OpenStack Meetup #8

OpenStack Deployment with Kolla Ansible Made Easy

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Bogor, 28 Feb 2020

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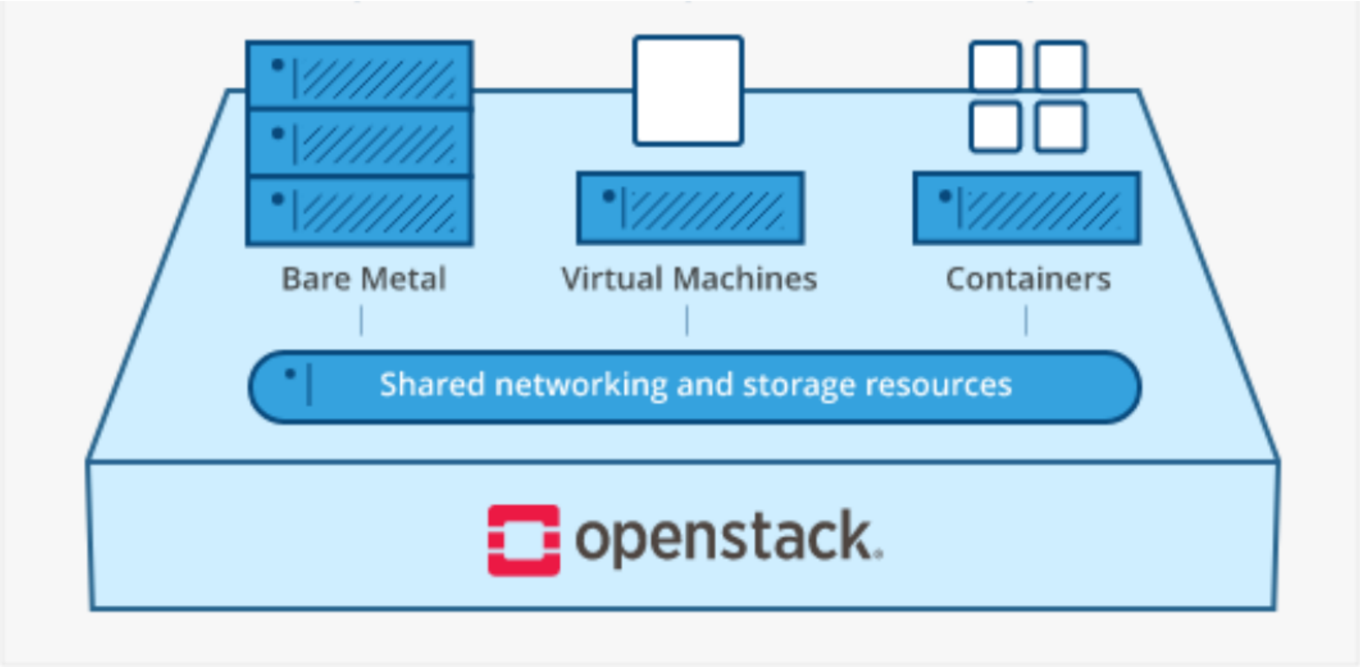
What is OpenStack ?

Open source software for creating private and public clouds.

OpenStack software controls large pools of compute, storage, and networking resources throughout a datacenter, managed through a dashboard or via the OpenStack API



