HANDS ON ISTIO/JAEGER/K8/EKS/KIALI

1) Create the AWS EC2 linux AMI instance

- Install kubectl [We will be accessing the PODS and resources of k8]

```
curl -LO "https://dl.k8s.io/release/$(curl -L -s https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl"

curl -LO "https://dl.k8s.io/$(curl -L -s https://dl.k8s.io/release/stable.txt)/bin/linux/amd64/kubectl.sha256"

echo "$(cat kubectl.sha256) kubectl" | sha256sum --check


sudo install -o root -g root -m 0755 kubectl /usr/local/bin/kubectl
```

- Install eksctl [We will create the cluster]

```
curl --silent --location "https://github.com/weaveworks/eksctl/releases/latest/download/eksctl_$(uname -s)_amd64.tar.gz" | tar xz -C /tmp

sudo mv /tmp/eksctl /usr/bin
eksctl version
```

2) Add IAM role to EC2 [So that EC2 access the EKS]

3) Create Cluster

eksctl create cluster --name=eksdemo1 --region=us-west-1 --zones=us-west-1b,us-west-1a --without-nodegroup

4) Add OIDC

eksctl utils associate-iam-oidc-provider --region us-west-1 --cluster eksdemo --approve

5) Add nodes

eksctl create nodegroup --cluster=eksdemo1 --region=us-west-1 --name=eksdemo-ng-public --node-type=t2.medium --nodes=2 --nodes-min=2 --nodes-max=4 --node-volume-size=10 --ssh-access --ssh-public-key=key-test --managed --asg-access --external-dns-access --full-ecr-access --appmesh-access --alb-ingress-access

```
[root@ip-172-31-3-173 ec2-user]# kubectl get pods -n kube-system
NAME                       READY   STATUS    RESTARTS   AGE
aws-node-fcd27             1/1     Running   0          2m33s
aws-node-g4hvd             1/1     Running   0          3m14s
coredns-769569fd5d-hq4b6   1/1     Running   0          23m
coredns-769569fd5d-ksfwt   1/1     Running   0          23m
kube-proxy-jbgp8           1/1     Running   0          2m33s
kube-proxy-rl8mg           1/1     Running   0          3m14s
```

6) INSTALL ISTIO

curl -L https://istio.io/downloadIstio | ISTIO_VERSION=1.18.1 TARGET_ARCH=x86_64 sh -

7) Go into the directory

cd istio-1.18.1

The installation directory contains:

- **Sample applications in samples/**
- **The istioctl client binary in the bin/ directory.**

8) SET THE PATH

export PATH=$PWD/bin:$PATH

9) INSTALL THE ISTIO WITH DEMO PROFILE

istioctl install --set profile=demo -y

10)
kubectl apply -f https://raw.githubusercontent.com/istio/istio/release-1.18/samples/bookinfo/platform/kube/bookinfo.yaml

11) kubectl get services

```
[root@ip-172-31-7-197 istio-1.18.1]#  kubectl get services
NAME          TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)    AGE
details       ClusterIP   10.100.228.237   <none>        9080/TCP   76s
kubernetes    ClusterIP   10.100.0.1       <none>        443/TCP    127m
productpage   ClusterIP   10.100.242.14    <none>        9080/TCP   76s
ratings       ClusterIP   10.100.232.38    <none>        9080/TCP   76s
reviews       ClusterIP   10.100.241.28    <none>        9080/TCP   76s
```

12) kubectl get pods

```
[root@ip-172-31-7-197 istio-1.18.1]# kubectl get pods
NAME                              READY   STATUS    RESTARTS   AGE
details-v1-5ffd6b64f7-9816v       1/1     Running   0          90s
productpage-v1-8b588bf6d-rblmb    1/1     Running   0          89s
ratings-v1-5f9699cfdf-mzzwp       1/1     Running   0          90s
reviews-v1-569db879f5-ltf6l       1/1     Running   0          90s
reviews-v2-65c4dc6fdc-mg9s4       1/1     Running   0          90s
reviews-v3-c9c4fb987-xcskp        1/1     Running   0          90s
```

13) Hit the below command

kubectl exec "$(kubectl get pod -l app=ratings -o jsonpath='{.items[0].metadata.name}')" -c ratings -- curl -sS productpage:9080/productpage | grep -o "<title>.*</title>"

14) TO INJECT ISTIO AS INIT CONTAINER [NOW 2 PODS WILL RUN]

- **kubectl label namespace default istio-injection=enabled**
- **istioctl analyze**
- **Delete all pods**
  kubectl delete pod <pod_name>

