

# [ Ingress LAB: NodePort를 이용한 LoadBalancer ]

## # Deployment 생성 #

### - phpserver / goapp deployment 생성

```
kevin@k8s-master:~/LABs$ mkdir ing-https && cd $_
kevin@k8s-master:~/LABs/ing-https$
kevin@k8s-master:~/LABs/ing-https$ vi phpserver-go-deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: phpserver-deployment
  labels:
    app: phpserver
spec:
  replicas: 3
  selector:
    matchLabels:
      app: phpserver
  template:
    metadata:
      labels:
        app: phpserver
    spec:
      containers:
        - name: phpserver-container
          image: 본인ID/phpserver:2.0
          ports:
            - containerPort: 80
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: goapp-deployment
  labels:
    app: goapp
spec:
  replicas: 3
  selector:
    matchLabels:
      app: goapp
  template:
    metadata:
      labels:
        app: goapp
    spec:
      containers:
        - name: goapp-container
          image: 본인ID/goapp:1.0
          ports:
            - containerPort: 9090

kevin@k8s-master:~/LABs/ing-https$ kubectl apply -f phpserver-go-deployment.yaml
```

### # Service 생성 #

```
kevin@k8s-master:~/LABs/ing-https$ vi phpserver-go-svc.yaml
```

```
apiVersion: v1
kind: Service
metadata:
  name: phpserver-lb
spec:
  type: NodePort
  ports:
    - port: 80
      targetPort: 80
  selector:
    app: phpserver
---
```

```
apiVersion: v1
kind: Service
metadata:
  name: goapp-lb
spec:
  type: NodePort
  ports:
    - port: 80
      targetPort: 9090
  selector:
    app: goapp
```

```
kevin@k8s-master:~/LABs/ing-https$ kubectl apply -f phpserver-go-svc.yaml
```

### # secret 생성 #

```
kevin@k8s-master:~/LABs/ing-https$ kubectl get secrets
```

NAME	TYPE	DATA	AGE
account-pwd-secret	Opaque	2	112m
dshub-https	Opaque	2	82m

```
kevin@k8s-master:~/LABs/ing-https$ openssl genrsa -out server.key 2048
Generating RSA private key, 2048 bit long modulus (2 primes)
.....+++++
.....+++++
e is 65537 (0x010001)
```

```
kevin@k8s-master:~/LABs/ing-https$ openssl req -new -x509 -key server.key -out server.cert
-days 360 -subj /CN=php.kakao.io,goapp.kakao.io
```

```
kevin@k8s-master:~/LABs/ing-https$ kubectl create secret tls k8s-secret
--cert=server.cert --key=server.key
secret/k8s-secret created
```

```
kevin@k8s-master:~/LABs/ing-https$ kubectl get secrets
```

NAME	TYPE	DATA	AGE
account-pwd-secret	Opaque	2	112m
dshub-https	Opaque	2	82m
k8s-secret	kubernetes.io/tls	2	19s

## # Ingress 생성 #

```
kevin@k8s-master:~/LABs/ing-https$ vi phpserver-go-ingress.yaml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: phpserver-goapp-ingress
spec:
  tls:
  - hosts:
    - php.kakao.io
    - goapp.kakao.io
    secretName: k8s-secret
  rules:
  - host: php.kakao.io
    http:
      paths:
      - path: /
        pathType: Prefix
        backend:
          service:
            name: phpserver-lb
            port:
              number: 80
  - host: goapp.kakao.io
    http:
      paths:
      - path: /
        pathType: Prefix
        backend:
          service:
            name: goapp-lb
            port:
              number: 80
```

```
kevin@k8s-master:~/LABs/ing-https$ kubectl apply -f phpserver-go-ingress.yaml
ingress.networking.k8s.io/phpserver-goapp-ingress created
```

