Continuous Deployment on Kubernetes with ArgoCD

Kubernetes Community Days Taipei 2024 - Lighting Talk

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About Me

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Agenda

01 What is ArgoCD?

a. What is GitOps?

b. ArgoCD Architecture

02 How to Integrate with ArgoCD?

a. Helm Chart

b. Integration Flow

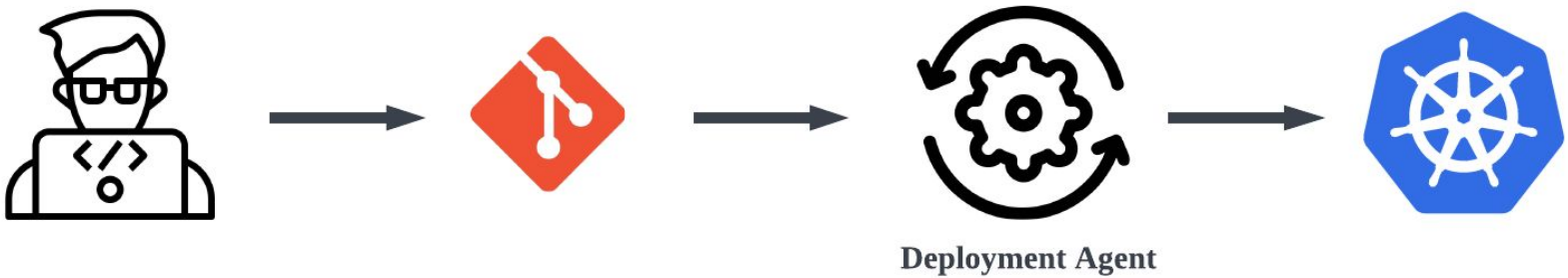
03 Conclusion

What is ArgoCD?

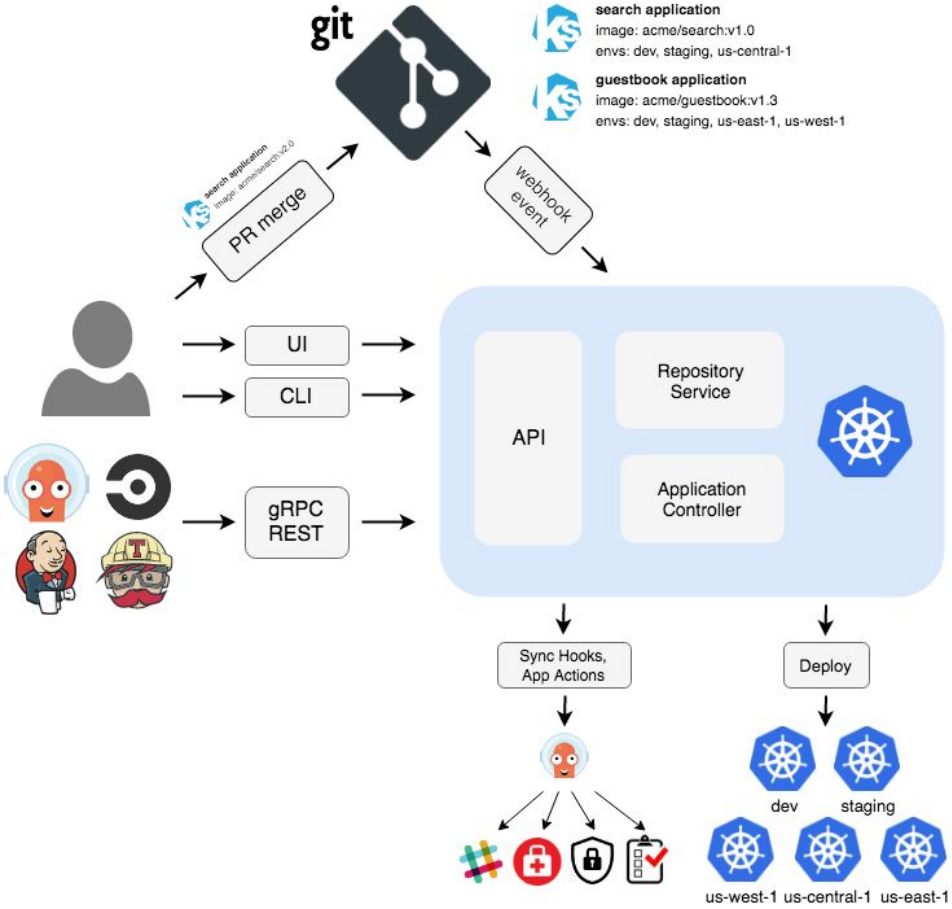
ArgoCD is a declarative, **GitOps** continuous delivery tool for Kubernetes.

