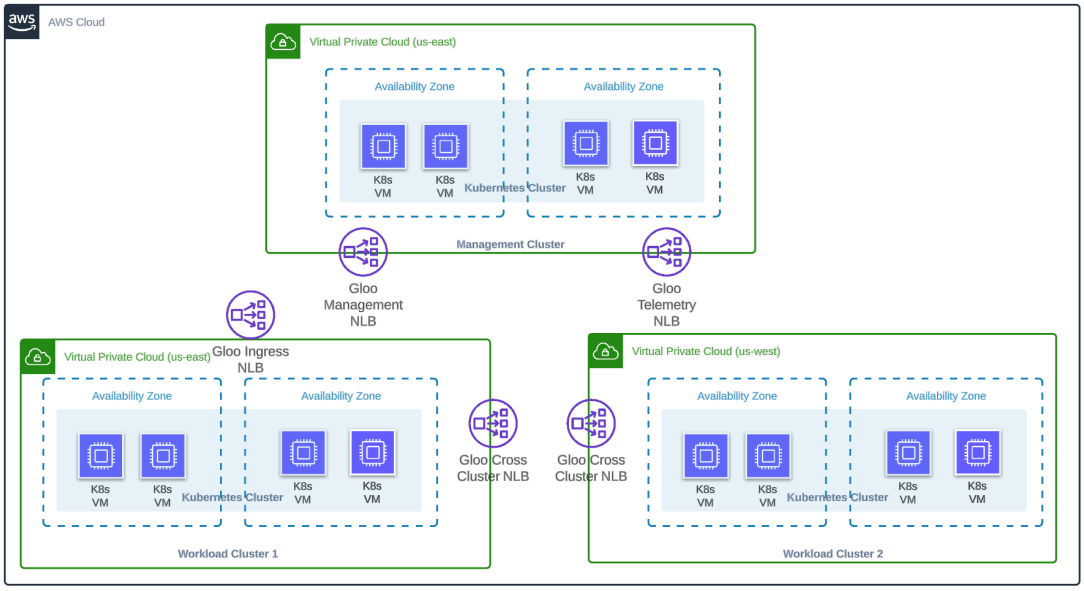
Lab 01 - Deploy EKS clusters

Deploying 3 EKS clusters using eksctl



eksctl is a useful tool in creating EKS clusters. This guide will show you how to create 3 working clusters to use for this demo.

- Deploy the first cluster

```
eksctl create cluster -f data/cluster-1.yaml
```

- Deploy the second cluster

```
eksctl create cluster -f data/cluster-2.yaml
```

- Deploy the third and final cluster

```
eksctl create cluster -f data/management.yaml
```

- Update the kubernetes context names

```
export AWS_USER=<user>
kubectl config rename-context $AWS_USER@cluster-1.us-east-2.eksctl.io cluster-1
kubectl config rename-context $AWS_USER@cluster-2.us-west-2.eksctl.io cluster-2
kubectl config rename-context $AWS_USER@management.us-east-2.eksctl.io management
```

Install AWS Load Balancer Controller

The AWS Load Balancer Controller manages AWS Elastic Load Balancers for a Kubernetes cluster. The controller provisions the following resources:

- An AWS Network Load Balancer (NLB) when you create a Kubernetes service of type LoadBalancer.
- Create IAM Policy to allow service accounts to create aws load balancers

```
curl -o iam_policy.json https://raw.githubusercontent.com/kubernetes-sigs/aws-load-balancer-controller/v2.4.7/docs/install/iam_policy.json

aws iam create-policy \
    --policy-name AWSLoadBalancerControllerIAMPolicy \
    --policy-document file://iam_policy.json
```

- Enable OIDC provider for service accounts

```
eksctl utils associate-iam-oidc-provider --region=us-east-2 --cluster=cluster-1 --approve
eksctl utils associate-iam-oidc-provider --region=us-west-2 --cluster=cluster-2 --approve
eksctl utils associate-iam-oidc-provider --region=us-east-2 --cluster=management --approve
```

- Create a Kubernetes service account named aws-load-balancer-controller in the kube-system namespace for the AWS Load Balancer Controller and annotate the Kubernetes service account with the name of the IAM role.

```
export AWS_ACCOUNT_ID=<account_id>
eksctl create iamserviceaccount \
  --cluster=cluster-1 \
  --region us-east-2 \
  --namespace=kube-system \
  --name=aws-load-balancer-controller \
  --attach-policy-
arn=arn:aws:iam::$AWS_ACCOUNT_ID:policy/AWSLoadBalancerControllerIAMPolicy \
  --override-existing-serviceaccounts \
  --approve

eksctl create iamserviceaccount \
  --cluster=cluster-2 \
  --region us-west-2 \
  --namespace=kube-system \
  --name=aws-load-balancer-controller \
  --attach-policy-
arn=arn:aws:iam::$AWS_ACCOUNT_ID:policy/AWSLoadBalancerControllerIAMPolicy \
  --override-existing-serviceaccounts \
  --approve
```

```
eksctl create iamserviceaccount \
  --cluster=management \
  --region us-east-2 \
  --namespace=kube-system \
  --name=aws-load-balancer-controller \
  --attach-policy-
arn=arn:aws:iam::$AWS_ACCOUNT_ID:policy/AWSLoadBalancerControllerIAMPolicy \
  --override-existing-serviceaccounts \
  --approve
```

- Install load balancer controller to each cluster

```
helm repo add eks https://aws.github.io/eks-charts
helm repo update

helm install aws-load-balancer-controller eks/aws-load-balancer-controller \
  -n kube-system \
  --kube-context cluster-1 \
  --set clusterName=cluster-1 \
  --set serviceAccount.create=false \
  --set serviceAccount.name=aws-load-balancer-controller

helm install aws-load-balancer-controller eks/aws-load-balancer-controller \
  -n kube-system \
  --kube-context cluster-2 \
  --set clusterName=cluster-2 \
  --set serviceAccount.create=false \
  --set serviceAccount.name=aws-load-balancer-controller

helm install aws-load-balancer-controller eks/aws-load-balancer-controller \
  -n kube-system \
  --kube-context management \
  --set clusterName=management \
  --set serviceAccount.create=false \
  --set serviceAccount.name=aws-load-balancer-controller
```