



KUBERNETES INSTALLATION

DevOps Certification Training

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INSTALLING KUBERNETES

Steps for Both Master and Slave

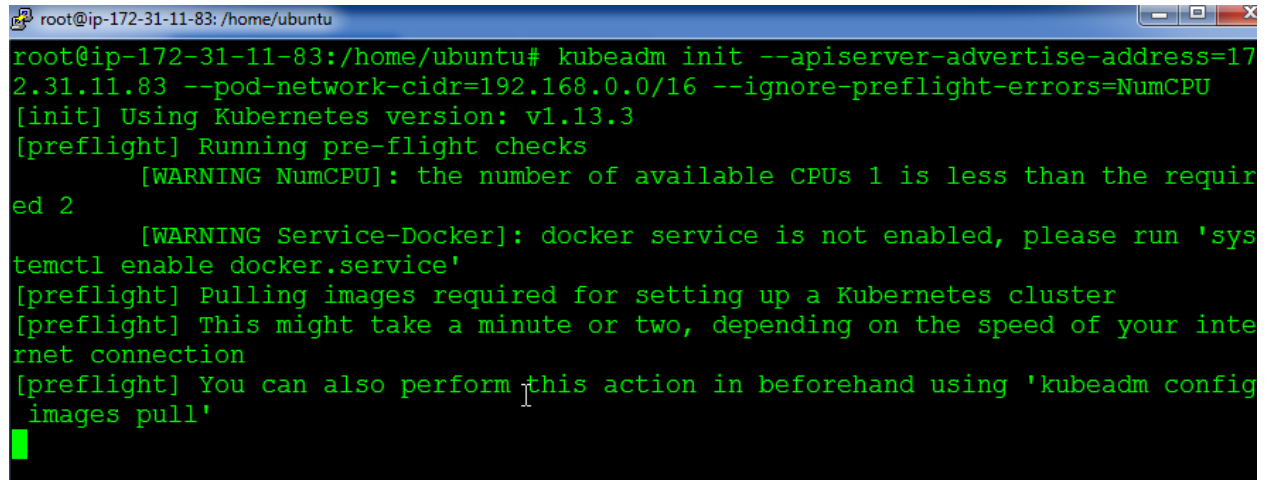
Step 1: Run the following commands for installing kubeadm as root

```
$ apt-get update  
$ apt-get install docker.io  
$ apt-get update && apt-get install -y apt-transport-https curl  
$ curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg |  
apt-key add -  
$ cat <<EOF >/etc/apt/sources.list.d/kubernetes.list  
deb https://apt.kubernetes.io/ kubernetes-xenial main  
EOF  
$ apt-get update  
$ apt-get install -y kubelet kubeadm kubectl
```

Steps for Kubernetes Master

Step 1: Initialize kubeadm using the following command:

```
$ kubeadm init --apiserver-advertise-address=<ip-address-of-master> --pod-network-cidr=192.168.0.0/16 --ignore-preflight-errors=NumCPU
```

A screenshot of a terminal window showing the execution of the kubeadm init command. The terminal title is "root@ip-172-31-11-83: /home/ubuntu". The command entered is "kubeadm init --apiserver-advertise-address=172.31.11.83 --pod-network-cidr=192.168.0.0/16 --ignore-preflight-errors=NumCPU". The output shows the Kubernetes version (v1.13.3), pre-flight checks, and warnings about the number of CPUs and Docker service status. The terminal text is as follows:

```
root@ip-172-31-11-83:/home/ubuntu# kubeadm init --apiserver-advertise-address=172.31.11.83 --pod-network-cidr=192.168.0.0/16 --ignore-preflight-errors=NumCPU
[init] Using Kubernetes version: v1.13.3
[preflight] Running pre-flight checks
        [WARNING NumCPU]: the number of available CPUs 1 is less than the required 2
        [WARNING Service-Docker]: docker service is not enabled, please run 'systemctl enable docker.service'
[preflight] Pulling images required for setting up a Kubernetes cluster
[preflight] This might take a minute or two, depending on the speed of your internet connection
[preflight] You can also perform this action in beforehand using 'kubeadm config images pull'
```

Step 2: In the output of the previous command, you will get a command, take this command and run it in the slave

```
Your Kubernetes master has initialized successfully!

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

You should now deploy a pod network to the cluster.
Run "kubectl apply -f [podnetwork].yaml" with one of the options listed at:
https://kubernetes.io/docs/concepts/cluster-administration/addons/

You can now join any number of machines by running the following on each node
as root:

kubeadm join 172.31.11.83:6443 --token a63940.44jgu0dr0ky3madf --discovery-token-ca-cert-hash sha256:4fd605b80394d81fdbd02cd71a05441238ded7b78f57cbd7e113d2ce10f2d7ad
```

```
This node has joined the cluster:
* Certificate signing request was sent to apiservert and a response was received
* The Kubelet was informed of the new secure connection details.

Run 'kubectl get nodes' on the master to see this node join the cluster.

root@ip-172-31-6-60:/home/ubuntu#
```

Step 3: On the master, exit to the normal user, and execute the following commands:

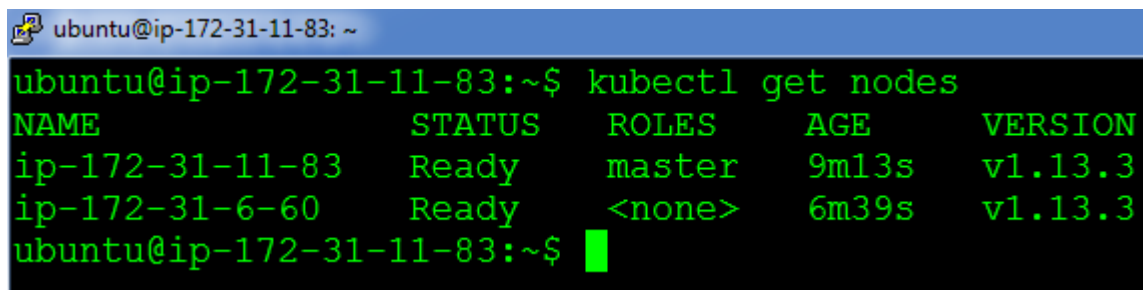
```
$ mkdir -p $HOME/.kube  
  
$ sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config  
  
$ sudo chown $(id -u):$(id -g) $HOME/.kube/config
```

Step 4: Next, let's install the network plugin. Execute the following commands:

```
$ kubectl apply -f https://docs.projectcalico.org/v3.3/getting-started/kubernetes/installation/hosted/rbac-kdd.yaml  
  
$ kubectl apply -f https://docs.projectcalico.org/v3.3/getting-started/kubernetes/installation/hosted/kubernetes-datastore/calico-networking/1.7/calico.yaml
```

Step 5: The previous command will take some time to take effect. After 4-5 mins, try the following command, if both the nodes are in the ready state, Installation is successful!

```
$ kubectl get nodes
```



```
ubuntu@ip-172-31-11-83: ~  
ubuntu@ip-172-31-11-83:~$ kubectl get nodes  
NAME                STATUS    ROLES    AGE   VERSION  
ip-172-31-11-83     Ready    master   9m13s v1.13.3  
ip-172-31-6-60      Ready    <none>   6m39s v1.13.3  
ubuntu@ip-172-31-11-83:~$
```