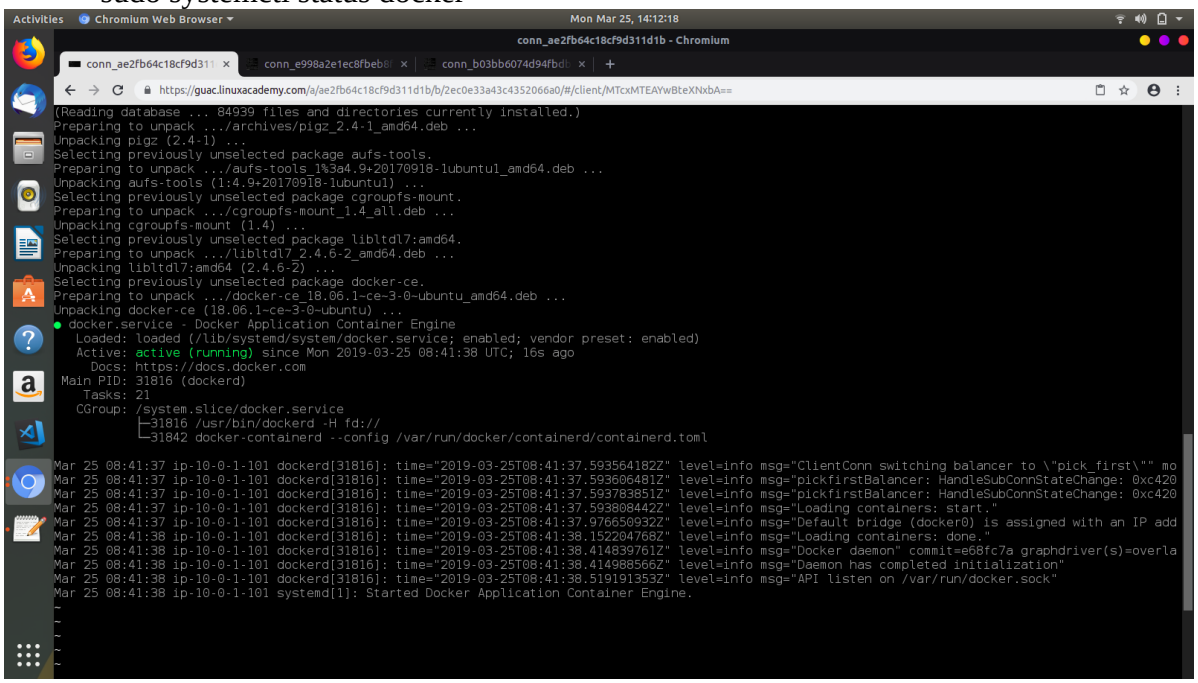
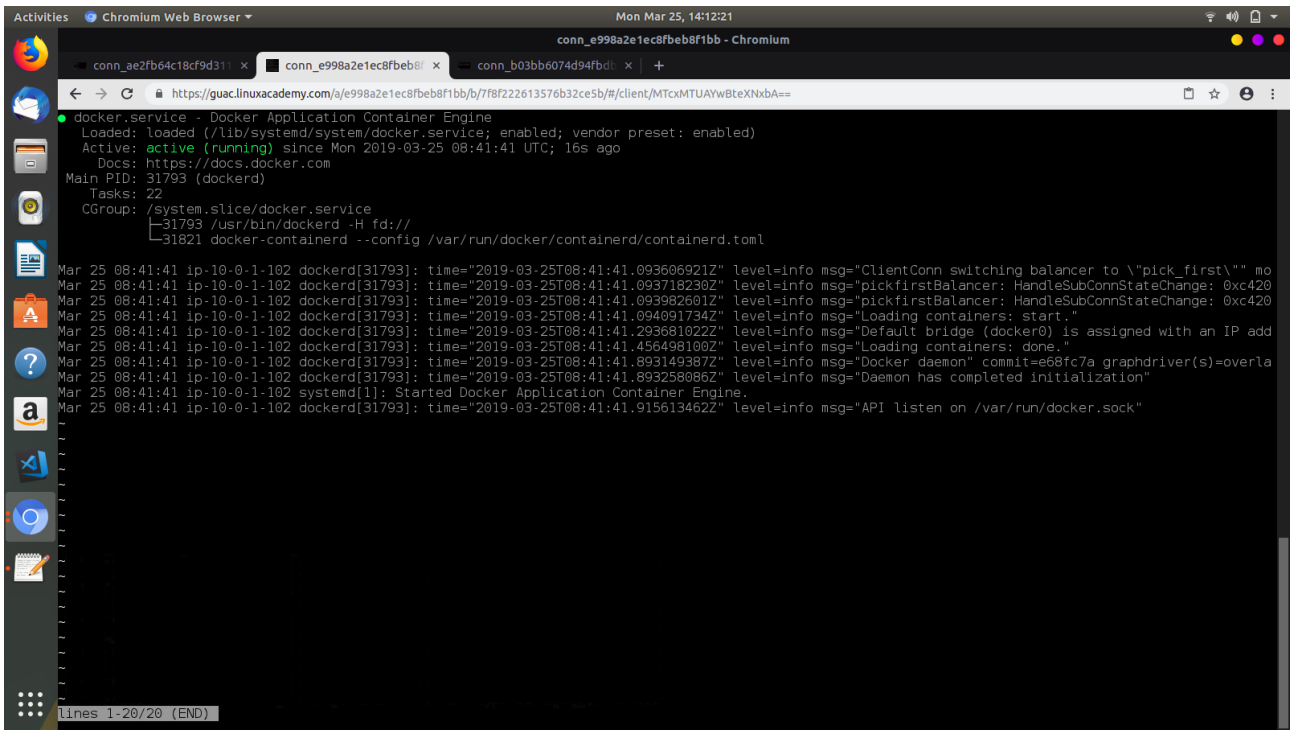
Kubernetes – Building A Three Node Cluster

