Module 4: Expose App, Scale App and Update App

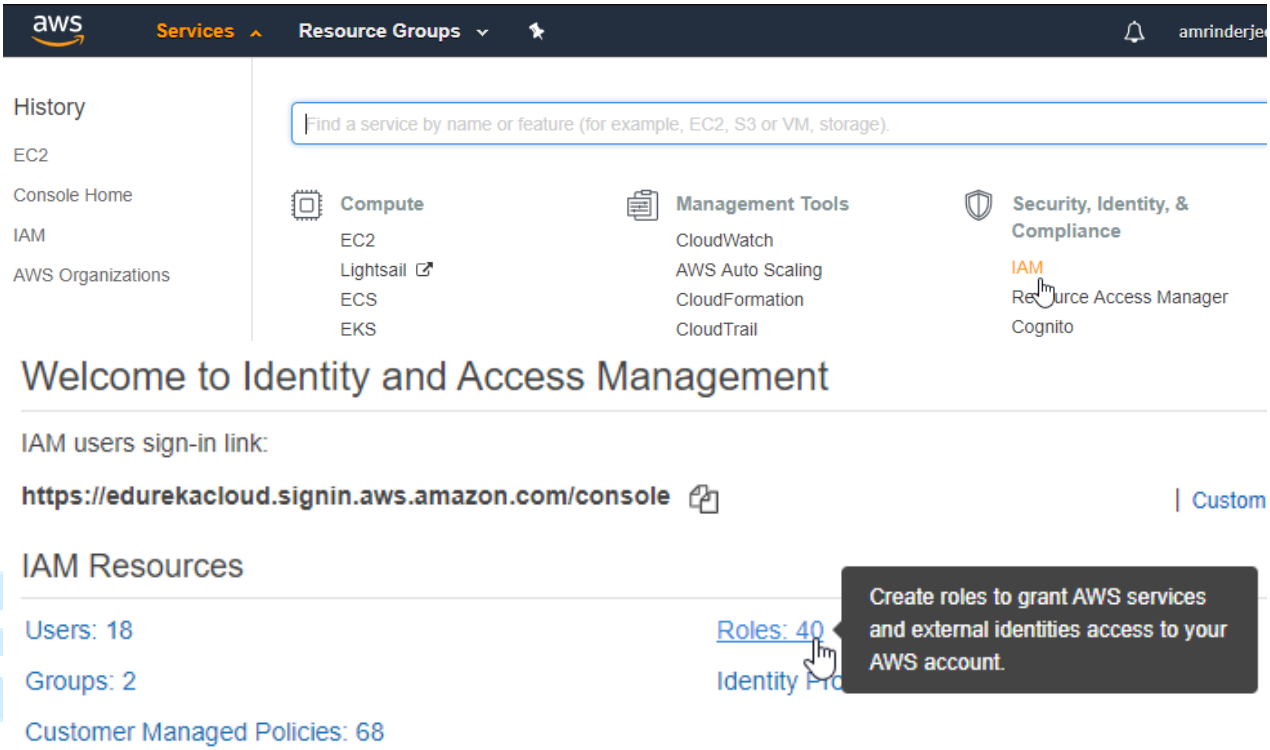
DEMO-6

DEMO Steps:

