Podejście GitOpsowe w K8S z użyciem ArgoCD

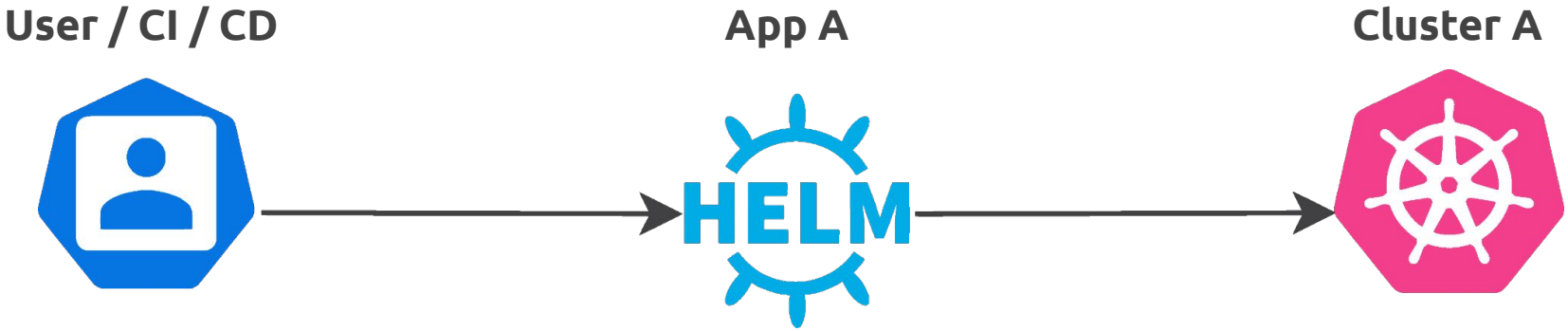
Jak zarządzać wieloma klastrami?

