



# // GITOPS: IS THIS SOMETHING FOR ME - OR NOT?

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# Agenda

- Basics
- Tools
- Challenges







# GitOps basics

### August 2017: GitOps - Operations by Pull Request

weave.works/blog/gitops operations by pull request

Use developer tooling to drive operations

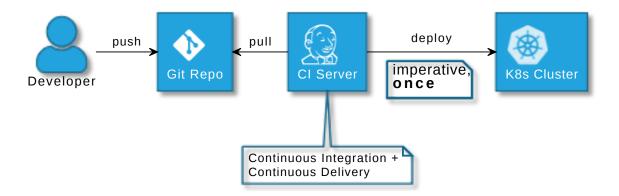
### **GitOps Principles**

The desired state of a GitOps managed system must be:

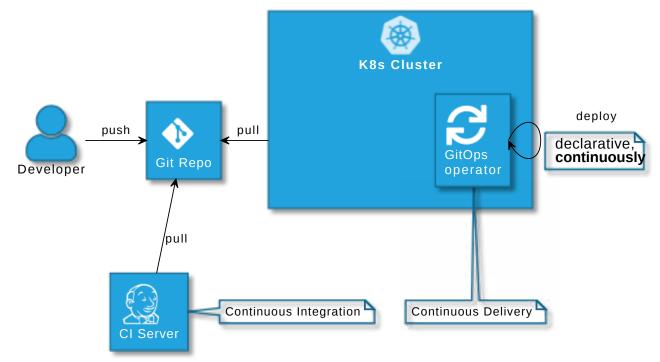
- 1. Declarative
- 2. Versioned and Immutable
- 3. Pulled Automatically
- 4. Continuously Reconciled
- github.com/open-gitops/documents/blob/main/PRINCIPLES.md



### "Classic" Continuous Delivery ("ClOps")

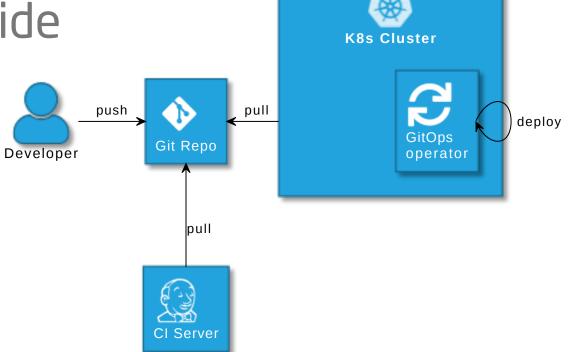


### **GitOps**



### Advantages of GitOps

- No access to cluster from outside
- No credentials on CI server
- Forces declarative description
- Config is auditable
- Self-healing
- Scalability one repo many applications
- Innovations provided by tools





## GitOps operators/controllers











### Supplementary GitOps tools

- Secrets Management
- Backup + Restore
- Deployment Strategies Progressive Delivery





















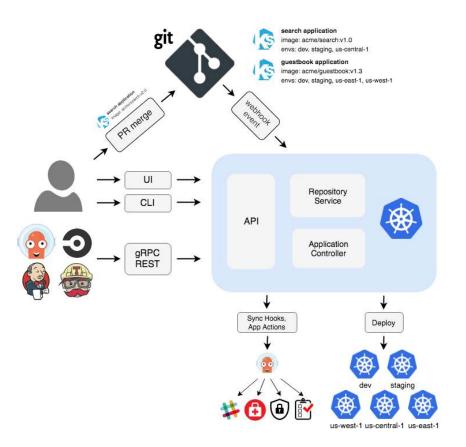


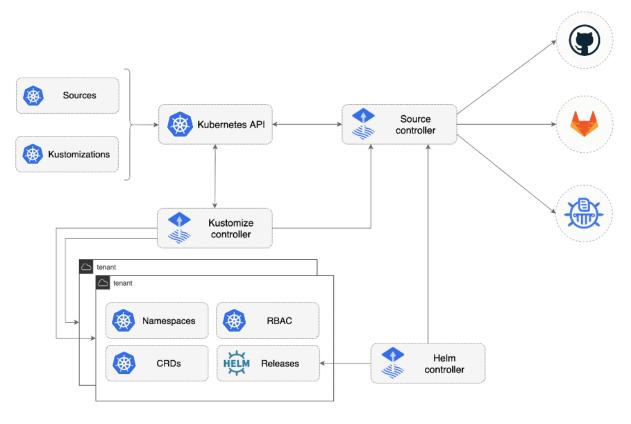
# Downsides

- More infra necessary
- Steep learning curve
- Lots of day two questions

### **GitOps infra**

- GitOps Operator comprises several applications
- Cause ops efforts: maintenance, alerts





