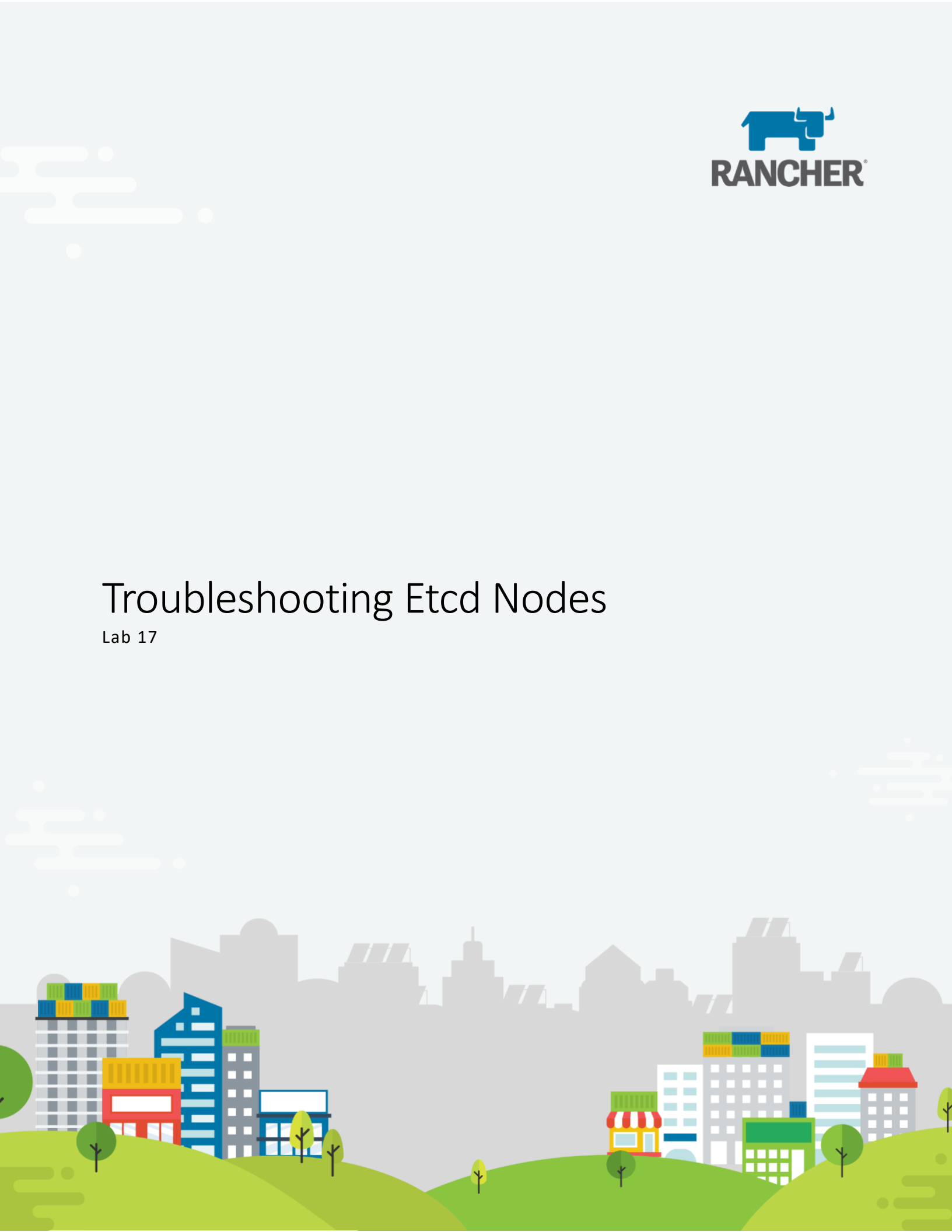


Troubleshooting Etcd Nodes

Lab 17

What are you Learning?

In this lesson you'll be troubleshooting Kubernetes etcd nodes.

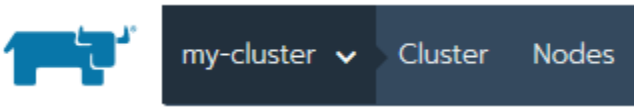
Why is it important?

Etcd nodes are where Kubernetes stores data. Etcd is a distributed high-speed key-value store, which is also a CNCF project. No etcd, means no cluster, so it's of the utmost importance that you maintain a quorum and a majority for the correct operation of the Kubernetes clusters.

