

Module 4: Expose App, Scale App and Update App

DEMO-6

edureka!

edureka!

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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

Select type of trusted entity


AWS service
EC2, Lambda and others


Another AWS account
Belonging to you or 3rd party


Web identity
Cognito or any OpenID provider


SAML 2.0 federation
Your corporate directory

Allows AWS services to perform actions on your behalf. [Learn more](#)

Choose the service that will use this role

EC2
Allows EC2 instances to call AWS services on your behalf.

Lambda
Allows Lambda functions to call AWS services on your behalf.

API Gateway	CodeBuild	EC2 - Fleet	Inspector	Redshift
AWS Support	CodeDeploy	EKS	IoT	Rekognition
AppSync	Config	EMR	Kinesis	S3
Application Auto Scaling	Connect	ElastiCache	Lambda	SMS
Application Discovery Service	DMS	Elastic Beanstalk	Lex	SNS
	Data Lifecycle Manager	Elastic Container Service	Machine Learning	SWF

* Required
Cancel
Next: Permissions

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

Create policy

Filter policies
Search
Showing 501 results

	Policy name	Used as	Description
<input checked="" type="checkbox"/>	AdministratorAccess	Permissions policy (5)	Provides full access to AWS services ...

- Add tags(optional)

Create role



Add tags (optional)

IAM tags are key-value pairs you can add to your role. Tags can include user information, such as an email address, or can be descriptive, such as a job title. You can use the tags to organize, track, or control access for this role. [Learn more](#)

Key	Value (optional)	Remove
Tool	kubernetes	

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

Create role

1 2 3 4

Review

Provide the required information below and review this role before you create it.

Role name* edureka-kubernetel

Use alphanumeric and '+,=, @, _' characters. Maximum 64 characters.

Role description Allows EC2 instances to call AWS services on your behalf.

Maximum 1000 characters. Use alphanumeric and '+,=, @, _' characters.

Trusted entities AWS service: ec2.amazonaws.com

Policies AdministratorAccess

Permissions boundary Permissions boundary is not set

* Required

Cancel

Previous

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

The screenshot shows the AWS Management Console interface. At the top, there are buttons for 'Launch Instance', 'Connect', and 'Actions'. Below these is a search bar and a table of EC2 instances. The first instance, 'kmaster' with ID 'i-07519fe0dbcb0...', is selected. The 'Actions' menu is open, showing options like 'Connect', 'Create Template From Instance', and 'Launch More Like This'. Under 'Instance State', the 'Attach/Replace IAM Role' option is highlighted. The background table shows columns for 'Name', 'Instance ID', 'Availability Zone', 'Instance State', and 'Status'.

Name	Instance ID	Availability Zone	Instance State	Status
kmaster	i-07519fe0dbcb0...	us-east-1a	running	2/2

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

Attach/Replace IAM Role

Select an IAM role to attach to your instance. If you don't have any IAM roles, choose Create new IAM role to create a role in the IAM console. If an IAM role is already attached to your instance, the IAM role you choose will replace the existing role.

Instance ID I-07519fe0dbcb0968b (kmaster) ⓘ

IAM role* edureka-kubernetes

⌂ Create new IAM role ⓘ

Cancel Apply

Attach/Replace IAM Role

✓ IAM role operation succeeded

Close

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 libjpeg-turbo8 libjpeg8 liblcms2-2 libpaper-utils libpaper1 libtiff5 libwebp6 lib
  python3-boto3 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=de51d6733c51fb7410a34f9793efd0a83e5332fd73dff8999fd6068c94921a&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=de51d6733c51fb7410a34f9793efd0a83e5332fd73dff8999fd6068c94921a&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'

