

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, kubectl, 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.

Resolution Name

It is very important that all machines have hosts registered in /etc/hosts.

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: Add a new server with the master papple.

main-monititools.yml: Installs prometheus operator monitoring.

main-newwrk.yml: Add a new server with the worker papple.

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

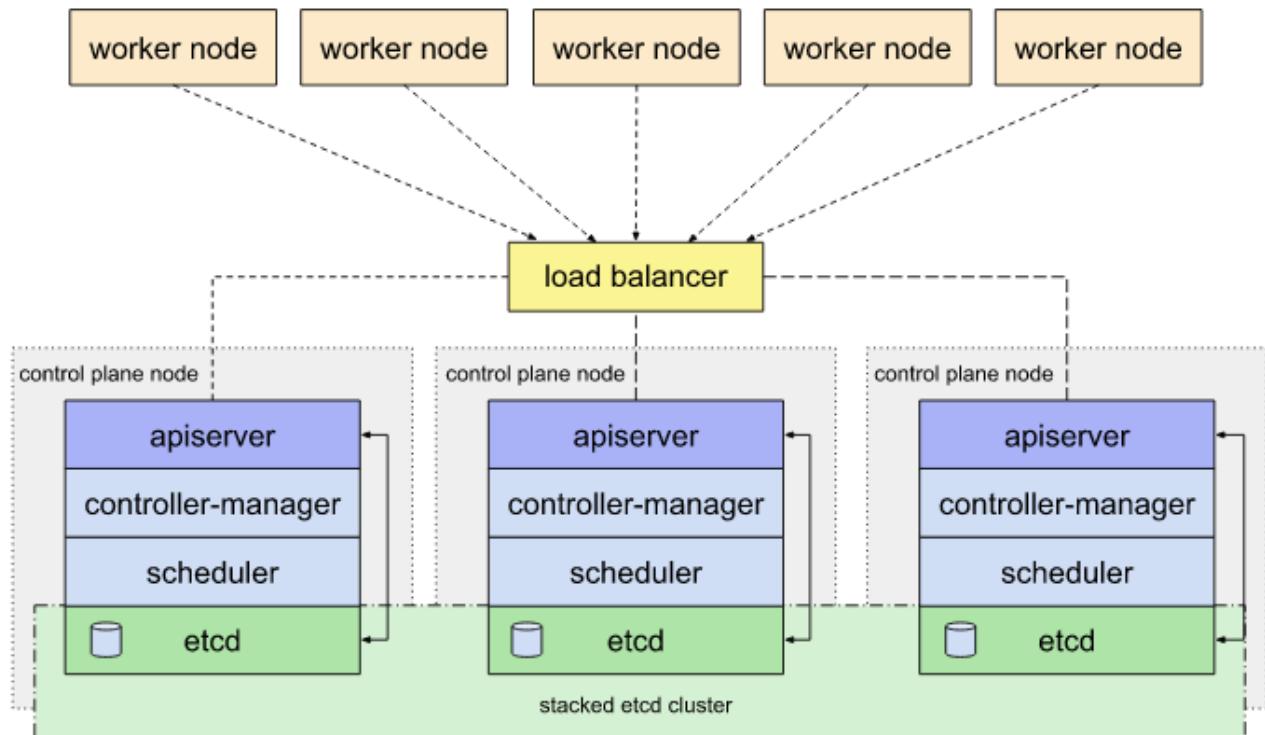


Figura 1

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

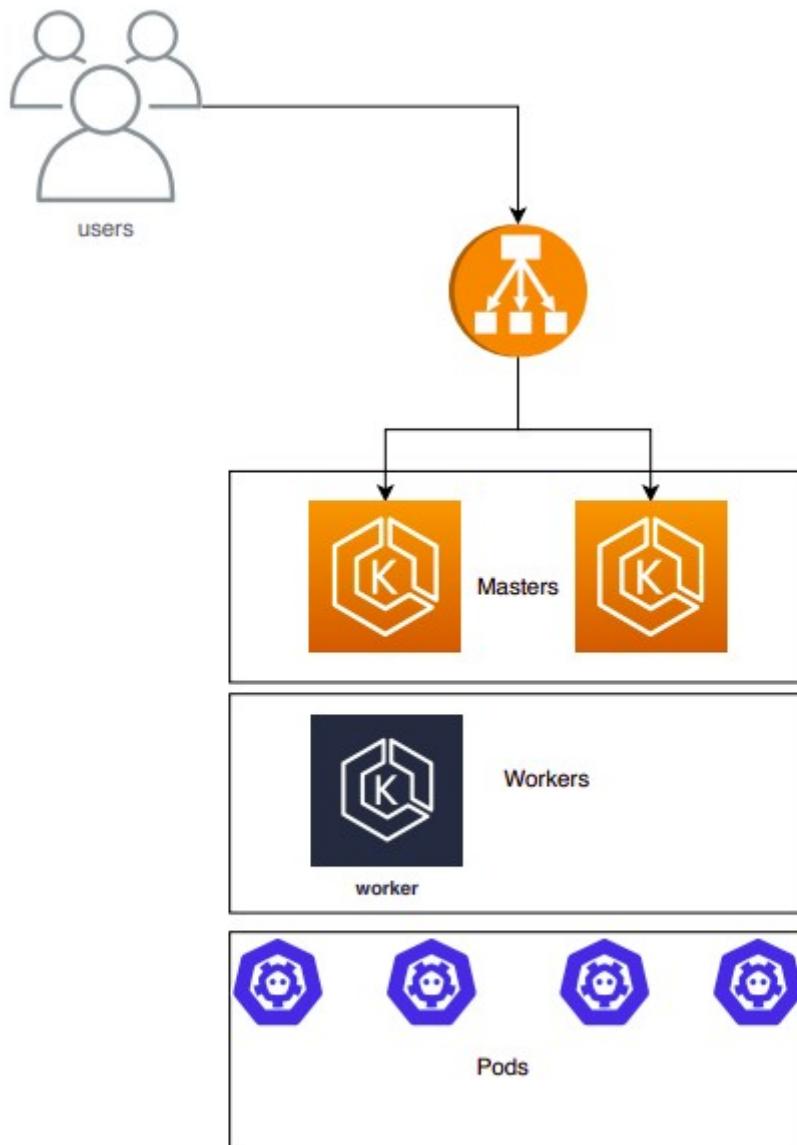


Figura 2:

```
root@haproxy:~# logout
fibo@haproxy:~$ logout
Connection to haproxy closed.
fibo@node1:~$ logout
root@node1:~# kubectl get nodes
NAME      STATUS    ROLES   AGE     VERSION
node1     Ready     master   57m    v1.18.2
node2     Ready     master   45m    v1.18.2
node3     Ready     <none>  47m    v1.18.2
```

Monitoring

For the monitoring we used the helm with the prometheus-monitor stack. These are some of the grafana dashboards:

