

# Lesson 09 Demo 03 Understanding Cluster and Node Logs

**Objective:** To understand the procedure of inspecting and troubleshooting control-plane components like the API server, controller manager, etcd, and kubelet service in worker nodes

Tools required: kubeadm, kubectl, kubelet, and containerd

**Prerequisites:** A Kubernetes cluster should already be set up (refer to the steps provided in Lesson 02, Demo 01 for guidance).

#### Steps to be followed:

- 1. View the control-plane component logs
- 2. View the controller manager logs
- 3. View the etcd logs
- 4. View the worker node logs

### Step 1: View the control-plane component logs

1.1 In the master node, navigate into the **log/pods** folder and list its components using the following commands:

cd /var/log/pods

ls

```
labsuser@master:~$ cd /var/log/pods$
labsuser@master:/var/log/pods$ ls
kube-system_calico-kube-controllers-7ddc4f45bc-zwxbh_223e1a32-5ce8-48ef-baa1-d65598da7988
kube-system_calico-node-v75jm_d0467ad8-127b-419f-9b08-edd87a2bfee8
kube-system_coredns-5dd5756b68-rgmdl_3e2beb6d-488c-4780-96bd-12c3e341c61c
kube-system_coredns-5dd5756b68-wtbjw_226e2d53-0cd6-4d69-99d0-44437ef5603e
kube-system_etcd-master.example.com_cd37cd8c60ea83647872ec4fcea48e57
kube-system_kube-apiserver-master.example.com_6ee13124afb883b3cebe80c2fbf06d0d
kube-system_kube-controller-manager-master.example.com_9da923039a4cbbee4e4404c678cbc9f1
kube-system_kube-proxy-ps78n_656f0d65-33e3-4ba1-9f39-03d9b69af453
kube-system_kube-scheduler-master.example.com_672923b25ef0715c9f5d824e6e124fd1
labsuser@master:/var/log/pods$
```



1.2 Navigate into the API server log sub-directory using the following command: cd kube-system kube-apiservermaster.example.com\_6ee13124afb883b3cebe80c2fbf06d0d/kube-apiserver

```
l<mark>absuser@master:/var/log/pods$ cd kube-system_kube-apiserver-master.example.com_6ee13124afb883b3cebe80c2fbf06d0d/kube-apiserve
l<mark>absuser@master:</mark>/var/log/pods/kube-system_kube-apiserver-master.example.com_6ee13124afb883b3cebe80c2fbf06d0d/kube-apiserver$</mark>
```

Note: The alphanumeric number after the API server component name will vary between servers.

1.3 List the latest log file using the following command:

ls -la

```
er@master:/var/log/pods/kube-system_kube-apiserver-master.example.com_6ee13124afb883b3cebe80c2fbf06d0d/kube-apiserver$ ls -la
drwxr-xr-x 3 root root 4096 Nov 4 09:20 ...
-rw-r---- 1 root root 42148 Nov 4 09:30 0.log
labsuser@master:/var/log/pods/kube-system_kube-apiserver-master.example.com_6ee13124afb883b3cebe80c2fbf06d0d/kube-apiserver$
```

The file **0.log** is the latest log file.

1.4 View the logs using the following command:

sudo cat 0.log

```
"Attributes: "mo.1," "BalancerAttributes": null,
"BalancerAttributes": null,
"Type": 0,
"Metadata": null
), Err: connection error: desc = "transport: Error while dialing: dial tcp 127.0.0.1:2379: connect: connection refus
```



```
2023-11-04109:30:18.760805762Z stderr F 11104 09:30:18.760718

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:30:18.761336562Z stderr F 11104 09:30:18.761680

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:30:18.761616165Z stderr F 11104 09:30:18.761680

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.756439345Z stderr F 11104 09:35:18.756757

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.756439345Z stderr F 11104 09:35:18.757350

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.75993459SZ stderr F 11104 09:35:18.759581

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.75989359SZ stderr F 11104 09:35:18.758630

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.75980359SZ stderr F 11104 09:35:18.758630

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.75980359SZ stderr F 11104 09:35:18.758630

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.75063479Z stderr F 11104 09:35:18.759842

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.7508397SZ stderr F 11104 09:35:18.759831

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.7508397SZ stderr F 11104 09:35:18.760807

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.7508397SZ stderr F 11104 09:35:18.759842

1 handler.go:232] Adding GroupVersion crd.projectcalico.org v1 to ResourceManager
2023-11-04109:35:18.7508397SZ stderr F 11104 09:35:18.760807

1 handler.go:232] Add
```

#### **Step 2: View the controller manager logs**

2.1 Navigate into the controller manager log sub-directory using the following command: cd kube-system\_kube-controller-manager-master.example.com\_9da923039a4cbbee4e4404c678cbc9f1/kube-controller-manager

```
labsuser@master:/var/log/pods$ cd kube-system_kube-controller-manager-master.example.com_9da923039a4cbbee4e4404c678cbc9f1/kube-controller-manager
labsuser@master:/var/log/pods/kube-system_kube-controller-manager-master.example.com_9da923039a4cbbee4e4404c678cbc9f1/kube-controller-manager$
```

2.2 List the latest log file using the following command:

Is -la

```
labsuser@master:/var/log/pods/kube-system_kube-controller-manager-master.example.com_9da923039a4cbbee4e4404c678cbc9f1/kube-controller-manager$ ls -la total 48
drwxr-xr-x 2 root root 4096 Nov 4 09:20 ..
drwxr-xr-x 3 root root 4096 Nov 4 09:20 ..
-rw-r----- 1 root root 40269 Nov 4 09:24 0.log
labsuser@master:/var/log/pods/kube-system_kube-controller-manager-master.example.com_9da923039a4cbbee4e4404c678cbc9f1/kube-controller-manager$
```

The file **0.log** is the latest log file.

