerPort: 8080
```

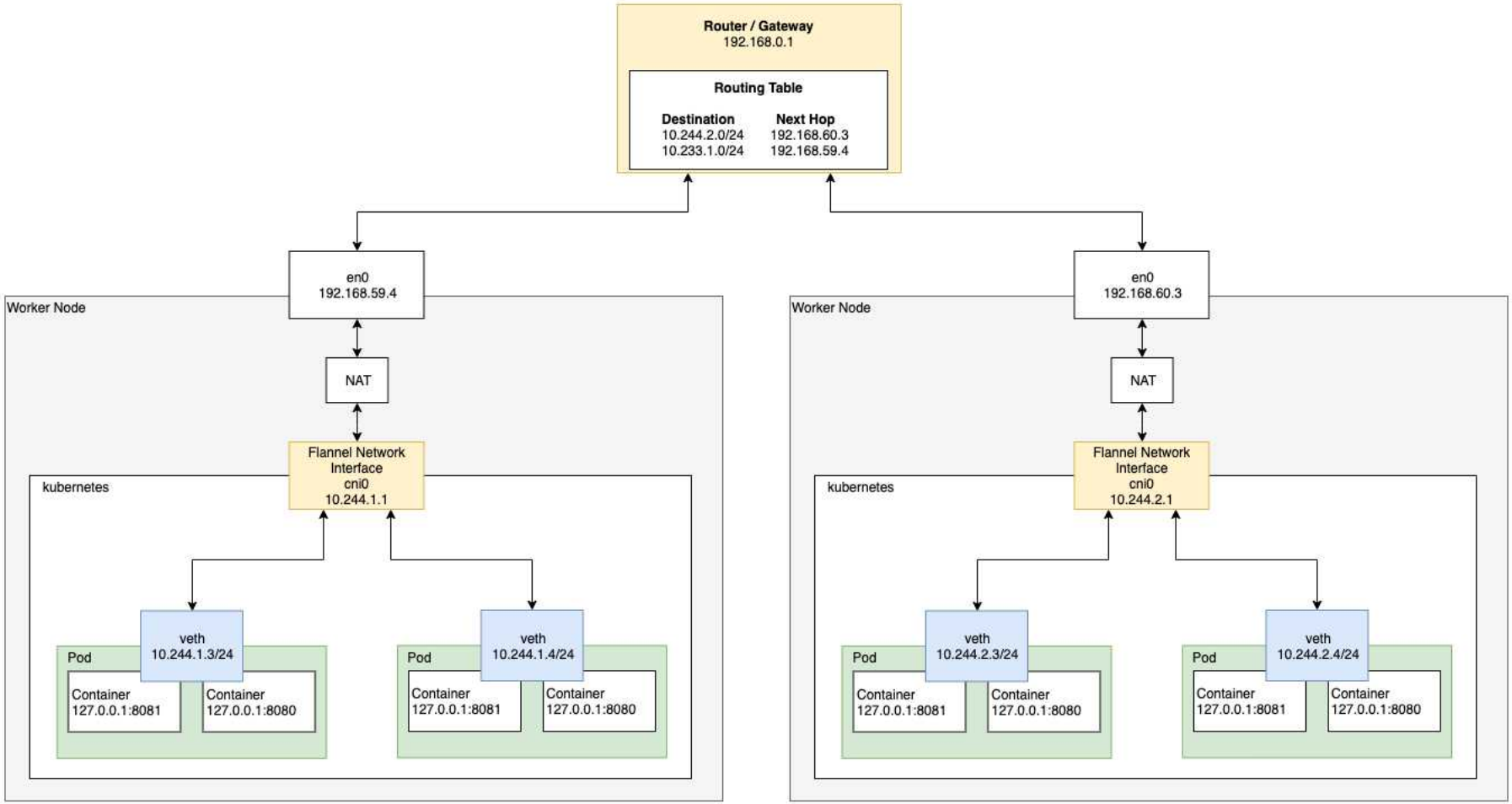
Pod Network 실습 - 2/3

```
❯ kubectl get nodes -o wide
NAME         STATUS   ROLES                  AGE    VERSION   INTERNAL-IP       EXTERNAL-IP   OS-IMAGE             KERNEL-VERSION     CONTAINER-RUNTIME
master-stg   Ready    control-plane,master   121d   v1.20.1   192.168.100.119   <none>        Ubuntu 20.04.2 LTS   5.4.0-72-generic   docker://20.10.1
worker1      Ready    <none>                 121d   v1.20.1   192.168.100.112   <none>        Ubuntu 20.04.2 LTS   5.4.0-72-generic   docker://20.10.1
worker2      Ready    <none>                 4d1h   v1.20.1   192.168.100.111   <none>        Ubuntu 20.04.2 LTS   5.4.0-72-generic   docker://20.10.1

❯ kubectl get pods -o wide
NAME                READY   STATUS    RESTARTS   AGE   IP            NODE      NOMINATED NODE   READINESS GATES
rs-node-web-dk4hd   1/1     Running   0          17m   10.244.2.21   worker2   <none>           <none>
rs-node-web-gjs8m   1/1     Running   0          17m   10.244.1.87   worker1   <none>           <none>
rs-node-web-j2q8s   1/1     Running   0          18m   10.244.1.82   worker1   <none>           <none>

