

# AWS re:Invent

NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

CON306-R

# Accelerate software development lifecycles with GitOps

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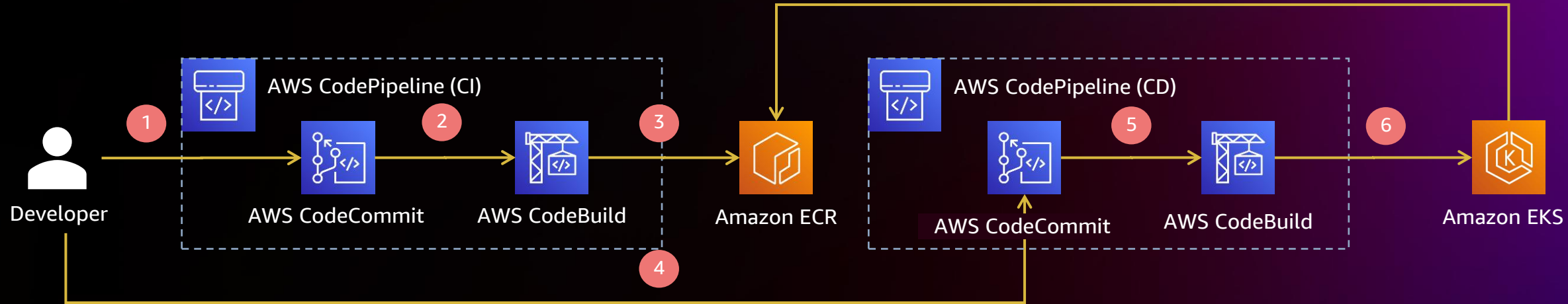
# Agenda

- Introduction and concepts
- Multi-cluster GitOps
- Lab time

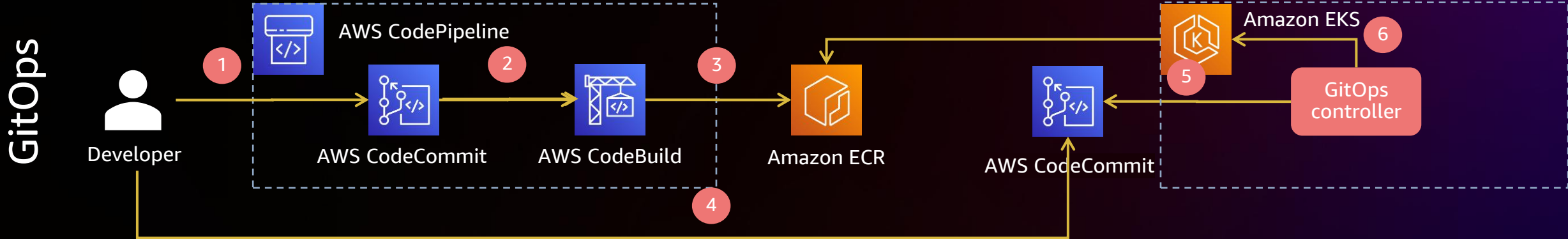
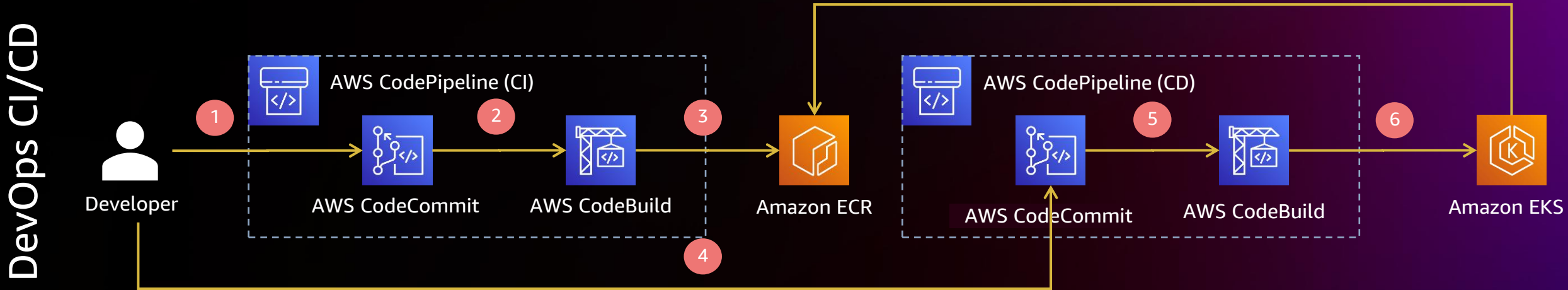
# Introduction and concepts

