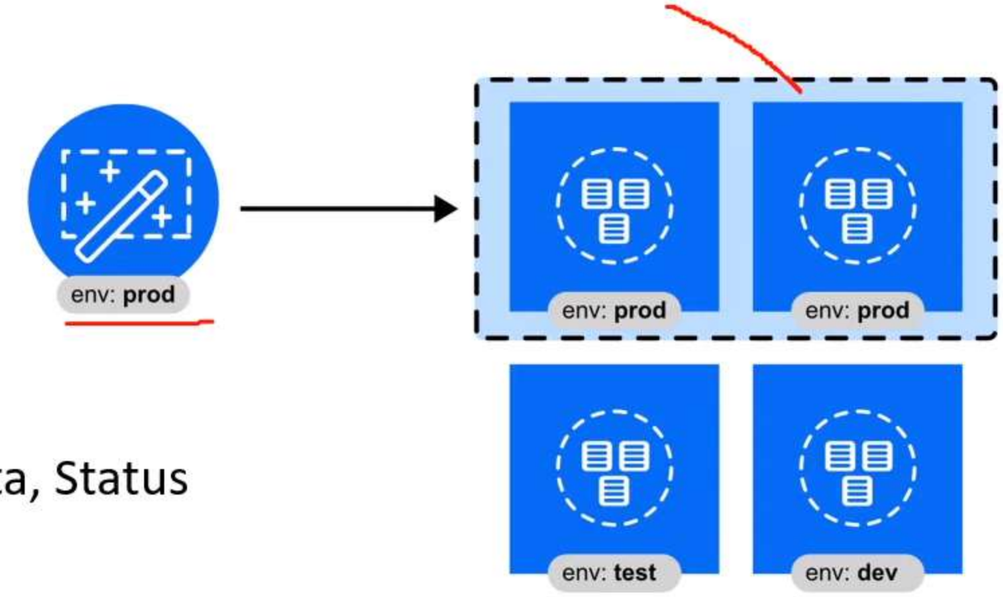
Selectors

Selectors are a way of selecting one or more Kubernetes Objects.

In Kubernetes there are **3 types** of selectors:

1. Label Selector

Select K8s objects based on the applied label



2. Field Selector

Select K8s objects based on object data eg. Metadata, Status

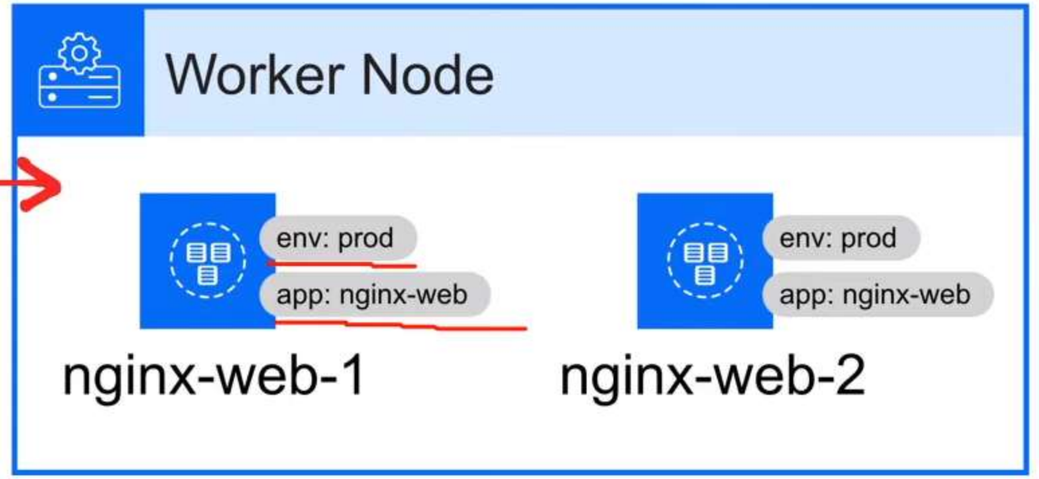
3. Node Selector

Select nodes for very specific pod placement

Label Selector – Applying Labels


```yaml
apiVersion: v1
kind: Pod
metadata:
  name: nginx-web-1
  labels:
    env: prod
    app: nginx-web
spec:
  containers:
    - name: nginx
      image: nginx
      ports:
        - containerPort: 80
---
apiVersion: v1
kind: Pod
metadata:
  name: nginx-web-2
  labels:
    env: prod
    app: nginx-web
spec:
  containers:
    - name: nginx
      image: nginx
      ports:
        - containerPort: 80
```

Label Selectors define labels as a **key value pair** under metadata in a Manifest file




```
kubectl get pods --show-labels
```

You can use the **–show-labels** flag to see labels.

```
kubectl label pods apache-web owner=devops
```

You can apply labels with the **label** command

Recommended Labels

These are recommended labels that ”should” **apply to every resource object**:

app.kubernetes.io/name
The name of the application

app.kubernetes.io/instance
A unique name identifying the instance of an application

app.kubernetes.io/version
The current version of the application (e.g., a semantic version, revision hash, etc.)

app.kubernetes.io/component
The component within the architecture

app.kubernetes.io/part-of
The name of a higher level application this one is part of

app.kubernetes.io/managed-by
The tool being used to manage the operation of an application

app.kubernetes.io/created-by
The controller/user who created this resource

Shared labels and annotations share a common prefix: app.kubernetes.io. Labels without a prefix are private to users.

```yaml
# This is an excerpt
apiVersion: apps/v1
kind: StatefulSet
metadata:
  labels:
    app.kubernetes.io/name: mysql
    app.kubernetes.io/instance: mysql-abcxzy
    app.kubernetes.io/version: "5.7.21"
    app.kubernetes.io/component: database
    app.kubernetes.io/part-of: wordpress
    app.kubernetes.io/managed-by: helm
    app.kubernetes.io/created-by: controller-manager
```

Label Selector – Selecting Labels

K8 objects like **Services** and **ReplicaSets** will target pods based on label selectors

```yaml
apiVersion: v1
kind: Service
metadata:
  name: my-service
spec:
  selector:
    app: MyApp
  ports:
    - protocol: TCP
      port: 80
      targetPort: 9376
```

```yaml
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  name: frontend
  labels:
    app: guestbook
    tier: frontend
spec:
  replicas: 3
  selector:
    matchLabels:
      tier: frontend
  template:
    metadata:
      labels:
        tier: frontend
    spec:
      containers:
      - name: php-redis
        image: gcr.io/google_samples/gb-frontend:v3
```

Notice the selector syntax varies for different templates

You can use selector in the KubeCTL command line with **--selector** or it alias **-l**

```
kubectl get pods --selector env=development
kubectl get pods -l env=development
```

Annotations

Kubernetes annotations allows you to attach **arbitrary non-identifying metadata to objects**.
Clients (eg. tools and libraries) can and my require this annotation in order to work.

Ingress often use annotation to communicate to Ingress Controllers.

To use the Nginx Ingress Controller you need To specifc a rewrite-target path.

```yaml
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: minimal-ingress
  annotations:
    nginx.ingress.kubernetes.io/rewrite-target: /
spec:
  rules:
  - http:
      paths:
      - path: /testpath
        pathType: Prefix
        backend:
          service:
            name: test
            port:
              number: 80
```