

DVS Technologies Aws & Devops

Compiled and Scrutinized by
Mr. Shaan Shaik
(Senior DevOps Lead)

Words To The Students

Though we have taken utmost efforts to present you this book error free, but still it may contain some errors or mistakes. Students are encouraged to bring, if there are any mistakes or errors in this document to our notice. So that it may be rectified in the next edition of this document.

“Suppressing your doubts is Hindering your growth”.

We urge you to work hard and make use of the facilities we are providing to you, because there is no substitute for hard work. We wish you all the best for your future.

“The grass isn’t greener on the other side; the grass is greener where you water it.”

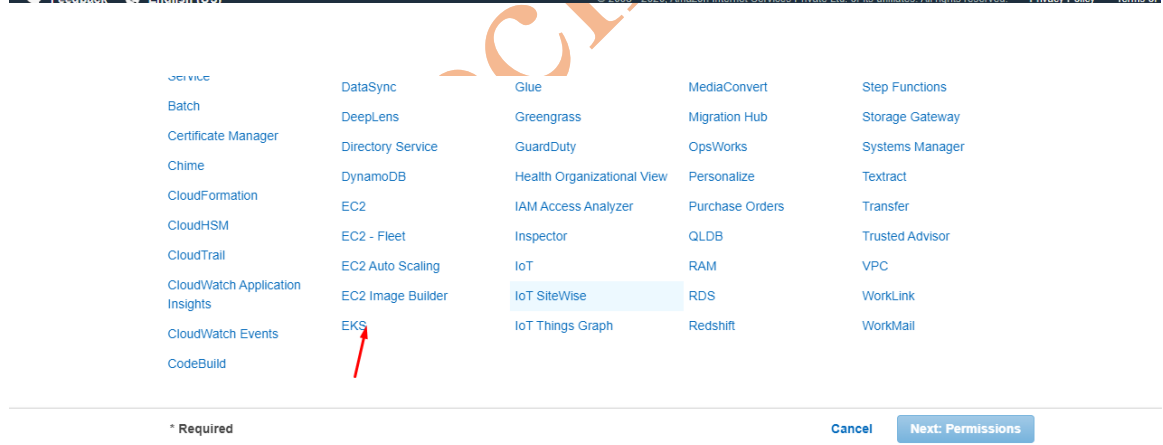
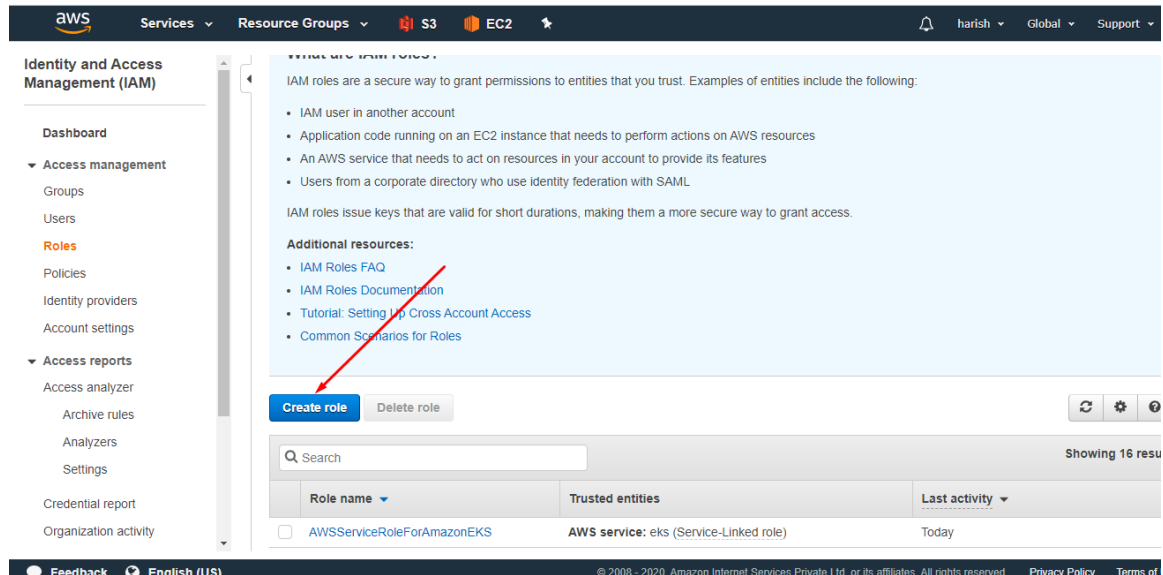
You and your suggestions are valuable to us; Help us to serve you better. In case of any suggestions, grievance, or complaints, please feel free to write us your suggestions, grievance and feedback on the following

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1. Installation and configuration

Role Creation:



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The screenshot shows the AWS IAM console interface for creating a new user. The top navigation bar includes links to various AWS services: CloudTrail, EC2 Auto Scaling, IoT, RAM, VPC, CloudWatch Application Insights, EC2 Image Builder, IoT SiteWise, RDS, WorkLink, CloudWatch Events, EKS, IoT Things Graph, Redshift, and WorkMail. The 'EKS' link is highlighted with a red box and an arrow pointing to the 'Select your use case' section.

Select your use case

EKS
Allows EKS to manage clusters on your behalf.

EKS - Cluster
Allows access to other AWS service resources that are required to operate clusters managed by EKS.

EKS - Fargate pod
Allows access to other AWS service resources that are required to run Amazon EKS pods on AWS Fargate.

EKS - Fargate profile
Allows EKS to run Fargate tasks.

EKS - Nodegroup
Allow EKS to manage nodegroups on your behalf.

* Required

Cancel Next: Permissions

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Filter policies Search Showing 1 result

Policy name	Used as	Description
AmazonEKSClusterPolicy	Permissions policy (1)	This policy provides Kubernetes the permisso...

Set permissions boundary

* Required

Cancel Previous Next: Tags

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Create role

1 2 3 4

Review

Provide the required information below and review this role before you create it.

Role name* eksclusterrole

Use alphanumeric and '+', '@', '_' characters. Maximum 64 characters.

Role description ekscluster

Maximum 1000 characters. Use alphanumeric and '+', '@', '_' characters.

Trusted entities AWS service: eks.amazonaws.com

Policies AmazonEKSClusterPolicy

Permissions boundary Permissions boundary is not set

No tags were added.

* Required

Cancel Previous Create role

aws Services Resource Groups S3 EC2

harish Global Support

Identity and Access Management (IAM)

Dashboard

Access management

Groups

Users

Roles

Policies

Identity providers

Account settings

Access reports

Access analyzer

Archive rules

Analyzers

Settings

Credential report

Organization activity

Create role Delete role

ekscluster

Showing 1 result

Role name	Trusted entities	Last activity
eksclusterrole	AWS service: eks	None

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Role ARN: `arn:aws:iam::907814406801:role/eksclusterrole`

Role description: ekscluster | [Edit](#)

Instance Profile ARNs: [View](#)

Path: /

Creation time: 2020-08-29 07:58 UTC+0400

Last activity: Not accessed in the tracking period

Maximum session duration: 1 hour [Edit](#)

Permissions | Trust relationships | Tags | Access Advisor | Revoke sessions

Permissions policies (1 policy applied)

[Attach policies](#) [Add inline policy](#)

Policy name	Policy type
AmazonEKSClusterPolicy	AWS managed policy

Permissions boundary (not set)

Add permissions to eksclusterrole

Attach Permissions

[Create policy](#) [Refresh](#)

Filter policies Showing 1 result

	Policy name	Type	Used as
<input checked="" type="checkbox"/>	AmazonEKSServicePolicy	AWS managed	Permissions policy (1)

[Cancel](#) [Attach policy](#)

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Identity and Access Management (IAM)

Roles

Role ARN arn:aws:iam::907814406801:role/eksclusterrole

Role description ekscluster | Edit

Instance Profile ARNs /

Path /

Creation time 2020-08-29 07:58 UTC+0400

Last activity Not accessed in the tracking period

Maximum session duration 1 hour Edit

Permissions Trust relationships Tags Access Advisor Revoke sessions

Permissions policies (2 policies applied)

Attach policies Add inline policy

Policy name	Policy type
AmazonEKSClusterPolicy	AWS managed policy
AmazonEKSServicePolicy	AWS managed policy

Permissions boundary (not set)

VPC Creation:

History

cloudfor

CloudFormation
Create and Manage Resources with Templates

EC2
Amazon Managed Blockchain
Athena
Alexa for Business
Amazon Chime
WorkMail
Amazon Horizon

Lightsail
Lambda
Batch
Satellite
Ground Station
Kinesis
QuickSight
Data Pipeline
AWS Data Exchange
AWS Glue
AWS Lake Formation
MSK

Elastic Beanstalk
Serverless Application Repository
AWS Outposts
EC2 Image Builder
Quantum Technologies
Amazon Braket

Storage
S3
EFS
FSx
S3 Glacier
Storage Gateway
AWS Backup
Management & Governance
AWS Organizations
CloudWatch
AWS Auto Scaling
CloudFormation
CloudTrail
Config
OnsWorks

Security, Identity, & Compliance
IAM
Resource Access Manager
Cognito
Security Manager

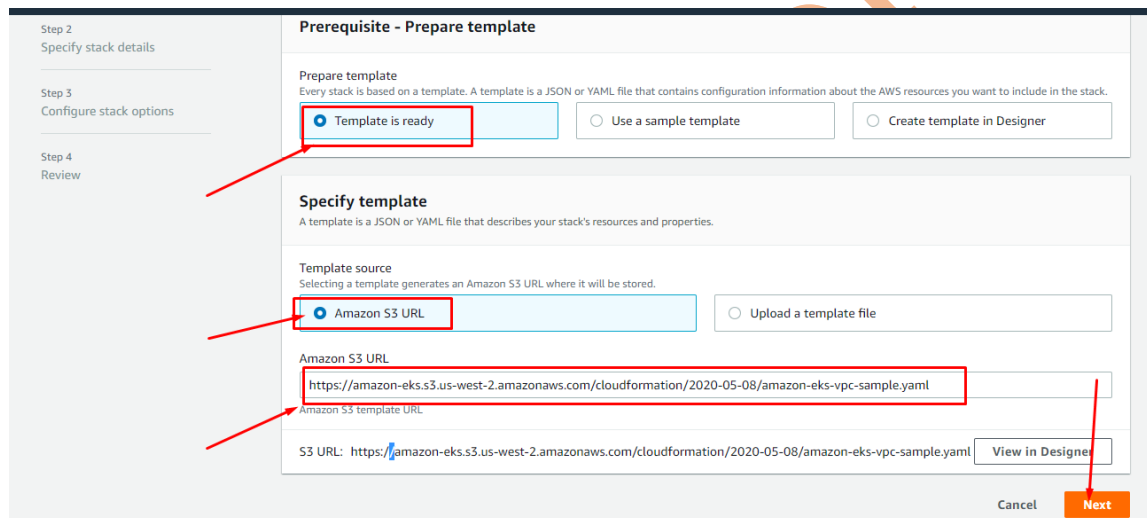
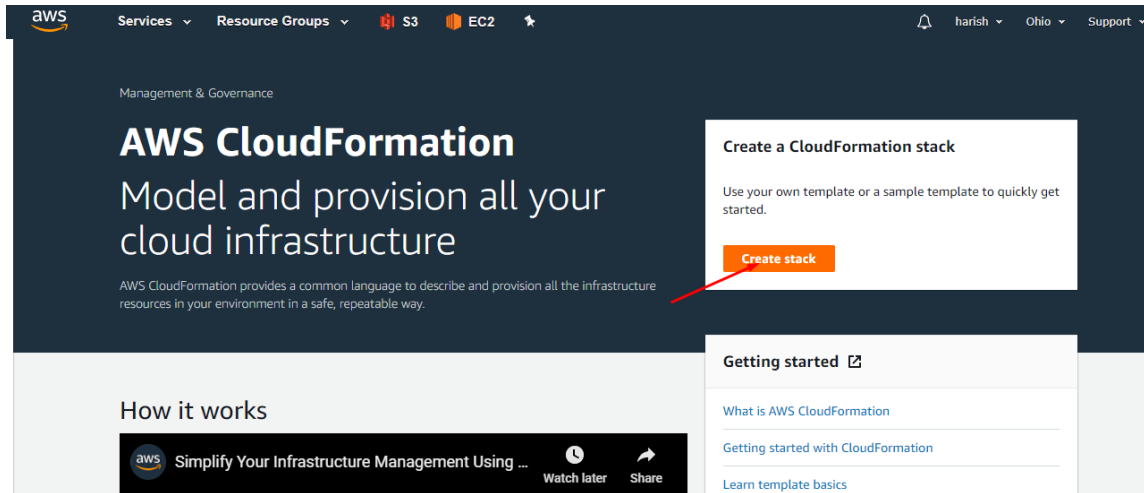
End User C
WorkSpaces
AppStream 2
WorkDocs
WorkLink

Internet Of
IoT Core
FreeRTOS
IoT 1-Click
IoT Analytics
IoT Greengrass

close

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CloudFormation > Stacks > Create stack

Step 1
Specify template

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Specify stack details

Stack name

Stack name

ekscluster-vpc

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

Worker Network Configuration

VpcBlock
The CIDR range for the VPC. This should be a valid private (RFC 1918) CIDR range.

192.168.0.0/16

Subnet01Block

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

Worker Network Configuration

VpcBlock
The CIDR range for the VPC. This should be a valid private (RFC 1918) CIDR range.

192.168.0.0/16

Subnet01Block
CidrBlock for subnet 01 within the VPC

192.168.64.0/18

Subnet02Block
CidrBlock for subnet 02 within the VPC

192.168.128.0/18

Subnet03Block
CidrBlock for subnet 03 within the VPC. This is used only if the region has more than 2 AZs.

