In this document we will setup eks cluster using CLI

Install aws cli in linux machine to connect eks cluster.

```
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# sudo yum remove awscli
Dependencies resolved.
===========================================================================================================================================
 Package                        Architecture            Version                          Repository                            Size
===========================================================================================================================================
Removing:
 awscli-2                       noarch                  2.14.5-1.amzn2023.0.1            @System                               104 M

Transaction Summary
===========================================================================================================================================
Remove  1 Package

Freed space: 104 M
Is this ok [y/N]: y
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :                                                                                                          1/1
  Erasing          : awscli-2-2.14.5-1.amzn2023.0.1.noarch                                                                    1/1
  Verifying        : awscli-2-2.14.5-1.amzn2023.0.1.noarch                                                                    1/1
===========================================================================================================================================
WARNING:
  A newer release of "Amazon Linux" is available.

  Available Versions:

  Version 2023.4.20240513:
    Run the following command to upgrade to 2023.4.20240513:

      dnf upgrade --releasever=2023.4.20240513

    Release notes:
      https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.4.20240513.html

  Version 2023.4.20240528:
    Run the following command to upgrade to 2023.4.20240528:

      dnf upgrade --releasever=2023.4.20240528

    Release notes:
      https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.4.20240528.html

===========================================================================================================================================
Removed:
  awscli-2-2.14.5-1.amzn2023.0.1.noarch

Complete!
[root@developer2-system ~]#
```

Install or update latest version of aws cli.

```
[root@developer2-system ~]# curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "awscliv2.zip"
unzip awscliv2.zip
sudo ./aws/install
```

sudo yum remove awscli

curl "https://awscli.amazonaws.com/awscli-exe-linux-x86_64.zip" -o "awscliv2.zip"

unzip awscliv2.zip

sudo ./aws/install

To see the changes exist the login shell and login again

RUN the command aws –version to see the changes.

```
[root@developer2-system ~]# aws --version
aws-cli/2.15.59 Python/3.11.8 Linux/6.1.87-99.174.amzn2023.x86_64 exe/x86_64.amzn.2023
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# curl -O https://s3.us-west-2.amazonaws.com/amazon-eks/1.28.8/2024-04-19/bin/linux/amd64/kubectl
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 46.9M  100 46.9M    0     0  5413k      0  0:00:08  0:00:08 --:--:-- 7087k
[root@developer2-system ~]# ls
aws   awscliv2.zip   dockeruat   kubectl   newtf   projectgit   vtgitrepo
[root@developer2-system ~]#
[root@developer2-system ~]# ls -lrth
total 105M
drwxr-xr-x. 3 root root  69 May  2 14:12 newtf
drwxr-xr-x. 3 root root  73 May  3 12:01 vtgitrepo
drwxr-xr-x. 3 root root  53 May  8 07:40 dockeruat
drwxr-xr-x. 3 root root  70 May  8 09:33 projectgit
-rw-r--r--. 1 root root 58M May 29 12:08 awscliv2.zip
drwxr-xr-x. 3 root root  78 May 29 12:08 aws
-rw-r--r--. 1 root root 47M May 30 13:17 kubectl
[root@developer2-system ~]#
[root@developer2-system ~]# chmod +x kubectl
[root@developer2-system ~]#
[root@developer2-system ~]# ls -lrth
total 105M
drwxr-xr-x. 3 root root  69 May  2 14:12 newtf
drwxr-xr-x. 3 root root  73 May  3 12:01 vtgitrepo
drwxr-xr-x. 3 root root  53 May  8 07:40 dockeruat
drwxr-xr-x. 3 root root  70 May  8 09:33 projectgit
-rw-r--r--. 1 root root 58M May 29 12:08 awscliv2.zip
drwxr-xr-x. 3 root root  78 May 29 12:08 aws
-rwxr-xr-x. 1 root root 47M May 30 13:17 kubectl
[root@developer2-system ~]#
[root@developer2-system ~]# mv kubectl /usr/local/bin/
[root@developer2-system ~]#
[root@developer2-system ~]# echo $PATH
/root/.local/bin:/root/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl version
Client Version: v1.28.8-eks-ae9a62a
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
The connection to the server localhost:8080 was refused - did you specify the right host or port?
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl version --clinet
error: unknown flag: --clinet
See 'kubectl version --help' for usage.
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl version --client
Client Version: v1.28.8-eks-ae9a62a
Kustomize Version: v5.0.4-0.20230601165947-6ce0bf390ce3
[root@developer2-system ~]#
[root@developer2-system ~]#
```