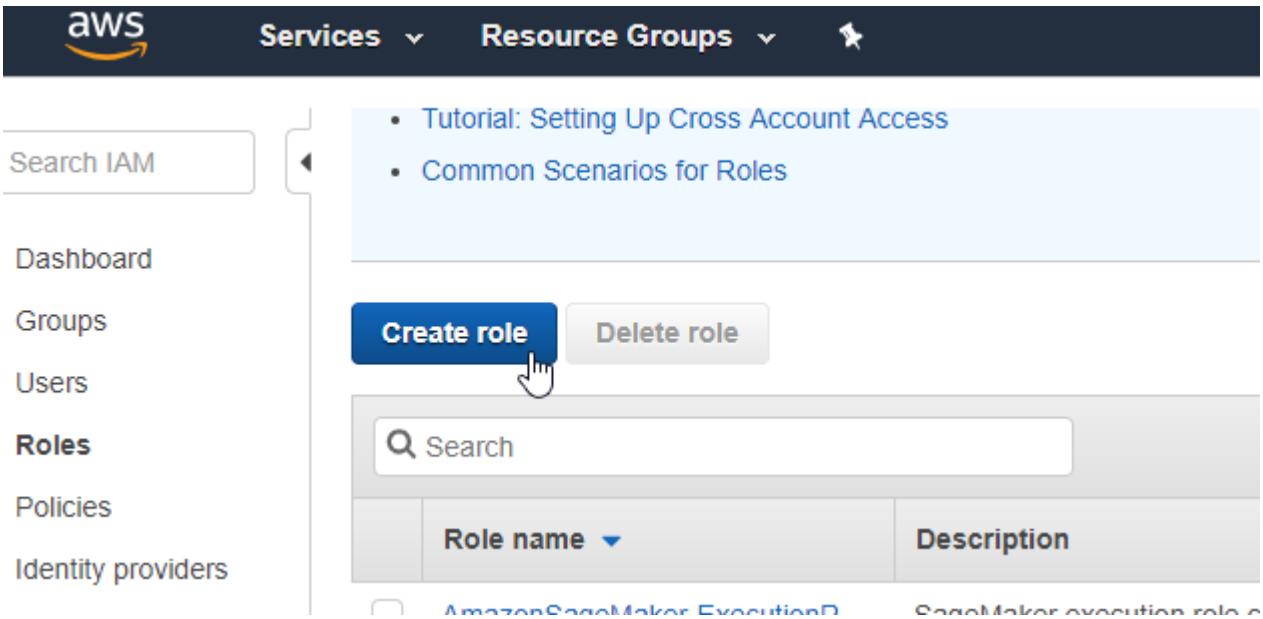
Setting up a Kops Cluster on aws

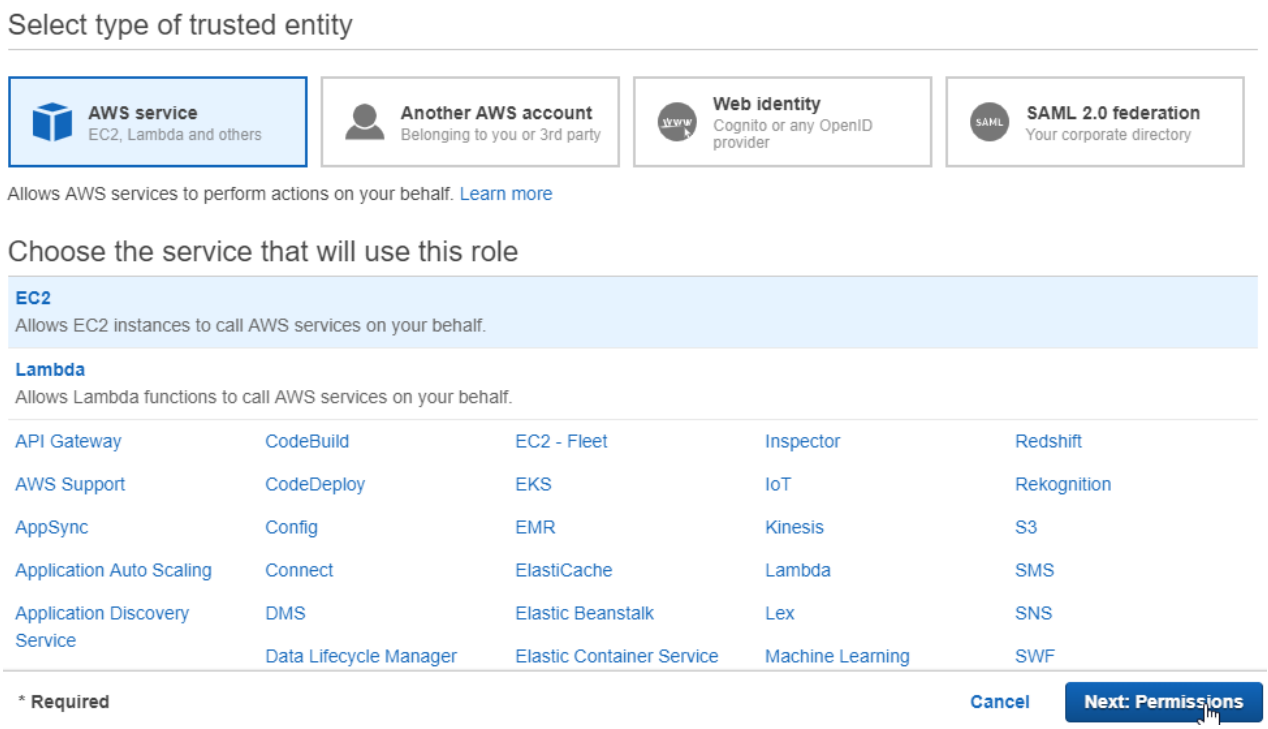
1. Create a new ec2 instance
2. Now, create a new IAM Role for your instance