192.168.192.0/18

Cancel Previous **Next**

Rollback configuration

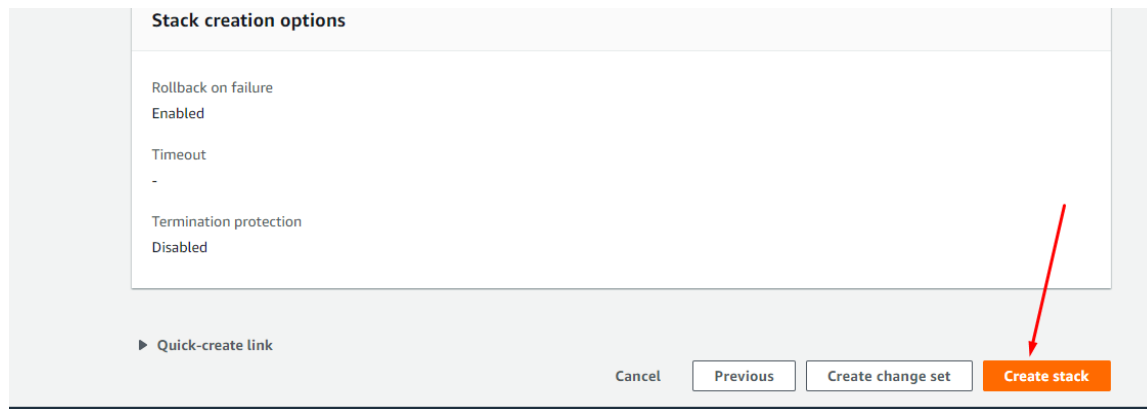
Specify alarms for CloudFormation to monitor when creating and updating the stack. If the operation breaches an alarm threshold, CloudFormation rolls it back. [Learn more](#)

Notification options

Stack creation options

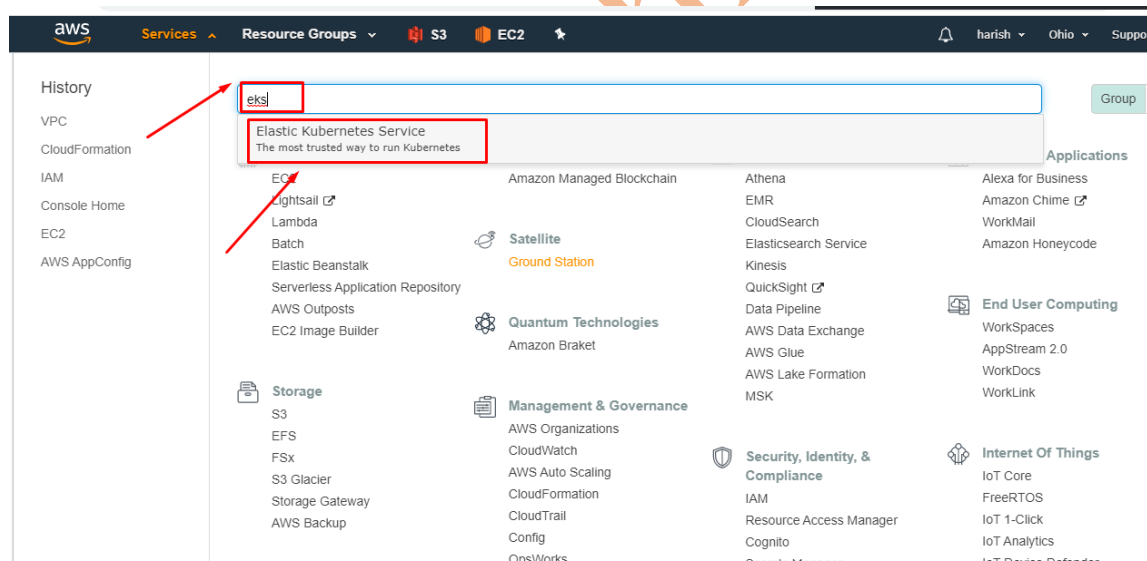
Cancel Previous **Next**

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Note: Wait Till you get your VPC

Let's create our EKS cluster now:



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Amazon Container Services

- Amazon ECS
- Clusters
- Task definitions
- Amazon EKS**
- Clusters
- Amazon ECR
- Repositories

Elastic Kubernetes Service (Amazon EKS)

Fully managed Kubernetes control plane

Amazon EKS is a managed service that makes it easy for you to use Kubernetes on AWS without needing to install and operate your own Kubernetes control plane.

Create EKS cluster

Cluster name:

Next step

Pricing

EKS Control Plane	EKS Pricing
Worker nodes	EC2 Pricing
Fargate pods	Fargate Pricing

How it works

Step 1: Configure cluster

Cluster configuration [Info](#)

Name - *Not editable after creation.*
Enter a unique name for this cluster.

Kubernetes version [Info](#)
Select the Kubernetes version for this cluster.

Cluster Service Role [Info](#) *Not editable after creation.*
Select the IAM Role to allow the Kubernetes control plane to manage AWS resources on your behalf.
To create a new role, go to the [IAM console](#).

Secrets encryption [Info](#)
These properties cannot be changed after the cluster is created.

☐ **Enable envelope encryption of Kubernetes secrets using KMS**
Enable envelope encryption to provide an additional layer of encryption for your Kubernetes secrets.

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Secrets encryption [Info](#)
These properties cannot be changed after the cluster is created.

☐ **Enable envelope encryption of Kubernetes secrets using KMS**
Enable envelope encryption to provide an additional layer of encryption for your Kubernetes secrets.

Tags (0) [Info](#)

This cluster does not have any tags.

Add tag
Remaining tags available to add: 50

Cancel Next

Networking [Info](#)
These properties cannot be changed after the cluster is created.

VPC [Info](#)
Select a VPC to use for your EKS Cluster resources.
To create a new VPC, go to the [VPC console](#).

vpc-03544fbfacaf20cfc | ekscluster-vpc-VPC

Subnets [Info](#)
Choose the subnets in your VPC where the control plane may place elastic network interfaces (ENIs) to facilitate communication with your cluster.
To create a new subnet, go to the corresponding page in the [VPC console](#).

Select subnets

subnet-01e152b04ea39d790 X subnet-0ec044d43409e6dee X

Filter security groups

☒ sg-017fddebd334d889f | ekscluster-vpc-**ControlPlaneSecurityGroup-7584M798EBQJ**
Cluster communication with worker nodes

☐ sg-0f698b7df1a4ac40e | default
default VPC security group

worker node subnets.

Select security groups

sg-017fddebd334d889f X

Cluster endpoint access [Info](#)

Make sure you are selecting SG

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Security groups [Info](#)
Choose the security groups to apply to the EKS-managed Elastic Network Interfaces that are created in your worker node subnets. To create a new security group, go to the corresponding page in the [VPC console](#).

Select security groups ▼ ↻

sg-017fddebd334d889f ✕

Cluster endpoint access [Info](#)
Configure access to the Kubernetes API server endpoint.

☒ **Public**
The cluster endpoint is accessible from outside of your VPC. Worker node traffic will leave your VPC to connect to the endpoint.

☐ **Public and private**
The cluster endpoint is accessible from outside of your VPC. Worker node traffic to the endpoint will stay within your VPC.

☐ **Private**
The cluster endpoint is only accessible through your VPC. Worker node traffic to the endpoint will stay within your VPC.

▶ **Advanced Settings**

Cancel Previous Next

Audit
Logs pertaining to cluster access via the Kubernetes API.
☐ Disabled

Authenticator
Logs pertaining to authentication requests into the cluster.
☐ Disabled

Controller manager
Logs pertaining to state of cluster controllers.
☐ Disabled

Scheduler
Logs pertaining to scheduling decisions.
☐ Disabled

Cancel Previous Next

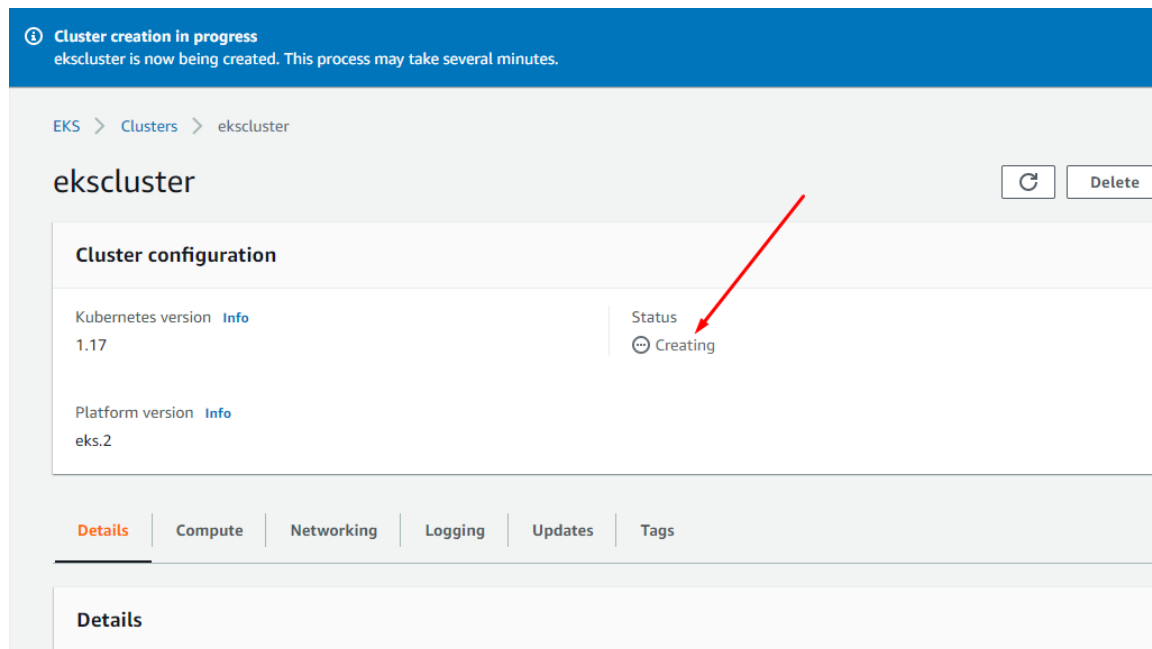
Step 3: Configure logging Edit

Control Plane Logging

API server Disabled	Audit Disabled	Authenticator Disabled
Controller manager Disabled	Scheduler Disabled	

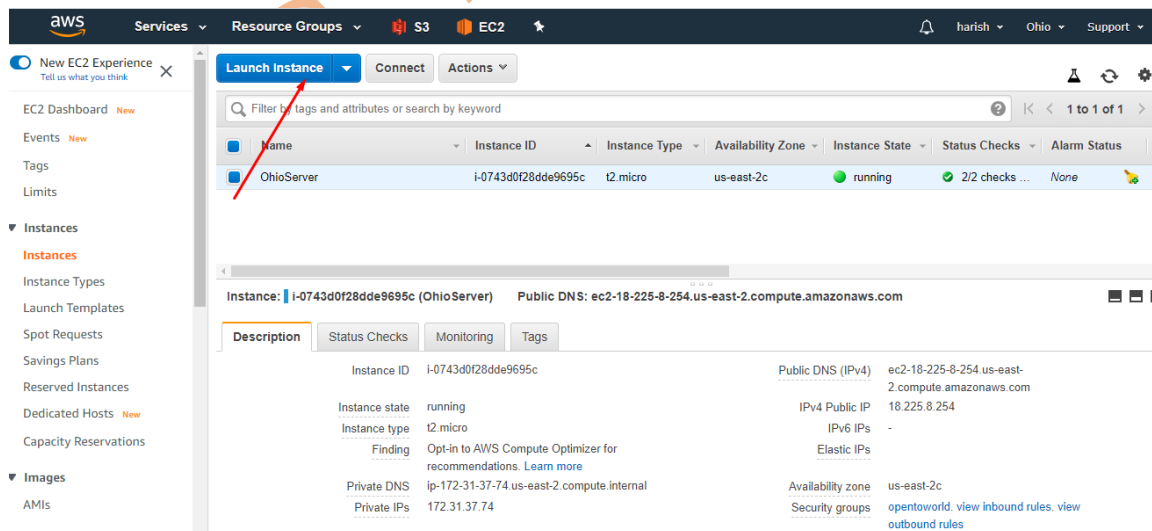
Cancel Previous Create

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Wait Till it is available

Create & Configure your workstation as below:



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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☐ Create a new security group
☒ Select an existing security group

Security Group ID	Name	Description	Actions
<input type="checkbox"/> sg-7fba5102	default	default VPC security group	Copy to new
<input type="checkbox"/> sg-0a1c984d7e49315a1	launch-wizard-1	launch-wizard-1 created 2020-07-24T18:48:36.238+04:00	Copy to new
<input type="checkbox"/> sg-02805dde752a5f790	launch-wizard-2	launch-wizard-2 created 2020-08-25T18:32:05.123+04:00	Copy to new
<input checked="" type="checkbox"/> sg-04fa56c50d6ab8877	opentoworld	opentoworld	Copy to new

Inbound rules for sg-04fa56c50d6ab8877 (Selected security groups: sg-04fa56c50d6ab8877)

Type	Protocol	Port Range	Source	Description
All traffic	All	All	0.0.0.0/0	

[Cancel](#) [Previous](#) [Review and Launch](#)

Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Instance Launch

Launch details. You can launch your instance now or save it as a template for later.

Instances' security
Your instances may be accessible from a public IP address. You can add additional ports in your security groups.

Linux 2 AMI (HVM), SS
Linux 2 comes with five years of support. It is available through extras.

