CI/CD part 2: deployment in EKS

Node.js Accelerator – Oct 22

Agenda

1. EKS
2. Configuring cluster on aws
3. Dashboard
4. Deployment in CI/CD

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Node.js Accelerator

Oct 2022

It is quite common to deploy backend applications with Docker images to Kubernetes.

Today we are going to see the approach with AWS EKS (Elastic Kubernetes Service)

Create the cluster with:

eksctl create cluster --region=us-east-1 --zones=us-east-1a,us-east-1b,us-east-1d --name=eks-sample --node-type=t3.small

It takes ~15 minutes to build the stack. Node type small is not recommended. The default is 2 large instances (goes ~127usd/month). Remember to delete it after your tests or it will cost even in 12 months free tier

Configuring the cluster with [eksctl]

```
~/projects/gitlab-nest main ❯ eksctl create cluster --region=us-east-1 --zones=us-east-1a,us-east-1b,us-east-1d --name=eks-sample
--node-type=t3.micro

2022-11-23 11:11:56 [ℹ]  eksctl version 0.112.0
2022-11-23 11:11:56 [ℹ]  using region us-east-1
2022-11-23 11:11:57 [ℹ]  subnets for us-east-1a - public:192.168.0.0/19 private:192.168.96.0/19
2022-11-23 11:11:57 [ℹ]  subnets for us-east-1b - public:192.168.32.0/19 private:192.168.128.0/19
2022-11-23 11:11:57 [ℹ]  subnets for us-east-1d - public:192.168.64.0/19 private:192.168.160.0/19
2022-11-23 11:11:57 [ℹ]  nodegroup "ng-3954a0ab" will use "" [AmazonLinux2/1.22]
2022-11-23 11:11:57 [ℹ]  using Kubernetes version 1.22
2022-11-23 11:11:57 [ℹ]  creating EKS cluster "eks-sample" in "us-east-1" region with managed nodes
2022-11-23 11:11:57 [ℹ]  will create 2 separate CloudFormation stacks for cluster itself and the initial managed nodegroup
2022-11-23 11:11:57 [ℹ]  if you encounter any issues, check CloudFormation console or try 'eksctl utils describe-stacks --region=u
s-east-1 --cluster=eks-sample'
2022-11-23 11:11:57 [ℹ]  Kubernetes API endpoint access will use default of {publicAccess=true, privateAccess=false} for cluster "
eks-sample" in "us-east-1"
2022-11-23 11:11:57 [ℹ]  CloudWatch logging will not be enabled for cluster "eks-sample" in "us-east-1"
2022-11-23 11:11:57 [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=eks-sample'
2022-11-23 11:11:57 [ℹ]
2 sequential tasks: { create cluster control plane "eks-sample",
    2 sequential sub-tasks: {
        wait for control plane to become ready,
        create managed nodegroup "ng-3954a0ab",
    }
}
2022-11-23 11:11:57 [ℹ]  building cluster stack "eksctl-eks-sample-cluster"
2022-11-23 11:11:58 [ℹ]  deploying stack "eksctl-eks-sample-cluster"
2022-11-23 11:12:28 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:12:59 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:13:59 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:15:00 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:16:01 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:17:02 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:18:02 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:19:03 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:20:04 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
2022-11-23 11:21:05 [ℹ]  waiting for CloudFormation stack "eksctl-eks-sample-cluster"
```

CloudFormation > Stacks

Stacks (3)

Delete | Update | Stack actions

Filter by stack name | View nested | Active

Stack name	Status	Created time	Description
eksctl-eks-sample-nodegroup-ng-3954a0ab	CREATE_COMPLETE	2022-11-23 11:26:13 UTC+0100	EKS Managed Nodes (SSH access: false) [created by eksctl]

Every time you create a new cluster, you need to configure the following:

minikube addons configure registry-creds

```
Do you want to enable AWS Elastic Container Registry? [y/n]: y
-- Enter AWS Access Key ID: CHANGE_ME
-- Enter AWS Secret Access Key: CHANGE_ME_AGAIN
-- (Optional) Enter AWS Session Token:
-- Enter AWS Region: us-east-1
-- Enter 12 digit AWS Account ID (Comma separated list): YOUR_ACCOUNT_ID
-- (Optional) Enter ARN of AWS role to assume:

Do you want to enable Google Container Registry? [y/n]: n

Do you want to enable Docker Registry? [y/n]: n

Do you want to enable Azure Container Registry? [y/n]: n
✅  registry-creds was successfully configured
```

