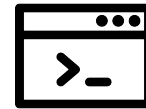


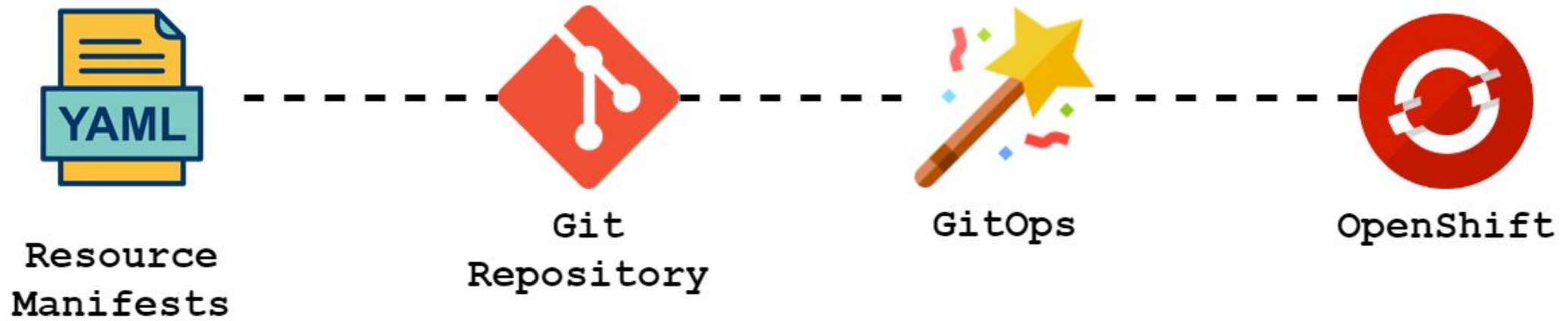
Adopting GitOps

in a larger enterprise



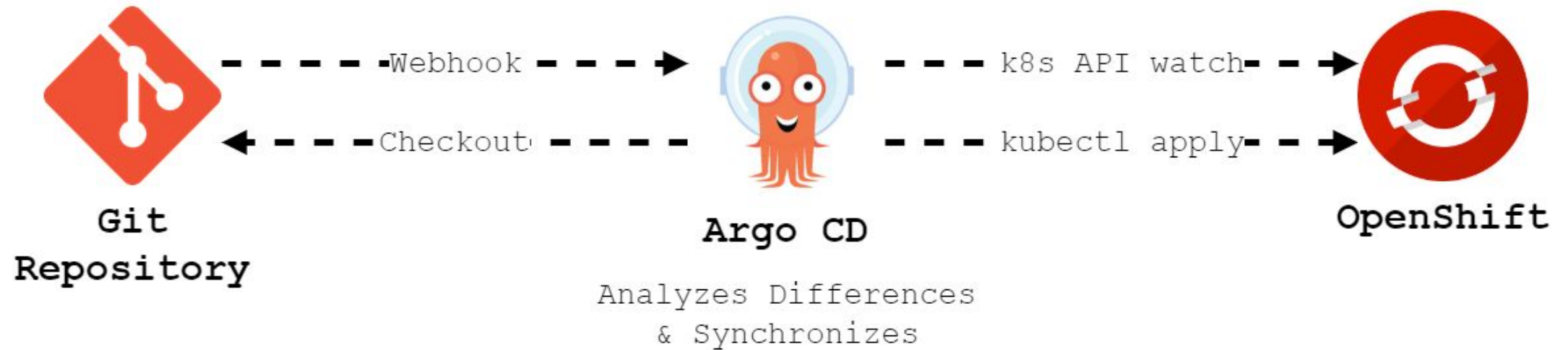
Nikolas Philips, DevOps Engineer at Baloise

GitOps with OpenShift



Argo CD

Getting YAML from Git into OpenShift



Argo CD

Synchronize Git repository with Cluster



```
1  apiVersion: argoproj.io/v1alpha1
2  kind: Application
3  metadata:
4    name: gitops-test
5  spec:
6    source:
7      path: gitops-test
8      repoURL: 'https://github.com/baloise-incubator/okd4-gitops-demo.git'
9    destination:
10     namespace: gitops-test
```