### **Learning curve**

- New concepts + tools for devs and platform teams
- Adapt deployment process
- Migrate applications
- Adapt error handling and alerting
  - avoid failing late and silently
  - accustom to new notification mechanism
  - still, reason might be difficult to pinpoint

### Day two questions

- How to realize local dev env?
- How to delete resources?
- How to structure repos and folders?
- How to realize different stages/environments?
- Role of CI server?
- •

### **Local development**

- App development: Just carry on without GitOps.
  Setting up GitOps operator, SCM, etc. complicated
- Integration: Run GitOps+k8s-based ops platform locally
  - cloudogu/gitops-playground
  - 2024-06-20 Workshop at CloudLand



### How to delete resources?

- garbage collection / resource pruning disabled by default
- Enable from beginning avoid manual interaction
- Unfortunately, still often unreliable / too defensive (?) 😕

### Repo and folder structure

- No standard for structures (intentionally)
- How many repos?
- Within repo: folder/branch structure for stage, team, app
- More options:
  - Topology: GitOps controller (s) 😂 Cluster(s) / Namespaces
  - GitOps controller-specific config

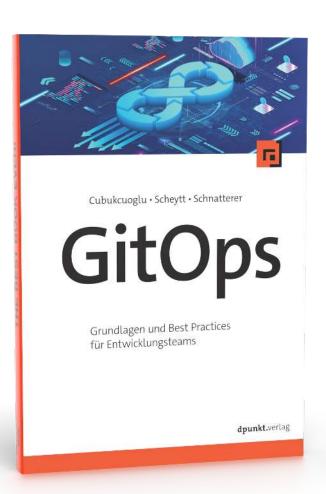
### **Promotion**

How to model environments/stages?

- Use branches or folders?
- Operations by Pull Request: (How to) use PRs?
- How to integrate CM tools?
- How to automate?
- (How to) use preview environments?

### **Further reading**

- GitOps Repository Structures and Patterns
  - Slides (Continuous Lifecycle 23)
  - Blog post series (Cloudogu Blog)
  - GitOps book
- Cloudogu/gitops-patterns
- Cloudogu/gitops-playground





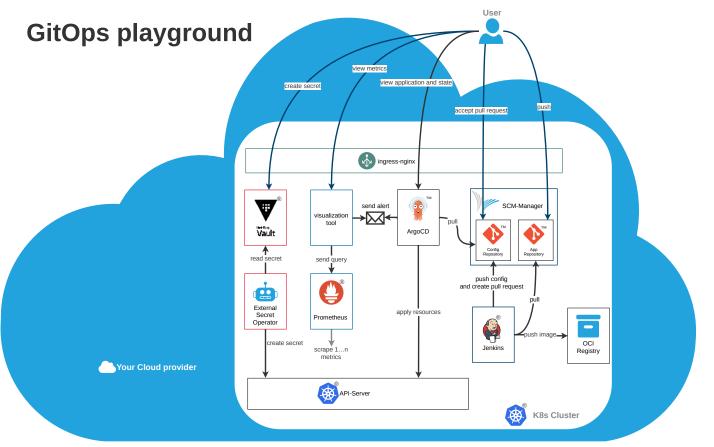
# Is GitOps something for me - or not?

- + Has advantages, once established
- Don't underestimate learning curve and migrations

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Cloudogu/gitops-playground





### **Image sources**

- Basics:
  - https://pixabay.com/illustrations/question-mark-important-sign-1872665/
- Tools:
  - https://pixabay.com/photos/tools-knives-wrenches-drills-1845426/
- Challenges:
  - https://unsplash.com/photos/bJhT\_8nbUA0
- Is GitOps something for me?
  - https://pixabay.com/illustrations/question-mark-question-response-1020165/