   Services-> IAM-> Roles

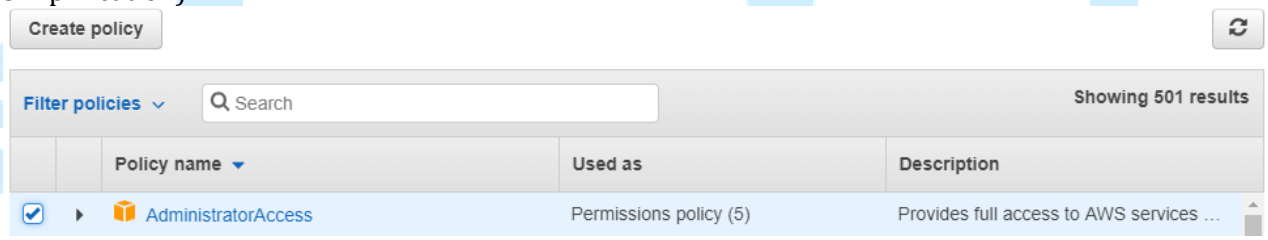


3. Click on create Role and choose EC2 as service

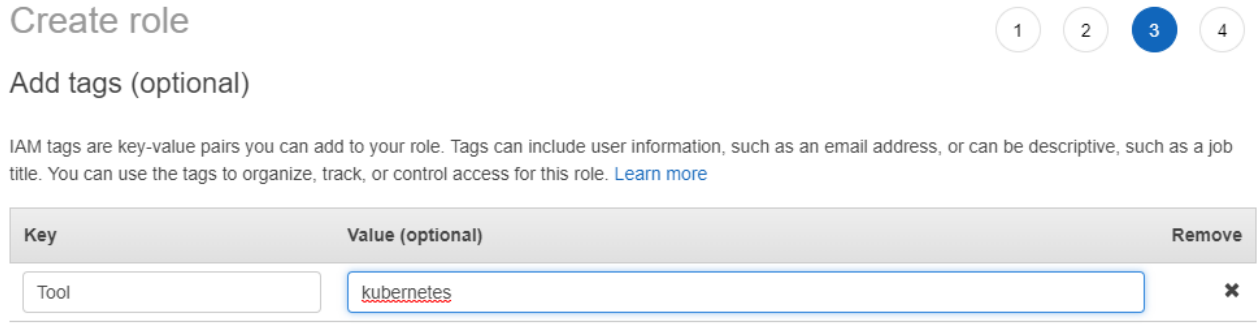




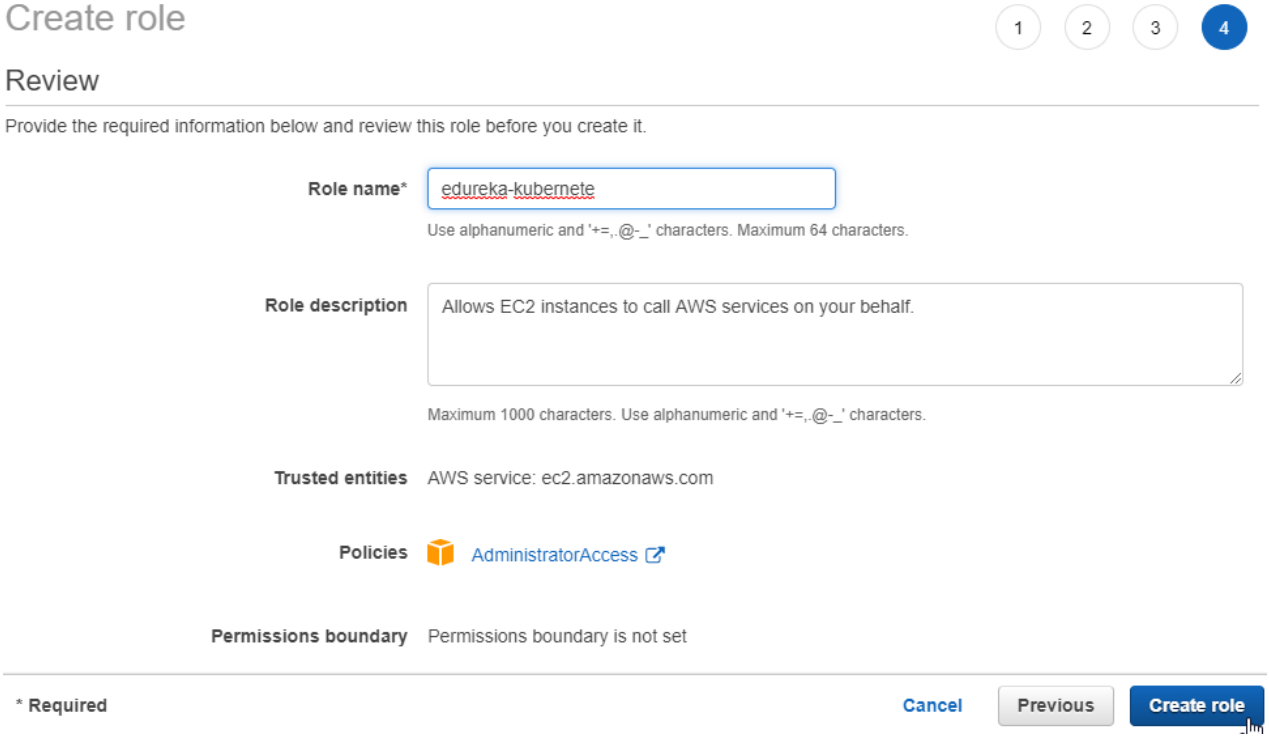
4. Attach appropriate policy to your Role(for this example admin acces is given for simplification)