Instance type
Instance type: t3.medium
Virtualization type: HVM

ECUs
Variable 1

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair
Select a key pair
shaan_harish_dvsbatch4

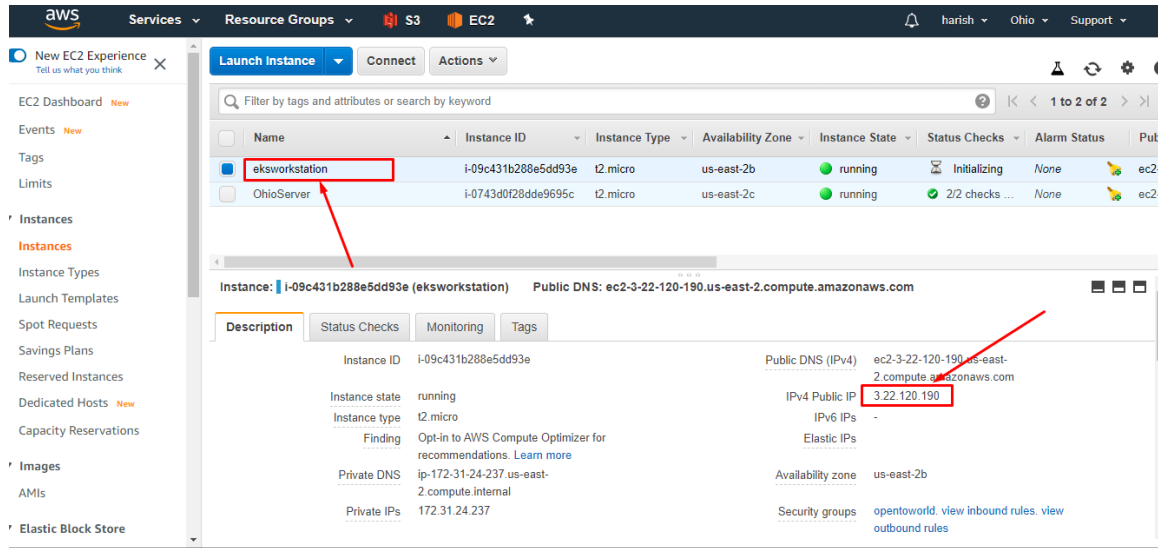
☒ I acknowledge that I have access to the selected private key file (shaan_harish_dvsbatch4.pem), and that without this file, I won't be able to log into my instance.

[Cancel](#) [Launch Instances](#)

Network Performance
Low to Moderate

[Cancel](#) [Previous](#)

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```
https://aws.amazon.com/amazon-linux-2/
7 package(s) needed for security, out of 14 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-24-237 ~]$ sudo hostnamectl set-hostname eksworkstation
[ec2-user@ip-172-31-24-237 ~]$ bash
[ec2-user@eksworkstation ~]$
```

Step1:

```
curl -o kubectl https://amazon-eks.s3.us-west-2.amazonaws.com/1.17.9/2020-08-04/bin/linux/amd64/kubectl
chmod +x ./kubectl
mkdir -p $HOME/bin && cp ./kubectl $HOME/bin/kubectl && export
PATH=$PATH:$HOME/bin
echo 'export PATH=$PATH:$HOME/bin' >> ~/.bashrc
kubectl version --short --client
```

Step2:

Now inorder to access our cluster we should make sure that we are having aws-iam-authenticator

ref:

<https://docs.aws.amazon.com/eks/latest/userguide/install-aws-iam-authenticator.html>
<https://github.com/kubernetes-sigs/aws-iam-authenticator>

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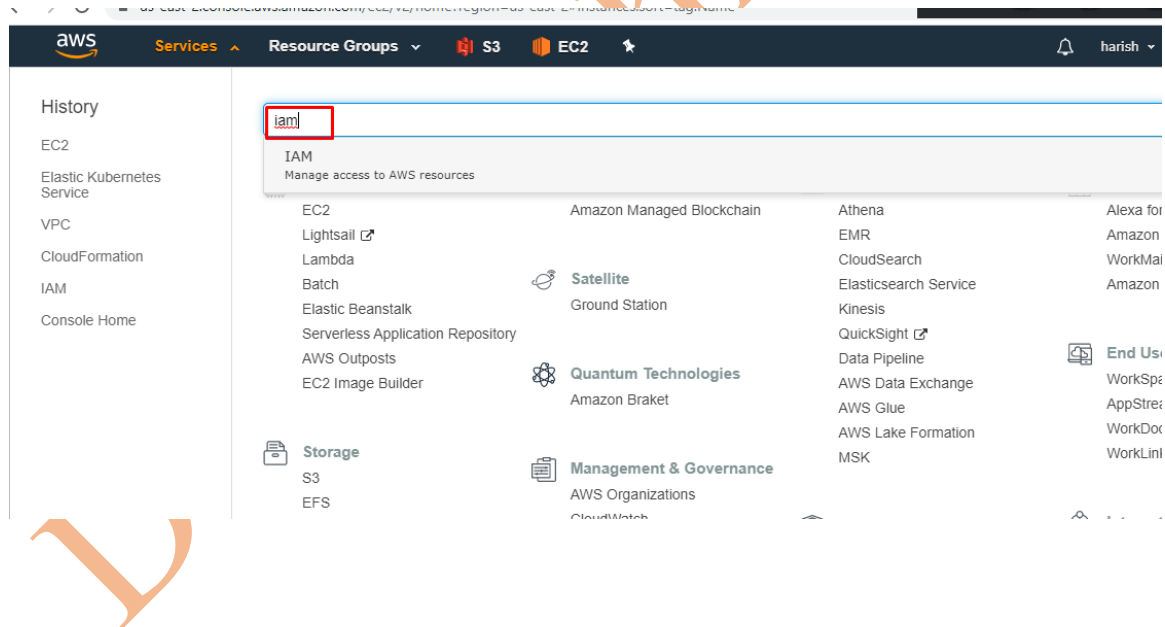
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```
curl -o aws-iam-authenticator https://amazon-eks.s3.us-west-2.amazonaws.com/1.17.9/2020-08-04/bin/linux/amd64/aws-iam-authenticator  
chmod +x ./aws-iam-authenticator  
mkdir -p $HOME/bin && cp ./aws-iam-authenticator $HOME/bin/aws-iam-authenticator  
&& export PATH=$PATH:$HOME/bin  
aws-iam-authenticator help  
A tool to authenticate to Kubernetes using AWS IAM credentials
```

Step3:
Install and configure latest PIP package

```
curl -O https://bootstrap.pypa.io/get-pip.py  
python get-pip.py  
pip install awscli --upgrade
```

NOTE: IF YOU ARE CREATING YOUR CLUSTER AS ROOT USER THEN YOU HAVE TO USE THE ROOT TOKEN FOR CONFIGURING YOUR EKS CLUSTER LIKE BELOW



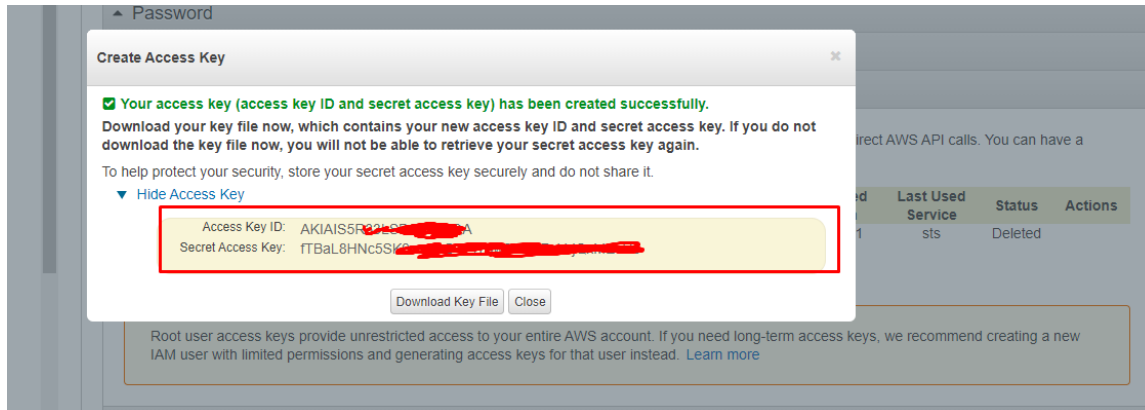
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The screenshot shows the AWS IAM console interface. The left sidebar contains the 'Identity and Access Management (IAM)' menu with options like Dashboard, Access management, Access reports, and Account settings. The main content area is titled 'IAM Resources' and shows statistics for Users (11), Groups (2), Roles (17), and Identity Providers (0). The 'Security Status' section is highlighted with a red box, showing a progress bar for '2 out of 5 complete'. Below this, a list of security recommendations is displayed, including 'Delete your root access keys', 'Activate MFA on your root account', 'Create individual IAM users', 'Use groups to assign permissions', and 'Apply an IAM password policy'. The 'Manage Security Credentials' button is also highlighted with a red box.

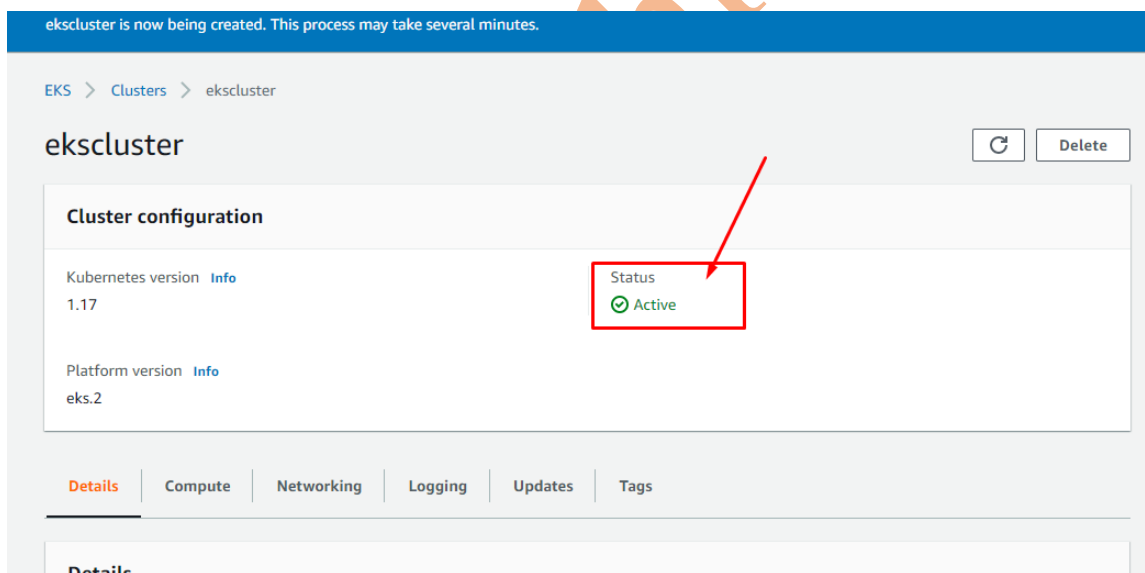
The screenshot shows the 'Your Security Credentials' page in the AWS IAM console. The page provides instructions on how to manage credentials for the AWS account. It lists three types of credentials: Password, Multi-factor authentication (MFA), and Access keys (access key ID and secret access key). The 'Access keys' section is highlighted with a red box. Below this, a table lists the existing access keys. A 'Create New Access Key' button is visible, and a warning message at the bottom states: 'Root user access keys provide unrestricted access to your entire AWS account. If you need long-term access keys, we recommend creating a new IAM user with limited permissions and generating access keys for that user instead. Learn more'.

Created	Access Key ID	Last Used	Last Used Region	Last Used Service	Status	Actions
Aug 28th 2020	AKIAIV5ODUASBVE45AZA	2020-08-29 00:39 UTC+0400	us-east-1	sts	Deleted	