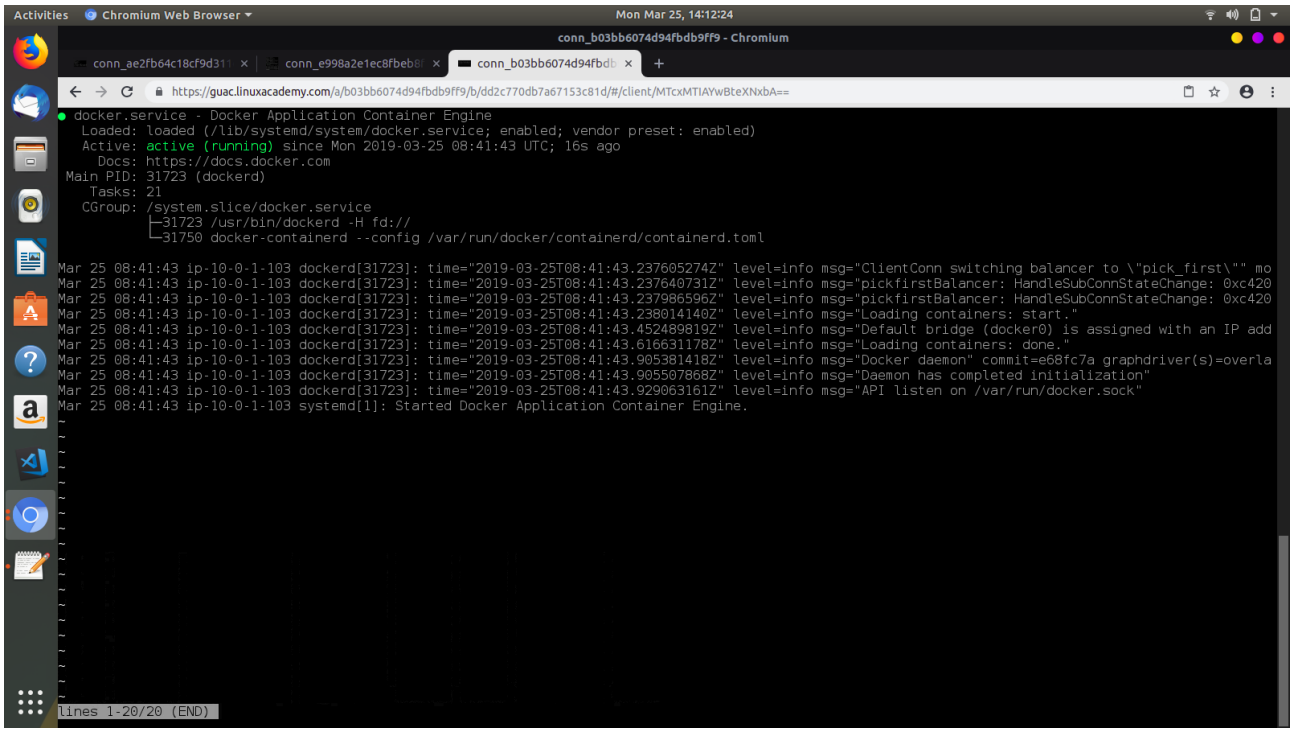
- This cluster is made on cloud servers provided by linux academy.
- The cluster contains three nodes – one master, two worker.
- Cluster will be using docker as container runtime.
- Cluster is built using kubeadm, which helps in automating the cluster building process.
- Kubelet is acts as a middle-man between kubernetes api and container runtime.