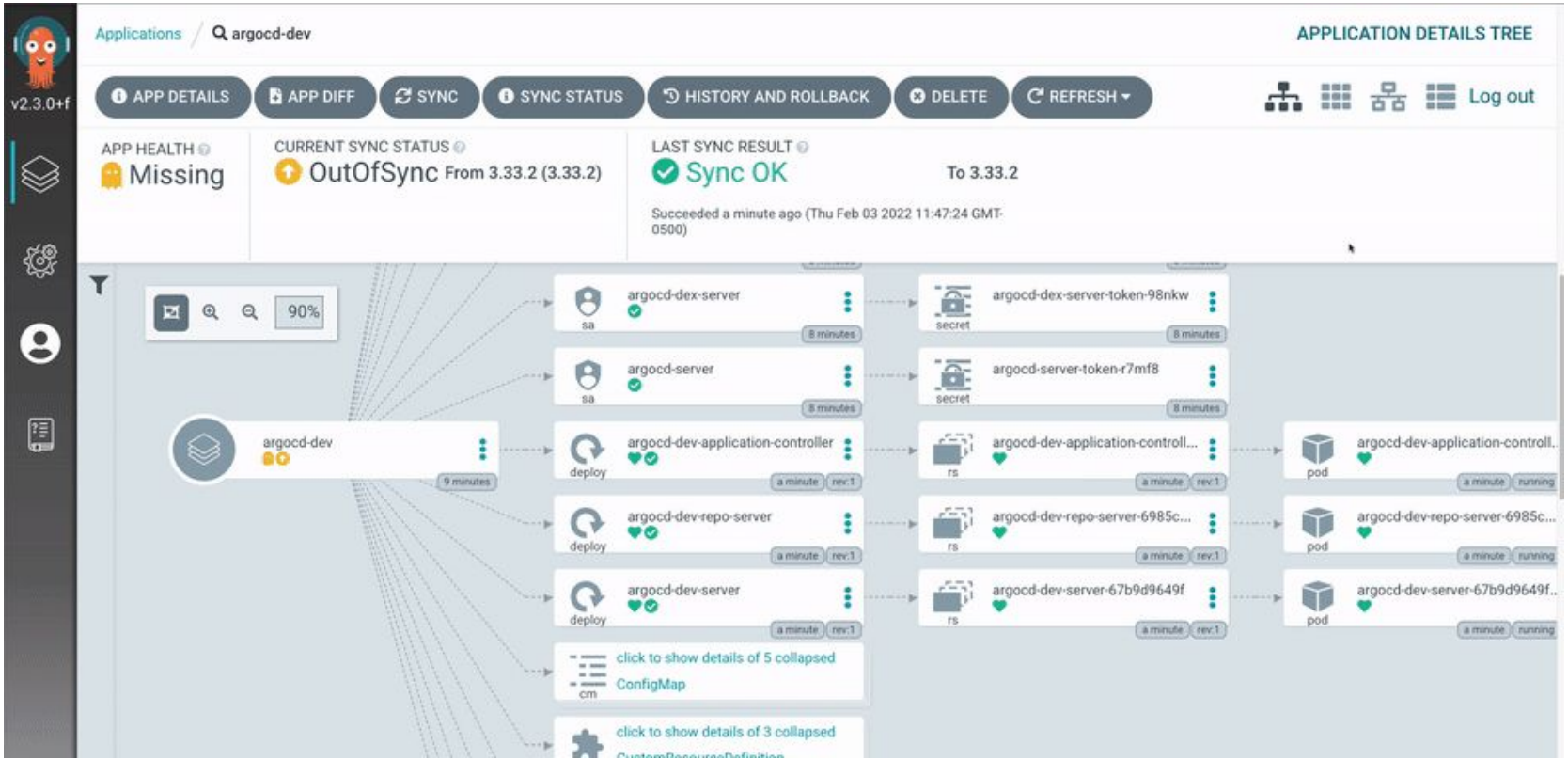
What is GitOps?