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```
[ec2-user@eksworkstation ~]$ aws configure
AWS Access Key ID [*****I5QA]: AKIAIS5R33LSDSXGI5QA
AWS Secret Access Key [*****EcU5]: 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
Default region name [us-east-1]: us-east-2
Default output format [json]: json
```

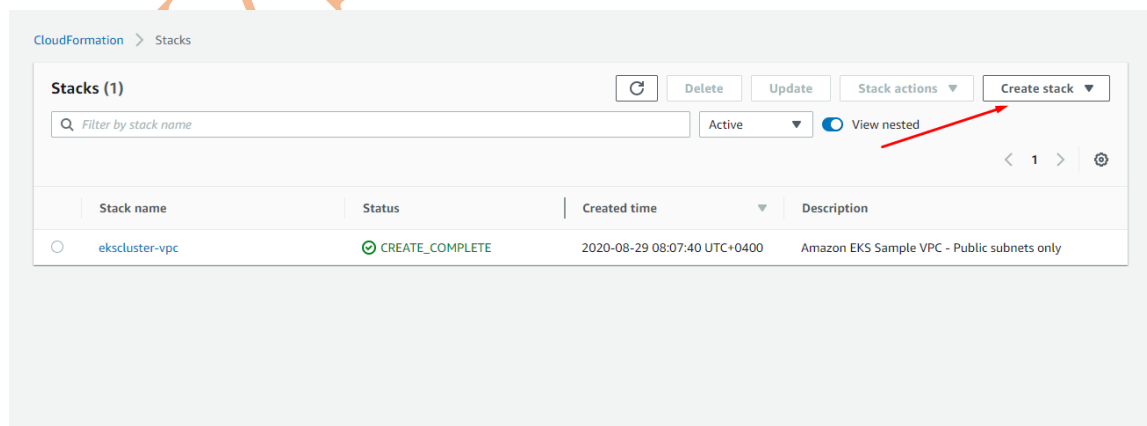
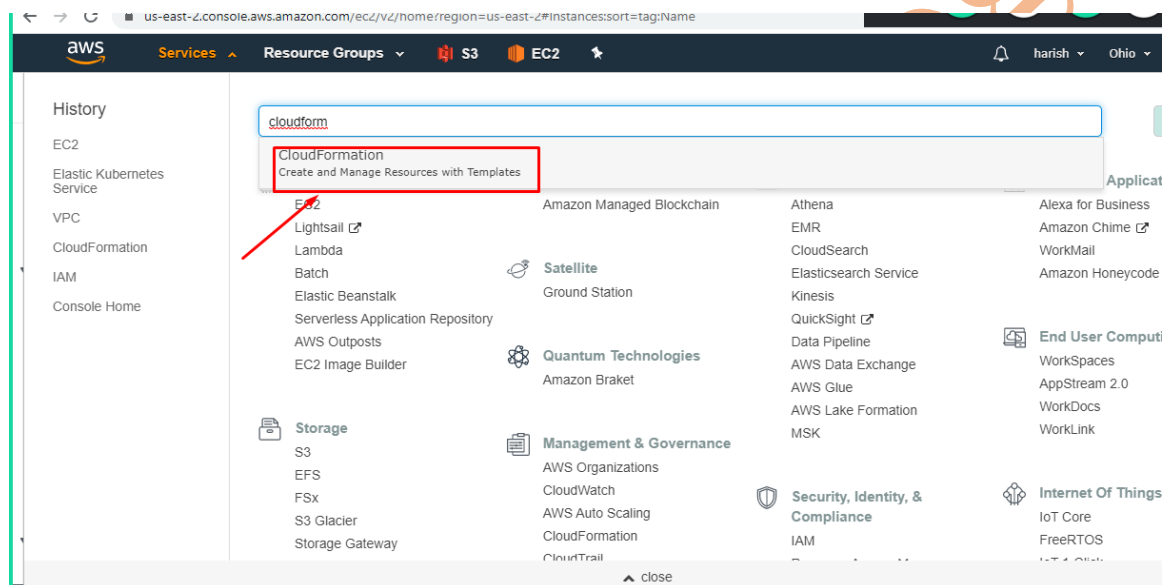


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```
[ec2-user@eksworkstation ~]$ aws eks update-kubeconfig --name ekscluster
Updated context arn:aws:eks:us-east-2:907814406801:cluster/ekscluster in /home/ec2-user/.kube/config
[ec2-user@eksworkstation ~]$ kubectl cluster-info
Kubernetes master is running at https://FA9307D5C48FA56F3C194E2BF4967C7B.y14.us-east-2.eks.amazonaws.com
CoreDNS is running at https://FA9307D5C48FA56F3C194E2BF4967C7B.y14.us-east-2.eks.amazonaws.com/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

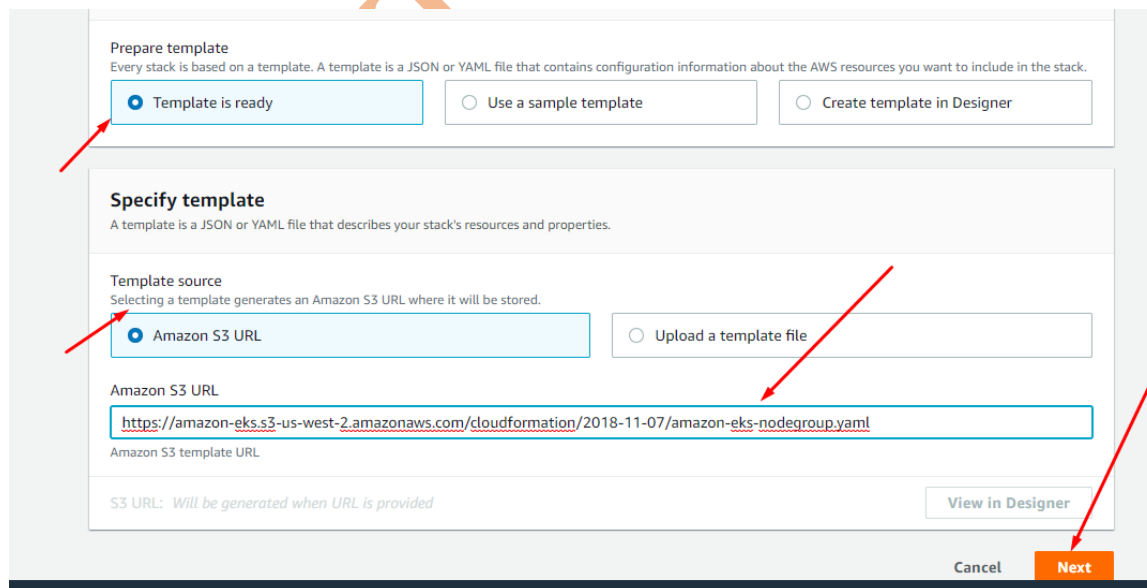
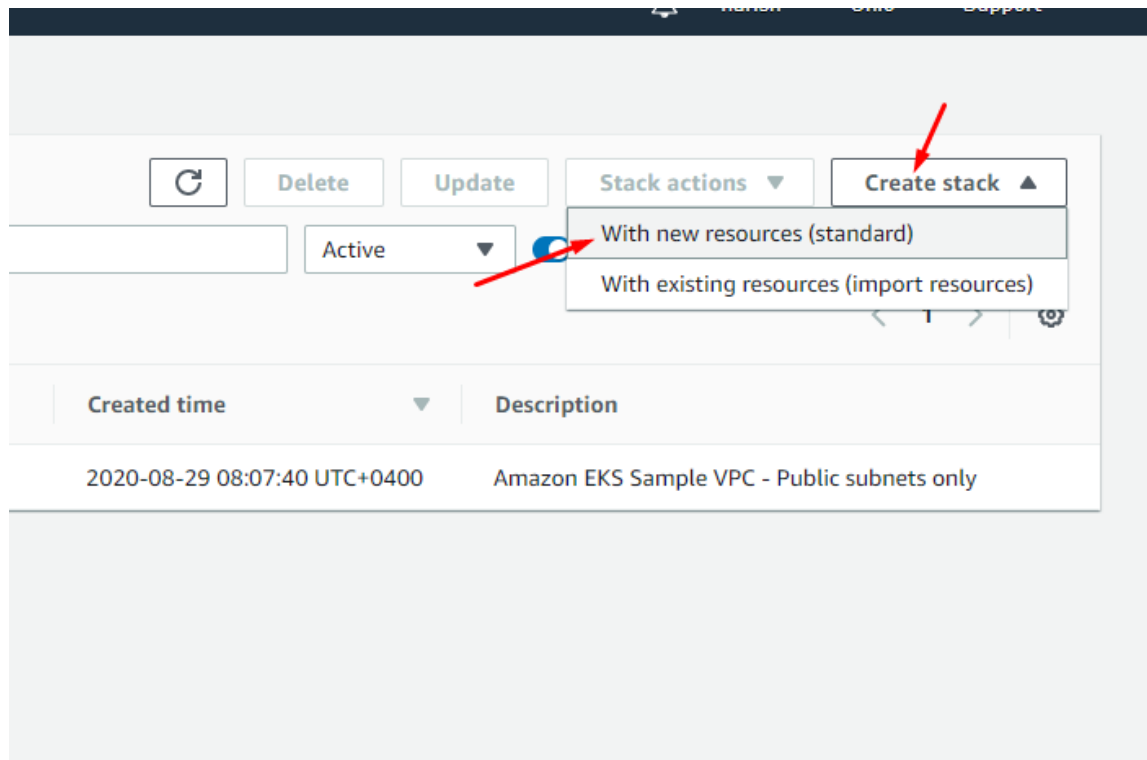
To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
[ec2-user@eksworkstation ~]$
```

Provisioning Worker Nodes :



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aws Services Resource Groups S3 EC2

Specify template

Step 2 Specify stack details

Step 3 Configure stack options

Step 4 Review

Stack name

Stack name

ekscluster-workers

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

EKS Cluster

ClusterName

The cluster name provided when the cluster was created. If it is incorrect, nodes will not be able to join the cluster.

ekscluster

ClusterControlPlaneSecurityGroup

The security group of the cluster control plane.

ekscluster-vpc-ControlPlaneSecurityGroup-7584M798EBQJ (sg-017fddebd334d889f)

Worker Node Configuration

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Worker Node Configuration

NodeGroupName

Unique identifier for the Node Group.

ekscluster-workers

NodeAutoScalingGroupMinSize

Minimum size of Node Group ASG.

1

NodeAutoScalingGroupMaxSize

Maximum size of Node Group ASG.

2

NodeInstanceType

EC2 instance type for the node instances.

t2.medium

NodeImageId

AMI id for the node instances.

ami-0c63709c

2.2.

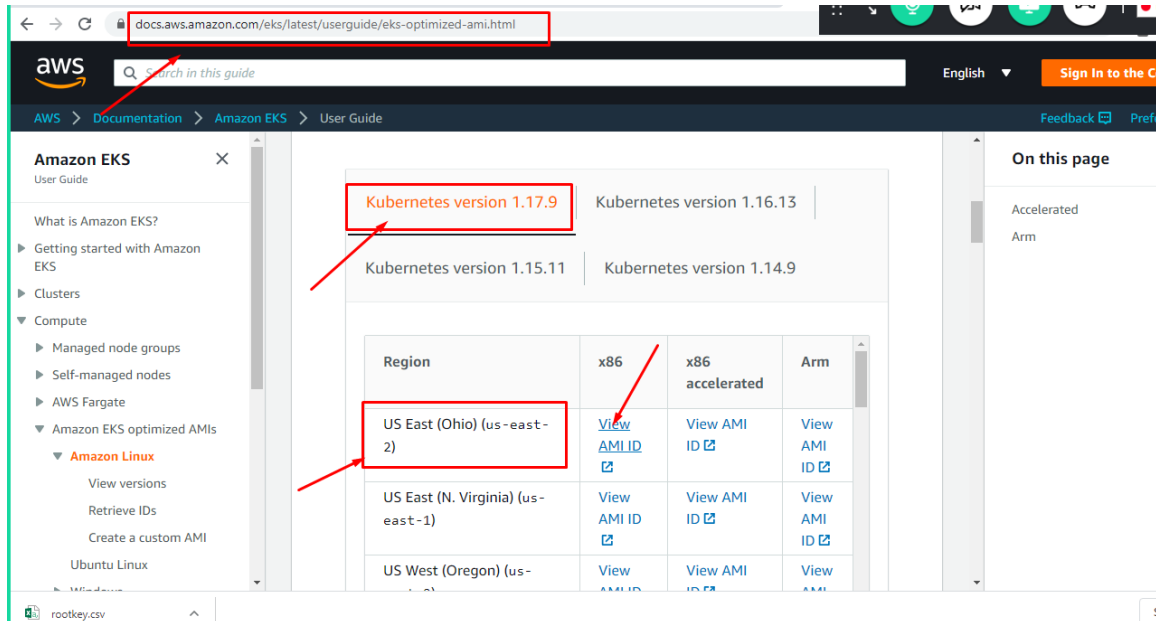
JS) © 2008 - 2020 Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use

Show all X

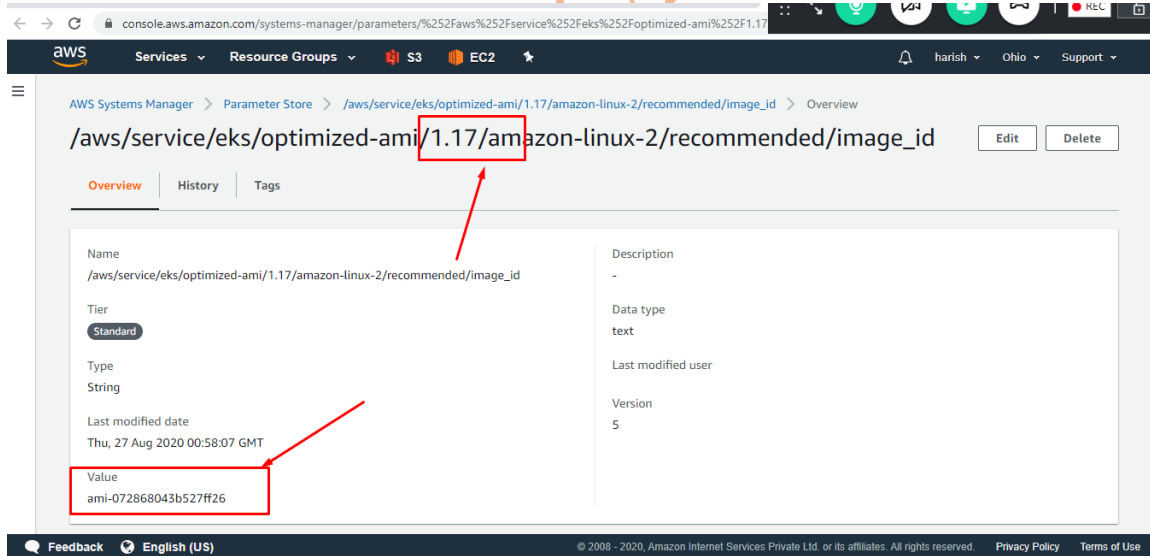
Follow the below site to get the right AMI for the workernode configuration:

