

# Deploy N Applications to N Clusters using Argo CD ApplicationSet

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👋 Hey!! I'm Dewan

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- From Moncton, NB (Atlantic Canada)
- ❤️ everything cloud-native
- Focus on DevOps/GitOps tools
- Besides work: 🎮 🏹 & Career Coaching



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# Agenda

- GitOps - Likely more than you think it is
  - Quick background on Argo CD - a GitOps CD tool for K8s
  - The 'What' & 'Why' of ApplicationSets
  - The 'How' of ApplicationSets
  - 🌟 Demo
- 
- Q&A | Resources



## GitOps in 1 slide

- GIT as the **SINGLE** source of truth of a system
- GIT as the **SINGLE** place where we operate (create, update, destroy envs)
- ALL changes are **observable/verifiable**

Let's understand GitOps for Kubernetes

What you get:

No Manual Intervention

- Automation
- Correctness
- Convergence

No Scripts

- Idempotence
- Developer Experience
- Determinism

## GitOps on K8s - B.O.M.

- Git repo(s)
- K8s cluster(s)
- Manifest generation tool (optional)
- A CI tool (CI servers should **NOT** do CD)
- A way to group K8s resources

# What is Argo CD?



**git**



**argo**



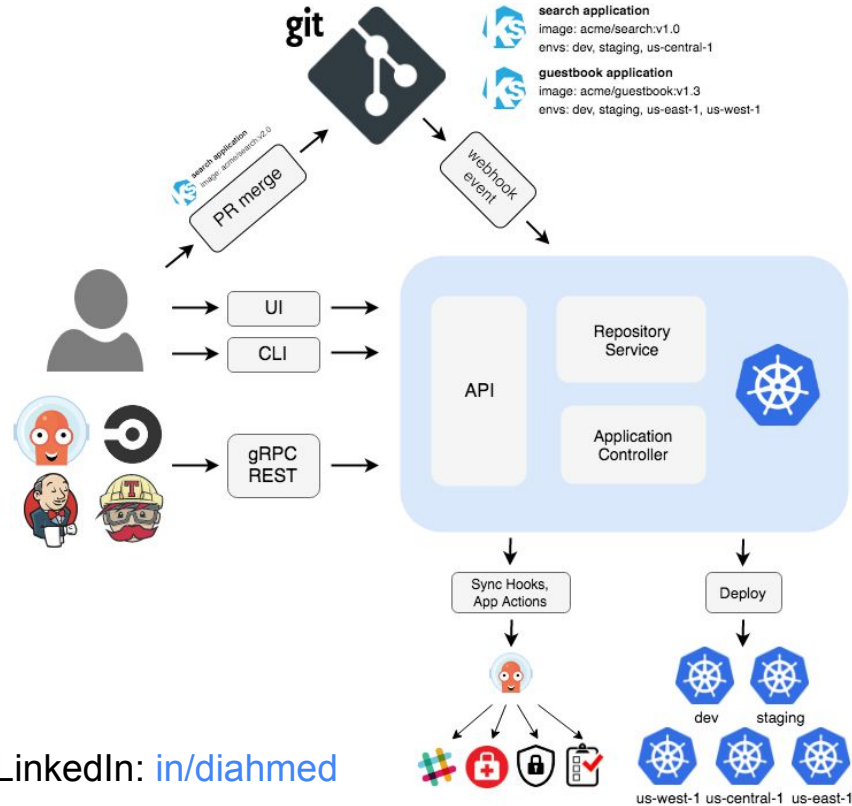
**cluster**

# Why Argo CD?

- Git as the single source of truth
- Developer centric
- Declarative
- Security, compliance, and auditing
- Trivialises rollback
- Observable - detect configuration drift
- Velocity