❯ kubectl exec -it rs-node-web-dk4hd -- curl -s http://10.244.2.21:8080
You've hit rs-node-web-dk4hd

❯ kubectl exec -it rs-node-web-dk4hd -- curl -s http://10.244.1.87:8080
You've hit rs-node-web-gjs8m

❯ kubectl exec -it rs-node-web-dk4hd -- curl -s http://10.244.1.82:8080
You've hit rs-node-web-j2q8s
```

Pod Network 실습 - 3/3



Pod Network



※ 참고 : https://medium.com/finda-tech/kubernetes-네트워크-정리-fccd4fd0ae6

Create Service

svc-none-node-web.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: svc-node

spec:
  ports:
  - port: 80
    targetPort: 8080

  selector:
    app: node-web
```

```
❯ kubectl create -f svc-none-node-web.yaml
service/svc-node created

❯ kubectl get services -o wide
NAME         TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)   AGE    SELECTOR
kubernetes   ClusterIP   10.96.0.1        <none>        443/TCP   123d   <none>
svc-node     ClusterIP   10.104.191.116   <none>        80/TCP    18s    app=node-web

❯ curl http://10.104.191.116
You've hit rs-node-web-dk4hd

❯ curl http://10.104.191.116
You've hit rs-node-web-j2q8s

❯ curl http://10.104.191.116
You've hit rs-node-web-dk4hd

❯ curl http://10.104.191.116
You've hit rs-node-web-gjs8m
```

sessionAffinity

※ affinity : 친밀감, 관련성

- 특정 클라이언트의 연결이 매번 동일한 Pod로 전달 : service.spec.sessionAffinity = "ClientIP"

- 기본값은 "None"

svc-clientip-node-web.yaml

```yaml
apiVersion: v1
kind: Service
metadata:
  name: svc-node

spec:
  ports:
  - port: 80
    targetPort: 8080

  selector:
    app: node-web

  sessionAffinity: ClientIP
```

```
❯ kubectl apply -f svc-client-node-web.yaml
Warning: resource services/svc-node is missing the kubectl.kubernetes.io/last-applied-configuration annotation which is required by kubectl apply. kubectl apply should only be used on resources created declaratively by either kubectl create --save-config or kubectl apply. The missing annotation will be patched automatically.
service/svc-node configured

❯ kubectl describe service svc-node
Name:              svc-node
Namespace:         default
Labels:            <none>
Annotations:       <none>
Selector:          app=node-web
Type:              ClusterIP
IP Families:       <none>
IP:                10.104.191.116
IPs:               10.104.191.116
Port:              <unset>  80/TCP
TargetPort:        8080/TCP
Endpoints:         10.244.1.88:8080,10.244.1.89:8080,10.244.2.22:8080
Session Affinity:  ClientIP
Events:            <none>
```

```
❯ curl http://10.104.191.116
You've hit rs-node-web-j2q8s

❯ curl http://10.104.191.116
You've hit rs-node-web-j2q8s

❯ curl http://10.104.191.116
You've hit rs-node-web-j2q8s
```

ports name

rs-node-web.yaml

```yaml
apiVersion: apps/v1
kind: ReplicaSet

metadata:
  name: rs-node-web
spec:
  replicas: 3
  selector:
    matchExpressions:
      - key: app
        operator: In
        values:
          - node-web
  template:
    metadata:
      labels:
        app: node-web
    spec:
      containers:
      - name: node-web
        image: whatwant/node-web:1.0
        ports:
        - containerPort: 8080
```

rs-node-web-ports-name.yaml

```yaml
apiVersion: apps/v1
kind: ReplicaSet

metadata:
  name: rs-node-web
spec:
  replicas: 3
  selector:
    matchExpressions:
      - key: app
        operator: In
        values:
          - node-web
  template:
    metadata:
      labels:
        app: node-web
    spec:
      containers:
      - name: node-web
        image: whatwant/node-web:1.0
        ports:
        - name: node-http
          containerPort: 8080
```

svc-clientip-node-web-ports-name.yaml

```yaml
apiVersion: v1
kind: Service
metadata:
  name: svc-node

spec:
  ports:
  - port: 80
    targetPort: node-http

  selector:
    app: node-web

  sessionAffinity: ClientIP
```

- Pod에서 정의된 ports에 name을 붙이면
- Service에서 그 이름을 사용할 수 있다.
- Service spec을 변경하지 않고도 ports 변경 가능

