

GitOps & Crossplane Assignment

1. Install ArgoCD on Kubernetes cluster

Create namespace for ArgoCD

```
quytran@VNNOT01796:/mnt/d/training/GitOps-Crossplane$ minikube kubectl create namespace argocd
namespace/argocd created
quytran@VNNOT01796:/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@VNNOT01796:/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@VNNOT01796:/mnt/d/training/GitOps-Crossplane$ helm list
NAME      NAMESPACE    REVISION    UPDATED      STATUS    CHART    APP VERSION
quytran@VNNOT01796:/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> <div>Show all</div>	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> <div>Show all</div>	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> <div>Show all</div>	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> <div>Show all</div>	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



APPLICATIONS TILES

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 kubectrl -- create secret generic aws-secret -n crossplane-system --from-file=creds=aws-credentials.txt
secret/aws-secret created
quytran@VMN0T01796:/mnt/d/training/GitOps-Crossplane$ minikube kubectrl -- get secret/aws-secret -o yaml -n crossplane-system
apiVersion: v1
data:
  creds: W2RlZmF1bHRdDQphd3NFYWNjZXNzX2tleV9pZCA9IEFLSUFRNjVLRVhIQ8dQs8RPT0o1DQphd3Nfc2VjcmV0X2FjYVZvc19rZXkgPSB0d2xuNUI4Q0TdZU1dkayt0ZGk1TjZSYWk1YmJMNDFKN2JqUE
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 the ArgoCD web interface and the AWS VPC console. The top section shows the ArgoCD application 'eks-provision-crossplane' in a 'Degraded' state. The 'SYNC STATUS' indicates it is 'Synced to aws-eks-app (6c5e812)', but the 'LAST SYNC' shows a failure with the message 'Succeeded 11 minutes ago (Sun May 05 2024 23:27:20 GMT+0700)' and a comment 'fix mismatch route table name'. Below this, a diagram illustrates the infrastructure components being managed, including VPCs, subnets, route tables, and network connections.

The bottom section shows the AWS VPC console for the VPC 'vpc-0e3c50bd2c1044932 / eks-crossplane-vpc'. The 'Details' tab shows the VPC is 'Available' and has two subnets: 'ap-southeast-1a' and 'ap-southeast-1b'. The 'Resource map' tab shows the VPC, subnets, route tables, and network connections.

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crossplane-eks-cluster

Delete cluster

Cluster info

Status

Active

Kubernetes version

1.29

Support period

Standard support until March 23, 2025

Provider

EKS

Overview

Resources

Compute

Networking

Add-ons

Access

Observability

Upgrade insights

Update history

Tags

Nodes (0)

Filter Nodes by property or value

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)

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

```
yuytran@DESKTOP-84D8AGS:/mnt/d/DevOps/gitops-crossplane$ minikube kubectl -- get secret/azure-secret -n crossplane-system -o yaml
apiVersion: v1
data:
  creds: ew0KICAgICJgJlbnR7ZGICIGFwMzdiZGY5Si9yZTUBIHRhdG9tMTQzMj04MDkxYWRjOWMiLA8KICAgICJgJlbnR7ZWlyZXQxOjAiAibWVrOFFhbm90N0N0bk9kZWVkbWVkdXNhbnR7dXZkYGV2VndvZS5GOGtKSQSI=DqogICAgInR1YnYmclw=
  kIkfjogIjJzMM3ZmE4LTfjYZVNGeOnIhyTzIL7QyZMRizTM5ZjZMcISDQogICAgInRlbWVudElkIkJogIjglZjgzV30TA0TLTjNzUldNdpxNi1jMzAyLWQzOGtGS3Zzc2N2Q0MStnc=
kind: Secret
metadata:
  creationTimestamp: "2024-05-08T17:13:54Z"
  name: azure-secret
  namespace: crossplane-system
  resourceVersion: "20448"
  uid: 9f4c72a5-5014-40ab-86de-9a29560906a0
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

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