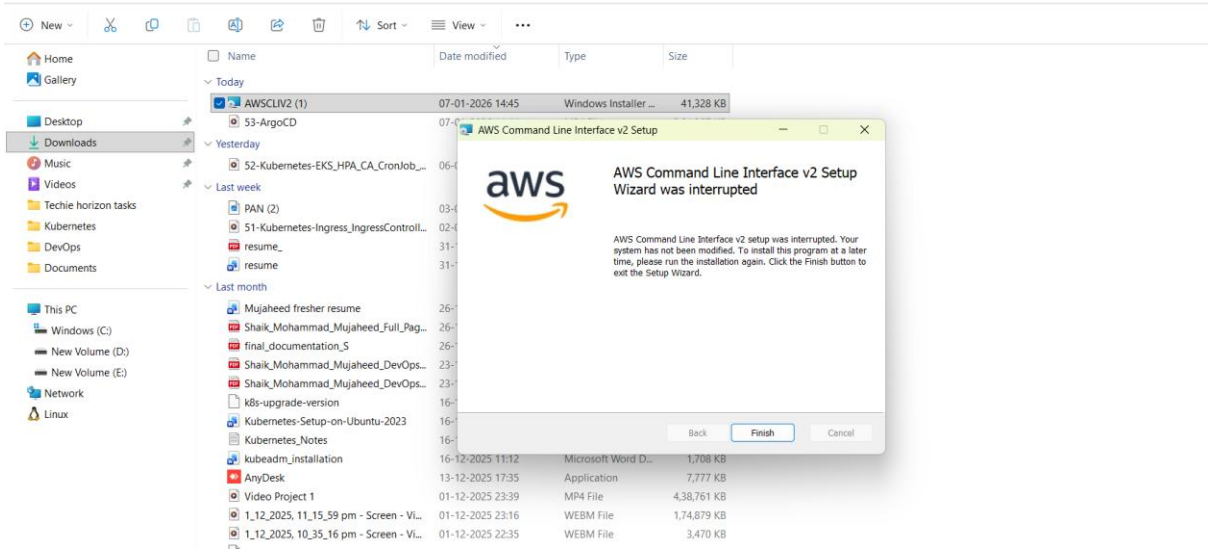
1. Setup eks cluster using eksctl

Download this from browser and install in windows machine.

- **https://awscli.amazonaws.com/AWSCLIV2.msi**

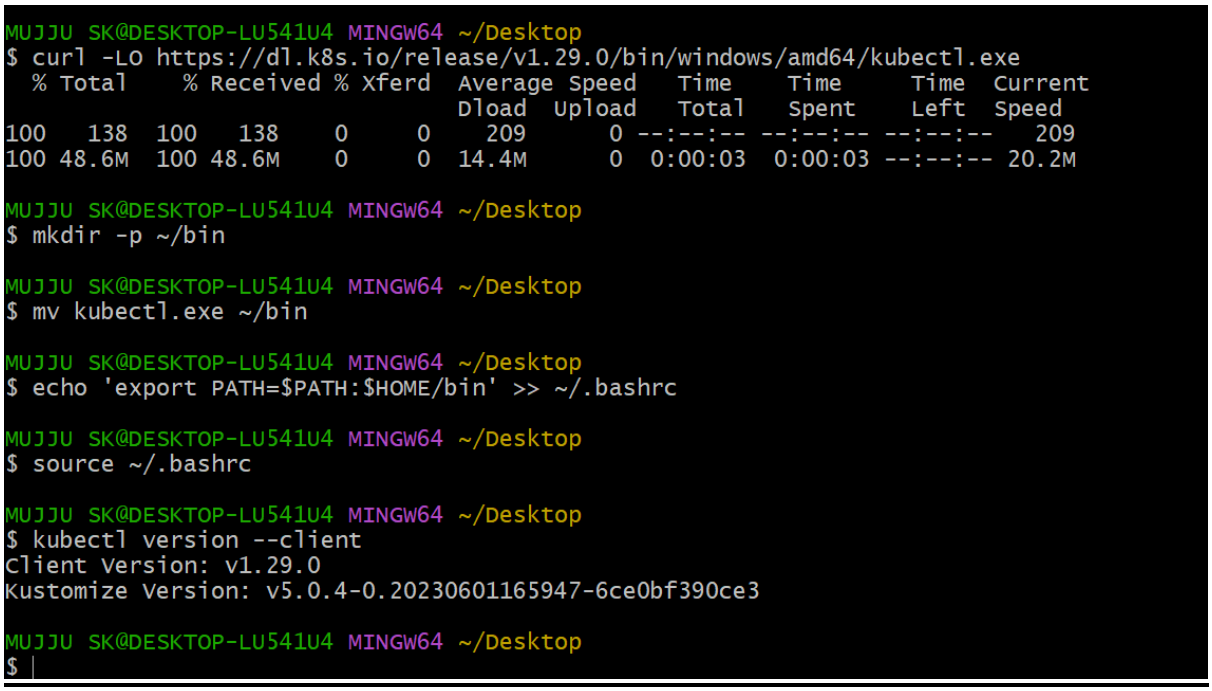


- **aws --version**
- **aws configure**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ aws --version

aws-cli/2.30.4 Python/3.13.7 Windows/11 exe/AMD64

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ aws configure
AWS Access Key ID [****************QAQC]:
AWS Secret Access Key [****************+q1G]:
Default region name [us-east-1]:
Default output format [json]:

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

Download kubectl:

- curl -LO https://dl.k8s.io/release/v1.29.0/bin/windows/amd64/kubectl.exe
- mkdir -p ~/bin
- mv kubectl.exe ~/bin
- echo 'export PATH=$PATH:$HOME/bin' >> ~/.bashrc
- source ~/.bashrc



Download eksctl:

- curl -LO https://github.com/weaveworks/eksctl/releases/latest/download/eksctl_Windows_amd64.zip
- unzip eksctl_Windows_amd64.zip
- mkdir -p ~/bin
- mv eksctl.exe ~/bin

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ curl -LO https://github.com/weaveworks/eksctl/releases/latest/download/eksctl_Windows_amd64.zip
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
  0     0    0     0    0     0      0      0 --:--:--  0:00:01 --:--:--     0
  0     0    0     0    0     0      0      0 --:--:--  0:00:01 --:--:--     0
100 35.7M  100 35.7M    0     0   9.9M      0  0:00:03  0:00:03 --:--:-- 15.2M

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ unzip eksctl_Windows_amd64.zip
Archive:  eksctl_Windows_amd64.zip
  inflating: eksctl.exe

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ mkdir -p ~/bin

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ mv eksctl.exe ~/bin

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ eksctl version
0.221.0

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

- **eksctl create cluster **
  **--name my-eks-cluster **
  **--region us-east-1 **
  **--node-type c7i-flex.large **
  --nodes 2

It will take 20 min to create cluster.

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ eksctl create cluster \
> --name my-eks-cluster \
> --region us-east-1 \
> --node-type c7i-flex.large \
2026-01-07 15:04:56 [ℹ]  eksctl version 0.221.0
2026-01-07 15:04:56 [ℹ]  using region us-east-1
2026-01-07 15:04:58 [ℹ]  setting availability zones to [us-east-1d us-east-1f]
2026-01-07 15:04:58 [ℹ]  subnets for us-east-1d - public:192.168.0.0/19 private:192.168
2026-01-07 15:04:58 [ℹ]  subnets for us-east-1f - public:192.168.32.0/19 private:192.16
2026-01-07 15:04:58 [ℹ]  nodegroup "ng-aaecd7bf" will use "" [AmazonLinux2023/1.32]
2026-01-07 15:04:58 [!]  Auto Mode will be enabled by default in an upcoming release of
king add-ons will no longer be created by default. To maintain current behavior, explic
onfiguration. Learn more: https://eksctl.io/usage/auto-mode/
2026-01-07 15:04:58 [ℹ]  using Kubernetes version 1.32
2026-01-07 15:04:58 [ℹ]  creating EKS cluster "my-eks-cluster" in "us-east-1" region wi
2026-01-07 15:04:58 [ℹ]  will create 2 separate CloudFormation stacks for cluster itsel
2026-01-07 15:04:58 [ℹ]  if you encounter any issues, check CloudFormation console or t
ter=my-eks-cluster'
2026-01-07 15:04:58 [ℹ]  Kubernetes API endpoint access will use default of {publicAcce
 in "us-east-1"
2026-01-07 15:04:58 [ℹ]  CloudWatch logging will not be enabled for cluster "my-eks-clu
2026-01-07 15:04:58 [ℹ]  you can enable it with 'eksctl utils update-cluster-logging --
gion=us-east-1 --cluster=my-eks-cluster'
2026-01-07 15:04:58 [ℹ]  default addons kube-proxy, coredns, metrics-server, vpc-cni we
2026-01-07 15:04:58 [ℹ]
2 sequential tasks: { create cluster control plane "my-eks-cluster",
    2 sequential sub-tasks: {
        2 sequential sub-tasks: {
            1 task: { create addons },
            wait for control plane to become ready,
        },
        create managed nodegroup "ng-aaecd7bf",
    }
```

```
2026-01-07 15:16:28 [ℹ]  building managed nodegroup stack "eksctl-my-eks-cluster-nodegroup-ng-aaecd7bf"
2026-01-07 15:16:30 [ℹ]  deploying stack "eksctl-my-eks-cluster-nodegroup-ng-aaecd7bf"
2026-01-07 15:16:30 [ℹ]  waiting for CloudFormation stack "eksctl-my-eks-cluster-nodegroup-ng-aaecd7bf"
2026-01-07 15:17:04 [ℹ]  waiting for CloudFormation stack "eksctl-my-eks-cluster-nodegroup-ng-aaecd7bf"
2026-01-07 15:17:58 [ℹ]  waiting for CloudFormation stack "eksctl-my-eks-cluster-nodegroup-ng-aaecd7bf"
2026-01-07 15:19:31 [ℹ]  waiting for CloudFormation stack "eksctl-my-eks-cluster-nodegroup-ng-aaecd7bf"
2026-01-07 15:19:32 [ℹ]  waiting for the control plane to become ready
2026-01-07 15:19:33 [✔]  saved kubeconfig as "C:\\Users\\Ashish\\.kube\\config"
2026-01-07 15:19:33 [ℹ]  no tasks
2026-01-07 15:19:33 [✔]  all EKS cluster resources for "my-eks-cluster" have been created
2026-01-07 15:19:35 [ℹ]  nodegroup "ng-aaecd7bf" has 2 node(s)
2026-01-07 15:19:35 [ℹ]  node "ip-192-168-28-220.ec2.internal" is ready
2026-01-07 15:19:35 [ℹ]  node "ip-192-168-41-142.ec2.internal" is ready
2026-01-07 15:19:35 [ℹ]  waiting for at least 2 node(s) to become ready in "ng-aaecd7bf"
2026-01-07 15:19:35 [ℹ]  nodegroup "ng-aaecd7bf" has 2 node(s)
2026-01-07 15:19:35 [ℹ]  node "ip-192-168-28-220.ec2.internal" is ready
2026-01-07 15:19:35 [ℹ]  node "ip-192-168-41-142.ec2.internal" is ready
2026-01-07 15:19:35 [✔]  created 1 managed nodegroup(s) in cluster "my-eks-cluster"
2026-01-07 15:19:36 [ℹ]  creating addon: metrics-server
2026-01-07 15:19:37 [ℹ]  successfully created addon: metrics-server
2026-01-07 15:19:40 [ℹ]  kubectl command should work with "C:\\Users\\Ashish\\.kube\\config", try 'kubectl get node
2026-01-07 15:19:40 [✔]  EKS cluster "my-eks-cluster" in "us-east-1" region is ready
```

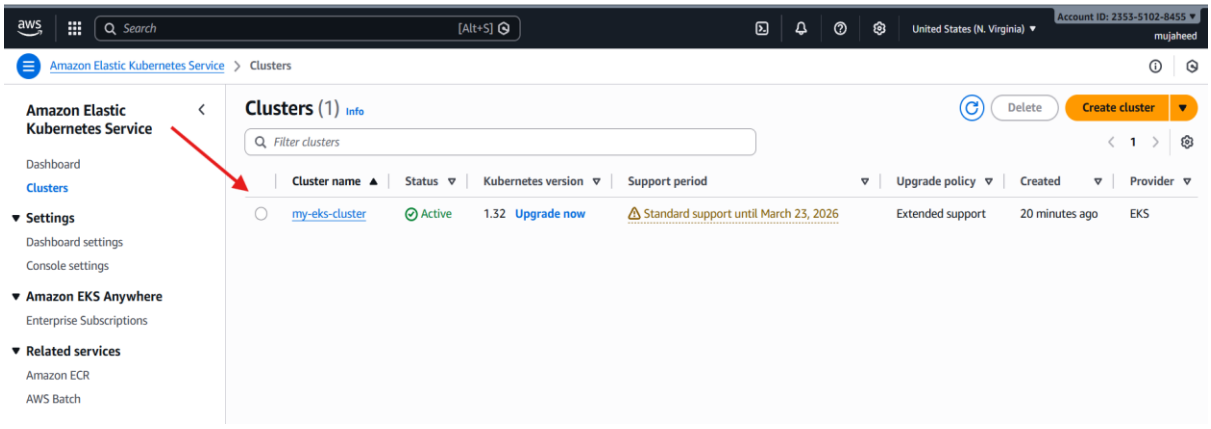
- **kubectl get nodes**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get nodes

NAME                                STATUS   ROLES    AGE     VERSION
ip-192-168-28-220.ec2.internal   Ready    <none>   4m32s   v1.32.9-eks-ecaa3a6
ip-192-168-41-142.ec2.internal   Ready    <none>   4m33s   v1.32.9-eks-ecaa3a6
```