Service check

- Pod가 시작되면 K8s는 해당 시점에 존재하는 Service를 가리키는 환경변수를 설정

```
❯ kubectl get services
NAME         TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)   AGE
kubernetes   ClusterIP   10.96.0.1        <none>        443/TCP   123d
svc-node     ClusterIP   10.104.191.116   <none>        80/TCP    67m

❯ kubectl get pods
NAME                READY   STATUS    RESTARTS   AGE
rs-node-web-dk4hd   1/1     Running   1          45h
rs-node-web-gjs8m   1/1     Running   1          45h
rs-node-web-j2q8s   1/1     Running   1          45h

❯ kubectl exec -it rs-node-web-dk4hd -- env
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
HOSTNAME=rs-node-web-dk4hd
TERM=xterm
KUBERNETES_PORT=tcp://10.96.0.1:443
KUBERNETES_PORT_443_TCP=tcp://10.96.0.1:443
KUBERNETES_PORT_443_TCP_PROTO=tcp
KUBERNETES_PORT_443_TCP_PORT=443
KUBERNETES_PORT_443_TCP_ADDR=10.96.0.1
KUBERNETES_SERVICE_HOST=10.96.0.1
KUBERNETES_SERVICE_PORT=443
KUBERNETES_SERVICE_PORT_HTTPS=443
NODE_VERSION=15.14.0
YARN_VERSION=1.22.5
HOME=/root

❯ kubectl delete pods rs-node-web-dk4hd
pod "rs-node-web-dk4hd" deleted
```

```
❯ kubectl get pods
NAME                READY   STATUS    RESTARTS   AGE
rs-node-web-ghqnq   1/1     Running   0          39s
rs-node-web-gjs8m   1/1     Running   1          45h
rs-node-web-j2q8s   1/1     Running   1          45h

❯ kubectl exec -it rs-node-web-ghqnq -- env
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin
HOSTNAME=rs-node-web-ghqnq
TERM=xterm
SVC_NODE_SERVICE_HOST=10.104.191.116
SVC_NODE_PORT_80_TCP=tcp://10.104.191.116:80
KUBERNETES_PORT_443_TCP_PORT=443
SVC_NODE_PORT=tcp://10.104.191.116:80
SVC_NODE_PORT_80_TCP_PROTO=tcp
KUBERNETES_SERVICE_PORT_HTTPS=443
KUBERNETES_PORT=tcp://10.96.0.1:443
SVC_NODE_PORT_80_TCP_PORT=80
SVC_NODE_PORT_80_TCP_ADDR=10.104.191.116
KUBERNETES_SERVICE_HOST=10.96.0.1
KUBERNETES_PORT_443_TCP_ADDR=10.96.0.1
KUBERNETES_PORT_443_TCP_PROTO=tcp
SVC_NODE_SERVICE_PORT=80
KUBERNETES_SERVICE_PORT=443
KUBERNETES_PORT_443_TCP=tcp://10.96.0.1:443
NODE_VERSION=15.14.0
YARN_VERSION=1.22.5
HOME=/root
```

DNS - 1/2

- kube-system namespace 內 kube-dns Pod 존재

  . DNS Server 실행하며 cluster에서 실행중인 다른 모든 Pod는 자동으로 이를 사용하도록 구성

```
❯ kubectl get pods --namespace kube-system -o wide
NAME                                READY   STATUS    RESTARTS   AGE     IP               NODE         NOMINATED NODE   READINESS GATES
coredns-74ff55c5b-dz8kq             1/1     Running   10         123d    10.244.0.23      master-stg   <none>           <none>
coredns-74ff55c5b-h66ct             1/1     Running   10         123d    10.244.0.22      master-stg   <none>           <none>
etcd-master-stg                     1/1     Running   29         123d    192.168.100.119  master-stg   <none>           <none>
kube-apiserver-master-stg           1/1     Running   26         123d    192.168.100.119  master-stg   <none>           <none>
kube-controller-manager-master-stg  1/1     Running   15         123d    192.168.100.119  master-stg   <none>           <none>
kube-flannel-ds-99psb               1/1     Running   14         123d    192.168.100.112  worker1      <none>           <none>
kube-flannel-ds-sdcpc               1/1     Running   4          5d23h   192.168.100.111  worker2      <none>           <none>
kube-flannel-ds-sdss8               1/1     Running   13         123d    192.168.100.119  master-stg   <none>           <none>
kube-proxy-5lvx5                    1/1     Running   3          5d23h   192.168.100.111  worker2      <none>           <none>
kube-proxy-nkb8c                    1/1     Running   10         123d    192.168.100.119  master-stg   <none>           <none>
kube-proxy-xvlvs                    1/1     Running   10         123d    192.168.100.112  worker1      <none>           <none>
kube-scheduler-master-stg           1/1     Running   15         123d    192.168.100.119  master-stg   <none>           <none>
```

