**SETTING UP KUBERNETS CLUSTER**

1. Copy the contents of the below repository to local

<https://github.com/mdzakriya100/kubernetes_projects/tree/main/k8's_cluster>

1. Install the virtaul box latest version and vagrant to you computer based on your computer

<https://www.oracle.com/virtualization/technologies/vm/downloads/virtualbox-downloads.html>  
  
<https://developer.hashicorp.com/vagrant/install?product_intent=vagrant>

1. Go the path in the terminal and run the below command

$ vagrant up

A screenshot of a computer

Description automatically generated

1. Once the three vm’s are running as the below , you can go ahead to login to master node

A screenshot of a computer

Description automatically generated

1. The master node is ready we can ssh into the machine via vagrant ssh master

$ vagrant ssh master

A screenshot of a computer

Description automatically generated

1. From now on can initialize **kubeadm** on the master node to manage the workers as root.

Run the following command as root, it will take a few mins

root@master:~# kubeadm init --apiserver-advertise-address 192.168.33.13 --pod-network-cidr=10.244.0.0/16

A black screen with white text

Description automatically generated

When it is done, should looks as:

A black background with many small lights

Description automatically generated with medium confidence

1. To start using your cluster, you need to run the following as a regular user:

mkdir -p $HOME/.kube

sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config

sudo chown $(id -u):$(id -g) $HOME/.kube/config



If you now list nodes till now it is the only one which is master by kubectl get nodes` you will see, the STATUS` is not ready. Simply because we did not apply any network plugin.

A black background with white text

Description automatically generated

I will use **flannel** net plugin for the cluster network.

$ kubectl apply -f <https://raw.githubusercontent.com/coreos/flannel/master/Documentation/kube-flannel.yml>

A black background with white text

Description automatically generated

1. Now master/controller node is ready, we can simply add workers.

step 1. vagrant ssh worker-1  
step 2. run the command below as root

You should now deploy a pod network to the cluster.

Then you can join any number of worker nodes by running the following on each as root:

kubeadm join 192.168.33.13:6443 --token sr1984.9gnahknpfug6txp4 \

--discovery-token-ca-cert-hash sha256:3d6f62fe330fd776af6869feb4ab2d92388d86f6bd86d6cb9b3140b3954391ad

A screenshot of a computer program

Description automatically generated

A screenshot of a computer program

Description automatically generated

No, finally we are ready to deploy nginx! :D

A screenshot of a computer screen

Description automatically generated

$ kubectl create deployment nginx --image=nginx --port 80  
$ kubectl create deployment webserver --image=nginx --port 80 --replicas=5

Expose this service on nodeport and curl / load the ip of the node and port number

A black background with white text

Description automatically generated

A screenshot of a computer

Description automatically generated

A computer screen with white text

Description automatically generated