

DevOps Internship Assignment

Objective

The aim of this assignment is to understand the hands-on experience with GitOps practices, utilizing Argo CD for continuous deployment and Argo Rollouts for advanced deployment strategies within a Kubernetes environment. You will be responsible for setting up a GitOps pipeline that automates the deployment and management of a simple web application.

Prerequisites

- Familiarity with Kubernetes concepts (Pods, Deployments, Services).
- Basic understanding of Docker and containerization.
- Experience with Git for version control.
- Access to a Kubernetes cluster for testing (you can use Minikube, kind, or a cloud provider's Kubernetes service).
- Argo CD and Argo Rollouts documentation: Familiarize yourself with the basics of these tools.

Assignment Overview

You will dockerize a simple web application, deploy it to a Kubernetes cluster using Argo CD, and manage its release process with Argo Rollouts. The assignment consists of four main tasks: setup and configuration, creating the GitOps pipeline, implementing a canary release, and documentation.

Video Link of whole Project: [Link]

https://twitter.com/apaar_tw/status/1790216305708331498

Task 1: Setup and Configuration

1. **Created a GitRepository:** [Link] <https://github.com/apaar-gh/tetris-rollout>
2. **Install Argo CD on Your Kubernetes Cluster:** [Link Documentation]

https://archive.eksworkshop.com/intermediate/290_argocd/install/

Commands :

```
kubectl create namespace argocd
```

```
kubectl apply -n argocd -f
```

```
https://raw.githubusercontent.com/argoproj/argo-cd/v2.4.7/manifests/install.yaml
```

3. **Install Argo Rollouts:** [Link Documentation]
<https://argo-rollouts.readthedocs.io/en/stable/installation/>

Commands :

```
kubectl create namespace argo-rollouts
```

```
kubectl apply -n argo-rollouts -f
```

```
https://github.com/argoproj/argo-rollouts/releases/latest/download/install.yaml
```

Kubectl Plugin Installation :

```
brew install argoproj/tap/kubectl-argo-rollouts
```

Task 2: Creating the GitOps Pipeline

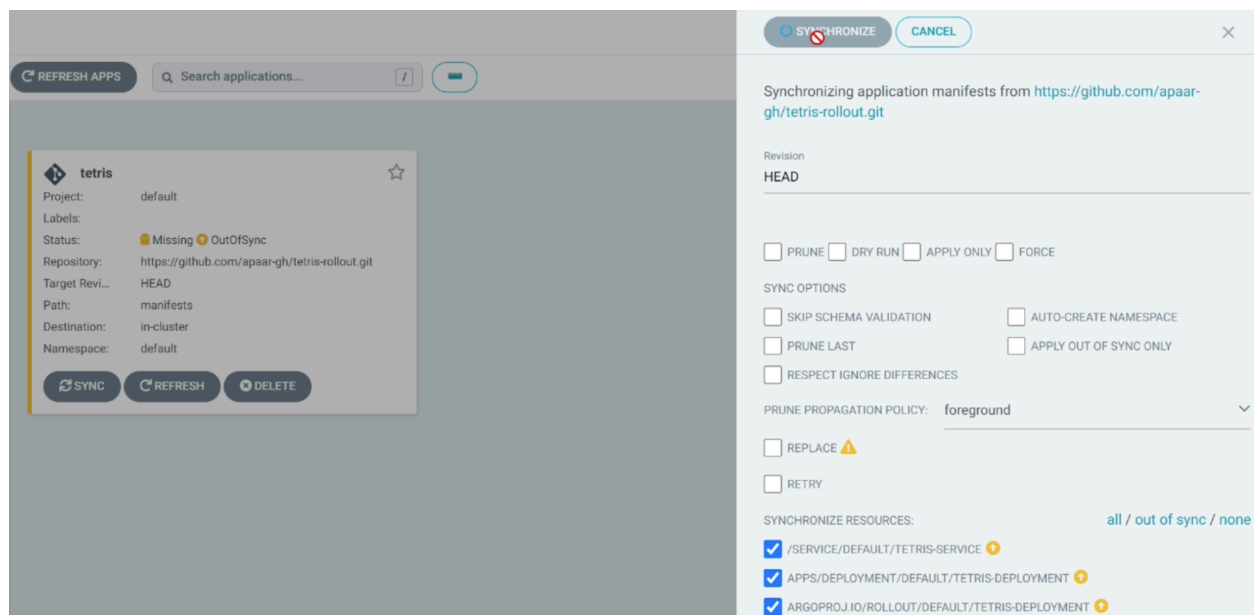
1. **Dockerize the Application:** [Docker Hub Link]
<https://hub.docker.com/repositories/log1cdk>