https://www.openstack.org/software/

OpenStack Deployments

Packstack

Manual Installation

Devstack

Triple-O

Kolla Ansible

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Kolla Ansible

OpenStack Services

Freezer

Trove Karbor

Searchlight

Sahara Manila

Cinder Swift

Keystone Barbican

Placement Heat

Glance

Nova Qinling Blazar

Magnum

Zun

Neutron Zaqar

Horizon

Octavia

Designate Mistral

Ironic

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Cyborg EC2API

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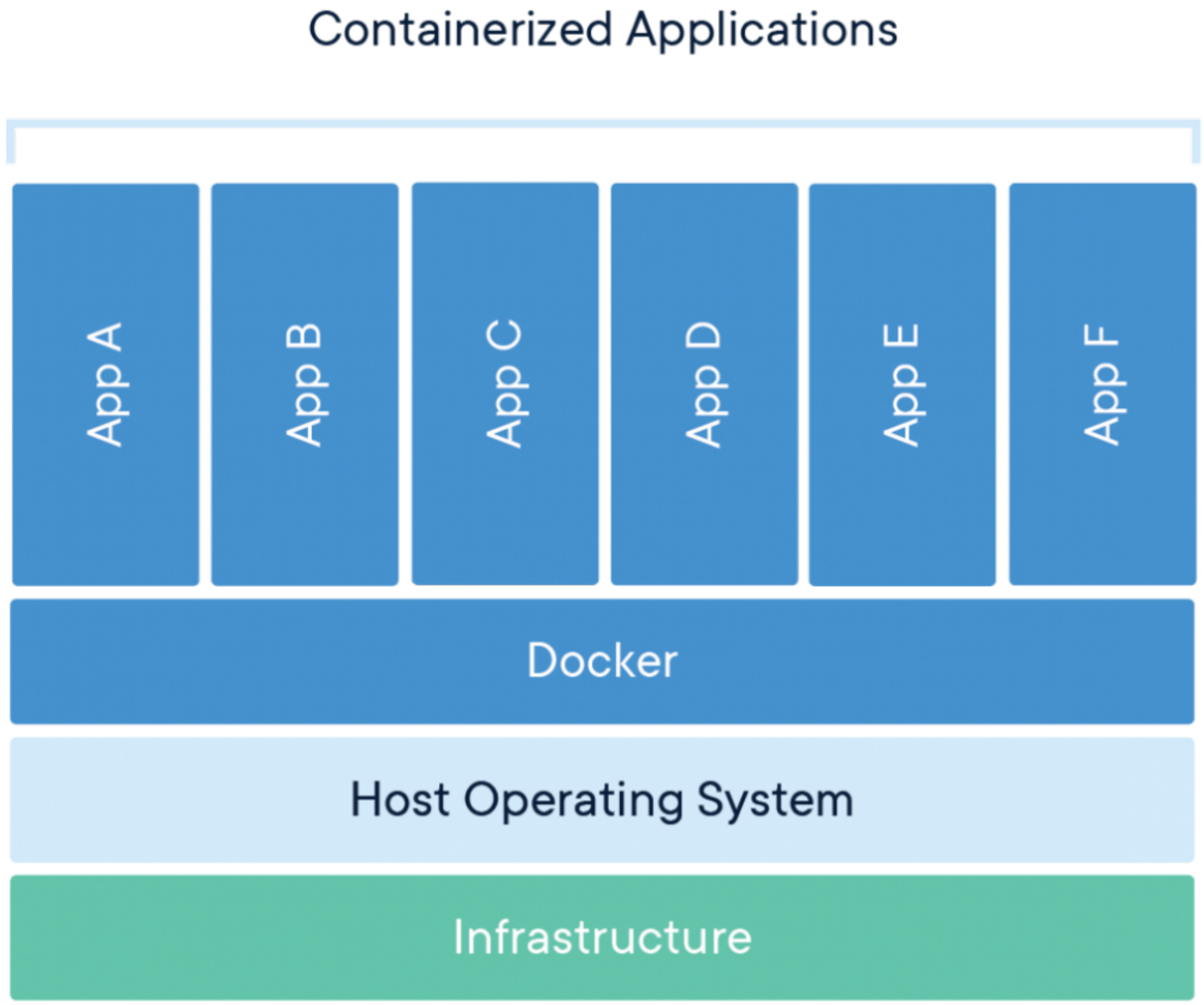
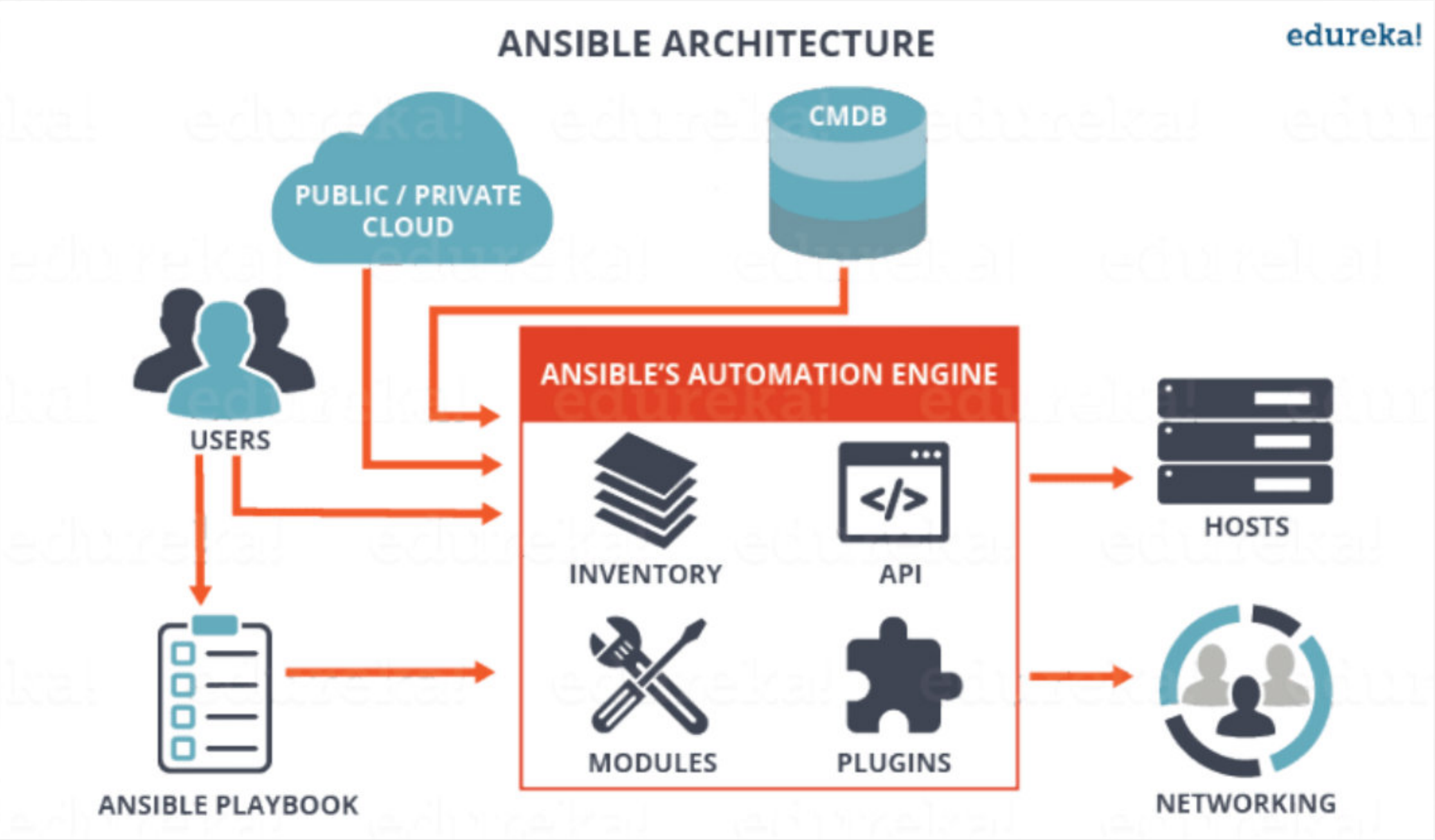
What is Docker ?



