

GitOps & Crossplane Assignment

Full name: Tran Xuan Quy

Staff code: SD5129

1. Install ArgoCD on Kubernetes cluster

Create namespace for ArgoCD

```
quytran@VN0101796:/mnt/d/training/GitOps-Crossplane$ minikube kubectl create namespace argocd
namespace/argocd created
quytran@VN0101796:/mnt/d/training/GitOps-Crossplane$ minikube kubectl get namespace
NAME                STATUS    AGE
argocd               Active   20s
default              Active   40m
kube-node-lease      Active   40m
kube-public          Active   40m
kube-system          Active   40m
```

Install ArgoCD helm chart

```
quytran@VN0101796:/mnt/d/training/GitOps-Crossplane$ helm install --namespace argocd -f argocd.yaml argocd argo/argo-cd
NAME: argocd
LAST DEPLOYED: Thu May 2 15:06:14 2024
NAMESPACE: argocd
STATUS: deployed
REVISION: 1
TEST SUITE: None
NOTES:
In order to access the server UI you have the following options:

1. kubectl port-forward service/argocd-server -n argocd 8080:443


   and then open the browser on http://localhost:8080 and accept the certificate

2. enable ingress in the values file 'server.ingress.enabled' and either
   - Add the annotation for ssl passthrough: https://argo-cd.readthedocs.io/en/stable/operator-manual/ingress/#option-1-ssl-passthrough
   - Set the 'configs.params.'server.insecure'' in the values file and terminate SSL at your ingress: https://argo-cd.readthedocs.io/en/stable/operator-manual/ingress/#option-2-multiple-ingress-objects-and-hosts


After reaching the UI the first time you can login with username: admin and the random password generated during the installation. You can find the password by running:

kubectl -n argocd get secret argocd-initial-admin-secret -o jsonpath="{.data.password}" | base64 -d

(You should delete the initial secret afterwards as suggested by the Getting Started Guide: https://argo-cd.readthedocs.io/en/stable/getting_started/#4-login-using-the-cli)
quytran@VN0101796:/mnt/d/training/GitOps-Crossplane$ helm list
NAME            NAMESPACE    REVISION    UPDATED      STATUS    CHART    APP VERSION
quytran@VN0101796:/mnt/d/training/GitOps-Crossplane$ helm list -n argocd
NAME            NAMESPACE    REVISION    UPDATED      STATUS    CHART    APP VERSION
argocd          argocd        1           2024-05-02 15:06:14.304764858 +0700 +07    deployed    argo-cd-6.7.18    v2.10.9
```






 **kubernetes**


argocd

 Search

Workloads > Pods

Pods

Name	Images	Labels	Node	Status
 argocd-application-controller-0	quay.io/argoproj/argocd:v2.10.9	<div>app.kubernetes.io/component: application-controller</div> <div>app.kubernetes.io/instance: argocd</div> <div>app.kubernetes.io/managed-by: Helm</div> Show all	minikube	Running
 argocd-applicationset-controller-77969776-ddjlq	quay.io/argoproj/argocd:v2.10.9	<div>app.kubernetes.io/component: applicationset-controller</div> <div>app.kubernetes.io/instance: argocd</div> <div>app.kubernetes.io/managed-by: Helm</div> Show all	minikube	Running
 argocd-notifications-controller-986bc8df4-wt2tt	quay.io/argoproj/argocd:v2.10.9	<div>app.kubernetes.io/component: notifications-controller</div> <div>app.kubernetes.io/instance: argocd</div> <div>app.kubernetes.io/managed-by: Helm</div> Show all	minikube	Running
 argocd-redis-697d447b76-zfth9	public.ecr.aws/docker/library/redis:7.2.4-alpine	<div>app.kubernetes.io/component: redis</div> <div>app.kubernetes.io/instance: argocd</div> <div>app.kubernetes.io/managed-by: Helm</div> Show all	minikube	Running
 argocd-repo-server-64dc855ddc-96z2l	quay.io/argoproj/argocd:v2.10.9	<div>app.kubernetes.io/component: repo-server</div> <div>app.kubernetes.io/instance: argocd</div> <div>app.kubernetes.io/managed-by: Helm</div>	minikube	Running

 **argo**
v2.10.9+0714f8

Applications

Settings

User Info

Documentation

Applications

+ NEW APP


SYNC APPS

REFRESH APPS

Search applications...

