**­­­­Installation of Kubernetes:**

**Kubernetes creation we have more methods:**

**Cluster 🡺 Group of nodes 🡺 1 master(1 or more) + 2 or 3 and more workers ( it may vary)**

**Installation method:  
<https://itnext.io/kubernetes-installation-methods-the-complete-guide-1036c860a2b3>**

**We manage->Kubeadm, minikube, kubespray -> on premises installation (we manage here , everything will do for our end example connectivity between master and worker node)**

**Cloud Manage 🡺 Magnum , EKS, GKE,AKS ( master and worker node setup everything manage Cloud Providers, but we have pay money)**

**Minimum hardware requirements for Kubernetes cluster  
<https://docs.kublr.com/installation/hardware-recommendation/>**

**Master node:2GB RAM , CPU 1.5 CORE  
Worker Node: 700mb,CPU 0.5**

**Now we are going to do partial setup of (we manage, and cloud manage)**

**Using tool : KOPS => ( 50% we , 50 % Cloud)  
KOPS=> Kubernetes Operations Called KOPS Methodology**

**It will do all cloud necessary things regards K8. We don’t configure anything manually in cloud .**

**If we are doing manual method, we will be facing below mentioned issues**

**Dependency issue  
setups issues  
firewall issues  
Security Issues  
Port Issues  
  
so that we are going to use KOPS Tool method, KOPS we will take care the cluster creating.**

1. **Create instance ( ubuntu server) ( this machine we called as client machine)**
2. **Install kops tool**

**#sudo su -  
  
# curl -Lo kops https://github.com/kubernetes/kops/releases/download/$(curl -s https://api.github.com/repos/kubernetes/kops/releases/latest | grep tag\_name | cut -d '"' -f 4)/kops-linux-amd64**

**# ls -lrt**

**# chmod +x ./kops ( give the Execute permission)**

**# mv ./kops /usr/local/bin/ (**

**3.Install kubectl tool**

**# curl -Lo kubectl https://storage.googleapis.com/kubernetes-release/release/$(curl -s <https://storage.googleapis.com/kubernetes-release/release/stable.txt)/bin/linux/amd64/kubectl>**

**# chmod +x kubectl  
# sudo mv ./kubectl /usr/local/bin/kubectl**

**=================================================================================**

**4.Go to AWS Console:🡪 IAM Service**

**#### Create user with full administrator Access ####**

**==================================================================================**

**Go to server:**

**# apt-get update**

**# apt install awscli**

**# aws configure**

**#us-east-2  
#json**

**#aws iam list-users ( to confirm ,we able to view users )**

**==================================================================================**

**Export:  
Variables:**

**BASH commands🡪 Bourne Again Shell it is programming language  
mv, cmd, echo, nano etc …..**

**Export which means environmental variable.**

**Example:**

**export city=Chennai**

**echo "$city"**

**echo "i am living $city"**

**Environmental variable : which means we can use any path or folders**

**Same as that we set the AWS user Credentials  
  
export AWS\_ACCESS\_KEY\_ID=AKIAWBOBLYNY4VKGMH5X  
export AWS\_SECRET\_ACCESS\_KEY=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  
  
==================================================================================**

**State File: ( it is noting but what are resource we create all details store in State file like (instance,s3,ELB,AS)**

**We create the bucket to store the state file.**

**Go to s3 and create the bucket , must enable the version.**

**=================================================================================**

**# ssh-keygen (in root user)**

**For generate key to communicate two machines.**

**==================================================================================**

**Set name Environment variable:**

**# export NAME=arun.k8s.local**

**# export KOPS\_STATE\_STORE=s3://kops31jul2023 (s3 bucket name)**

**# kops create cluster --zones us-east-2a ${NAME}**

**# kops update cluster --name arun.k8s.local --yes --admin**

**If u want to edit the node**

**# kops edit ig --name=arun.k8s.local nodes-us-east-2a ( we able to view setup)**

**#** **kops update cluster --name arun.k8s.local --yes --admin**

**# kops validate cluster**

**For deleting cluster****# kops delete cluster --name=arun.k8s.local --state=s3://kops31jul2023 --yes**

**We can check**

**Kubectl get pods**

**Kubectl get nods**

**Must specify --yes to apply changes**

**Cluster configuration has been created.**

**Suggestions:**

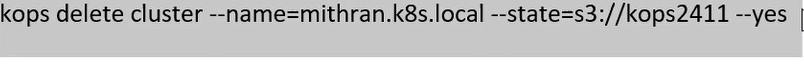
**\* list clusters with: kops get cluster**

**\* edit this cluster with: kops edit cluster arun.k8s.local**

**\* edit your node instance group: kops edit ig --name=arun.k8s.local nodes-us-east-2a**

**\* edit your master instance group: kops edit ig --name=arun.k8s.local master-us-east-2a**

**Finally configure your cluster with: kops update cluster --name arun.k8s.local --yes –admin**

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kubectl delete pods <pod> --grace-period=0 --force