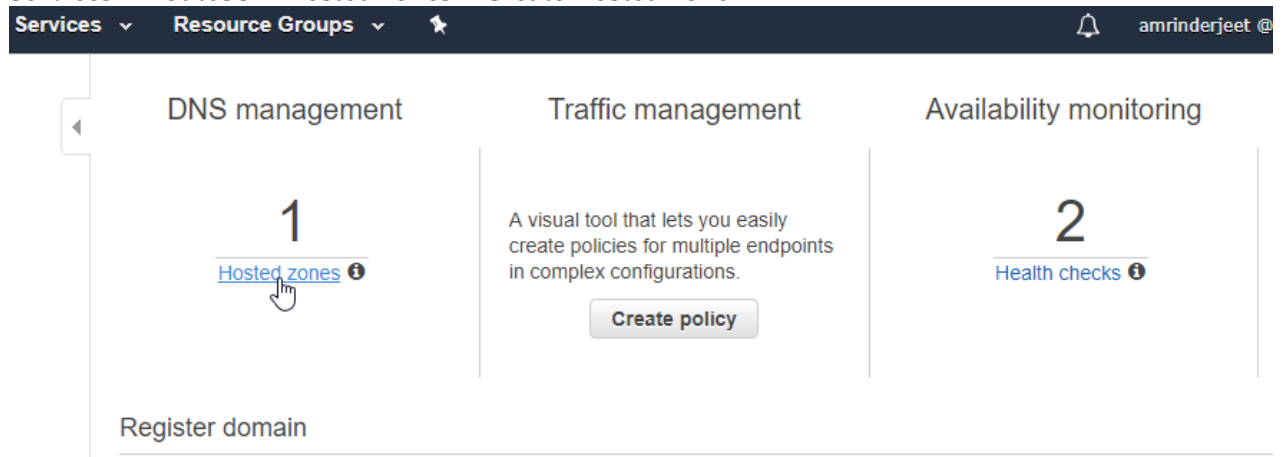
kops-linux-amd64      100%[=====
```

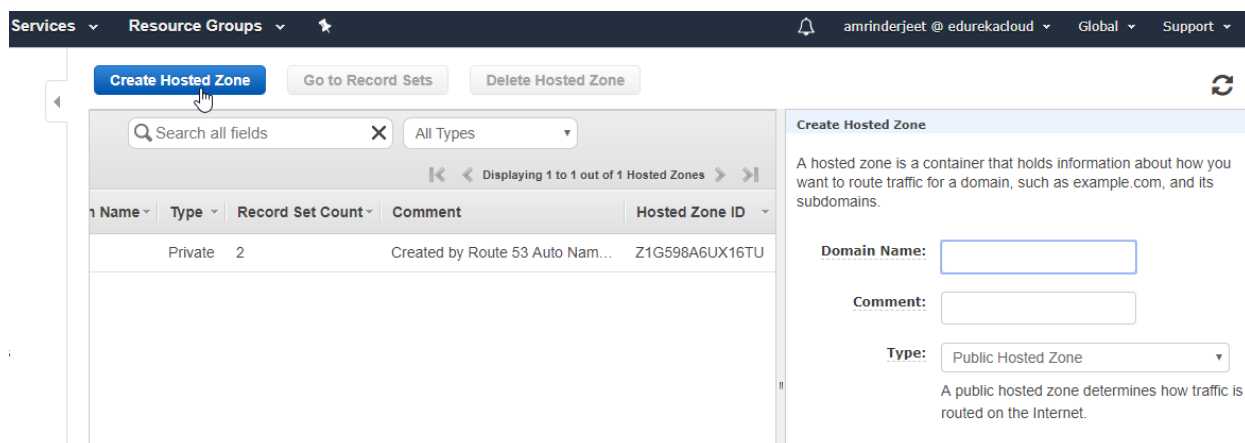
```
ubuntu@kmaster:~$ chmod +x kops-linux-amd64
ubuntu@kmaster:~$ mv kops-linux-amd64 /usr/local/bin/kops
```

12. With Kops installed you have to configure domain for your cluster to access it from outside.

To do that go to route53

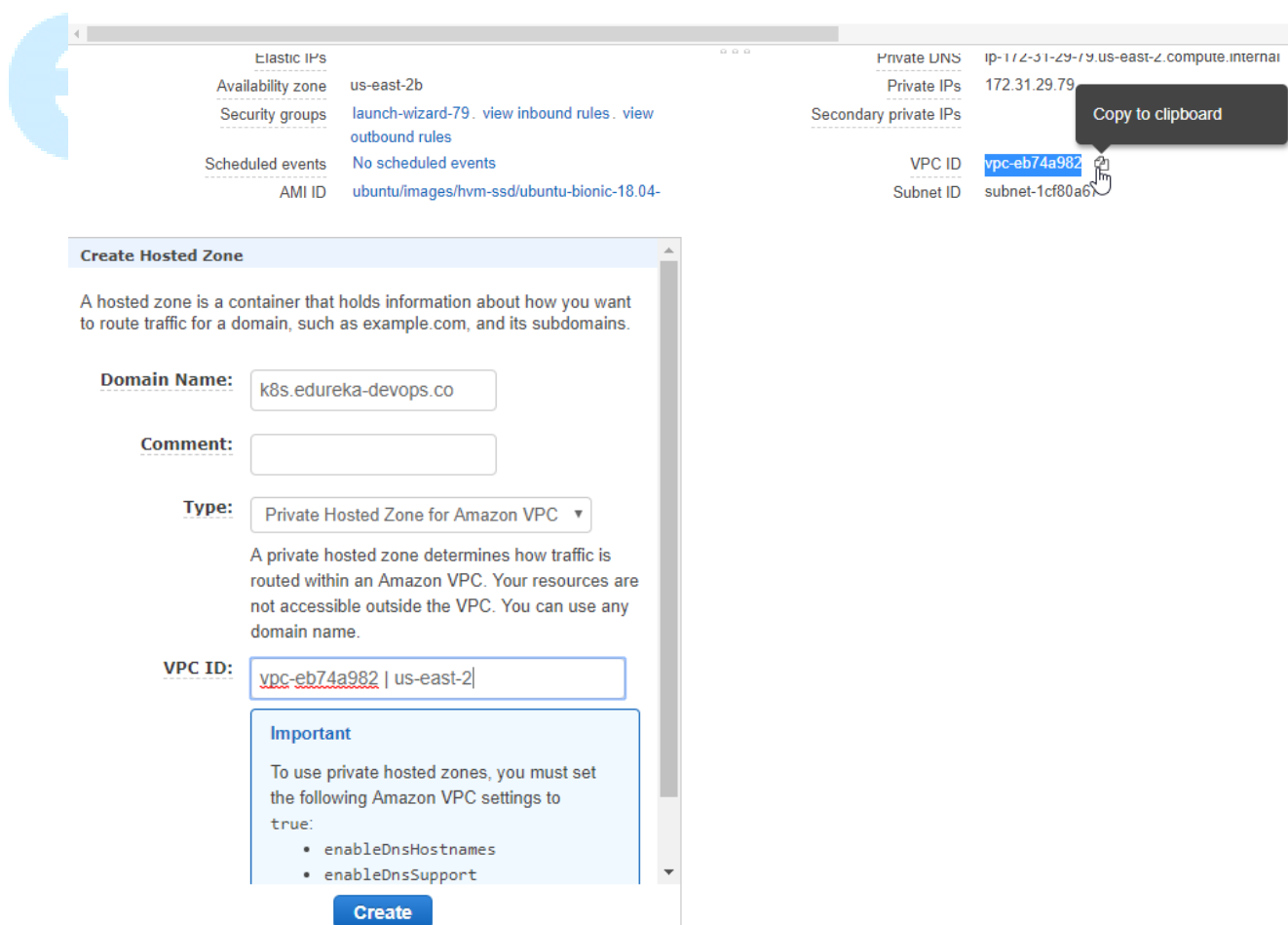
Services-> Route53-> Hosted zones-> Create Hosted Zone

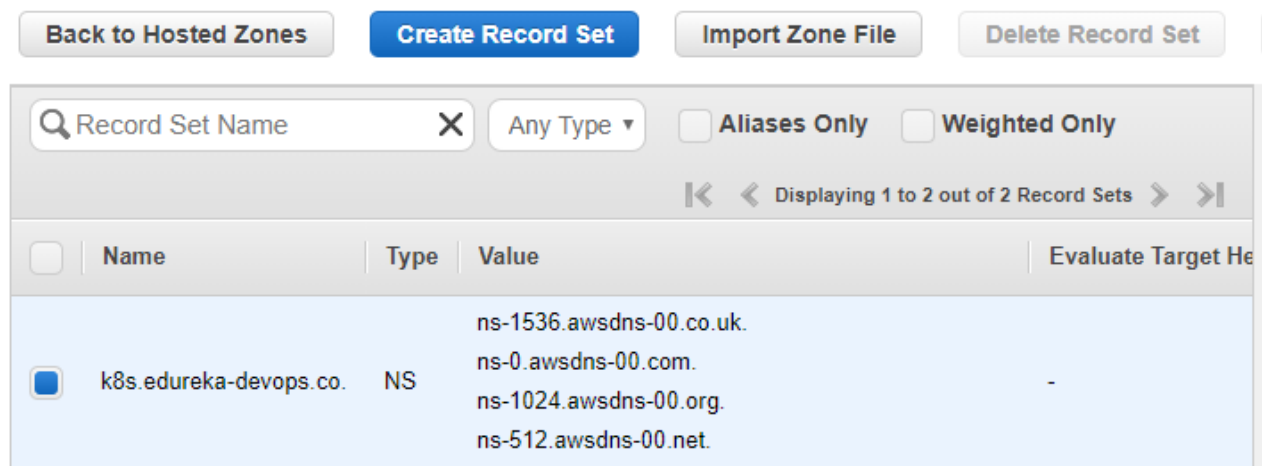




13. Add a domain name for your cluster and copy your instance VPC ID from the instance page and paste it the VPC ID column and then press Create

	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
