

## **GitOps - Continuous and Progressive Deployment in AWS EKS**

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**- Sivamuthu Kumar**

# Sivamuthu Kumar

## AWS Community Builder - Containers

Sr. Software Architect, Computer Enterprises Inc  
Orlando, Florida



ksivamuthu



ksivamuthu



ksivamuthu





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## */ TODAY'S AGENDA*

- Overview of GitOps
- GitOps operator in Kubernetes
- Fluxv2 - Continuous deployment of configuration and App.
- Flagger - Progressive delivery, automated canary deployments
- Q&A
- Quiz with Exciting Rewards

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**GitOps - Continuous and Progressive Deployment in AWS EKS**



# GitOps

**A new operational model for modern systems**

## What is GitOps?

GitOps is the code-based infrastructure and operational procedures that rely on Git as a source control system.



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A graphic with a dark blue background. At the top, the text 'CI/CD' is written in large white letters. Below it is a white Kubernetes ship's wheel icon. The graphic is surrounded by various colored dots (blue, red, green) and lines, suggesting a complex system or workflow. To the left and right of the central graphic are 3D cubes, one light blue and one pink, floating in the space.

CI/CD

# GitOps Principles



There are four key principles of GitOps that drive its implementation:

- Describe the entire system declaratively
- Version the canonical desired system state in Git
- Automatically apply approved changes to the desired state
- Ensure correctness and alert on divergence with software agents

# GitOps vs DevOps



DevOps - about culture and methodology, as much as techniques and tools



GitOps - Techniques and Best Practices to implement Continuous Delivery

# Not Just for Kubernetes



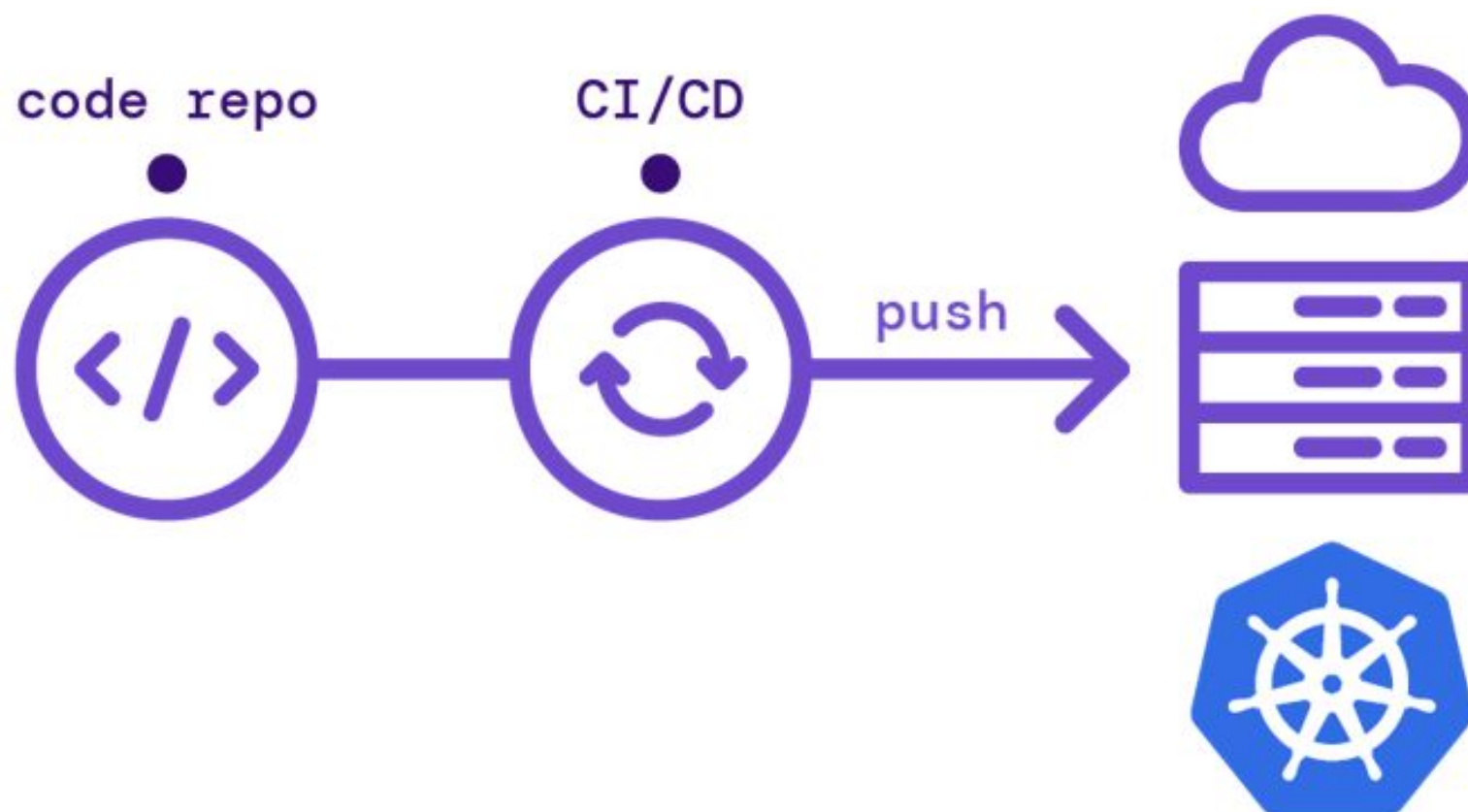
- Kubernetes vs Non-Kubernetes configuration and workloads
- GitOps is not just for Kubernetes
- Keep everything in your version control