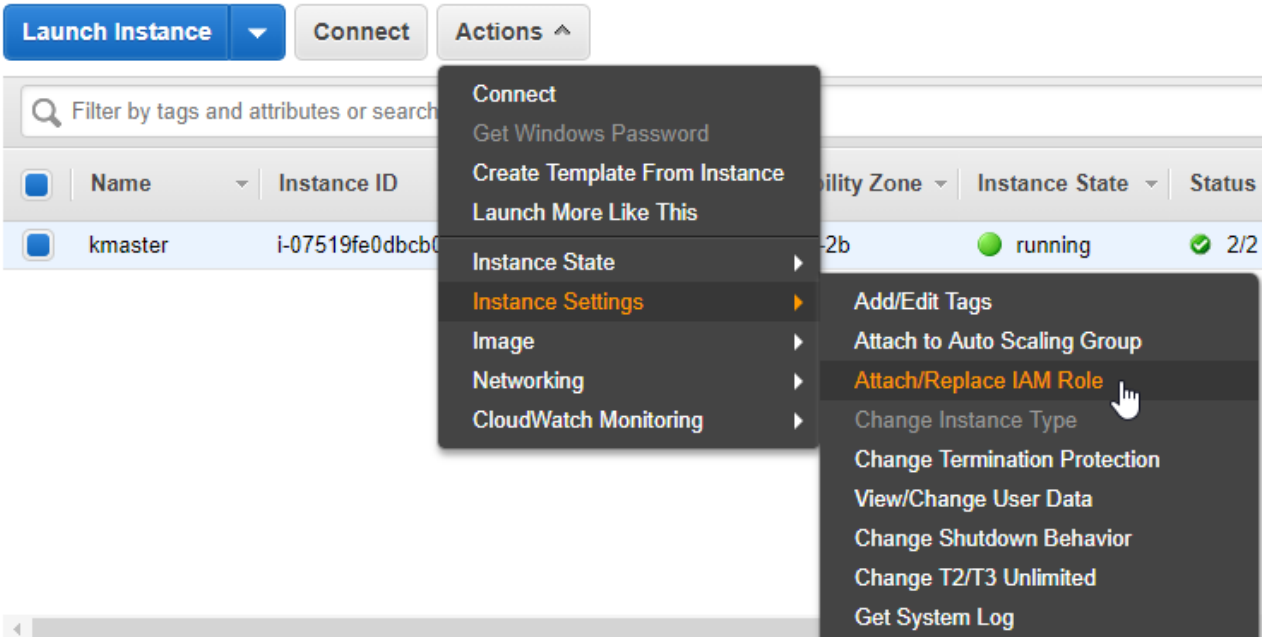
5. Add tags(optional)



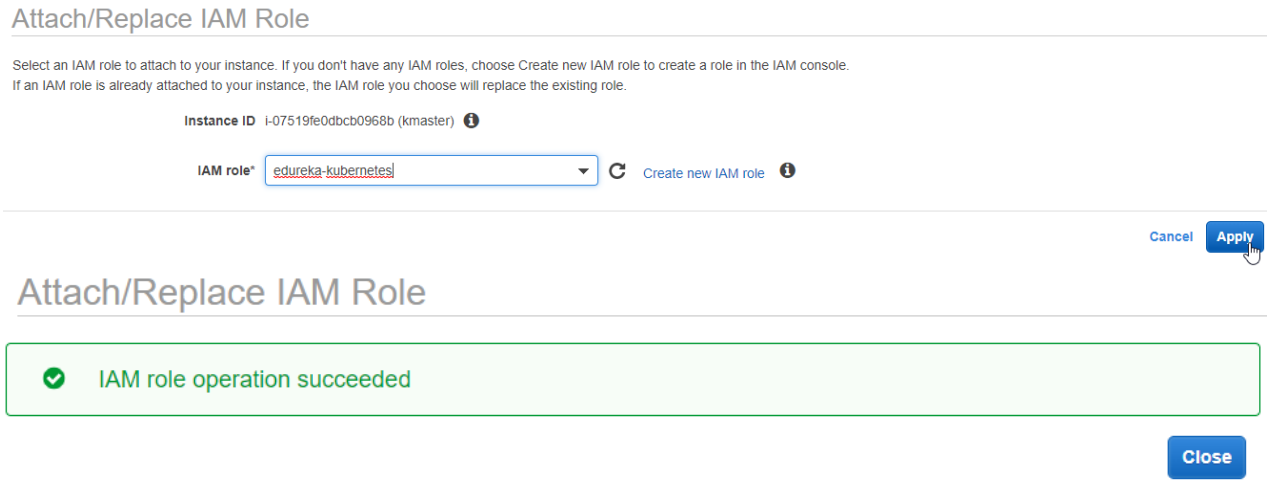
6. Give your Role a name and review the policies assigned to it and then press Create role



7. Now, attach the role with your newly created EC2 instance by selecting the instance and clicking
Actions-> Instance Settings-> Attach/Replace IAM Role