- **kubectl get pods -A**

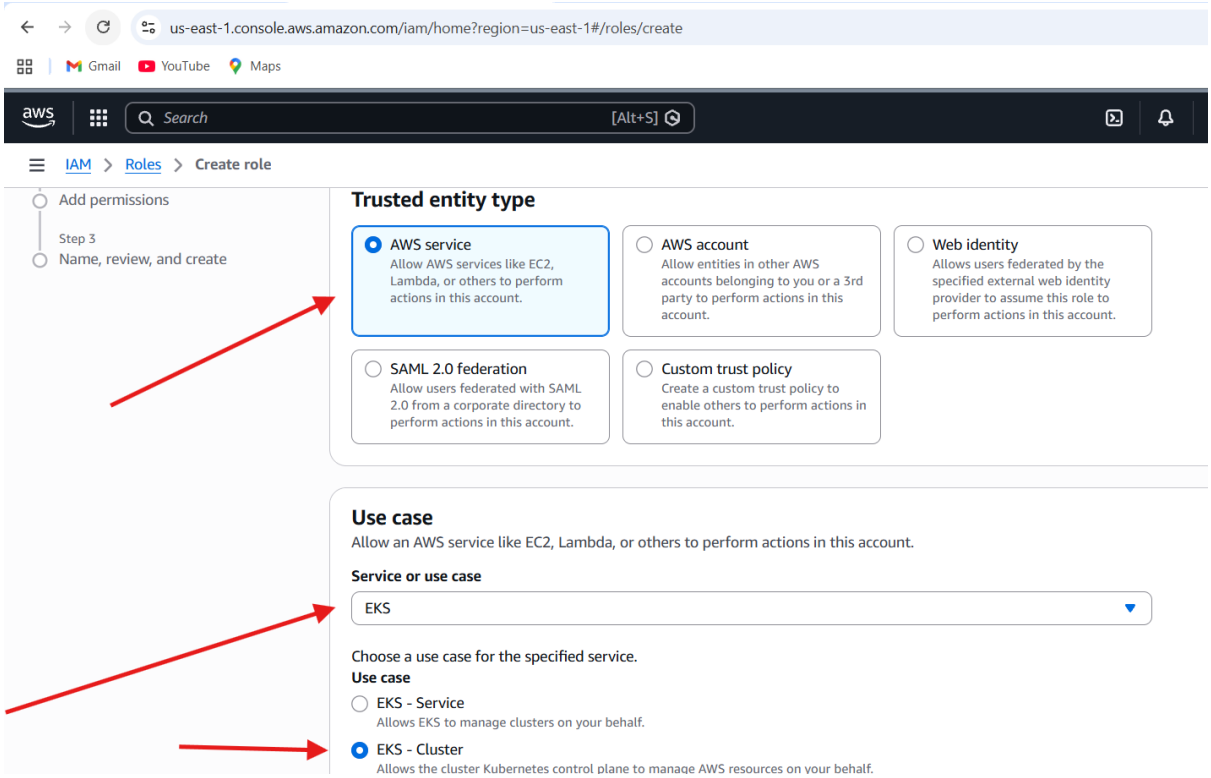
```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get pods -A
NAMESPACE     NAME                                READY   STATUS    RESTARTS   AGE
kube-system   aws-node-7bvmr                      2/2     Running   0          4m45s
kube-system   aws-node-wv58z                      2/2     Running   0          4m45s
kube-system   coredns-6b9575c64c-2pz9g            1/1     Running   0          8m25s
kube-system   coredns-6b9575c64c-sg4w9            1/1     Running   0          8m25s
kube-system   kube-proxy-dmjst                    1/1     Running   0          4m45s
kube-system   kube-proxy-ht7q8                    1/1     Running   0          4m45s
kube-system   metrics-server-7cbd59cb7c-621xf     1/1     Running   0          3m8s
kube-system   metrics-server-7cbd59cb7c-qt771     1/1     Running   0          3m8s
```

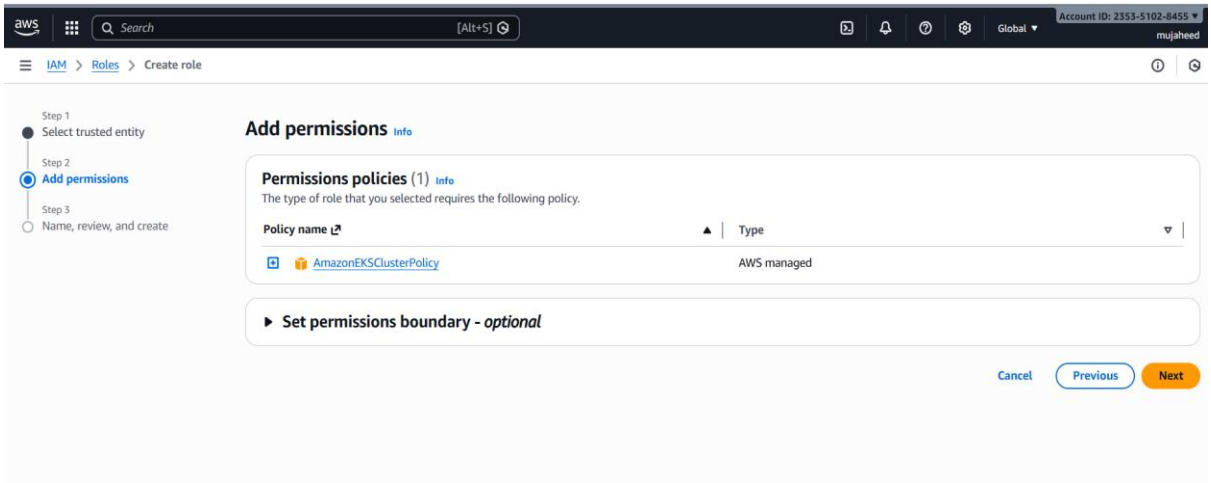
Go to eks service you find that a cluster has been created.

