**Kubernetes Cluster Setup with Kubespray & Ansible**

1. Generate ssh keys and transfer the keys to nodes to establish password-less authentication.

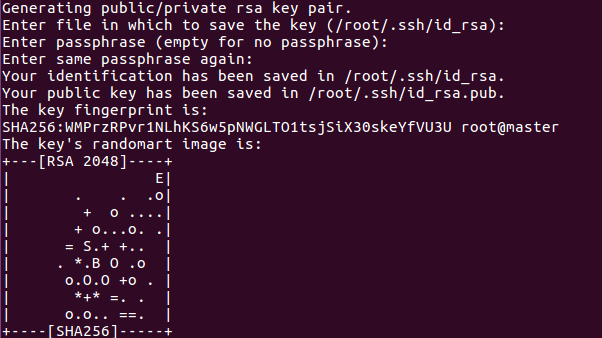
Here,

Master : 172.27.56.145

Node1 : 172.27.15.47

Node2 : 172.27.15.83

*Command : ssh-keygen*



Transfer the keys to all master and nodes.

*Command : ssh-copy-id <user>@<ip-address>*

Note : In case you do not know password, just copy and paster the keys.

2. Get the kubespray repo on your machine and untar it.

*Command :*

*wget https://github.com/kubernetes-incubator/kubespray/archive/v2.7.0.tar.gz*

*tar -xzf v2.7.0.tar.gz*

3. Install the required packages as mentioned in requirements.txt.

Note : pip needs to be installed on the machine as a pre-requisite.

*Command : sudo pip install -r requirements.txt*

4. Create a folder for your cluster and copy the required files from “sample” folder.

*Command :*

*mkdir inventory/mycluster*

*cp -rfp inventory/sample/\* inventory/mycluster*

5. Remove the unnecessary files. [OPTIONAL STEP]

*Command :*

*rm -rf inventory/sample inventory/local/*

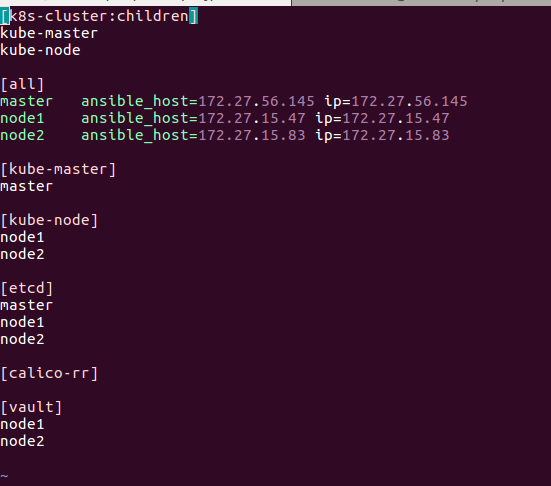
6. Update Ansible inventory file with inventory builder.

*Command :*

*declare -a IPS=(172.27.3.187 172.27.3.188 172.27.3.189 172.27.3.192)*

*CONFIG\_FILE=inventory/mycluster/hosts.ini python3 contrib/inventory\_builder/inventory.py ${IPS[@]}*

7. Update your host.ini file as per your master-node architecture.



[all]

master ansible\_host=172.27.56.145 ip=172.27.56.145

node1 ansible\_host=172.27.15.47 ip=172.27.15.47

node2 ansible\_host=172.27.15.83 ip=172.27.15.83

[kube-master]

master

[kube-node]

node1

node2

[etcd]

master

node1

node2

[calico-rr]

master

node1

node2

[vault]

node1

node2

[k8s-cluster:children]

kube-master

kube-node

8. Run ansible playbook to create the cluster.

*Command :* *ansible-playbook -i inventory/mycluster/hosts.ini cluster.yml*

**Addition of Node**

Update hosts.ini [add a node in hosts.ini] and run below command.

ansible-playbook -i inventory/mycluster/hosts.ini scale.yml –flush-cache

NOTE : This was not working for me so I did below which worked for me. Need to check on this!

*ansible-playbook -i inventory/mycluster/hosts.ini cluster.yml*

**Deletion of Node**

It supports two ways to select the nodes:

Use --extra-vars "node=<nodename>,<nodename2>" to select the node you want to delete.

ansible-playbook -i inventory/mycluster/hosts.ini remove-node.yml -b -v \

--private-key=~/.ssh/private\_key \

--extra-vars "node=nodename,nodename2"

or

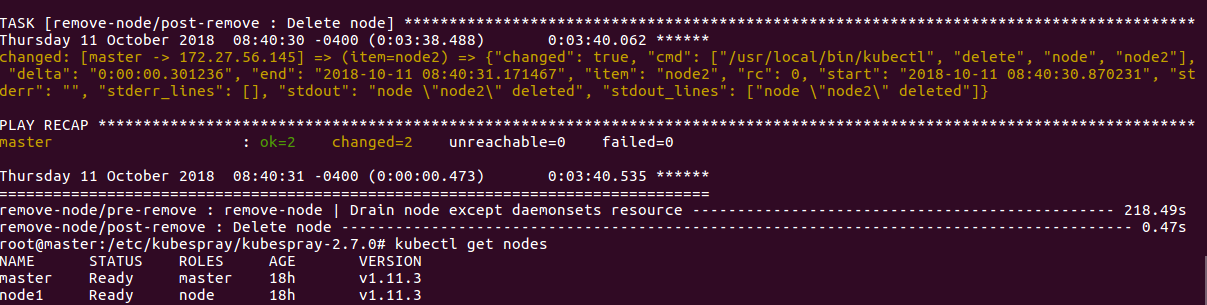
Use --limit nodename,nodename2 to select the node

ansible-playbook -i inventory/mycluster/hosts.ini remove-node.yml -b -v \

--private-key=~/.ssh/private\_key \

--limit “nodename,nodename2"

Ex. : ansible-playbook -i inventory/mycluster/hosts.ini remove-node.yml -b -v --private-key=~/.ssh/private\_key --extra-vars "node=node2"



**Issues & Solutions**

Issue 1 : Permission denied

*Solution : You need to give all root/sudo access to the user which is used by ansible to use the playbook.*

Issue 2 : Python not found.

*Solution : You need to check on master if python is installed on different folder or not present.*

*If python is not present on master, then install.*

*If python is installed at different location, create a symlink.*

*Command : ln -s <src\_dir> <destination\_dir>*

Issue 3 : The conditional check 'hostvars[item]['cluster\_id'] == cluster\_id' failed.

Solution : Run below playbooks in sequence.

ansible-playbook -i inventory/mycluster/hosts.ini remove-node.yml --flush-cache

ansible-playbook -i inventory/mycluster/hosts.ini reset.yml --flush-cache

Issue 4 : Failed to create 'IPPool' resource: resource already exists: IPPool(default-pool).

Solution : Run below playbooks in sequence.

ansible-playbook -i inventory/mycluster/hosts.ini remove-node.yml --flush-cache

ansible-playbook -i inventory/mycluster/hosts.ini reset.yml –flush-cache

Issue 5 : apt-get update", "msg": "W: The repository 'https://download.docker.com/linux/ubuntu xenial Release' does not have a Release file.

*Solution :* Run below playbooks in sequence.

ansible-playbook -i inventory/mycluster/hosts.ini remove-node.yml --flush-cache

ansible-playbook -i inventory/mycluster/hosts.ini reset.yml –flush-cache

Issue 6 : fatal: [node3]: FAILED! => {"msg": "Timeout (12s) waiting for privilege escalation prompt: "}

Solution : Enable Internet access on the machine where error is occurring.