# DevOps CI/CD vs. GitOps

DevOps CI/CD



# DevOps CI/CD vs. GitOps



# Flux, the GitOps controller for Kubernetes



Implemented as a set of Kubernetes extensions

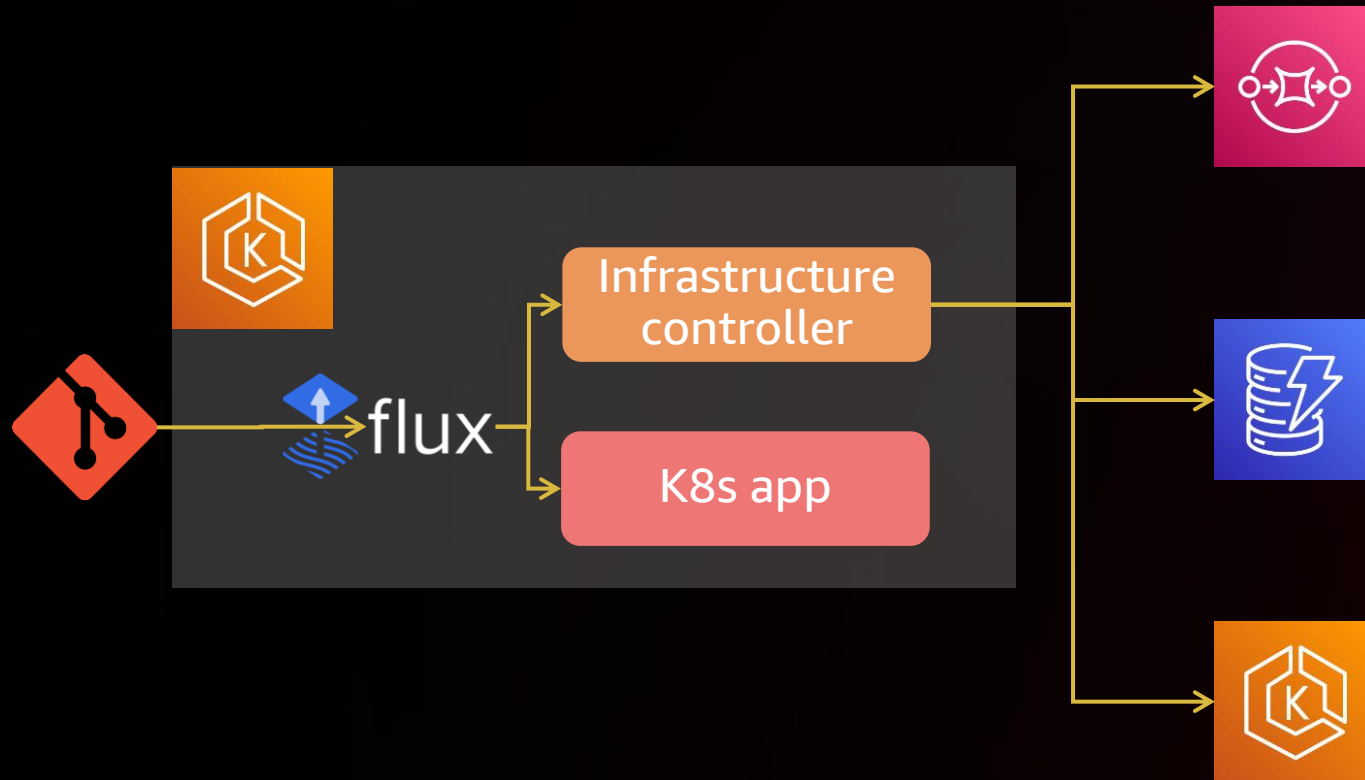


Runs as an in-cluster software agent



Amazon EKS add-on for GitOps  
(coming soon)

# Infrastructure controllers



e.g., AWS Controller for Kubernetes (ACK), Crossplane

## Sample manifest

```
apiVersion: dynamodb.aws.crossplane.io/v1alpha1
kind: Table
metadata:
  name: products
spec:
  forProvider:
    region: us-west-2
    attributeDefinitions:
      - attributeName: id
        attributeType: S
    keySchema:
      - attributeName: id
        keyType: HASH
    billingMode: PROVISIONED
    provisionedThroughput:
      readCapacityUnits: 1
      writeCapacityUnits: 1
    providerConfigRef:
      name: default
```



# Secrets management – What are secrets?

“A Secret is an object that contains a small amount of sensitive data such as a password, a token, or a key.”

