Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

Step 1: Base Installation on All Nodes

3- Set Hostname

```
hostnamectl set-hostname node1
hostnamectl
bash

hostnamectl set-hostname node2
hostnamectl
bash

hostnamectl set-hostname node3
hostnamectl
bash
```

4- Disable Selinux

sestatus

5- systemctl disable firewalld && systemctl stop firewalld

iptables -L -n

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

  Step 1: Base Installation on All Nodes

  6- vim /etc/hosts :

  192.168.198.179 node1
  192.168.198.177 node2
  192.168.198.178 node3

  7- ssh keygen Generate and Copy

  ssh-keygen -t rsa
  ssh-copy-id node1
  ssh-copy-id node2
  ssh-copy-id node3

  8- yum clean all ; yum update –y

  9- reboot

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

  Step 1: Base Installation on All Nodes

  10- vi /etc/modules-load.d/bridge-nf.conf
  br_netfilter

  11- echo "net.bridge.bridge-nf-call-iptables = 1" >> /etc/sysctl.conf

  12- reboot

  13- For check :
  lsmod | grep br_netfilter

```
br_netfilter          22256  0
bridge               151336  1 br_netfilter
```

  sysctl -a | grep "net.bridge.bridge-nf-call-iptables"

```
net.bridge.bridge-nf-call-iptables = 1
```

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

  Step 1: Base Installation on All Nodes

14- swapoff -a

vim /etc/fstab   Remove Swap Mount

#/dev/mapper/centos-swap swap swap defaults 0 0

15- yum install -y yum-utils device-mapper-persistent-data lvm2

Checking Disk with Ftype=1 :

xfs_info / | grep ftype

naming =version 2 bsize=4096 ascii-ci=0 ftype=1

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

Step 2: Install Docker and Kubernetes on All Nodes

16- curl ipinfo.io

17- yum-config-manager --add-repo https://download.docker.com/linux/centos/docker-ce.repo

18- vi /etc/yum.repos.d/kubernetes.repo

```
[kubernetes]
name=Kubernetes
baseurl=https://packages.cloud.google.com/yum/repos/kubernetes-el7-x86_64
enabled=1
gpgcheck=1
repo_gpgcheck=1
gpgkey=https://packages.cloud.google.com/yum/doc/yum-key.gpg
        https://packages.cloud.google.com/yum/doc/rpm-package-key.gpg
```

19- yum clean all
20- yum list

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

  Step 2: Install Docker and Kubernetes on All Nodes

  21- yum install -y docker-ce
  systemctl start docker

  22- cat > /etc/docker/daemon.json <<EOF

```
{
  "exec-opts": ["native.cgroupdriver=systemd"],
  "log-driver": "json-file",
  "log-opts": {
    "max-size": "100m"
  },
  "storage-driver": "overlay2",
  "storage-opts": [
    "overlay2.override_kernel_check=true"
  ]
}
```

  EOF

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

  Step 2: Install Docker and Kubernetes on All Nodes

  23- systemctl enable docker
  systemctl restart docker

  24- yum install -y kubelet kubeadm kubectl

  25- systemctl enable kubelet
  Note : (kubelet will go up and down)

  26- reboot all nodes

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

Step 3: Configuration Kubernetes On Master Node

27- sysctl -a | grep ip_for

net.ipv4.ip_forward = 1

28- kubeadm init --pod-network-cidr=10.245.0.0/16 --apiserver-advertise-address=192.168.198.179

WAIT FOR DOWNLOAD IMAGES and Then

docker images

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
k8s.gcr.io/kube-proxy	v1.15.0	d235b23c3570	3 weeks ago	82.4MB
k8s.gcr.io/kube-apiserver	v1.15.0	201c7a840312	3 weeks ago	207MB
k8s.gcr.io/kube-controller-manager	v1.15.0	8328bb49b652	3 weeks ago	159MB
k8s.gcr.io/kube-scheduler	v1.15.0	2d3813851e87	3 weeks ago	81.1MB
k8s.gcr.io/coredns	1.3.1	eb516548c180	6 months ago	40.3MB
k8s.gcr.io/etcd	3.3.10	2c4adeb21b4f	7 months ago	258MB
k8s.gcr.io/pause	3.1	da86e6ba6ca1	19 months ago	742kB