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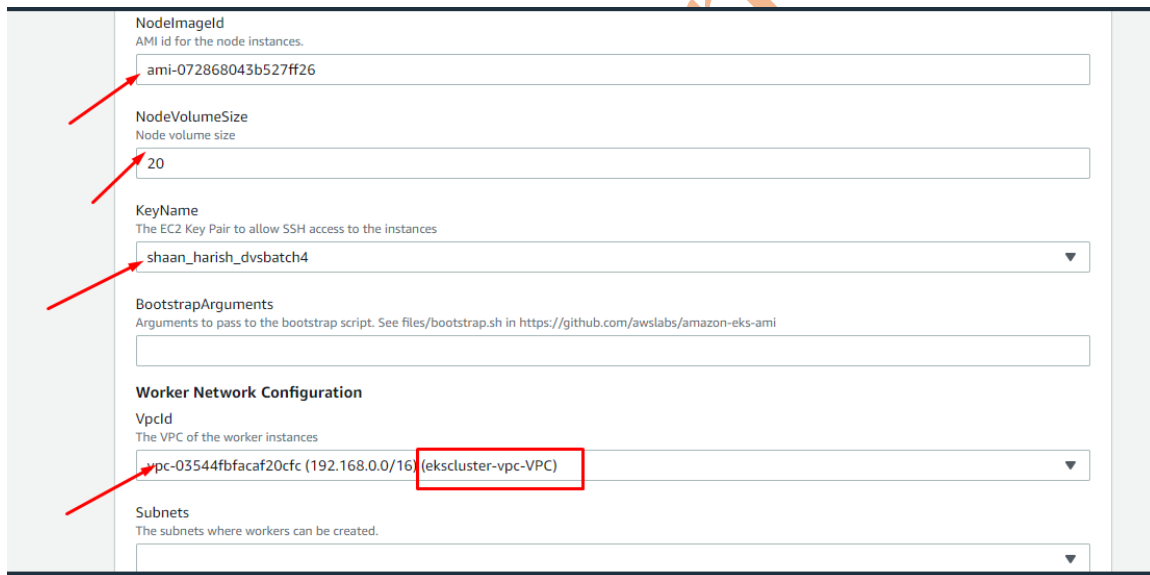
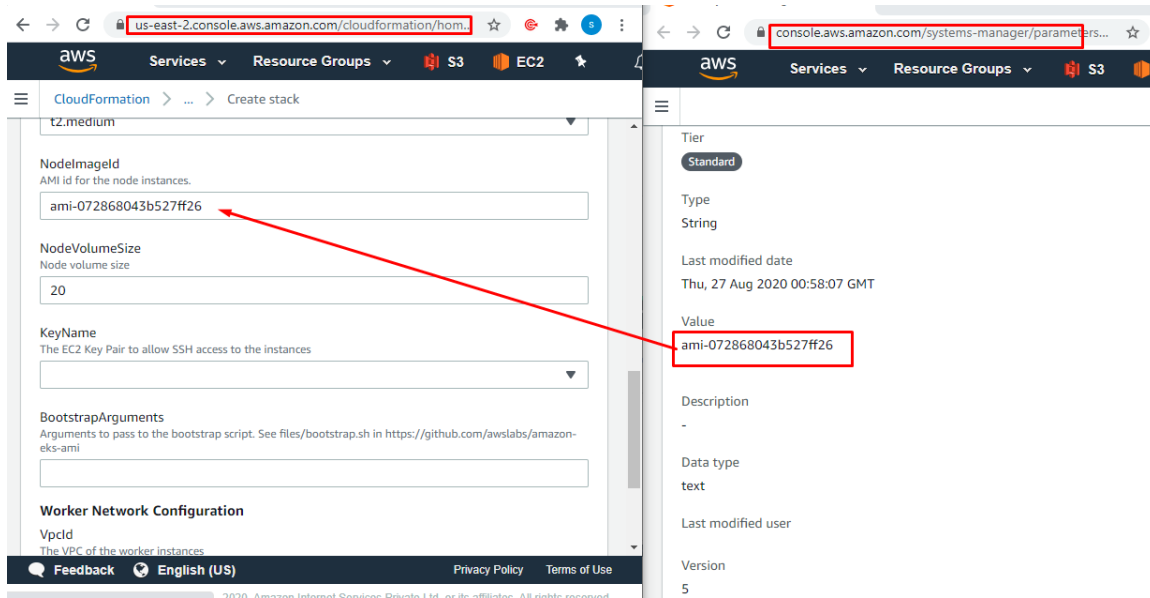


NOTE: Since I am using OHIO opting for this ami, please select the ami id as per your selected region



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KeyName
The EC2 Key Pair to allow SSH access to the instances

shaan_harish_dvsbatch4

subnet-0d41902a8f1f61771 (192.163.2.0/24) (ohioprivsubnet)

subnet-01e152b04ea39d790 (192.168.128.0/18) (ekscluster-vpc-Subnet02)

subnet-0ca641ff18ac4510a (192.163.1.0/24) (ohiopubsubnet)

subnet-e176719b (172.31.16.0/20)

subnet-0ec044d43409e6dee (192.168.192.0/18) (ekscluster-vpc-Subnet03)

subnet-9a61aff1 (172.31.0.0/20)

subnet-0cd60eb3e2322c669 (192.168.64.0/18) (ekscluster-vpc-Subnet01)

subnet-07bfd04b (172.31.32.0/20)

subnet-01e152b04ea39d790 (192.168.128.0/18) (ekscluster-vpc-Subnet02) X

subnet-0ec044d43409e6dee (192.168.192.0/18) (ekscluster-vpc-Subnet03) X

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The subnets where workers can be created.

subnet-01e152b04ea39d790 (192.168.128.0/18) (ekscluster-vpc-Subnet02) X

subnet-0ec044d43409e6dee (192.168.192.0/18) (ekscluster-vpc-Subnet03) X

subnet-0cd60eb3e2322c669 (192.168.64.0/18) (ekscluster-vpc-Subnet01) X

Cancel Previous Next

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► Rollback configuration

Specify alarms for CloudFormation to monitor when creating and updating the stack. If the operation breaches an alarm threshold, CloudFormation rolls it back. [Learn more](#)

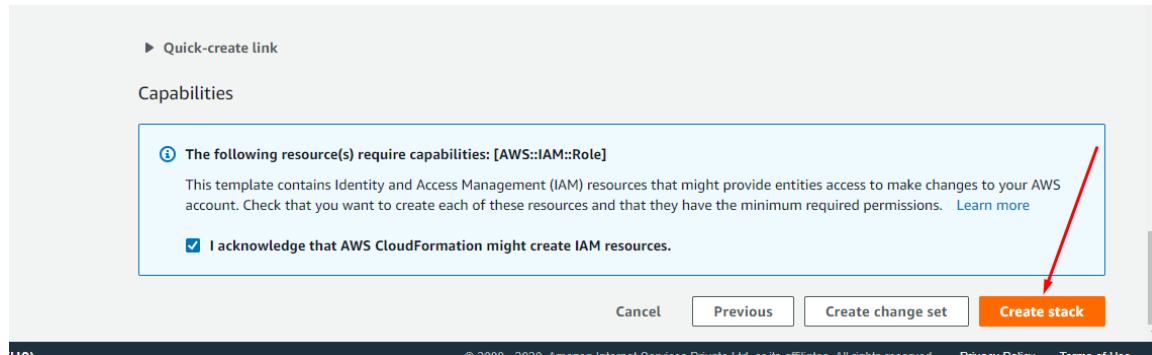
► Notification options

► Stack creation options

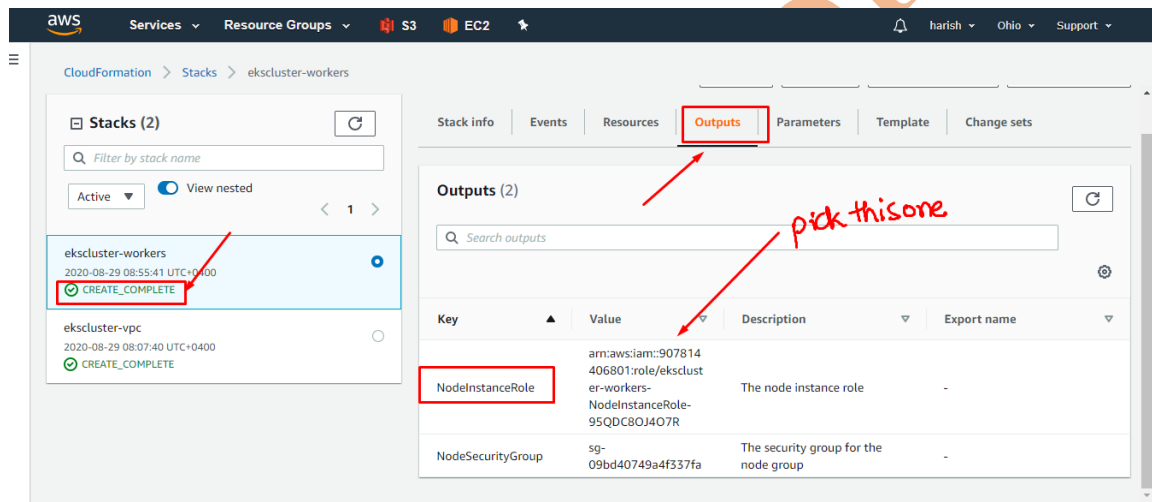
Cancel Previous Next

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Once stack is done, make sure that you are copying the node ARN like below.
arn:aws:iam::907814406801:role/ekscluster-workers-NodeInstanceRole-95QDC8OJ4O7R



Now perform the below in our workstation server

curl -O <https://amazon-eks.s3-us-west-2.amazonaws.com/cloudformation/2018-11-07/aws-auth-cm.yaml>

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```
[ec2-user@eksworkstation ~]$ curl -O https://amazon-eks.s3-us-west-2.amazonaws.com/cloudformation/2018-11-07/aws-auth-cm-yaml
curl -O https://amazon-eks.s3-us-west-2.amazonaws.com/cloudformation/2018-11-07/aws-auth-cm-yaml
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 317 0 317 0 0 1035 0 --:--:-- --:--:-- --:--:-- 1035
100 282 100 282 0 0 3098 0 --:--:-- --:--:-- --:--:-- 3098
[ec2-user@eksworkstation ~]$ ls -l aws-auth-cm.yaml
-rw-rw-r-- 1 ec2-user ec2-user 282 Aug 29 05:01 aws-auth-cm.yaml
[ec2-user@eksworkstation ~]$ cat aws-auth-cm.yaml
apiVersion: v1
kind: ConfigMap
metadata:
  name: aws-auth
  namespace: kube-system
data:
  mapRoles: |
    - rolearn: <ARN of instance role (not instance profile)>
      username: system:node:{{EC2PrivateDNSName}}
      groups:
        - system:bootstrappers
        - system:nodes
[ec2-user@eksworkstation ~]$
```

The screenshot shows the AWS Management Console with the 'CloudFormation' service selected. Under 'Stacks', the 'ekscluster-workers' stack is highlighted. A terminal window is overlaid on the right, displaying the contents of the 'aws-auth-cm.yaml' file. A red box in the terminal highlights the 'rolearn' field, which is 'arn:aws:iam::907814406801:role/ekscluster-workers-NodeInstanceRole-95QDC80J407R'. A red arrow points from this role name in the terminal to the 'NodeInstanceRole' entry in the table below the terminal.

Resource Name	Resource ID	Description	Creation Status
NodeInstanceRole	arn:aws:iam::907814406801:role/ekscluster-workers-NodeInstanceRole-95QDC80J407R	The node instance role	-
NodeSecurityGroup	sg-09bd40749a4f337fa	The security group for the node group	-

```
[ec2-user@eksworkstation ~]$ cat aws-auth-cm.yaml
apiVersion: v1
kind: ConfigMap
metadata:
  name: aws-auth
  namespace: kube-system
data:
  mapRoles: |
    - rolearn: arn:aws:iam::907814406801:role/ekscluster-workers-NodeInstanceRole-95QDC80J407R
      username: system:node:{{EC2PrivateDNSName}}
      groups:
        - system:bootstrappers
        - system:nodes
[ec2-user@eksworkstation ~]$
```

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```
- system:nodes
[ec2-user@eksworkstation ~]$ kubectl apply -f aws-auth-cm.yaml
configmap/aws-auth created
[ec2-user@eksworkstation ~]$ kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
ip-192-168-191-192.us-east-2.compute.internal	NotReady	<none>	3s	v1.17.9-eks-4c6976
ip-192-168-205-24.us-east-2.compute.internal	NotReady	<none>	2s	v1.17.9-eks-4c6976

```
[ec2-user@eksworkstation ~]$
```

```
^C[ec2-user@eksworkstation ~]$ kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
ip-192-168-191-192.us-east-2.compute.internal	Ready	<none>	36s	v1.17.9-eks-4c6976
ip-192-168-205-24.us-east-2.compute.internal	Ready	<none>	35s	v1.17.9-eks-4c6976

```
[ec2-user@eksworkstation ~]$
```

2. IAM Authentication

Let's create a user called "ramesh" & try to perform the cluster activities.

```
[ec2-user@eksworkstation ~]$ id -a ramesh
id: ramesh: no such user
[ec2-user@eksworkstation ~]$ sudo useradd ramesh
[ec2-user@eksworkstation ~]$ id -a ramesh
uid=1001(ramesh) gid=1001(ramesh) groups=1001(ramesh)
[ec2-user@eksworkstation ~]$
```