DNS - 2/2

- Kubernetes는 각 container의 /etc/resolv.conf 파일을 수정
- FQDN (Fully Qualified Domain Name) : service name . namespace name . svc.cluster.local

```
❯ kubectl create -f rs-node-web.yaml
❯ kubectl create -f svc-none-node-web.yaml

❯ kubectl get pods
NAME                READY   STATUS    RESTARTS   AGE
rs-node-web-j7g25   1/1     Running   0          4m28s
rs-node-web-p7gfn   1/1     Running   0          4m28s
rs-node-web-sl7tt   1/1     Running   0          4m28s

❯ kubectl get services
NAME         TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)   AGE
kubernetes   ClusterIP   10.233.0.1     <none>        443/TCP   39h
svc-node     ClusterIP   10.233.38.45   <none>        80/TCP    3m22s

❯ kubectl exec -it rs-node-web-j7g25 -- cat /etc/resolv.conf
nameserver 169.254.25.10
search default.svc.cluster.local svc.cluster.local cluster.local skbroadband
options ndots:5
```

```
❯ kubectl exec -it rs-node-web-ghqnq -- cat /etc/resolv.conf
nameserver 10.96.0.10
search default.svc.cluster.local svc.cluster.local cluster.local skbroadband
options ndots:5

❯ kubectl exec -it rs-node-web-ghqnq -- curl -s http://svc-node
You've hit rs-node-web-ghqnq

❯ kubectl exec -it rs-node-web-ghqnq -- curl -s http://svc-node.default
You've hit rs-node-web-ghqnq

❯ kubectl exec -it rs-node-web-ghqnq -- curl -s http://svc-node.default.svc
You've hit rs-node-web-ghqnq

❯ kubectl exec -it rs-node-web-ghqnq -- curl -s http://svc-node.default.svc.cluster
^Ccommand terminated with exit code 130

❯ kubectl exec -it rs-node-web-ghqnq -- curl -s http://svc-node.default.svc.cluster.local
^Ccommand terminated with exit code 130
```

Trouble Shooting

Endpoints - 1/2

- Service로 노출되는 Pod의 IP 주소와 Port 목록
- client → kube-proxy → Endpoints 중 하나의 IP/Port 선택 → 들어온 연결을 대상 Pod의 수신 대기 서버로 전달

```
❯ kubectl describe service svc-node
Name:              svc-node
Namespace:         default
Labels:            <none>
Annotations:       <none>
Selector:          app=node-web
Type:              ClusterIP
IP Families:       <none>
IP:                10.104.191.116
IPs:               10.104.191.116
Port:              <unset>  80/TCP
TargetPort:        8080/TCP
Endpoints:         10.244.1.88:8080,10.244.1.89:8080,10.244.2.23:8080
Session Affinity:  ClientIP
Events:            <none>
```

```
❯ kubectl get pods -o wide
NAME                READY   STATUS    RESTARTS   AGE   IP             NODE      NOMINATED NODE
READINESS GATES
rs-node-web-ghqnq   1/1     Running   0          99m   10.244.2.23    worker2   <none>           <none>
rs-node-web-gjs8m   1/1     Running   1          47h   10.244.1.88    worker1   <none>           <none>
rs-node-web-j2q8s   1/1     Running   1          47h   10.244.1.89    worker1   <none>           <none>
```

Endpoints - 2/2

- Endpoints 명시하지 않으면? = Selectors를 지정하지 않기

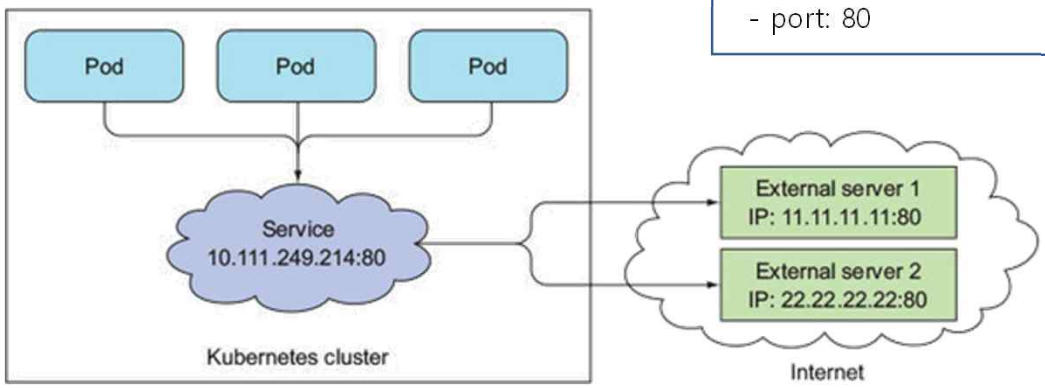
  . Endpoints 직접 생성 필요 (Service와 Endpoints 이름이 같아야 한다)

svc-no-selector.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: external-service