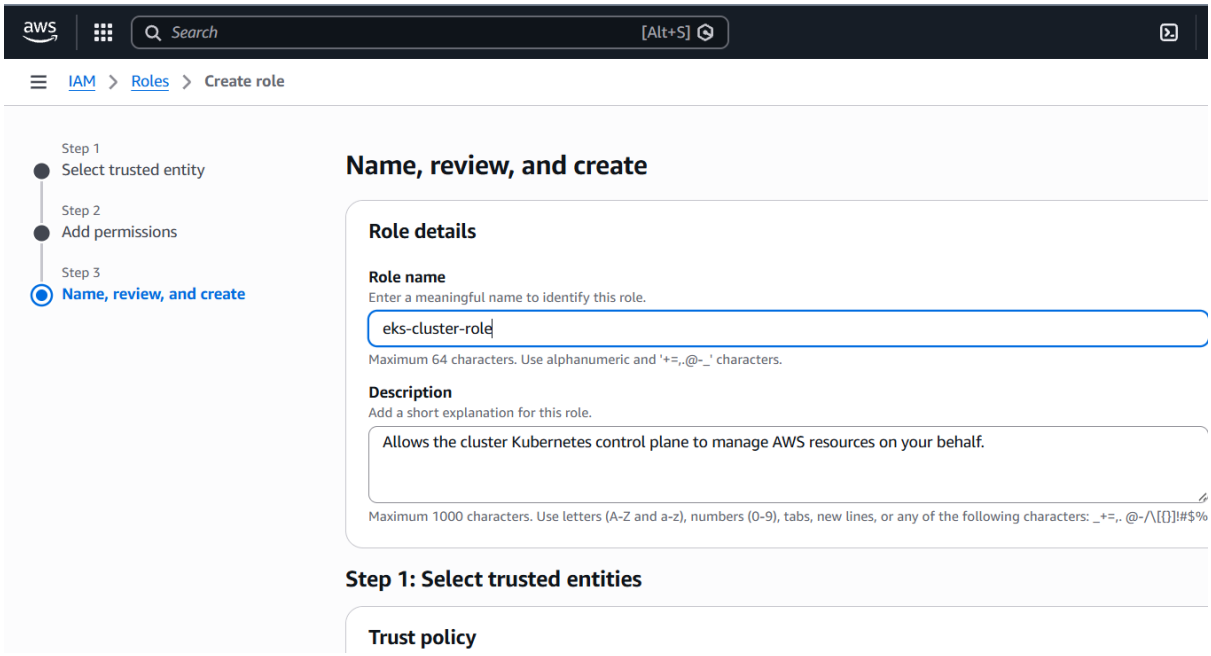


2. setup eks cluster using console

Create an IAM Role for EKS Cluster

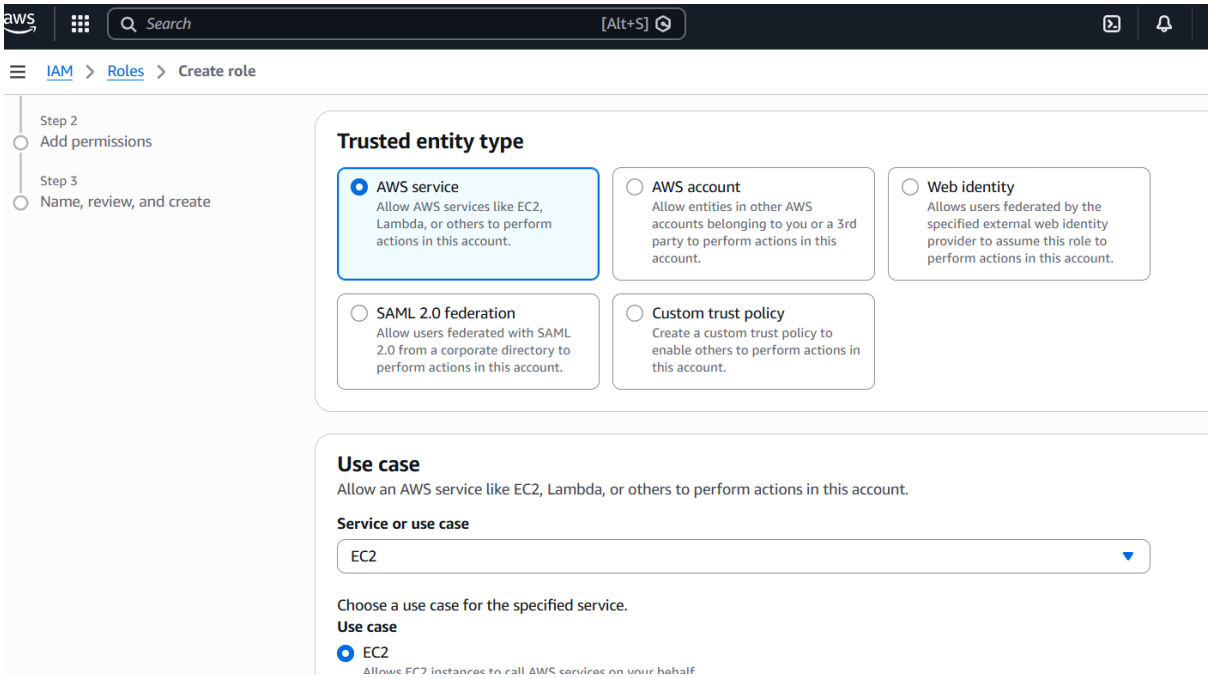






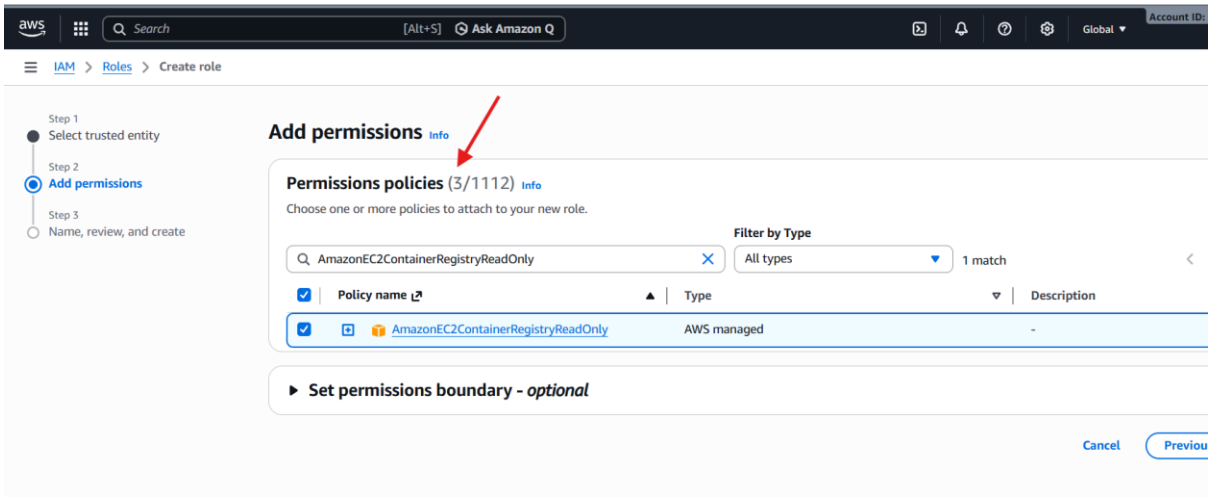
Then click on create

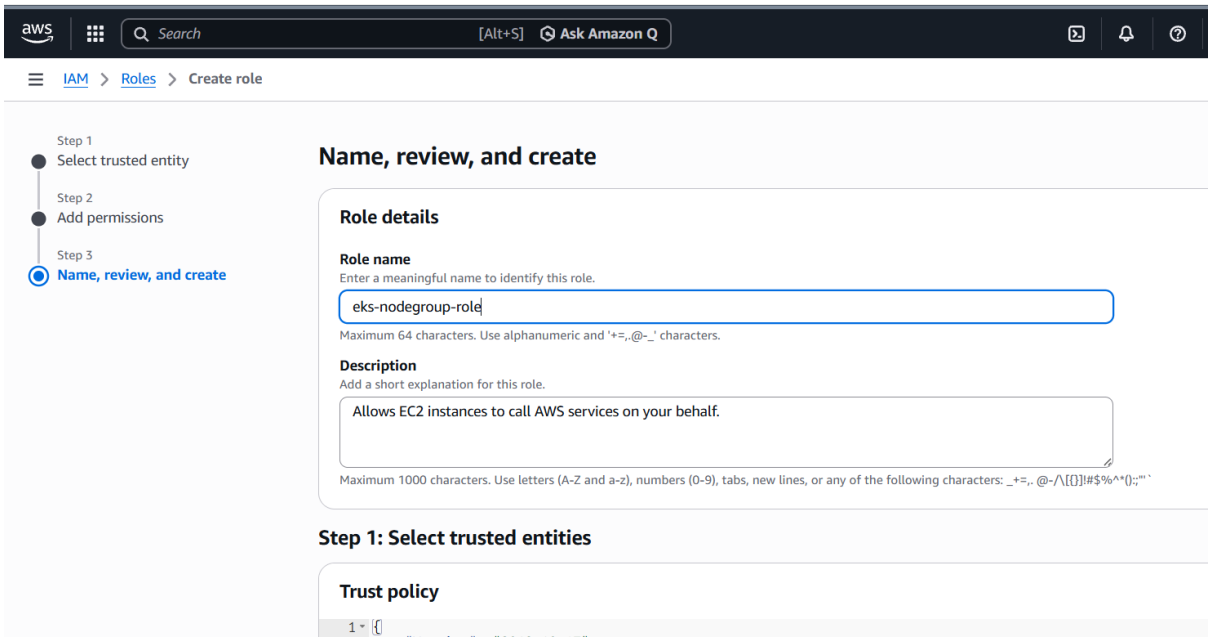
Create an IAM Role for Worker Nodes:



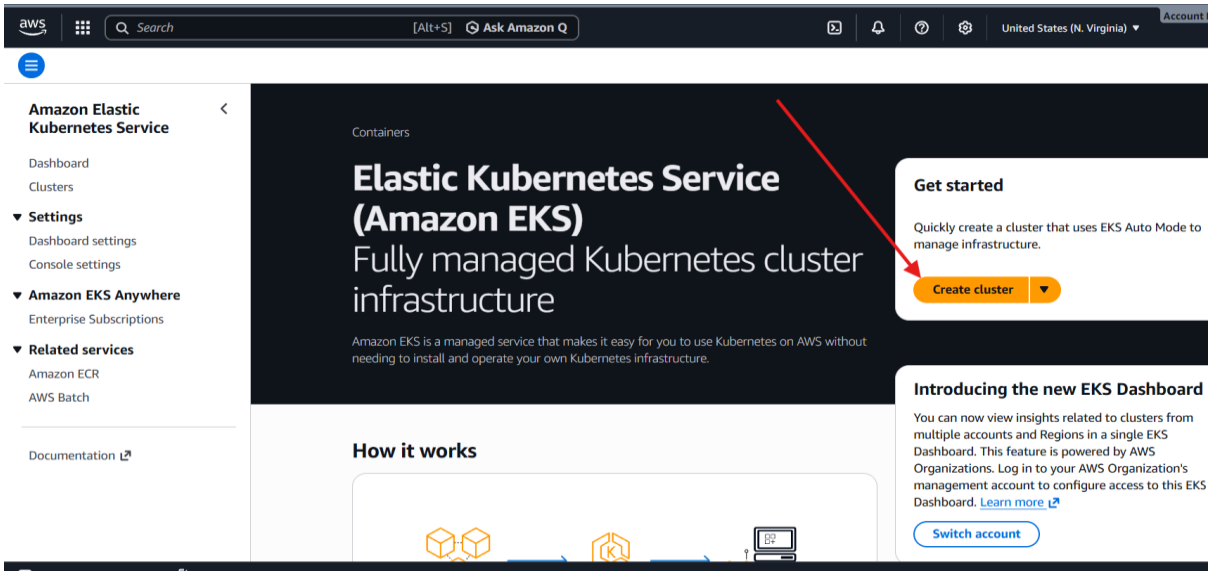
Attach these 3 policies

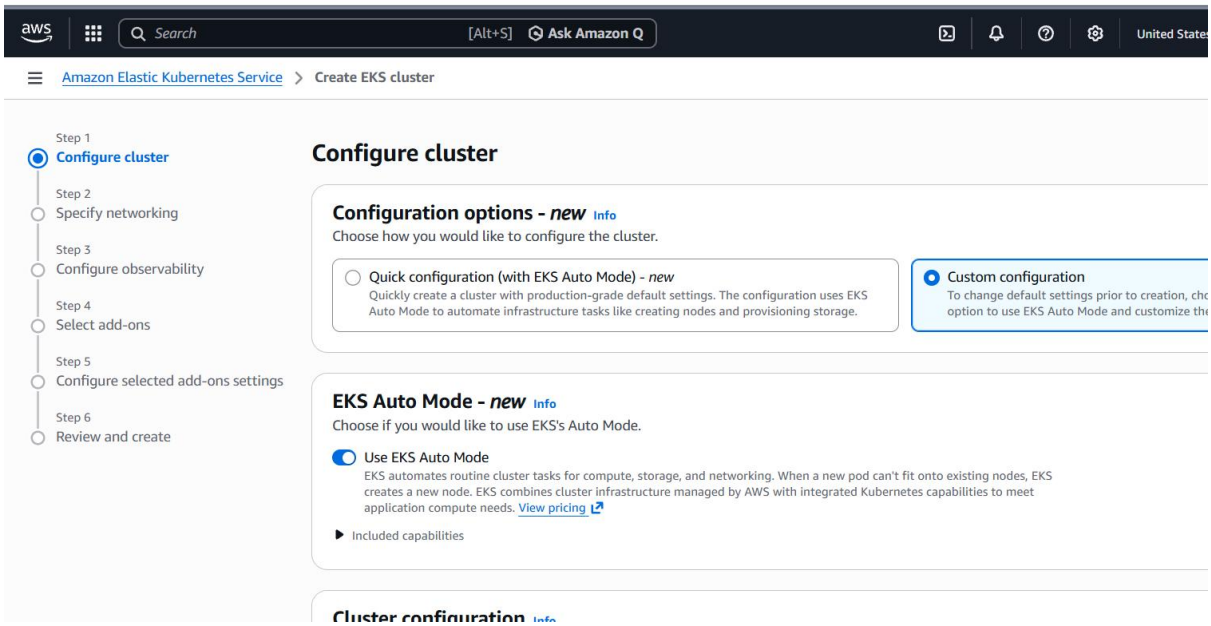
- **AmazonEKSWorkerNodePolicy**
- **AmazonEKS_CNI_Policy**
- **AmazonEC2ContainerRegistryReadOnly**

