

# Referensi Cepat Kubernetes

kubectl, pod, deployment, service, config, debugging

## Dasar kubectl

### Info Cluster

```
kubectl cluster-info
kubectl get nodes
kubectl config current-context
kubectl config use-context my-cluster
```

### Perintah Utama

<b>kubectl get &lt;resource&gt;</b>	Tampilkan daftar resource
<b>kubectl describe &lt;resource&gt; &lt;name&gt;</b>	Info detail resource
<b>kubectl create -f file.yaml</b>	Buat resource dari file
<b>kubectl apply -f file.yaml</b>	Buat atau perbarui resource
<b>kubectl delete -f file.yaml</b>	Hapus resource dari file
<b>kubectl edit &lt;resource&gt; &lt;name&gt;</b>	Edit resource di tempat
<b>kubectl api-resources</b>	Tampilkan semua tipe resource

### Format Output

<b>-o wide</b>	Kolom tambahan (IP, node)
<b>-o yaml</b>	Output YAML lengkap
<b>-o json</b>	Output JSON lengkap
<b>-o jsonpath='{.spec}'</b>	Ekstrak field tertentu
<b>--sort-by=.metadata.name</b>	Urutkan output berdasarkan field

## Pod

### Operasi Pod

```
kubectl get pods
kubectl get pods -A # all namespaces
kubectl run nginx --image=nginx # quick pod
kubectl delete pod nginx
```

### YAML Pod

```
apiVersion: v1
kind: Pod
metadata:
  name: myapp
  labels: { app: myapp }
spec:
  containers:
    - name: app
      image: nginx:1.27
      ports:
        - containerPort: 80
```

### Nilai Status Pod

<b>Running</b>	Semua container sudah berjalan
<b>Pending</b>	Menunggu penjadwalan atau pull image
<b>CrashLoopBackOff</b>	Container terus crash dan restart
<b>ImagePullBackOff</b>	Gagal mengunduh image container
<b>Completed</b>	Sesuai berjalan (Jobs)

## Deployment

### YAML Deployment

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: web
spec:
  replicas: 3
  selector:
    matchLabels: { app: web }
  template:
    metadata:
      labels: { app: web }
    spec:
      containers:
        - name: web
          image: nginx:1.27
          ports:
            - containerPort: 80
```

### Perintah Deployment

<b>kubectl get deploy</b>	Tampilkan deployment
<b>kubectl scale deploy web --replicas=5</b>	Skala replica
<b>kubectl set image deploy/web web=nginx:1.28</b>	Update image (rolling)
<b>kubectl rollout status deploy/web</b>	Pantau progres rollout
<b>kubectl rollout undo deploy/web</b>	Rollback ke revisi sebelumnya
<b>kubectl rollout history deploy/web</b>	Lihat riwayat revisi

## Service

### Jenis Service

<b>ClusterIP</b>	Internal saja (default)
<b>NodePort</b>	Ekspos di IP setiap node pada port statis
<b>LoadBalancer</b>	Load balancer eksternal (cloud)
<b>ExternalName</b>	Alias DNS ke layanan eksternal

### YAML Service

```
apiVersion: v1
kind: Service
metadata:
  name: web-svc
spec:
  type: ClusterIP
  selector: { app: web }
  ports:
    - port: 80
      targetPort: 80
```

### Ekspos Cepat

```
kubectl expose deploy web --port=80 --type=ClusterIP
kubectl expose deploy web --port=80 --type=NodePort
kubectl get svc
```

## ConfigMap & Secret

### ConfigMap

```
kubectl create configmap app-cfg \
  --from-literal=DB_HOST=db.example.com \
  --from-file=config.ini
```

### Secret

```
kubectl create secret generic db-creds \
  --from-literal=username=admin \
  --from-literal=password=s3cret
```

### Penggunaan dalam Pod

```
# As environment variables
envFrom:
  - configMapRef: { name: app-cfg }
  - secretRef: { name: db-creds }

