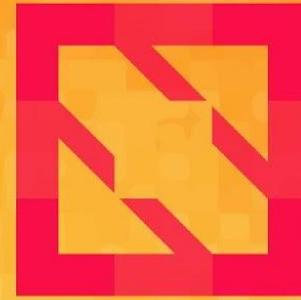




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Everything You Need To Be A GitOps Ninja

Alex Collins & Alex Matyushentsev



Get ready!



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It is helpful (but not mandatory) to have the following on your laptop:

- Git
- Docker + Kubernetes (e.g. Docker for Desktop)
- Helm
- Kustomize

Who Are We?



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Alex Collins is a Principal Engineer working on Intuit's Modern SaaS platform. Previously he was the EMEA Software Architect on QuickBooks Online based in London, as well as a blogger and author.



Alexander Matyushentsev is a Principal Engineer in the Intuit Modern SaaS team. He is focused on building tools which makes it easier to use Kubernetes. He is a core contributors to "Argo Workflows" and "Argo CD" projects.



Intuit and Kubernetes



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- 1,000 engineers working on K8S based services
- 137 clusters
- 3,500 namespaces
- 4,000 nodes
- 27,000 compute cores
- 39,500 pods

What Is GitOps



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- Your desired software system is described by files in Git
- An agent ensures the live system is in the same state as Git

What Is GitOps?

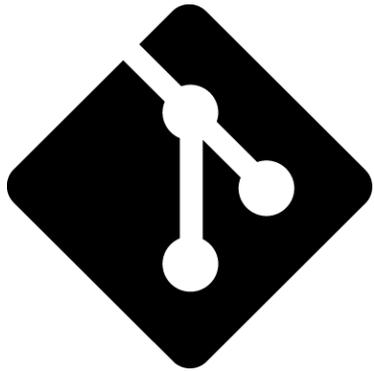


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Git repo



Agent



Kubernetes
cluster

What Is GitOps?



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Useful:

- Manifest generation tool
- CI system
- A way to group Kubernetes resources



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Demo: Poor Man's GitOps

<https://github.com/gitops-workshop/poor-mans-gitops>



Poor Man's GitOps: Problems



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- Security
- Observability
- Impact
- Latency
- Single tenancy

Why GitOps?



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- Single source of truth
- Security, compliance, and auditing
- Developer centric - self-service, pull requests, code reviews
- Trivialises rollback
- Declarative - describe what you want, not how to get there
- Observable - detect unexpected changes, configuration drift

What Is Helm?



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- A CLI which facilitates management of Kubernetes manifests as **charts**.
- A **chart** is a tarball containing, meta-data, e.g .name and version, templated YAML files, default values to merge.
- It works by taking same templated YAML files “**a chart**” and applying some configuration “**values.yaml**” to produce output.

Helm is all about packaging an app for others.





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Hands-On: Helm

<https://github.com/gitops-workshop/kustomize>



Helm: What You'll Learn



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- Anatomy of a chart
- How to build and publish the chart
- How to install the chart locally

Helm: Challenges



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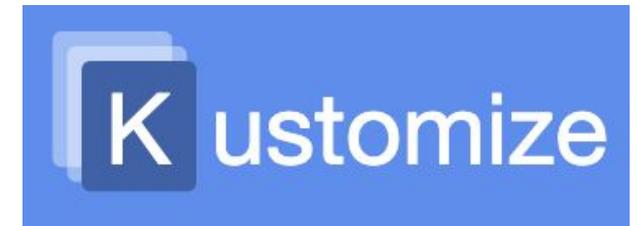
- Requires (prior to v3) Tiller to be installed into your cluster.
- Uses Golang templating - ugly as hell.
- Not declarative

What Is Kustomize?

- A CLI which facilitates management of Kubernetes manifests
- It works by applying one or more **overlays**, on top of base YAML, to produce a variants

What isn't Kustomize?

- Not a templating tool (e.g. jinja2)



Kustomize is all about defining an app for yourself.



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Hands-On: Kustomize

<https://github.com/gitops-workshop/kustomize>



Kustomize: Challenges



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- No parameters or templates
- No lifecycle management

Helm or Kustomize or other*...?



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If you need to package apps to share with other people choose Helm, otherwise Kustomize.

*see also Jsonnet, raw YAML



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Introduction to Argo CD



What Is Argo CD?

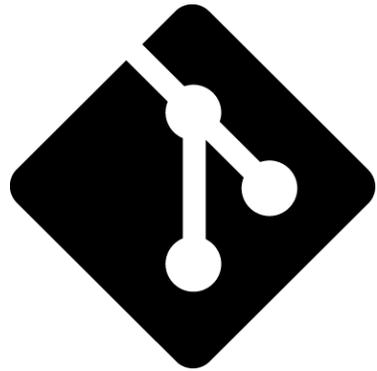


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Git repo



Agent



Kubernetes
cluster

Argo Community



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Demo: Argo CD

<https://github.com/gitops-workshop/argo-cd-demos>





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Hands-On: Your 1st App





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LOGIN VIA GITHUB



Sign in to GitHub
to continue to GitOps Workshop

Username or email address

alex@alexecollins.com

Password

[Forgot password?](#)

Sign in

Your account (alexec)
Verify your GitHub account

Resources
Determine what resources both you and GitOps Workshop can access

Actions
Enable you to trigger actions on GitHub from within GitOps Workshop

Resources on your account

Email addresses (read)
View your email addresses

GitOps Workshop has not been installed on any accounts you have access to.

[Learn more about GitOps Workshop](#)

Authorize GitOps Workshop by Alex Collins

Authorizing will redirect to
<http://localhost:4000>

The screenshot shows the Argo CD web interface. At the top, there's a header with 'Applications' and 'APPLICATIONS'. Below the header, there are buttons for '+ NEW APP' and 'SYNC APPS'. A sidebar on the left contains navigation icons. The main content area features a large circular icon with a stack of layers and the text 'No applications yet' and 'Create new application to start managing resources in your cluster'. A 'CREATE APPLICATION' button is located at the bottom of this section.



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Demo: Code CI





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Hands-On: Upgrade App





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Hands-On: Preview App





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Hands-On: Hooks And Waves





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Hands-On: GitOps Secrets

<https://github.com/gitops-workshop/secrets>



What We Covered



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- Poor Man's GitOps
- Helm
- Kustomize
- Argo CD demo and my-app
- CI + CD
- Hooks and Waves



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Find Out More?

<http://bit.ly/gitops-workshop>

Come find us at the Intuit booth.