Docker Images v1(initial version) and v2 after update.

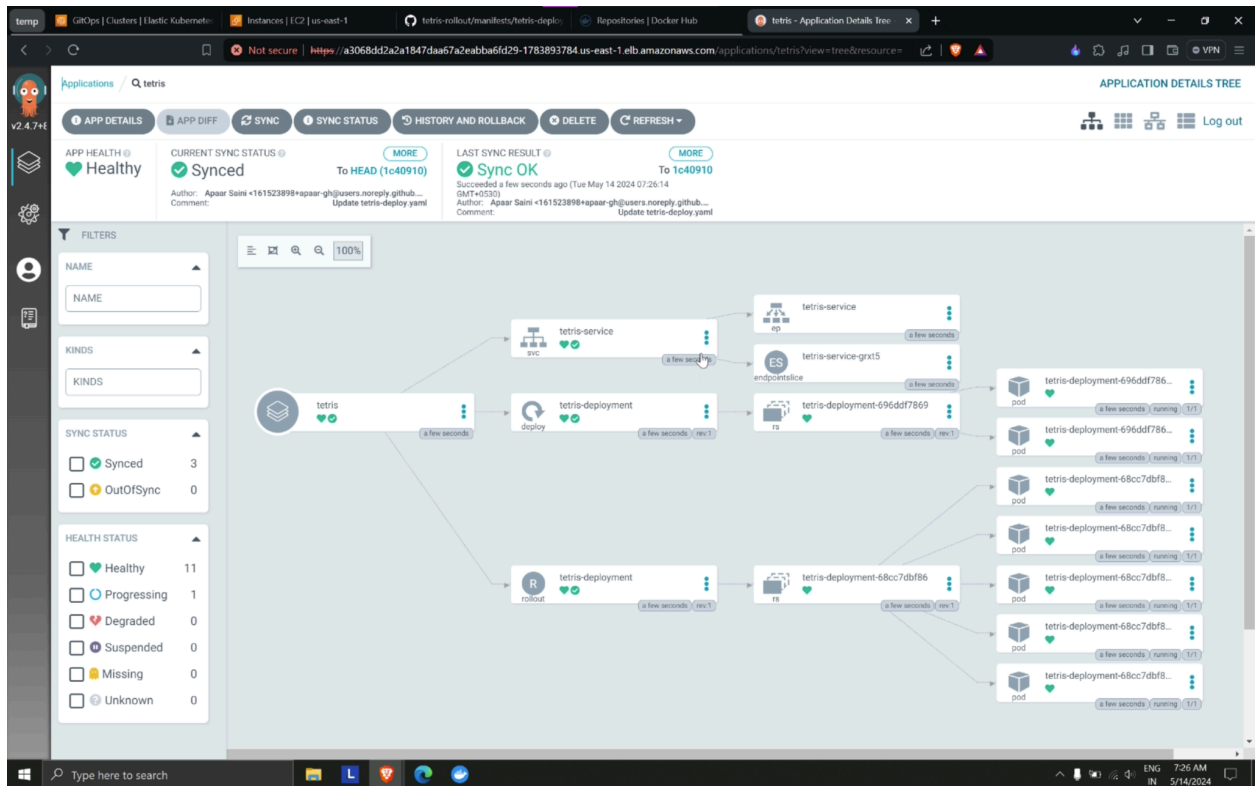
log1cdk / tetriv2 Contains: Image • Last pushed: about 2 hours ago	Security unknown 0 2 Public
log1cdk / tetris Contains: Image • Last pushed: about 5 hours ago	Security unknown 0 8 Public