2.3 View the logs using the following command: sudo cat 0.log

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```
tusUpdateNeeded to needed true, because nodeName=\"morker-node-2.example.com\" does not exist"
2023-11-04109:23:58.7374275162 stderr F 11104 09:23:58.7377363 1 topologycache.go:237] "Can't get CPU or zone information for node" mode="morker-node-1.example.com"
2023-11-04109:23:58.7374275162 stderr F 11104 09:23:58.737567 stderr F 11104 09:23:58.737567 stderr F 11104 09:23:58.737567 stderr F 11104 09:23:58.737567 stderr F 11104 09:23:58.76727 1 event.go:307] "Event occurred" object="kube-system/kube-proxy" fieldPath="" kind="DaemonSet" apiVersion="apps/v1" type="N ormal" reason="SuccessfulCreate" message="Created pod: kube-proxy-16x5j"
2023-11-04109:23:58.8456487352 stderr F 11104 09:23:58.845533 1 topologycache.go:237] "Can't get CPU or zone information for node" node="worker-node-1.example.com"
2023-11-04109:23:58.8456487352 stderr F 11104 09:23:58.845533 1 topologycache.go:237] "Can't get CPU or zone information for node" node="worker-node-1.example.com"
2023-11-04109:23:58.8456487352 stderr F 11104 09:24:00.614509 1 replica_set.go:676] "Finished syncing" kind="ReplicaSet" key="kube-system/calico-kube-controllers-7ddc4f45bc" duration="6" api3-11-04109:24:00.7022030242 stderr F 11104 09:24:00.702450 1 node_lifecycle_controller.go:877] "Hissing timestamp for Node. Assuming now as a timestamp" node="worker-node-2.example.com"
2023-11-04109:24:00.7022030242 stderr F 11104 09:24:00.70215 1 event.go:307] "Event occurred" object="worker-node-2.example.com" fieldPath="" kind="Node" apiVersion="v1" type="Normal" reason="segisteredNode" message="Node worker-node-2.example.com" in Controller-manager$
```

#### Step 3: View the etcd logs

3.1 Navigate into the etcd log sub-directory using the following command:

cd kube-system\_etcd-

master.example.com\_cd37cd8c60ea83647872ec4fcea48e57/etcd

```
labsuser@master:/var/log/pods$ cd kube-system_etcd-master.example.com_cd37cd8c60ea83647872ec4fcea48e57/etcd labsuser@master:/var/log/pods/kube-system_etcd-master.example.com_cd37cd8c60ea83647872ec4fcea48e57/etcd$ ■
```

3.2 List the latest log file using the following command:

ls -la

```
labsuser@master:/var/log/pods/kube-system_etcd-master.example.com_cd37cd8c60ea83647872ec4fcea48e57/etcd$ ls -la total 52
drwxr-xr-x 2 root root 4096 Nov 4 09:20 .
drwxr-xr-x 3 root root 4096 Nov 4 09:20 ..
-rw-r---- 1 root root 40042 Nov 4 09:50 0.log
labsuser@master:/var/log/pods/kube-system_etcd-master.example.com_cd37cd8c60ea83647872ec4fcea48e57/etcd$
```

The file **0.log** is the latest log file.

3.3 View the logs using the following command:

sudo cat 0.log

```
labsuser@master:/var/log/pods/kube-system_etcd=master.example.com_cd37cd8c60ea83647872ec4fcea48e57/etcd$ sudo cat 0.log
2023-11-04709:20:14.482252722 stderr f {"level":"warn", "ts"":2023-11-04709:20:14.4808792", "caller":"embed/config.go:673", "msg":"Running http and grpc server on single port. This is not recomended for production."
2023-11-04709:20:14.4838044132 stderr f {"level":"info", "ts":"2023-11-04709:20:14.4837052", "caller":"etcdmain/etcd.go:73", "msg":"Running: ", "args":["etcd", "--advertise-client-urls-https://172.31.38.180:23799", "-cert-file=/etc/kubernetes/pki/etcd/server.ort", "--client-cert-authetrue", "--data-dir=/var/lib/etcd", "--experimental-initial-corrupt-check-true", "--experimental-initial-check-true", "--experimental-initial-check-true", "--experimental-initial-check-true", "--experimental-ini
```



### Step 4: View the worker node logs

4.1 In the **worker node-1**, view the kubelet service logs using the following command: **sudo journalctl -xu kubelet -n** 

Press **q** on the keyboard to exit from the above command.

4.2 View pod logs in the worker node using the following commands:

## cd /var/log/pods/

ls

```
labsuser@worker-node-1:~$ cd /var/log/pods/
labsuser@worker-node-1:/var/log/pods$ ls
kube-system_calico-node-7757b_38058a03-2306-4ae0-a0ba-160ea4b1b948 kube-system_kube-proxy-2m2zt_807ca464-4eea-4e28-a55d-8254e45ca53d
labsuser@worker-node-1:/var/log/pods$
```

The container name will be listed as folders. The logs of any pod within the container can be viewed by navigating inside the folder.

By following these steps, you will successfully be able to inspect and troubleshoot the control-plane components in the worker nodes.