– from Kubernetes.io

# Secrets management strategies

## Externalize secrets

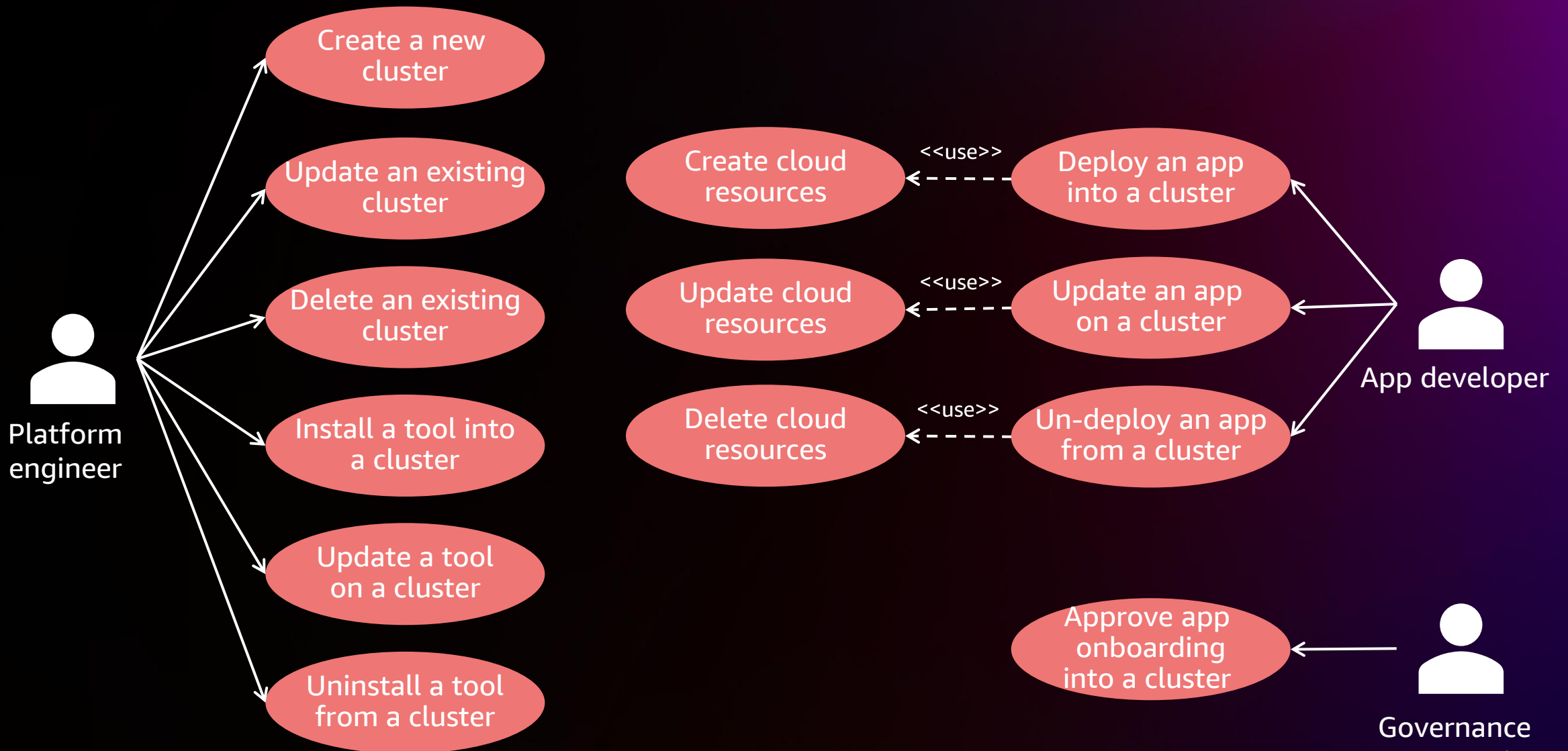
- Secret information stored in an external vault
- e.g., External Secrets Operator

