

## Demo of EKS Cluster Deploy Using CloudFormation

- Run from your CLI:

```
aws cloudformation create-stack \  
  
--stack-name eks-demo \  
  
--template-body file://eks-demo.yaml \  
  
--capabilities CAPABILITY_NAMED_IAM
```

### Output

```
"StackId": "arn:aws:cloudformation:us-east-1:974655543823:stack/eks-demo/f4732790-  
bede-11f0-afd9-0affd0765e9f"
```

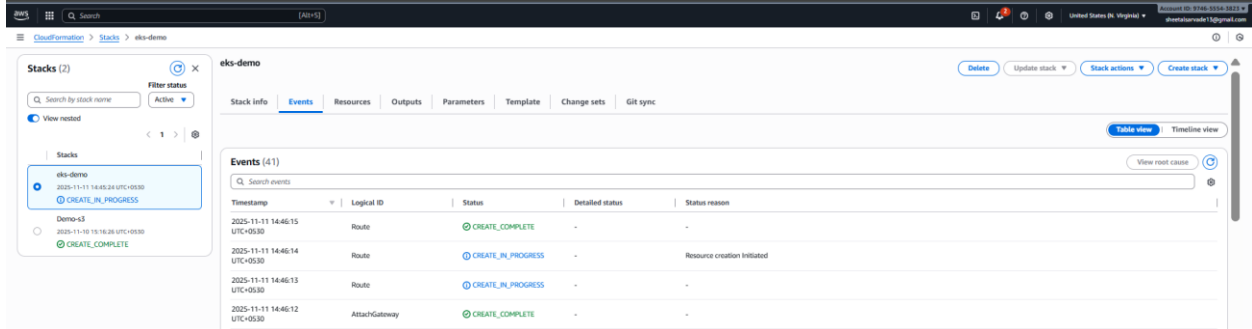
```
~ $ aws cloudformation create-stack \  
> --stack-name eks-demo \  
> --template-body file://eks-demo.yaml \  
> --capabilities CAPABILITY_NAMED_IAM  
{  
  "StackId": "arn:aws:cloudformation:us-east-1:974655543823:stack/eks-demo/f4732790-bede-11f0-afd9-0affd0765e9f"  
}  
~ $
```

The screenshot displays the AWS Management Console interface. On the left, the 'Amazon S3' service is selected, showing a sidebar with options like 'General purpose buckets', 'Directory buckets', 'Table buckets', and 'Vector buckets'. The main content area features the 'Amazon S3' logo and the tagline 'Store and retrieve any amount of data from anywhere'. Below this, the 'CloudShell' terminal window is open, showing the command 'aws cloudformation describe-stacks --stack-name eks-demo' and its output. The output is a JSON object containing details about the 'eks-demo' stack, including its ID, name, description, parameters, creation time, status, and capabilities.

```
us-east-1 +  
~ $ aws cloudformation describe-stacks --stack-name eks-demo  
{  
  "Stacks": [  
    {  
      "StackId": "arn:aws:cloudformation:us-east-1:974655543823:stack/eks-demo/f4732790-bede-11f0-afd9-0affd0765e9f",  
      "StackName": "eks-demo",  
      "Description": "Demo EKS Cluster using Free Tier/eligible resources",  
      "Parameters": [  
        {  
          "ParameterKey": "ClusterName",  
          "ParameterValue": "eks-demo-cluster"  
        }  
      ],  
      "CreationTime": "2025-11-11T09:15:24.223000+00:00",  
      "RollbackConfiguration": {},  
      "StackStatus": "CREATE_IN_PROGRESS",  
      "DisableRollback": false,  
      "NotificationARNs": [],  
      "Capabilities": [  
        "CAPABILITY_NAMED_IAM"  
      ],  
      "Tags": [],  
      "EnableTerminationProtection": false,  
      "DriftInformation": {  
        "StackDriftStatus": "NOT_CHECKED"  
      }  
    }  
  ]  
}  
~ $
```

