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# Launch a Kubernetes Cluster



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The screenshot shows the AWS CloudFormation console interface. At the top, there are two tabs: 'Nodes (3) Info' and 'Node groups (1) Info'. The 'Nodes' tab is active, displaying a table with three rows of node information. The 'Node groups' tab is also visible below it.

Node name	Instance type	Compute	Managed by	Created	Status
ip-192-168-25-140.eu-west-2.compute.internal	t2.micro	Node group	nextwork-nodegroup	Created an hour ago	Ready
ip-192-168-55-195.eu-west-2.compute.internal	t2.micro	Node group	nextwork-nodegroup	Created an hour ago	Ready
ip-192-168-82-193.eu-west-2.compute.internal	t2.micro	Node group	nextwork-nodegroup	Created an hour ago	Ready

**Node groups (1) Info**

Node groups implement basic compute scaling through EC2 Auto Scaling groups.

Group name	Desired size	AMI release version	Launch template	Status
nextwork-nodegroup	3	1.31.2-20241121	eksctl-nextwork-eks-cluster-nodegroup-nextwork-nodegroup (1)	Active



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# Introducing Today's Project!

In this project, I will deploy our very first Kubernetes Cluster using Amazon EKS, This is because Eks is AWS Service for deploying kuberenetes clusters in the cloud. I will get to learn cool tools like eksctl and cloud formation.

## What is Amazon EKS?

Amazon EKS is AWS cloud kuberenetes service, which means it simplifies managing kubernetes clusters. we used it tin todays's project to create our very first amazon eks kubernetes cluster

## One thing I didn't expect

N?A

## This project took me...

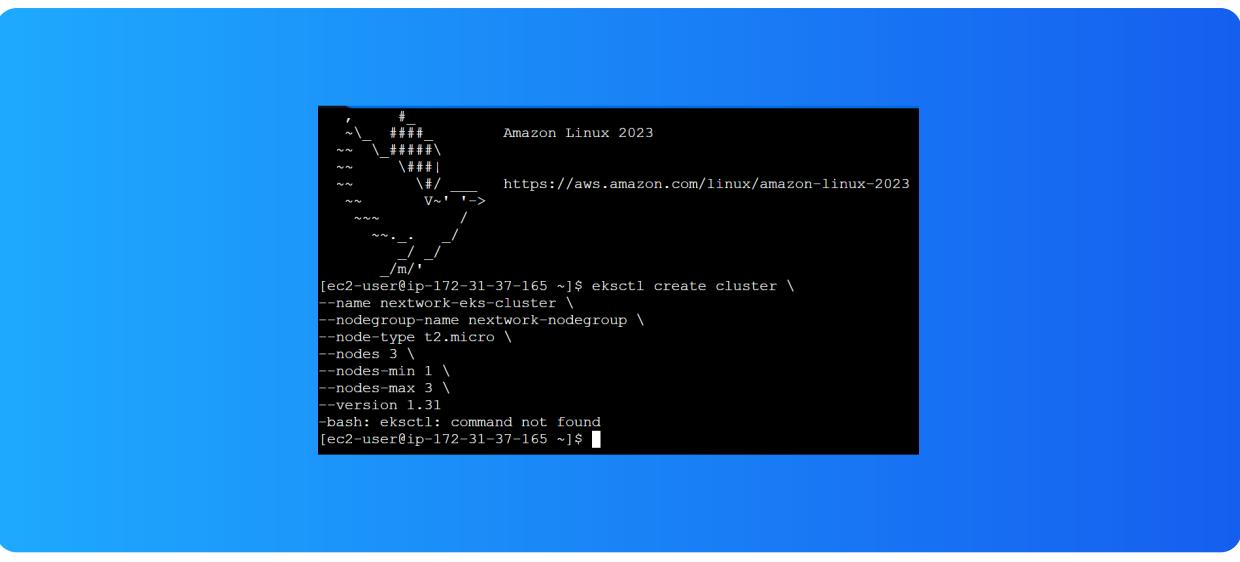
1 hour

# What is Kubernetes?

Kubernetes is a container orchestration platform, which is a fancy way to say that it coordinates containers so they're running smoothly across all your servers. Companies and developers use Kubernetes to develop and manage large scale containerized app

I used eksctl to create a kubernetes cluster using the command line. The create cluster command I ran defined name of the cluster, its node group's name and node size settings. We also defined the region and instance type of EC2.

I initially ran into two errors while using eksctl. The first one was because of not having installed eks yet. The second one was because we had our ec2 instance didn't have permissions to our AWS account + services yet.



