Setup a virtual Openstack environment

Milestones 01: Build the virtual infrastructure

1 .Vagrant 101

After installing vagrant and the resizing plugin, inside the Vagrantfile directory, run

```
vagrant up
```

This command will create the typology based on the Vagrantfile.

To check that the Virtual machines are running

```
vagrant status
```

To connect to the created VMs:

```
vagrant ssh <vm name >
```

If you like to use putty or another ssh client, you can use the public IP with :
username: vagrant
password vagrant

To destroy the created infra:

```
vagrant destroy  -f
```

2. Create bare metal nodes

Note :The next commands must be runned on the bare metal VM

Change the directory

```
# cd /home/vagrant/openstack_scripts/baremetal/
```

Create a node

```
./create_baremetal.sh <node number > <disk size > <VCPU> <RAM>
```

Example:

```
./create_baremetal.sh 01  30G 1 4096
```

3. Add nodes to VirtualBMC

Note :The next commands must be runned on the bare metal VM

Add the node to VirtualBMC

```
vbmc add --port 6230 node_01
vbmc start node_01
```

Check the status of the vm

```
ipmitool -I lanplus -U admin -P password -H 127.0.0.1 -p 6230 power status
```

Turn off the vm

```
ipmitool -I lanplus -U admin -P password -H 127.0.0.1 -p 6230 power off

virsh list --all
```

In virsh you can see the VM in a shutdown state

Turn on the vm

```
ipmitool -I lanplus -U admin -P password -H 127.0.0.1 -p 6230 power on

virsh list --all
```

Milestones 02: Setup OpenStack LAB

Now our lab is ready we'll move to the install of OpenStack on the infrastructure that we built. In each VM you will find a directory called *openstack_scripts*

```
root@controller01:/home/vagrant# ls openstack_scripts/
baremetal  compute  controller  storage
```

For each VM use the right folder. inside you will find a script each one is used to install a node, you can check the used configurations in the *configs* directory.

1. Setup controller node

openstack_scripts/controller/deploy_controller.sh is used to deploy controller components on the controller, the script is splitted into functions, each function is responsible of installing a component, the *deploy_controller* script contains the following functions:

Function	Description
init	Upgrade system, install OpenStack repository and client
mysql	Deploy and configure a MySQL server
rabbitmq	Install and Create a rabbitmq user
memcache	Install memcache server
keystone	Install keystone and configure keystone
glance	Install keystone and configure glance
placement	Install keystone and configure placement
nova	Install keystone and configure nova
cinder	Install keystone and configure cinder
network	Create baremetal and public bridge and
neutron	Install keystone and configure neutron
horizon	Install keystone and configure horizon

ironic	Install keystone and configure ironic

To start deploying the controller node :

Login as root:

```
$ sudo su
```

Change the directory to :

```
# cd /home/vagrant/openstack_scripts/controller/
```

Run the script with the needed function

```
# ./deploy_controller.sh  <function>
```

Run the functions one by one and in each step check that the service is working properly, it is prefered to use the following order :

1. init
2. mysql
3. rabbitmq
4. memcache
5. keystone
6. glance
7. placement
8. nova
9. network
10. neutron
11. cinder
12. horizon
13. ironic

PS: I'll provide how to validate each step in the third milestone

2. Setup compute node

Same as the controller, the deploy_compute.sh is responsible of deploying a compute node, it contains 3 functions :

Function	Description
init	Upgrade system, install OpenStack repository and client
compute	Install nova-compute and hypervisor
neutron	Install OpenVswitch and OVS agent

To start deploying the compute node :

Login as root:

```
$ sudo su
```

Change the directory to :

```
# cd /home/vagrant/openstack_scripts/compute/
```

Run the script with the needed function

```
# ./deploy_compute.sh  <function>
```

3. Setup storage node

Same as the controller, the deploy_storage.sh is responsible of deploying a storage node, it contains 2 functions :

Function	Description
init	Upgrade system, install OpenStack repository and client
storage	Install and configure cinder-volume, create a PV and VG using LVM

To start deploying the storage node :

Login as root:

```
$ sudo su
```

Change the directory to :

```
# cd /home/vagrant/openstack_scripts/storage/
```

Run the script with the needed function

```
# ./deploy_storage.sh  <function>
```

Milestones 03: Documentation

Our work is not done yet, i left many things to add into the final documentations

What next:

- How to validate each componant
- Create Floating IP network
- Create Private network
- Create Flavor
- Create a server
- Create a router
- Attache an Floating IP to VM
- Create volume and attach it to a VM
- Create Bare Metal network
- Upload deploy images to glance
- Create bare metal flavors
- Enroll a node
- Deploy a bare metal server
- Finalise Ironic configuration