

**GitOps,
Kubernetes
and ArgoCD**



What is GitOps?

[GitOps](#) is a Continuous Delivery strategy where our infrastructure and application configuration are defined as code and stored centrally in a version control system like Git. GitOps uses Git as a single source of truth. This means that it uses what is defined in the Git repository to configure your infrastructure and applications.

Advantages of using GitOps

- Faster and safer deployments
- Ease of performing rollbacks
- Better traceability
- It makes it easy to eliminate configuration drifts

Popular GitOps tools

A lot of GitOps tools exist such as ArgoCD, FluxCD and JenkinsX. However, in this talk, we will be focusing on ArgoCD

An introduction to ArgoCD

Argo CD is a declarative, GitOps continuous delivery tool for Kubernetes.



How does it work

Argo CD is implemented as a kubernetes controller which continuously monitors running applications and compares the current, live state against the desired target state (as specified in the Git repo). A deployed application whose live state deviates from the target state is considered OutOfSync. Argo CD reports & visualizes the differences, while providing facilities to automatically or manually sync the live state back to the desired target state. Any modifications made to the desired target state in the Git repo can be automatically applied and reflected in the specified target environments.

Features of ArgoCD

- Support for multiple config management/templating tools (Kustomize, Helm, Jsonnet, plain-YAML)
- Ability to manage and deploy to multiple clusters
- SSO Integration (OIDC, OAuth2, LDAP, SAML 2.0, GitHub, GitLab, Microsoft, LinkedIn)
- Rollback/Roll-anywhere to any application configuration committed in Git repository
- Health status analysis of application resources
- Automated configuration drift detection and visualization
- Automated or manual syncing of applications to its desired state
- Web UI which provides real-time view of application activity
- CLI for automation and CI integration
- Webhook integration (GitHub, BitBucket, GitLab)
- Parameter overrides for overriding helm parameters in Git



ArgoCD Web UI



Applications

APPLICATIONS

+ NEW APP

SYNC APPS

Search applications...



Log out

FILTERS



Items per page: 10

SYNC STATUS

- Unknown 0
- Synced 2
- OutOfSync 1

HEALTH STATUS

- Unknown 0
- Progressing 0
- Suspended 0
- Healthy 2
- Degraded 0
- Missing 1



cli-app

Proje... default
Labels:
Status: Missing OutOfSync
Repo... https://github.com/utibeabasi...
Targe...
Path: cli
Desti... in-cluster
Nam... default

SYNC



declarative-app

Proje... default
Labels:
Status: Healthy Synced
Repo... https://github.com/utibeabasi...
Targe... HEAD
Path: demo
Desti... in-cluster
Nam... default

SYNC



helm-demo

Proje... default
Labels:
Status: Healthy Synced
Repo... https://github.com/utibeabasi...
Targe... HEAD
Path: helm
Desti... in-cluster
Nam... default

SYNC



ArgoCD CLI

```
utibeabasi@users-MacBook-Pro > ~/Documents/Devops practice/argocd/config > ? master  
argocd app create cli-app \  
--repo https://github.com/utibeabasi6/argocd-config \  
--path cli \  
--dest-server https://kubernetes.default.svc \  
--dest-namespace default  
application 'cli-app' created  
utibeabasi@users-MacBook-Pro > ~/Documents/Devops practice/argocd/config > ? master
```


**Thanks for
listening!**