spec:
  ports:
  - port: 80
```

svc-no-selector.yaml

```
apiVersion: v1
kind: Endpoints
metadata:
  name: external-service

subsets:
  - addresses:
    - ip: 11.11.11.11
    - ip: 22.22.22.22
    ports:
    - port: 80
```



※ 참고 : https://livebook.manning.com/book/kubernetes-in-action/chapter-5/144

ExternalName

- 외부 서비스의 별칭으로 사용되는 서비스

. Pod는 서비스의 FQDN을 사용하는 대신 external-service.default.svc.cluster.local 로 외부 서비스에 연결

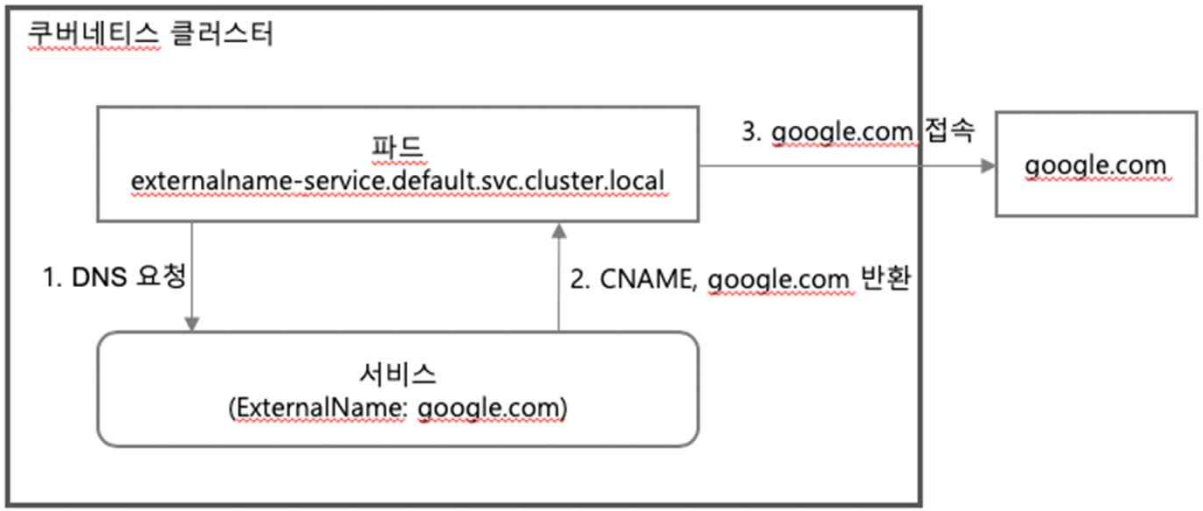
. Service를 사용하는 Pod에서 실제 서비스 이름과 위치가 숨겨짐

. 나중에 Service spec 수정하여 다른 Service를 가리킬 수 있음

추가 정보

external-name.yaml

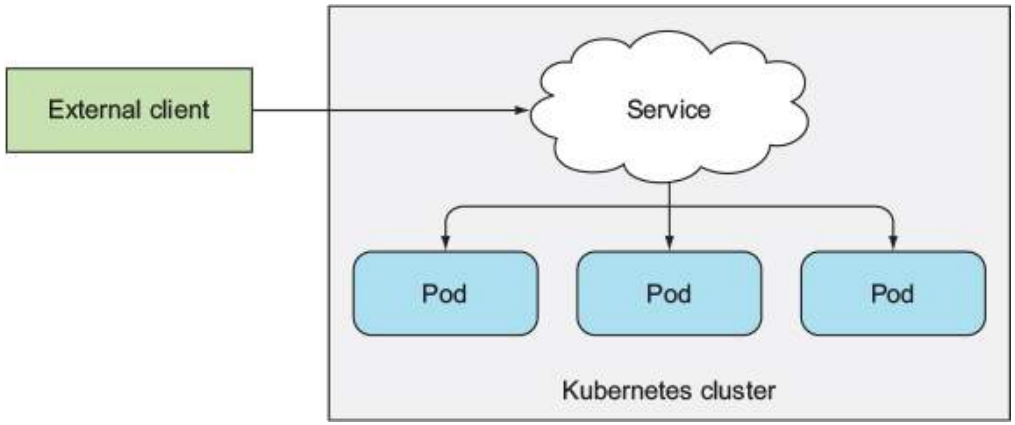
```
apiVersion: v1
kind: Service
metadata:
  name: external-service

spec:
  type: ExternalName
  externalName: google.com
```



※ 참고 : https://livebook.manning.com/book/kubernetes-in-action/chapter-5/144

Exposing a service to external clients

- NodePort
- LoadBalancer
- Ingress



※ 참고 : https://livebook.manning.com/book/kubernetes-in-action/chapter-5/158

NodePort

- 모든 Node에 특정 Port를 할당하고 Service를 구성하는 Pod로 들어오는 연결을 전달

  . 모든 Node에서 동일한 Port 번호 사용

svc-nodeport.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: svc-nodeport

spec:
  type: NodePort
  ports:
  - port: 80
    targetPort: 8080
    nodePort: 30123

  selector:
    app: node-web
```

```
❯ kubectl create -f svc-nodeport.yaml
service/svc-nodeport created

❯ kubectl get services -o wide
NAME           TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE    SELECTOR
kubernetes     ClusterIP   10.96.0.1       <none>        443/TCP        124d   <none>
svc-nodeport   NodePort    10.110.15.244   <none>        80:30123/TCP   6s     app=node-web

❯ kubectl get nodes -o wide
NAME         STATUS   ROLES                  AGE    VERSION   INTERNAL-IP       EXTERNAL-IP   OS-IMAGE             KERNEL-VERSION     CONTAINER-RUNTIME
master-stg   Ready    control-plane,master   124d   v1.20.1   192.168.100.119   <none>        Ubuntu 20.04.2 LTS   5.4.0-72-generic   docker://20.10.1
worker1      Ready    <none>                 124d   v1.20.1   192.168.100.112   <none>        Ubuntu 20.04.2 LTS   5.4.0-72-generic   docker://20.10.1
worker2      Ready    <none>                 6d3h   v1.20.1   192.168.100.111   <none>        Ubuntu 20.04.2 LTS   5.4.0-72-generic   docker://20.10.1

❯ curl http://192.168.100.119:30123
You've hit rs-node-web-6fz7s

❯ curl http://192.168.100.112:30123
You've hit rs-node-web-v6khr

❯ curl http://192.168.100.111:30123
You've hit rs-node-web-v6khr
```