Maksymilian Wrzesień

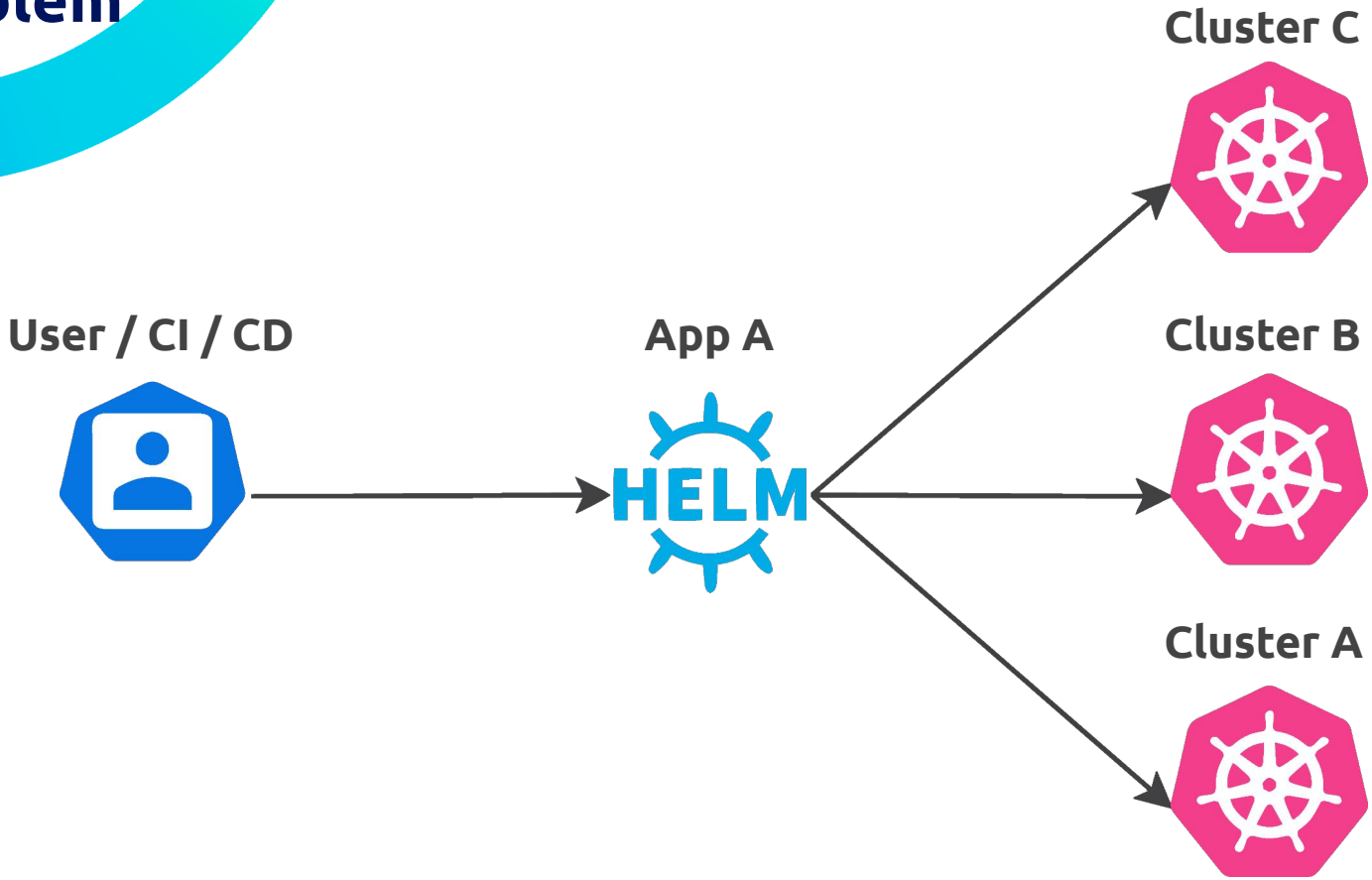
GitOps approach in K8S with help of ArgoCD