# How Argo CD works



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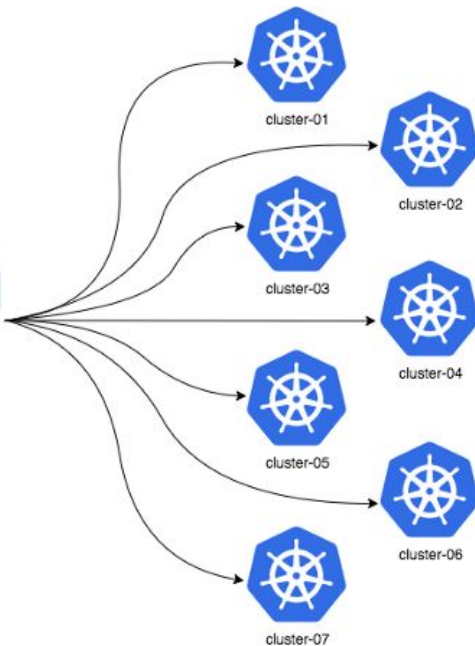
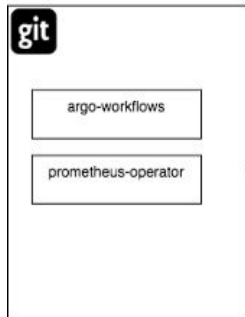
# Argo CD Demo



## But what if you want to...

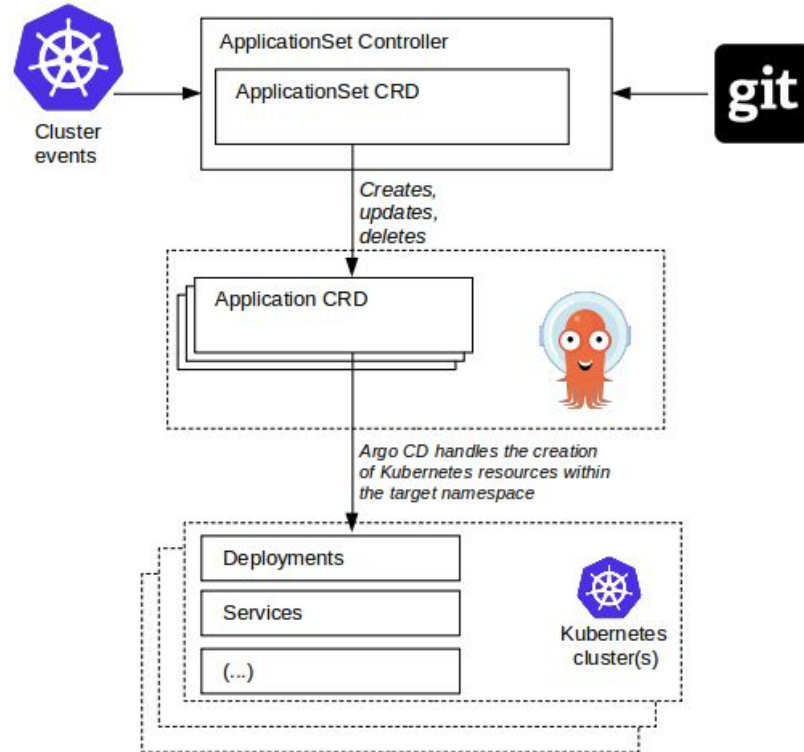
- Deploy Argo CD Applications to multiple Kubernetes clusters at once
- Deploy multiple Argo CD Applications from a single monorepo
- Allows unprivileged cluster users to deploy Argo CD Applications
- Do all of the above by only a single instance of Kubernetes CRD

# Introducing ApplicationSet Controller for Argo CD



```
1  apiVersion: argoproj.io/v1alpha1
2  kind: ApplicationSet
3  metadata:
4    name: guestbook
5  spec:
6    generators:
7      - list:
8        # Parameters are generated based on this cluster list, to be substituted
9        # into the template below.
10     elements:
11       - cluster: engineering-dev
12         url: https://1.2.3.4
13       - cluster: engineering-prod
14         url: https://2.4.6.8
15       - cluster: finance-preprod
16         url: https://9.8.7.6
17   template:
18     # An Argo CD Application template, with support for parameter substitution
19     # with values from parameters generated above.
20     metadata:
21       name: '{{cluster}}-guestbook'
22     spec:
23       project: default
24       source:
25         repoURL: https://github.com/argoproj-labs/applicationset.git
26         targetRevision: HEAD
27         path: examples/list-generator/guestbook/{{cluster}}
28       destination:
29         server: '{{url}}'
30         namespace: guestbook
```

# How does ApplicationSet Controller work?



# ApplicationSet Generators

- [List Generator](#)
- [Cluster Generator](#)
- [Git Generator \(Directory & File\)](#)
- [Matrix Generator](#)
- [SCM Provider Generator](#)
- [Cluster Decision Resource Generator](#)

# Argo CD ApplicationSet Controller Demo



# Thank you!

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## Questions?

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