  [NOTE - You will see two container per pod]

```
[root@ip-172-31-7-197 istio-1.18.1]# kubectl get pods
NAME                              READY   STATUS    RESTARTS   AGE
details-v1-5ffd6b64f7-4xpp2       2/2     Running   0          21s
productpage-v1-8b588bf6d-lffqt    2/2     Running   0          21s
ratings-v1-5f9699cfdf-psmb6       2/2     Running   0          21s
reviews-v1-569db879f5-srq4z       2/2     Running   0          21s
reviews-v2-65c4dc6fdc-hzhjg       2/2     Running   0          21s
reviews-v3-c9c4fb987-5ppmb        2/2     Running   0          21s
```

15) cd samples/bookinfo/networking/

kubectl apply -f bookinfo-gateway.yaml

16) kubectl get vs

kubectl get gateway

17)

kubectl get svc istio-ingressgateway -n istio-system

18) Set the ingress IP and ports:

```
export INGRESS_HOST=$(kubectl -n istio-system get service
istio-ingressgateway -o jsonpath='{.status.loadBalancer.ingress[0].ip}')
export INGRESS_PORT=$(kubectl -n istio-system get service
istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="http2")].port}')
export SECURE_INGRESS_PORT=$(kubectl -n istio-system get service
istio-ingressgateway -o jsonpath='{.spec.ports[?(@.name=="https")].port}')
```

19) echo $SECURE_INGRESS_PORT

20)

export INGRESS_HOST=a06f39bd75fac4a8491ee0db7ba09704-646636610.us-west-1.elb.amazonaws.com

export GATEWAY_URL=$INGRESS_HOST:$INGRESS_PORT

echo $GATEWAY_URL

21) HIT THE BELOW URL

echo "http://$GATEWAY_URL/productpage"

http://a02c0d05e773744d289073f25ac63817-1278996514.us-west-1.elb.amazonaws.com/productpage

22) KIALI DASHOBAORD [ALL TOOLS INSTALLATION]

cd istio-1.18.1/samples/addons

kubectl apply -f samples/addons

Or

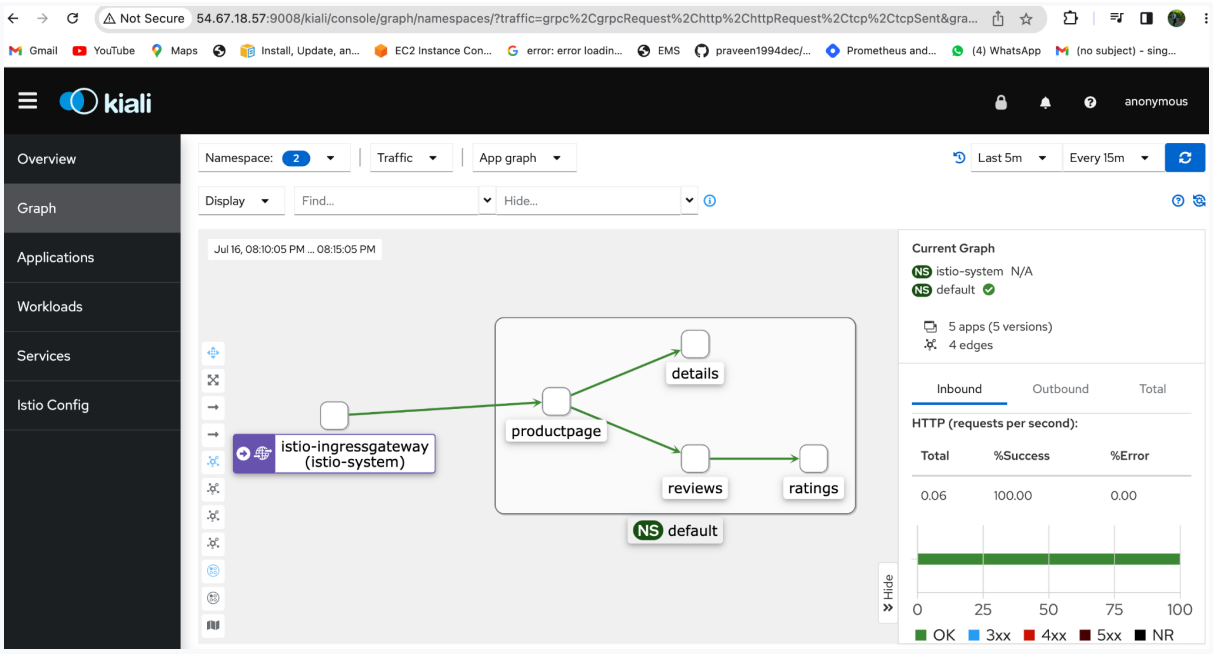
Kubectl apply -f .