LoadBalancer

- Service type을 LoadBalancer로 선언 하면 Provider에 의해서 LoadBalancer가 생성

  . 생성된 LoadBalancer는 외부 공개 IP를 가지게 되며 해당 IP로 접근 가능

svc-loadbalancer.yaml

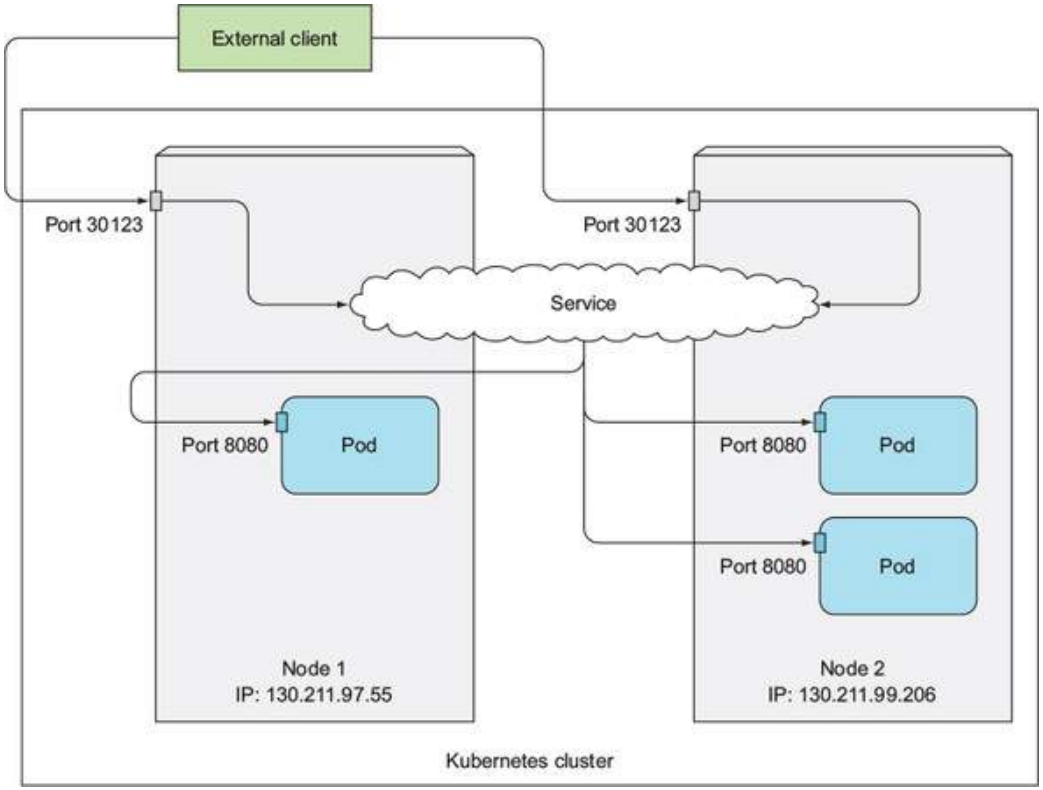
```
apiVersion: v1
kind: Service
metadata:
  name: svc-loadbalancer

spec:
  type: LoadBalancer
  ports:
  - port: 80
    targetPort: 8080

selector:
  app: node-web
```