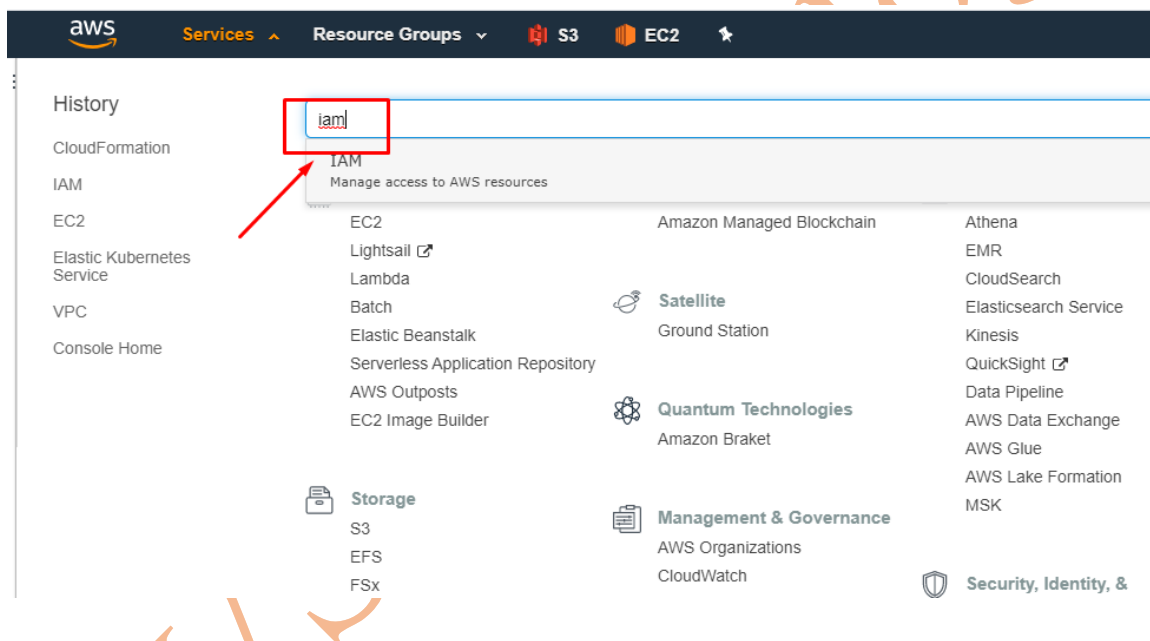
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```
ec2-user@eksworkstation ~]$  
ec2-user@eksworkstation ~]$ whoami  
ec2-user  
ec2-user@eksworkstation ~]$ kubectl get nodes  
NAME                                STATUS    ROLES    AGE   VERSION  
ip-192-168-191-192.us-east-2.compute.internal Ready    <none>   42m   v1.17.9-eks-4c6976  
ip-192-168-205-24.us-east-2.compute.internal Ready    <none>   42m   v1.17.9-eks-4c6976  
ec2-user@eksworkstation ~]$
```

cluster responded

```
ec2-user@eksworkstation ~]$ sudo su - ramesh  
ramesh@eksworkstation ~]$ whoami  
ramesh  
ramesh@eksworkstation ~]$ kubectl get nodes  
-bash: kubectl: command not found  
ramesh@eksworkstation ~]$
```

No response



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Identity and Access Management (IAM)

Dashboard

- Access management
 - Groups
 - Users**
 - Roles
 - Policies
 - Identity providers
 - Account settings
- Access reports
 - Access analyzer
 - Archive rules
 - Analizers

Add user **Delete user**

Find users by username or access key

	User name	Groups	Access key age	Password age	Last active
<input type="checkbox"/>	automation	None	✓ 18 days	None	18 days
<input type="checkbox"/>	awscluser	None	✓ 5 days	None	2 days
<input type="checkbox"/>	dbadmin	None	None	20 days	19 days
<input type="checkbox"/>	dvsbatch4	None	None	28 days	25 days
<input type="checkbox"/>	EPUSER	None	✓ 14 days	None	14 days
<input type="checkbox"/>	mytest1	None	✓ Today	None	Today
<input type="checkbox"/>	practice	None	✓ 6 days	None	6 days
<input type="checkbox"/>	shaan_automa...	None	✓ Today	None	Today
<input type="checkbox"/>	somesh	None	None	13 days	13 days

User name* ramesh

Add another user

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. [Learn more](#)

Access type* ☒ **Programmatic access**
Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.

☒ **AWS Management Console access**
Enables a **password** that allows users to sign-in to the AWS Management Console.

Console password* ☐ Autogenerated password ☒ Custom password

.....

☐ Show password

Require password reset* ☒ User must create a new password at next sign-in

* Required

Cancel **Next: Permissions**

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▼ Set permissions

Add user to group Copy permissions from existing user Attach existing policies directly

Create policy

Filter policies ▼ Showing 6 results

	Policy name ▼	Type	Used as
<input checked="" type="checkbox"/>	AmazonEKS_CNI_Policy	AWS managed	Permissions policy (2)
<input checked="" type="checkbox"/>	AmazonEKSClusterPolicy	AWS managed	Permissions policy (2)
<input checked="" type="checkbox"/>	AmazonEKSFargatePodExecutionRolePolicy	AWS managed	Permissions policy (1)
<input checked="" type="checkbox"/>	AmazonEKSServicePolicy	AWS managed	Permissions policy (2)
<input checked="" type="checkbox"/>	AmazonEKSVPCResourceController	AWS managed	Permissions policy (1)
<input checked="" type="checkbox"/>	AmazonEKSWorkerNodePolicy	AWS managed	Permissions policy (2)

Cancel Previous Next: Tags

The following policies will be attached to the user shown above.

Type	Name
Managed policy	AmazonEKS_CNI_Policy
Managed policy	AmazonEKSClusterPolicy
Managed policy	AmazonEKSFargatePodExecutionRolePolicy
Managed policy	AmazonEKSServicePolicy
Managed policy	AmazonEKSVPCResourceController
Managed policy	AmazonEKSWorkerNodePolicy

Tags

No tags were added.

Cancel Previous Create user

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Success
You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.

Users with AWS Management Console access can sign-in at: <https://907814406801.signin.aws.amazon.com/console>

[Download .csv](#)

User	Access key ID	Secret access key	Email login instructions
ramesh	AKIA5GXPURKI2WDJSZOO	cDbXjX0oG043fqZUd1sWtw7N+BR eu1VePhRaIG4 Hide	Send email

[Close](#)

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Save credentials

Execute the below commands as ec2-user::

```
[ec2-user@eksworkstation ~]$ sudo cp -r ./bin/ /home/ramesh/ -f
[ec2-user@eksworkstation ~]$ sudo cp .local /home/ramesh/ -rf
[ec2-user@eksworkstation ~]$ sudo cp ~/.bashrc /home/ramesh/ -rf
[ec2-user@eksworkstation ~]$
```

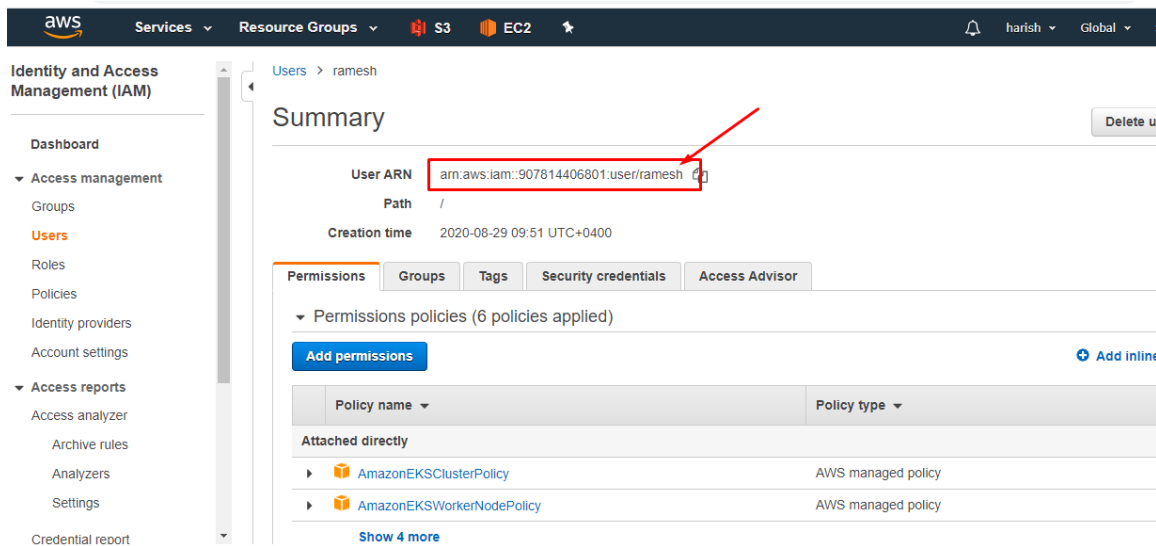
[[As Ramesh User]]

```
[ramesh@eksworkstation ~]$ aws configure
AWS Access Key ID [None]: AKIA5GXPURKI2WDJSZOO
AWS Secret Access Key [None]: cDbXjX0oG043fqZUd1sWtw7N+BR eu1VePhRaIG4
Default region name [None]: us-east-2
Default output format [None]: json
[ramesh@eksworkstation ~]$ kubectl version --short
Client Version: v1.17.9-eks-4c6976
The connection to the server localhost:8080 was refused - did you specify the right host or port?
[ramesh@eksworkstation ~]$
```

[[As ec2-user or root User]]

perform the below as ec2-user or root user

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The screenshot shows the AWS IAM console interface. On the left is a navigation menu with options like Dashboard, Access management, Groups, Users, Roles, Policies, Identity providers, Account settings, Access reports, Access analyzer, Archive rules, Analyzers, Settings, and Credential report. The main content area is titled 'Users > ramesh' and shows a 'Summary' tab. The 'User ARN' is 'arn:aws:iam::907814406801:user/ramesh', which is highlighted with a red box and an arrow. Below this, the 'Creation time' is '2020-08-29 09:51 UTC+0400'. The 'Permissions' tab is selected, showing 'Permissions policies (6 policies applied)'. There is a table of attached policies:

Policy name	Policy type
Attached directly	
AmazonEKSClusterPolicy	AWS managed policy
AmazonEKSWorkerNodePolicy	AWS managed policy

```
[ec2-user@eksworkstation ~]$ cat aws-auth-cm.yaml
apiVersion: v1
kind: ConfigMap
metadata:
  name: aws-auth
  namespace: kube-system
data:
  mapRoles: |
    - rolearn: arn:aws:iam::907814406801:role/ekscluster-workers-NodeInstanceRole-95QDC80J407R
      username: system:node:{{EC2PrivateDNSName}}
      groups:
        - system:bootstrappers
        - system:nodes
```

Before adding user info

```
- system:nodes
[ec2-user@eksworkstation ~]$ vi aws-auth-cm.yaml
[ec2-user@eksworkstation ~]$ cat aws-auth-cm.yaml
apiVersion: v1
kind: ConfigMap
metadata:
  name: aws-auth
  namespace: kube-system
data:
  mapRoles: |
    - rolearn: arn:aws:iam::907814406801:role/ekscluster-workers-NodeInstanceRole-95QDC80J407R
      username: system:node:{{EC2PrivateDNSName}}
      groups:
        - system:bootstrappers
        - system:nodes
  mapUsers: |
    - userarn: arn:aws:iam::907814406801:user/ramesh
      username: ramesh
      groups:
        - system:masters
[ec2-user@eksworkstation ~]$
```

After adding user info

```
[ec2-user@eksworkstation ~]$ cat aws-auth-cm.yaml
apiVersion: v1
```

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```
kind: ConfigMap
metadata:
  name: aws-auth
  namespace: kube-system
data:
  mapRoles: |
    - rolearn: arn:aws:iam::907814406801:role/ekscluster-workers-NodeInstanceRole-95QDC8OJ407R
      username: system:node:{{EC2PrivateDNSName}}
      groups:
        - system:bootstrappers
        - system:nodes
  mapUsers: |
    - userarn: arn:aws:iam::907814406801:user/ramesh
      username: ramesh
      groups:
        - system:masters
```

```
[ec2-user@eksworkstation ~]$ kubectl apply -f aws-auth-cm.yaml
configmap/aws-auth configured
[ec2-user@eksworkstation ~]$
```