## Store secret in Git encrypted

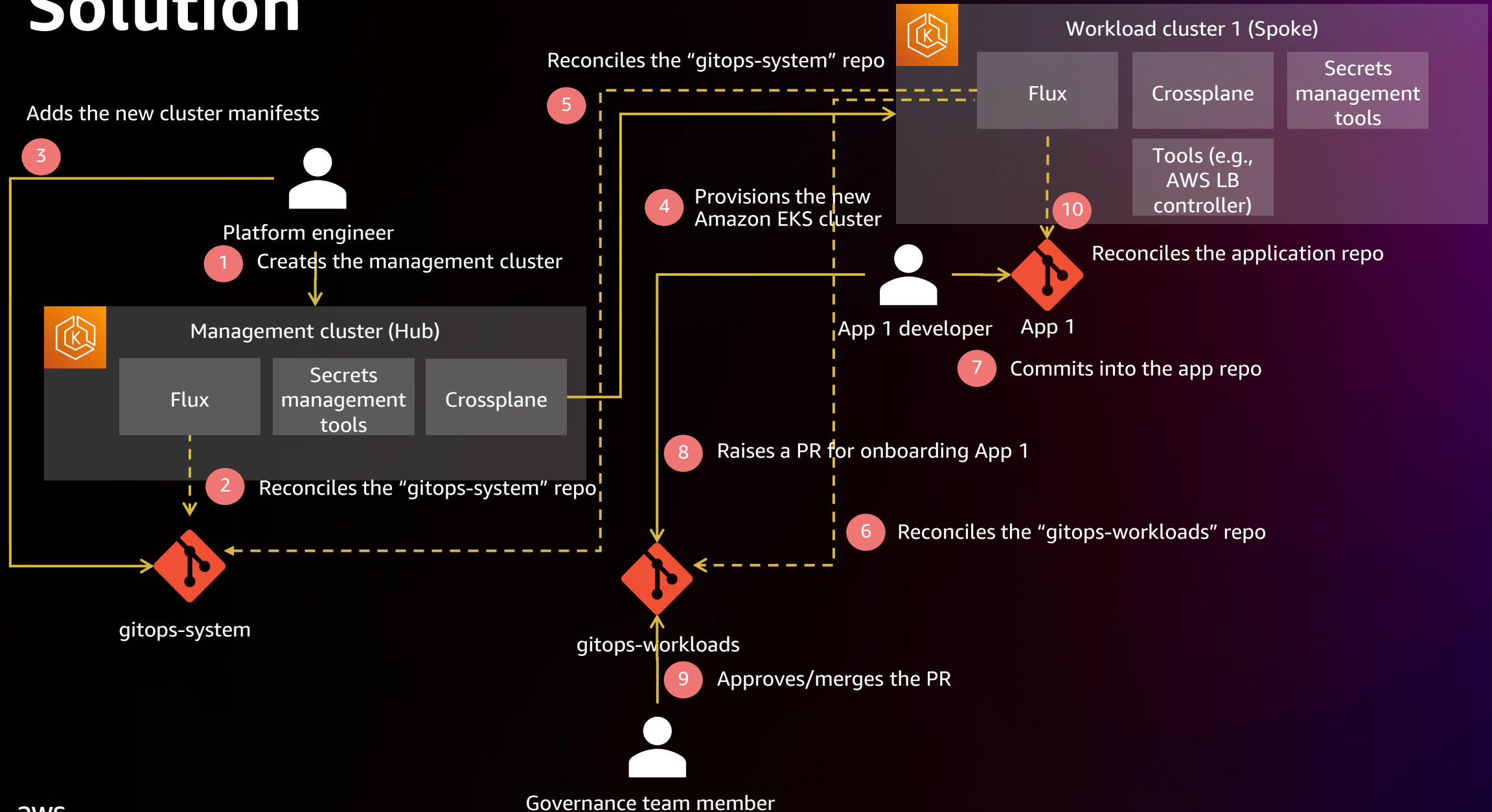
- Secret information stored in Git, but in an encrypted form
- e.g., Sealed Secrets