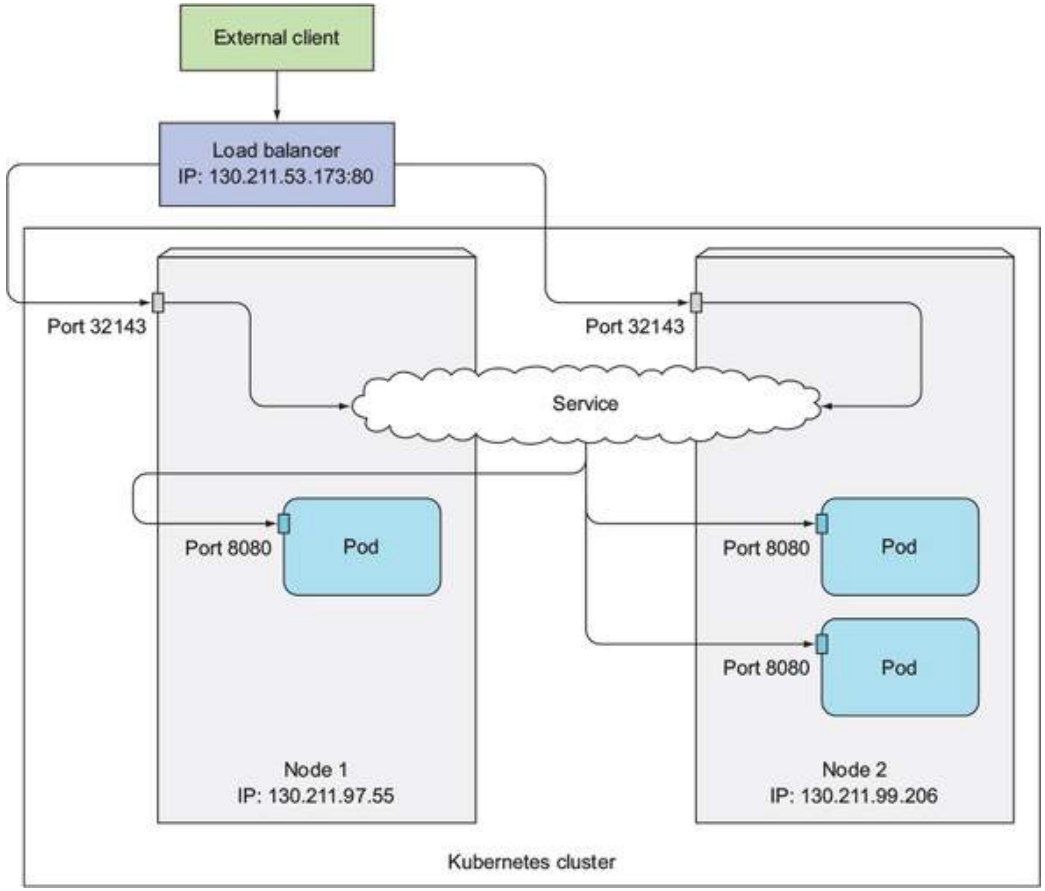
```
❯ kubectl create -f svc-loadbalancer.yaml
service/svc-loadbalancer created

❯ kubectl get services -o wide -w
NAME               TYPE           CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE     SELECTOR
kubernetes         ClusterIP      10.96.0.1       <none>        443/TCP        124d    <none>
svc-loadbalancer   LoadBalancer   10.110.162.50   <pending>     80:32701/TCP   8m53s   app=node-web
svc-nodeport       NodePort       10.110.15.244   <none>        80:30123/TCP   24m     app=node-web
```

※ On-Prem 환경에서는 별도의 LoadBalancer 구축 필요 (ex. Metal LB)

