

# K8s Cluster

The project's root folder is `install_k8s`. The project to create the cluster was divided into roles to facilitate the execution of roles. The structure of the roles was divided as follows:

## Roles

- `create-cluster`  
This as the name says creates the cluster. The main file for this role is: `init-cluster.yml`
- `get-token`  
This captures the token in an auxiliary way in the playbooks (`main-newwrk.yml`, `main-master.yml`) so that they have the keys and certificates to add the new servers to the cluster. The main file for this role is: `init-cluster.yml`
- `ha-proxy`  
This configures the HA proxy. The main file for this role is: `init-cluster.yml`
- `install-helm`  
This performs the download of the binaries for the execution of the helm that is used in the creation of the monitoring.
- `install-k8s`  
This performs the installation of the packages: `docker`, `kubectrl`, `kubeadmin`, `kubelet`.
- `install-monit-tools`  
This installs the prometheus operator stack.
- `join-workers`  
This adds workers to the cluster when deploying the cluster.
- `new-master`  
This adds the new masters to the existing cluster.
- `new-workers`  
This adds the new masters to the existing cluster.

## Playbook files and hosts.

In the **hosts** file we have all groups of computers used by ansible:

In the **[kubernetes]** group, we must place all hosts that will have the kubernetes role, for future actions that must be performed in all kubernetes.

In the **[k8s-master]** group there should be all servers that have the role of master.

In the **[k8s-workers]** group there should be all servers that have the role of worker.

In the **[k8s-master-new]** group there must be all servers that will become master, after the completion of the main-master.yml playbook the server must be removed from this group.

In the **[k8s-master-init]** group there is the server that was used for the initial creation of the cluster.

In the **[k8s-master-new]** group there must be all the servers that will become a worker, after the completion of the main-newwrk.yml playbook the server should be removed from this group.

In the group **[ha-proxy]** there is the server that is the haproxy

In the **[k8s-workers: vars]** and **[k8s-master-init: vars]** groups there are variations used in the creation of the cluster.

# Execution playbooks

**main-base.yml:** Install base programs to run ansible, it must be run on all servers.  
**main-createcluster.yml:** This cleans up any old configuration and recreates the cluster.  
**main-Install-k8s.yml:** Install docker, kubeadm, kubelet, kubectl.  
**main-master.yml:** Adds a new server with the master paple.  
**main-monititools.yml:** Installs prometheus operator monitoring.  
**main-newwrk.yml:** Adds a new server with the worker paple.  
**main-proxy.yml:** install the haproxy packages and configure it.

## Structure

The structure used was the re-command by kubernetes inc, following the structure of figure 1