8. Type in the IAM role name you want to attach and click apply



9. Start your instance and update your existing repositories and install awscli on your instance

   Syntax: sudo apt-get update
   sudo apt-get install awscli -y

```
ubuntu@kmaster:~$ sudo apt-get update
Hit:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Get:3 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-backports InRelease [74.6 kB]
Get:4 http://security.ubuntu.com/ubuntu bionic-security InRelease [83.2 kB]
Get:5 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 Packages [443 kB]
Get:6 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 Packages [577 kB]
Fetched 1267 kB in 1s (2420 kB/s)
Reading package lists... Done
```

```
ubuntu@kmaster:~$ sudo apt-get install awscli
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  docutils-common libjbig0 libjpeg-turbo8 libjpeg8 liblcms2-2 libpaper-utils libpaperl libtiff5 libwebp6 lib
  python3-botocore python3-dateutil python3-docutils python3-jmespath python3-olefile python3-pil python3-py
  python3-s3transfer sgml-base xml-core
Suggested packages:
  liblcms2-utils docutils-doc fonts-linuxlibertine | ttf-linux-libertine texlive-lang-french texlive-latex-b
  python-pil-doc python3-pil-dbg ttf-bitstream-vera sgml-base-doc debhelper
The following NEW packages will be installed:
```

10. Before you could install Kops you need to set up kubectl on your cluster so run the following commands to install kubectl on you instance

    Syntax:
    sudo apt-get update && sudo apt-get install -y apt-transport-https

    curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -

    echo "deb https://apt.kubernetes.io/ kubernetes-xenial main" | sudo tee -a /etc/apt/sources.list.d/kubernetes.list

    sudo apt-get update

    sudo apt-get install kubectl -y

11. To install Kops use the following commands:

    Syntax:

    wget https://github.com/kubernetes/kops/releases/download/1.10.0/kops-linux-amd64

    chmod +x kops-linux-amd64

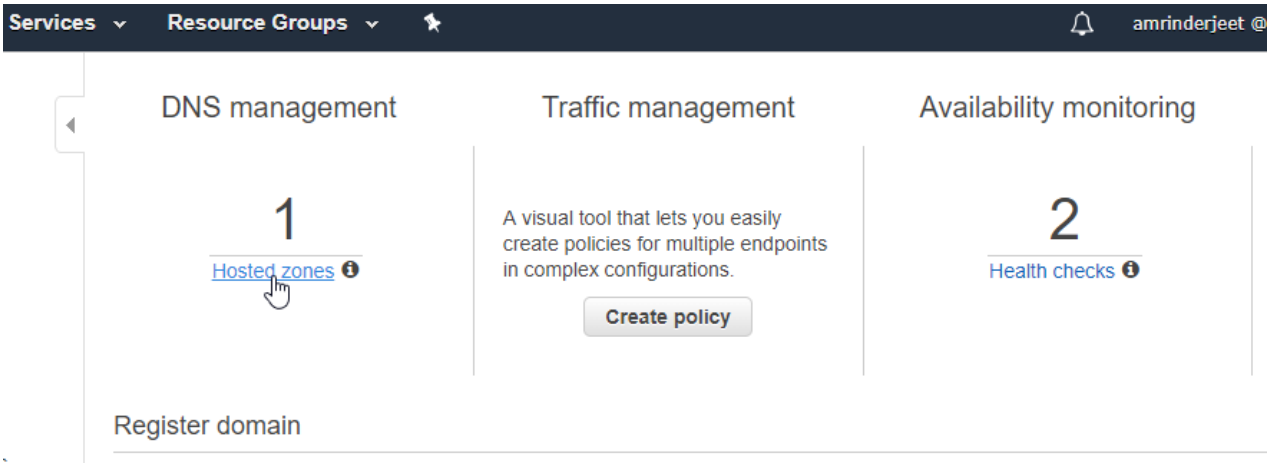
    mv kops-linux-amd64 /usr/local/bin/kops

