Let’s cook an Amazon EKS Cluster

Kidding! We’ll just make one :)

$ whoami

Yashvardhan Kukreja

Backend and DevOps Engineer (PS: Containers are love)

AWS Certified Solutions Architect - Associate

Tech Blogger

Also, I love to run :D

So what are we gonna do today

We'll learn how to create an Amazon EKS Cluster.

And on the way, we'll discuss and learn about Kubernetes and multiple services of AWS.

Technologies, we're gonna play around with

- Kubernetes
- Amazon EKS
- Amazon EC2
- Amazon VPC
- AWS CloudFormation
- AWS IAM

Umm…. So, what's Kubernetes?

- Container orchestrator.
- Manages, schedules, automates, etc. the containers to distribute load amongst them.

And.... AWS?

- Cloud computing services which provide the ability to rent and utilise cloud computing platforms in a matter of some clicks.
- No need to manage bare-metal servers.

So, what's Amazon EKS?

- Elastic Kubernetes Service
- Service provided by AWS to create Kubernetes clusters without making you pull your hair!
- No need to manually install and configure kubernetes. All done by AWS.

What is Amazon EC2 then?

- A service provided by AWS to host servers/computers on AWS Cloud.
- You can access them as Virtual Machines from your laptops.
- Amazon EC2 instance == Server/Computer on AWS Cloud.

What about Amazon VPC

- Virtual Private Cloud
- It’s like a logically isolated sub-cloud in AWS.
- All the communications happening in it will not be exposed to the outside internet.

Ok! AWS CloudFormation?

- Infrastructure-as-Code
- Helps you spin up any number of any AWS resources in an automated manner by writing the required JSON or YAML files.

And... what about AWS IAM?

- Identity and Access Management
- Used for restricting and managing different levels of accesses to different AWS resources under an AWS account.
- What if you want Alex to have permission to create EC2 instances (servers) under your AWS account but not allowing Bob? (coz he uses spaces over tabs XD)

Let’s dive into real stuff

Creating an Amazon EKS Cluster and tinkering with it!

Step 1 - Creating an Amazon EKS Role

- We’ll create an Amazon EKS Role with the required EKS Cluster and Service policies.
- This will involve the rightful permissions to create and establish an EKS Cluster under your account.

Step 2 - Creating a VPC for our EKS cluster

- We'll create a VPC where our EKS Cluster will reside.
- This will be done through a readymade CloudFormation template.
- It will have multiple subnets in which our Worker Nodes will reside.

Step 3 - Creating the EKS Cluster

- We'll create an EKS Cluster in the above created VPC.
- This will be done through AWS CLI (Command-Line Interface).
- Here, we will also link our laptop with this EKS Cluster so that we can execute the "kubectl" commands on it by running them in our laptop.

Step 4 - Setting up the worker nodes

- Here, we will launch the worker nodes under our above-created EKS Cluster.
- These worker nodes will also be spun up by a CloudFormation template.
- Then, we'll allow our worker nodes to join our EKS Cluster by running the AWS Authenticator ConfigMap with the ARN of NodeInstanceRoles of worker nodes (Phew!)

Time to deploy a sample app.... And test it!

- Here's the link to the YAML for deploying a sample app

  https://github.com/yashvardhan-kukreja/grofers-talk-resources/blob/master/nginx-k8s.yaml

Important Links

- GitHub repo with important scripts - https://github.com/yashvardhan-kukreja/grofers-talk-resources
- VPC CloudFormation Template - https://amazon-eks.s3-us-west-2.amazonaws.com/cloudformation/2019-11-15/amazon-eks-vpc-sample.yaml
- Worker NodeGroup CloudFormation Template - https://amazon-eks.s3-us-west-2.amazonaws.com/cloudformation/2019-01-09/amazon-eks-nodegroup.yaml
- ConfigMap for allowing Worker Nodes to join EKS Cluster - https://amazon-eks.s3-us-west-2.amazonaws.com/cloudformation/2019-01-09/aws-auth-cm.yaml

Homework!!!!

- Learn Jenkins
- Setup a CI/CD pipeline where the source would be a github webhook trigger (git push) and the deployment target would be an Amazon EKS Cluster.

Let’s connect!

- LinkedIn - https://www.linkedin.com/in/yashvardhan-kukreja/
- Twitter - https://twitter.com/yashkukreja98
- Github - https://github.com/yashvardhan-kukreja
- Medium - https://medium.com/@yash.kukreja.98/

Thanks everyone!
Adios :)

“Cloud-based is the holy grail”
- Erlich Blachman (Silicon Valley)