Documentation

1. Install Docker on all three server nodes.
    - Adding gpg key for docker repository
      curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
    - Adding the docker repository
      sudo add-apt-repository \
      "deb [arch=amd64] https://download.docker.com/linux/ubuntu \
      $(lsb_release -cs) \
      stable"
    - Updating the package listing
      sudo apt-get update
    - Installing the docker community edition
      sudo apt-get install -y docker-ce=18.06.1~ce~3-0~ubuntu
    - Preventing docker auto update
      sudo apt-mark hold docker-ce
    - Checking status of docker
      sudo systemctl status docker



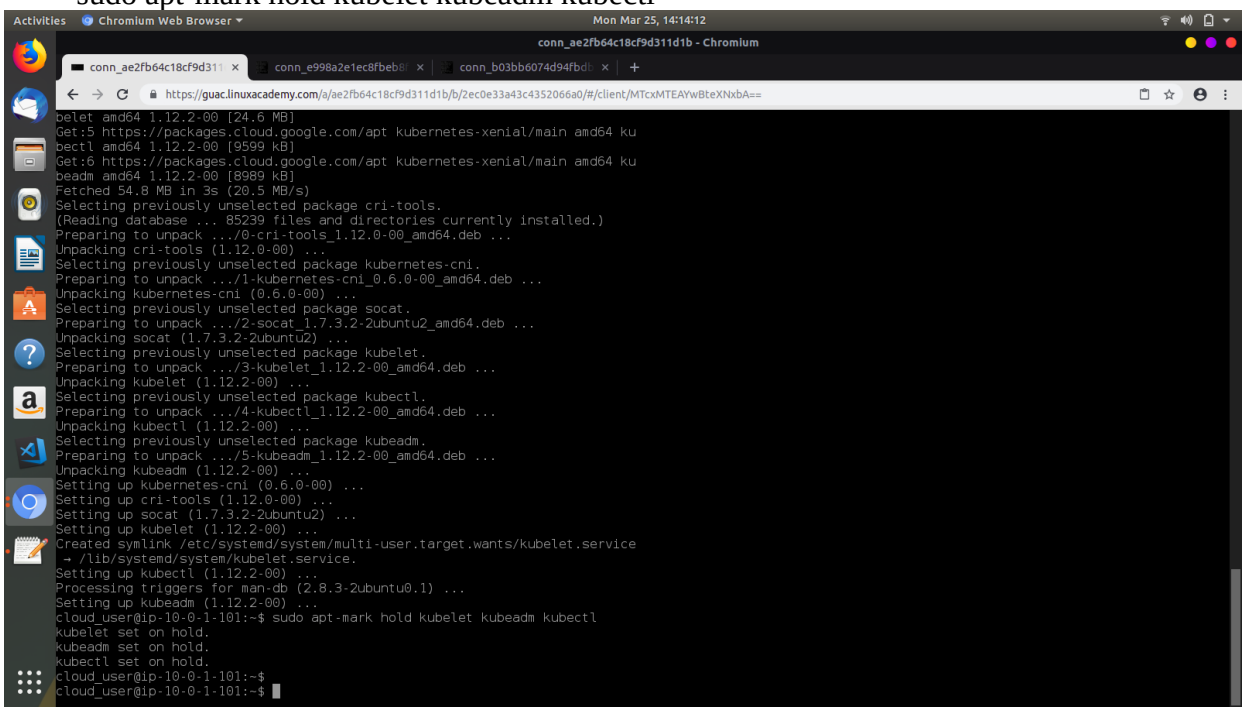


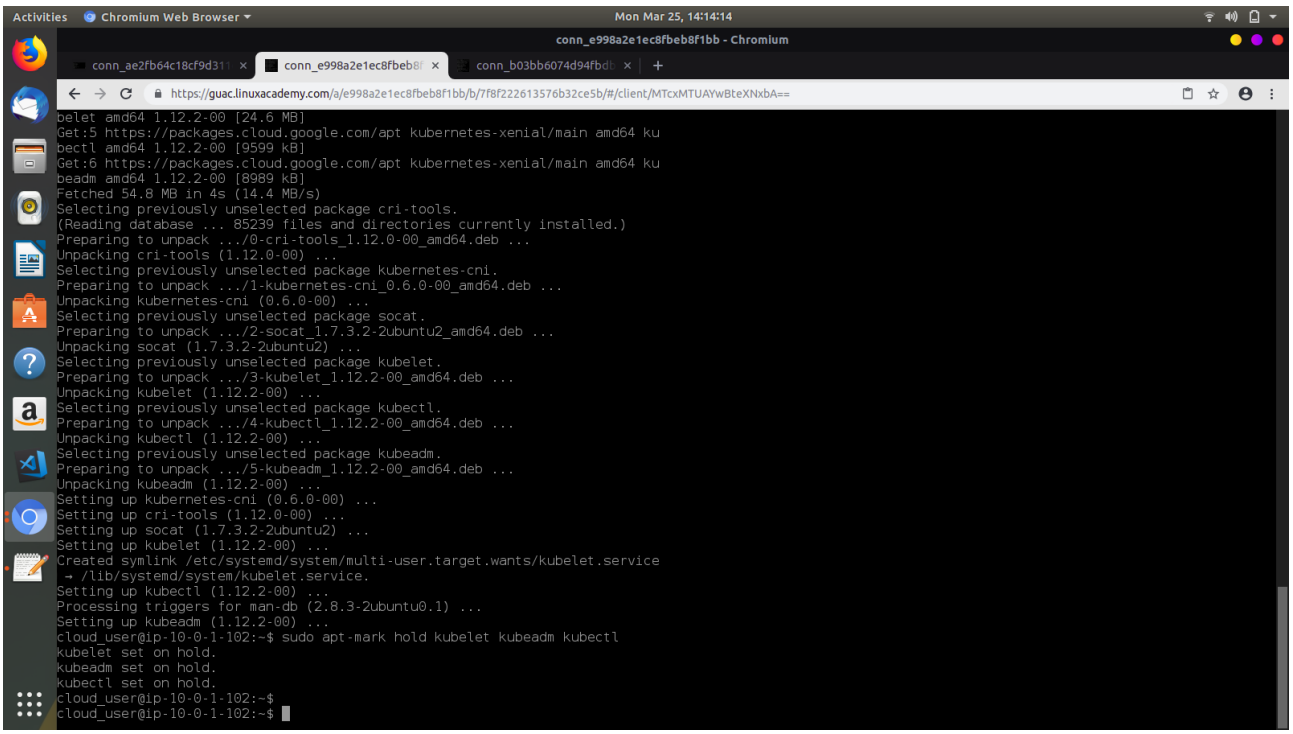


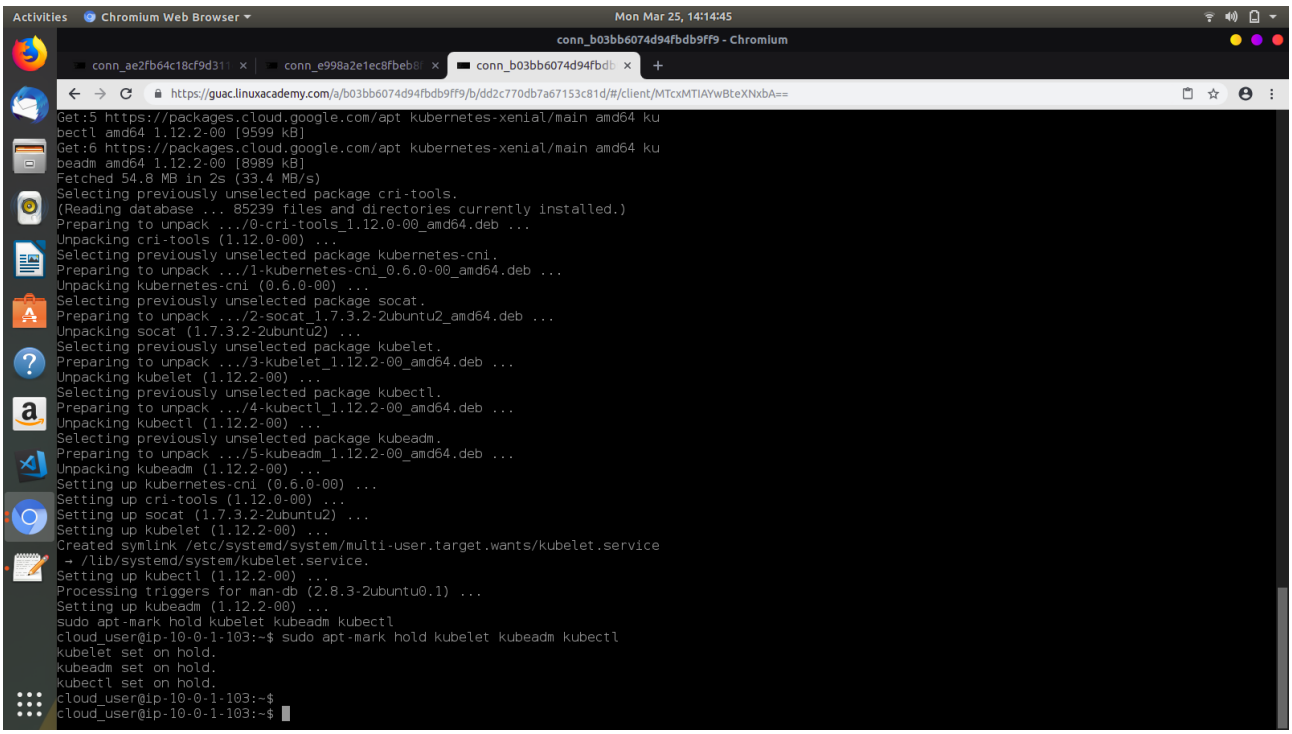
2. Installing kubeadm, kubelet, kubectl on all nodes.
   - Adding gpg key for kubernetes repository
     curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -