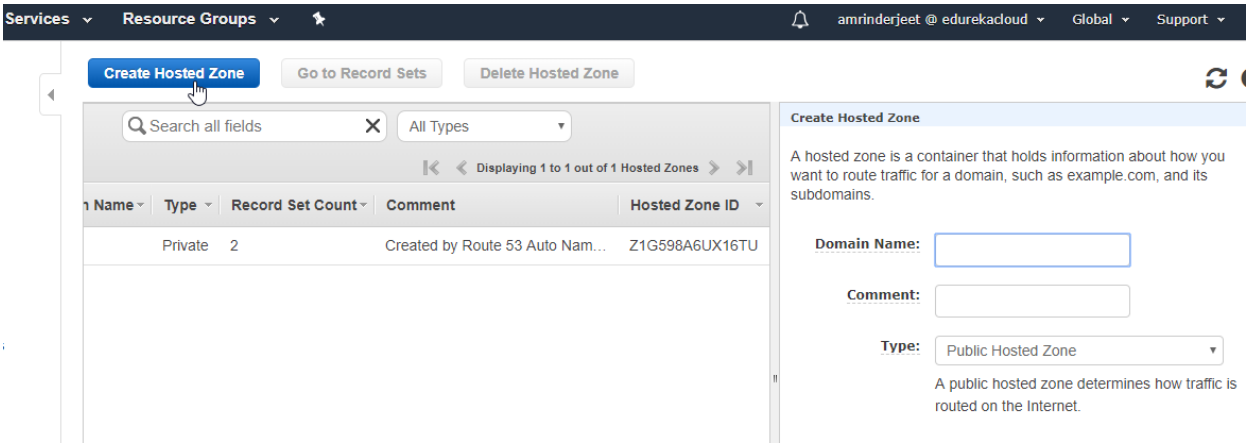
```
ubuntu@kmaster:~$ wget https://github.com/kubernetes/kops/releases/download/1.10.0/kops-linux-amd64
--2018-11-23 08:36:51--  https://github.com/kubernetes/kops/releases/download/1.10.0/kops-linux-amd64
Resolving github.com (github.com)... 192.30.253.112, 192.30.253.113
Connecting to github.com (github.com)|192.30.253.112|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://github-production-release-asset-2e65be.s3.amazonaws.com/62091339/d5c60900-a0cf-11e8-86
SHA256&X-Amz-Credential=AKIAIWNJYAX4CSVEH53A%2F20181123%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20181
ure=de51d6733c51fb7410a34f9793efd0a83e5332fd73dff899fdfa16068c94921a&X-Amz-SignedHeaders=host&actor_id=0
B%20filename%3Dkops-linux-amd64&response-content-type=application%2Foctet-stream [following]
--2018-11-23 08:36:51--  https://github-production-release-asset-2e65be.s3.amazonaws.com/62091339/d5c609
ithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIWNJYAX4CSVEH53A%2F20181123%2Fus-east-1%2Fs3%2Faws4_request&X
00&X-Amz-Signature=de51d6733c51fb7410a34f9793efd0a83e5332fd73dff899fdfa16068c94921a&X-Amz-SignedHeaders=
on=attachment%3B%20filename%3Dkops-linux-amd64&response-content-type=application%2Foctet-stream
Resolving github-production-release-asset-2e65be.s3.amazonaws.com (github-production-release-asset-2e65b
Connecting to github-production-release-asset-2e65be.s3.amazonaws.com (github-production-release-asset-2
... connected.
HTTP request sent, awaiting response... 200 OK
Length: 85875392 (82M) [application/octet-stream]
Saving to: 'kops-linux-amd64'

kops-linux-amd64                    100%[=============================================================
```

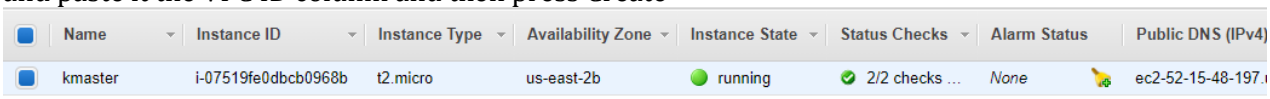
```
ubuntu@kmaster:~$ chmod +x kops-linux-amd64
ubuntu@kmaster:~$ mv kops-linux-amd64 /usr/local/bin/kops
```