**Now, let's put all these pieces  
together to address a real scenario**

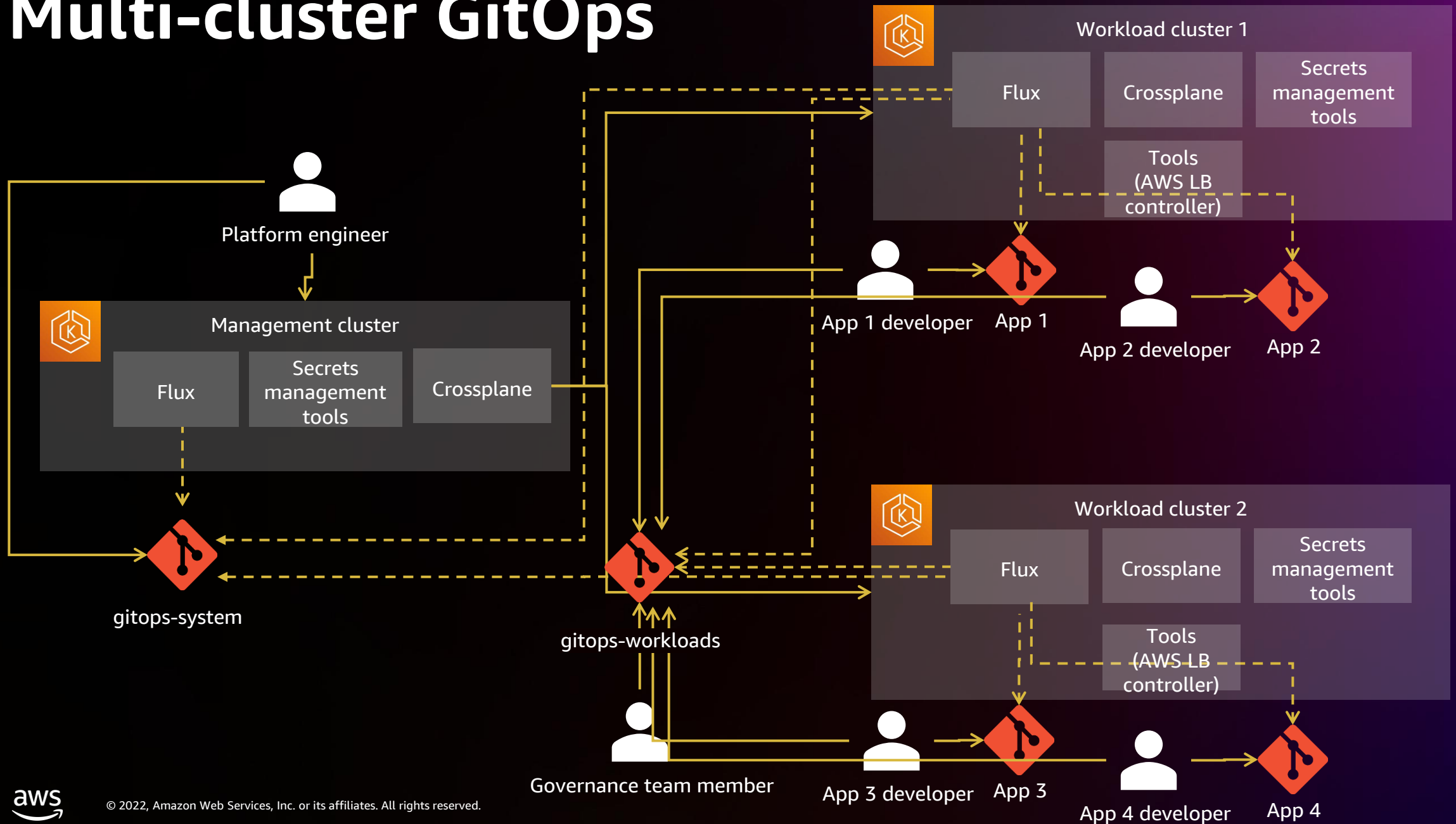
# Use cases



# Solution



# Multi-cluster GitOps



# Lab time



# Lab structure

- ~~Introduction~~
- ~~Build sequence~~
- Lab 1: Workshop setup
- Lab 2: Build a workload cluster
- Lab 3: Deploy an application into a workload cluster
- Lab 4: Manage workload clusters
- Conclusion



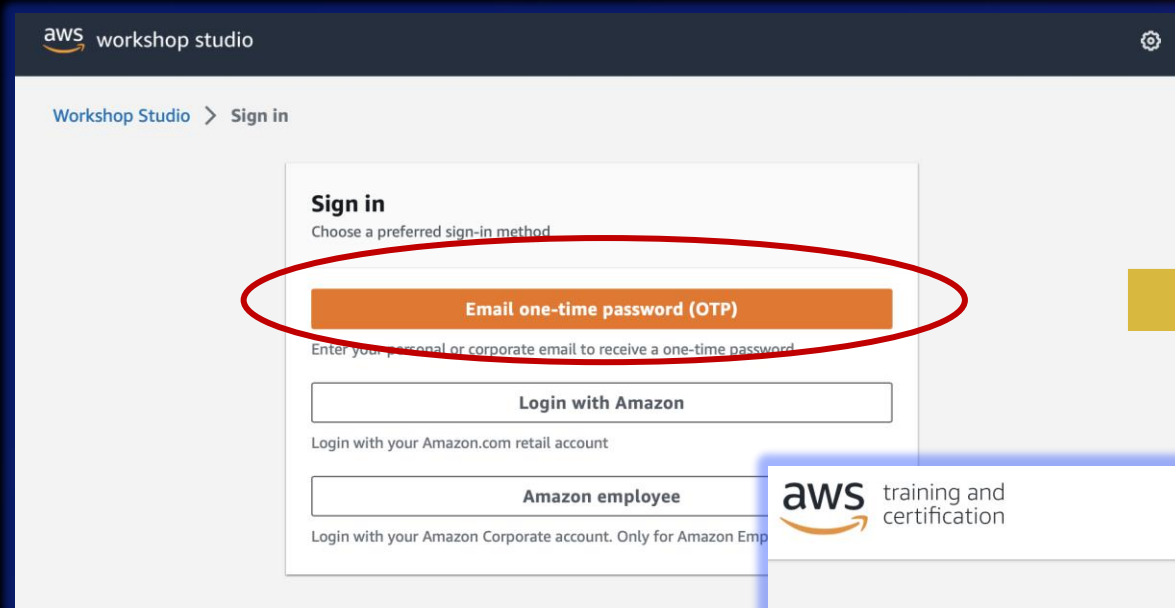
# Access lab environment

1

Visit <https://catalog.workshops.aws/join>  
(recommended browser: **Chrome**)