Installing eksctl in linux machine to access or create eks.

```
[root@developer2-system ~]# curl --silent --location "https://github.com/weaveworks/eksctl/releases/latest/download/eksctl_$(uname -s)_amd64.tar.gz" | tar xz -C /tmp
[root@developer2-system ~]#
[root@developer2-system ~]# ls
aws   awscliv2.zip   dockeruat   newtf   projectgit   vtgitrepo
[root@developer2-system ~]#
[root@developer2-system ~]# cd/tmp
-bash: cd/tmp: No such file or directory
[root@developer2-system ~]#  cd /tmp/
[root@developer2-system tmp]#
[root@developer2-system tmp]# ls -lrth
total 137M
drwx------. 3 root root   60 May 29 11:57 systemd-private-d2d197edde544a6298f38723b4182fda-systemd-resolved.service-Al4WOv
drwx------. 3 root root   60 May 29 11:57 systemd-private-d2d197edde544a6298f38723b4182fda-policy-routes@enX0.service-yrBw5A
drwx------. 3 root root   60 May 29 11:57 systemd-private-d2d197edde544a6298f38723b4182fda-systemd-logind.service-3DGFok
drwx------. 3 root root   60 May 29 11:57 systemd-private-d2d197edde544a6298f38723b4182fda-dbus-broker.service-VcSV7t
drwx------. 3 root root   60 May 29 11:57 systemd-private-d2d197edde544a6298f38723b4182fda-chronyd.service-RBoY2v
-rwxr-xr-x. 1 1001  127 137M May 29 20:14 eksctl
[root@developer2-system tmp]#
[root@developer2-system tmp]# mv eksctl /usr/local/bin/
[root@developer2-system tmp]#
[root@developer2-system tmp]# eksctl version
0.180.0
[root@developer2-system tmp]#
[root@developer2-system tmp]#
```

Create EKS cluster role.

AWS Dashboard Go to into IAM

Create role

Add permission

fullEC2access

full Administrator

fullCloudformation

full IAM access

Name, review, and create

Role details

Role name
Enter a meaningful name to identify this role.

eks_cluster_role

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

Description
Add a short explanation for this role.

Allows EC2 instances to call AWS services on your behalf.

Maximum 1000 characters. Use letters (A-Z and a-z), numbers (0-9), tabs, new lines, or any of the following characters: _+=,. @-/\[{}]!#$%^&*();:"'<> `

Step 2: Add permissions   Edit

Permissions policy summary

Policy name ▢	▲	Type	▽	Attached as	▽
AdministratorAccess		AWS managed - job function		Permissions policy	
AmazonEC2FullAccess		AWS managed		Permissions policy	
AWSCloudFormationFullAccess		AWS managed		Permissions policy	
IAMFullAccess		AWS managed		Permissions policy	

Attach ekscluster role k8s_boot_strep linux machine

Update IAM role to linux machine.

Setup kubernetes using eksctl.

Example

eksctl create cluster --name cluster-name \

--region region-name \

--node-type instance-type \

--nodes-min 2 \

--nodes-max 2 \

--zones <AZ-1>,<AZ-2>

Using this

eksctl create cluster --name valaxy-cluster \

--region ap-south-1 \

--node-type t2.small \

AWS Dashboard -->> Cludformation -->> see valaxy cluster

RUN k8s basics command.

```
[root@developer2-system ~]# kubectl get nodes
NAME                                            STATUS   ROLES    AGE    VERSION
ip-192-168-17-254.ap-south-1.compute.internal   Ready    <none>   17h    v1.29.3-eks-ae9a62a
ip-192-168-59-94.ap-south-1.compute.internal    Ready    <none>   16h    v1.29.3-eks-ae9a62a
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get all
NAME                 TYPE         CLUSTER-IP    EXTERNAL-IP   PORT(S)    AGE
service/kubernetes   ClusterIP    10.100.0.1    <none>        443/TCP    17h
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get namespace
NAME              STATUS   AGE
default           Active   17h
kube-node-lease   Active   17h
kube-public       Active   17h
kube-system       Active   17h
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]#
```

