

## Kubernetes Task-2

### Task Description:

Create the K8s EKS,further you have to do the deployment of the Nginx application and access the application outside the cluster.

### Techstacks needs to be used :

- AWS EKS
- EKSCTL
- Kubectl

Ensure to have:

- AWS CLI installed and configured
- eksctl installed
- kubectl installed

### Creating K8s EKS cluster:

```
$ eksctl create cluster \
--name nginx-cluster \
--region us-east-1 \
--nodegroup-name nginx-nodes \
--node-type t3.small \
--nodes 1 \
--nodes-min 1 \
--nodes-max 1 \
--managed
2026-02-17 16:34:57 [i] eksctl version 0.221.0
2026-02-17 16:34:57 [i] using region us-east-1
2026-02-17 16:35:06 [i] setting availability zones to [us-east-1d us-east-1b]
2026-02-17 16:35:06 [i] subnets for us-east-1d - public:192.168.0.0/19 private:192.168.64.0/19
2026-02-17 16:35:06 [i] subnets for us-east-1b - public:192.168.32.0/19 private:192.168.96.0/19
2026-02-17 16:35:06 [i] nodegroup "nginx-nodes" will use "" [AmazonLinux2023/1.32]
2026-02-17 16:35:06 [i] Auto Mode will be enabled by default in an upcoming release of eksctl. This means managed node groups and managed networking add-ons will no longer be created.
2026-02-17 16:35:06 [i] set 'autoModeConfig.enabled: false' in your cluster configuration. Learn more: https://eksctl.io/usage/auto-mode/
2026-02-17 16:35:06 [i] using Kubernetes version 1.32
2026-02-17 16:35:06 [i] creating EKS cluster "nginx-cluster" in "us-east-1" region with managed nodes
2026-02-17 16:35:06 [i] will create 2 separate CloudFormation stacks for cluster itself and the initial managed nodegroup
2026-02-17 16:35:06 [i] if you encounter any issues, check CloudFormation console or try 'eksctl utils describe-stacks --region=us-east-1 --cluster=nginx-cluster'
2026-02-17 16:35:06 [i] Kubernetes API endpoint access will use default of {publicAccess=true, privateAccess=false} for cluster "nginx-cluster" in "us-east-1"
2026-02-17 16:35:06 [i] Cloudwatch Logging will not be enabled for cluster "nginx-cluster" in "us-east-1"
2026-02-17 16:35:06 [i] you can enable it with 'eksctl utils update-cluster-logging --enable-types={SPECIFY-YOUR-LOG-TYPES-HERE (e.g. all)} --region=us-east-1 --cluster=nginx-cluster'
2026-02-17 16:35:06 [i] default addons coredns, metrics-server, vpc-cni, kube-proxy were not specified, will install them as EKS addons
2026-02-17 16:35:06 [i]
2 sequential tasks: { create cluster control plane "nginx-cluster",
  2 sequential sub-tasks: {
    2 sequential sub-tasks: {
      1 task: { create addons },
      wait for control plane to become ready,
    },
    create managed nodegroup "nginx-nodes",
  }
}
2026-02-17 16:35:06 [i] building cluster stack "eksctl-nginx-cluster-cluster"
2026-02-17 16:35:14 [i] deploying stack "eksctl-nginx-cluster-cluster"
2026-02-17 16:35:44 [i] waiting for CloudFormation stack "eksctl-nginx-cluster-cluster"
2026-02-17 16:36:21 [i] waiting for CloudFormation stack "eksctl-nginx-cluster-cluster"
2026-02-17 16:37:27 [i] waiting for CloudFormation stack "eksctl-nginx-cluster-cluster"
2026-02-17 16:38:41 [i] waiting for CloudFormation stack "eksctl-nginx-cluster-cluster"
```

```

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ eksctl get cluster
NAME      REGION      EKSCTL CREATED
nginx-cluster  us-east-1  True

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get nodes
NAME           STATUS   ROLES      AGE    VERSION
ip-192-168-3-239.ec2.internal  Ready    <none>    7m3s   v1.32.11-eks-70ce843

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)

```

This will create VPC,EKS control plane,worker nodes,cloud formation stack,build the managed node group stack.

A new Kubernetes version is available for this cluster.

**nginx-cluster**

Your cluster's Kubernetes version (1.32) will reach the end of standard support on March 23, 2026.

**Cluster info**

Status: Active	Kubernetes version: 1.32	Support period: Standard support until March 23, 2026	Provider: EKS
Cluster health: 0	Upgrade insights: 0	Node health issues: 0	Capability issues: 0

Overview | Resources | **Compute** | Networking | Add-ons 1 | Capabilities | Access | Observability | Update history & backups | Tags

**Nodes (0)**

Filter Nodes by property or value

CloudFormation > Stacks

Termination protection was successfully changed for arn:aws:cloudformation:us-east-1:260448776023:stack/eksctl-nginx-cluster-cluster/417295b0-0be9-11f1-9e44-0ef3b8cad441

**Stacks (2)**

Stack name	Status	Created time	Description
eksctl-nginx-cluster-nodegroup-nginx-nodes	CREATE_COMPLETE	2026-02-17 16:51:48 UTC+0530	EKS Managed Nodes (SSH access: false) [created by eksctl]
eksctl-nginx-cluster-cluster	CREATE_COMPLETE	2026-02-17 16:35:14 UTC+0530	EKS cluster (dedicated VPC: true, dedicated IAM: true) [created and managed by eksctl]

The screenshot shows the AWS CloudWatch Instances console. At the top, there are several tabs: Agile software devel..., Apache Maven - Wi..., JUnit - Wikipedia, Eclipse Subversive ..., JDK 1.7 Features, New Features in Java..., Eclipse (software) ..., and All B... The main area displays a table of instances. The table has columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, and Public IPv4 ... The 'nginx-cluster-' instance is highlighted and has a status check of 3/3 checks passed. The 'test-server' instance is listed below it.

