

# Sesión 12 : k8s

## k8s

### lab (traefik)

- traefik como ingress controller:

[traefik-rbac.yaml](#)

```
---
kind: ClusterRole
apiVersion: rbac.authorization.k8s.io/v1beta1
metadata:
  name: traefik-ingress-controller
rules:
  - apiGroups:
    - ""
    resources:
      - services
      - endpoints
      - secrets
    verbs:
      - get
      - list
      - watch
  - apiGroups:
    - extensions
    resources:
      - ingresses
    verbs:
      - get
      - list
      - watch
---
kind: ClusterRoleBinding
apiVersion: rbac.authorization.k8s.io/v1beta1
metadata:
  name: traefik-ingress-controller
roleRef:
  apiGroup: rbac.authorization.k8s.io
  kind: ClusterRole
  name: traefik-ingress-controller
subjects:
  - kind: ServiceAccount
    name: traefik-ingress-controller
    namespace: kube-system
```

[traefik-daemonset.yaml](#)

```
---
apiVersion: v1
kind: ServiceAccount
metadata:
  name: traefik-ingress-controller
  namespace: kube-system
---
kind: DaemonSet
apiVersion: extensions/v1beta1
metadata:
  name: traefik-ingress-controller
  namespace: kube-system
  labels:
    k8s-app: traefik-ingress-lb
spec:
  template:
    metadata:
      labels:
        k8s-app: traefik-ingress-lb
        name: traefik-ingress-lb
    spec:
      serviceAccountName: traefik-ingress-controller
      terminationGracePeriodSeconds: 60
      containers:
      - image: traefik
        name: traefik-ingress-lb
        ports:
          - name: http
            containerPort: 80
            hostPort: 80
          - name: admin
            containerPort: 8080
            hostPort: 8080
        securityContext:
          capabilities:
            drop:
            - ALL
          add:
            - NET_BIND_SERVICE
        args:
        - --api
        - --kubernetes
        - --logLevel=INFO
---
kind: Service
apiVersion: v1
metadata:
  name: traefik-ingress-service
  namespace: kube-system
spec:
  selector:
    k8s-app: traefik-ingress-lb
  ports:
    - protocol: TCP
      port: 80
```

```
name: web
- protocol: TCP
port: 8080
name: admin
```

esta versión no se ha desplegado correctamente VS la anterior

[traefik-deployment.yaml](#)

```
---
apiVersion: v1
kind: ServiceAccount
metadata:
  name: traefik-ingress-controller
  namespace: kube-system
---
kind: Deployment
apiVersion: extensions/v1beta1
metadata:
  name: traefik-ingress-controller
  namespace: kube-system
  labels:
    k8s-app: traefik-ingress-lb
spec:
  replicas: 1
  selector:
    matchLabels:
      k8s-app: traefik-ingress-lb
  template:
    metadata:
      labels:
        k8s-app: traefik-ingress-lb
        name: traefik-ingress-lb
    spec:
      serviceAccountName: traefik-ingress-controller
      terminationGracePeriodSeconds: 60
      containers:
      - image: traefik
        name: traefik-ingress-lb
        ports:
          - name: http
            containerPort: 80
          - name: admin
            containerPort: 8080
        args:
          - --api
          - --kubernetes
          - --logLevel=INFO
---
kind: Service
apiVersion: v1
metadata:
  name: traefik-ingress-service
  namespace: kube-system
spec:
```

```
selector:  
  k8s-app: traefik-ingress-lb  
ports:  
  - protocol: TCP  
    port: 80  
    name: web  
  - protocol: TCP  
    port: 8080  
    name: admin  
type: NodePort
```

## lab (who)

<https://medium.com/@geraldcroes/kubernetes-traefik-101-when-simplicity-matters-957eeede2cf8>

[whoami-deployment.yaml](#)

```
apiVersion: extensions/v1beta1  
kind: Deployment  
metadata:  
  name: whoami-deployment  
spec:  
  replicas: 1  
  selector:  
    matchLabels:  
      app: whoami  
  template:  
    metadata:  
      labels:  
        app: whoami  
    spec:  
      containers:  
        - name: whoami-container  
          image: containous/whoami
```

[whoami-service.yaml](#)

```
apiVersion: v1  
kind: Service  
metadata:  
  name: whoami-service  
spec:  
  ports:  
    - name: http  
      targetPort: 80  
      port: 80  
  selector:  
    app: whoami
```

[whoami-ingress.yaml](#)

```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: whoami-ingress
  annotations:
    kubernetes.io/ingress.class: traefik
spec:
  rules:
  - host: whoami.localhost
    http:
      paths:
      - path: /
        backend:
          serviceName: whoami-service
          servicePort: http
```

si queremos NO tocar el localhost para que resuelva **whoami.localhost**, podemos lanzar este comando: `curl -H 'Host: whoami.localhost' 192.168.99.100`

también podemos usar <http://nip.io>:

[whoami-ingress.yaml](#)

```
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: whoami-ingress
  annotations:
    kubernetes.io/ingress.class: traefik
spec:
  rules:
  - host: whoami-192-168-99-100.nip.io
    http:
      paths:
      - path: /
        backend:
          serviceName: whoami-service
          servicePort: http
```

[whoareyou-deployment.yaml](#)

```
apiVersion: extensions/v1beta1
kind: Deployment
metadata:
  name: whoareyou-deployment
spec:
  replicas: 2
  selector:
    matchLabels:
      app: whoareyou
  template:
    metadata:
      labels:
        app: whoareyou
```

```
spec:
  containers:
  - name: whoareyou-container
    image: containous/whoami
---
apiVersion: v1
kind: Service
metadata:
  name: whoareyou-service
spec:
  ports:
  - name: http
    targetPort: 80
    port: 80
  selector:
    app: whoareyou
---
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: whoareyou-ingress
  annotations:
    kubernetes.io/ingress.class: traefik
spec:
  rules:
  - host: whoareyou-192-168-99-100.nip.io
    http:
      paths:
      - path: /
        backend:
          serviceName: whoareyou-service
          servicePort: http
```