kubectl get nodes

kubectl get all

kubectl get namespace

kubectl run webapp --image=httpd

kubectl get all

kubectl get po

kubectl version

```
[root@developer2-system ~]# kubectl run webapp --image=httpd
pod/webapp created
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get po
NAME      READY    STATUS                RESTARTS    AGE
webapp    0/1      ContainerCreating     0           6s
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get po
NAME      READY    STATUS      RESTARTS    AGE
webapp    1/1      Running     0           9s
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get all
NAME           READY    STATUS      RESTARTS    AGE
pod/webapp     1/1      Running     0           19s

NAME                 TYPE          CLUSTER-IP     EXTERNAL-IP    PORT(S)    AGE
service/kubernetes   ClusterIP     10.100.0.1     <none>         443/TCP    17h
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# █
```

Create Deployment using command line

kubectl create deployment demo-nginx --image=nginx --port=80 --replicas=2

kubectl get deployment

kubectl get pod

kubectl get all

kubectl expose deployment demo-nginx --port=80 --type=LoadBalancer

kubectl get all

```
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl create deployment demo-nginx --image=nginx --port=80 --replicas=2
deployment.apps/demo-nginx created
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get deployment
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
demo-nginx    1/2     2            1           9s
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get deploy
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
demo-nginx    2/2     2            2           17s
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get replicaset
NAME                    DESIRED   CURRENT   READY   AGE
demo-nginx-5c97459668   2         2         2       53s
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get pod
NAME                          READY   STATUS    RESTARTS   AGE
demo-nginx-5c97459668-4sd56   1/1     Running   0          2m7s
demo-nginx-5c97459668-tjt49   1/1     Running   0          2m7s
webapp                        1/1     Running   0          12m
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get all
NAME                              READY   STATUS    RESTARTS   AGE
pod/demo-nginx-5c97459668-4sd56   1/1     Running   0          2m18s
pod/demo-nginx-5c97459668-tjt49   1/1     Running   0          2m18s
pod/webapp                        1/1     Running   0          13m

NAME                 TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
service/kubernetes   ClusterIP   10.100.0.1   <none>        443/TCP   17h

NAME                         READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/demo-nginx   2/2     2            2           2m18s

NAME                                    DESIRED   CURRENT   READY   AGE
replicaset.apps/demo-nginx-5c97459668   2         2         2       2m18s
[root@developer2-system ~]#
[root@developer2-system ~]#
```

Expose the deployment as service. This will create an ELB in front of those 2 containers and allow us to publicly access them.

```
[root@developer2-system ~]# kubectl expose deployment demo-nginx --port=80 --type=LoadBalancer
service/demo-nginx exposed
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get all
NAME                              READY   STATUS    RESTARTS   AGE
pod/demo-nginx-5c97459668-4sd56   1/1     Running   0          6m53s
pod/demo-nginx-5c97459668-tjt49   1/1     Running   0          6m53s
pod/webapp                        1/1     Running   0          17m

NAME                 TYPE           CLUSTER-IP      EXTERNAL-IP                                                                           PORT(S)        AGE
service/demo-nginx   LoadBalancer   10.100.73.140   ae29645b1726c41808233b9ddb0bd9ae-1176010176.ap-south-1.elb.amazonaws.com   80:30656/TCP   4s
service/kubernetes   ClusterIP      10.100.0.1      <none>                                                                        443/TCP        17h

NAME                         READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/demo-nginx   2/2     2            2           6m53s

NAME                                    DESIRED   CURRENT   READY   AGE
replicaset.apps/demo-nginx-5c97459668   2         2         2       6m53s
[root@developer2-system ~]#
[root@developer2-system ~]#
```

Not secure | ae29645b1726c41808233b9ddb0bd9ae-1176010176.ap-south-1.elb.amazonaws.com