- Cluster creation Completed

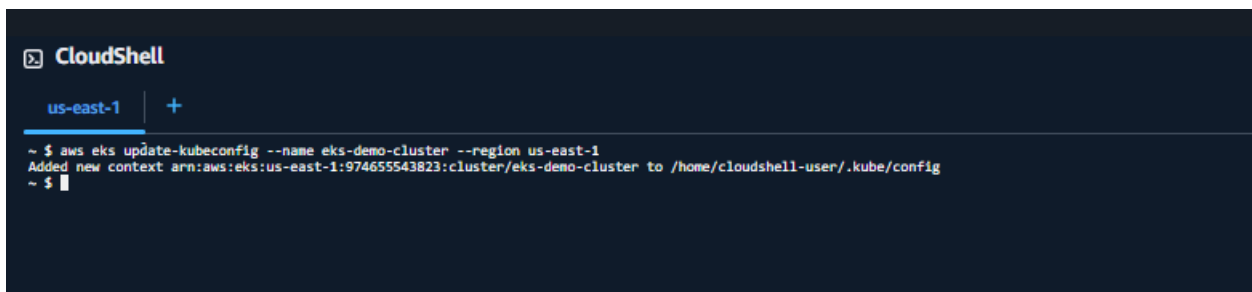
```
~ $ aws cloudformation describe-stacks --stack-name eks-demo
{
  "Stacks": [
    {
      "StackId": "arn:aws:cloudformation:us-east-1:974655543823:stack/eks-demo/f4732790-bede-11f0-afd9-8affd0765e9f",
      "StackName": "eks-demo",
      "Description": "Demo EKS Cluster using Free Tier?eligible resources",
      "Parameters": [
        {
          "ParameterKey": "ClusterName",
          "ParameterValue": "eks-demo-cluster"
        }
      ],
      "CreationTime": "2025-11-11T09:15:24.223000+00:00",
      "RollbackConfiguration": {},
      "StackStatus": "CREATE_COMPLETE",
      "DisableRollback": false,
      "NotificationARNs": [],
      "Capabilities": [
        "CAPABILITY_NAMED_IAM"
      ],
      "Outputs": [
        {
          "OutputKey": "ClusterName",
          "OutputValue": "eks-demo-cluster"
        },
        {
          "OutputKey": "ClusterEndpoint",
          "OutputValue": "https://2E49BD9C5A7C81122FE0A8F50DF4A01A.gr7.us-east-1.eks.amazonaws.com"
        }
      ],
      "Tags": [],
      "EnableTerminationProtection": false,
      "DriftInformation": {
        "StackDriftStatus": "NOT_CHECKED"
      }
    }
  ]
}
```



The screenshot shows the AWS CloudFormation console for the 'eks-demo' stack. The 'Events' tab is selected, displaying a list of 41 events. The stack is in the 'CREATE\_COMPLETE' state. The events table shows the following resources being created:

Timestamp	Logical ID	Status	Detailed status	Status reason
2025-11-11 14:46:15 UTC+0530	Route	CREATE_COMPLETE	-	-
2025-11-11 14:46:14 UTC+0530	Route	CREATE_IN_PROGRESS	-	Resource creation initiated
2025-11-11 14:46:13 UTC+0530	Route	CREATE_IN_PROGRESS	-	-
2025-11-11 14:46:12 UTC+0530	AttachGateway	CREATE_COMPLETE	-	-

- **Connect to cluster**



The screenshot shows the AWS CloudShell terminal with the following command and output:

```
~ $ aws eks update-kubeconfig --name eks-demo-cluster --region us-east-1
Added new context arn:aws:eks:us-east-1:974655543823:cluster/eks-demo-cluster to /home/cloudshell-user/.kube/config
~ $
```

```

~ $ aws eks update-kubeconfig --name eks-demo-cluster --region us-east-1
Added new context arn:aws:eks:us-east-1:974655543823:cluster/eks-demo-cluster to /home/cloudshell-user/.kube/config
~ $
~ $ kubectl get nodes

NAME                                STATUS    ROLES    AGE     VERSION
ip-10-0-1-164.ec2.internal          Ready    <none>   7m57s   v1.33.5-eks-c39b1d0
~ $
~ $