Public Cloud 환경에서는 제공해주는 LoadBalancer 바로 사용 가능

NodePort vs LoadBalancer

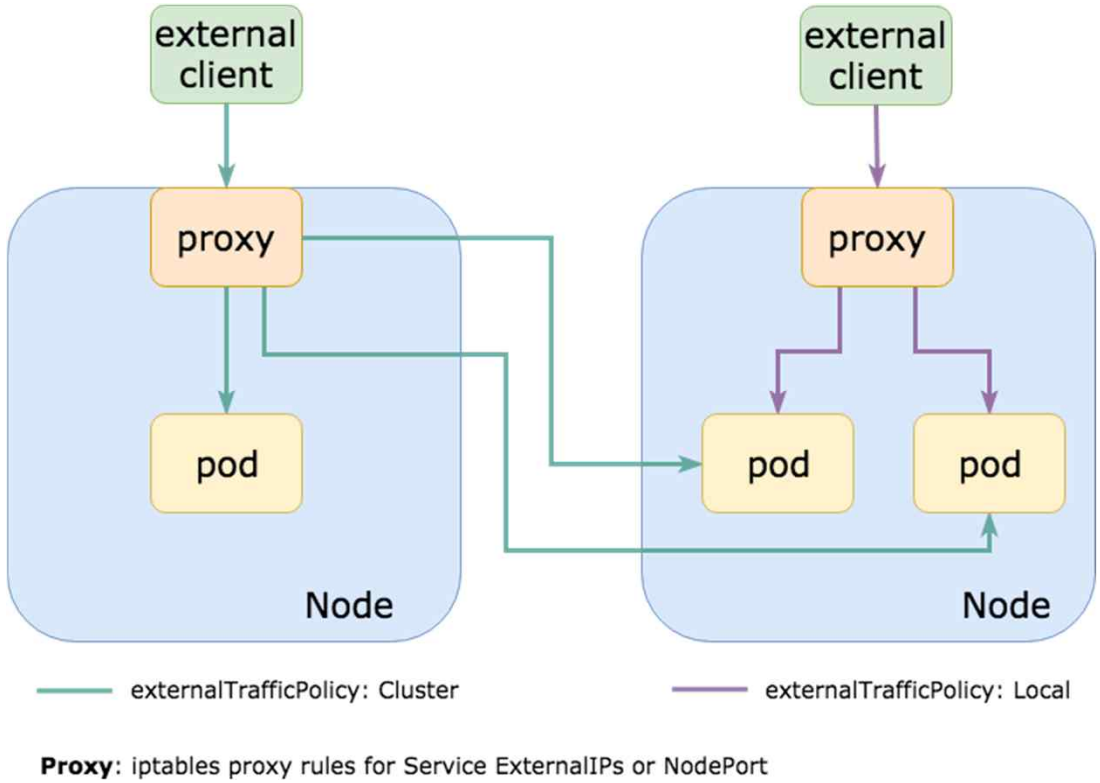




※ 참고 : https://livebook.manning.com/book/kubernetes-in-action/chapter-5/219

externalTrafficPolicy - 1/2

- 불필요한 네트워크 hop 발생
- 클라이언트 IP가 보존되지 않음



※ 참고 : https://coffeewhale.com/kubernetes/mistake/2020/11/29/mistake-10/

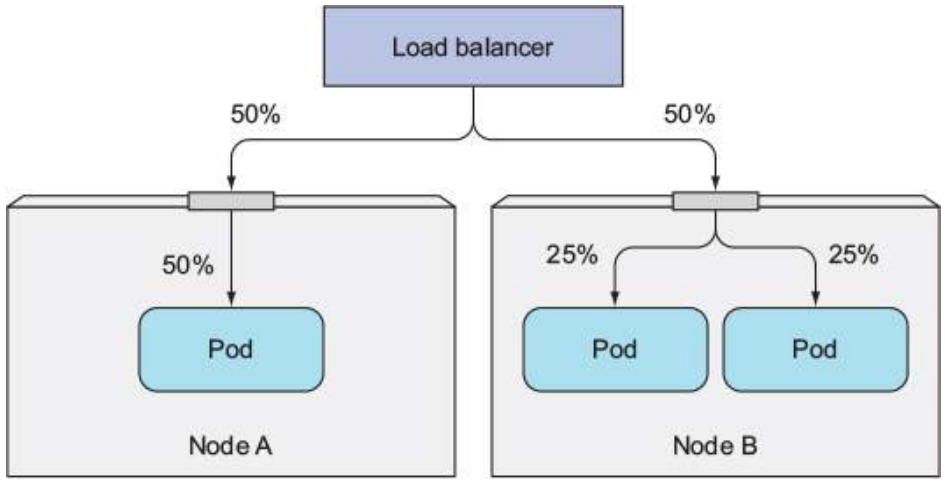
externalTrafficPolicy - 2/2

- 오직 로컬 Endpoint로만 proxy 요청, 다른 node로 트래픽 전달하지 않음

  . 원본 소스 IP 주소를 보존

svc-externaltrafficpolicy.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: svc-loadbalancer

spec:
  type: LoadBalancer
  ports:
  - port: 80
    targetPort: 8080

  selector:
    app: node-web

  externalTrafficPolicy: Local
```



※ "externalTrafficPolicy: Local" 설정에 따른 문제점 : 균등히 배부되지 않을 수 있음

※ 참고 : https://livebook.manning.com/book/kubernetes-in-action/chapter-5/230

Ingress - 1/2

- 클라이언트가 요청한 호스트와 경로에 따라 요청을 전달할 서비스가 결정

  . HTTP(S)기반의 L7 LoadBalancing 기능을 제공하는 컴포넌트

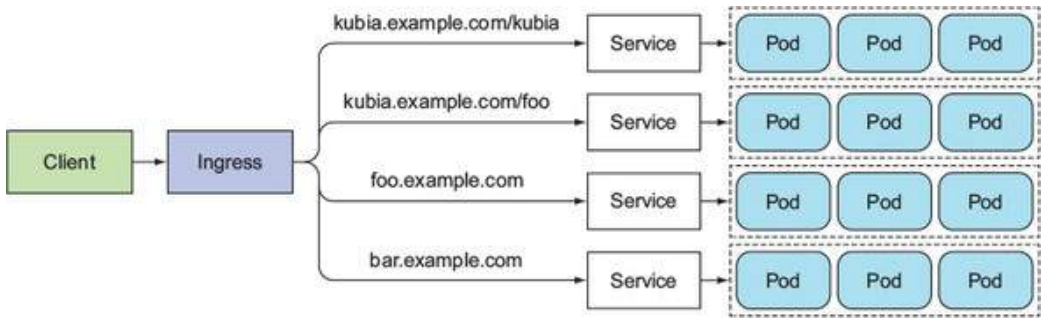
- Ingress 구현체

  . 구글 클라우드 : https://github.com/kubernetes/ingress-gce

  . 오픈소스 : https://github.com/kubernetes/ingress-nginx

  . 상용 : F5 BIG IP Controller (http://clouddocs.f5.com/products/connectors/k8s-bigip-ctlr)

- 각 구현체마다 설정 방법 차이 존재



※ 참고 : https://livebook.manning.com/book/kubernetes-in-action/chapter-5/243

Ingress - 2/2

- 오픈소스 Ingress 구현체 설치

  . https://docs.nginx.com/nginx-ingress-controller/installation/installation-with-manifests/

실습