CI/CD Pipeline
K8s Cluster

Your CI/CD is Pushing Directly to Prod. Right Now.

Pipelines `kubectl apply`. Engineers deploy from laptops. Rollbacks = hope and prayer.

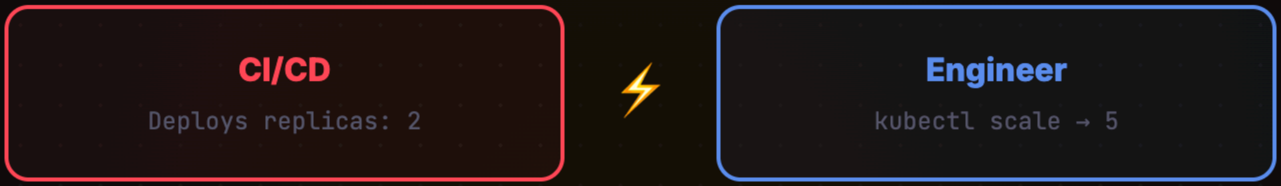
No audit trail.

No single source of truth.

Prod = whatever the last apply said.

⚠ THE PROBLEM

The Push Nightmare.



CI/CD

```
Deploys replicas: 2
```

⚡

Engineer

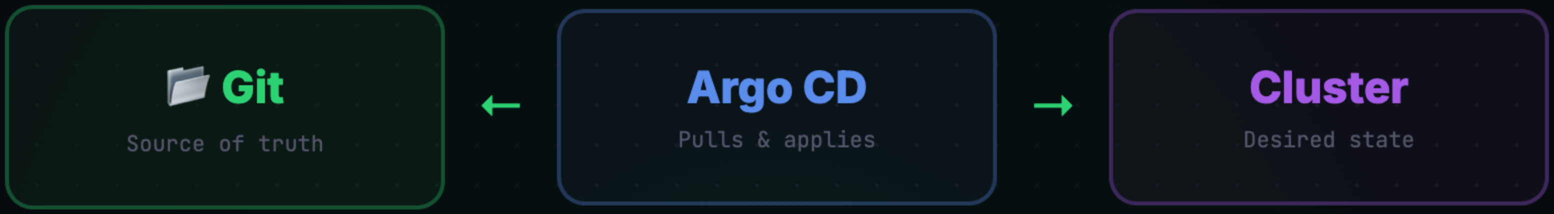
```
kubectl scale → 5
```

- 💀 CI pushes **replicas: 2**. Dev scales to 5 for load test. Next pipeline run overwrites it.
- 🔄 **Configuration drift.** Who changed what? Nobody knows.
- 🔥 Truth is scattered. **Nobody wins.**
- 📝 Env var changed in prod? **Nobody committed it.** Next deploy wipes it.

Configuration Drift **No Audit Trail**

✅ THE SOLUTION

GitOps: The Pull Method.



📂 Git
Source of truth

←

Argo CD
Pulls & applies

→

Cluster
Desired state

📂 **Git repo** = your Helm charts, values, desired state.

🔄 **Argo CD watches Git,** runs helm template, applies to cluster.

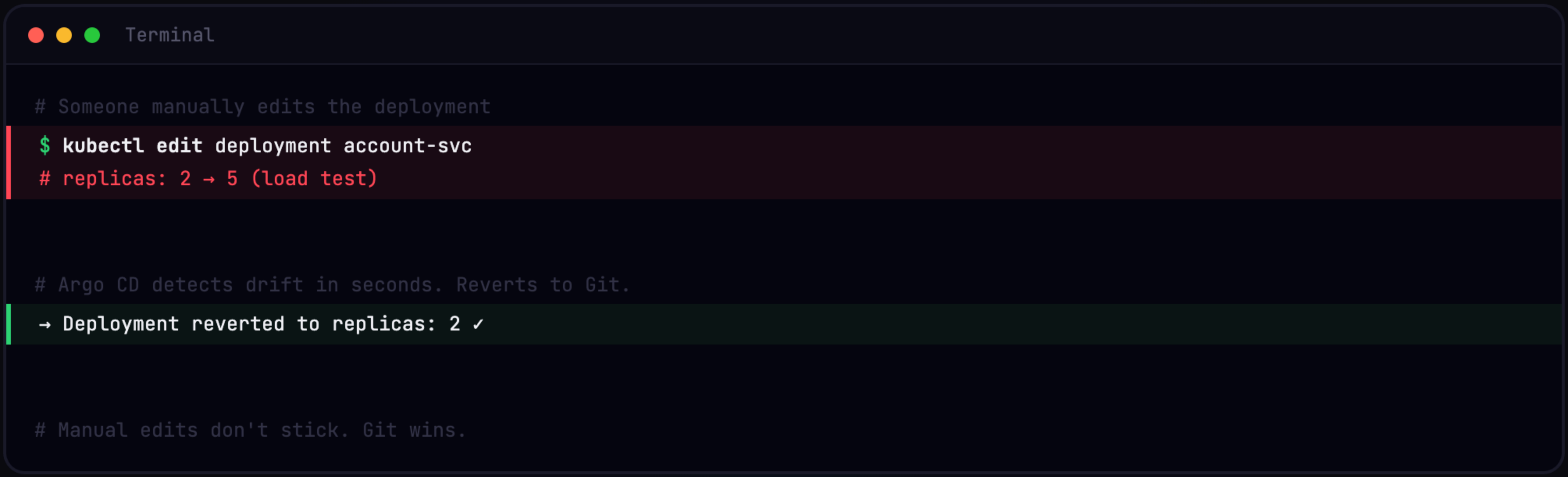
🚫 **No direct pushes.** Everything flows from Git.

FOUR GITOPS PRINCIPLES

1. Declarative 2. Versioned 3. Pulled 4. Reconciled

⚡ OPERATIONAL POWER

Self-Healing: Drift Dies Here.



```
# Someone manually edits the deployment
$ kubectl edit deployment account-svc
# replicas: 2 → 5 (load test)


# Argo CD detects drift in seconds. Reverts to Git.
→ Deployment reverted to replicas: 2 ✓


# Manual edits don't stick. Git wins.
```

👀 Someone runs **kubectl edit deployment** — changes replicas.

⚡ Argo CD detects the drift in **seconds**.

✅ Reverts cluster to match Git. **No debates.**

📋 UI shows **diff before sync.** Rollback = revert commit + push.

`Default sync interval: 3 min. Or use webhooks for instant reconciliation.`

Argo CD vs. Flux — Which One?

🔄 Argo CD

UI, RBAC, multi-cluster. Easier to get started.

vs

⚡ Flux

GitOps-native. Lighter. CNCF graduated first.

Argo CD: Want a UI? Need RBAC? Start here.

Flux: Pure GitOps. Lighter footprint. Git-native.

💬 **Let me know your pick in the comments.**

P.S. Friday: Open-Source Kubernetes Guide — 10 tools every backend engineer needs. Link in bio.