



## Exercise 3.3: Finish Cluster Setup

1. View the available nodes of the cluster. It can take a minute or two for the status to change from NotReady to Ready. The NAME field can be used to look at the details. Your node name will be different.

```
student@lfs458-node-1a0a:~$ kubectl get node
```

NAME	STATUS	ROLES	AGE	VERSION
lfs458-worker	Ready	<none>	50s	v1.17.1
lfs458-node-1a0a	Ready	master	28m	v1.17.1

2. Look at the details of the node. Work line by line to view the resources and their current status. Notice the status of Taints. The master won't allow non-infrastructure pods by default for security and resource contention reasons. Take a moment to read each line of output, some appear to be an error until you notice the status shows False.

```
student@lfs458-node-1a0a:~$ kubectl describe node lfs458-node-1a0a
```

```
Name:                lfs458-node-1a0a
Roles:               master
Labels:              beta.kubernetes.io/arch=amd64
                    beta.kubernetes.io/os=linux
                    kubernetes.io/hostname=lfs458-node-1a0a
                    node-role.kubernetes.io/master=
Annotations:         kubeadm.alpha.kubernetes.io/cri-socket: /var/run/dockershim.sock
                    node.alpha.kubernetes.io/ttl: 0
                    projectcalico.org/IPV4Address: 10.142.0.3/32
                    volumes.kubernetes.io/controller-managed-attach-detach: true
CreationTimestamp:   Mon, 07 Jan 2020 22:04:03 +0000
Taints:              node-role.kubernetes.io/master:NoSchedule
<output_omitted>
```

3. Allow the master server to run non-infrastructure pods. The master node begins tainted for security and performance reasons. We will allow usage of the node in the training environment, but this step may be skipped in a production environment. Note the **minus sign (-)** at the end, which is the syntax to remove a taint. As the second node does not have the taint you will get a not found error.

```
student@lfs458-node-1a0a:~$ kubectl describe node | grep -i taint
```

```
Taints:              node-role.kubernetes.io/master:NoSchedule
Taints:              <none>
```

```
student@lfs458-node-1a0a:~$ kubectl taint nodes \
--all node-role.kubernetes.io/master-
```

```
node/lfs458-node-1a0a untainted
error: taint "node-role.kubernetes.io/master:" not found
```

4. Now that the master node is able to execute any pod we **may** find there is a new taint. This behavior began with v1.12.0, requiring a newly added node to be enabled. It has reappeared in versions since then. View, then remove the taint if present. It can take a minute or two for the scheduler to deploy the remaining pods.

```
student@lfs458-node-1a0a:~$ kubectl describe node | grep -i taint
```

```
Taints:              node.kubernetes.io/not-ready:NoSchedule
Taints:              <none>
```

```
student@lfs458-node-1a0a:~$ kubectl taint nodes \
--all node.kubernetes.io/not-ready-
```

```
node/lfs58-node-1a0a untainted
error: taint "node.kubernetes.io/not-ready:" not found
```

5. Determine if the DNS and Calico pods are ready for use. They should all show a status of Running. It may take a minute or two to transition from Pending.

```
student@lfs458-node-1a0a:~$ kubectl get pods --all-namespaces
```

NAMESPACE	NAME	READY	STATUS	RESTARTS	AGE
kube-system	calico-etcd-jlgwr	1/1	Running	0	6m
kube-system	calico-kube-controllers-74b888b647-wlqf5	1/1	Running	0	6m
kube-system	calico-node-tpvnr	2/2	Running	0	6m
kube-system	coredns-78fcdf6894-nc5cn	1/1	Running	0	17m
kube-system	coredns-78fcdf6894-xs96m	1/1	Running	0	17m

<output\_omitted>

6. **Only if you notice the coredns- pods are stuck in ContainerCreating status you may have to delete them, causing new ones to be generated.** Delete both pods and check to see they show a Running state. Your pod names will be different.

```
student@lfs458-node-1a0a:~$ kubectl get pods --all-namespaces
```

NAMESPACE	NAME	READY	STATUS	RESTARTS	AGE
kube-system	calico-node-qkvzh	2/2	Running	0	59m
kube-system	calico-node-vndn7	2/2	Running	0	12m
kube-system	coredns-576cbf47c7-rn6v4	0/1	ContainerCreating	0	3s
kube-system	coredns-576cbf47c7-vq5dz	0/1	ContainerCreating	0	94m

<output\_omitted>

```
student@lfs458-node-1a0a:~$ kubectl -n kube-system delete \
  pod coredns-576cbf47c7-vq5dz coredns-576cbf47c7-rn6v4
```

```
pod "coredns-576cbf47c7-vq5dz" deleted
pod "coredns-576cbf47c7-rn6v4" deleted
```

7. When it finished you should see a new tunnel, tunl0, interface. It may take up to a minute to be created. As you create objects more interfaces will be created, such as cali interfaces when you deploy pods, as shown in the output below.

```
student@lfs458-node-1a0a:~$ ip a
```

```
<output_omitted>
4: tunl0@NONE: <NOARP,UP,LOWER_UP> mtu 1440 qdisc noqueue state
UNKNOWN group default qlen 1000
    link/ipip 0.0.0.0 brd 0.0.0.0
    inet 192.168.0.1/32 brd 192.168.0.1 scope global tunl0
        valid_lft forever preferred_lft forever
6: calib0b93ed4661@if4: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu
1440 qdisc noqueue state UP group default
    link/ether ee:ee:ee:ee:ee:ee brd ff:ff:ff:ff:ff:ff link-netnsid 1
    inet6 fe80::ecee:eeff:feee:eeee/64 scope link
        valid_lft forever preferred_lft forever
<output_omitted>
```