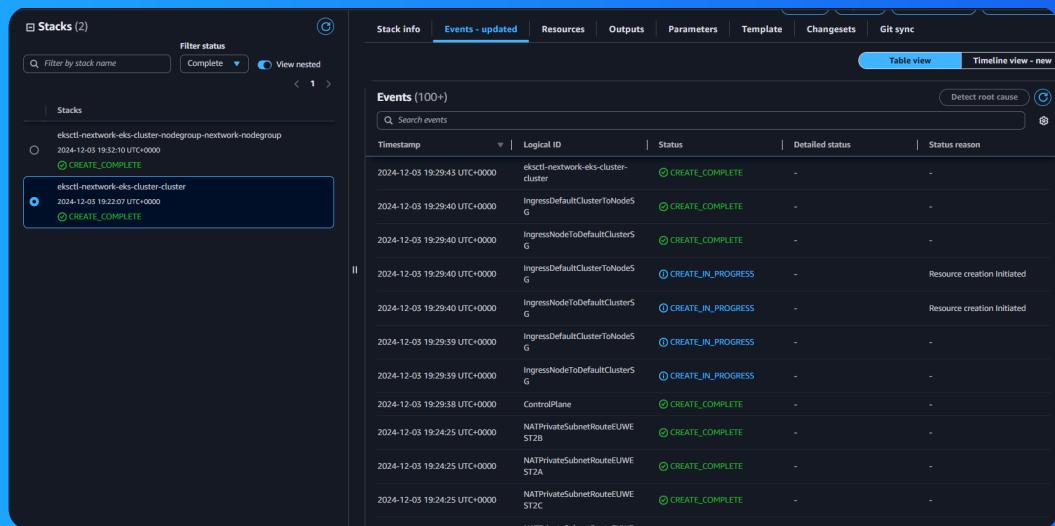
```
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

[ec2-user@ip-172-31-37-165 ~]$ eksctl create cluster \
--name nextwork-eks-cluster \
--nodegroup-name nextwork-nodegroup \
--node-type t2.micro \
--nodes 3 \
--nodes-min 1 \
--nodes-max 3 \
--version 1.31
-bash: eksctl: command not found
[ec2-user@ip-172-31-37-165 ~]$ █
```

# eksctl and CloudFormation

CloudFormation helped create my EKS cluster because eksctl uses CF under the hood when we run an eksctl create command. It created VPC resources because creating the EKS cluster in the default VPC would cause compatibility permissions issues.

There was also a second CloudFormation stack for the node group. The difference between a cluster and node group is that the cluster is the entire kubernetes setup (including the control plane), while the node group is a group of EC2 instances inside



# The EKS console

I had to create an IAM access entry in order to see the nodes in our new node group. An access entry is a mapping of AWS IAM policies to Kubernetes' access control system. I set it up by using the access entry page within the EKS management console.

It took at least 30 minutes to create my cluster. Since I'll create this cluster again in the next project of this series, maybe this process could be sped up if we used templates e.g terraform or cloud formation and install dependencies ahead.

The screenshot shows the AWS EKS Management Console interface. At the top, there's a search bar labeled "Filter Nodes by property or value". Below it is a table titled "Nodes (3) Info" with columns: Node name, Instance type, Compute, Managed by, Created, and Status. Three nodes are listed, all created an hour ago and marked as "Ready". Below this is another table titled "Node groups (1) Info" with columns: Group name, Desired size, AMI release version, Launch template, and Status. One node group is listed, named "nextwork-nodegroup", with a desired size of 3, AMI release version 1.31.2-20241121, and launch template "eksctl-nextwork-eks-cluster-nodegroup-nextwork-nodegroup (1)". The status is "Active".

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# EXTRA: Deleting nodes

Did you know you can find your EKS cluster's nodes in Amazon EC2? This is because an EC2 is the node in kubernetes clusters/setups using AWS

'When I deleted my EC2 instances new nodes were created This is because our k8 cluster wanted to maintain its desired state/size

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4...	Elastic IP
All states									
<input type="checkbox"/> nextwork-eks-cluster-nextwork-nodegroup-...	i-096f55abcf70517aa4	<span>Running</span>	t2.micro	<span>2/2 checks passed</span>	<span>View alarms +</span>	eu-west-2c	ec2-3-10-119-197.eu-w...	3.10.119.197	-
<input type="checkbox"/> network-eks-instance	i-0727d230f25dfc50	<span>Running</span>	t2.micro	<span>2/2 checks passed</span>	<span>View alarms +</span>	eu-west-2b	ec2-13-40-85-44.eu-w...	15.40.85.44	-
<input type="checkbox"/> nextwork-eks-cluster-nextwork-nodegroup-...	i-092c95331a1bb205	<span>Running</span>	t2.micro	<span>2/2 checks passed</span>	<span>View alarms +</span>	eu-west-2b	ec2-13-42-28-126.eu-w...	15.42.28.126	-
<input type="checkbox"/> nextwork-eks-cluster-nextwork-nodegroup-...	i-0e33e5945acbf509r	<span>Running</span>	t2.micro	<span>2/2 checks passed</span>	<span>View alarms +</span>	eu-west-2a	ec2-18-170-59-155.eu...	18.170.59.155	-
<input checked="" type="checkbox"/> nextwork-eks-cluster-nextwork-nodegroup-...	i-031e8a529f418a740	<span>Terminated</span>	t2.micro	-	<span>View alarms +</span>	eu-west-2c	-	-	-
<input checked="" type="checkbox"/> nextwork-eks-cluster-nextwork-nodegroup-...	i-085c741fc5fe6cf6	<span>Terminated</span>	t2.micro	-	<span>View alarms +</span>	eu-west-2b	-	-	-
<input checked="" type="checkbox"/> nextwork-eks-cluster-nextwork-nodegroup-...	i-0033fe03e090f0091	<span>Terminated</span>	t2.micro	-	<span>View alarms +</span>	eu-west-2a	-	-	-



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