How to manage multiple clusters?

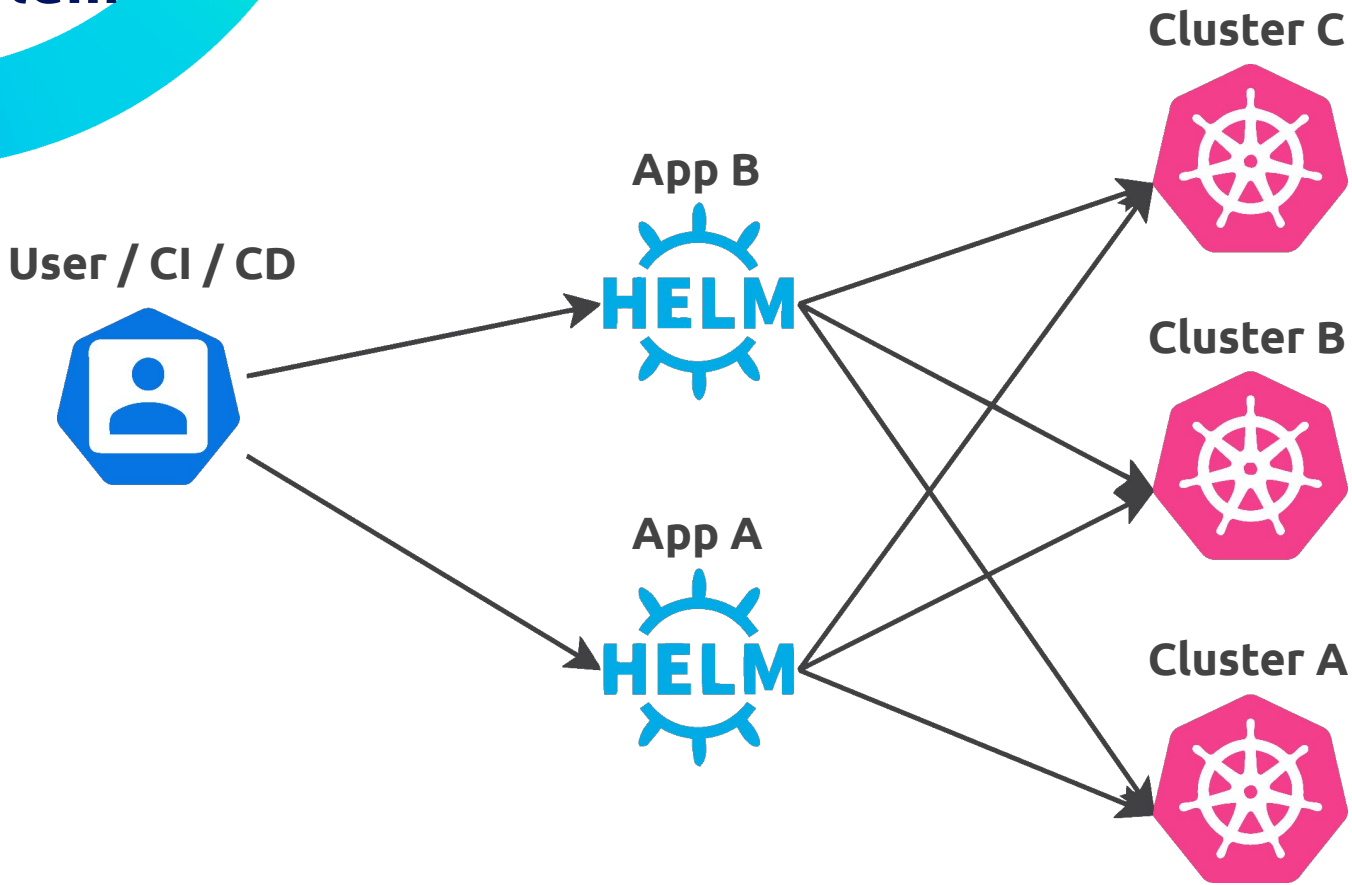
Problem