7

Log out



No applications available to you just yet

Create new application to start managing resources in your cluster


CREATE APPLICATION


Install Crossplane


```
! crossplane-application.yaml > {} spec > {} destination
1  apiVersion: argoproj.io/v1alpha1
2  kind: Application
3  metadata:
4    name: crossplane
5  spec:
6    destination:
7      namespace: crossplane-system
8      server: 'https://kubernetes.default.svc'
9    source:
10     repoURL: 'https://charts.crossplane.io/stable'
11     targetRevision: 1.15.2
12     chart: crossplane
13   sources: []
14   project: default
15   syncPolicy:
16     automated:
17       prune: true
18       selfHeal: true
19     syncOptions:
20       - CreateNamespace=true
21
```


← ↻ Not secure | https://localhost:8080/applications?showFavorites=false&proj=&sync


📁 Import favorites | 📁 NTG Favorites | 🌐 Training | Microsoft... | 🌐 Enterprise Skills Init... | 🏠 Home - Micros...

 **argo**
v2.10.9+c071af8

 **Applications**

 Settings

 User Info

 Documentation

☐ ★ Favorites Only

SYNC STATUS


☐ ⏸ Unknown 0

☐ ✅ Synced 1

☐ ⚠ OutOfSync 0

Applications

🔍

 **crossplane** ☆

Project: default

Labels:

Status: ❤️ Healthy ✅ Synced

Reposit... https://charts.crossplane.io/stable

Target R... 1.15.2

Chart: crossplane

Destinat... in-cluster

Namesp... crossplane-system

Created ... 05/02/2024 15:52:03 (17 minutes ago)

Last Sync: 05/02/2024 15:52:06 (17 minutes ago)

2. Create an EKS cluster using Crossplane

Create an AWS secret

```
quytran@VMN0T01796:/mnt/d/training/GitOps-Crossplane$ minikube kubectl -- create secret generic aws-secret --from-file=creds=aws-credentials.txt
secret/aws-secret created
quytran@VMN0T01796:/mnt/d/training/GitOps-Crossplane$ minikube kubectl -- get secret/aws-secret -o yaml -n crossplane-system
apiVersion: v1
data:
  creds: W2RlZmFibHRdQ3NfYWNjZXNzX2tleV9pZCA9IEFLSUFRNVJLRVhIQ9dQ50RPT0o1DQphd3Nfc2VjcmVhX2FjY2Vzc19rZXkgPSB0d2x0NUI4QTdZUldkayt0ZGk1TjZSYWb6bWQ1YmJMNDFKN2JqUE
  N8DQo=
kind: Secret
metadata:
  creationTimestamp: "2024-05-03T06:40:19Z"
  name: aws-secret
  namespace: crossplane-system
  resourceVersion: "24090"
  uid: ab9a9907-4ecb-475b-9fd3-094e97f28be7
type: Opaque
```

Create an application on ArgoCD to provision the cluster

The screenshot displays two interfaces used for provisioning an EKS cluster. The top interface is the ArgoCD web console, showing the application 'eks-provision-crossplane' in a 'Synced' state. The bottom interface is the AWS VPC console, showing the details of the VPC 'vpc-0e3c50bd2c1044932' (eks-crossplane-vpc). The VPC details include its ID, state (Available), DNS settings, and a resource map showing subnets, route tables, and network connections.

ArgoCD Application Details:

- Application: eks-provision-crossplane
- Sync Status: Synced to aws-eks-app (6c5e812)
- Last Sync: Sync OK to 6c5e812
- Synced at: 11 minutes ago (Sun May 05 2024 23:27:30 GMT+0700)
- Author: Quy Tran Xuan <quy.tranxuan@mashtechglobal.com>
- Comment: fix mismatch route table name

AWS VPC Details:

- VPC ID: vpc-0e3c50bd2c1044932
- State: Available
- DNS hostnames: Disabled
- DNS resolution: Enabled
- Main route table: rtb-008669bfe45bedf1
- Main network ACL: acl-022065455482832f2
- IPv4 CIDR: 172.20.0.0/16
- IPv6 pool: -
- Owner ID: 065439157700

Resource Map:

- VPC: eks-crossplane-vpc
- Subnets (2): ap-southeast-1a (subnet-056b3a70e71cb3569), ap-southeast-1b (subnet-016e52eba9ccf7b2c)
- Route tables (2): rtb-008669bfe45bedf1 (eks-crossplane-rtb)
- Network connections (1): eks-igw

Amazon Elastic Kubernetes Service

Clusters **New**

Amazon EKS Anywhere
Enterprise Subscriptions **New**

Related services
Amazon ECR
AWS Batch

Documentation
Submit feedback

crossplane-eks-cluster ⌵ Delete cluster

Cluster info info

Status **Active** Kubernetes version info 1.29 Support period info Standard support until March 23, 2025 Provider EKS

Overview | Resources | **Compute** | Networking | Add-ons | Access | Observability | Upgrade insights | Update history | Tags

Nodes (0) info

< **1** >

Node name	Instance type	Node group	Created	Status
No Nodes This cluster does not have any Nodes, or you don't have permission to view them.				