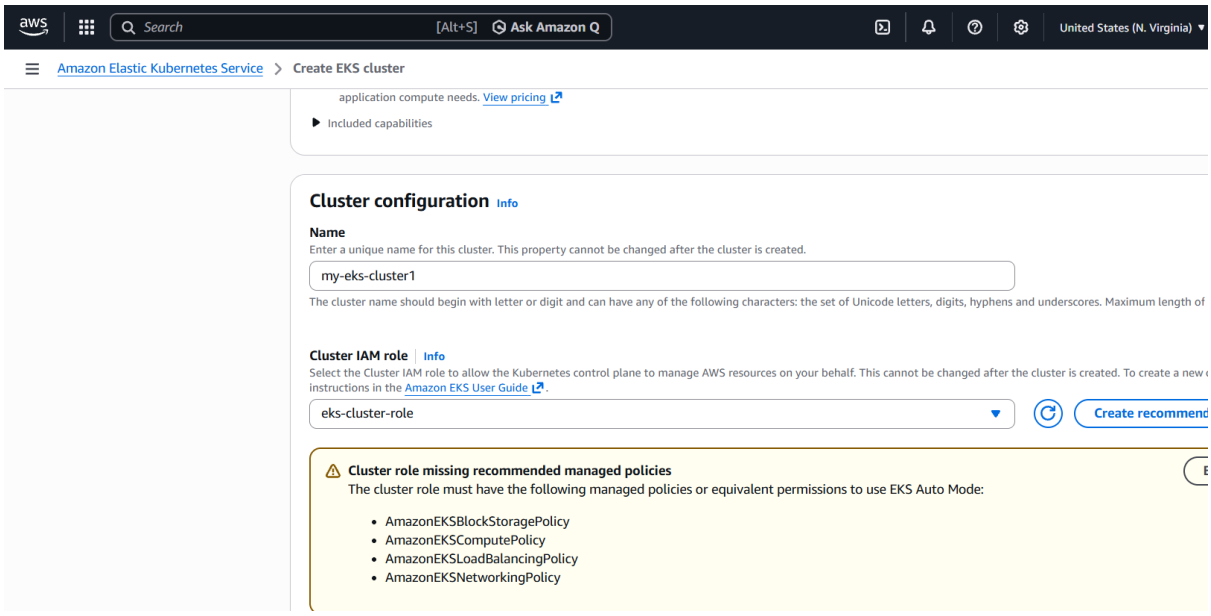


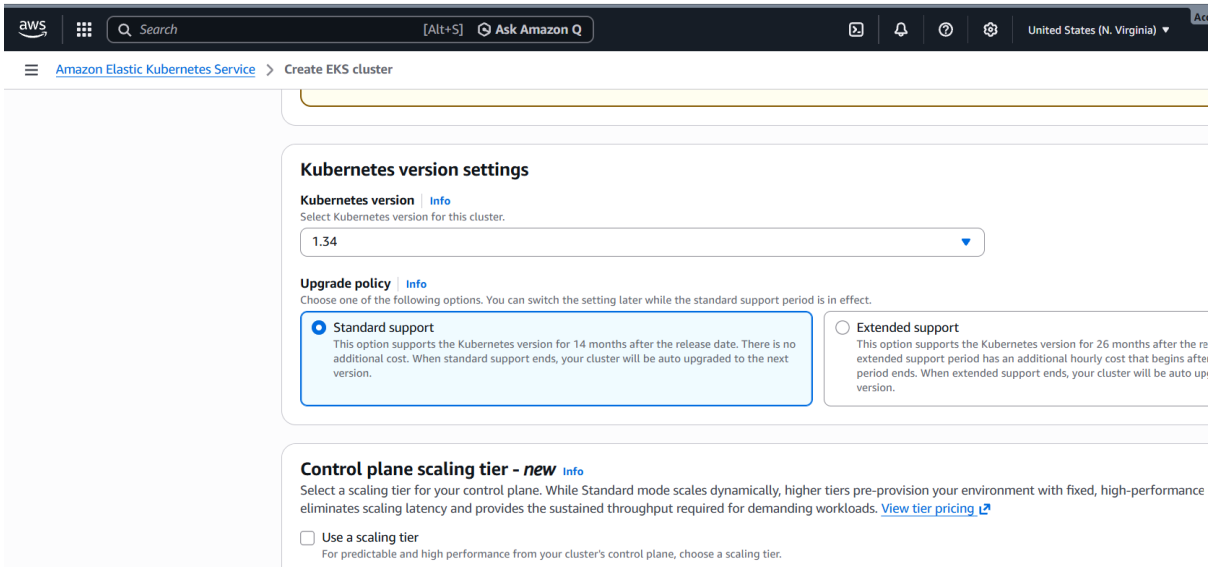


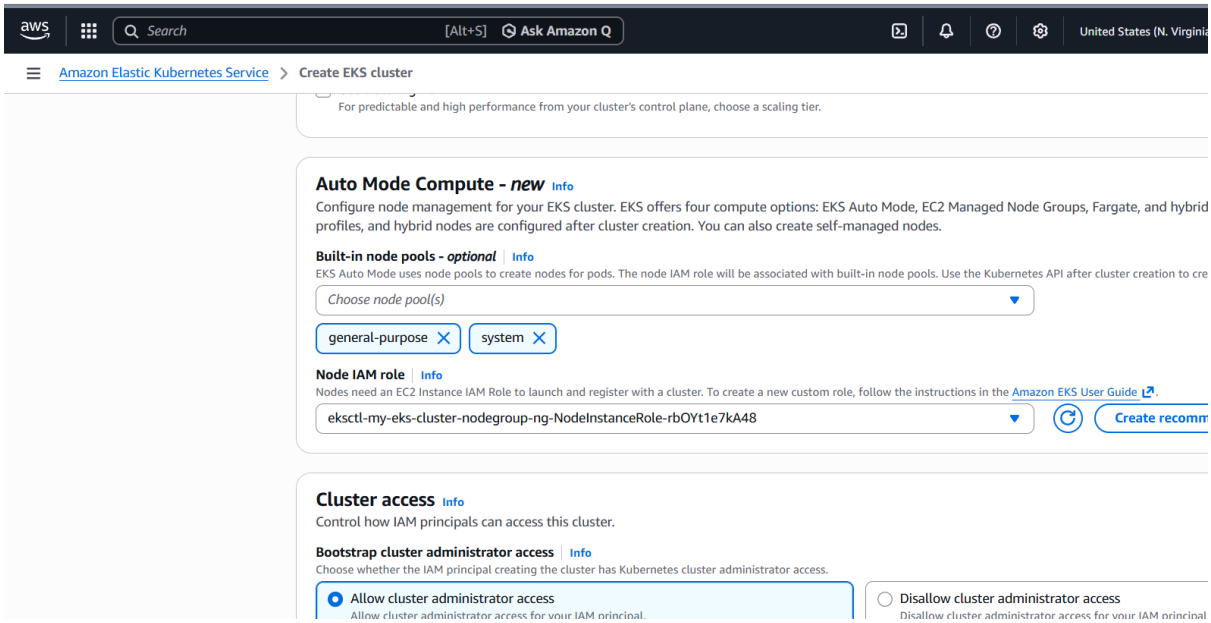
Go to eks and create cluster

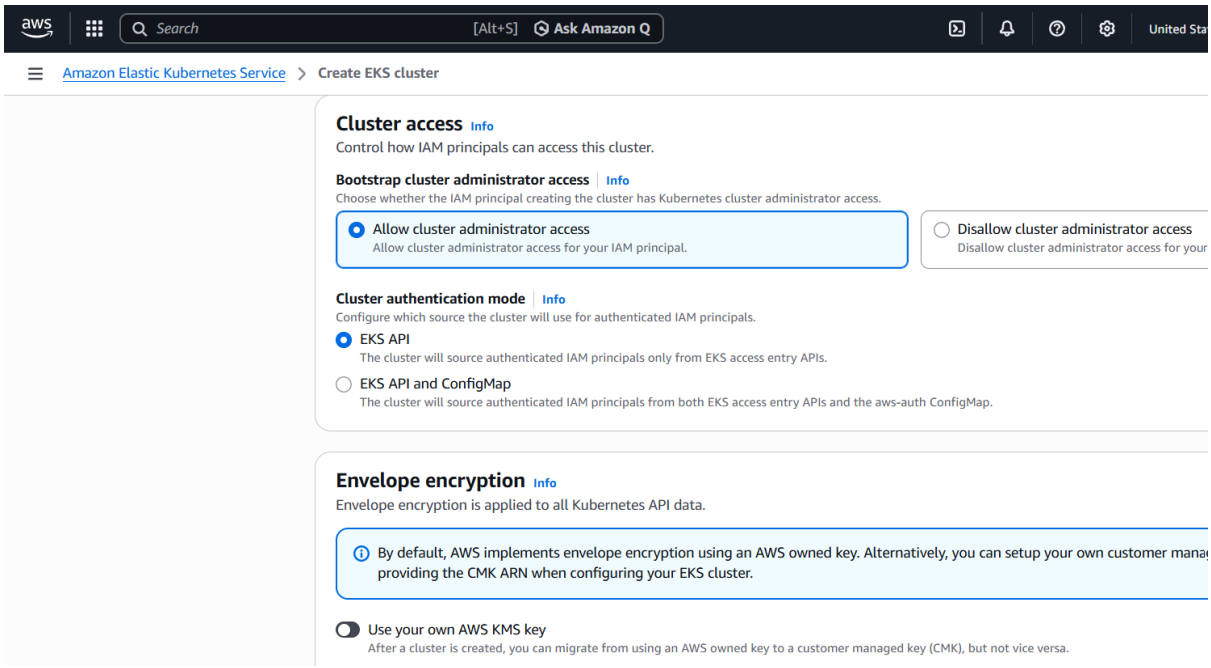


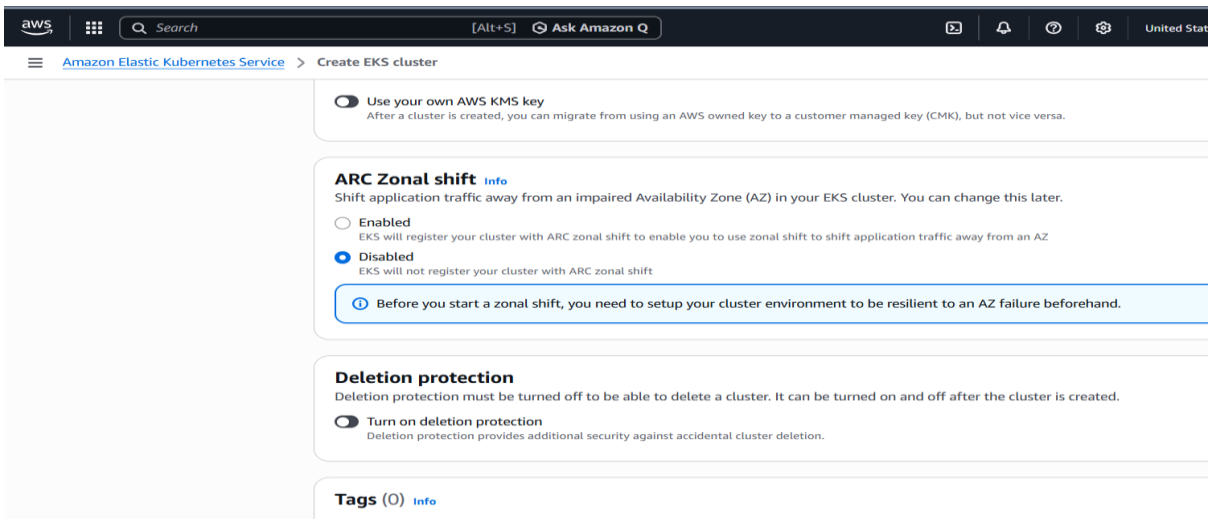

Search
[Alt+S]
Ask Amazon Q
United States
Amazon Elastic Kubernetes Service
Create EKS cluster
Step 1
Configure cluster
Step 2
Specify networking
Step 3
Configure observability
Step 4
Select add-ons
Step 5
Configure selected add-ons settings
Step 6
Review and create
Configure cluster
Configuration options - new Info
Choose how you would like to configure the cluster.
Quick configuration (with EKS Auto Mode) - new
Quickly create a cluster with production-grade default settings. The configuration uses EKS Auto Mode to automate infrastructure tasks like creating nodes and provisioning storage.
Custom configuration
To change default settings prior to creation, cho
option to use EKS Auto Mode and customize the
EKS Auto Mode - new Info
Choose if you would like to use EKS's Auto Mode.
Use EKS Auto Mode
EKS automates routine cluster tasks for compute, storage, and networking. When a new pod can't fit onto existing nodes, EKS creates a new node. EKS combines cluster infrastructure managed by AWS with integrated Kubernetes capabilities to meet application compute needs. View pricing
Included capabilities
Cluster configuration Info


Search
[Alt+S]
Ask Amazon Q
United States (N. Virginia)
Amazon Elastic Kubernetes Service
Create EKS cluster
application compute needs. View pricing
Included capabilities
Cluster configuration Info
Name
Enter a unique name for this cluster. This property cannot be changed after the cluster is created.
my-eks-cluster1
The cluster name should begin with letter or digit and can have any of the following characters: the set of Unicode letters, digits, hyphens and underscores. Maximum length of
Cluster IAM role Info
Select the Cluster IAM role to allow the Kubernetes control plane to manage AWS resources on your behalf. This cannot be changed after the cluster is created. To create a new
instructions in the Amazon EKS User Guide.
eks-cluster-role
Create recommend
Cluster role missing recommended managed policies
The cluster role must have the following managed policies or equivalent permissions to use EKS Auto Mode:
AmazonEKSBlockStoragePolicy
AmazonEKSComputePolicy
AmazonEKSLoadBalancingPolicy
AmazonEKSNetworkingPolicy

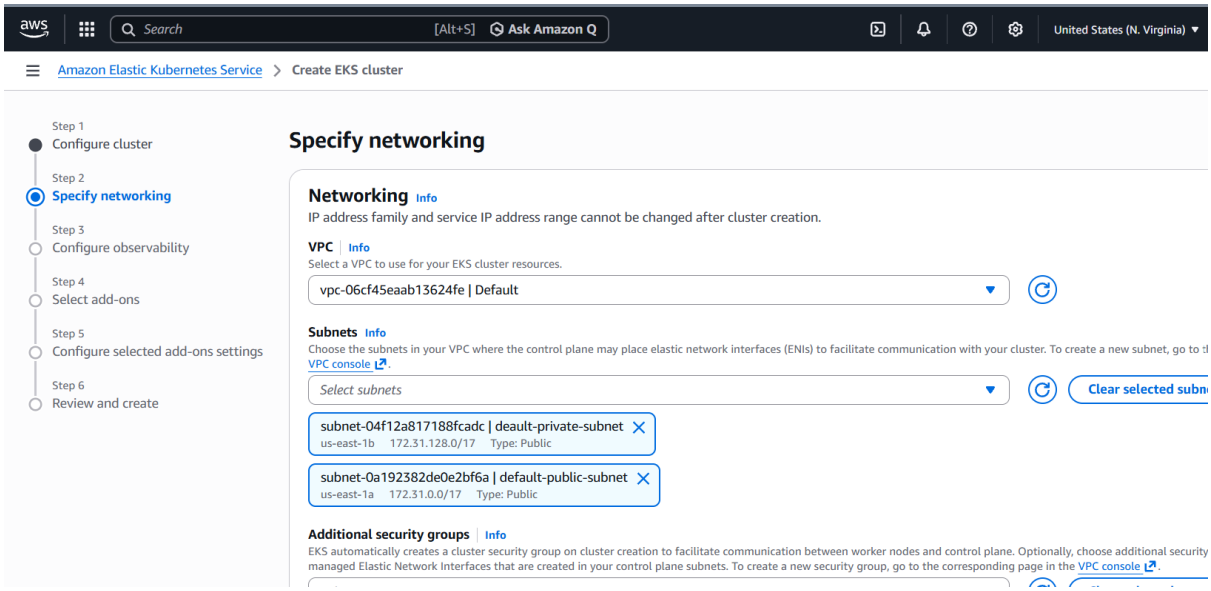

Search
[Alt+S]
Ask Amazon Q
United States (N. Virginia)
Amazon Elastic Kubernetes Service
Create EKS cluster
Kubernetes version settings
Kubernetes version Info
Select Kubernetes version for this cluster.
1.34
Upgrade policy Info
Choose one of the following options. You can switch the setting later while the standard support period is in effect.
Standard support
This option supports the Kubernetes version for 14 months after the release date. There is no additional cost. When standard support ends, your cluster will be auto upgraded to the next version.
Extended support
This option supports the Kubernetes version for 26 months after the re
extended support period has an additional hourly cost that begins afte
period ends. When extended support ends, your cluster will be auto up
version.
Control plane scaling tier - new Info
Select a scaling tier for your control plane. While Standard mode scales dynamically, higher tiers pre-provision your environment with fixed, high-performance eliminates scaling latency and provides the sustained throughput required for demanding workloads. View tier pricing
Use a scaling tier
For predictable and high performance from your cluster's control plane, choose a scaling tier.

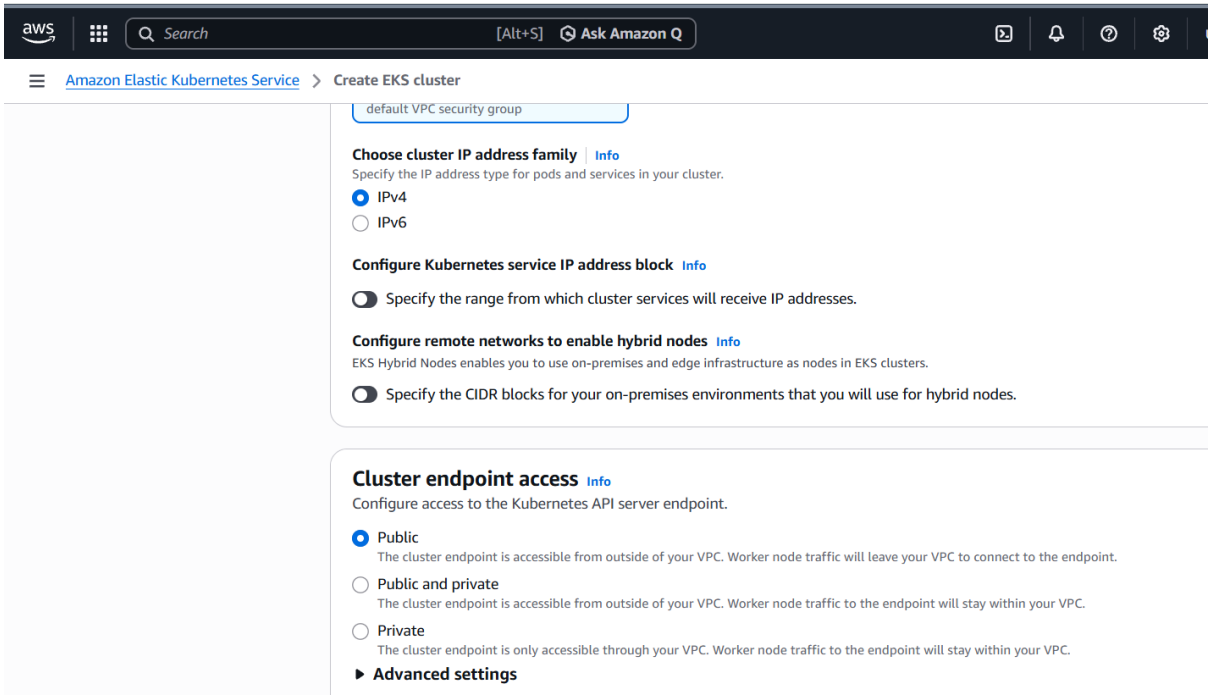

Search
[Alt+S]
Ask Amazon Q
United States (N. Virginia
Amazon Elastic Kubernetes Service
Create EKS cluster
For predictable and high performance from your cluster's control plane, choose a scaling tier.
Auto Mode Compute - new Info
Configure node management for your EKS cluster. EKS offers four compute options: EKS Auto Mode, EC2 Managed Node Groups, Fargate, and hybrid
profiles, and hybrid nodes are configured after cluster creation. You can also create self-managed nodes.
Built-in node pools - optional Info
EKS Auto Mode uses node pools to create nodes for pods. The node IAM role will be associated with built-in node pools. Use the Kubernetes API after cluster creation to cre
Choose node pool(s)
general-purpose
system
Node IAM role Info
Nodes need an EC2 Instance IAM Role to launch and register with a cluster. To create a new custom role, follow the instructions in the Amazon EKS User Guide.
eksctl-my-eks-cluster-nodegroup-ng-NodeInstanceRole-rbOYt1e7kA48
Create recomm
Cluster access Info
Control how IAM principals can access this cluster.
Bootstrap cluster administrator access Info
Choose whether the IAM principal creating the cluster has Kubernetes cluster administrator access.
Allow cluster administrator access
Allow cluster administrator access for your IAM principal.
Disallow cluster administrator access
Disallow cluster administrator access for your IAM principal