Problem



Problem

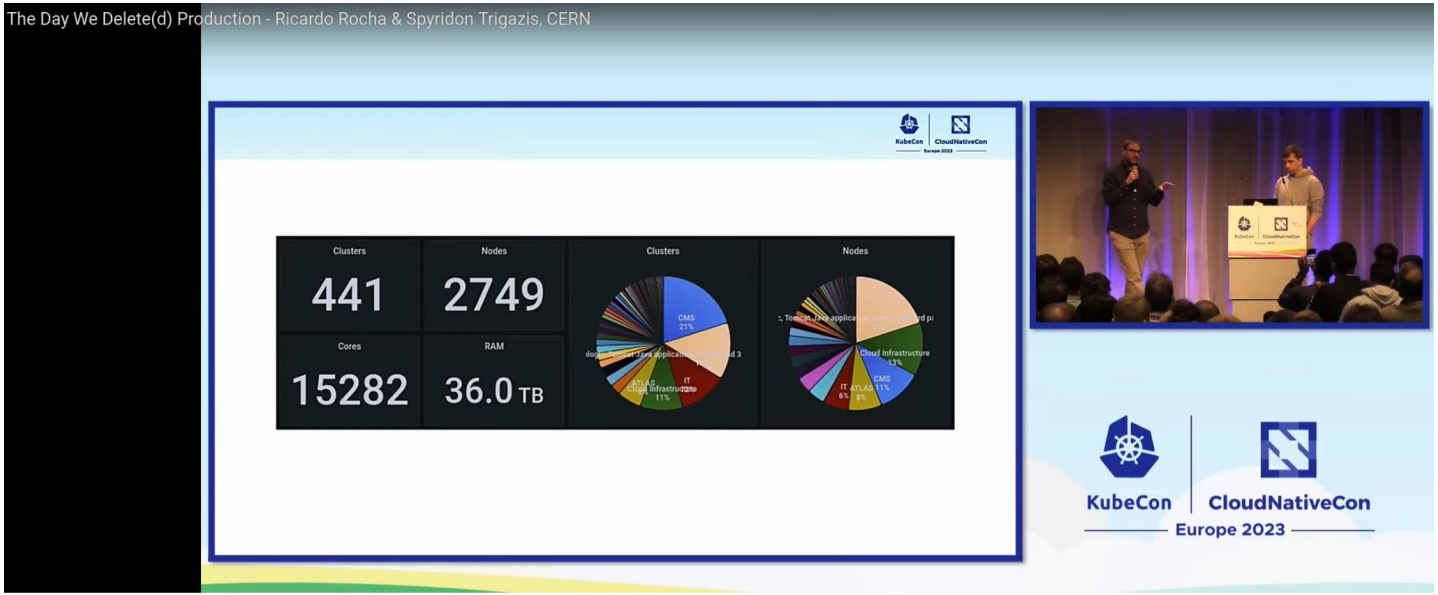


Problem

What is the problem?