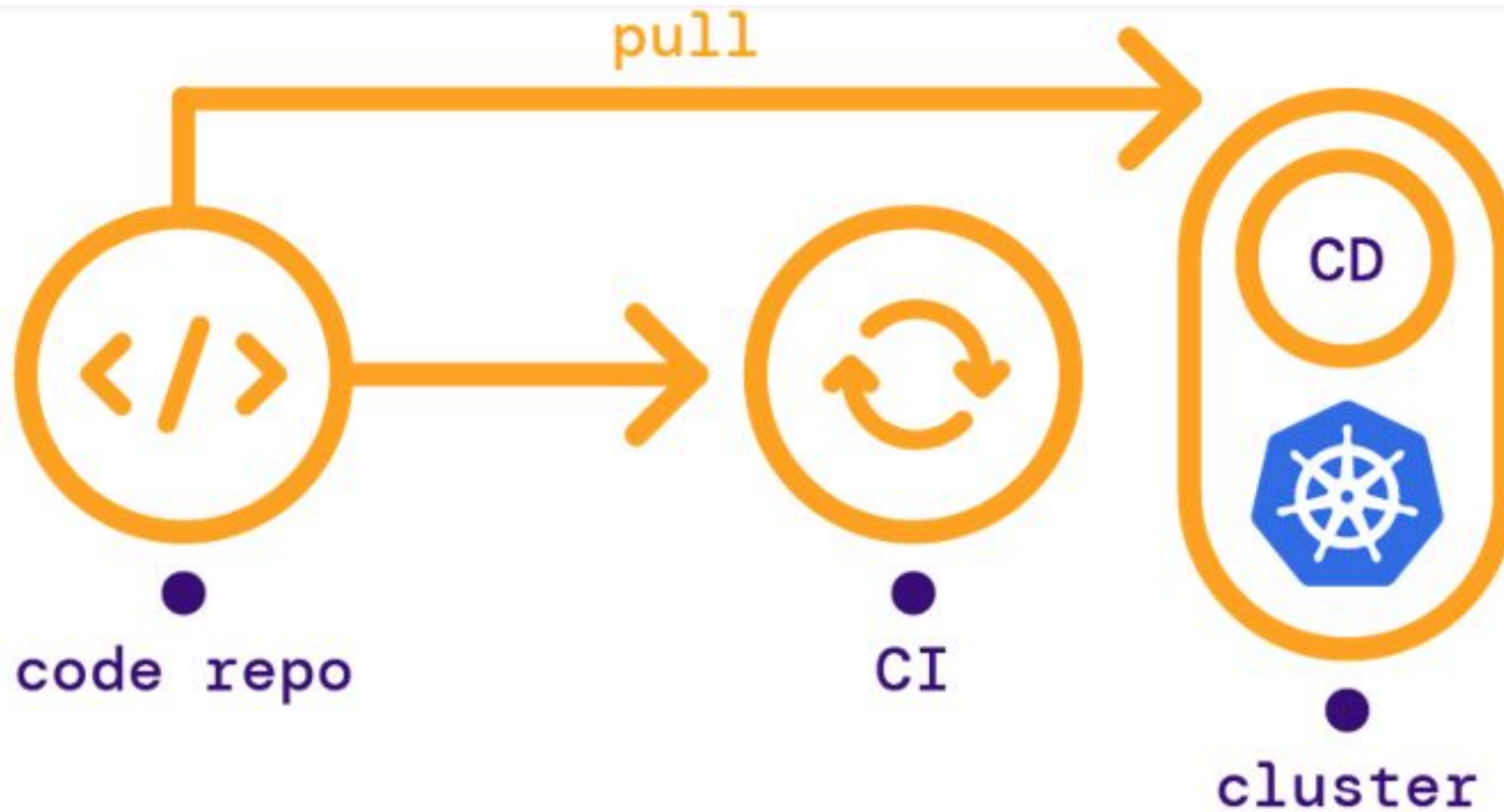
# Push vs Pull based workflows

**Employ GitOps principles**

# Push Workflow



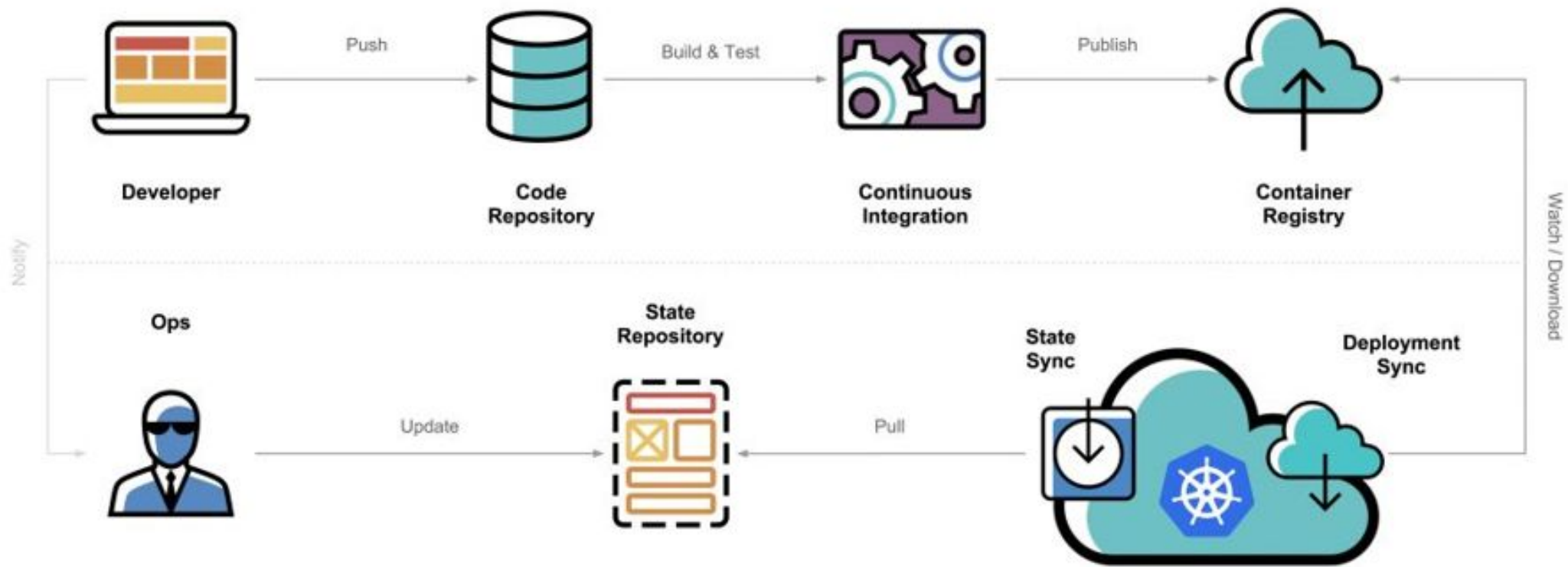
# Pull Workflow



# GitOps Operator

**Kubernetes agent watching your version control changes..**

# CI/CD With GitOps



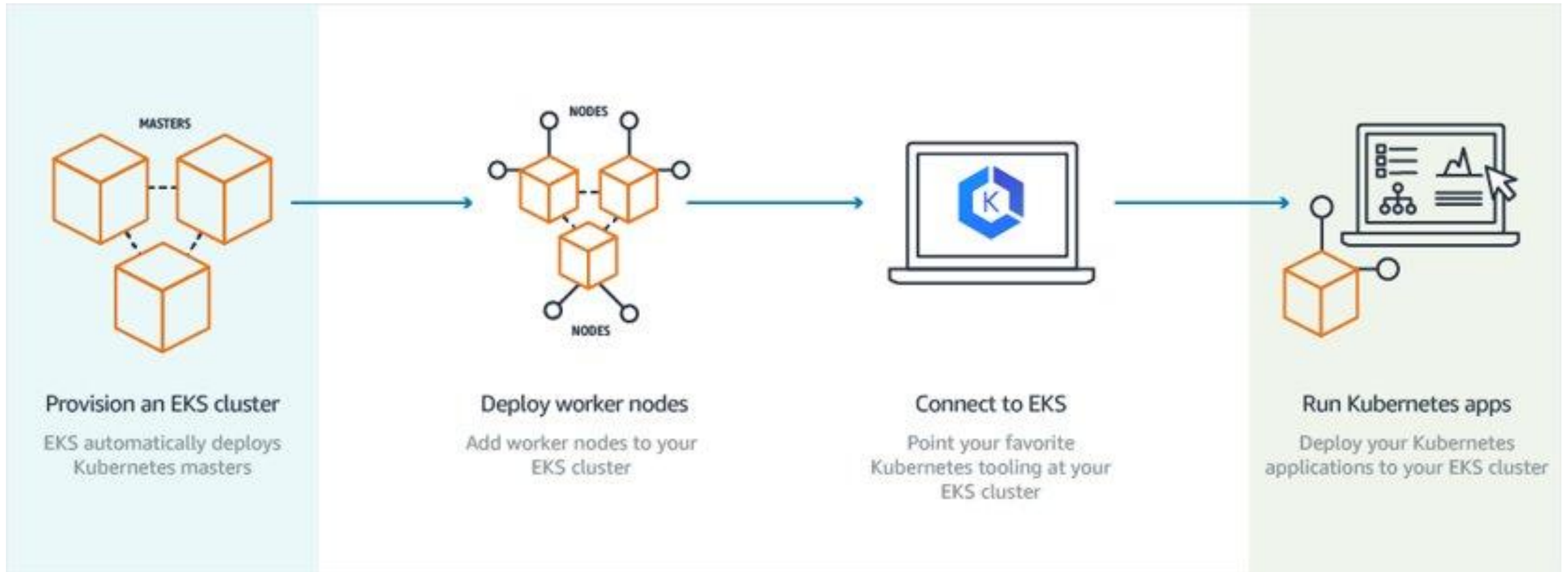