<input type="checkbox"/>	kmaster	i-07519fe0dbcb0968b	t2.micro	us-east-2b	running	2/2 checks ...	None	ec2-52-15-48-197.1

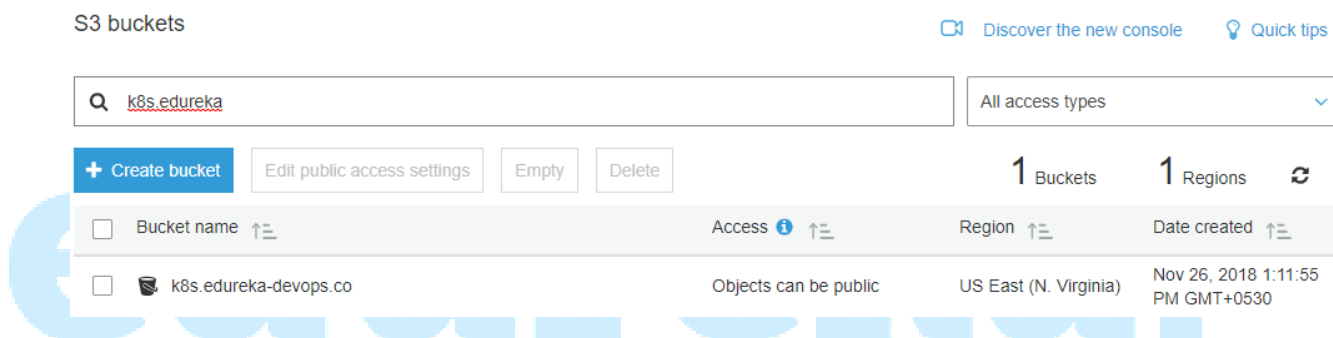




14. Create an s3 bucket to save your cluster data to it

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/+JHnJDC3w8QlHIXlWsD9QplgNySZrqch/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

Amazon S3 > k8s.edureka-devops.co

Overview Properties Permissions Management

Search: Type a prefix and press Enter to search. Press ESC to clear.

Upload Create folder Download Actions

US East (N. Virginia)

Viewing 1 to 1

Name	Last modified	Size	Storage class
useast2.k8s.edureka-devops.co	--	--	--

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
```

Launch Instance ▼ Connect Actions ▼

Filter by tags and attributes or search by keyword ? 1 to 4 of 4

<input type="checkbox"/>	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4
<input type="checkbox"/>	nodes.useas...	i-02b7915a0148974...	t2.medium	us-east-2b	● running	✓ 2/2 checks ...	None	ec2-18-223-101-187.us...	18.2
<input type="checkbox"/>	master-us-ea...	i-0557846d8411706da	c4.large	us-east-2b	● running	✓ 2/2 checks ...	None	ec2-18-216-59-124.us...	18.2
<input type="checkbox"/>	kmaster	i-07519fe0dbcb0968b	t2.micro	us-east-2b	● running	✓ 2/2 checks ...	None	ec2-52-15-48-197.us-e...	52.1
<input type="checkbox"/>	nodes.useas...	i-0a31b8cde3ba11699	t2.medium	us-east-2b	● running	✓ 2/2 checks ...	None	ec2-18-191-121-161.us...	18.1