   - Adding kubernetes repository
     cat << EOF | sudo tee /etc/apt/sources.list.d/kubernetes.list
     deb https://apt.kubernetes.io/ kubernetes-xenial main
     EOF
   - Updating package listing
     sudo apt-get update
   - Installing kubelet, kubeadm, kubectl

sudo apt-get install -y kubelet=1.12.2-00 kubeadm=1.12.2-00 kubectl=1.12.2-00

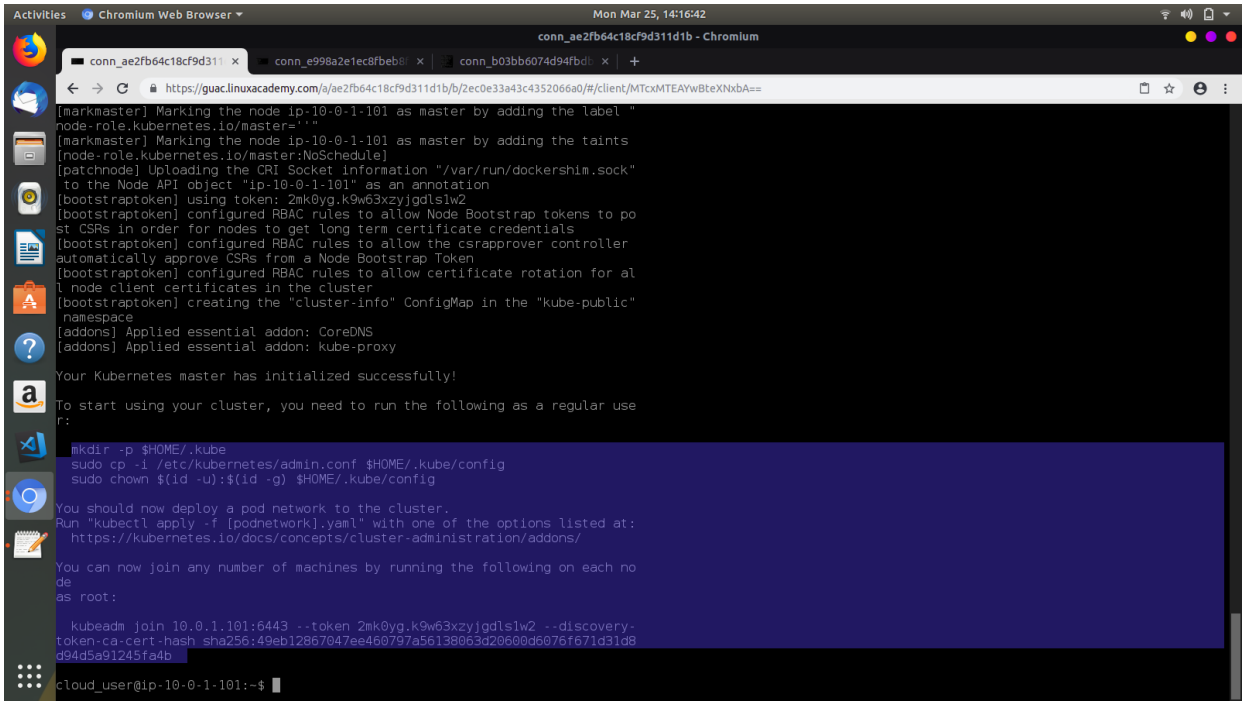
- Preventing auto updates
  sudo apt-mark hold kubelet kubeadm kubectl

