

# Lab: Deploy Kyverno and Enforce `costcenter` Label on Pods

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## Objective

1. Deploy Kyverno in your cluster
  2. Create a Kyverno policy that **validates all pods** have a `costcenter` label
  3. Test pod creation with and without the label
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## Prerequisites

- A running Kubernetes cluster (Minikube, Kind, etc.)
  - `kubectl` installed
  - Cluster-admin access
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## Lab Structure

```
kyverno-lab/  
├── policies/  
│   └── require-costcenter-label.yaml  
└── test/  
    ├── good-pod.yaml  
    └── bad-pod.yaml
```

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## Install Kyverno

```
kubectl create -f  
https://github.com/kyverno/kyverno/releases/latest/download/install.yaml
```

Verify it's running:

```
kubectl get pods -n kyverno
```

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## Create the Required Label Policy

 policies/require-costcenter-label.yaml

```
apiVersion: kyverno.io/v1
kind: ClusterPolicy
metadata:
  name: require-costcenter-label
spec:
  validationFailureAction: Enforce
  rules:
    - name: check-costcenter-label
      match:
        resources:
          kinds:
            - Pod
      validate:
        message: "All pods must have a 'costcenter' label."
        pattern:
          metadata:
            labels:
              costcenter: "?*"

```

Apply the policy:


```
kubectl apply -f policies/require-costcenter-label.yaml
```

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## Test the Policy

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### Good Pod

 test/good-pod.yaml

```
apiVersion: v1
kind: Pod
metadata:
  name: good-nginx
  labels:
    costcenter: devops
spec:
  containers:
  - name: nginx
    image: nginx
```


Apply:

```
kubectl apply -f test/good-pod.yaml
```

● Should succeed.

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✗ Bad Pod (Missing `costcenter` )

 test/bad-pod.yaml

```
apiVersion: v1
kind: Pod
metadata:
  name: bad-nginx
spec:
  containers:
  - name: nginx
    image: nginx
```

Apply:

```
kubectl apply -f test/bad-pod.yaml
```

● Should be rejected with:

```
Error from server: admission webhook ... denied the request: All pods must have a
'costcenter' label.
```

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## Summary

Component	Description
Kyverno	Validating admission controller
ClusterPolicy	Enforces label presence on pod creation
<code>costcenter</code> label	Required label to pass policy check

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## Cleanup

```
kubectl delete -f test/  
kubectl delete -f policies/require-costcenter-label.yaml  
kubectl delete -f  
https://github.com/kyverno/kyverno/releases/latest/download/install.yaml
```

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