2

Choose **Email one-time password (OTP)**



aws workshop studio

Workshop Studio > Sign in

**Sign in**  
Choose a preferred sign-in method

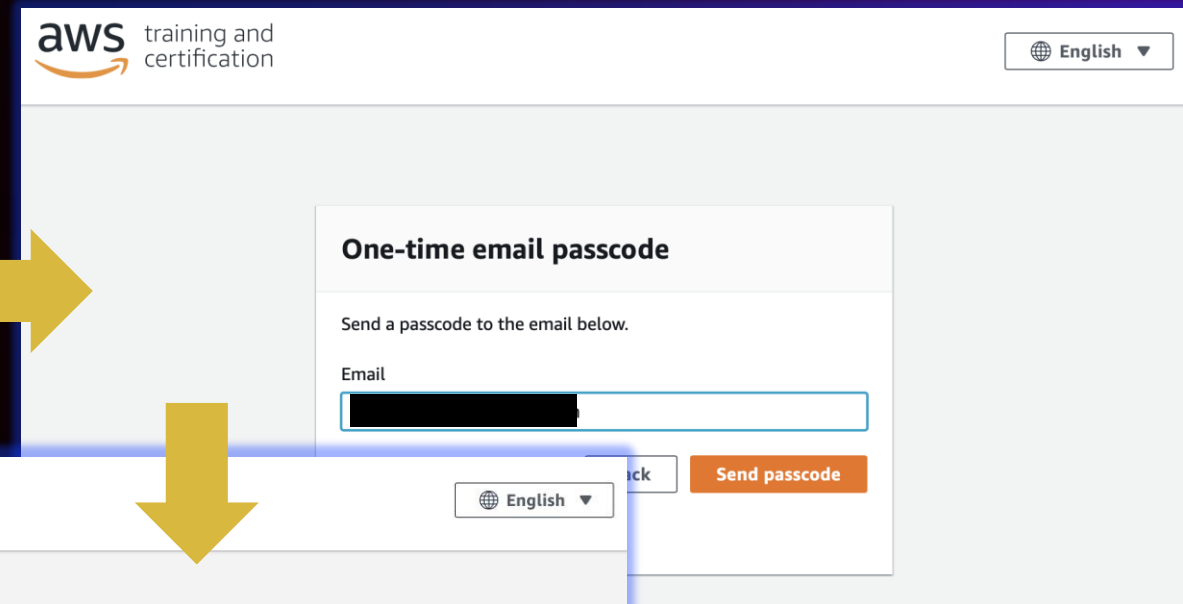
**Email one-time password (OTP)**  
Enter your personal or corporate email to receive a one-time password

Login with Amazon  
Login with your Amazon.com retail account

Amazon employee  
Login with your Amazon Corporate account. Only for Amazon Employees

3

Enter your email address



aws training and certification

English

**One-time email passcode**

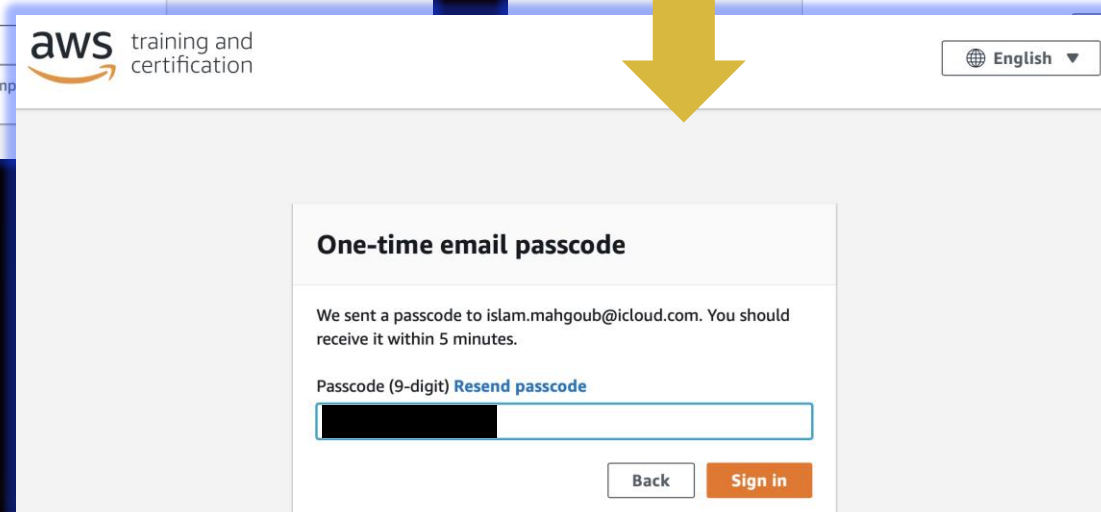
Send a passcode to the email below.

