

# Minikube

A journey through key Kubernetes skills

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- Cluster setup and scheduling
- Services and networking
- ConfigMaps & Secrets
- RBAC access control
- Affinity, taints, tolerations



## **Lab 1-2: Minikube Multi-Node Cluster**

- Launch 3-node Minikube cluster
- Verify node roles and labels
- Deploy multi-pod app

## ⚙️ Lab 3-4: Scheduling, Affinity & Tolerations

- Use `nodeSelector` to target zones
- Apply node affinity via `matchExpressions`
- Taint nodes to prevent unsanctioned scheduling
- Use tolerations to bypass taints selectively

## Lab 5: Networking & Services

- Deploy sample pods with `kubectl run`
- Expose them via `ClusterIP`, then upgrade to `NodePort`
- Access services via `minikube service`
- Test networking using temporary pods like `busybox`

## Lab 6: ConfigMaps & Secrets

- Store app configs via ConfigMaps
- Secure sensitive info using Secrets
- Inject into pods as environment variables
- Validate with `printenv` inside pods



## Lab 7: RBAC Fundamentals

- Create service accounts, roles, rolebindings
- Limit access to specific verbs/resources
- Test permissions inside pods
- Confirm denied access to unauthorized resources