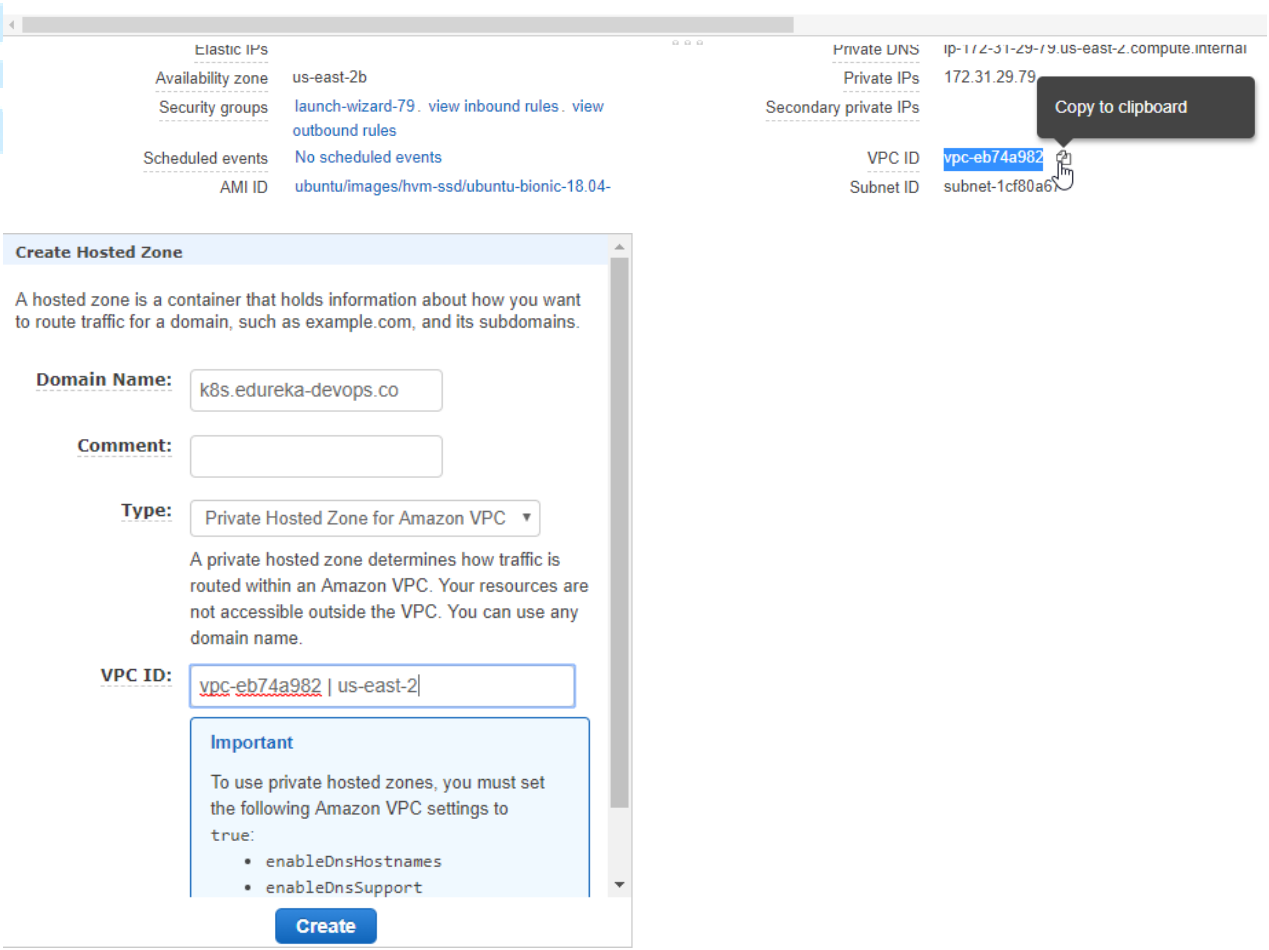
12. With Kops installed you have to configure domain for your cluster to access it from outside.
    To do that go to route53
    Services-> Route53-> Hosted zones-> Create Hosted Zone

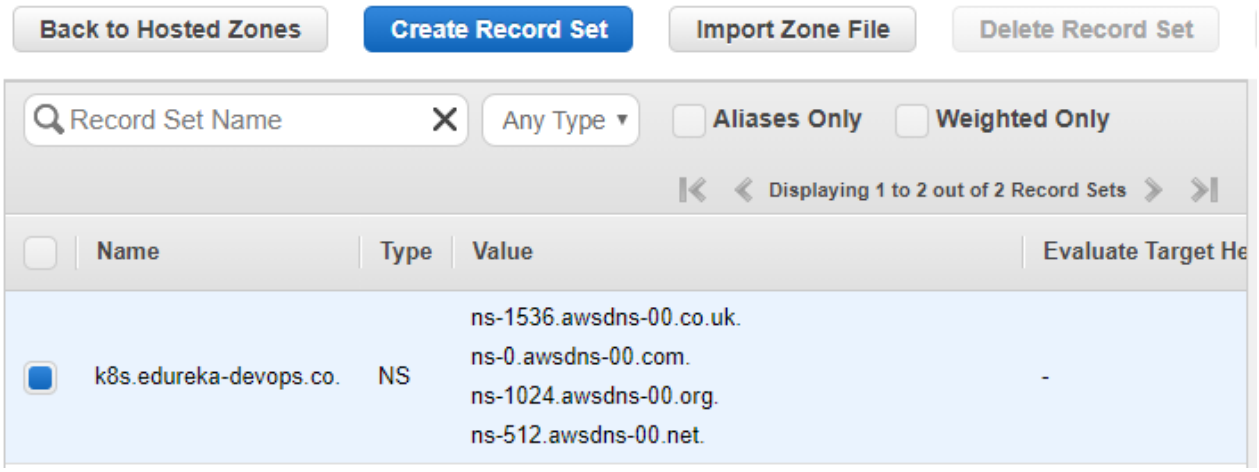




13. Add a domain name for your cluster and copy your instance VPC ID from the instance page and paste it the VPC ID column and then press Create

