

# Code to Production - Kubernetes with Tekton and GitOps

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Mario Vázquez  
Senior Software Engineer  
@mvazce

# GitOps

- YAML objects stored in a git repository with version control
- Templating available with Helm or Kustomize
- Quite simply “kubectl apply -f \$path” runs over and over
- No object type creation limitations
- Remediation of objects with a webhook or by a controller monitoring a repository

# Best Practices

- Least privileges as possible
- Store code and Kubernetes objects in different repositories
- Setup proper RBAC access for your Git Repositories
  - Avoid storing Secrets, instead use Sealed Secrets
- Document the process to create/recreate the GitOps artefacts

# Deployment Models

- Hub and Spoke
  - Hub and Spoke clusters can use push or pull mechanisms, or even a mix of the two
- Cluster Independent
  - One reconciler per cluster
  - Harder to manage

# Argo CD

- Web UI
- Multiple cluster configuration
- Templating available with Helm or Kustomize
- Multiple sync options
  - Pruning
  - Self healing
  - Auto-sync
  - Webhook

# Kustomize

- Allows you to override values in your Kubernetes objects
- Integrated into kubectl 1.14+
- Kustomize is super powerful for multisite
  - Configure overlays based on destination cluster

# Tekton

- CI/CD
- Serverless
  - No need to manage a CI server, it's built into the cluster
- Enables Pipeline/Workflow functionality
- Pluggable
  - Code a task or pipeline but run differently based on parameters / resources

# Tekton terminology

- TaskRun -> Task
- PipelineRun -> Pipeline
- Event Listener -> Trigger Binding -> Trigger Template



# Why Argo CD and Tekton?

- Argo CD lacks workflow/pipeline functionality
- Tekton can maintain the image lifecycle
- Tekton can provide a testing process
- Argo CD can manage and modify multiple clusters from a single location

# Helpful Binaries

- `argocd` - Interact with Argo CD API
- `tkn` - Interact with Tekton API
- `kubeseal` - Seal secrets

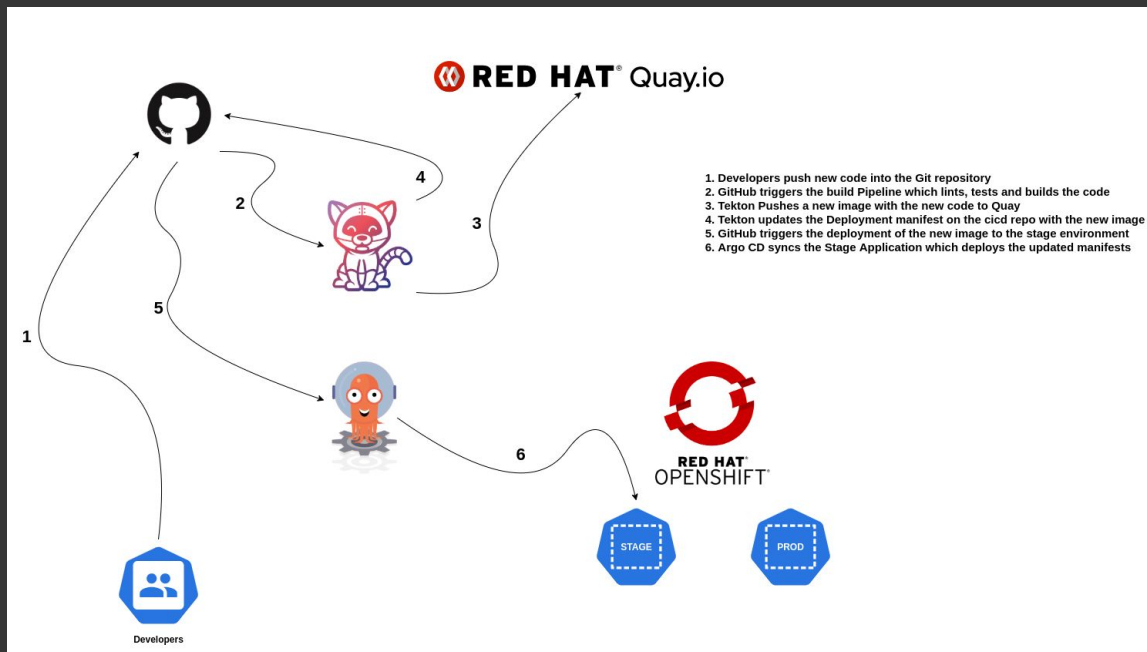
# Demo

- We have a GoLang App
- Two Tekton Pipelines
  - One pipeline which builds the code
  - One pipeline which promotes images to production
- Argo CD
  - Deploys the App builds to the different environments

Demo Code: <https://bit.ly/codetoproduction-devconfus20>

# Demo Architecture

Build and deploy the code to staging



# Demo Architecture

Promote the build and deploy to production