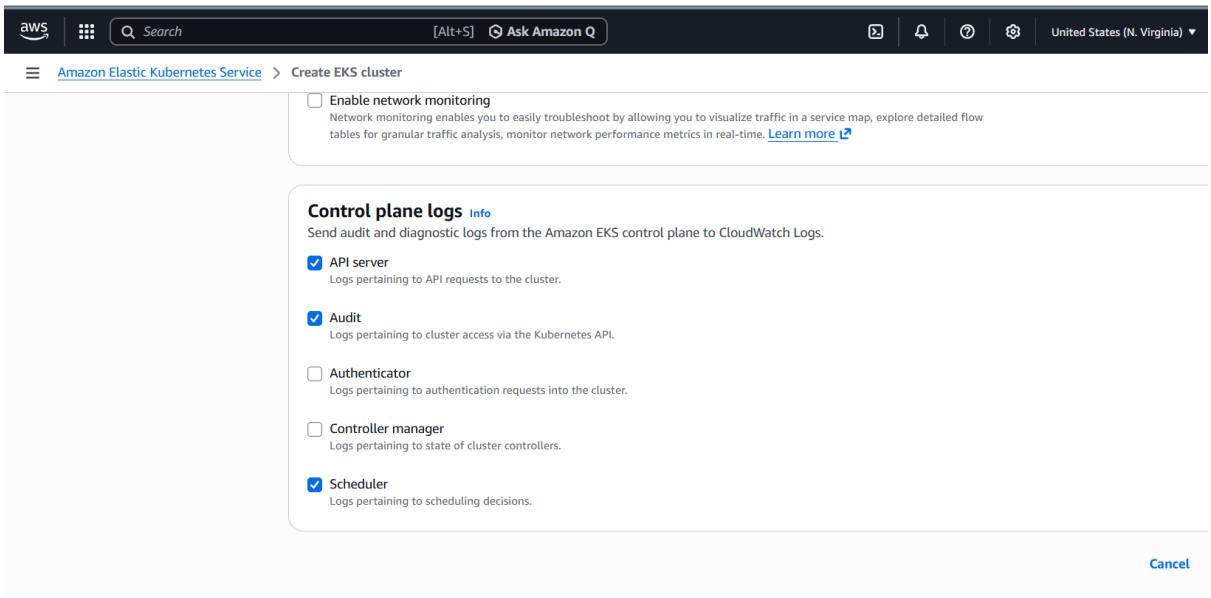

Search
[Alt+S]
Ask Amazon Q
United Sta
Amazon Elastic Kubernetes Service
Create EKS cluster
Cluster access Info
Control how IAM principals can access this cluster.
Bootstrap cluster administrator access Info
Choose whether the IAM principal creating the cluster has Kubernetes cluster administrator access.
Allow cluster administrator access
Allow cluster administrator access for your IAM principal.
Disallow cluster administrator access
Disallow cluster administrator access for your
Cluster authentication mode Info
Configure which source the cluster will use for authenticated IAM principals.
EKS API
The cluster will source authenticated IAM principals only from EKS access entry APIs.
EKS API and ConfigMap
The cluster will source authenticated IAM principals from both EKS access entry APIs and the aws-auth ConfigMap.
Envelope encryption Info
Envelope encryption is applied to all Kubernetes API data.
By default, AWS implements envelope encryption using an AWS owned key. Alternatively, you can setup your own customer mana
providing the CMK ARN when configuring your EKS cluster.
Use your own AWS KMS key
After a cluster is created, you can migrate from using an AWS owned key to a customer managed key (CMK), but not vice versa.


Search
[Alt+S]
Ask Amazon Q
United Stat
Amazon Elastic Kubernetes Service
Create EKS cluster
Use your own AWS KMS key
After a cluster is created, you can migrate from using an AWS owned key to a customer managed key (CMK), but not vice versa.
ARC Zonal shift Info
Shift application traffic away from an impaired Availability Zone (AZ) in your EKS cluster. You can change this later.
Enabled
EKS will register your cluster with ARC zonal shift to enable you to use zonal shift to shift application traffic away from an AZ
Disabled
EKS will not register your cluster with ARC zonal shift
Before you start a zonal shift, you need to setup your cluster environment to be resilient to an AZ failure beforehand.
Deletion protection
Deletion protection must be turned off to be able to delete a cluster. It can be turned on and off after the cluster is created.
Turn on deletion protection
Deletion protection provides additional security against accidental cluster deletion.
Tags (0) Info

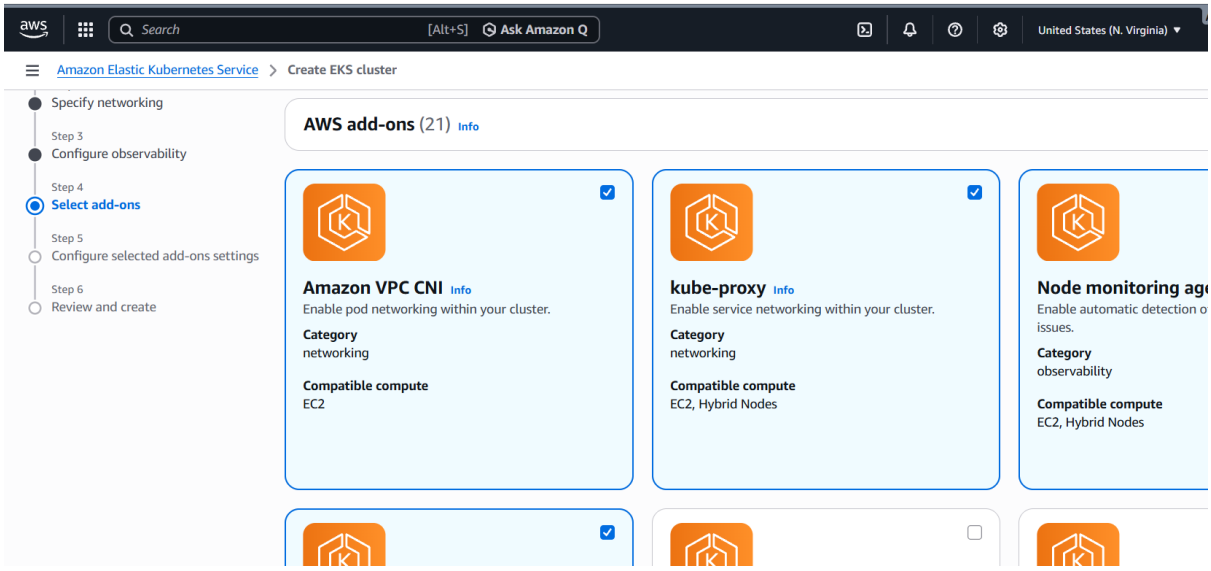
Click on next

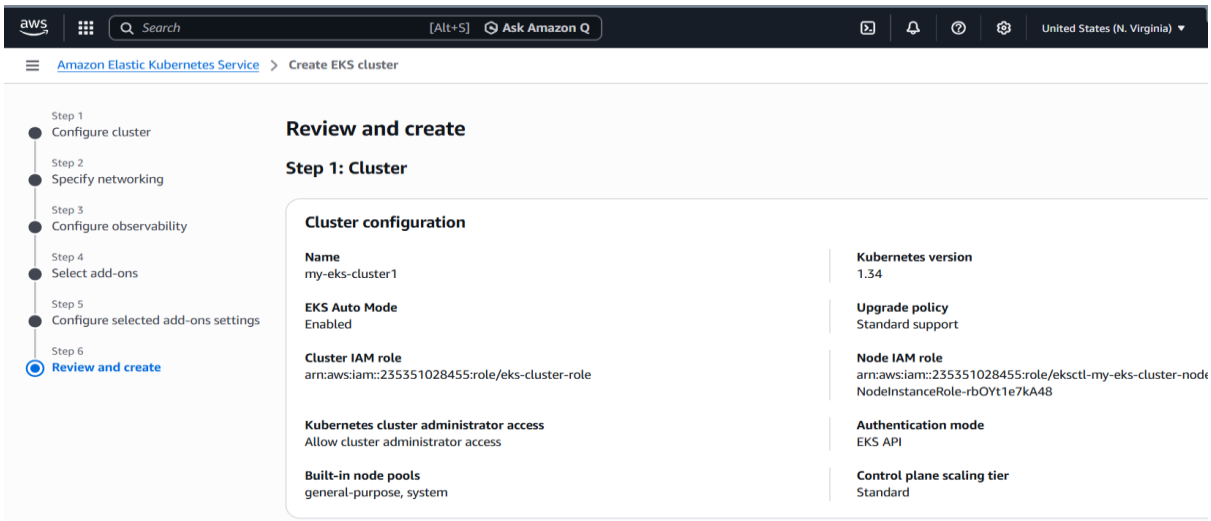




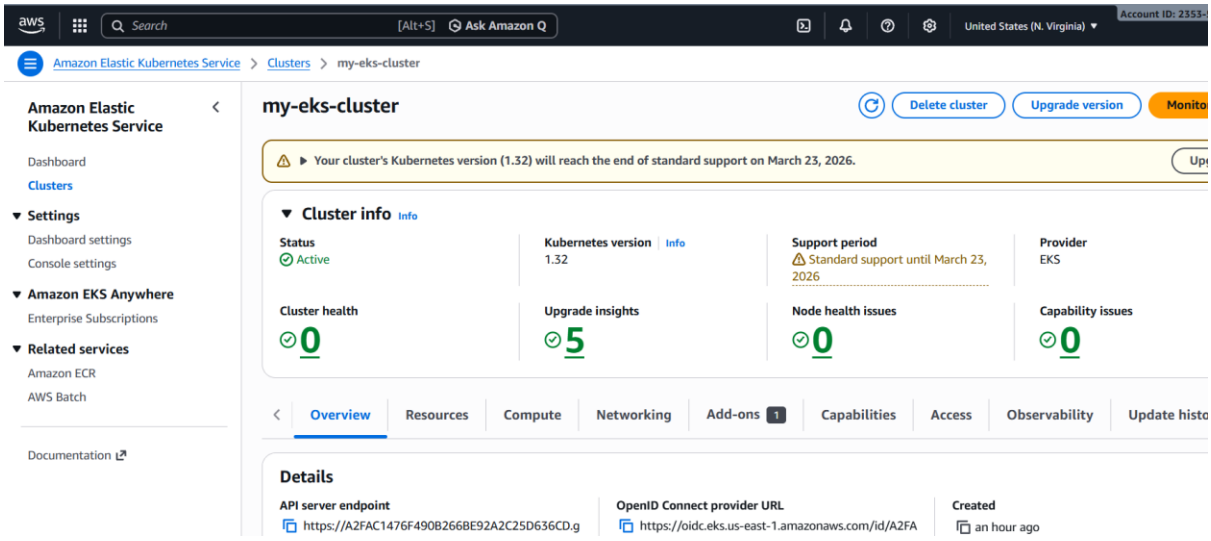


Select addons that you are needed





Click on create it will create a cluster in 10 min



3. Setup HPA

- **vi hpa-app.yaml**

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: hpa-nginx
spec:
  replicas: 1
  selector:
    matchLabels:
      app: hpa-nginx
  template:
```

```
metadata:
  labels:
    app: hpa-nginx
spec:
  containers:
  - name: nginx
    image: nginx
    ports:
    - containerPort: 80
    resources:
      requests:
        cpu: "100m"
        memory: "128Mi"
      limits:
        cpu: "200m"
        memory: "256Mi"
```

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: hpa-nginx
spec:
  replicas: 1
  selector:
    matchLabels:
      app: hpa-nginx
  template:
    metadata:
      labels:
        app: hpa-nginx
    spec:
      containers:
      - name: nginx
        image: nginx
        ports:
        - containerPort: 80
        resources:
          requests:
            cpu: "100m"
            memory: "128Mi"
          limits:
            cpu: "200m"
            memory: "256Mi"
~
```

- **kubectl apply -f hpa-app.yaml**
- **kubectl get pods**
- **kubectl top pods**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi hpa-app.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f hpa-app.yaml
deployment.apps/hpa-nginx created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get pods
NAME                         READY   STATUS    RESTARTS   AGE
hpa-nginx-f86cfcc9d-7lrp7    1/1     Running   0          12s

