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Tutorial Instalasi Kubernetes dengan 1 Master dan 2 Worker Node di Linux

**Persiapan Awal untuk Semua Node (Master & Worker)**

1. Ubah hostname:  
 - Master: sudo hostnamectl set-hostname master  
 - Worker1: sudo hostnamectl set-hostname worker1  
 - Worker2: sudo hostnamectl set-hostname worker2  
  
2. Edit file /etc/hosts pada semua node:  
 192.168.56.10 master  
 192.168.56.11 worker1  
 192.168.56.12 worker2  
  
3. Matikan swap:  
 sudo swapoff -a  
 sudo sed -i '/ swap / s/^/#/' /etc/fstab  
  
4. Aktifkan modul kernel:  
 sudo modprobe overlay  
 sudo modprobe br\_netfilter  
  
 Tambahkan config:  
 sudo tee /etc/sysctl.d/kubernetes.conf <<EOF  
 net.bridge.bridge-nf-call-ip6tables = 1  
 net.bridge.bridge-nf-call-iptables = 1  
 net.ipv4.ip\_forward = 1  
 EOF  
  
 Jalankan:  
 sudo sysctl --system

**Install Docker di Semua Node**

1. Update dan install dependensi:  
 sudo apt update  
 sudo apt install -y ca-certificates curl gnupg lsb-release  
  
2. Tambah GPG key Docker:  
 sudo mkdir -m 0755 -p /etc/apt/keyrings  
 curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg  
  
3. Tambah repository Docker:  
 echo "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linux/ubuntu $(lsb\_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null  
  
4. Install Docker:  
 sudo apt update  
 sudo apt install -y docker-ce docker-ce-cli containerd.io  
  
5. Tambah user ke grup docker:  
 sudo usermod -aG docker $USER

**Install Kubernetes (kubeadm, kubelet, kubectl) di Semua Node**

1. Tambah repository Kubernetes:  
 sudo apt update && sudo apt install -y apt-transport-https ca-certificates curl  
 curl -fsSLo /usr/share/keyrings/kubernetes-archive-keyring.gpg https://packages.cloud.google.com/apt/doc/apt-key.gpg  
  
2. Tambah repo ke sources list:  
 echo "deb [signed-by=/usr/share/keyrings/kubernetes-archive-keyring.gpg] https://apt.kubernetes.io/ kubernetes-xenial main" | sudo tee /etc/apt/sources.list.d/kubernetes.list  
  
3. Install:  
 sudo apt update  
 sudo apt install -y kubelet kubeadm kubectl  
 sudo apt-mark hold kubelet kubeadm kubectl

**Inisialisasi Master Node**

Di node master:  
 sudo kubeadm init --pod-network-cidr=192.168.0.0/16  
  
Setelah selesai:  
 mkdir -p $HOME/.kube  
 sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config  
 sudo chown $(id -u):$(id -g) $HOME/.kube/config

**Install Plugin Jaringan (Contoh: Calico)**

Install Calico di master node:  
 kubectl apply -f https://raw.githubusercontent.com/projectcalico/calico/v3.25.0/manifests/calico.yaml

**Gabungkan Worker Node ke Master**

Jalankan perintah kubeadm join yang diberikan output saat init master pada worker1 dan worker2, contohnya:  
  
 kubeadm join 192.168.56.10:6443 --token abcdef.0123456789abcdef \  
 --discovery-token-ca-cert-hash sha256:xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

**Cek Semua Node dari Master**

Di master:  
 kubectl get nodes  
  
Output seharusnya:  
 master Ready control-plane ...  
 worker1 Ready <none> ...  
 worker2 Ready <none> ...

**Deploy Contoh Pod**

Deploy nginx:  
 kubectl create deployment nginx --image=nginx  
 kubectl expose deployment nginx --port=80 --type=NodePort  
 kubectl get pods -o wide