GitOps is an operational framework that applies DevOps best practices for infrastructure automation **using Git as a single source of truth.**



ArgoCD Architecture




Applications
argocd-dev
APPLICATION DETAILS TREE
v2.3.0+f
APP DETAILS
APP DIFF
SYNC
SYNC STATUS
HISTORY AND ROLLBACK
DELETE
REFRESH
Log out
APP HEALTH
Missing
CURRENT SYNC STATUS
OutOfSync From 3.33.2 (3.33.2)
LAST SYNC RESULT
Sync OK
To 3.33.2
Succeeded a minute ago (Thu Feb 03 2022 11:47:24 GMT-0500)
90%
argocd-dev
9 minutes
argocd-dex-server
8 minutes
argocd-dex-server-token-98nkw
8 minutes
argocd-server
8 minutes
argocd-server-token-r7mf8
8 minutes
argocd-dev-application-controller
a minute
rev:1
argocd-dev-application-controll...
a minute
rev:1
argocd-dev-application-controll..
a minute
running
argocd-dev-repo-server
a minute
rev:1
argocd-dev-repo-server-6985c...
a minute
rev:1
argocd-dev-repo-server-6985c...
a minute
running
argocd-dev-server
a minute
rev:1
argocd-dev-server-67b9d9649f
a minute
rev:1
argocd-dev-server-67b9d9649f..
a minute
running
click to show details of 5 collapsed ConfigMap
click to show details of 3 collapsed

How to Integrate with ArgoCD?

- kustomize applications
- helm charts
- jsonnet files
- Plain directory of YAML/json manifests

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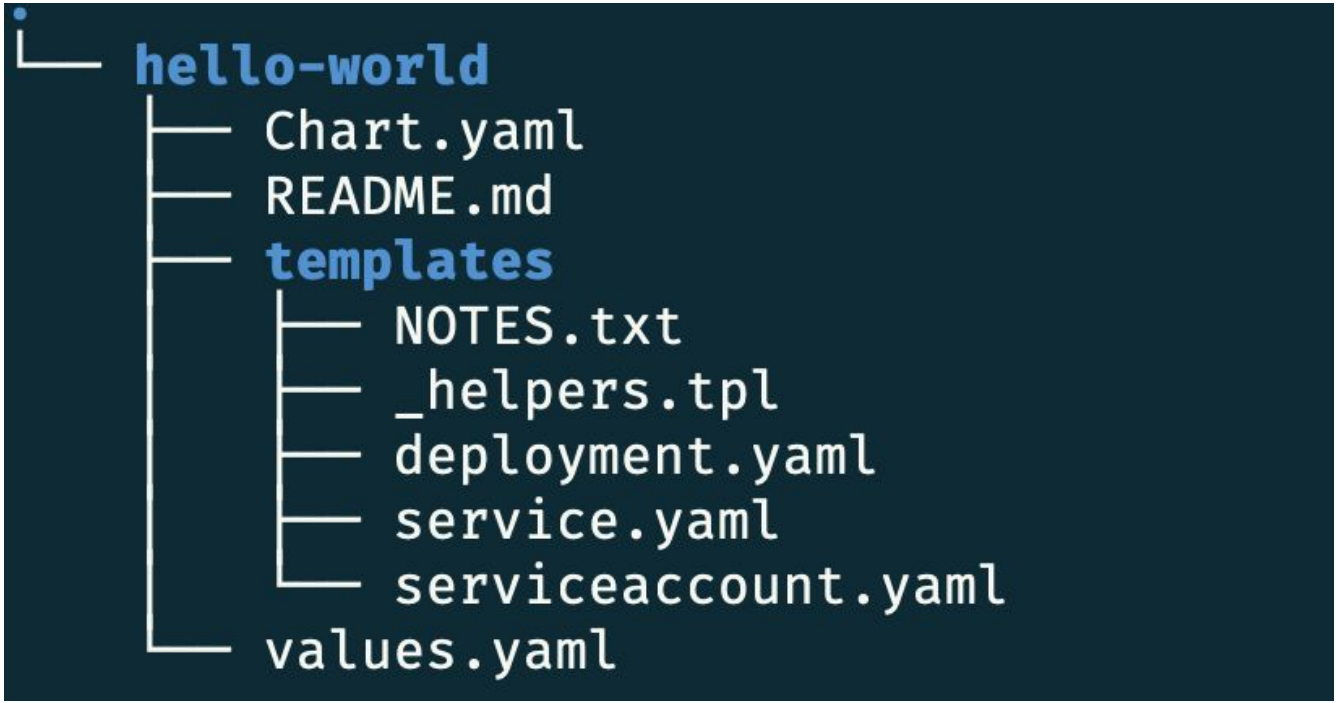
ArgoCD Integration - Helm Chart