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl top pods
NAME                         CPU(cores)   MEMORY(bytes)
hpa-nginx-f86cfcc9d-7lrp7    0m           3Mi

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

- **vi service.yaml**

apiVersion: v1

kind: Service

metadata:

name: hpa-nginx-service

spec:

selector:

app: hpa-nginx

ports:

- port: 80

targetPort: 80

```
apiVersion: v1
kind: Service
metadata:
  name: hpa-nginx-service
spec:
  selector:
    app: hpa-nginx
  ports:
  - port: 80
    targetPort: 80
```

- **kubectl apply -f service.yaml**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi service.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f service.yaml
service/hpa-nginx-service created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

- **vi hpa.yaml**

```
apiVersion: autoscaling/v2
kind: HorizontalPodAutoscaler
metadata:
  name: hpa-nginx
spec:
  scaleTargetRef:
    apiVersion: apps/v1
    kind: Deployment
    name: hpa-nginx
  minReplicas: 1
  maxReplicas: 5
  metrics:
  - type: Resource
    resource:
      name: cpu
      target:
        type: Utilization
        averageUtilization: 50
```

```yaml
apiVersion: autoscaling/v2
kind: HorizontalPodAutoscaler
metadata:
  name: hpa-nginx
spec:
  scaleTargetRef:
    apiVersion: apps/v1
    kind: Deployment
    name: hpa-nginx
  minReplicas: 1
  maxReplicas: 5
  metrics:
  - type: Resource
    resource:
      name: cpu
      target:
        type: Utilization
        averageUtilization: 50
```

- **kubectl apply -f hpa.yaml**
- **kubectl get hpa**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi hpa.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f hpa.yaml
horizontalpodautoscaler.autoscaling/hpa-nginx created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get hpa
NAME        REFERENCE              TARGETS              MINPODS   MAXPODS   REPLICAS   AGE
hpa-nginx   Deployment/hpa-nginx   cpu: <unknown>/50%   1         5         0          10s

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get hpa
NAME        REFERENCE              TARGETS       MINPODS   MAXPODS   REPLICAS   AGE
hpa-nginx   Deployment/hpa-nginx   cpu: 0%/50%   1         5         1          34s

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

4. Setup cluster autoscale

- **kubectl get nodes**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get nodes
NAME                                STATUS   ROLES    AGE    VERSION
ip-192-168-28-220.ec2.internal   Ready    <none>   120m   v1.32.9-eks-ecaa3a6
ip-192-168-41-142.ec2.internal   Ready    <none>   120m   v1.32.9-eks-ecaa3a6

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$
```

- **vi cluster-autoscaler-policy.json**

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "autoscaling:DescribeAutoScalingGroups",
        "autoscaling:DescribeAutoScalingInstances",
        "autoscaling:DescribeLaunchConfigurations",
        "autoscaling:DescribeScalingActivities",
        "autoscaling:SetDesiredCapacity",
        "autoscaling:TerminateInstanceInAutoScalingGroup",
        "ec2:DescribeLaunchTemplateVersions"
      ],
      "Resource": "*"
    }
  ]
}
```

- **aws iam create-policy **
  **--policy-name AmazonEKSClusterAutoscalerPolicy **
  --policy-document file://cluster-autoscaler-policy.json

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi cluster-autoscaler-policy.json

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ aws iam create-policy \
>   --policy-name AmazonEKSClusterAutoscalerPolicy \
>   --policy-document file://cluster-autoscaler-policy.json
{
    "Policy": {
        "PolicyName": "AmazonEKSClusterAutoscalerPolicy",
        "PolicyId": "ANPATNTADWLTWQDCMOSKO",
        "Arn": "arn:aws:iam::235351028455:policy/AmazonEKSClusterAutoscalerPolicy",
        "Path": "/",
        "DefaultVersionId": "v1",
        "AttachmentCount": 0,
        "PermissionsBoundaryUsageCount": 0,
        "IsAttachable": true,
        "CreateDate": "2026-01-07T11:51:11+00:00",
        "UpdateDate": "2026-01-07T11:51:11+00:00"
    }
}

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

Get OIDC provider:

**eksctl utils associate-iam-oidc-provider **

**--region us-east-1 **

**--cluster my-eks-cluster **

--approve

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ eksctl utils associate-iam-oidc-provider \
>   --region us-east-1 \
>   --cluster my-eks-cluster \
>   --approve
2026-01-07 17:27:26 [ℹ]  will create IAM Open ID Connect provider for cluster "my-eks-cluster" in "us-east-1
2026-01-07 17:27:27 [✔]  created IAM Open ID Connect provider for cluster "my-eks-cluster" in "us-east-1"
```

**aws eks describe-cluster **

**--name my-eks-cluster **

**--query "cluster.identity.oidc.issuer" **

--output text

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ aws eks describe-cluster \
>   --name my-eks-cluster \
> u --query "cluster.identity.oidc.issuer" \
>   --output text
https://oidc.eks.us-east-1.amazonaws.com/id/A2FAC1476F490B266BE92A2C25D636CD
```

**eksctl create iamserviceaccount **

**--name cluster-autoscaler **

**--namespace kube-system **

**--cluster my-eks-cluster **

**--attach-policy-arn arn:aws:iam::235351028455:policy/AmazonEKSClusterAutoscalerPolicy **

--approve \

--override-existing-serviceaccounts

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ eksctl create iamserviceaccount \
>   --name cluster-autoscaler \
>   --namespace kube-system \
>   --cluster my-eks-cluster \
>   --attach-policy-arn arn:aws:iam::235351028455:policy/AmazonEKSClusterAutoscalerPolicy \
>   --approve \
>   --override-existing-serviceaccounts
2026-01-07 17:29:23 [ℹ]  1 iamserviceaccount (kube-system/cluster-autoscaler) was included (based on the
2026-01-07 17:29:23 [!]  metadata of serviceaccounts that exist in Kubernetes will be updated, as --overr
2026-01-07 17:29:23 [ℹ]  1 task: {
    2 sequential sub-tasks: {
        create IAM role for serviceaccount "kube-system/cluster-autoscaler",
        create serviceaccount "kube-system/cluster-autoscaler",
    } }2026-01-07 17:29:23 [ℹ]  building iamserviceaccount stack "eksctl-my-eks-cluster-addon-iamservicea
2026-01-07 17:29:23 [ℹ]  deploying stack "eksctl-my-eks-cluster-addon-iamserviceaccount-kube-system-clust
2026-01-07 17:29:24 [ℹ]  waiting for CloudFormation stack "eksctl-my-eks-cluster-addon-iamserviceaccount-
2026-01-07 17:29:55 [ℹ]  waiting for CloudFormation stack "eksctl-my-eks-cluster-addon-iamserviceaccount-
2026-01-07 17:29:57 [ℹ]  created serviceaccount "kube-system/cluster-autoscaler"

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```
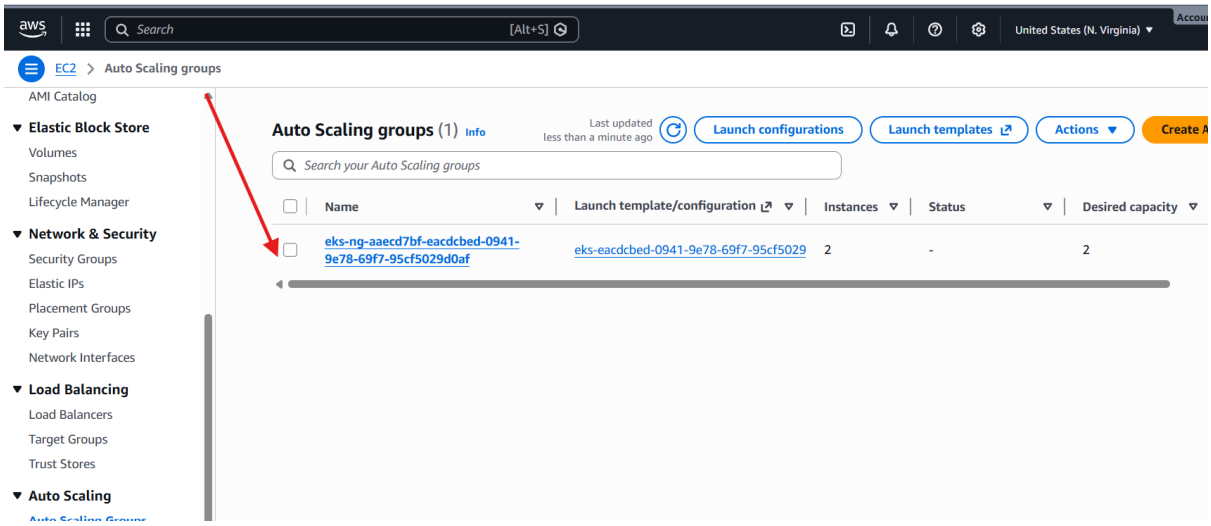

Replace your autoscaling group name in your script



- vi cluster-autoscaler.yaml

apiVersion: apps/v1

kind: Deployment

metadata:

  name: cluster-autoscaler

  namespace: kube-system

```
spec:
  replicas: 1
  selector:
    matchLabels:
      app: cluster-autoscaler
  template:
    metadata:
      labels:
        app: cluster-autoscaler
      annotations:
        cluster-autoscaler.kubernetes.io/safe-to-evict: "false"
    spec:
      serviceAccountName: cluster-autoscaler
      containers:
      - name: cluster-autoscaler
        image: registry.k8s.io/autoscaling/cluster-
autoscaler:v1.29.0
        command:
        - ./cluster-autoscaler
        - --cloud-provider=aws
        - --balance-similar-node-groups
```

- --skip-nodes-with-system-pods=false

- --skip-nodes-with-local-storage=false

- --nodes=1:5: eks-ng-aaecd7bf-eacdcbed-0941-9e78-69f7-95cf5029d0af

- --stderrthreshold=info

- --v=4

resources:

limits:

cpu: 100m

memory: 300Mi

requests:

cpu: 100m

memory: 300Mi

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: cluster-autoscaler
  namespace: kube-system
spec:
  replicas: 1
  selector:
    matchLabels:
      app: cluster-autoscaler
  template:
    metadata:
      labels:
        app: cluster-autoscaler
      annotations:
        cluster-autoscaler.kubernetes.io/safe-to-evict: "false"
    spec:
      serviceAccountName: cluster-autoscaler
      containers:
      - name: cluster-autoscaler
        image: registry.k8s.io/autoscaling/cluster-autoscaler:v1.29.0
        command:
        - ./cluster-autoscaler
        - --cloud-provider=aws
        - --balance-similar-node-groups
        - --skip-nodes-with-system-pods=false
        - --skip-nodes-with-local-storage=false
        - --nodes=1:5:eks-ng-aaecd7bf-eacdcbed-0941-9e78-69f7-95cf5029d0af
        - --stderrthreshold=info
        - --v=4
        resources:
          limits:
            cpu: 100m
            memory: 300Mi
          requests:
            cpu: 100m
            memory: 300Mi
```

- **kubectl apply -f cluster-autoscaler.yaml**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi cluster-autoscaler.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f cluster-autoscaler.yaml
deployment.apps/cluster-autoscaler created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
```

- **vi cluster-autoscaler-rbac.yaml**

```yaml
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRole
metadata:
  name: cluster-autoscaler
rules:
- apiGroups: [""]
  resources: ["events", "endpoints"]
  verbs: ["create", "patch"]
- apiGroups: [""]
  resources: ["pods/eviction"]
  verbs: ["create"]
- apiGroups: [""]
  resources: ["pods/status"]
  verbs: ["update"]
- apiGroups: [""]
  resources: ["endpoints"]
  resourceNames: ["cluster-autoscaler"]
  verbs: ["get", "update"]
- apiGroups: [""]
  resources: ["nodes"]
  verbs: ["watch", "list", "get", "update"]
- apiGroups: [""]
  resources: ["pods", "services", "replicationcontrollers", "persistentvolumeclaims", "pe
  verbs: ["watch", "list", "get"]
- apiGroups: ["apps"]
  resources: ["statefulsets", "replicasets", "daemonsets", "deployments"]
  verbs: ["watch", "list", "get"]
- apiGroups: ["batch", "extensions"]
  resources: ["jobs"]
  verbs: ["watch", "list", "get"]
- apiGroups: ["policy"]
  resources: ["poddisruptionbudgets"]
  verbs: ["watch", "list"]
```

- **kubectl apply -f cluster-autoscaler-rbac.yaml**
- **kubectl rollout restart deployment cluster-autoscaler -n kube-system**
- **kubectl get pods -n kube-system | grep cluster-autoscaler**

- **kubectl logs -n kube-system deployment/cluster-autoscaler**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi cluster-autoscaler-rbac.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f cluster-autoscaler-rbac.yaml
clusterrole.rbac.authorization.k8s.io/cluster-autoscaler created
clusterrolebinding.rbac.authorization.k8s.io/cluster-autoscaler created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl rollout restart deployment cluster-autoscaler -n kube-system
deployment.apps/cluster-autoscaler restarted

