# Exercise 16.1: High Availability Steps

**Overview**

In this lab we will add two more control planes to our cluster, change taints and deploy an application to a particular node, and test that we can access it from outside the cluster. The nodes will handle various infrastructure services and the **etcd** database and should be sized accordingly.

The steps are presented in two ways. First the general steps for those interested in more of a challenge. Following that will be the detailed steps found in previous labs.

You will need three more nodes. One to act as a load balancer, the other two will act as cp nodes for quorum. Log into each and use the **ip** command to fill in the table with the IP addresses of the primary interface of each node. If using **GCE** nodes it would be `ens4`, yours may be different. You may need to install software such an editor on the nodes.

| | |
|---|---|
| Proxy Node | |
| Second Control Plane | |
| Third Control Plane | |

As the prompts may look similar you may want to change the terminal color or other characteristics to make it easier to keep them distinct. You can also change the prompt using something like: **PS1="ha-proxy$ "**, which may help to keep the terminals distinct.

**High level steps:**

1. Deploy a load balancer configured to pass through traffic on your new proxy node. HAProxy is easy to deploy using online documentation. Start with forwarding traffic of the cp alias to just the working cp.
2. Install the Kubernetes software on the second and third cp nodes.
3. Use **kubeadm join** on the second cp, adding it to the cluster as another control plane using the node name.
4. Join the third cp as another control plane to the cluster using the node name.
5. Update the proxy to use all three cps backend IPs.
6. Temporarily shut down the first cp and monitor traffic.