How to Install Kubernetes on Ubuntu 22.04 | Step-by-Step

Do The below steps 1 to 6 in both Master & Worker nodes:-

Step 1: Disable swap:

```
sudo swapoff -a
```

Step 2: Set up hostnames

sudo hostnamectl set-hostname "master " → For Master Node

sudo hostnamectl set-hostname "worker01 " → For Worker1 Node

sudo hostnamectl set-hostname "worker02 " → For Worker2 Node

Step 3: Update the /etc/hosts File for Hostname Resolution

sudo vi /etc/hosts

Add private ip's of nodes

Example:-

```
ubuntu@ip-172-31-28-133:~$ cat /etc/hosts
172.31.28.133 master
172.31.24.245 worker01
172.31.23.136 worker02
```

Step 4: Set up the IPV4 bridge on all nodes

```
cat <<EOF | sudo tee /etc/modules-load.d/k8s.conf
overlay
br_netfilter
EOF

sudo modprobe overlay

sudo modprobe br_netfilter

# sysctl params required by setup, params persist across reboots
cat <<EOF | sudo tee /etc/sysctl.d/k8s.conf
net.bridge.bridge-nf-call-iptables  = 1
net.bridge.bridge-nf-call-ip6tables = 1
net.ipv4.ip_forward                 = 1
EOF

# Apply sysctl params without reboot
sudo sysctl --system
```

Step 5: Install kubelet, kubeadm, and kubectl on each node

```
sudo apt-get update

sudo apt-get install -y apt-transport-https ca-certificates curl gpg

curl -fsSL https://pkgs.k8s.io/core:/stable:/v1.29/deb/Release.key | sudo gpg --dearmor -o /etc/apt/keyrings/kubernetes-apt-keyring.gpg

echo 'deb [signed-by=/etc/apt/keyrings/kubernetes-apt-keyring.gpg] https://pkgs.k8s.io/core:/stable:/v1.29/deb/ /' | sudo tee /etc/apt/sources.list.d/kubernetes.list

sudo apt-get update

sudo apt-get install -y kubelet kubeadm kubectl

sudo apt-mark hold kubelet kubeadm kubectl
```

Step 6: Install Docker

```
sudo apt install docker.io

sudo mkdir /etc/containerd

sudo sh -c "containerd config default > /etc/containerd/config.toml"

sudo sed -i 's/ SystemdCgroup = false/ SystemdCgroup = true/' /etc/containerd/config.toml

sudo systemctl restart containerd.service

sudo systemctl restart kubelet.service

sudo systemctl enable kubelet.service
```

Step 7: Initialize the Kubernetes cluster on the master node

On MASTER NODE:-

```
sudo kubeadm config images pull
```

sudo kubeadm init --pod-network-cidr=10.10.0.0/16

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

Step 8: Configure kubectl and Calico

```
kubectl create -f https://raw.githubusercontent.com/projectcalico/calico/v3.26.1/manifests/tigera-operator.yaml

curl https://raw.githubusercontent.com/projectcalico/calico/v3.26.1/manifests/custom-resources.yaml -O
```

```
sed -i 's/cidr: 192\.168\.0\.0\/16/cidr: 10.10.0.0\/16/g' custom-resources.yaml
```

```
kubectl create -f custom-resources.yaml
```

Step 9: Add worker nodes to the cluster

```
sudo kubeadm join &lt;MASTER_NODE_IP&gt;:&lt;API_SERVER_PORT&gt; --token &lt;TOKEN&gt; --discovery-token-ca-cert-hash
&lt;CERTIFICATE_HASH&gt;
```

Step 10: Verify the cluster and test

```
kubectl get nodes
```