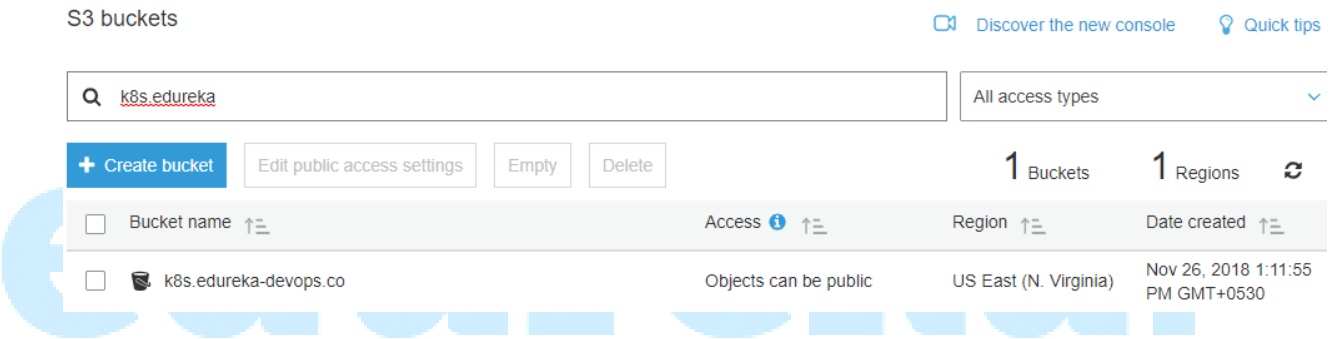






14. Create an s3 bucket to save your cluster data to it

    Syntax: aws s3 mb s3://clusters.dev.example.com
    Change with you own domain



15. Create a variable to store the address to you bucket

    Syntax: export KOPS_STORE_STATE=s3://cluster.dev.example.com

```
ubuntu@kmaster:~$ aws s3 mb s3://k8s.edureka-devops.co
make_bucket: k8s.edureka-devops.co
```

16. Create an ssh public key file

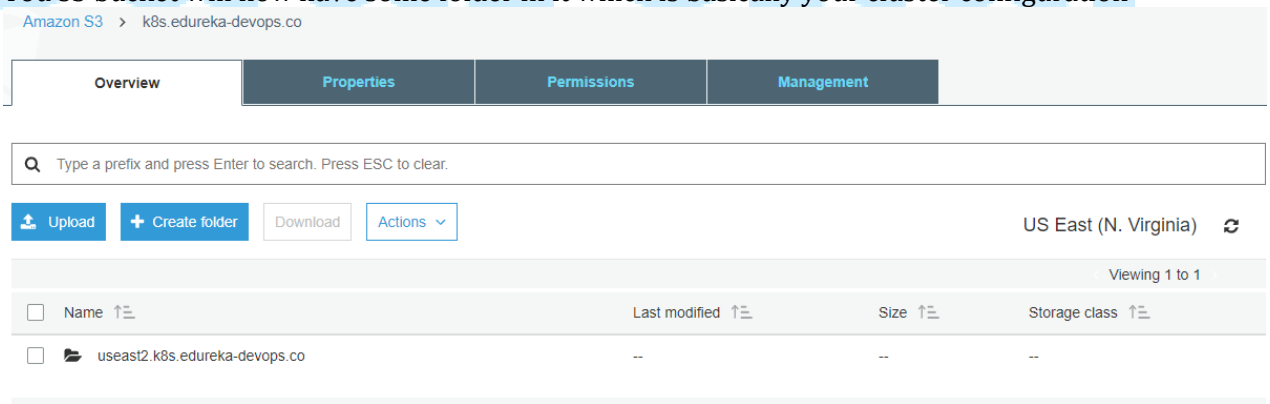
    Syntax: ssh-keygen

```
ubuntu@kmaster:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa.
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:Vm/+JHnJDC3w8QlHIX1WsD9QplgNySZrqch/V2LIVaM ubuntu@kmaster
The key's randomart image is:
+---[RSA 2048]----+
|             .o*B+|
|             .=*+*|
|          o +*=+.|
|         . ++Eoo |
|       .S. +*o+..|
|       .o .oo*o.o|
|         .  +.*o |
|          . .=.  |
|           . ..  |
+----[SHA256]-----+
```

17. Now, to finally create the cluster run

    Syntax: kops create cluster --cloud=aws --zones=us-east-2b --name=useast2.k8s.edureka-devops.co --dns-zone=k8s.edureka-devops.co --dns private

18. You s3 bucket will now have some folder in it which is basically your cluster configuration



19. To start creating you cluster resources

    Syntax: kops update cluster useast2.k8s.edureka-devops.co –yes

    This will create all the resources required for you cluster

20. It'll take 5-10 ten minutes for aws to create the cluster. After some time has passed you can validate the cluster

    Syntax: kops validate cluster

```
ubuntu@kmaster:~$ kops validate cluster
Using cluster from kubectl context: useast2.k8s.edureka-devops.co

Validating cluster useast2.k8s.edureka-devops.co

INSTANCE GROUPS
NAME                    ROLE    MACHINETYPE     MIN     MAX     SUBNETS
master-us-east-2b       Master  c4.large        1       1       us-east-2b
nodes                   Node    t2.medium       2       2       us-east-2b

NODE STATUS
NAME                                            ROLE    READY
ip-172-20-40-178.us-east-2.compute.internal     node    True
ip-172-20-48-81.us-east-2.compute.internal      master  True
ip-172-20-51-139.us-east-2.compute.internal     node    True

Your cluster useast2.k8s.edureka-devops.co is ready
```