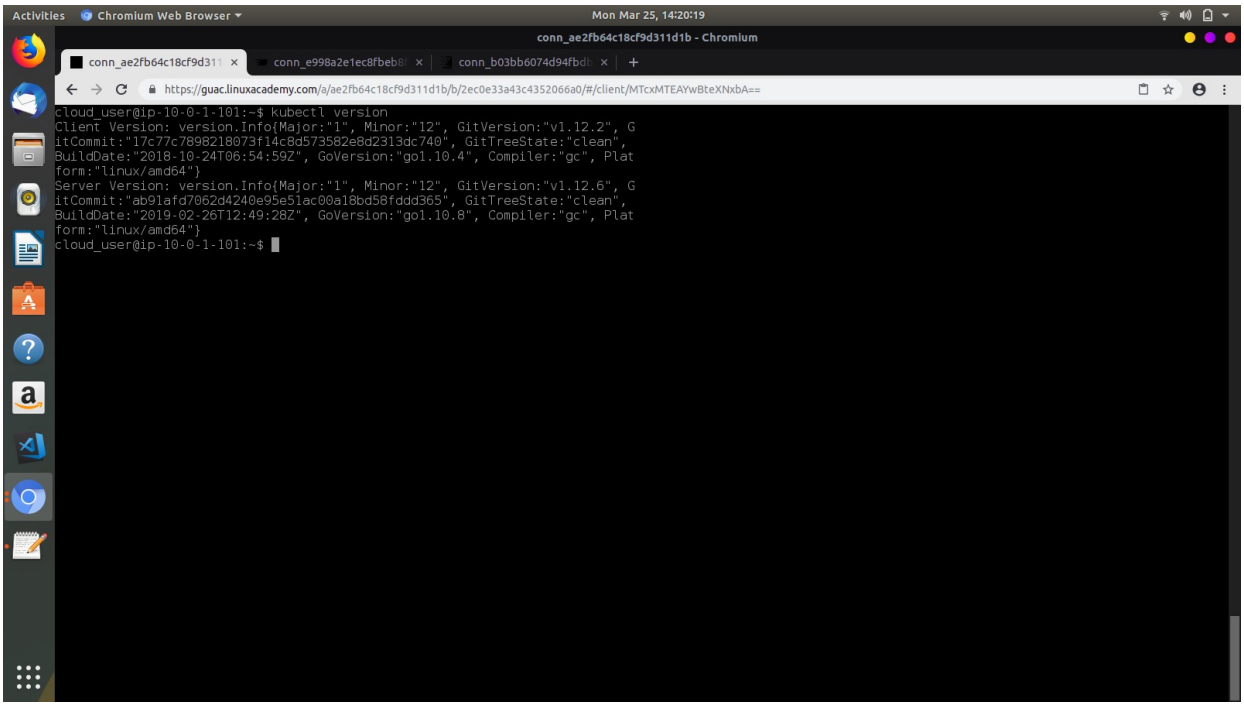




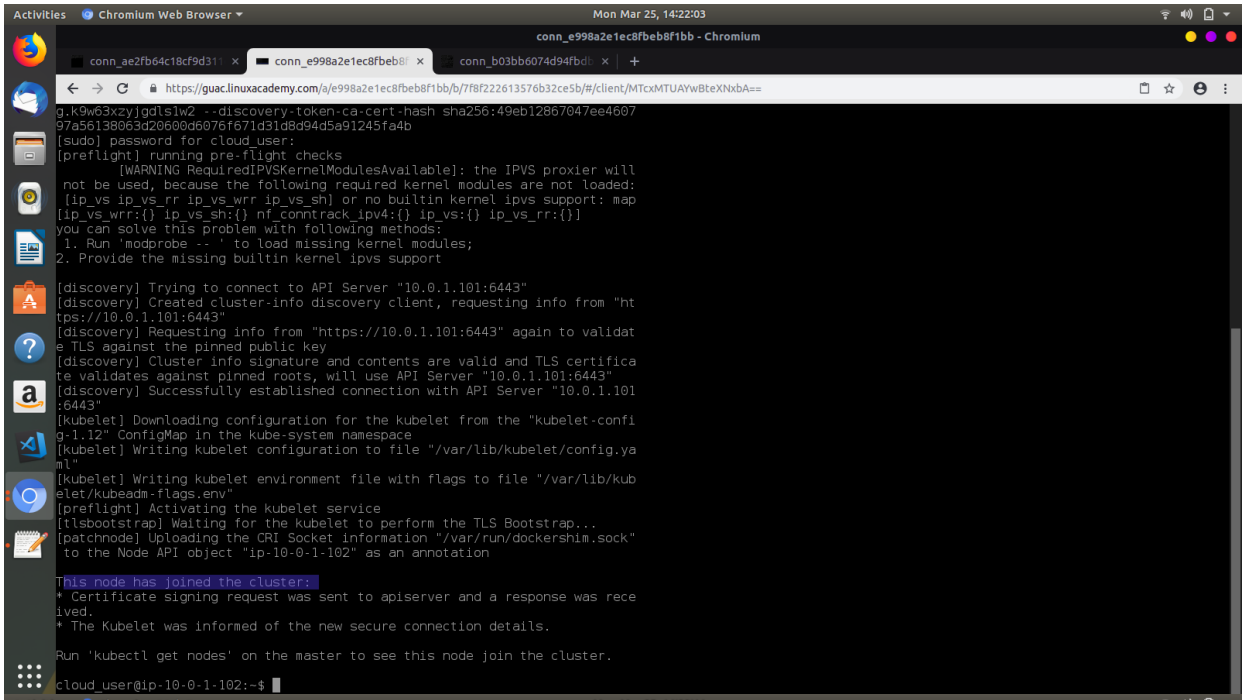


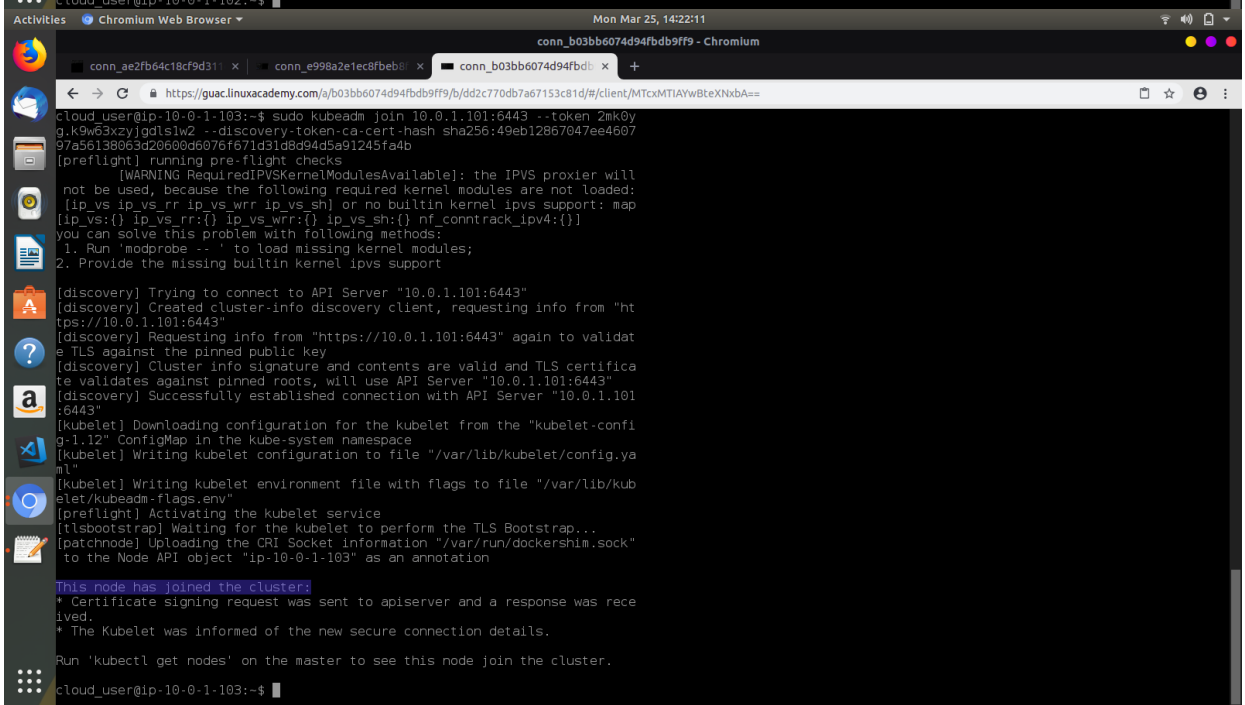
3. Building cluster with kubeadm
   - For setting for flanel network plugin
     sudo kubeadm init –pod-network-cidr=10.244.0.0/16
   - Setting up kubeconfig that local local user can use kubectl on master
     mkdir -p $HOME/.kube
     sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
     sudo chown $(id -u):$(id -g) $HOME/.kube/config
   - Checking kubectl
     kubectl version