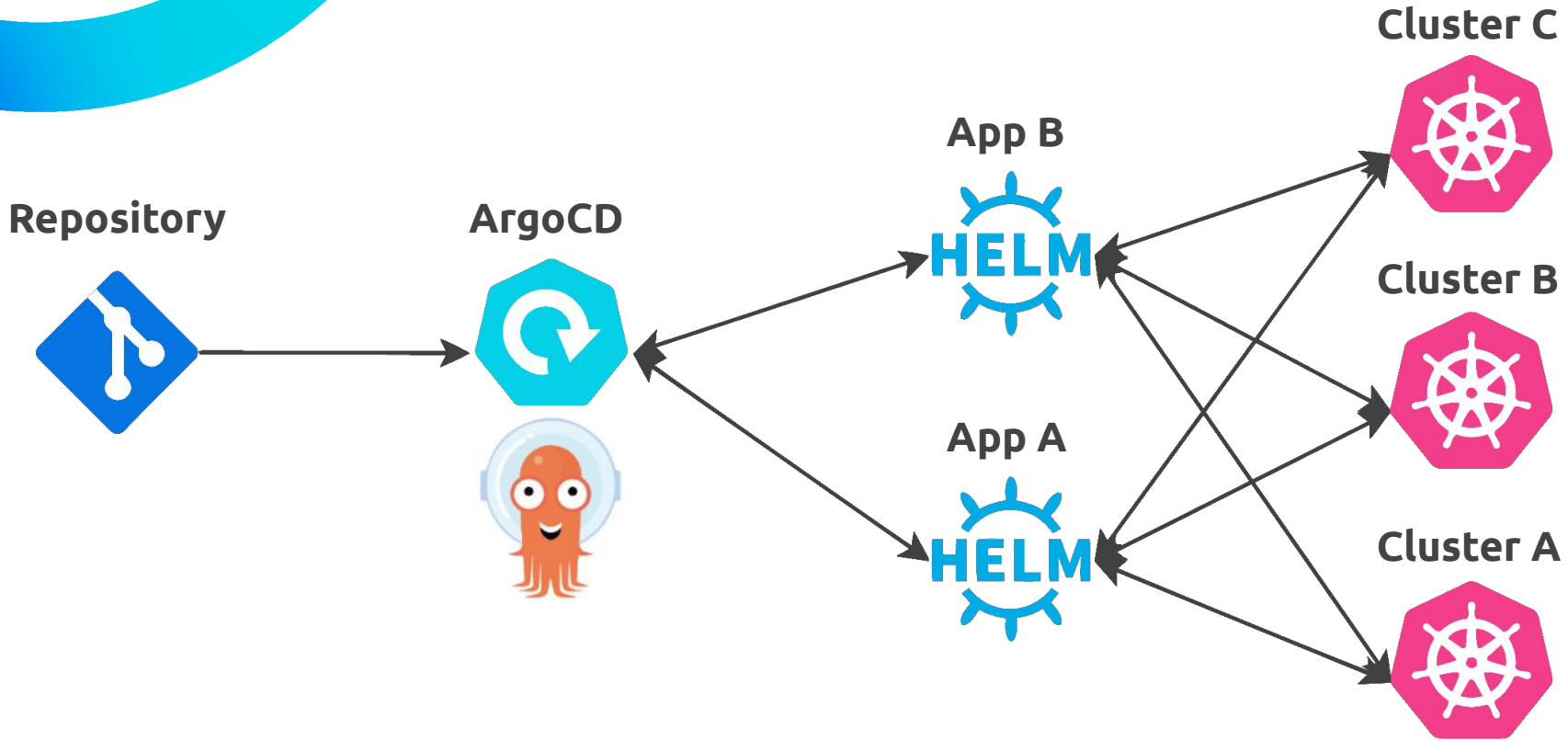
Problem

Problem



Source:
https://youtu.be/TEg3Ne5uPYc?t=100

Solution


Repository
ArgoCD
App B
HELM
App A
HELM
Cluster C
Cluster B
Cluster A

Application

```yaml
# Deploy helm chart found in this repo at 'k8s-operator' cluster to namespace 'default'
apiVersion: argoproj.io/v1alpha1
kind: Application
metadata:
  name: single-app-k8s-operator
  namespace: argocd
spec:
  destination:
    name: k8s-operator
    namespace: default
  project: default
  source:
    path: app/chart
    repoURL: git@github.com:m-wrzesien/infoshare-2023.git
    targetRevision: master
    helm:
      releaseName: single-app
```

Source:
https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/multi-app-single-cluster-k8s-operator.yaml

Application

```yaml
# Deploy helm chart found in this repo at 'k8s-operator' cluster to namespace 'default'
apiVersion: argoproj.io/v1alpha1
kind: Application
metadata:
  name: single-app-k8s-operator
  namespace: argocd
spec:
  destination:
    name: k8s-operator
    namespace: default
  project: default
  source:
    path: app/chart
    repoURL: git@github.com:m-wrzesien/infoshare-2023.git
    targetRevision: master
    helm:
      releaseName: single-app
```

Source:
https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/multi-app-single-cluster-k8s-operator.yaml

