**On all 3 servers**

First, set up the Docker and Kubernetes repositories:

curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -

sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu \

$(lsb\_release -cs) \

stable"

curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -

cat << EOF | sudo tee /etc/apt/sources.list.d/kubernetes.list

deb https://apt.kubernetes.io/ kubernetes-xenial main

EOF

Install Docker and Kubernetes packages:

Note that if you want to use a newer version of Kubernetes, change the version installed for kubelet, kubeadm, and kubectl. Make sure all three use the same version.

**Note**: There is currently a bug in Kubernetes 1.13.4 (and earlier) that can cause problems installaing the packages. Use 1.13.5-00 to avoid this issue.

sudo apt-get update

sudo apt-get install -y docker-ce=18.06.1~ce~3-0~ubuntu kubelet=1.13.5-00 kubeadm=1.13.5-00 kubectl=1.13.5-00

sudo apt-mark hold docker-ce kubelet kubeadm kubectl

Enable iptables bridge call:

echo "net.bridge.bridge-nf-call-iptables=1" | sudo tee -a /etc/sysctl.conf

sudo sysctl -p

#### On the Kube master server

Initialize the cluster:

sudo kubeadm init --pod-network-cidr=10.244.0.0/16

Set up local kubeconfig:

mkdir -p $HOME/.kube

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

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

Install Flannel networking:

kubectl apply -f https://raw.githubusercontent.com/coreos/flannel/bc79dd1505b0c8681ece4de4c0d86c5cd2643275/Documentation/kube-flannel.yml

**Note:** If you are using Kubernetes 1.16 or later, you will need to use a newer flannel installation yaml instead:

kubectl apply -f https://raw.githubusercontent.com/coreos/flannel/3f7d3e6c24f641e7ff557ebcea1136fdf4b1b6a1/Documentation/kube-flannel.yml

#### On each Kube node server

Join the node to the cluster:

sudo kubeadm join $controller\_private\_ip:6443 --token $token --discovery-token-ca-cert-hash $hash

#### On the Kube master server

Verify that all nodes are joined and ready:

kubectl get nodes

You should see all three servers with a status of Ready:

NAME STATUS ROLES AGE VERSION

wboyd1c.mylabserver.com Ready master 54m v1.13.4

wboyd2c.mylabserver.com Ready <none> 49m v1.13.4

wboyd3c.mylabserver.com Ready <none> 49m v1.13.4