Git Source

Target Namespace

Argo CD

Good & Bad thing about Argo CD

- It doesn't tell how to structure Git repositories
- Follows Unix philosophy

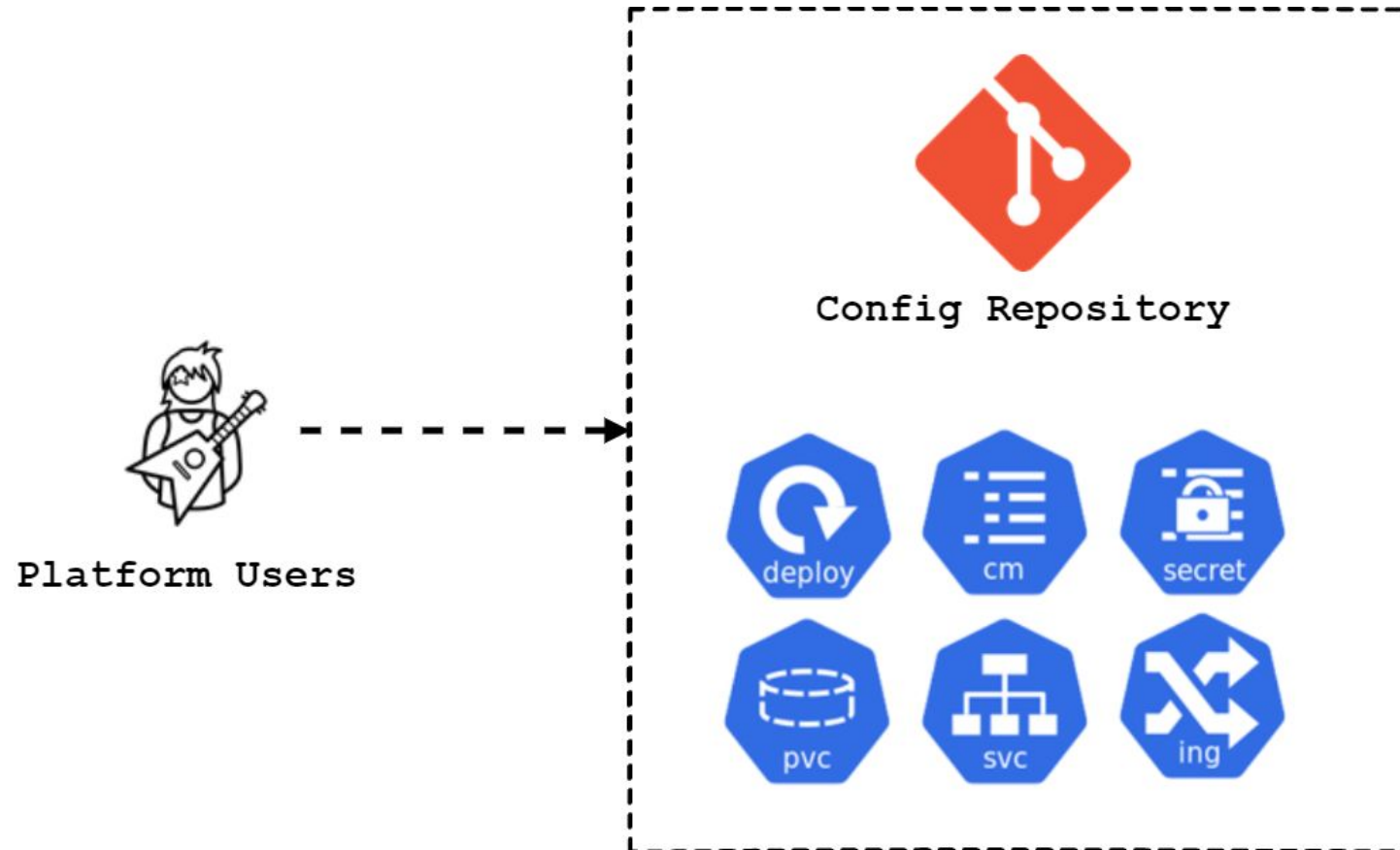
Structure & Manage Resource Manifests

Separate Config and Source Code Repositories

- Allows to modify config without triggering CI build
- Comprise services built from multiple Git repositories
- Cleaner audit log