## Creating deployment:

```
hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl create deployment nginx-deployment --image=nginx
deployment.apps/nginx-deployment created

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get pods
NAME                      READY   STATUS    RESTARTS   AGE
nginx-deployment-6cfb98644c-v2cvn   1/1     Running   0          66s
```

## Expose Nginx Outside the Cluster:

```
hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl expose deployment nginx-deployment \
  --port=80 \
  --type=LoadBalancer
service/nginx-deployment exposed

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get pods --show-labels
error: unknown flag: --show-labels
See 'kubectl get --help' for usage.

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get pods --show-labels
NAME                      READY   STATUS    RESTARTS   AGE   LABELS
nginx-deployment-6cfb98644c-v2cvn   1/1     Running   0      5m39s   app=nginx-deployment,pod-template-hash=6cfb98644c

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get deployments
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment 1/1       1           1          6m56s

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ ^[[200-kubectl get svc
bash: $'\E[200-kubectl': command not found

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get svc
NAME        TYPE      CLUSTER-IP      EXTERNAL-IP      PORT(S)      AGE
kubernetes  ClusterIP  10.100.0.1    <none>          443/TCP     28m
nginx-deployment  LoadBalancer  10.100.53.19  af7b5c911674643d1bc4244af8668742-1706948639.us-east-1.elb.amazonaws.com  80:30214/TCP  4m40s
```

## Load balancer created automatically:

## Access the Nginx application through browser(outside the cluster):

## Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to [nginx.org](http://nginx.org). Commercial support is available at [nginx.com](http://nginx.com).

*Thank you for using nginx.*

## Accessing through terminal:

```
hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ curl http://af7b5c911674643d1bc4244af8668742-1706948639.us-east-1.elb.amazonaws.com
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

## YAML Based Deployment:

Create nginx-deployment1.yaml:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment1
spec:
  replicas: 2
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
        - name: nginx
          image: nginx
          ports:
            - containerPort: 80
```

```
hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ vi nginx-deployment1.yaml

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl apply -f nginx-deployment1.yaml
deployment.apps/nginx-deployment1 created
```

Creating nginx-service.yaml:

```

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

```

```

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ vi nginx-service.yaml

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl apply -f nginx-service.yaml
service/nginx-service created

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get deployments
NAME        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   1/1     1           1          33m
nginx-deployment1  2/2     2           2          4m16s

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get pods --show-labels
NAME                           READY   STATUS    RESTARTS   AGE   LABELS
nginx-deployment-6cfb98644c-v2cvn  1/1     Running   0          34m   app=nginx-deployment,pod-template-hash=6cfb98644c
nginx-deployment1-86c57bc6b8-5ndjg  1/1     Running   0          5m7s  app=nginx,pod-template-hash=86c57bc6b8
nginx-deployment1-86c57bc6b8-gws4F  1/1     Running   0          5m7s  app=nginx,pod-template-hash=86c57bc6b8

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)
$ kubectl get svc
NAME        TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
kubernetes   ClusterIP   10.100.0.1    <none>        443/TCP       56m
nginx-deployment   LoadBalancer  10.100.53.19  af7b5c911674643d1bc4244af8668742-1706948639.us-east-1.elb.amazonaws.com  80:30214/TCP   31m
nginx-service   LoadBalancer  10.100.19.121 adadbc42b8ec14b01bbc109335aa4e40-1675289414.us-east-1.elb.amazonaws.com  80:31260/TCP   2m24s

hp@LAPTOP-M939AS8F MINGW64 ~/OneDrive/Desktop/Company/code/Guvi-Tasks (main)

```

Load balancers (2) <a href="#">What's new?</a>									<a href="#">Actions</a>
<input type="checkbox"/>	Name	State	Type	Scheme	IP address type	VPC ID	Availability Zones	Security group	
<input type="checkbox"/>	adadbc42b8ec14b01bb...	-	classic	-	-	vpc-07dcf613b40e1919a	2 Availability Zones	sg-07896f72a	
<input type="checkbox"/>	af7b5c911674643d1bc...	-	classic	-	-	vpc-07dcf613b40e1919a	2 Availability Zones	sg-09555b80f	

## Accessing nginx-deployment1 from browser:



Not secure

af7b5c911674643d1bc4244af8668742-1706948639.us-east-1.elb.amazonaws.com

Agile software devel... W Apache Maven - Wi... W JUnit - Wikipedia E Eclipse Subversive -... JDK 1.7 Features T New Features in Jav...

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*Thank you for using nginx.*

Accessing Nginx-Service from browser:



Not secure

adadbc42b8ec14b01bbc109335aa4e40-1675289414.us-east-1.elb.amazonaws.com

Agile software devel... W Apache Maven - Wi... W JUnit - Wikipedia E Eclipse Subversive -... JDK 1.7 Features T New Features in Jav... W Eclipse (software) -...

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*Thank you for using nginx.*