Email  
[Redacted email address]

Back Send passcode

4

Enter OTP



aws training and certification

English

**One-time email passcode**

We sent a passcode to islam.mahgoub@icloud.com. You should receive it within 5 minutes.

Passcode (9-digit) [Resend passcode](#)

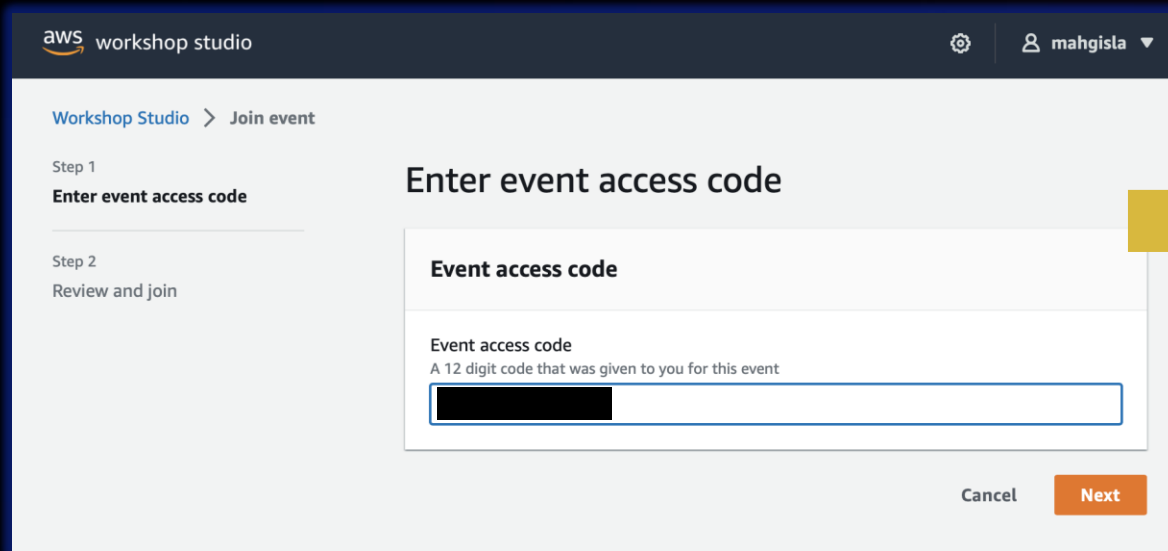
[Redacted passcode]