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get pods -n kube-system | grep cluster-autoscaler
cluster-autoscaler-bf5bbbcc5-kz48m   1/1     Running   0          14s
```

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl logs -n kube-system deployment/cluster-autoscaler
I0107 12:10:36.428462       1 main.go:595] Cluster Autoscaler 1.29.0
I0107 12:10:36.522544       1 leaderelection.go:250] attempting to acquire leader lease kube-system/cluster-
E0107 12:10:36.527199       1 leaderelection.go:332] error retrieving resource lock kube-system/cluster-auto
luster-autoscaler" is forbidden: User "system:serviceaccount:kube-system:cluster-autoscaler" cannot get reso
ion.k8s.io" in the namespace "kube-system"
I0107 12:10:36.527218       1 leaderelection.go:255] failed to acquire lease kube-system/cluster-autoscaler
E0107 12:10:40.749574       1 leaderelection.go:332] error retrieving resource lock kube-system/cluster-auto
luster-autoscaler" is forbidden: User "system:serviceaccount:kube-system:cluster-autoscaler" cannot get reso
ion.k8s.io" in the namespace "kube-system"
I0107 12:10:40.749620       1 leaderelection.go:255] failed to acquire lease kube-system/cluster-autoscaler
E0107 12:10:42.809804       1 leaderelection.go:332] error retrieving resource lock kube-system/cluster-auto
luster-autoscaler" is forbidden: User "system:serviceaccount:kube-system:cluster-autoscaler" cannot get reso
ion.k8s.io" in the namespace "kube-system"
I0107 12:10:42.809917       1 leaderelection.go:255] failed to acquire lease kube-system/cluster-autoscaler
E0107 12:10:45.786321       1 leaderelection.go:332] error retrieving resource lock kube-system/cluster-auto
luster-autoscaler" is forbidden: User "system:serviceaccount:kube-system:cluster-autoscaler" cannot get reso
ion.k8s.io" in the namespace "kube-system"
I0107 12:10:45.786347       1 leaderelection.go:255] failed to acquire lease kube-system/cluster-autoscaler
E0107 12:10:48.808456       1 leaderelection.go:332] error retrieving resource lock kube-system/cluster-auto
luster-autoscaler" is forbidden: User "system:serviceaccount:kube-system:cluster-autoscaler" cannot get reso
ion.k8s.io" in the namespace "kube-system"
I0107 12:10:48.808476       1 leaderelection.go:255] failed to acquire lease kube-system/cluster-autoscaler
E0107 12:10:52.593628       1 leaderelection.go:332] error retrieving resource lock kube-system/cluster-auto
luster-autoscaler" is forbidden: User "system:serviceaccount:kube-system:cluster-autoscaler" cannot get reso
ion.k8s.io" in the namespace "kube-system"
```

Test the scaling:

- **vi test-pod.yaml**

apiVersion: v1

kind: Pod

metadata:

name: cpu-stress

spec:

containers:

- name: stress

image: busybox

command: ["sh", "-c", "sleep 3600"]

resources:

requests:

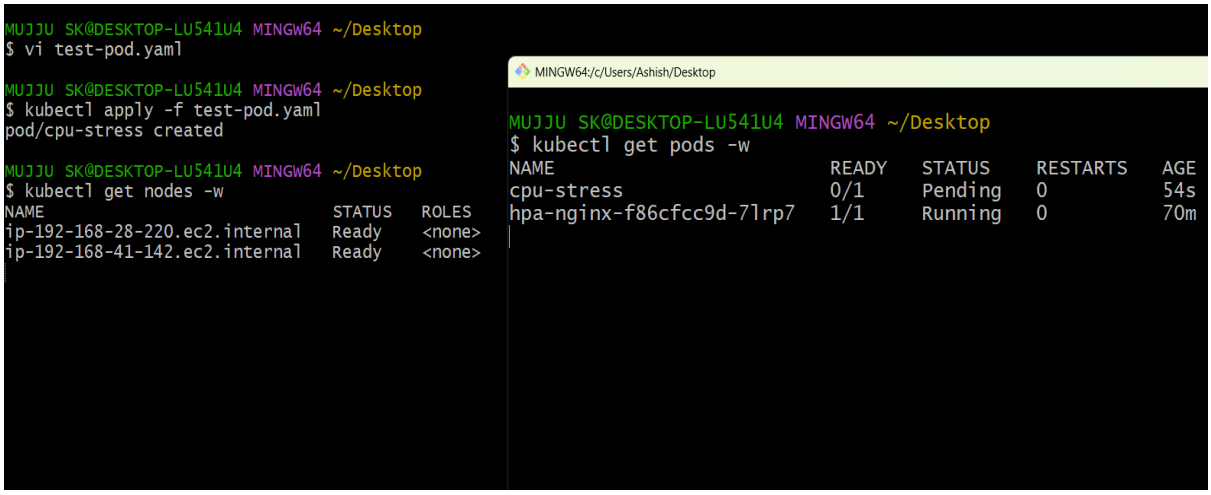
cpu: "2000m"

```yaml
apiVersion: v1
kind: Pod
metadata:
  name: cpu-stress
spec:
  containers:
  - name: stress
    image: busybox
    command: ["sh", "-c", "sleep 3600"]
    resources:
      requests:
        cpu: "2000m"
```

- **kubectl apply -f test-pod.yaml**

if pods are pending state it will create new nodes

- **kubectl get pods -w**
- **kubectl get nodes -w**



5. Setup cronjob and job

- **vi job.yaml**

```
apiVersion: batch/v1
kind: Job
metadata:
  name: sample-job
spec:
  backoffLimit: 3
  completions: 1
  parallelism: 1
  template:
    spec:
      restartPolicy: Never
      containers:
```

- name: job-container

image: busybox

command:

- sh

- -c

- echo "Job started"; sleep 10; echo "Job completed"

```
apiVersion: batch/v1
kind: Job
metadata:
  name: sample-job
spec:
  backoffLimit: 3
  completions: 1
  parallelism: 1
  template:
    spec:
      restartPolicy: Never
      containers:
      - name: job-container
        image: busybox
        command:
        - sh
        - -c
        - echo "Job started"; sleep 10; echo "Job completed"
~
```

- **kubectl apply -f job.yaml**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi job.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f job.yaml
job.batch/sample-job created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

- **kubectl get jobs**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f job.yaml
job.batch/sample-job created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get jobs
NAME         STATUS     COMPLETIONS   DURATION   AGE
sample-job   Complete   1/1           14s        2m16s
```

- **kubectl logs job/sample-job**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl logs job/sample-job
Job started
Job completed
```

Cronjob:

- **vi cronjob.yaml**

```
apiVersion: batch/v1
kind: CronJob
metadata:
  name: sample-cronjob
spec:
  schedule: "*/2 * * * *"   # Every 2 minutes
  successfulJobsHistoryLimit: 3
  failedJobsHistoryLimit: 1
```

jobTemplate:

spec:

template:

spec:

restartPolicy: Never

containers:

- name: cron-container

image: busybox

command:

- sh

- -c

- date; echo "CronJob executed"

```yaml
apiVersion: batch/v1
kind: CronJob
metadata:
  name: sample-cronjob
spec:
  schedule: "*/2 * * * *"   # Every 2 minutes
  successfulJobsHistoryLimit: 3
  failedJobsHistoryLimit: 1
  jobTemplate:
    spec:
      template:
        spec:
          restartPolicy: Never
          containers:
          - name: cron-container
            image: busybox
            command:
            - sh
            - -c
            - date; echo "CronJob executed"
```

- **kubectl apply -f cronjob.yaml**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi cronjob.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f cronjob.yaml
cronjob.batch/sample-cronjob created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

- **kubectl get cronjobs**
- **kubectl get cronjobs**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get cronjobs
NAME             SCHEDULE      TIMEZONE   SUSPEND   ACTIVE   LAST SCHEDULE   AGE
sample-cronjob   */2 * * * *   <none>     False     0        39s             105s

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

- **kubectl get jobs -w**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi cronjob.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f cronjob.yaml
cronjob.batch/sample-cronjob created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get cronjobs
NAME             SCHEDULE      TIMEZONE   SUSP
sample-cronjob   */2 * * * *   <none>     Fals

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

```
MINGW64:/c/Users/Ashish/Desktop

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get jobs -w
NAME                       STATUS     COMPLETIONS   DURATION   AGE
sample-cronjob-29463204    Complete   1/1           4s         51s
sample-cronjob-29463206    Running    0/1                      0s
sample-cronjob-29463206    Running    0/1           0s         0s
sample-cronjob-29463206    Running    0/1           3s         3s
sample-cronjob-29463206    Complete   1/1           3s         3s
```

6. Create secret and inject inside pod

**kubectl create secret generic app-secret **

**--from-literal=DB_USER=admin **

--from-literal=DB_PASSWORD=admin123

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl create secret generic app-secret \
>   --from-literal=DB_USER=admin \
>   --from-literal=DB_PASSWORD=admin123
secret/app-secret created
```

- **kubectl get secret app-secret**
- **kubectl describe secret app-secret**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get secret app-secret
NAME         TYPE     DATA   AGE
app-secret   Opaque   2      17s

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl describe secret app-secret
Name:         app-secret
Namespace:    default
Labels:       <none>
Annotations:  <none>

Type:  Opaque

Data
====
DB_USER:      5 bytes
DB_PASSWORD:  8 bytes
```

- **vi secret-env-pod.yaml**

apiVersion: v1

```
kind: Pod
metadata:
  name: secret-env-pod
spec:
  containers:
  - name: test-container
    image: busybox
    command: ["sh", "-c", "env | grep DB && sleep 3600"]
    env:
    - name: DB_USER
      valueFrom:
        secretKeyRef:
          name: app-secret
          key: DB_USER
    - name: DB_PASSWORD
      valueFrom:
        secretKeyRef:
          name: app-secret
          key: DB_PASSWORD
```

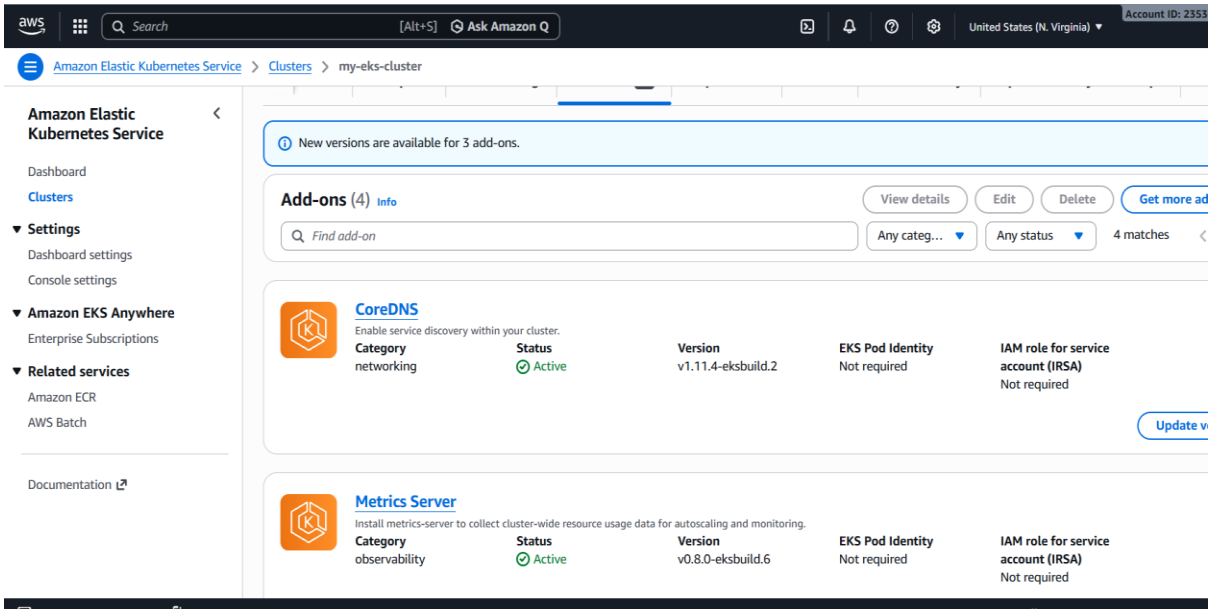
```yaml
apiVersion: v1
kind: Pod
metadata:
  name: secret-env-pod
spec:
  containers:
  - name: test-container
    image: busybox
    command: ["sh", "-c", "env | grep DB && sleep 3600"]
    env:
    - name: DB_USER
      valueFrom:
        secretKeyRef:
          name: app-secret
          key: DB_USER
    - name: DB_PASSWORD
      valueFrom:
        secretKeyRef:
          name: app-secret
          key: DB_PASSWORD
```

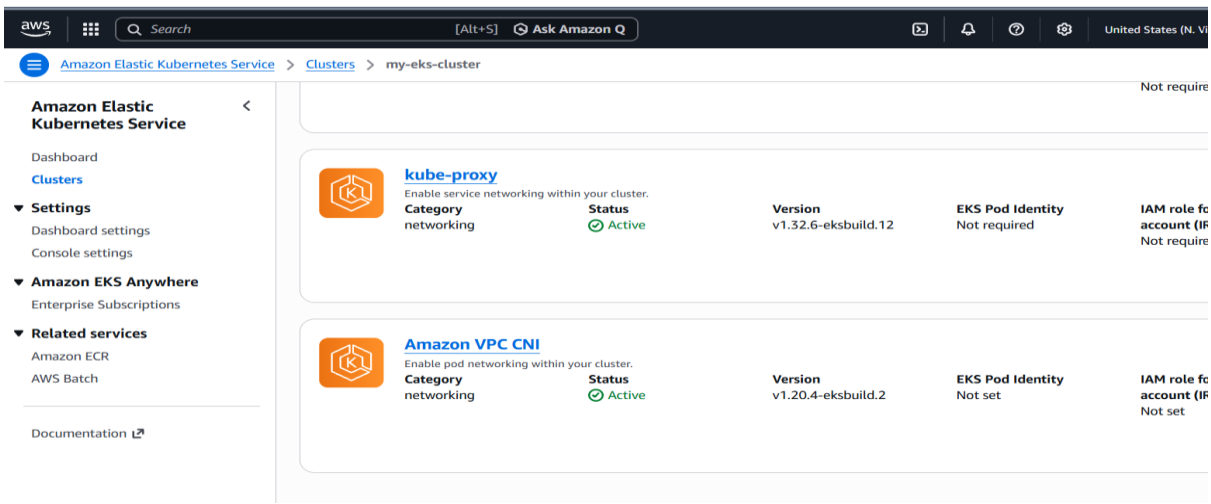
- **kubectl apply -f secret-env-pod.yaml**
- **kubectl logs secret-env-pod**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ vi secret-env-pod.yaml