Structure & Manage Resource Manifests

GitOps for Platform Users



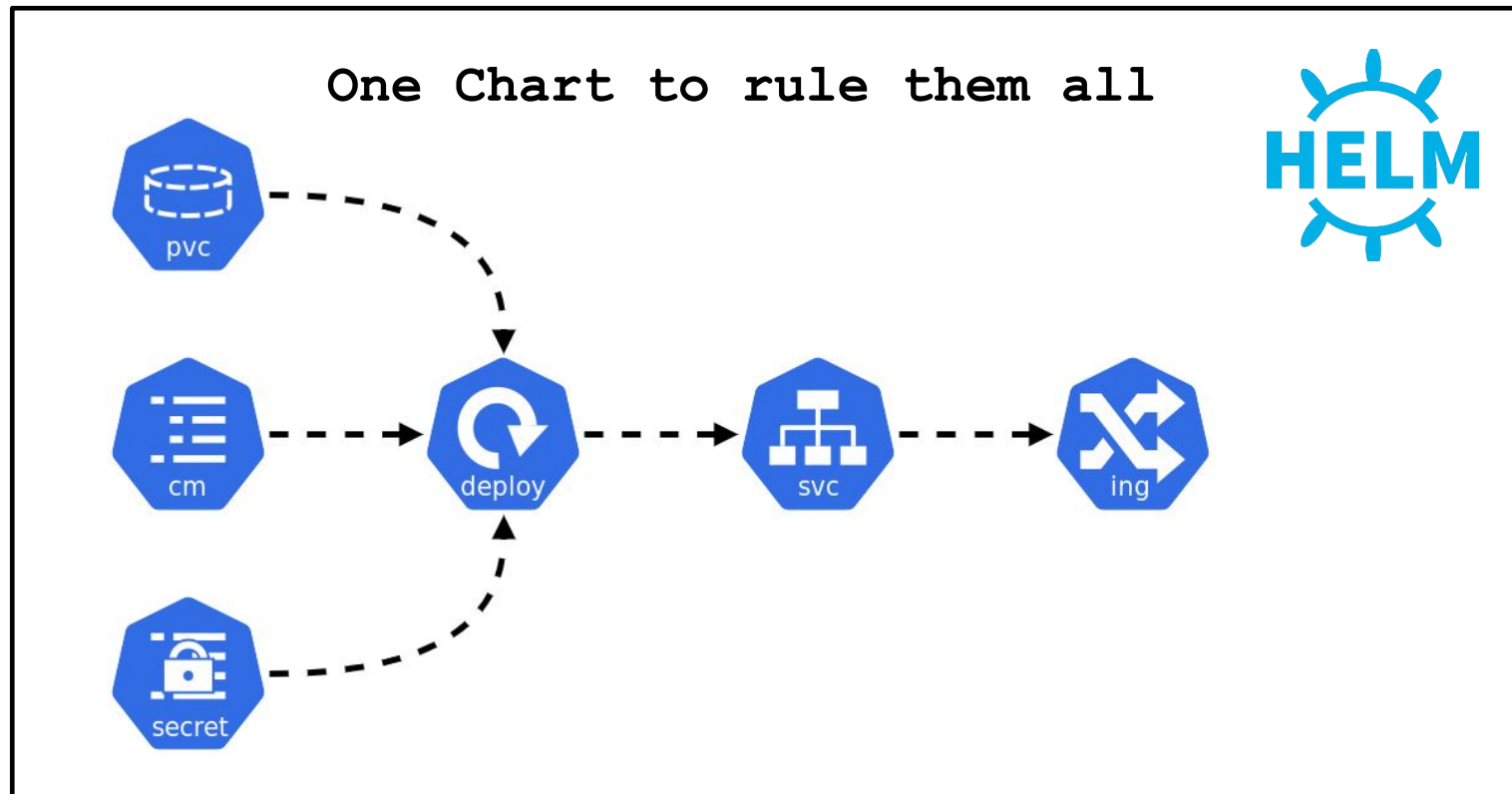
Structure & Manage Resource Manifests

Config Repository Structure

- Two repositories per team/domain/value stream
 - One for production
 - One for non-production
- Top-level directories in a config repository correspond to a namespace/project in OpenShift