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

```
[root@developer2-system ~]# kubectl get all
NAME                                    READY   STATUS    RESTARTS   AGE
pod/demo-nginx-5c97459668-4sd56         1/1     Running   0          16m
pod/demo-nginx-5c97459668-tjt49         1/1     Running   0          16m
pod/webapp                              1/1     Running   0          27m

NAME                     TYPE           CLUSTER-IP      EXTERNAL-IP                                                                        PORT(S)        AGE
service/demo-nginx       LoadBalancer   10.100.73.140   ae29645b1726c41808233b9ddb0bd9ae-1176010176.ap-south-1.elb.amazonaws.com          80:30656/TCP   10m
service/kubernetes       ClusterIP      10.100.0.1      <none>                                                                             443/TCP        17h

NAME                            READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/demo-nginx      2/2     2            2           16m

NAME                                      DESIRED   CURRENT   READY   AGE
replicaset.apps/demo-nginx-5c97459668     2         2         2       16m
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl delete deployment.apps/demo-nginx
deployment.apps "demo-nginx" deleted
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get all
NAME           READY   STATUS    RESTARTS   AGE
pod/webapp     1/1     Running   0          27m

NAME                     TYPE           CLUSTER-IP      EXTERNAL-IP                                                                        PORT(S)        AGE
service/demo-nginx       LoadBalancer   10.100.73.140   ae29645b1726c41808233b9ddb0bd9ae-1176010176.ap-south-1.elb.amazonaws.com          80:30656/TCP   10m
service/kubernetes       ClusterIP      10.100.0.1      <none>                                                                             443/TCP        17h
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl delete service/demo-nginx
service "demo-nginx" deleted
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl delete service/demo-nginx
Error from server (NotFound): services "demo-nginx" not found
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get all
NAME           READY   STATUS    RESTARTS   AGE
pod/webapp     1/1     Running   0          30m

NAME                     TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
service/kubernetes       ClusterIP   10.100.0.1   <none>        443/TCP   17h
[root@developer2-system ~]#
```

Create First manifest file for pod and service

```
apiVersion: v1
kind: Pod
metadata:
  name: demo-pod
#  labels:
#    app: demo
spec:
  containers:
    - name: demo-nginx
      image: nginx
      ports:
        - name: demo-ngnix
          containerPorts: 80

~
```

```
apiVersion: v1
kind: Service
metadata:
  name: demo-service
spec:
  ports:
  - name: nginx-port
    port: 80
    targetPort: 80

  type: LoadBalancer
~
```

```
[root@developer2-system ~]# vim pod.yaml
[root@developer2-system ~]#
[root@developer2-system ~]# cat pod.yaml
apiVersion: v1
kind: Pod
metadata:
  name: demo-pod
  labels:
    app: demo
spec:
  containers:
    - name: demo-nginx
      image: nginx
      ports:
        - name: demo-ngnix
          containerPorts: 80
[root@developer2-system ~]#
[root@developer2-system ~]# vim service.yaml
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# cat service.yaml
apiVersion: v1
kind: Service
metadata:
  name: demo-service
spec:
  ports:
  - name: nginx-port
    port: 80
    targetPort: 80

  type: LoadBalancer
[root@developer2-system ~]#
```

Create pod and service try to acces from browser it's not working for that we need to add label in pod yaml and selector in service yaml

```
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# vim pod.yaml
[root@developer2-system ~]# vim pod.yaml
[root@developer2-system ~]#
[root@developer2-system ~]# vim pod.yaml
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl create -f pod.yaml
pod/demo-pod created
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get all
NAME              READY   STATUS    RESTARTS   AGE
pod/demo-pod      1/1     Running   0          5s

NAME                 TYPE        CLUSTER-IP    EXTERNAL-IP   PORT(S)    AGE
service/kubernetes   ClusterIP   10.100.0.1    <none>        443/TCP    18h
[root@developer2-system ~]#
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl create service.yaml
Error: must specify one of -f and -k

error: unknown command "service.yaml"
See 'kubectl create -h' for help and examples
[root@developer2-system ~]# kubectl create -f service.yaml
service/demo-service created
[root@developer2-system ~]#
[root@developer2-system ~]# kubectl get all
NAME              READY   STATUS    RESTARTS   AGE
pod/demo-pod      1/1     Running   0          23s

NAME                   TYPE           CLUSTER-IP       EXTERNAL-IP                                                                      PORT(S)         AGE
service/demo-service   LoadBalancer   10.100.169.125   aa45f9b92640f46d4ac99a1589ac1b8d-2019559862.ap-south-1.elb.amazonaws.com        80:30189/TCP    6s
service/kubernetes     ClusterIP      10.100.0.1       <none>                                                                           443/TCP         18h
[root@developer2-system ~]#
[root@developer2-system ~]#
```