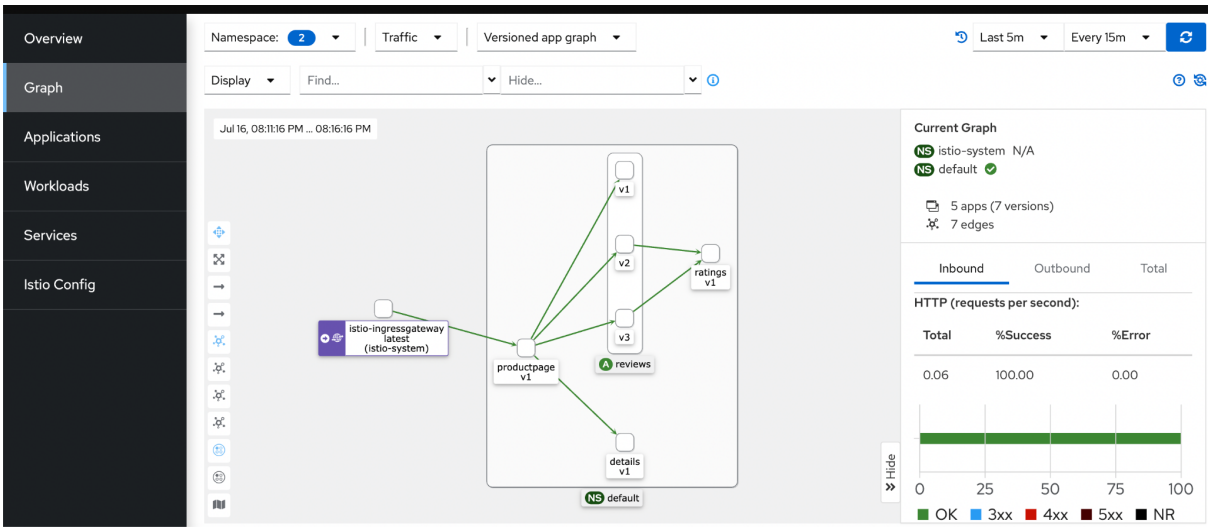
23) DO PORT FORWARD

OPEN THE SG TO ALL TRAFFIC

kubectl port-forward --address 0.0.0.0 svc/kiali 9008:20001 -n istio-system

http://54.67.18.57:9008/kiali/console/overview?duration=60&refresh=60000

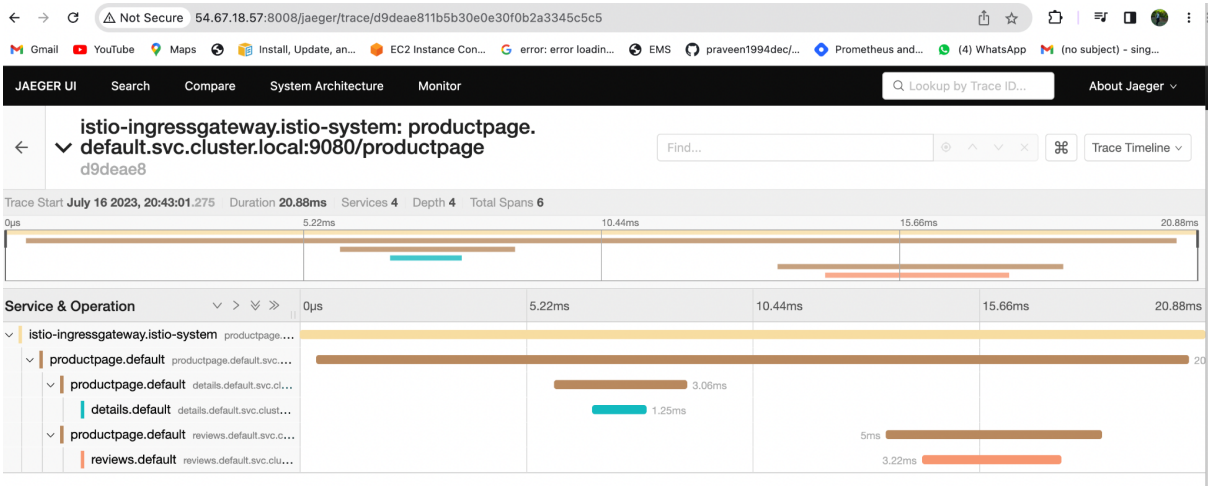




24) FOR JAEGER

kubectl port-forward --address 0.0.0.0 svc/tracing 8008:80 -n istio-system

Website - www.praveensingampalli.com
Youtube - https://www.youtube.com/praveensingampalli



Delete:

DELETE NODE
eksctl delete nodegroup --cluster=eksdemo --region=us-west-1 --name=eksdemo-ng-public
DELETE CLUSTER
eksctl delete cluster --name=eksdemo --region=us-west-1

Website - www.praveensingampalli.com
Youtube - https://www.youtube.com/praveensingampalli