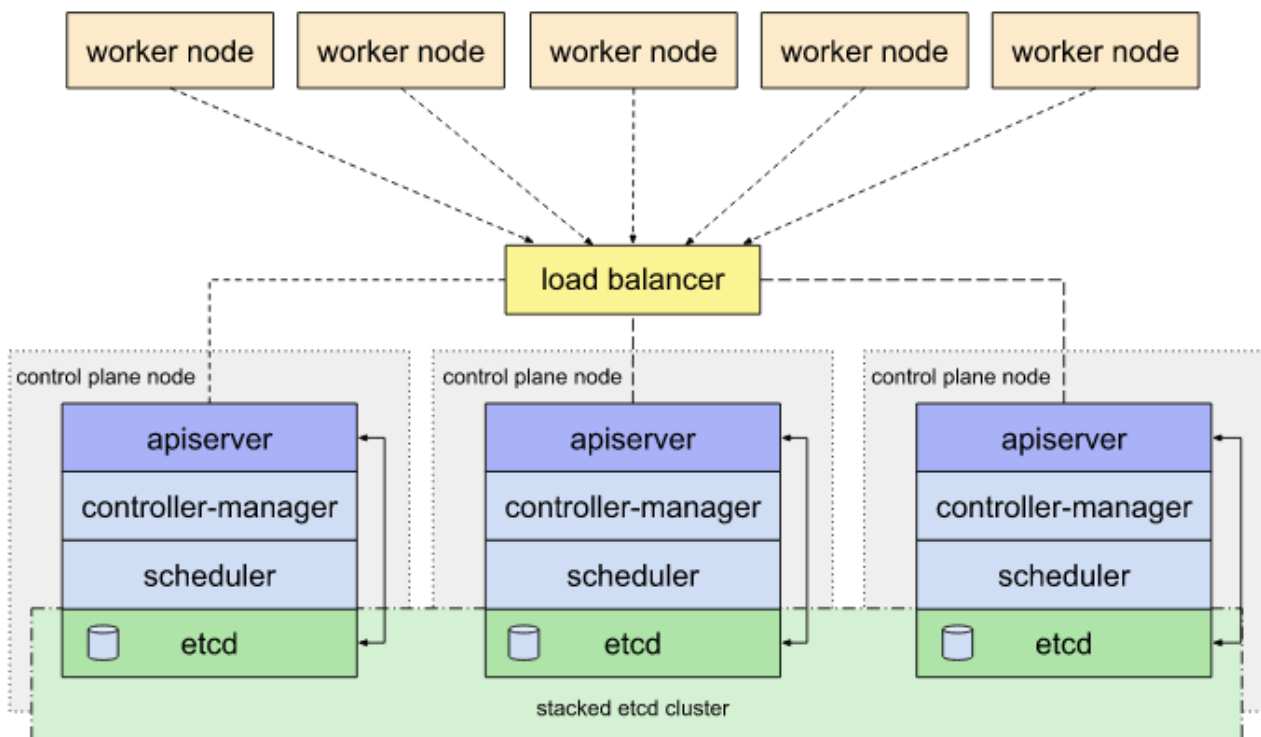
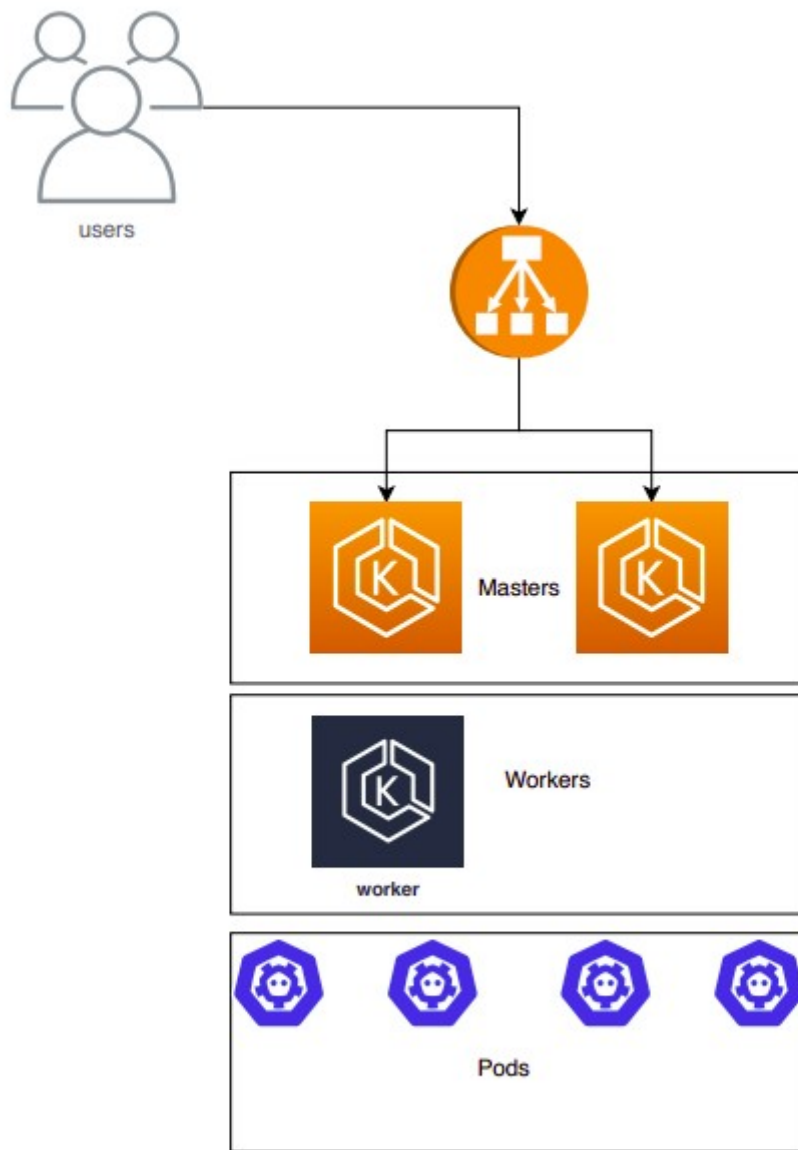


Figura 1

In this image we have the drawing of how the cluster is configured. For the environment.



*Figura 2:*