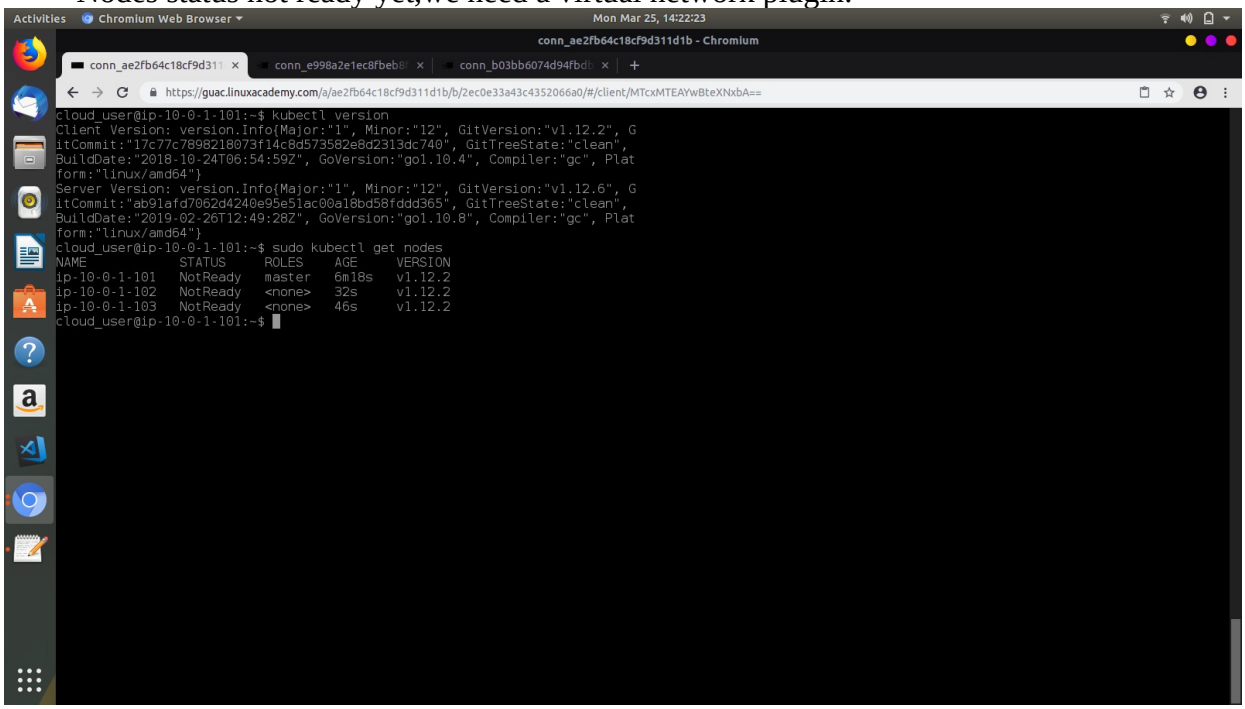


- Joining two worker nodes to the master node in cluster
  sudo kubeadm join 10.0.1.101:6443 --token 2mk0yg.k9w63xzyjgdls1w2 --discovery-token-ca-cert-hash sha256:49eb12867047ee460797a56138063d20600d6076f671d31d8d94d5a91245fa4b





- kubectl get nodes
  Nodes status not ready yet,we need a virtual network plugin.



- Turning on ip-tables on all 3 nodes.
  echo "net.bridge.bridge-nf-call-iptables=1" | sudo tee -a /etc/sysctl.conf
  sudo sysctl -p
- Install flannel on master using YAML
  kubectl apply -f
  https://raw.githubusercontent.com/coreos/flannel/bc79dd1505b0c8681ece4de4c0d86c5cd2643275/Documentation/kube-flannel.yml
- Now all 3 nodes in cluster are ready
  kubectl get nodes