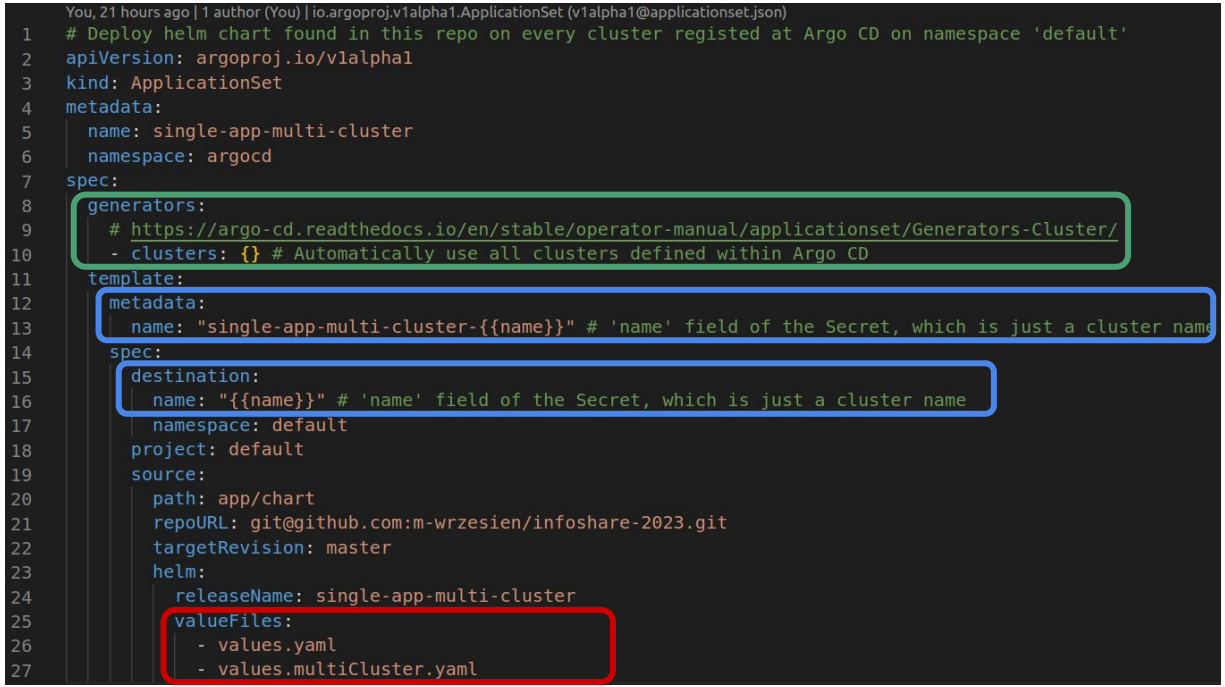
Application

```yaml
# Deploy all Kubernetes manifests found at this directory in this repo, and automaticaly synchronise the state of those manifest (including deleting those unnecessary)
apiVersion: argoproj.io/v1alpha1
kind: Application
metadata:
  name: argo-apps
  namespace: argocd
spec:
  destination:
    name: k8s-operator
    namespace: argocd
  project: default
  source:
    path: argo-apps
    repoURL: git@github.com:m-wrzesien/infoshare-2023.git
    targetRevision: master
  syncPolicy:
    automated:
      prune: true
      selfHeal: true
```

Source:
https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/argo-apps.yaml