# EKS Cluster

**Managed Kubernetes Service in AWS**

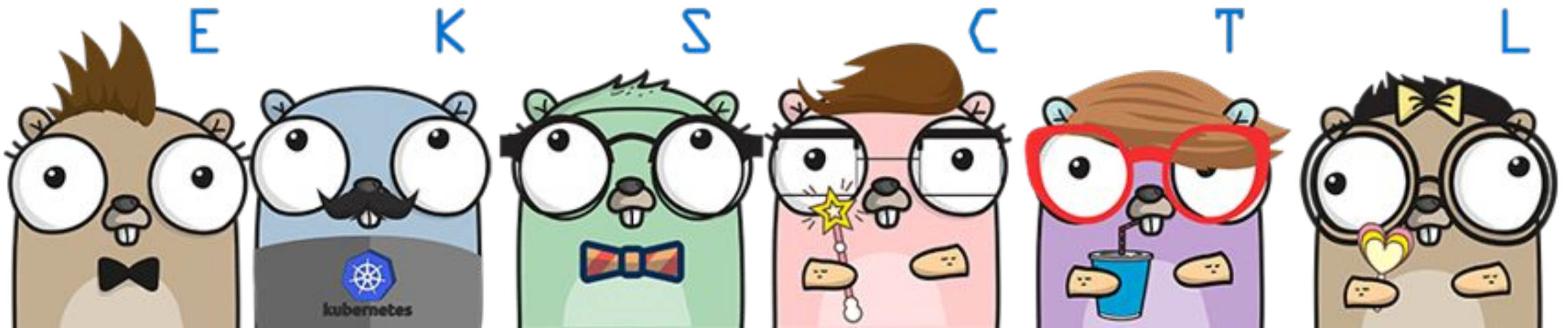


Amazon EKS

# EKS Cluster- Workflow



# EKSCTL – Create Kubernetes Cluster in EKS







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```
apiVersion: eksctl.io/v1alpha5
kind: ClusterConfig
