

KUBERNETES FROM ZERO · FOUNDATIONS 9 OF 12 · LESSON 9 · LESSON KIT · CHEAT SHEET

Kubernetes from Zero, part 9: ConfigMaps and Secrets

How settings reach a container, and the commands from Lesson 9.

Every command ran on a kind v0.33.0 cluster (node v1.37.0, kubectl v1.37.2) on 10 Nov 2026. Cluster: k8s-ep07.

THE ONE RULE

Keep settings out of images. Variables are read once at start; mounted files update. A Secret is base64, so guard who can read it.

How a container receives a setting

what updates, and what does not

PATH	WHAT THE LESSON SAYS	AFTER YOU EDIT THE OBJECT
One key as a variable	`env[].valueFrom.configMapKeyRef`. You name the variable.	fixed at container start
All keys as variables	`envFrom[].configMapRef`, with an optional `prefix`. Imports file keys too.	fixed at container start
Keys as files	`volumes[].configMap` plus `volumeMounts`.	updates after a delay (about a minute in the lab)
subPath	Mounts a single file.	never updated in a running Pod
Secret files	`volumes[].secret.secretName`, often `defaultMode: 0400`.	tmpfs on the node
stringData	Plain text in the manifest. Stored base64 in `data`.	you do not encode it
immutable: true	Every change becomes a new named object.	delete and recreate to change

The four rules in the recap

settings, updates, Secrets, immutability

1	**out of the image**	ConfigMaps and Secrets keep settings out of images. Containers read them as variables or files.
2	**updates**	Variables are fixed when the container starts. Volume files update after a delay. `subPath` files never do.
3	**Secret**	A Secret is base64-encoded and, by default, unencrypted in etcd. Limit who can read Secrets and who can create Pods.
4	**immutable**	`immutable: true` turns every change into a new, named version you can roll out and roll back.

Key commands

commands verbatim from the lesson

Create and read

```
kubectl create configmap app --from-literal=K=V
```
add `--dry-run=client -o yaml` to see the object

```
kubectl create configmap app --from-file=app.properties
```
the key is the file name

```
kubectl create secret generic db --from-literal=password=...
```
put your value after password=; no annotation with the value

```
kubectl get secret db -o jsonpath='{.data.password}' | \
  base64 -d
```
base64 is not encryption

```
kubectl rollout restart deployment/app
```
new Pods read new variable values

SCAN FOR THE LESSON

Lesson: **Kubernetes from Zero, part 9: ConfigMaps and Secrets**

https://aitamer.news/posts/k8s-from-zero-09-configmaps-and-secrets/?utm_source=lessonkit&utm_medium=pdf&utm_campaign=k8s-09&utm_content=cheatsheet

NEXT IN THE SERIES **Next: Lesson 10, probes and graceful shutdown**. Kubernetes from Zero, part 10, Probes and graceful shutdown. Lesson page

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