Then enable it with:

minikube addons enable registry-creds

Having a simple dashboard to test with proxy

kubectl apply -f https://raw.githubusercontent.com/kubernetes/dashboard/v2.5.1/aio/deploy/recommended.yaml

Then getting a token:

kubectl -n kube-system describe secret $(kubectl -n kube-system get secret | grep eks-admin | awk '{print $1}')

Create a service account (let's see the yaml sample)

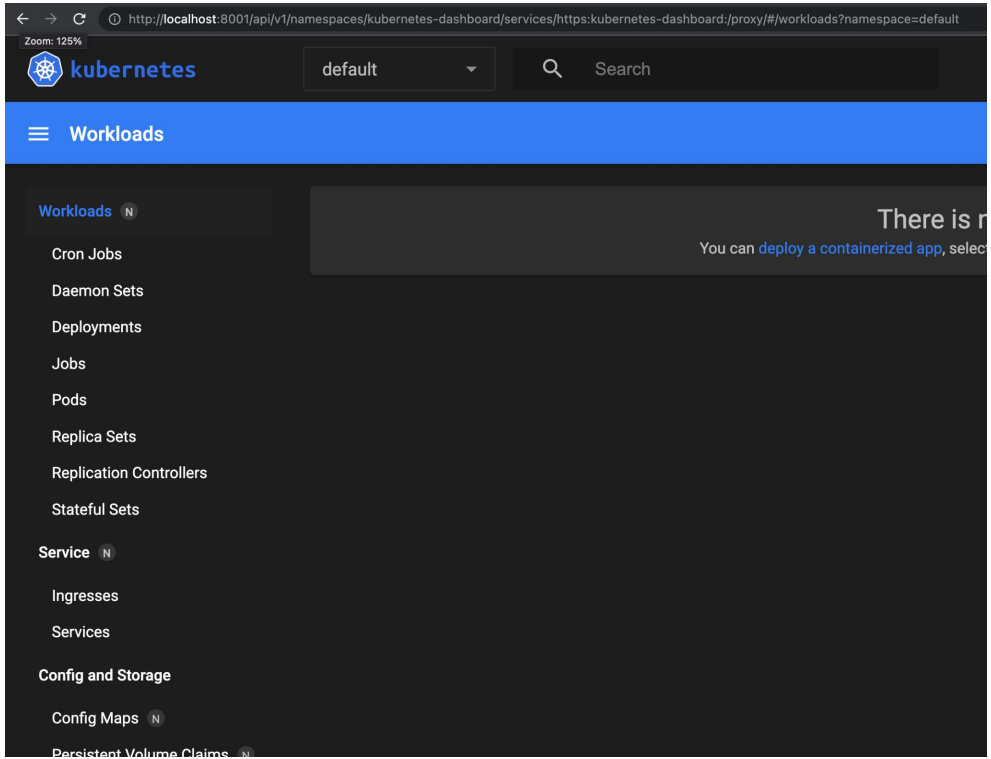
And finally accessing it with

kubectl proxy

Open:

http://localhost:8001/api/v1/namespaces/kubernetes-dashboard/services/https:kubernetes-dashboard:/proxy/#/error?namespace=default

Dashboard


http://localhost:8001/api/v1/namespaces/kubernetes-dashboard/services/https:kubernetes-dashboard:/proxy/#/workloads?namespace=default
Zoom: 125%
kubernetes
default
Search
Workloads
Workloads
Cron Jobs
Daemon Sets
Deployments
Jobs
Pods
Replica Sets
Replication Controllers
Stateful Sets
Service
Ingresses
Services
Config and Storage
Config Maps
There is
You can deploy a containerized app, selec

Let’s pause the slides and work on the code now

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ACTION ITEMS

Week 8

- Node.js is vast and there are still a lot to learn. We'll recommend to keep studying and combining the learnt knowledge with:
  - Learning basics of cloud infrastructure, such as AWS, GCP, Azure
  - Improve your GraphQL skills
  - Learn better microservices
  - Practice with streams
  - Try socket.io to work with websockets
  - Get a deeper understanding on CI/CD pipelines
  - Learn deeper about serverless
  - Learn basics of scraping pages with Node.js (with Puppeteer for example)
  - And more...


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