# As volume mount
volumes:
  - name: cfg
    configMap: { name: app-cfg }
```

### Perintah

<b>kubectl get cm</b>	Tampilkan ConfigMap
<b>kubectl get secret</b>	Tampilkan Secret
<b>kubectl describe cm app-cfg</b>	Tampilkan data ConfigMap
<b>kubectl get secret db-creds -o yaml</b>	Tampilkan Secret (base64-encoded)

## Namespace

### Perintah Namespace

<b>kubectl get ns</b>	Tampilkan namespace
<b>kubectl create ns staging</b>	Buat namespace
<b>kubectl delete ns staging</b>	Hapus namespace dan semua resource
<b>kubectl get pods -n staging</b>	Tampilkan pod di namespace
<b>kubectl get pods -A</b>	Tampilkan pod di semua namespace

### Atur Namespace Default

```
kubectl config set-context --current \
  --namespace=staging
```

## Volume

### PersistentVolumeClaim

```
apiVersion: v1
kind: PersistentVolumeClaim
metadata:
  name: data-pvc
spec:
  accessModes: [ReadWriteOnce]
  resources:
    requests: { storage: 10Gi }
```

### Mount dalam Pod

```
volumes:
  - name: data
    persistentVolumeClaim:
      claimName: data-pvc
containers:
  - volumeMounts:
    - name: data
      mountPath: /app/data
```

### Jenis Volume

<b>emptyDir</b>	Direktori sementara, dihapus bersama pod
<b>hostPath</b>	Mount path filesystem host
<b>persistentVolumeClaim</b>	Penyimpanan persisten (PVC)
<b>configMap</b>	Mount ConfigMap sebagai file
<b>secret</b>	Mount Secret sebagai file

# Referensi Cepat Kubernetes

## Ingress

### YAML Ingress

```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: web-ingress
spec:
  rules:
    - host: app.example.com
      http:
        paths:
          - path: /
            pathType: Prefix
            backend:
              service:
                name: web-svc
                port: { number: 80 }
```

### Catatan Ingress

<b>Ingress Controller</b>	Wajib ada (nginx-ingress, traefik, dll.)
<b>pathType: Prefix</b>	Cocokkan awalan URL
<b>pathType: Exact</b>	Cocokkan path URL tepat
<b>TLS</b>	Tambahkan bagian <b>tls</b> : dengan nama secret

## Debugging

### Perintah Diagnostik

<b>kubectl logs &lt;pod&gt;</b>	stdout/stderr container
<b>kubectl logs &lt;pod&gt; -c &lt;ctr&gt;</b>	Log container tertentu
<b>kubectl logs &lt;pod&gt; --previous</b>	Log dari container yang crash
<b>kubectl describe pod &lt;pod&gt;</b>	Event, kondisi, status
<b>kubectl exec -it &lt;pod&gt; -- sh</b>	Masuk shell ke container
<b>kubectl port-forward &lt;pod&gt; 8080:80</b>	Forward port lokal ke pod
<b>kubectl top pods</b>	Penggunaan CPU/memori (metrics-server)
<b>kubectl get events --sort-by=.lastTimestamp</b>	Timeline event cluster

### Pod Debug

```
kubectl run debug --rm -it --image=busybox -- sh
# or attach ephemeral container
kubectl debug -it <pod> --image=busybox
```

## Pola Umum

### Label & Selector

```
kubectl get pods -l app=web
kubectl get pods -l 'env in (prod,staging)'
kubectl label pod myapp env=prod
```

### Batas Resource

```
resources:
  requests: { cpu: 100m, memory: 128Mi }
  limits:   { cpu: 500m, memory: 256Mi }
```

## Liveness & Readiness

```
livenessProbe:
  httpGet: { path: /healthz, port: 8080 }
  initialDelaySeconds: 5
  periodSeconds: 10
readinessProbe:
  httpGet: { path: /ready, port: 8080 }
```

## Resep Cepat

<b>Dry run</b>	<b>kubectl apply -f file.yaml --dry-run=client</b>
<b>Generate YAML</b>	<b>kubectl create deploy web --image=nginx --dry-run=client -o yaml</b>
<b>Watch</b>	<b>kubectl get pods -w</b>
<b>Copy file</b>	<b>kubectl cp file.txt pod:/tmp/</b>
<b>Restart deploy</b>	<b>kubectl rollout restart deploy/web</b>