

## Lesson 07 Demo 04

### Troubleshooting Node Readiness

**Objective:** To diagnose and troubleshoot the issue of a worker node transitioning from the status of Not Ready to Ready

**Tools required:** kubeadm, kubectl, kubelet, and containerd

**Prerequisites:** A Kubernetes cluster (refer to Demo 01 from Lesson 01 for setting up a cluster)

Steps to be followed:

1. Check the node status on the master node
2. Disable worker-node-2 and troubleshoot the issue
3. Fix worker-node-2

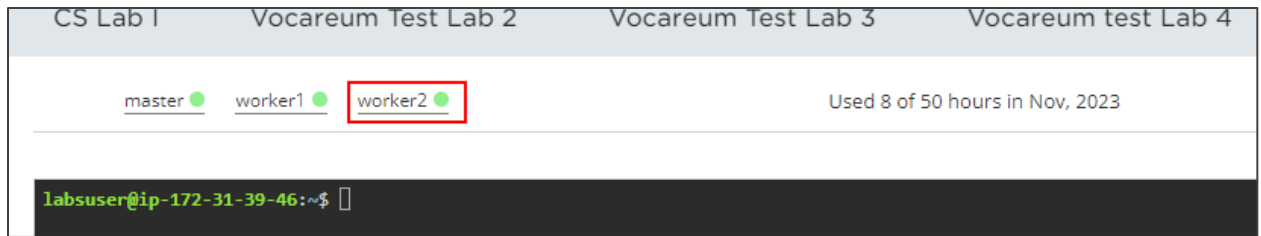
#### Step 1: Check the node status on the master node

- 1.1 Check the node status on the master node using the following command:

**kubectl get nodes**

```
labsuser@master:~$ kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
master.example.com                 Ready    control-plane   19h   v1.30.4
worker-node-1.example.com          Ready    <none>         19h   v1.30.4
worker-node-2.example.com          Ready    <none>         19h   v1.30.4
labsuser@master:~$
```

## 1.2 Navigate to worker-node-2 in the LMS dashboard



## Step 2: Disable worker-node-2 and troubleshoot the issue

### 2.1 Execute the following commands to stop and check the kubelet service:

**sudo service kubelet stop**

**sudo service kubelet status**

```
labsuser@worker-node-2:~$ sudo service kubelet stop
labsuser@worker-node-2:~$ sudo service kubelet status
o kubelet.service - kubelet: The Kubernetes Node Agent
   Loaded: loaded (/lib/systemd/system/kubelet.service; enabled; vendor preset: enabled)
   Drop-In: /usr/lib/systemd/system/kubelet.service.d
            └─10-kubeadm.conf
   Active: inactive (dead) since Mon 2023-11-06 04:36:42 UTC; 15s ago
     Docs: https://kubernetes.io/docs/
   Process: 4816 ExecStart=/usr/bin/kubelet $KUBELET_KUBECONFIG_ARGS $KUBELET_CONFIG_ARGS $KUBELET_KUBEADM_ARGS $KUBELET_EXTRA_ARGS (code=exited, status=0/SUCCESS)
   Main PID: 4816 (code=exited, status=0/SUCCESS)
    CPU: 3.266s

Nov 06 04:36:37 worker-node-2.example.com kubelet[4816]: E1106 04:36:37.338987 4816 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:36:38 worker-node-2.example.com kubelet[4816]: E1106 04:36:38.339117 4816 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:36:39 worker-node-2.example.com kubelet[4816]: E1106 04:36:39.339580 4816 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:36:40 worker-node-2.example.com kubelet[4816]: E1106 04:36:40.339943 4816 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:36:41 worker-node-2.example.com kubelet[4816]: E1106 04:36:41.340322 4816 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:36:41 worker-node-2.example.com systemd[1]: Stopping kubelet: The Kubernetes Node Agent...
Nov 06 04:36:41 worker-node-2.example.com kubelet[4816]: 11106 04:36:41.986410 4816 dynamic_cafile_content.go:171] "Shutting down controller" name="client-ca-bundle:/etc/kubernetes/
Nov 06 04:36:42 worker-node-2.example.com systemd[1]: kubelet.service: Deactivated successfully.
Nov 06 04:36:42 worker-node-2.example.com systemd[1]: Stopped kubelet: The Kubernetes Node Agent.
Nov 06 04:36:42 worker-node-2.example.com systemd[1]: kubelet.service: Consumed 3.266s CPU time.
lines 1-20/20 (END)
```

Press **q** to exit

2.2 After a few minutes, check the status of **worker-node-2** in the master node using the following command:

**kubectl get nodes**

```
labsuser@master:~$ kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
master.example.com                  Ready     control-plane  8d    v1.30.5
worker-node-1.example.com           Ready     <none>      8d    v1.30.4
worker-node-2.example.com           NotReady  <none>      8d    v1.30.4
labsuser@master:~$
```

The status of **worker-node-2** is **NotReady**.