Back Sign in

# Access lab environment

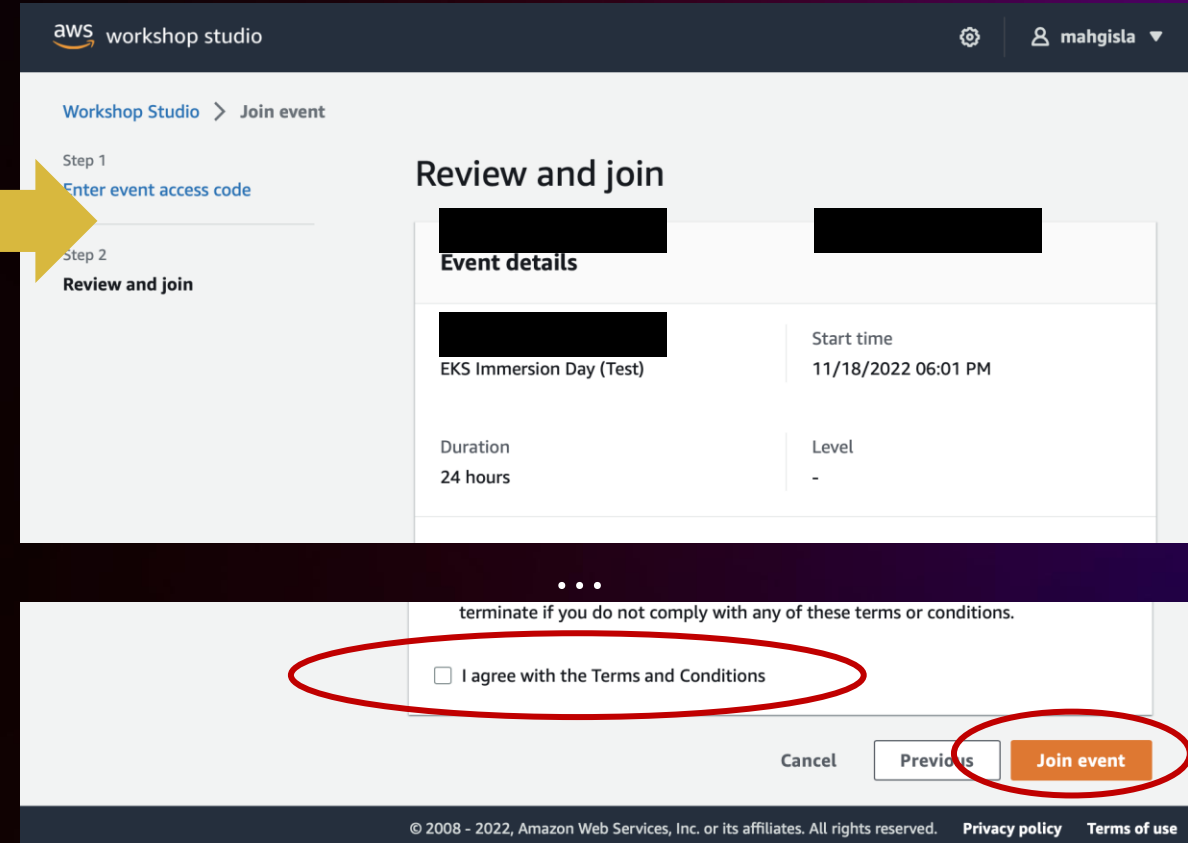
5

Enter access code: **142b-0aea4a-0a**



6

Review terms and conditions, select the checkbox, and then select **Join event**



# Access lab environment

7

Review lab instructions

aws workshop studio

CON306 - Accelerate software development lifecycles with GitOps event

Event ends in 11 hours 56 minutes.

Event dashboard > Accelerate software development lifecycles with GitOps

## Accelerate software development lifecycles with GitOps

This workshop contains labs to setup a multi-cluster GitOps environment on [Amazon Elastic Kubernetes Service \(EKS\)](#) using [Flux](#) and [Crossplane](#).

Note: this workshop can currently only be run at an AWS-hosted event

Previous Next

- Introduction
- Build sequence
- Lab 1: Workshop Setup
- Lab 2: Build a workload cluster
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8

Access your AWS account by selecting **Open AWS Console (us-west-2)**

aws workshop studio

CON306 - Accelerate software development lifecycles with GitOps event

Event in progress  
Ends in 11 hours 51 minutes 32 seconds.

Event dashboard > Accelerate software development lifecycles with GitOps

## CON306 - Accelerate software development lifecycles with GitOps event

Event information

- Accelerate software development lifecycles with GitOps
- Introduction
- Lab 1: Workshop Setup
- Lab 2: Build a workload cluster

▼ AWS account access

- Open AWS console (us-west-2)**
- Get AWS CLI credentials

(Amazon EKS)

Description

GitOps simplifies both application deployments and operations tasks with Kubernetes. In this workshop, learn how to build a scalable, complete GitOps system that addresses the needs of both application teams and platform teams.

aws Services Search [Option+S]

Console Home Info

Reset to default layout Add widgets

Recently visited Info

Welcome to AWS

Getting started with AWS

Learn the fundamentals and find valuable information to get the most out of AWS.



# Access lab environment

- 1 Visit Workshop Studio: <https://catalog.workshops.aws/join>
- 2 Choose **Email one-time password (OTP)**
- 3 Enter your email address
- 4 Enter OTP
- 5 Enter access code: **142b-0aea4a-0a**
- 6 Review terms and conditions, select the checkbox, and then select **Join event**
- 7 Review lab instructions
- 8 Access your AWS account by selecting **Open AWS Console (us-west-2)** (located at the bottom-left part of the Workshop Studio web page)

# Conclusion

## What have we accomplished?

- Combined a GitOps controller (Flux) with an infrastructure controller (Crossplane) to build an end-to-end/multi-cluster GitOps
- Learned how to structure Git to support large/complex environments

## Next steps

- Visit our GitHub repo: [github.com/aws-samples/eks-multi-cluster-gitops](https://github.com/aws-samples/eks-multi-cluster-gitops). Take it out for a spin. Watch it, star it, fork it, and start sharing feedback through GitHub Issues.

# Thank you!

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Please complete the session  
survey in the **mobile app**



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