[[As ramesh User]]

```
[ramesh@eksworkstation ~]$ whoami
ramesh
[ramesh@eksworkstation ~]$ aws eks update-kubeconfig --name ekscluster
Added new context arn:aws:eks:us-east-2:907814406801:cluster/ekscluster to /home/ramesh/.kube/config
[ramesh@eksworkstation ~]$ kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
ip-192-168-191-192.us-east-2.compute.internal	Ready	<none>	55m	v1.17.9-eks-4c6976
ip-192-168-205-24.us-east-2.compute.internal	Ready	<none>	55m	v1.17.9-eks-4c6976

3. Configuring Autoscalling

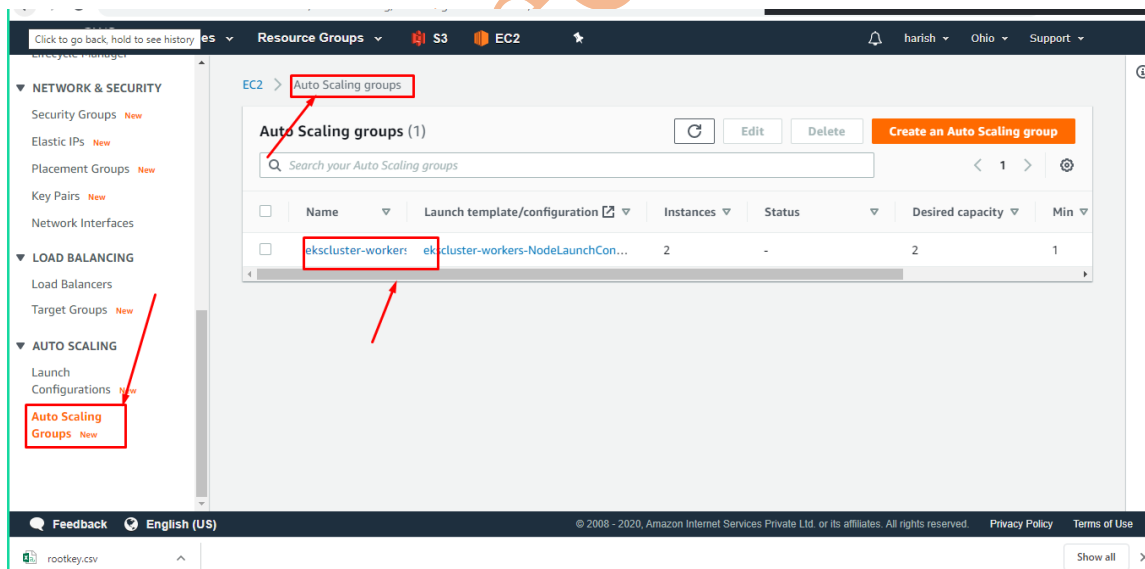
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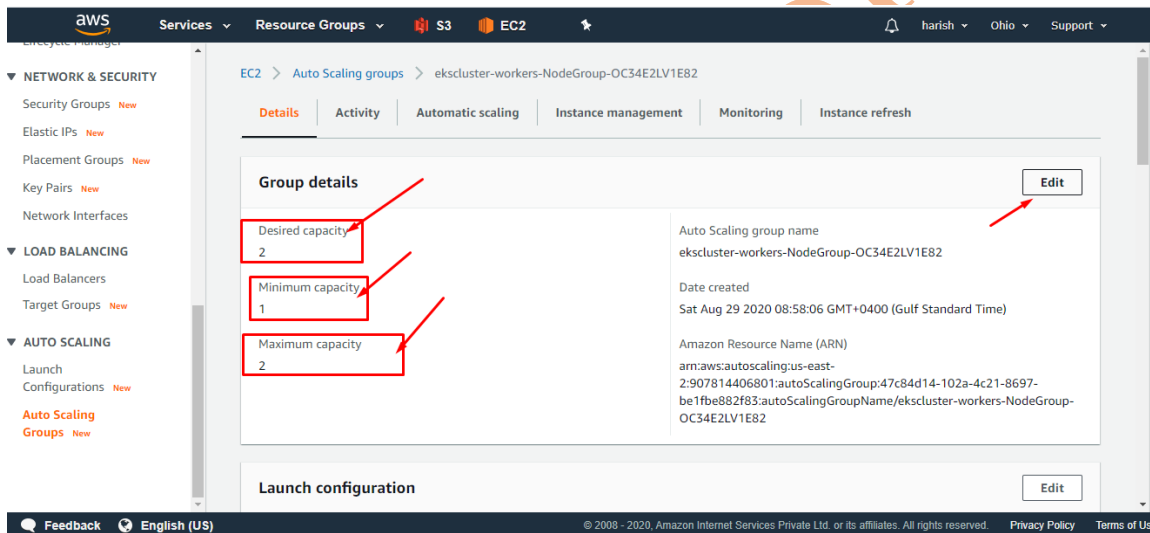
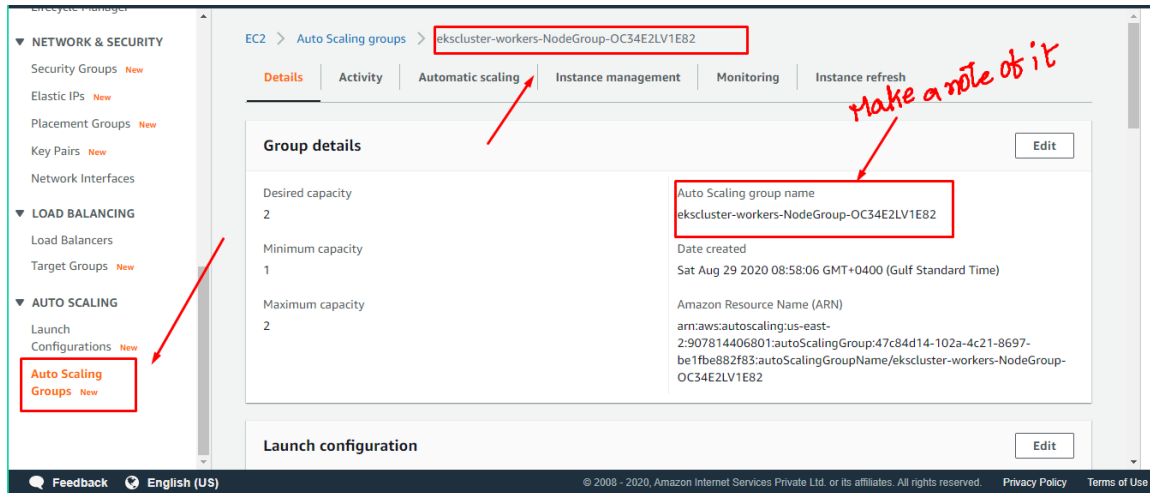
```
[ec2-user@eksworkstation ~]$  
[ec2-user@eksworkstation ~]$ kubectl create deploy myapp --image=nginx  
deployment.apps/myapp created  
[ec2-user@eksworkstation ~]$ kubectl scale deploy myapp --replicas=3
```

```
[ec2-user@eksworkstation ~]$ kubectl scale deploy myapp --replicas=3  
deployment.apps/myapp scaled  
[ec2-user@eksworkstation ~]$ kubectl expose deploy myapp --port 80 --type LoadBalancer  
service/myapp exposed  
[ec2-user@eksworkstation ~]$ kubectl get all -l app=myapp  
NAME                                READY    STATUS    RESTARTS   AGE  
pod/myapp-57c9b8fc4-74vds           1/1     Running   0           32s  
pod/myapp-57c9b8fc4-7spdb           1/1     Running   0           32s  
pod/myapp-57c9b8fc4-hf19k           1/1     Running   0           50s  
  
NAME                                TYPE                CLUSTER-IP      EXTERNAL-IP  
service/myapp                       LoadBalancer       10.100.250.89    a403534ac5d4b44d4d6b923b9d6bfa97-1634315458.us-east-2.elb.amazonaws.com  
0:30833/TCP                          9s  
  
NAME                                READY    UP-TO-DATE    AVAILABLE   AGE  
deployment.apps/myapp               3/3      3              3           50s  
  
NAME                                DESIRED    CURRENT    READY    AGE  
replicaset.apps/myapp-57c9b8fc4     3          3          3       50s  
[ec2-user@eksworkstation ~]$
```

Whenever there is a huge load on my pod in the cluster how my cluster's worker nodes get expanded automatically. In order to achieve this do the below.



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EC2 > Auto Scaling groups > ekscluster-workers-NodeGroup-OC34E2LV1E82

Details

Group size

Specify the size of the Auto Scaling group by changing the desired capacity. You can also specify minimum and maximum capacity limits. Your desired capacity must be within the limit range.

Desired capacity
2

Minimum capacity
1

Maximum capacity
6

Cancel Update

EC2 > Auto Scaling groups > ekscluster-workers-NodeGroup-OC34E2LV1E82

Details Activity Automatic scaling Instance management Monitoring Instance refresh

Group details

Edit

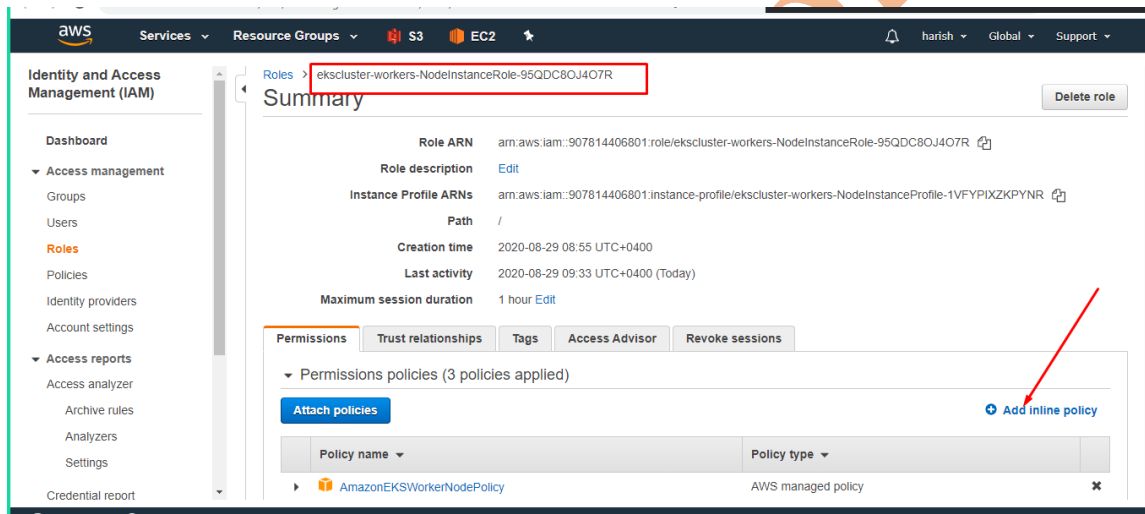
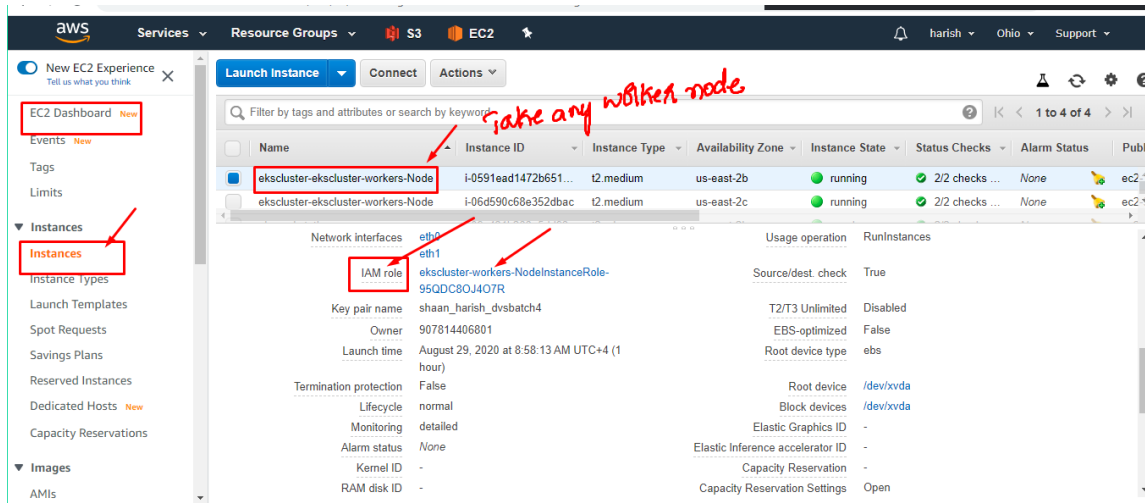
Desired capacity 2	Auto Scaling group name ekscluster-workers-NodeGroup-OC34E2LV1E82
Minimum capacity 1	Date created Sat Aug 29 2020 08:58:06 GMT+0400 (Gulf Standard Time)
Maximum capacity 6	Amazon Resource Name (ARN) arn:aws:autoscaling:us-east-2:907814406801:autoScalingGroup:47c84d14-102a-4c21-8697-be1f8e882f83:autoScalingGroupName/ekscluster-workers-NodeGroup-OC34E2LV1E82

Launch configuration Edit

We need to create one inline policy for our role like below.

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Create policy

1 2

A policy defines the AWS permissions that you can assign to a user, group, or role. You can create and edit a policy in the visual editor and using JSON. [Learn more](#)

Visual editor **JSON** [Import managed policy](#)

[Expand all](#) | [Collapse all](#)

▼ Select a service [Clone](#) [Remove](#)

► Service [Choose a service](#)

Actions Choose a service before defining actions

Resources Choose actions before applying resources

Create policy

1 2

A policy defines the AWS permissions that you can assign to a user, group, or role. You can create and edit a policy in the visual editor and using JSON. [Learn more](#)

Visual editor **JSON** [Import managed policy](#)

```
6 *
7 "Action": [
8   "autoscaling:DescribeAutoScalingGroups",
9   "autoscaling:DescribeAutoScalingInstances",
10  "autoscaling:DescribeInstances",
11  "autoscaling:DescribeLaunchConfigurations",
12  "autoscaling:DescribeTags",
13  "autoscaling:SetDesiredCapacity",
14  "autoscaling:TerminateInstanceInAutoScalingGroup",
15  "ec2:DescribeLaunchTemplateVersions",
16  "ec2:DescribeInstanceTypes"
17 ]
```

Character count: 416 of 10,240.
The current character count includes character for all inline policies in the role: ekscluster-workers-NodeInstanceRole-95QDC8QJ4OTR

[Cancel](#) [Review policy](#)

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "autoscaling:DescribeAutoScalingGroups",
        "autoscaling:DescribeAutoScalingInstances",
        "autoscaling:DescribeInstances",
        "autoscaling:DescribeLaunchConfigurations",
        "autoscaling:DescribeTags",
        "autoscaling:SetDesiredCapacity",
        "autoscaling:TerminateInstanceInAutoScalingGroup",
        "ec2:DescribeLaunchTemplateVersions",
```