```

```
metadata:
  name: demo-cluster
  region: us-east-1
```

```
nodeGroups:
- name: ng-1
  instanceType: m5.large
  desiredCapacity: 2
```



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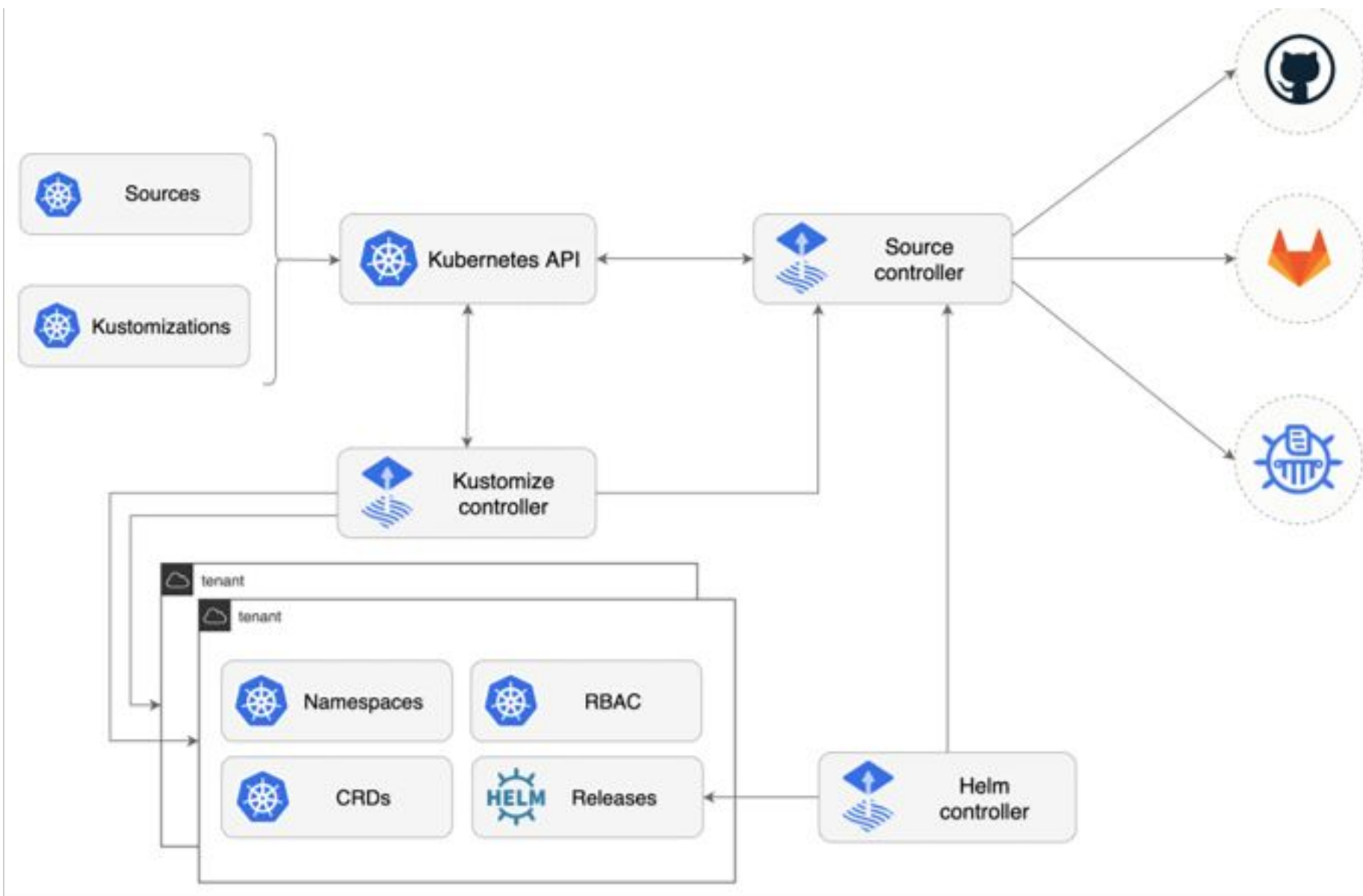
```
apiVersion: eksctl.io/v1alpha5
kind: ClusterConfig