Structure & Manage Resource Manifests

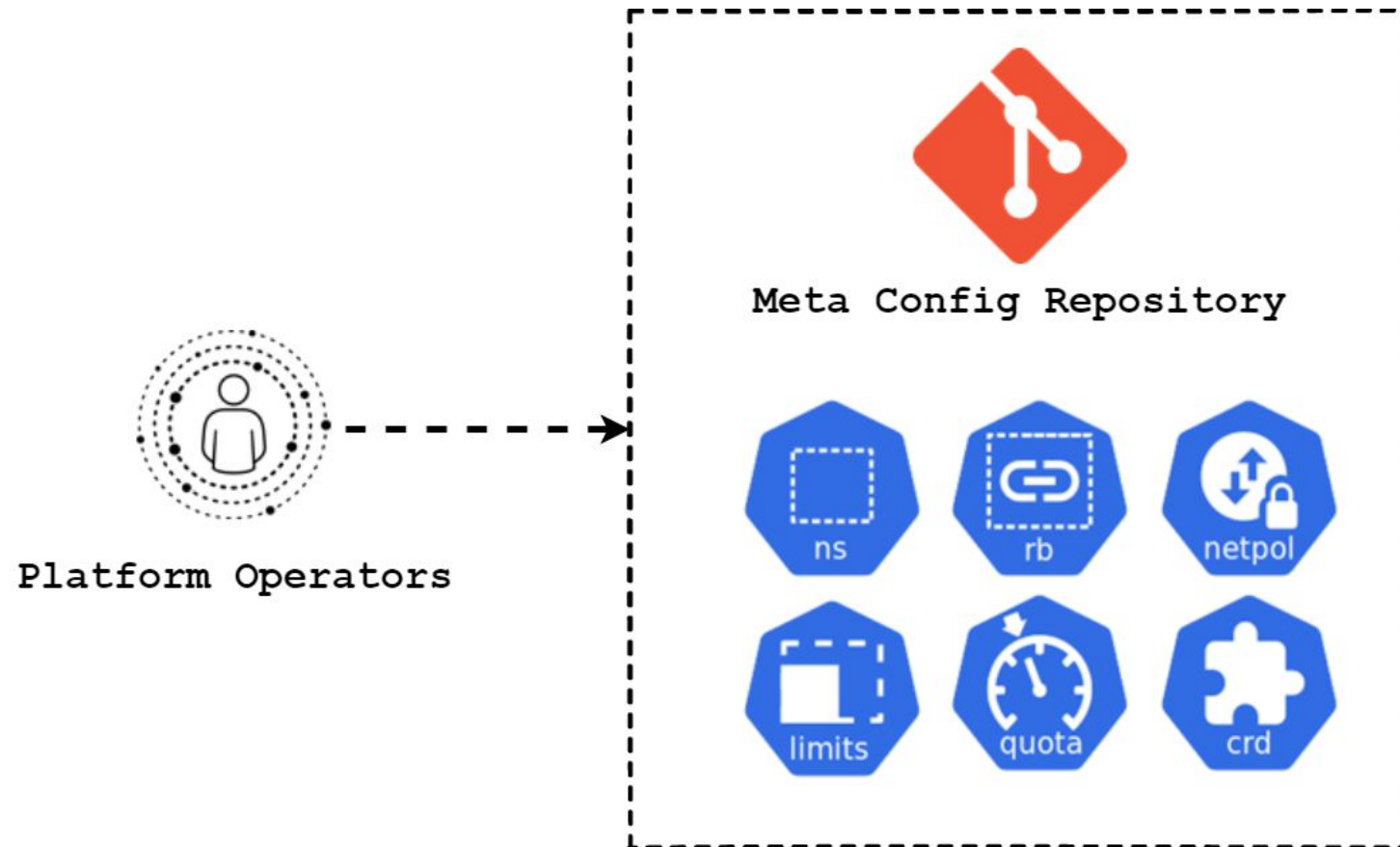
Simplify Application Deployments



<https://github.com/baloise-incubator/generic-chart>

Structure & Manage Resource Manifests

GitOps for Operations



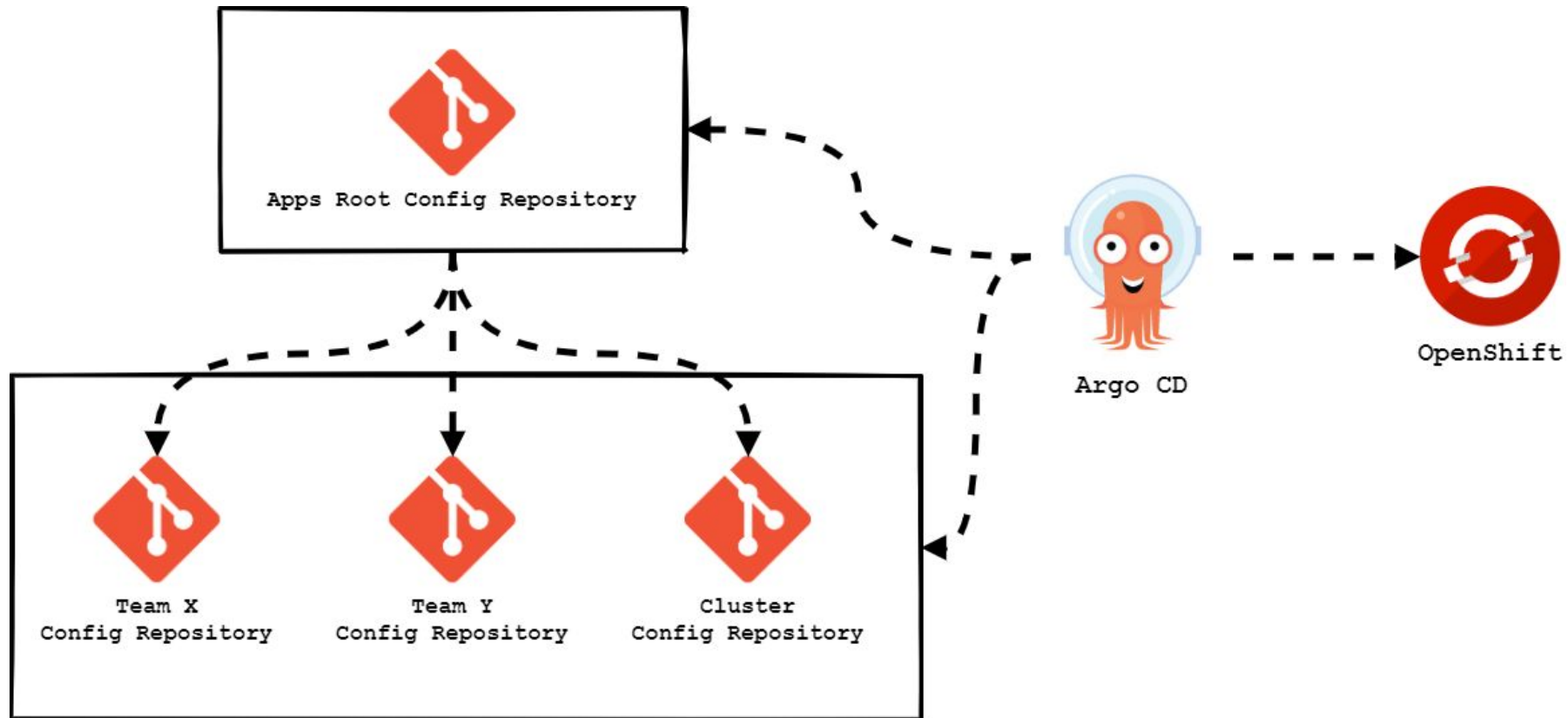
Structure & Manage Resource Manifests

App-of-Apps Pattern

- Contains meta configuration for each config repository
- Manages operational relevant OpenShift resources
 - Namespaces
 - Argo CD Applications (Git → Cluster)
 - RBAC
 - Network Policy / LimitRange