2. **Deploy the Application Using Argo CD:**

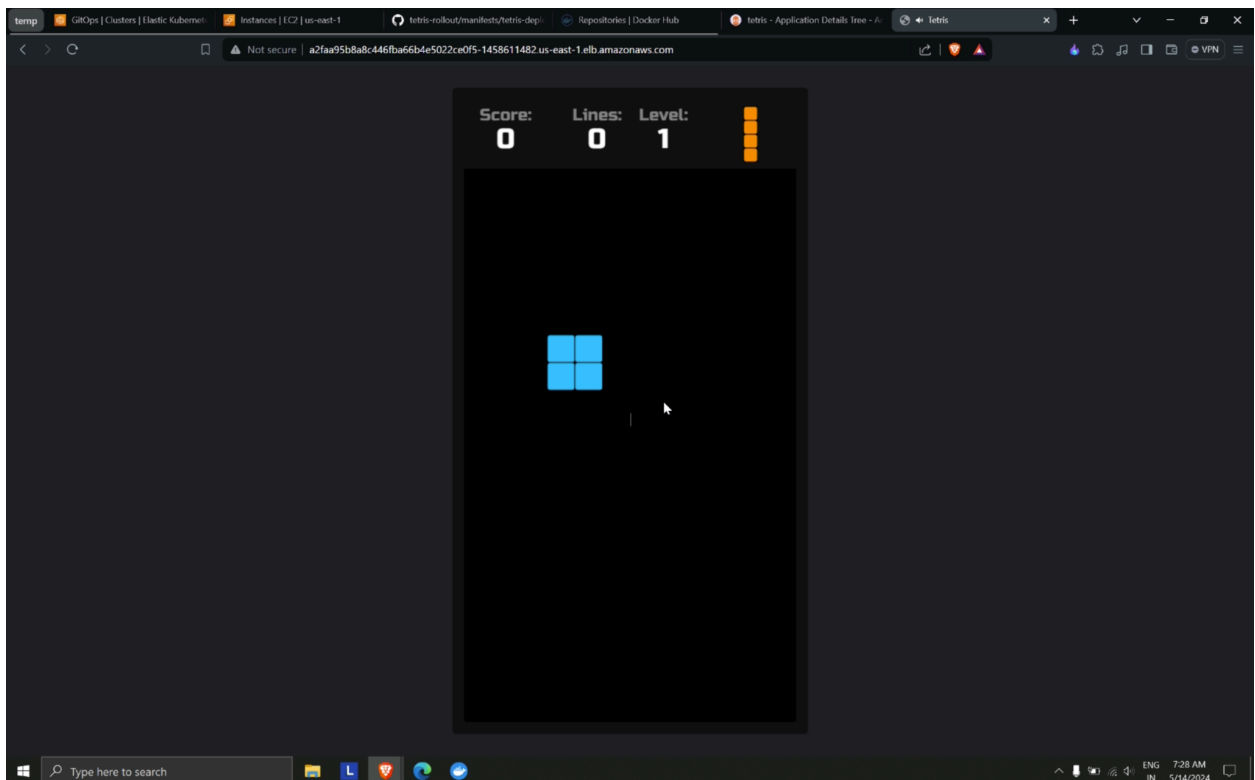
Deploying and Synchronizing Application

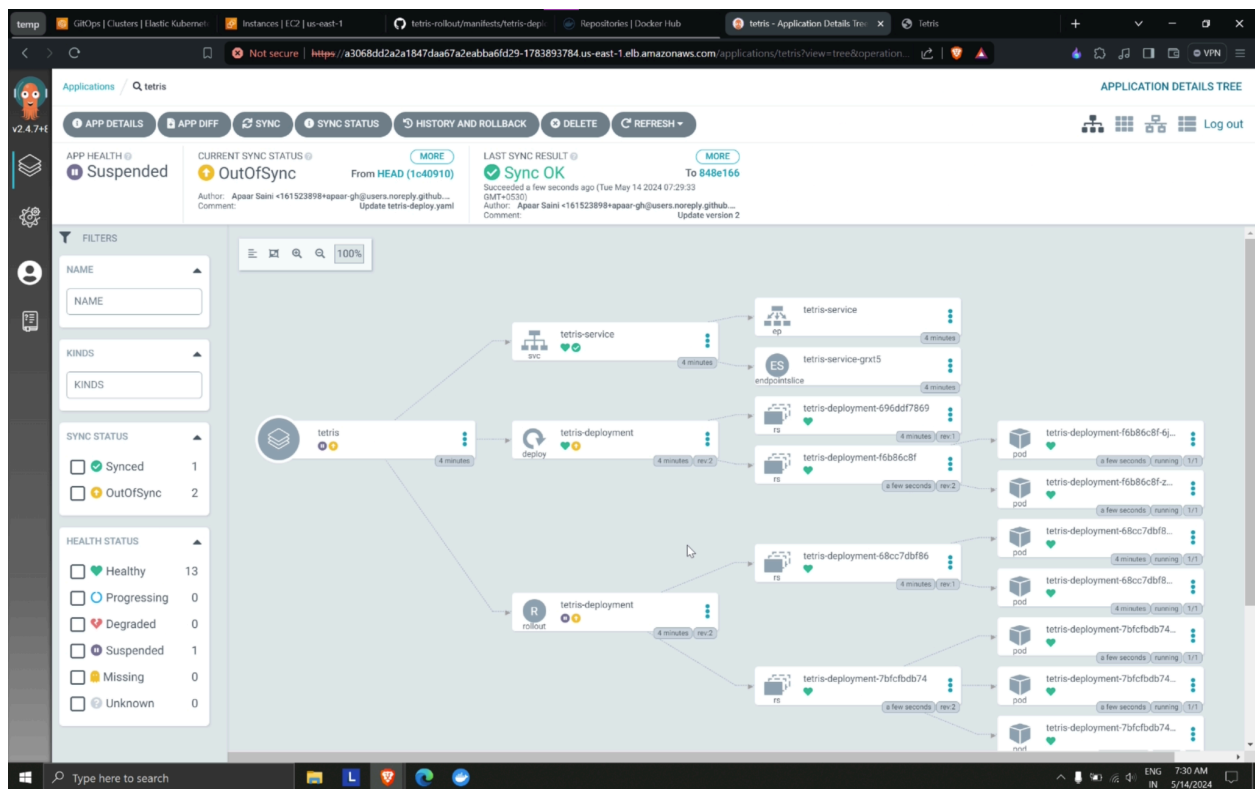


Task 3: Implementing a Canary Release with Argo Rollouts

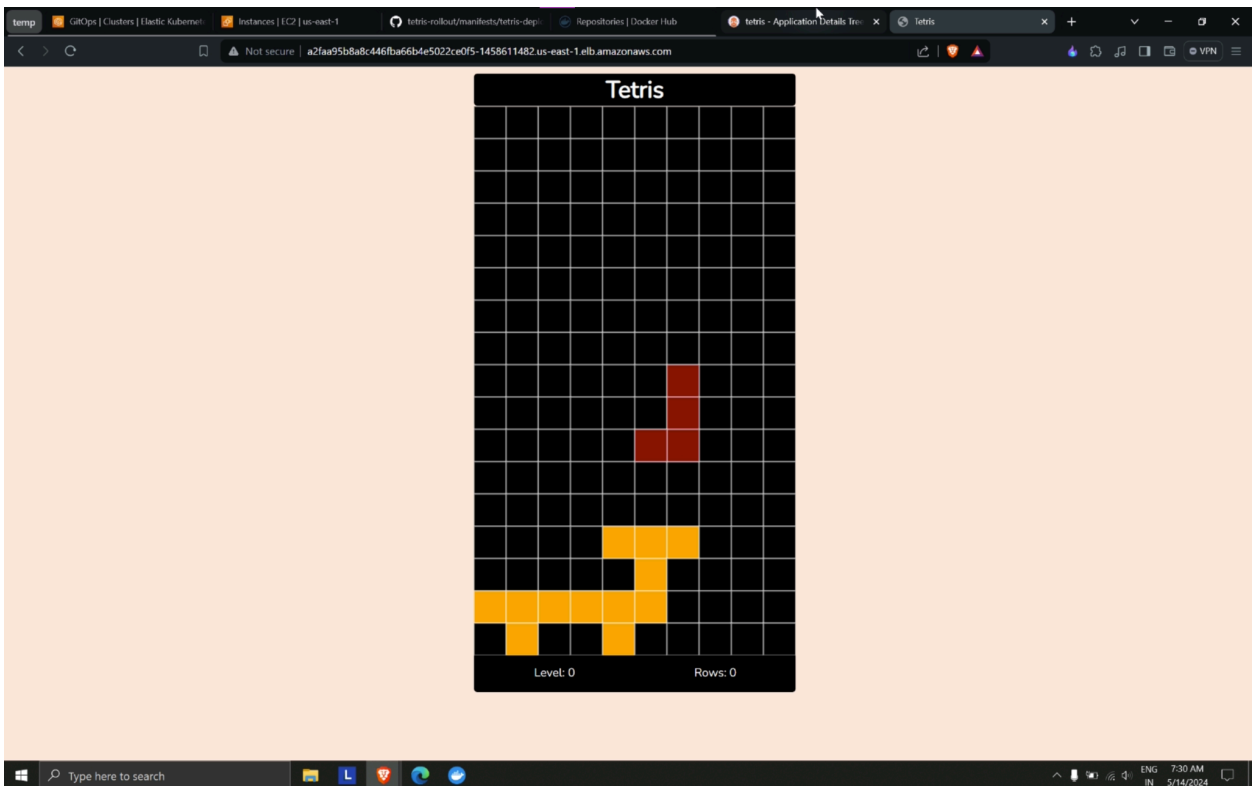


Canary Rollout-1 | Tetris Version-1





Canary Rollout-2 | Tetris Version-2



Task 4:Cleanup

Clean Up: 1-Deleting Nodes

Node group termination in progress

Nodes is now being terminated. This process may take several minutes.

EKS > Clusters > GitOps > Node groups > Nodes

Nodes

Refresh Edit Delete

Node group configuration

Kubernetes version

1.29

AMI type

AL2_x86_64

Status

Deleting

AMI release version

1.29.3-20240506

Instance types

t3.medium

Disk size

20 GiB

2-Deleting Kubernetes Cluster

Extended support for Kubernetes versions pricing

New prices for extended support will start in the April billing cycle. For more information, see the [blog post](#).

Notifications

0 0 0 3 0

EKS > Clusters > GitOps

Cluster

Search Filter

Cluster Actions

Refresh Edit Delete

Delete: GitOps

Warning

Deleting this EKS cluster will permanently remove it. Are you sure you want to delete this EKS cluster?

Warning

Associated scrapers are not automatically deleted as a part of cluster deletion. It is recommended that you delete any associated scrapers before cluster deletion to avoid incurring further costs.

View scrapers

To confirm deletion, type the cluster name in the field.

GitOps

Cancel

Delete

3-Deleting Load Balancer

representation of the relationships between load balancer resources and provides the ability to
leshoot the architecture of your load balancer. Resource map can be viewed on the load

Delete load balancer

×

Delete 2 load balancers permanently? This action can't be undone.

⚠

Proceeding with this action deletes the load balancers and their listeners.
Target groups associated to these load balancers will become available for
association to another load balancer and their registered targets remain
unaffected.

To avoid accidental deletion we ask you to provide additional written consent.

Type **confirm** to agree.

confirm

Cancel

Delete