

KUBERNETES FROM ZERO · WORKLOADS & TROUBLESHOOTING 1 OF 14 · LESSON 13 · LESSON KIT · CHEAT SHEET

Kubernetes from Zero, part 13: Volumes, PersistentVolumes, claims and StorageClasses

emptyDir, claims, classes, and the commands from Lesson 13.

Every command ran on a three-node kind v0.33.0 cluster (node v1.37.0, kubectl v1.37.2) on 10 Nov 2026. Cluster: k8s-ep13.

THE ONE RULE

A Pod asks for storage with a PersistentVolumeClaim; a StorageClass makes the PersistentVolume. Check the reclaim policy before you delete a claim.

Who owns the bytes from the recap

OBJECT	WHAT THE LESSON SAYS	SCOPE
emptyDir	Scratch shared by the Pod's containers. It disappears with the Pod. Avoid hostPath. `medium: Memory` counts against memory.	the Pod
Claim	A PersistentVolumeClaim is your request. The Pod names the claim and never names the volume.	namespaced
PersistentVolume	The storage a claim binds to, one to one.	cluster-scoped
StorageClass	Names a provisioner and creates volumes on demand. kind's local-path class is the usual default.	cluster-scoped
First consumer	WaitForFirstConsumer: the claim stays Pending until a Pod uses it, so the volume can land on the Pod's node.	default is Immediate
ReadWriteOnce	Pods on that one node can share the volume.	kind's local-path supports this
ReadWriteMany	Many nodes. Needs a driver that supports it. kind's local-path does not.	ProvisioningFailed in the lab
ReadWriteOncePod	Exactly one Pod. CSI volumes only.	not the kind default
Delete / Retain	Delete takes the storage with the claim. Retain leaves a Released PV and the bytes.	check RECLAIM POLICY before you delete

Key commands commands verbatim from the lesson

Look before you delete

`kubectl get storageclass`
(default) marks the default

`kubectl get pvc,pv`
PVCs are namespaced, PVs are not

`kubectl describe pvc data`
read the Events when a claim stays Pending

`kubectl get pv <name> -o yaml`
look at nodeAffinity

`kubectl get csidrivers`
none on a stock kind cluster

SCAN FOR THE LESSON

Lesson: **Kubernetes from Zero, part 13: Volumes, PersistentVolumes, claims and StorageClasses**

https://aitamer.news/posts/k8s-from-zero-13-volumes-pv-pvc-storageclass/?utm_source=lessonkit&utm_medium=pdf&utm_campaign=k8s-13&utm_content=cheatsheet

NEXT IN THE SERIES **Next: Lesson 14, StatefulSets**. Kubernetes from Zero, part 14, StatefulSets. Lesson page

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