2.3 Execute the following command to check the node:

**kubectl describe node worker-node-2.example.com**

```
labsuser@master:~$ kubectl describe node worker-node-2.example.com
Name: worker-node-2.example.com
Roles: <none>
Labels: beta.kubernetes.io/arch=amd64
        beta.kubernetes.io/os=linux
        kubernetes.io/arch=amd64
        kubernetes.io/hostname=worker-node-2.example.com
        kubernetes.io/os=linux
Annotations: kubeadm.alpha.kubernetes.io/cri-socket: unix:///var/run/containerd/containerd.sock
              node.alpha.kubernetes.io/ttl: 0
              projectcalico.org/IPV4Address: 172.31.20.246/20
              projectcalico.org/IPV4IPTunnelAddr: 192.168.232.192
              volumes.kubernetes.io/controller-managed-attach-detach: true
CreationTimestamp: Mon, 06 Nov 2023 04:33:28 +0000
Taints: node.kubernetes.io/unreachable:NoExecute
        node.kubernetes.io/unreachable:NoSchedule
Unschedulable: false
Lease:
  HolderIdentity: worker-node-2.example.com
  AcquireTime: <unset>
  RenewTime: Mon, 06 Nov 2023 04:36:32 +0000
Conditions:
  Type             Status    LastHeartbeatTime    LastTransitionTime    Reason             Message
  ----             -
  NetworkUnavailable False    Mon, 06 Nov 2023 04:34:23 +0000    Mon, 06 Nov 2023 04:34:23 +0000    CalicoIsUp         Calico is running on this node
  MemoryPressure   Unknown    Mon, 06 Nov 2023 04:33:58 +0000    Mon, 06 Nov 2023 04:37:16 +0000    NodeStatusUnknown  Kubelet stopped posting node status.
  DiskPressure     Unknown    Mon, 06 Nov 2023 04:33:58 +0000    Mon, 06 Nov 2023 04:37:16 +0000    NodeStatusUnknown  Kubelet stopped posting node status.
  PIDPressure      Unknown    Mon, 06 Nov 2023 04:33:58 +0000    Mon, 06 Nov 2023 04:37:16 +0000    NodeStatusUnknown  Kubelet stopped posting node status.
  Ready            Unknown    Mon, 06 Nov 2023 04:33:58 +0000    Mon, 06 Nov 2023 04:37:16 +0000    NodeStatusUnknown  Kubelet stopped posting node status.
```

The command helps diagnose and troubleshoot the node status.

## Step 3: Fix worker-node-2

3.1 In **worker-node-2**, start the kubelet service and check its status using the following commands:

```
sudo systemctl start kubelet
sudo systemctl status kubelet
```

```
labuser@worker-node-2:~$ sudo systemctl start kubelet
labuser@worker-node-2:~$ sudo systemctl status kubelet
• kubelet.service - kubelet: The Kubernetes Node Agent
   Loaded: loaded (/lib/systemd/system/kubelet.service; enabled; vendor preset: enabled)
   Drop-In: /usr/lib/systemd/system/kubelet.service.d
            └─10-kubeadm.conf
   Active: active (running) since Mon 2023-11-06 04:48:06 UTC; 12s ago
     Docs: https://kubernetes.io/docs/
   Main PID: 8735 (kubelet)
    Tasks: 10 (limit: 9379)
  Memory: 25.5M
     CPU: 420ms
   CGroup: /system.slice/kubelet.service
           └─8735 /usr/bin/kubelet --bootstrap-kubeconfig=/etc/kubernetes/bootstrap-kubelet.conf --kubeconfig=/etc/kubernetes/kubelet.conf --config=/var/lib/kubelet/config.yaml --cont

Nov 06 04:48:09 worker-node-2.example.com kubelet[8735]: E1106 04:48:09.705046 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:10 worker-node-2.example.com kubelet[8735]: E1106 04:48:10.706207 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:11 worker-node-2.example.com kubelet[8735]: E1106 04:48:11.706415 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:12 worker-node-2.example.com kubelet[8735]: E1106 04:48:12.707325 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:13 worker-node-2.example.com kubelet[8735]: E1106 04:48:13.708186 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:14 worker-node-2.example.com kubelet[8735]: E1106 04:48:14.709244 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:15 worker-node-2.example.com kubelet[8735]: E1106 04:48:15.709901 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:16 worker-node-2.example.com kubelet[8735]: E1106 04:48:16.710602 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:17 worker-node-2.example.com kubelet[8735]: E1106 04:48:17.711686 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
Nov 06 04:48:18 worker-node-2.example.com kubelet[8735]: E1106 04:48:18.712155 8735 file_linux.go:61] "Unable to read config path" err="path does not exist, ignoring" path="/etc/kube
lines 1-23/23 (END)
```

Press **q** to exit

3.2 After a few minutes, check the node status on the master node using the following command:

```
kubectl get nodes
```

```
labuser@master:~$ kubectl get nodes
NAME                                STATUS    ROLES    AGE   VERSION
master.example.com                 Ready    control-plane   19h   v1.30.4
worker-node-1.example.com         Ready    <none>        19h   v1.30.4
worker-node-2.example.com         Ready    <none>        19h   v1.30.4
labuser@master:~$
```

By following these steps, you have successfully diagnosed and troubleshooted the issues that caused a worker node to transition from the status of Not Ready to Ready.