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl apply -f secret-env-pod.yaml
pod/secret-env-pod created

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl logs secret-env-pod
DB_PASSWORD=admin123
DB_USER=admin

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$
```

7. Check different add-ons available on eks.

- Amazon VPC CNI
- CoreDNS
- kube-proxy
- Amazon EBS CSI Driver
- Metrics Server
- Amazon EFS CSI Driver
- AWS Load Balancer Controller
- Amazon GuardDuty Agent
- Amazon CloudWatch Observability
- Amazon VPC Lattice Controller





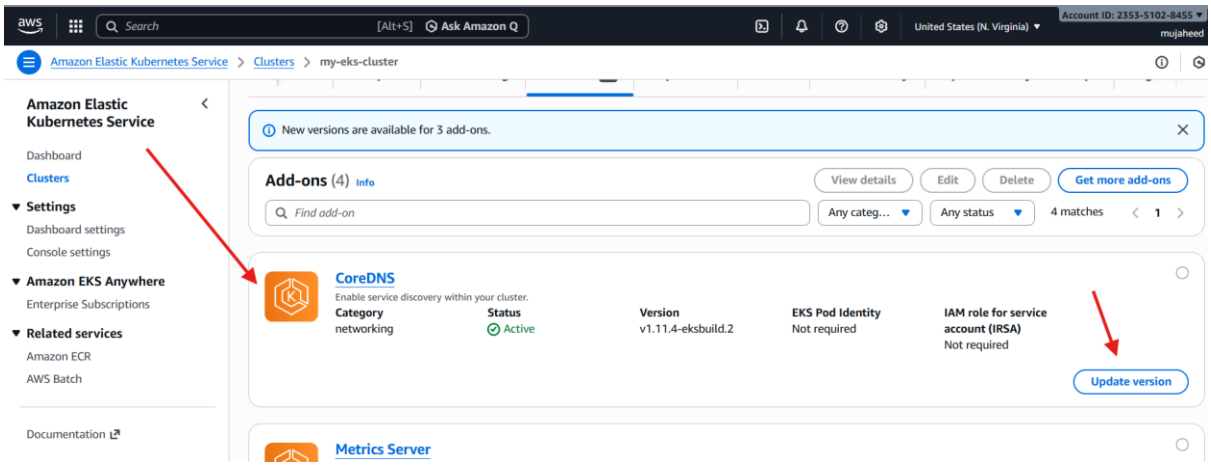
8. Upgrade eks cluster

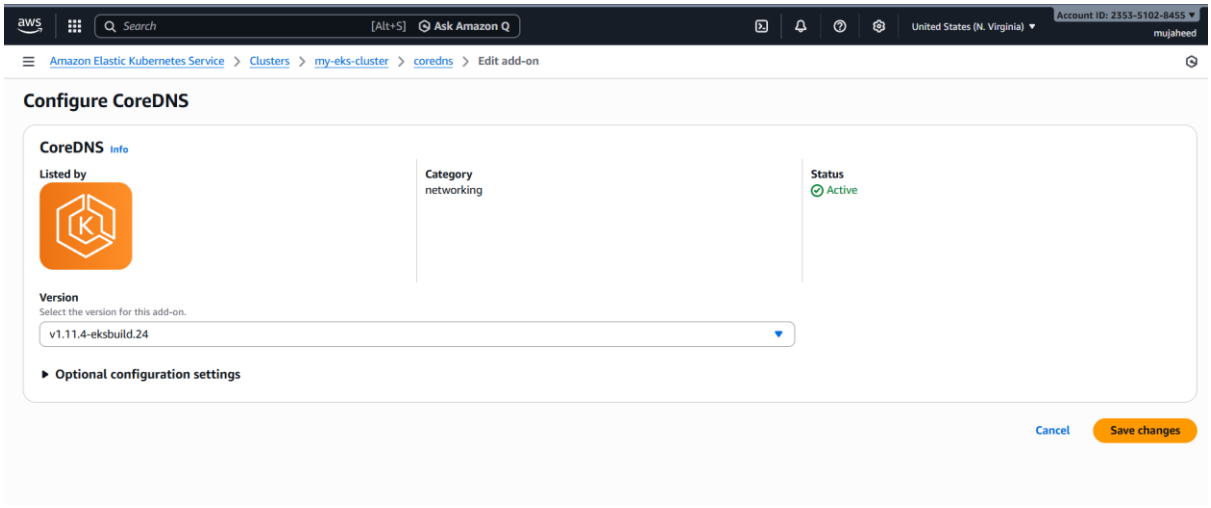
- aws eks describe-cluster \
  --name my-eks-cluster \
  --query cluster.version
- kubectl get nodes

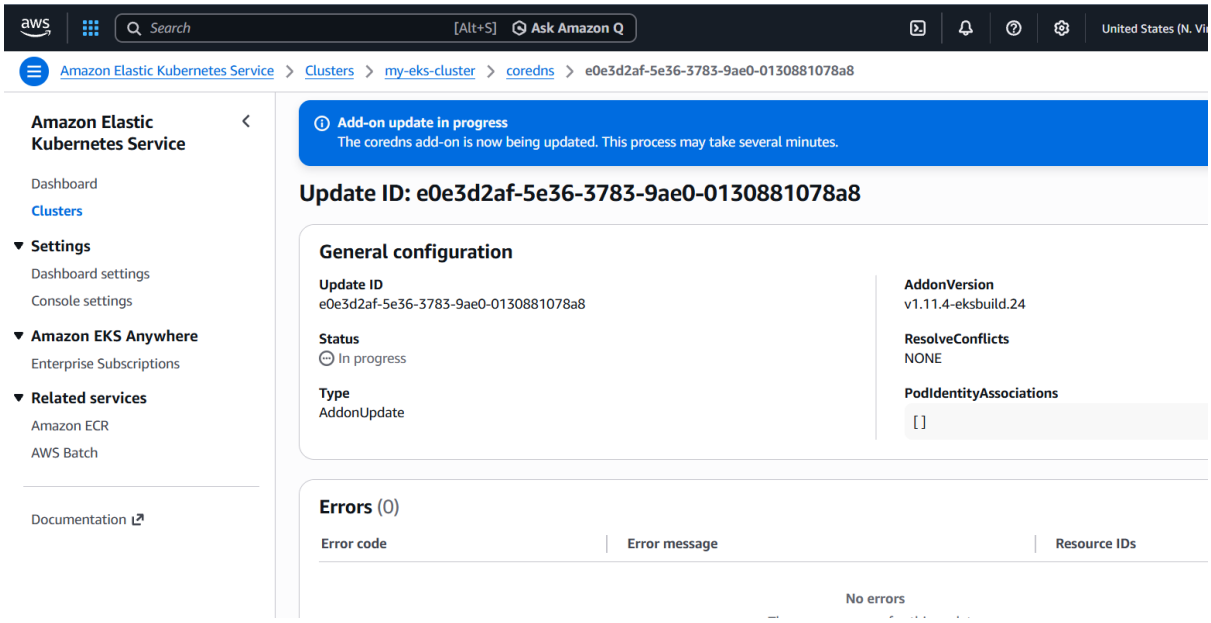
```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl get nodes
NAME                           STATUS   ROLES    AGE     VERSION
ip-192-168-28-220.ec2.internal   Ready    <none>   3h58m   v1.32.9-eks-ecaa3a6
ip-192-168-41-142.ec2.internal   Ready    <none>   3h58m   v1.32.9-eks-ecaa3a6

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ aws eks describe-cluster \
>   --name my-eks-cluster \
>   --query cluster.version
"1.32"
```

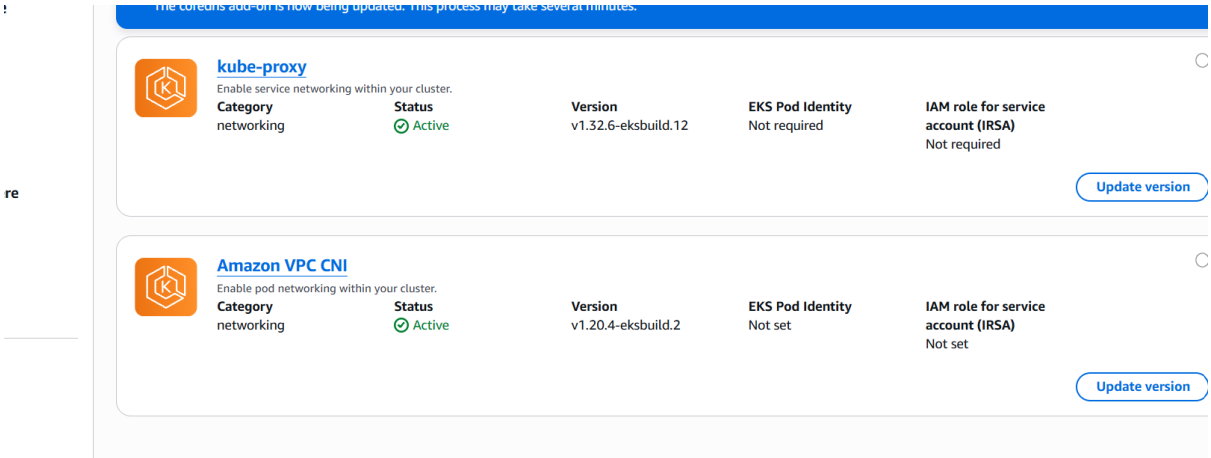
Go to eks

- select on your cluster
- select addons
- upgrade each add on with latest version




Search
[Alt+S]
Ask Amazon Q
United States (N. Virginia)
Account ID: 2353-5102-8455
mujaheed
Amazon Elastic Kubernetes Service
Clusters
my-eks-cluster
coredns
Edit add-on
Configure CoreDNS
CoreDNS Info
Listed by
Category
networking
Status
Active
Version
Select the version for this add-on.
v1.11.4-eksbuild.24
Optional configuration settings
Cancel
Save changes


Search
[Alt+S]
Ask Amazon Q
United States (N. Vi
Amazon Elastic Kubernetes Service
Clusters
my-eks-cluster
coredns
e0e3d2af-5e36-3783-9ae0-0130881078a8
Amazon Elastic Kubernetes Service
Dashboard
Clusters
Settings
Dashboard settings
Console settings
Amazon EKS Anywhere
Enterprise Subscriptions
Related services
Amazon ECR
AWS Batch
Documentation
Add-on update in progress
The coredns add-on is now being updated. This process may take several minutes.
Update ID: e0e3d2af-5e36-3783-9ae0-0130881078a8
General configuration
Update ID
e0e3d2af-5e36-3783-9ae0-0130881078a8
Status
In progress
Type
AddonUpdate
AddonVersion
v1.11.4-eksbuild.24
ResolveConflicts
NONE
PodIdentityAssociations
[]
Errors (0)
Error code
Error message
Resource IDs
No errors


kube-proxy
Enable service networking within your cluster.
Category
networking
Status
Active
Version
v1.32.6-eksbuild.12
EKS Pod Identity
Not required
IAM role for service account (IRSA)
Not required
Update version
Amazon VPC CNI
Enable pod networking within your cluster.
Category
networking
Status
Active
Version
v1.20.4-eksbuild.2
EKS Pod Identity
Not set
IAM role for service account (IRSA)
Not set
Update version

Configure kube-proxy

kube-proxy Info

Listed by

Category
networking

Status
Active

Version
Select the version for this add-on.

v1.32.6-eksbuild.12

▸ Optional configuration settings

Cancel

Configure kube-proxy

kube-proxy Info

Listed by

Category
networking

Status
Active

Version
Select the version for this add-on.

v1.32.9-eksbuild.2

▸ Optional configuration settings

Cancel | Save changes

Configure Amazon VPC CNI

Amazon VPC CNI Info

Listed by

Category
networking

Status
Active

Version
Select the version for this add-on.

v1.20.4-eksbuild.2

▾ Add-on access

EKS Pod Identity | IAM roles for service accounts (IRSA)

Pod Identity IAM role for service account: aws-node

Configure Amazon VPC CNI

Amazon VPC CNI Info

Listed by

Category
networking

Status
Active

Version
Select the version for this add-on.

v1.21.1-eksbuild.1

▾ Add-on access

EKS Pod Identity | IAM roles for service accounts (IRSA)

Upgrade kubectl:

- **curl -LO https://dl.k8s.io/release/v1.32.0/bin/windows/amd64/kubectl.exe**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ curl -LO https://dl.k8s.io/release/v1.32.0/bin/windows/amd64/kubectl.exe
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100   138  100   138    0     0    286      0 --:--:-- --:--:-- --:--:--   287
100 56.1M  100 56.1M    0     0  2458k      0  0:00:23  0:00:23 --:--:-- 3296k
```

- **mv kubectl.exe /c/Windows/System32/kubectl.exe**
- **kubectl version**

```
MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ mv kubectl.exe /c/Users/Ashish/bin/kubectl.exe

MUJJU SK@DESKTOP-LU541U4 MINGW64 ~/Desktop
$ kubectl version
Client Version: v1.32.0
Kustomize Version: v5.5.0
Server Version: v1.32.10-eks-b3126f4
```