## lab (flocker)

- minukube dashboard : lanza proceso dashboard web

## instalar (sin flocker) un WP y MYSQL

- mysql:

[mysql-secrets.yaml](#)

```
apiVersion: v1
kind: Secret
metadata:
  name: mysql-secret
type: Opaque
data:
  password: cm9vdA==
```

## mysql.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: wordpress-mysql
  labels:
    app: wordpress
spec:
  ports:
    - port: 3306
  selector:
    app: wordpress
    tier: mysql
  clusterIP: None
---
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: mysql-pv-claim
  labels:
    app: wordpress
spec:
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 20Gi
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: wordpress-mysql
  labels:
    app: wordpress
spec:
  selector:
    matchLabels:
      app: wordpress
      tier: mysql
  strategy:
    type: Recreate
  template:
    metadata:
      labels:
        app: wordpress
        tier: mysql
    spec:
      containers:
        - image: mysql:5.6
          name: mysql
          env:
            - name: MYSQL_ROOT_PASSWORD
              valueFrom:
                secretKeyRef:
                  name: mysql-secret
```

```
    key: password
  ports:
    - containerPort: 3306
      name: mysql
  volumeMounts:
    - name: mysql-persistent-storage
      mountPath: /var/lib/mysql
  volumes:
    - name: mysql-persistent-storage
      persistentVolumeClaim:
        claimName: mysql-pv-claim
```

## wordpress.yaml

```
apiVersion: v1
kind: Service
metadata:
  name: wordpress-service
  labels:
    app: wordpress
spec:
  ports:
    - name: http
      targetPort: 80
      port: 80
# - port: 80
  selector:
    app: wordpress
    tier: frontend
# type: LoadBalancer
---
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: wp-pv-claim
  labels:
    app: wordpress
spec:
  accessModes:
    - ReadWriteOnce
  resources:
    requests:
      storage: 20Gi
---
apiVersion: apps/v1
kind: Deployment
metadata:
  name: wordpress
  labels:
    app: wordpress
spec:
# replicas: 1
  selector:
    matchLabels:
```

```

    app: wordpress
    tier: frontend
# strategy:
# type: Recreate
template:
  metadata:
    labels:
      app: wordpress
      tier: frontend
  spec:
    containers:
      - image: wordpress:4.8-apache
        name: wordpress
        env:
          - name: WORDPRESS_DB_HOST
            value: wordpress-mysql
          - name: WORDPRESS_DB_PASSWORD
            valueFrom:
              secretKeyRef:
                name: mysql-secret
                key: password
        ports:
          - containerPort: 80
            name: wordpress
        volumeMounts:
          - name: wordpress-persistent-storage
            mountPath: /var/www/html
        volumes:
          - name: wordpress-persistent-storage
            persistentVolumeClaim:
              claimName: wp-pv-claim
    ---
apiVersion: extensions/v1beta1
kind: Ingress
metadata:
  name: wordpress-ingress
  annotations:
    kubernetes.io/ingress.class: traefik
spec:
  rules:
    - host: wordpress-192-168-99-100.nip.io
      http:
        paths:
          - path: /
            backend:
              serviceName: wordpress-service
              servicePort: http

```

- kubectl edit <objeto>
- kubectl scale --replicas=3 deployment/<pod>
- kubectl autoscale --min=3 --max=10 --cpu-percent=2 deployment/<pod>
- kubectl get all --all-namespaces
- kubectl get all --namespace=<namespace>
  - lo que no se muestra:
    - kubectl get pv

- kubectl get pvc
- kubectl get ingresses
- kubectl api-resources

## flocker

- instalación: <https://flocker.readthedocs.io/en/latest/kubernetes-integration/> ← fails!
- <https://github.com/linux-on-ibm-z/docs/wiki/Building-Flocker> ← fails!
- <https://flocker.readthedocs.io/en/latest/supported/flockercontainers.html#flocker-containers>

## objetos kubernetes

- replicationcontroller: <https://kubernetes.io/docs/concepts/workloads/controllers/replicationcontroller/>
- replicaset: <https://kubernetes.io/docs/concepts/workloads/controllers/replicaset/>
- deployment: <https://kubernetes.io/docs/concepts/workloads/controllers/deployment/>
  - rollout, concepto de log de revisiones de deployment
  - sección deployment, sección replicaset, sección pod
- daemonset: <https://kubernetes.io/docs/concepts/workloads/controllers/daemonset/>
- statefulsets: <https://kubernetes.io/docs/concepts/workloads/controllers/statefulset/>
  - storageclassname : servicio de gestión de volúmenes
- persistentvolumes: <https://kubernetes.io/docs/concepts/storage/persistent-volumes/>
  - modos:
    - readOnlyOnce : solo un POD puede usar ese volumen para lectura/escritura
    - readOnlyMany
    - readOnlyMany
  - persistentVolumeProvisioning:  
<https://github.com/kubernetes/examples/blob/master/staging/persistent-volume-provisioning/README.md>
  - storage classes: <https://kubernetes.io/docs/concepts/storage/storage-classes/>
- secrets: <https://kubernetes.io/docs/concepts/configuration/secret/>
- labels: <https://kubernetes.io/docs/concepts/overview/working-with-objects/labels/>

## otros

- helm fetch <> : descarga

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