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```
"ec2:DescribeInstanceTypes"
],
"Resource": "*"
}
]
```

Name*

Maximum 128 characters. Use alphanumeric and '+=, @ _ - ' characters.

Summary

Service	Access level	Resource	Request condition
Allow (2 of 238 services) Show remaining 236			
EC2	Limited: List	All resources	None
EC2 Auto Scaling	Full: Read Limited: List, Write	All resources	None

[Cancel](#) [Previous](#) [Create policy](#)

Maximum session duration 1 hour [Edit](#)

Permissions Trust relationships Tags Access Advisor Revoke sessions

▼ Permissions policies (4 policies applied)

[Attach policies](#) [Add inline policy](#)

Policy name	Policy type
▶ AmazonEKSWorkerNodePolicy	AWS managed policy
▶ AmazonEC2ContainerRegistryReadOnly	AWS managed policy
▶ AmazonEKS_CNI_Policy	AWS managed policy
▶ eksclusterautoscale	Inline policy

▶ Permissions boundary (not set)

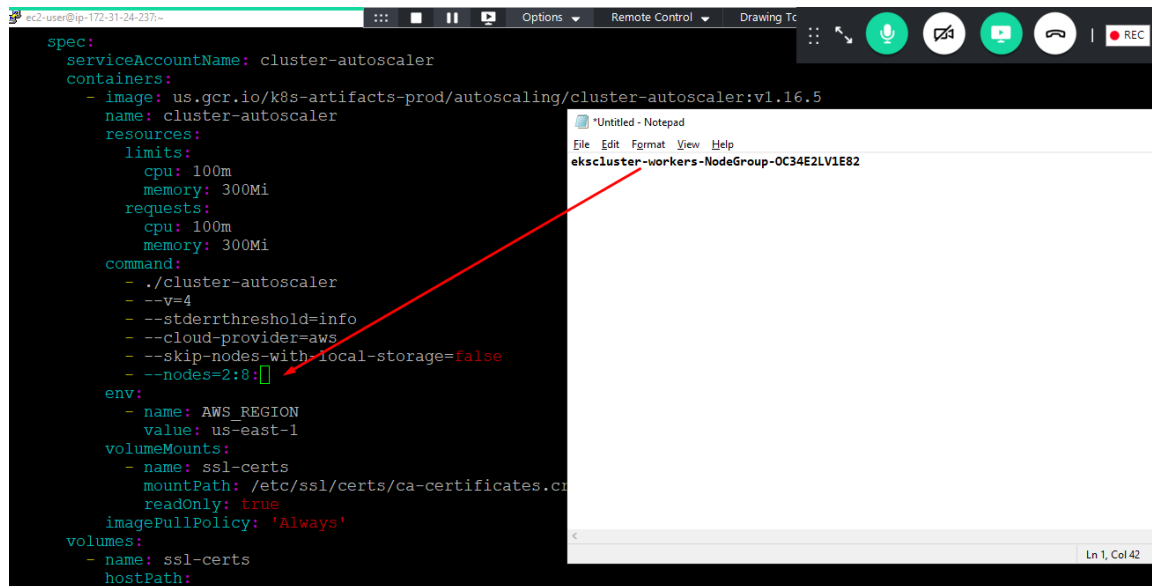
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[Show all](#) ✕

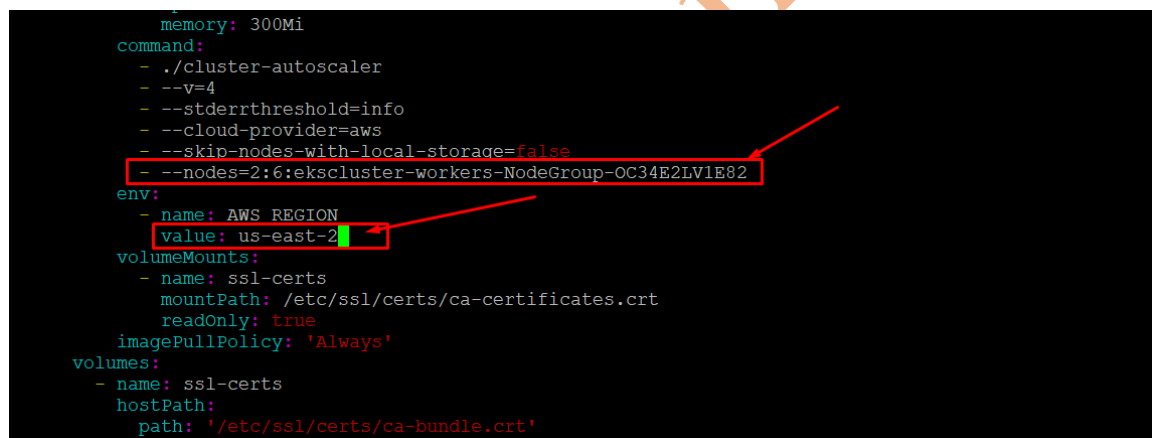
Now lets go to our workstation machine & do the below.

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```
spec:
  serviceAccountName: cluster-autoscaler
  containers:
  - image: us.gcr.io/k8s-artifacts-prod/autoscaling/cluster-autoscaler:v1.16.5
    name: cluster-autoscaler
    resources:
      limits:
        cpu: 100m
        memory: 300Mi
      requests:
        cpu: 100m
        memory: 300Mi
    command:
    - ./cluster-autoscaler
    - --v=4
    - --stderrthreshold=info
    - --cloud-provider=aws
    - --skip-nodes-with-local-storage=false
    - --nodes=2:0:[]
    env:
    - name: AWS_REGION
      value: us-east-1
    volumeMounts:
    - name: ssl-certs
      mountPath: /etc/ssl/certs/ca-certificates.crt
      readOnly: true
    imagePullPolicy: 'Always'
  volumes:
  - name: ssl-certs
    hostPath:
```



```
memory: 300Mi
command:
- ./cluster-autoscaler
- --v=4
- --stderrthreshold=info
- --cloud-provider=aws
- --skip-nodes-with-local-storage=false
- --nodes=2:6:ekscluster-workers-NodeGroup-OC34E2LV1E82
env:
- name: AWS_REGION
  value: us-east-2
volumeMounts:
- name: ssl-certs
  mountPath: /etc/ssl/certs/ca-certificates.crt
  readOnly: true
  imagePullPolicy: 'Always'
volumes:
- name: ssl-certs
  hostPath:
    path: '/etc/ssl/certs/ca-bundle.crt'
```

```
[ec2-user@eksworkstation ~]$ cat autoscaleconfiguration.yaml
```

```
apiVersion: v1
```

```
kind: ServiceAccount
```

```
metadata:
```

```
  labels:
```

```
    k8s-addon: cluster-autoscaler.addons.k8s.io
```

```
    k8s-app: cluster-autoscaler
```

```
  name: cluster-autoscaler
```

```
  namespace: kube-system
```

```
---
```

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apiVersion: rbac.authorization.k8s.io/v1beta1

kind: ClusterRole

metadata:

name: cluster-autoscaler

labels:

k8s-addon: cluster-autoscaler.addons.k8s.io

k8s-app: 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',
 'persistentvolumes',
]
verbs: ['watch', 'list', 'get']
- apiGroups: ['extensions']
resources: ['replicasets', 'daemonsets']
verbs: ['watch', 'list', 'get']
- apiGroups: ['policy']
resources: ['poddisruptionbudgets']
verbs: ['watch', 'list']
- apiGroups: ['apps']
resources: ['statefulsets', 'daemonsets', 'apps', 'replicasets']
verbs: ['watch', 'list', 'get']
- apiGroups: ['storage.k8s.io']

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```
resources: ['storageclasses', 'csinodes']
verbs: ['watch', 'list', 'get']
- apiGroups: ['batch', 'extensions']
  resources: ['jobs']
  verbs: ['get', 'list', 'watch', 'patch']
```

```
apiVersion: rbac.authorization.k8s.io/v1beta1
kind: Role
metadata:
  name: cluster-autoscaler
  namespace: kube-system
  labels:
    k8s-addon: cluster-autoscaler.addons.k8s.io
    k8s-app: cluster-autoscaler
rules:
- apiGroups: ['']
  resources: ['configmaps']
  verbs: ['create']
- apiGroups: ['']
  resources: ['configmaps']
  resourceNames: ['cluster-autoscaler-status']
  verbs: ['delete', 'get', 'update']
```

```
apiVersion: rbac.authorization.k8s.io/v1beta1
kind: ClusterRoleBinding
metadata:
  name: cluster-autoscaler
  labels:
    k8s-addon: cluster-autoscaler.addons.k8s.io
    k8s-app: cluster-autoscaler
roleRef:
  apiGroup: rbac.authorization.k8s.io
  kind: ClusterRole
  name: cluster-autoscaler
subjects:
- kind: ServiceAccount
  name: cluster-autoscaler
  namespace: kube-system
```

```
apiVersion: rbac.authorization.k8s.io/v1beta1
kind: RoleBinding
```

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metadata:

name: cluster-autoscaler

namespace: kube-system

labels:

k8s-addon: cluster-autoscaler.addons.k8s.io

k8s-app: cluster-autoscaler

roleRef:

apiGroup: rbac.authorization.k8s.io

kind: Role

name: cluster-autoscaler

subjects:

- kind: ServiceAccount

name: cluster-autoscaler

namespace: kube-system

apiVersion: apps/v1

kind: Deployment

metadata:

name: cluster-autoscaler

namespace: kube-system

labels:

app: cluster-autoscaler

spec:

replicas: 1

selector:

matchLabels:

app: cluster-autoscaler

template:

metadata:

labels:

app: cluster-autoscaler

spec:

serviceAccountName: cluster-autoscaler

containers:

- image: us.gcr.io/k8s-artifacts-prod/autoscaling/cluster-autoscaler:v1.16.5

name: cluster-autoscaler

resources:

limits:

cpu: 100m

memory: 300Mi

requests:

cpu: 100m

memory: 300Mi

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command:

- ./cluster-autoscaler
- --v=4
- --stderrthreshold=info
- --cloud-provider=aws
- --skip-nodes-with-local-storage=false
- --nodes=2:6:ekscluster-workers-NodeGroup-OC34E2LV1E82

env:

- name: AWS_REGION
value: us-east-2

volumeMounts:

- name: ssl-certs
mountPath: /etc/ssl/certs/ca-certificates.crt
readOnly: true
imagePullPolicy: 'Always'

volumes:

- name: ssl-certs
hostPath:
path: '/etc/ssl/certs/ca-bundle.crt'

[ec2-user@eksworkstation ~]\$

```
[ec2-user@eksworkstation ~]$  
[ec2-user@eksworkstation ~]$ kubectl apply -f autoscaleconfiguration.yaml  
serviceaccount/cluster-autoscaler created  
clusterrole.rbac.authorization.k8s.io/cluster-autoscaler created  
role.rbac.authorization.k8s.io/cluster-autoscaler created  
clusterrolebinding.rbac.authorization.k8s.io/cluster-autoscaler created  
rolebinding.rbac.authorization.k8s.io/cluster-autoscaler created  
deployment.apps/cluster-autoscaler created  
[ec2-user@eksworkstation ~]$
```

Testing the cluster Autoscalling:

```
[ec2-user@eksworkstation ~]$ kubectl get pods -l app=myapp  
NAME                                READY   STATUS    RESTARTS   AGE  
myapp-57c9b8fc4-74vds              1/1     Running   0           15m  
myapp-57c9b8fc4-7spdb              1/1     Running   0           15m  
myapp-57c9b8fc4-hfl9k              1/1     Running   0           16m  
[ec2-user@eksworkstation ~]$ kubectl scale deploy myapp --replicas=40  
deployment.apps/myapp scaled  
[ec2-user@eksworkstation ~]$ kubectl get deploy  
NAME    READY   UP-TO-DATE   AVAILABLE   AGE  
myapp   17/40   40           17          16m  
[ec2-user@eksworkstation ~]$
```

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```
[ec2-user@eksworkstation ~]$ kubectl get nodes
NAME                                                    STATUS    ROLES    AGE   VERSION
ip-192-168-191-192.us-east-2.compute.internal          Ready     <none>    77m   v1.17.9-eks-4c6976
ip-192-168-205-24.us-east-2.compute.internal           Ready     <none>    77m   v1.17.9-eks-4c6976
[ec2-user@eksworkstation ~]$
```

Wait for some time then check for your worker nodes

Finally :

```
[ec2-user@eksworkstation ~]$ kubectl get nodes
NAME                                                    STATUS    ROLES    AGE   VERSION
ip-192-168-191-192.us-east-2.compute.internal          Ready     <none>    78m   v1.17.9-eks-4c6976
ip-192-168-205-24.us-east-2.compute.internal           Ready     <none>    78m   v1.17.9-eks-4c6976
ip-192-168-76-248.us-east-2.compute.internal           Ready     <none>    31s   v1.17.9-eks-4c6976
[ec2-user@eksworkstation ~]$
```

Removing nodes from the autoscalling by reducing the replica count:

```
(reverse i-search) $ : kubectl get node c
[ec2-user@eksworkstation ~]$ kubectl scale deploy myapp --replicas=1
deployment.apps/myapp scaled
[ec2-user@eksworkstation ~]$ kubectl get nodes
NAME                                                    STATUS    ROLES    AGE   VERSION
ip-192-168-191-192.us-east-2.compute.internal          Ready     <none>    79m   v1.17.9-eks-4c6976
ip-192-168-205-24.us-east-2.compute.internal           Ready     <none>    79m   v1.17.9-eks-4c6976
ip-192-168-76-248.us-east-2.compute.internal           Ready     <none>    59s   v1.17.9-eks-4c6976
[ec2-user@eksworkstation ~]$
```

Please wait for some time so that your third node will be automatically get delete from the cluster

```
[ec2-user@eksworkstation ~]$ kubectl get nodes
NAME                                                    STATUS    ROLES    AGE   VERSION
ip-192-168-191-192.us-east-2.compute.internal          Ready     <none>    96m   v1.17.9-eks-4c6976
ip-192-168-76-248.us-east-2.compute.internal           Ready     <none>    18m   v1.17.9-eks-4c6976
[ec2-user@eksworkstation ~]$
```