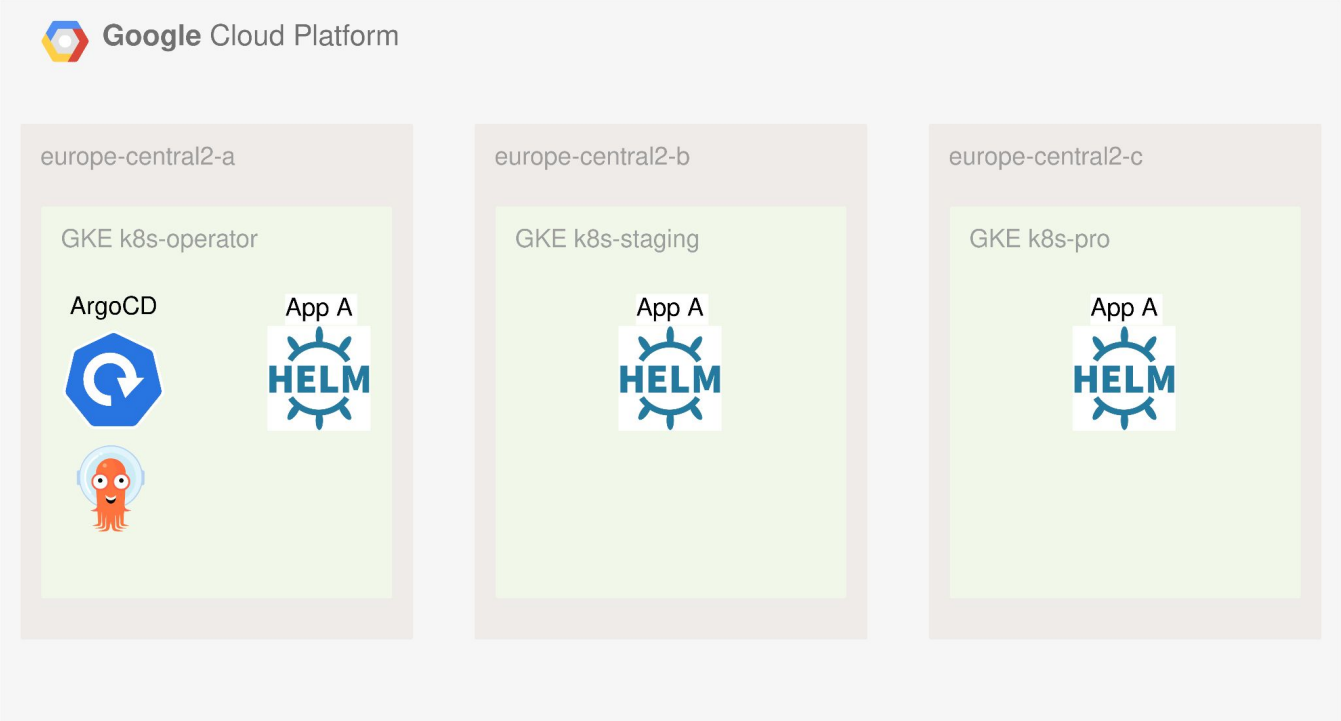
Demo - Deploy App using Argo

ApplicationSet - Cluster generator



Source:
https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/single-app-multi-cluster.yaml

Demo - Deploy App using Argo ApplicationSet
Cluster Generator



ApplicationSet - Git generator

```yaml
# Deploy single helm chart found in this repo as a multiple healm releases with different values at 'k8s-operator' cluster to namespace 'default'
apiVersion: argoproj.io/v1alpha1
kind: ApplicationSet
metadata:
  name: multi-app-single-cluster
  namespace: argocd
spec:
  generators:
    # https://argo-cd.readthedocs.io/en/stable/operator-manual/applicationset/Generators-Git/      You, 21 hours ago • Repo init
    - git:
        repoURL: git@github.com:m-wrzesien/infoshare-2023.git
        revision: master
        directories:
          - path: app/chart/apps/*
  template:
    metadata:
      name: "multi-app-single-cluster-{{path.basename}}-k8s-operator" # 'path.basename' - name of one of the folder that match wildcard (e.g. app-a)
    spec:
      destination:
        name: k8s-operator
        namespace: default
      project: default
      source:
        path: app/chart
        repoURL: git@github.com:m-wrzesien/infoshare-2023.git
        targetRevision: master
        helm:
          releaseName: multi-app-single-cluster-{{path.basename}}
          valueFiles:
            - values.yaml
            - 'apps/{{path.basename}}/values.singleCluster.yaml'  # paths is relative to the 'path' field
```

Source:
https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/multi-app-single-cluster-k8s-operator.yam

