



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 may be different, use YOUR control-plane name in future commands, if different than the book.

```
student@cp:~$ kubectl get node
```

NAME	STATUS	ROLES	AGE	VERSION
cp	Ready	control-plane	28m	v1.26.1
worker	Ready	<none>	50s	v1.26.1

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 cp 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@cp:~$ kubectl describe node cp
```

```
Name:                cp
Roles:               control-plane,master
Labels:              beta.kubernetes.io/arch=amd64
                    beta.kubernetes.io/os=linux
                    kubernetes.io/arch=amd64
                    kubernetes.io/hostname=cp
                    kubernetes.io/os=linux
Annotations:         node-role.kubernetes.io/control-plane=
                    kubeadm.alpha.kubernetes.io/cri-socket: /var/run/dockershim.sock
                    node.alpha.kubernetes.io/ttl: 0
                    projectcalico.org/IPv4Address: 10.142.0.3/32
                    projectcalico.org/IPv4IPIPTunnelAddr: 192.168.242.64
                    volumes.kubernetes.io/controller-managed-attach-detach: true
CreationTimestamp:   Tue, 24 Feb 2023 22:04:03 +0000
Taints:              node-role.kubernetes.io/master:NoSchedule
<output_omitted>
```

3. Allow the cp server to run non-infrastructure pods. The cp 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. There may be more than one taint. Keep checking and removing them until all are removed.

```
student@cp:~$ kubectl describe node | grep -i taint
```

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

```
student@cp:~$ kubectl describe node | grep -i taint
```

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

```
student@cp:~$ kubectl taint nodes --all node-role.kubernetes.io/control-plane-
```

```
node/cp untainted
error: taint "node-role.kubernetes.io/control-plane" not found
```

- 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@cp:~$ kubectl get pods --all-namespaces
```

NAMESPACE	NAME	READY	STATUS	RESTARTS	AGE
kube-system	calico-node-jlgwr	1/1	Running	0	6m
kube-system	calico-kube-controllers-74b88b647-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>

- 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@cp:~$ 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@cp:~$ kubectl -n kube-system delete \
  pod coredns-576cbf47c7-vq5dz coredns-576cbf47c7-rn6v4
```

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

- 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@cp:~$ 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>
```

- Containerd may still be using an out of date notation for the runtime-endpoint. You may see errors about an undeclared resource type such as unix//. We will update the **crictl** configuration. There are many possible configuration options. We will set one, and view the configuration file that is created.

```
student@cp:~$ sudo crictl config --set \
runtime-endpoint=unix:///run/containerd/containerd.sock \
--set image-endpoint=unix:///run/containerd/containerd.sock
```

```
student@cp:~$ sudo cat /etc/crictl.yaml
```

```
runtime-endpoint: "unix:///run/containerd/containerd.sock"
image-endpoint: "unix:///run/containerd/containerd.sock"
timeout: 0
debug: false
pull-image-on-create: false
disable-pull-on-run: false
```