Structure & Manage Resource Manifests

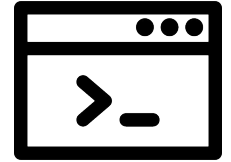
Operations of Config Repositories



<https://github.com/baloise-incubator/okd4-apps-root-config/>

Edit YAML

GitOpsCLI



- Update YAML values in config repository
- Update root config repository with all apps from child config repositories
- Add pull request comments
- Create and delete preview environments in the config repository


Continuous Deployment with GitOps CLI

- Update Apps Root Config repository with all apps from child Config Repositories

```
apps/okd4-example-apps.yaml
@@ -21,3 +21,4 @@ namespaceResourceBlacklist:
21      21
22      22      applications:
23      23      gitops-nginx-demo: {}
24      24      + gitops-nginx-demo-fa687a8f-preview: {}
```

Continuous Deployment with GitOps CLI

- Update YAML files in Git repositories e.g. to change an image tag

```
▼ 2 ■ ■ ■ ■ nginx-test/values.yaml  ⋮
```

lhs	@@ -2,7 +2,7 @@
2	2 generic:
3	3 image:
4	4 repository: registry.baloise.dev/example/gitops-nginx-demo
5	- tag: 001aff0190da49fe1f171aede351d2a936965514
5	+ tag: 3acfe8674c4f890ed515b144290d1c72c87ea465
6	6 ingress:
7	7 enabled: true
8	8 host: gitops-nginx-demo-1edd27d2.apps.origin.baloise.dev

Continuous Deployment with GitOps CLI

- Create and delete preview environments for a pull request for a Application Code Repository

```
▼ 1 ■■■■■ gitops-nginx-demo-bb56843c-preview/Chart.yaml ⓘ ...
... @@ -0,0 +1 @@
1 + name: gitops-nginx-demo-bb56843c-preview

▼ 5 ■■■■■ gitops-nginx-demo-bb56843c-preview/requirements.yaml ⓘ ...
... @@ -0,0 +1,5 @@
1 + dependencies:
2 +   - name: generic-chart
3 +     version: 1.0.0
4 +     repository: https://registry.baloise.dev/chartrepo/library
5 +     alias: generic ⓘ

▼ 8 ■■■■■ gitops-nginx-demo-bb56843c-preview/values.yaml ⓘ ...
... @@ -0,0 +1,8 @@
1 + # Example Helm values.yaml
2 + generic:
3 + image:
4 +   repository: registry.baloise.dev/example/gitops-nginx-demo
5 +   tag: 0.1.0
6 + ingress:
7 +   enabled: true
8 +   host: gitops-nginx-demo-previewplaceholder.apps.origin.baloise.dev ⓘ
```


Links

□ Links

- Argo CD - <https://argoproj.github.io/argo-cd/>
- GitOps CLI - <https://baloise-incubator.github.io/gitopscli/>
- Apps Root Config - <https://github.com/baloise-incubator/okd4-apps-root-config>
- Generic Chart - <https://github.com/baloise-incubator/generic-chart>
- Demo Application - <https://github.com/baloise-incubator/gitops-nginx-demo>
- Tekton Pipeline - <https://github.com/baloise-incubator/okd4-cluster-infra-apps/tree/master/tekton-chatopshandler>
- Sealed Secrets - <https://github.com/bitnami-labs/sealed-secrets>
- Terminal Icon from [Freepik](#) via [Flaticon](#)
- document clipart png from [pngtree.com](https://www.pngtree.com)