Demo - Deploy App using Argo ApplicationSet
Git Generator

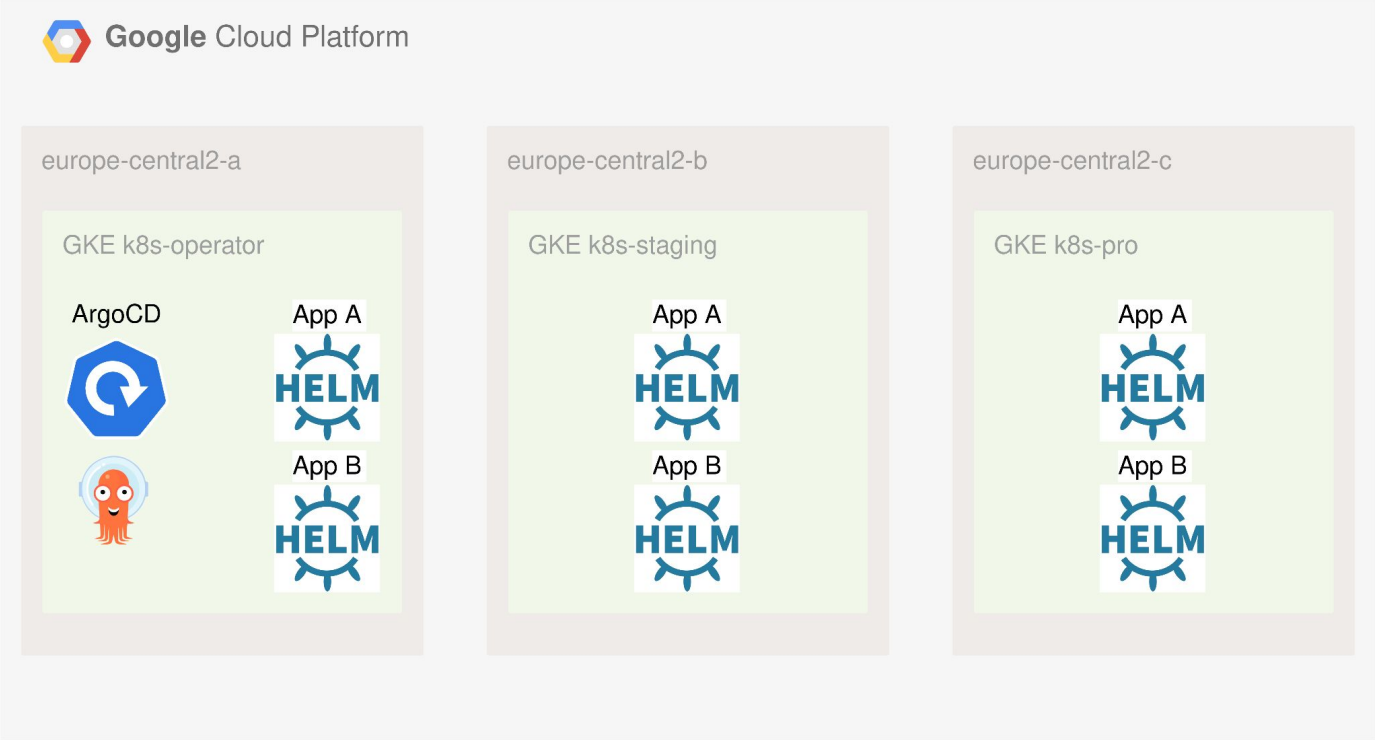
ApplicationSet - Matrix generator

```yaml
# Deploy single helm chart found in this repo as a multiple helm releases with different values to each registed cluster to namespace 'default'
apiVersion: argoproj.io/v1alpha1
kind: ApplicationSet
metadata:
  name: multi-app-multi-cluster
  namespace: argocd
spec:
  generators:
    # https://argo-cd.readthedocs.io/en/stable/operator-manual/applicationset/Generators-Matrix/
    - matrix:
        generators:
          - git:
              repoURL: git@github.com:m-wrzesien/infoshare-2023.git
              revision: master
              directories:
                - path: app/chart/apps/*
          - clusters: {} # Automatically use all clusters defined within Argo CD
  template:
    metadata:
      name: "multi-app-multi-cluster-{{path.basename}}-{{name}}"
    spec:
      destination:
        name: "{{name}}"
        namespace: default
      project: default
      source:
        path: app/chart
        repoURL: git@github.com:m-wrzesien/infoshare-2023.git
        targetRevision: master
        helm:
          releaseName: multi-app-multi-cluster-{{path.basename}}
          valueFiles:
            - values.yaml
            - "apps/{{path.basename}}/values.multiCluster.yaml"
```

Source:
https://github.com/m-wrzesien/infoshare-2023/blob/master/argo-apps/multi-app-multi-cluster.yaml

Demo - Deploy App using Argo ApplicationSet

Matrix Generator



Documentation

https://argo-cd.readthedocs.io/en/stable/

https://argo-cd.readthedocs.io/en/stable/operator-manual/applicationset/

Source

Github:
https://github.com/m-wrzesien/infoshare-2023

eSky GROUP

Thank you
for attending our Infoshare 2023 speech!