metadata:
  name: demo-cluster
  region: us-east-1

# other cluster config ...
gitops:
  flux:
    gitProvider: github
    flags:
      owner: ksivamuthu
      repository: demo-cluster-gitops-repo
      private: true
      branch: main
      namespace: flux-system
      path: clusters/dev
```

# Flux v2

**Flux is a tool for keeping Kubernetes clusters in sync with sources of configuration (like Git repositories) and automating updates to configuration when there is new code to deploy.**



# Who is Flux for?



**cluster operators** who automate provision and configuration of clusters;



**platform engineers** who build continuous delivery for developer teams;



**app developers** who rely on continuous delivery to get their code live.

# Progressive Delivery

**Flagger – Automated Canary Deployments**

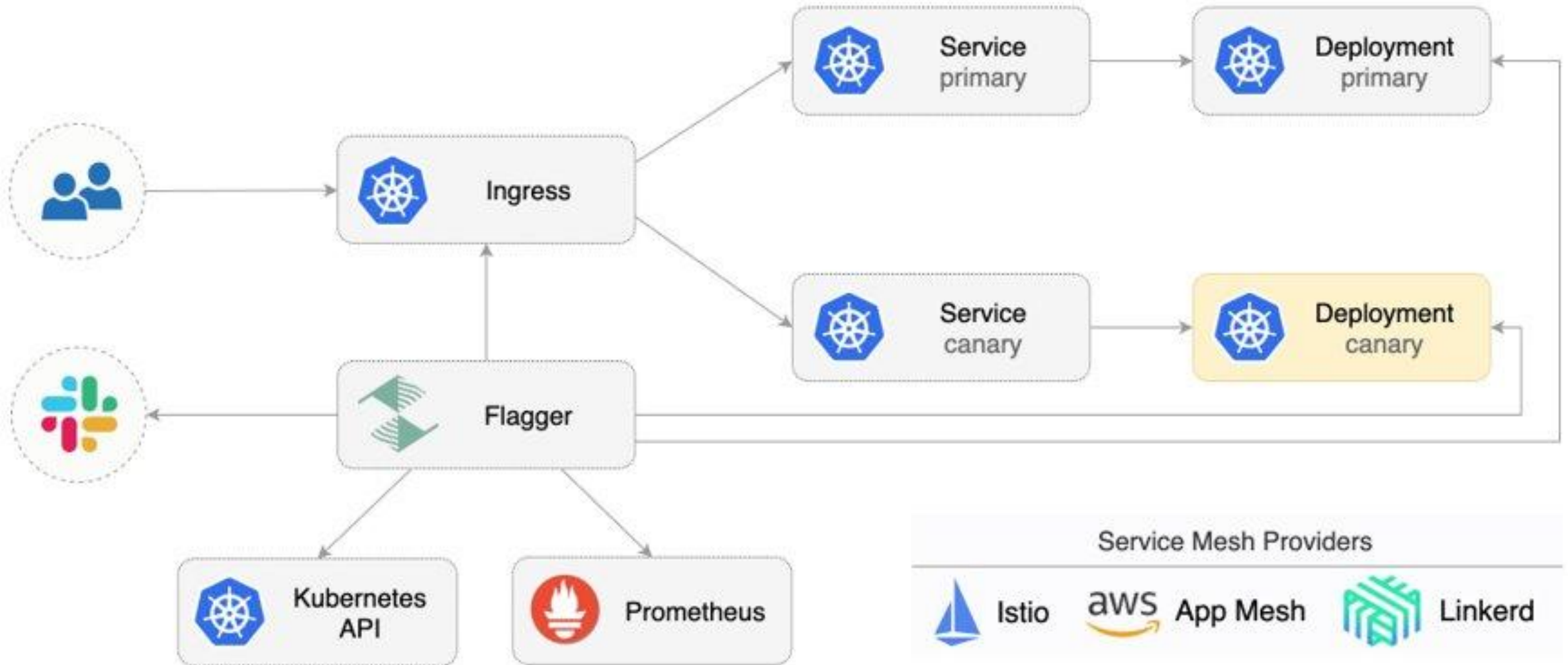


# Flagger

- Safe Releases - Canary, A/B, Blue Green Deployments
- Flexible Traffic Routing - work with major service meshes
- Extensible Validations - Approval (manual, programmatic validation)



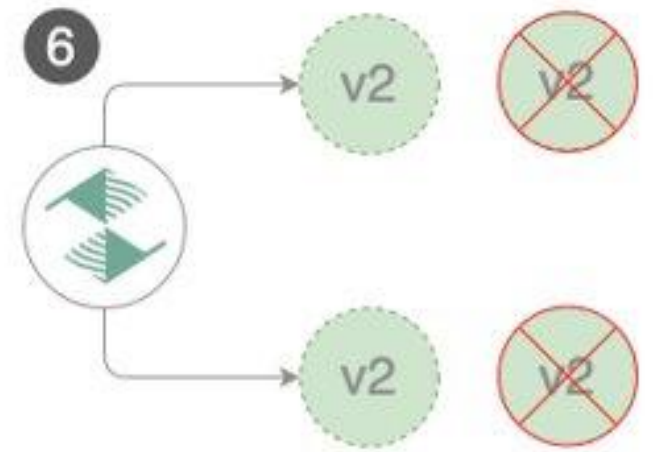
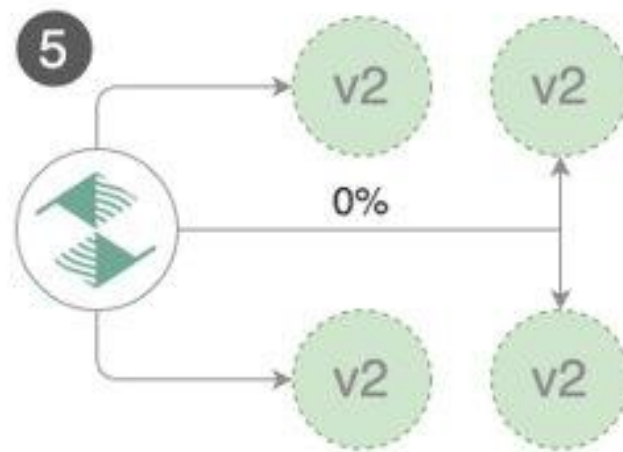
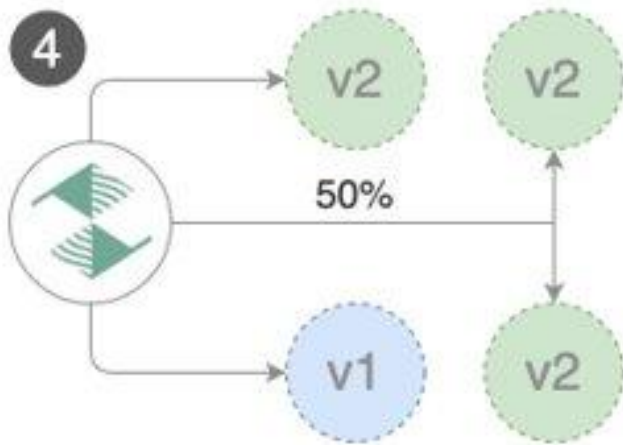
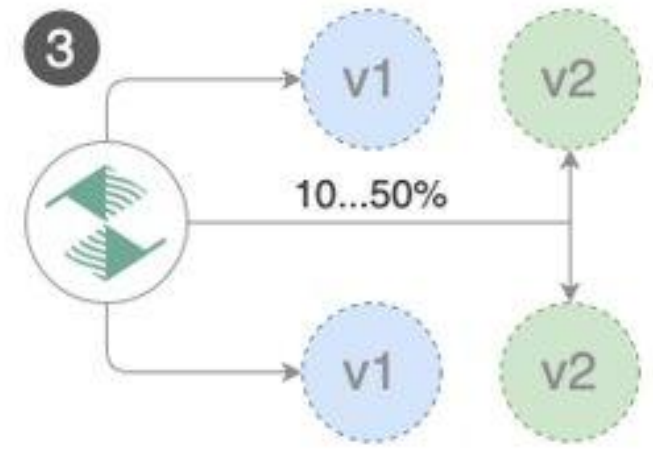
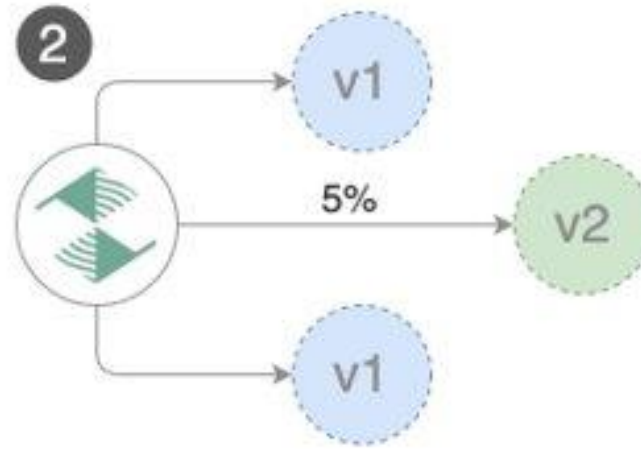
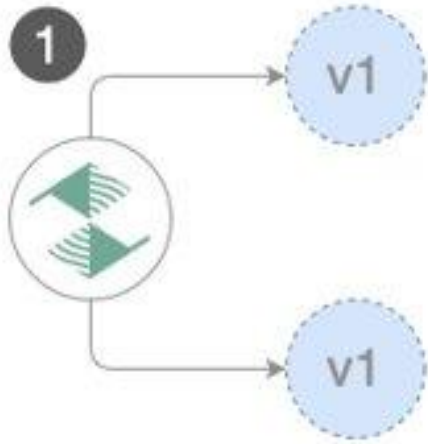
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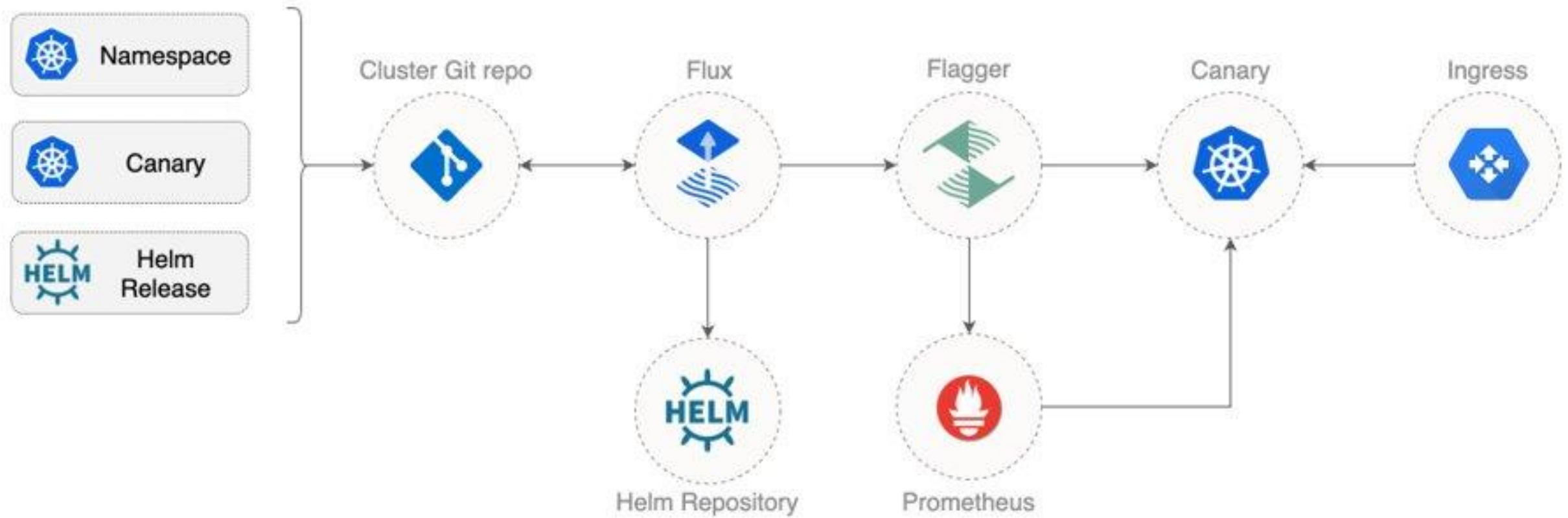


# Flux & Flagger

**Continuous and Progressive Delivery in EKS**



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# Reference