A package manager for Kubernetes that helps you define, install, and upgrade complex Kubernetes applications.


hello-world
Chart.yaml
README.md
templates
NOTES.txt
_helpers.tpl
deployment.yaml
service.yaml
serviceaccount.yaml
values.yaml

deployment.yaml

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: {{ include "hello-world.fullname" . }}
  labels:
    {{- include "hello-world.labels" . | nindent 4 }}
spec:
  replicas: {{ .Values.replicaCount }}
  selector:
    matchLabels:
      {{- include "hello-world.selectorLabels" . | nindent 6 }}
  template:
    metadata:
      labels:
        {{- include "hello-world.selectorLabels" . | nindent 8 }}
    spec:
      serviceAccountName: {{ include "hello-world.serviceAccountName" . }}
      containers:
        - name: {{ .Chart.Name }}
          image: "{{ .Values.image.repository }}:{{ .Values.image.tag | default .Chart.AppVersion }}"
          imagePullPolicy: {{ .Values.image.pullPolicy }}
          ports:
            - name: http
              containerPort: 80
              protocol: TCP
```

values.yaml

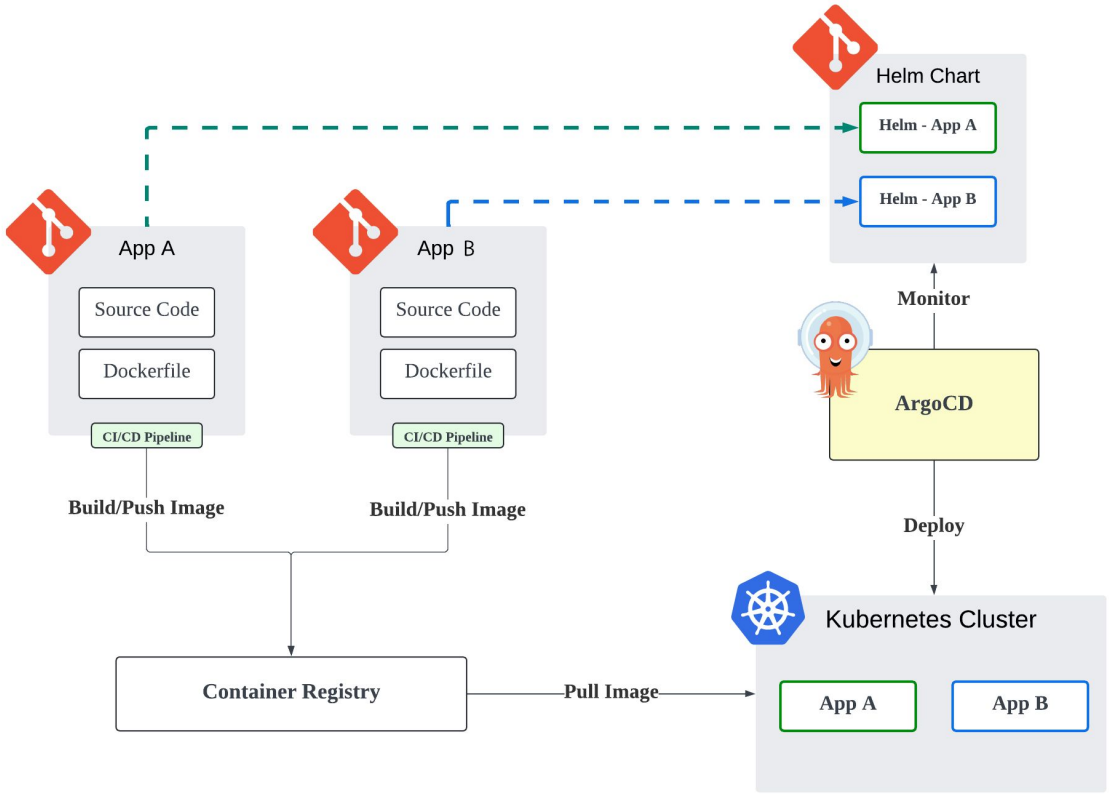
```yaml
replicaCount: 1

image:
  repository: nginx
  pullPolicy: IfNotPresent
  tag: ""

  ...

```

Benefits of using Helm Chart

Simplified deployment of complex applications

Easy management of multiple environments with value overrides

Integration Flow



Conclusion - ArgoCD

Automated deployment and synchronization

Enhanced and Simplified Kubernetes application management

Improved visibility into application deployments

Faster error detection and recovery

Thank You!