```

## Test the Cluster

```

~ $
~ $ kubectl create deployment demo-app --image=nginx
deployment.apps/demo-app created
~ $ kubectl expose deployment demo-app --port=80 --type=LoadBalancer
service/demo-app exposed
~ $ kubectl get svc
NAME      TYPE          CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
demo-app  LoadBalancer 172.20.178.206   ac7c5d1e1b1ff40f49d17db1c1cbbec0-1398656529.us-east-1.elb.amazonaws.com 80:31796/TCP    9s
kubernetes ClusterIP 172.20.0.1       <none>           443/TCP          12m
~ $

```

- Create Pods

## kubectl run nginx-pod --image=nginx --port=80

```

~ $ kubectl run nginx-pod --image=nginx --port=80
pod/nginx-pod created
~ $

```

```

~ $ kubectl get pods
NAME                                READY    STATUS    RESTARTS   AGE
demo-app-65bd44c89b-s4k65           0/1      Pending   0           4m7s
nginx-pod                            0/1      Pending   0           2m10s
~ $ kubectl expose pod nginx-pod --type=LoadBalancer --port=80
service/nginx-pod exposed

```

```

~ $ kubectl get svc
NAME      TYPE          CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
demo-app  LoadBalancer 172.20.178.206   ac7c5d1e1b1ff40f49d17db1c1cbbec0-1398656529.us-east-1.elb.amazonaws.com 80:31796/TCP    4m34s
kubernetes ClusterIP 172.20.0.1       <none>           443/TCP          17m
nginx-pod LoadBalancer 172.20.188.179   af768c41d6c934c8a8792a2749057ebf-2082763503.us-east-1.elb.amazonaws.com 80:31592/TCP    15s
~ $

```

```

~ $ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
~ $ kubectl get pods
NAME                                READY    STATUS    RESTARTS   AGE
demo-app-65bd44c89b-s4k65           0/1      Pending   0           7m51s
nginx-deployment-96b9d695-4vk5d     0/1      Pending   0           10s
nginx-deployment-96b9d695-5pqpr     0/1      Pending   0           10s
nginx-deployment-96b9d695-pchch     0/1      Pending   0           10s

```

```

~ $ kubectl get all
NAME                                READY   STATUS    RESTARTS   AGE
pod/demo-app-65bd44c89b-s4k65      0/1     Pending   0           8m41s
pod/nginx-deployment-96b9d695-4vk5d 0/1     Pending   0           60s
pod/nginx-deployment-96b9d695-5pqpr 0/1     Pending   0           60s
pod/nginx-deployment-96b9d695-pchch 0/1     Pending   0           60s
pod/nginx-pod                      0/1     Pending   0           6m44s

NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP      PORT(S)          AGE
service/demo-app                  LoadBalancer        172.20.178.206   ac7c5d1e1b1fff48f49d17db1c1cbbec0-1398656529.us-east-1.elb.amazonaws.com 80:31796/TCP      8m31s
service/kubernetes                ClusterIP            172.20.0.1       <none>            443/TCP          28m
service/nginx-pod                 LoadBalancer        172.20.188.179   af768c41d6c934c8a8792a2749057ebf-2082763503.us-east-1.elb.amazonaws.com 80:31592/TCP      4m12s

NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/demo-app            0/1     1             0           8m41s
deployment.apps/nginx-deployment    0/3     3             0           60s

NAME                                DESIRED   CURRENT   READY   AGE
replicaset.apps/demo-app-65bd44c89b 1          1         0       8m41s
replicaset.apps/nginx-deployment-96b9d695 3          3         0       60s

```

## Delete Cloudformation stack

The screenshot shows the AWS CloudFormation console for the 'eks-demo' stack. The stack is in the 'DELETE\_IN\_PROGRESS' state. The left sidebar shows the 'Stacks' list with 'eks-demo' selected. The main area displays the 'Events' tab, showing a list of events. The events table has columns for 'Timestamp', 'Logical ID', 'Status', 'Detailed status', and 'Status reason'. There are two events listed:

Timestamp	Logical ID	Status	Detailed status	Status reason
2025-11-11 14:56:43 UTC+05:30	eks-demo	CREATE_COMPLETE	-	-
2025-11-11 14:56:42 UTC+05:30	EKSClusterGroup	CREATE_COMPLETE	-	-