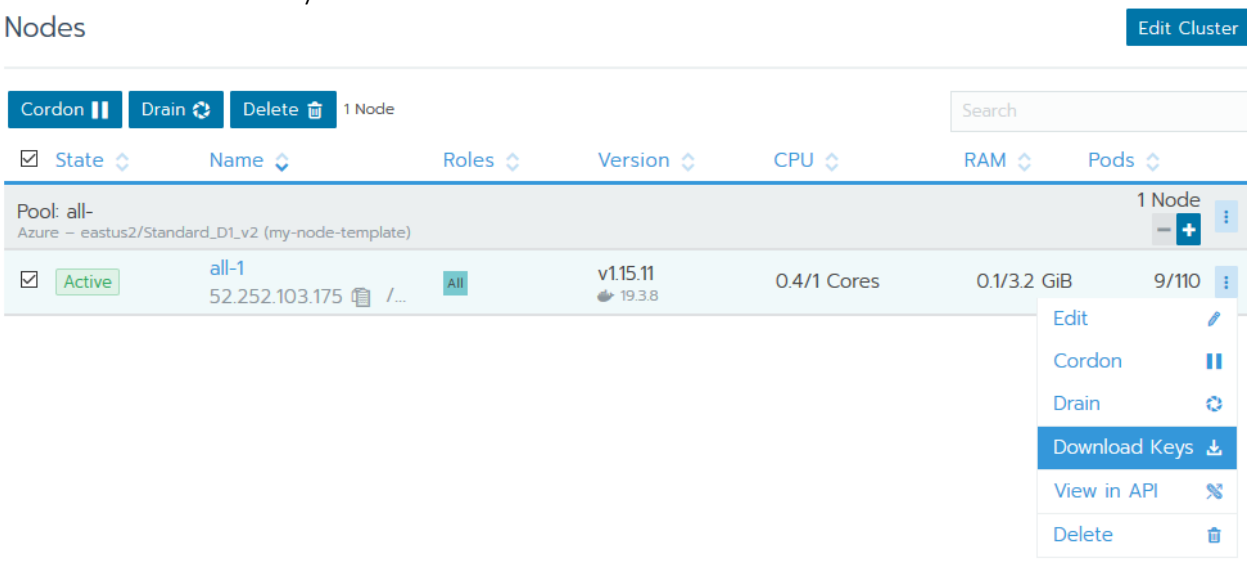
Troubleshooting Etcd Nodes

1. You'll need node access to the etcd nodes. For nodes provisioned with Rancher via an infrastructure provider, you can download the SSH keys.
2. For the cluster you'll be diagnosing,

3. Navigate to nodes



4. Select Download Keys



5. Once you've connected via SSH, you're going to look at the logs in Docker.
6. Check if the etcd containers are running.
7. Check the logs for issues.
8. The next set of checks are connectivity checks, the assume there's at least one healthy node to connect to.
9. Etcdctl, the cli for etcd, is built into the etcd container, and is used for these checks.
10. Since etcd runs as a distributed system, you want to check all of its members.

11. Use etcdctl to check the endpoint status. Etcd uses the RAFT consensus algorithm, to maintain quorum. A significant distance between RAFT INDEX and RAFT TERM indicates a problem. There should one, and only one leader, and only one.
12. Check the health of the members
13. Check port connectivity, etcd uses both 2379 and 2380.
14. Check for any alarms. These indicate etcd may be in faulted state.
15. If there is an alarm there are a number of actions your should take.
16. If you continue to have problems, replace any etcd nodes.

Testing That it Works

If etcd is in a bad state, you'll know very quickly. The Kubernetes API stores all state in etcd, without an etcd majority writes from the Kubernetes API will fail and the cluster state will be immutable.

References

- Etcd Nodes – https://rancher.com/docs/rancher/v2.x/en/overview/concepts/#etcd-nodes
- Etcd - https://etcd.io/
- Troubleshooting Etcd Nodes - https://rancher.com/docs/rancher/v2.x/en/troubleshooting/kubernetes-components/etcd/#checking-if-the-etcd-container-is-running
- Control Plane-Node Communication - https://kubernetes.io/docs/concepts/architecture/control-plane-node-communication/