GET TOKEN :

**kubeadm join 192.168.198.179:6443 --token 1kk99v.xd59s661o2ancje7 **

--discovery-token-ca-cert-hash sha256:f9c76b7a612a69e7ded8676b9be71740469052924e4373c14e2a266f2e55b477

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

  Step 3: Configuration Kubernetes On Master Node

29- RUN for execute kubectl :

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

30- kubectl get node

```
NAME    STATUS     ROLES    AGE     VERSION
node1      NotReady   master     6h29m   v1.15.0
```

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

Step 4: Configuration Kubernetes Network On Master Node

31-
curl https://raw.githubusercontent.com/coreos/flannel/master/Documentation/kube-flannel.yml -o /opt/kube-flannel.yml
curl https://raw.githubusercontent.com/coreos/flannel/master/Documentation/k8s-manifests/kube-flannel-rbac.yml -o /opt/kube-flannel-rbac.yml

32- vi kube-flannel.yml // and in “Network” field change “10.244.0.0/16” to “10.245.0.0/16”.
Network "10.245.0.0/16"

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

Step 4: Configuration Kubernetes Network On Master Node

33- cd /opt

kubectl apply -f kube-flannel-rbac.yml

OUTPUT :

clusterrole.rbac.authorization.k8s.io/flannel created
clusterrolebinding.rbac.authorization.k8s.io/flannel created

34- kubectl apply -f kube-flannel.yml

OUTPUT :

podsecuritypolicy.extensions/psp.flannel.unprivileged created
clusterrole.rbac.authorization.k8s.io/flannel configured
clusterrolebinding.rbac.authorization.k8s.io/flannel unchanged
serviceaccount/flannel created
configmap/kube-flannel-cfg created
daemonset.extensions/kube-flannel-ds-amd64 created
daemonset.extensions/kube-flannel-ds-arm64 created
daemonset.extensions/kube-flannel-ds-arm created
daemonset.extensions/kube-flannel-ds-ppc64le created
daemonset.extensions/kube-flannel-ds-s390x created

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

  Step 5: Join Nodes , Run on Worker Nodes

  35- ON Node2 , Node3

  kubeadm join 192.168.198.179:6443 --token 1kk99v.xd59s661o2ancje7 --discovery-token-ca-cert-hash sha256:f9c76b7a612a69e7ded8676b9be71740469052924e4373c14e2a266f2e55b477

Kubernetes Installation Method

- **Kubeadm Installation For CKA EXAM :**

Step 6: Checking Join Nodes and RUN on Master Node

36- Note : WAIT Nodes NotReady To Ready

watch -d -n 1 "kubectl get node"

```
NAME    STATUS   ROLES    AGE     VERSION
node1   Ready    master   113m    v1.15.0
node2   Ready    <none>   4m10s   v1.15.0
node3   Ready    <none>   3m7s    v1.15.0
```

OR

kubectl get node -o wide

```
NAME   STATUS  ROLES   AGE   VERSION  INTERNAL-IP      EXTERNAL-IP  OS-IMAGE            KERNEL-VERSION                CONTAINER-RUNTIME
node1  Ready   master  132m  v1.15.0  192.168.198.179  <none>       CentOS Linux 7 (Core)  3.10.0-957.21.3.el7.x86_64  docker://18.9.7
node2  Ready   <none>  23m   v1.15.0  192.168.198.177  <none>       CentOS Linux 7 (Core)  3.10.0-957.21.3.el7.x86_64  docker://18.9.7
node3  Ready   <none>  22m   v1.15.0  192.168.198.178  <none>       CentOS Linux 7 (Core)  3.10.0-957.21.3.el7.x86_64  docker://18.9.7
```