## # Ingress 조회 #

```
kevin@k8s-master:~/LABs/ing-https$ kubectl get ingress
```

NAME	CLASS	HOSTS	ADDRESS	PORTS	AGE
phpserver-goapp-ingress	<none>	php.kakao.io,goapp.kakao.io		80, 443	18s

```
kevin@k8s-master:~/LABs/ing-https$ kubectl get deploy,po,svc,ingress -o wide
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE	CONTAINERS	IMAGES	SELECTOR
deployment.apps/goapp-deployment	3/3	3	3	8m37s	goapp-container	dbgurum/goapp:1.0	app=goapp
deployment.apps/phpserver-deployment	3/3	3	3	8m37s	phpserver-container	dbgurum/phpserver:2.0	app=phpserver

NAME	READY	STATUS	RESTARTS	AGE	IP	NODE	NOMINATED NODE	READINESS GATES
pod/goapp-deployment-6975fdf7dd-dfb4f	1/1	Running	0		8m37s	10.111.156.117	k8s-node1	<none>
pod/goapp-deployment-6975fdf7dd-j9qqj	1/1	Running	0		8m37s	10.109.131.50	k8s-node2	<none>
pod/goapp-deployment-6975fdf7dd-ncv6k	1/1	Running	0		8m37s	10.111.156.118	k8s-node1	<none>
pod/phpserver-deployment-c45649987-4988s	1/1	Running	0		8m37s	10.109.131.48	k8s-node2	<none>
pod/phpserver-deployment-c45649987-jbrm5	1/1	Running	0		8m37s	10.109.131.49	k8s-node2	<none>
pod/phpserver-deployment-c45649987-jscjx	1/1	Running	0		8m37s	10.111.156.119	k8s-node1	<none>

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE	SELECTOR
service/goapp-lb	NodePort	10.110.189.28	<none>	80:31293/TCP	7m37s	app=goapp
service/phpserver-lb	NodePort	10.107.180.138	<none>	80:32204/TCP	7m37s	app=phpserver

NAME	CLASS	HOSTS	ADDRESS	PORTS	AGE
ingress.networking.k8s.io/phpserver-goapp-ingress	<none>	php.kakao.io,goapp.kakao.io		80, 443	22m

### # host 접근을 하기 위한 추가 설정

```
kevin@k8s-master:~/LABs/ing-https$ sudo vi /etc/hosts
[sudo] password for kevin:
127.0.0.1      localhost
127.0.1.1      k8s-master
192.168.56.100 k8s-master      php.kakao.io      goapp.kakao.io
192.168.56.101 k8s-node1        php.kakao.io      goapp.kakao.io
192.168.56.102 k8s-node2        php.kakao.io      goapp.kakao.io
192.168.56.103 k8s-node3        php.kakao.io      goapp.kakao.io
```

### # goapp 접근 테스트: 각 pod로 접근하는 것을 확인

```
kevin@k8s-master:~/LABs/ing-https$ curl goapp.kakao.io:31293
hostname: goapp-deployment-6975fdf7dd-ncv6k
IP: [10.111.156.118]
```

```
kevin@k8s-master:~/LABs/ing-https$ curl goapp.kakao.io:31293
hostname: goapp-deployment-6975fdf7dd-dfb4f
IP: [10.111.156.117]
```

```
kevin@k8s-master:~/LABs/ing-https$ curl goapp.kakao.io:31293
hostname: goapp-deployment-6975fdf7dd-j9qqj
IP: [10.109.131.50]
```

```
kevin@k8s-master:~/LABs/ing-https$ curl php.kakao.io:32204
Container hostName & Port#: phpserver-deployment-c45649987-jscjx
```

```
kevin@k8s-master:~/LABs/ing-https$ curl php.kakao.io:32204
Container hostName & Port#: phpserver-deployment-c45649987-4988s
```

```
kevin@k8s-master:~/LABs/ing-https$ curl php.kakao.io:32204
Container hostName & Port#: phpserver-deployment-c45649987-jbrm5
```

Q) 아래와 같이 https로 접근이 가능하도록 연구해 보세요.

```
kevin@k8s-master:~/LABs/ing-https$ curl https://goapp.kakao.io:31293
```

```
kevin@k8s-master:~/LABs/ing-https$ curl https://php.kakao.io:32204
```