Node groups (1) info Edit Delete Add node group

Group name	Desired size	AMI release version	Launch template	Status
crossplane-eks-ng	1	1.29.3-20240424	-	Creating

3. Create an AKS cluster

Create Azure secret

```
yuyuan@DESKTOP-04D8AGS:/mnt/d/DevOps/gitops-crossplane$ minikube kubectl -- get secret/azure-secret -n crossplane-system -o yaml
apiVersion: v1
data:
  creds: ewk0CAGICjYjbGlbnRzZGIGIENwZDIyGSZlOGYtUTB1RHNDg0NTZmODQNZDZhdkYmRjOWMiLA0KICAgICjYjbGlbnRzZWlyZXQIOiAiAkwvOFFNaW90MmwkaW52YWVudHJ1eXNMcDc3YkVGVZvdDZSNksgKQSIzDQogICAgInR1bnNjcmlwdGkiOiJkIiwiaXNjaWRzOmZALTFrY2YVNGE0Ni1hYTU1LTQyZmRlZTMsZjZkMCIsDQogICAgInRlbwVudElkIjogIjYjbGlzZWY3OTAtMTljNmZUbGNkdH11Iiwia2YyLWQGT3Nzc2QzQ2MSINCn0=
kind: Secret
metadata:
  creationTimestamp: "2024-05-08T17:13:54Z"
  name: azure-secret
  namespace: crossplane-system
  resourceVersion: "20448"
  uid: 9f4c72a5-5014-40ab-86de-9a29569906a0
type: Opaque
```


Create an application on ArgoCD

←

↺

Not secure | https://localhost:8000/applications?showFavorites=false&proj=&sync=&autoSync=&health=&namespace=&cluster=&labels=

Import favorites | Training | Microsoft... | Airlines

argo

v2.11.0+d3f33c0

←

Applications

Settings

User Info

Documentation

☐ ★ Favorites Only

SYNC STATUS

HEALTH STATUS

LABELS


Applications

+ NEW APP

↺ SYNC APPS

↺ REFRESH APPS

Search applications...

azure-crossplane-provision

☆

Project: default

Labels:

Status: ♥ Healthy ♥ Synced

Reposit... https://github.com/XQuyTran/gitops-c...

Target R... crossplane-azure-resources

Path: ./azure

Destinat... in-cluster

Names... crossplane-system


Created... 05/08/2024 23:44:23 (22 minutes ago)

Last Sy... 05/08/2024 23:53:21 (13 minutes ago)

↺ SYNC

↺ REFRESH

⊖ DELETE

crossplane

☆

Project: default

Labels:

Status: ♥ Healthy ♥ Synced

Reposit... https://charts.crossplane.io/stable

Target R... 1.15.2

Chart: crossplane

Destinat... in-cluster

Names... crossplane-system

Created... 05/08/2024 21:50:49 (2 hours ago)

Last Sy... 05/08/2024 21:50:59 (2 hours ago)

↺ SYNC

↺ REFRESH

⊖ DELETE

Resources with tag provisioner : crossplane

Default Directory

Manage view

Refresh

Export to CSV

Open query

Assign tags

Filter for any field...

Subscription equals all

Type equals all

Add filter

0 Recommendations

7 Changed resources

0 Unsecure resources

<input type="checkbox"/> Name ↑↓	Type ↑↓	Resource group ↑↓	Location ↑↓
<input type="checkbox"/> ac74800a-28f1-47e8-98d0-b4b80e480413	Public IP address	MC_sea-crossplane-rg_sea-crossplane-aks_south...	Southeast Asia
<input type="checkbox"/> aks-agentpool-12003158-nsg	Network security group	MC_sea-crossplane-rg_sea-crossplane-aks_south...	Southeast Asia
<input type="checkbox"/> aks-agentpool-32638889-vmss	Virtual machine scale set	MC_sea-crossplane-rg_sea-crossplane-aks_south...	Southeast Asia
<input type="checkbox"/> aks-vnet-12003158	Virtual network	MC_sea-crossplane-rg_sea-crossplane-aks_south...	Southeast Asia
<input type="checkbox"/> kubernetes	Load balancer	MC_sea-crossplane-rg_sea-crossplane-aks_south...	Southeast Asia
<input type="checkbox"/> MC_sea-crossplane-rg_sea-crossplane-aks_southeastasia	Resource group	MC_sea-crossplane-rg_sea-crossplane-aks_south...	Southeast Asia
<input type="checkbox"/> sea-crossplane-aks	Kubernetes service	sea-crossplane-rg	Southeast Asia
<input type="checkbox"/> sea-crossplane-aks-agentpool	Managed Identity	MC_sea-crossplane-rg_sea-crossplane-aks_south...	Southeast Asia
<input type="checkbox"/> sea-crossplane-rg	Resource group	sea-crossplane-rg	Southeast Asia