- AWS EKS - <https://aws.amazon.com/eks>
- Flux v2 - <https://fluxcd.io/>
- Flagger - <https://flagger.app/>
- GitOps - <https://www.weave.works/technologies/gitops/>



# A Quick Tour of Whizlabs

**By Abhishek Maurya**



WHIZLABS

**Q&A**



# QUIZ TIME

**5 Questions, 5 Winners**

## IT'S RAINING REWARDS



1. 5 Quiz Winners will win 1 FREE **Whizlabs Course/Practice Test** of their choice.
2. Grab a Flat 60% OFF on all courses/practice tests. Use code: **WLSIVA60**
3. Grab a Flat 30% OFF on Whizlabs Subscription. Use code: **WLSIVA30**



**Q. 1 \_\_\_\_\_ is a special namespace that is used for special purposes like bootstrapping a cluster.**

- A. Kube-public**
- B. Kube-private**
- C. Kube-system**
- D. Default**

Q. 2 \_\_\_\_\_ is a simple CLI tool for creating clusters on EKS.

- A. Eksctl
- B. Kubectl
- C. Aws-ctl
- D. cluster-ctl

**Q. 3 Flux is GitOps toolkit based on \_\_\_\_\_ workflow.**

- A. Pull**
- B. Push**

**Q. 4 \_\_\_\_\_ allow organizations to test in production with real users.**

- A. Canary Deployments**
- B. Blue Green Deployments**
- C. Rolling Deployments**

**Q. 5 How many total certifications AWS have?**

- A. 10**
- B. 8**
- C. 11**
- D. 4**

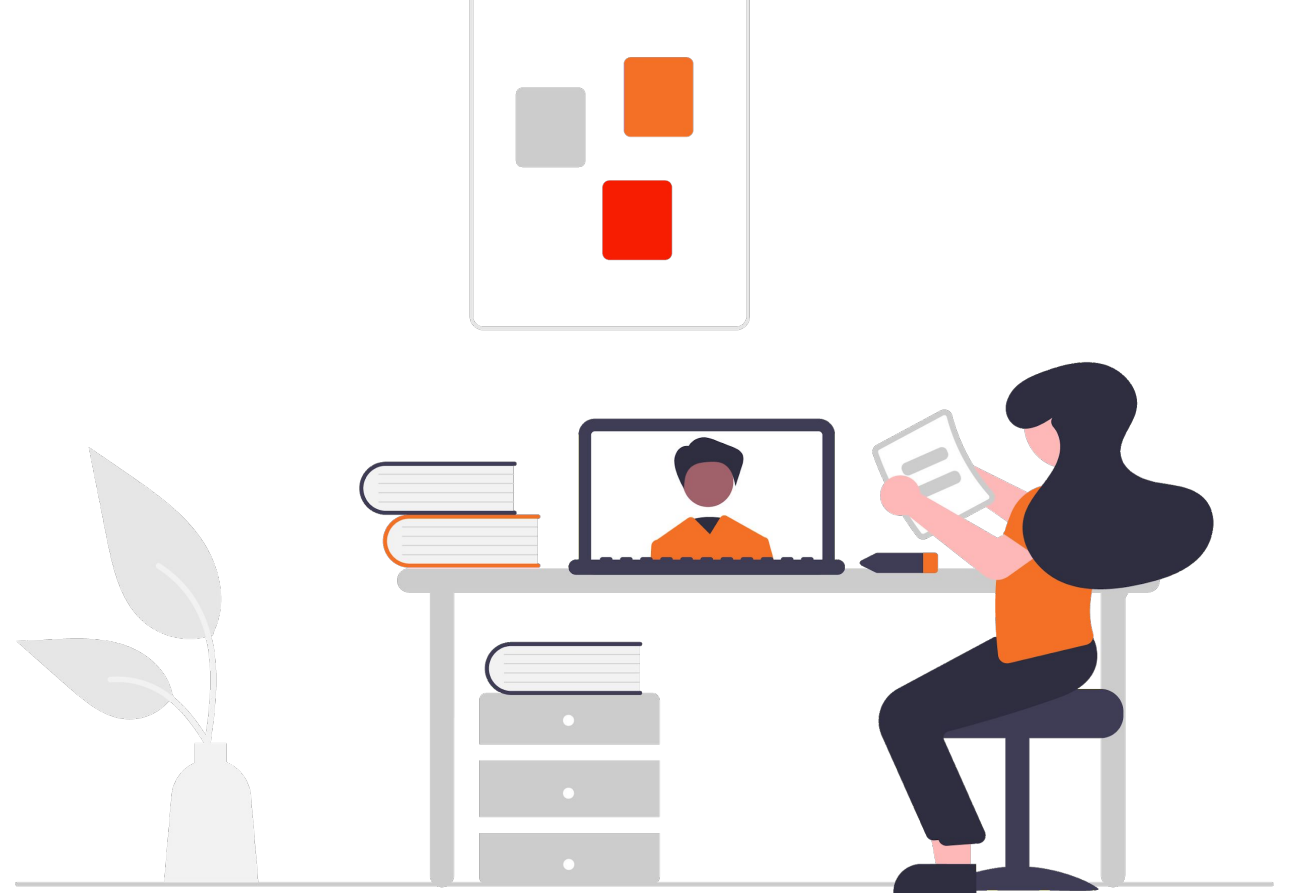
**Q. 6 Whizlabs #100daysofcloud - Is it helping you to begin your cloud journey?**

**A. Yes**

**B. Hell Yes!!**



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# THANK YOU