What is Ansible ?

Ansible is the simplest way to automate apps and IT infrastructure. Application Deployment + Configuration Management + Continuous Delivery.



https://www.edureka.co/blog/what-is-ansible/

What is Kolla ?

KOLLA

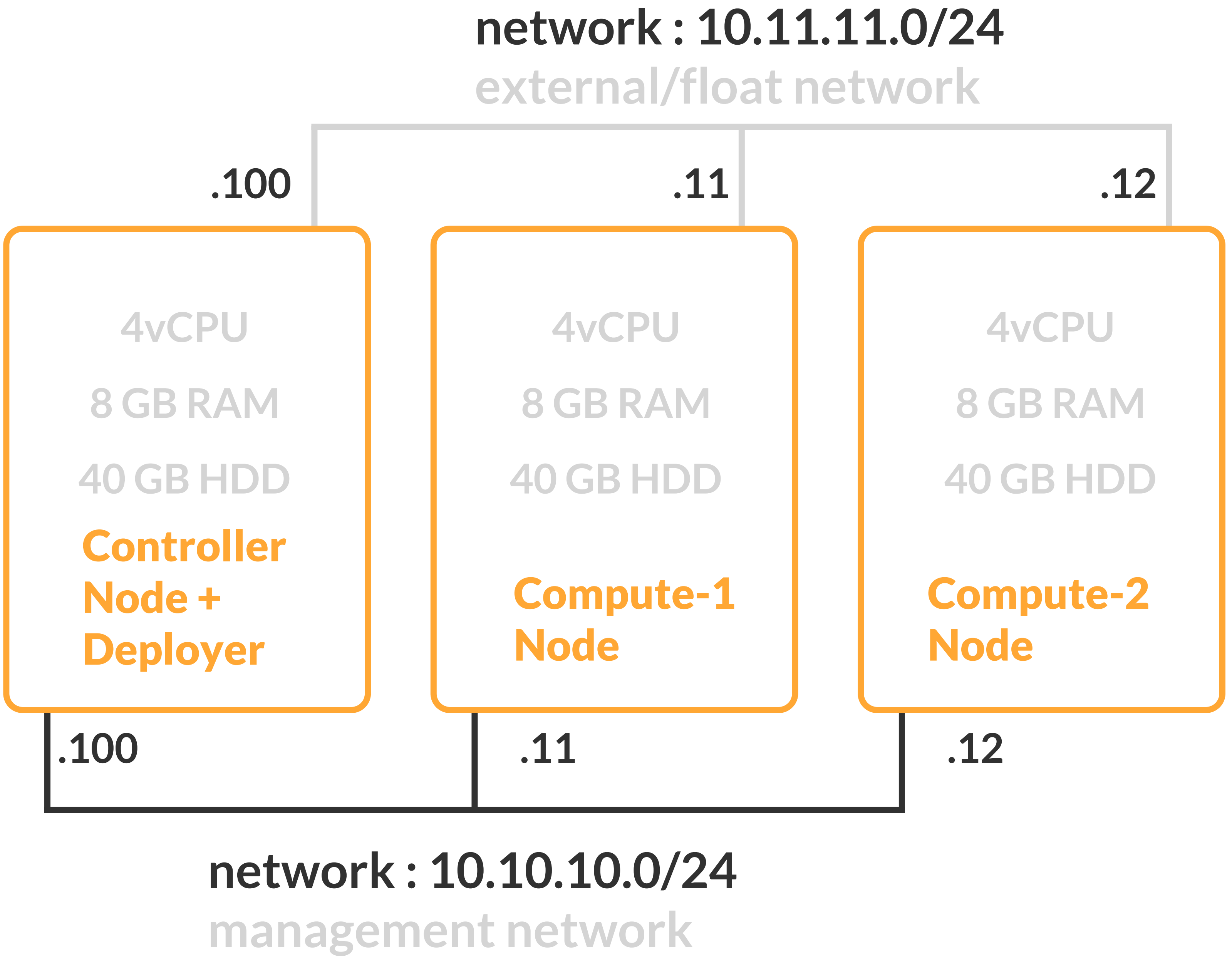
an OpenStack Community Project

Kolla-Ansible deploys a containerised OpenStack control plane using Kolla containers, orchestrated via Ansible. The project aims for simplicity and reliability, while providing a flexible, intuitive configuration model.

Kolla	Build Images
Kolla-Ansible	Deploy and Manage Containers

https://www.openstack.org/software/releases/train/components/kolla-ansible

Topology



network : 10.11.11.0/24

external/float network

.100

.11

.12

4vCPU

8 GB RAM

40 GB HDD

Controller Node + Deployer

4vCPU

8 GB RAM

40 GB HDD

Compute-1 Node

4vCPU

8 GB RAM

40 GB HDD

Compute-2 Node

.100

.11

.12

network : 10.10.10.0/24

management network

Keystone (Identity Service)

Overview :

a single point of integration for managing authentication, authorization, and a catalog of services.

Prerequisites

```
mysql -u root -p
MariaDB [(none)]> CREATE DATABASE keystone;
MariaDB [(none)]> GRANT ALL PRIVILEGES ON keystone.* TO 'keystone'@'localhost' \
IDENTIFIED BY 'KEYSTONE_DBPASS';
MariaDB [(none)]> GRANT ALL PRIVILEGES ON keystone.* TO 'keystone'@'%' \
IDENTIFIED BY 'KEYSTONE_DBPASS';
```

Install and Configure Components

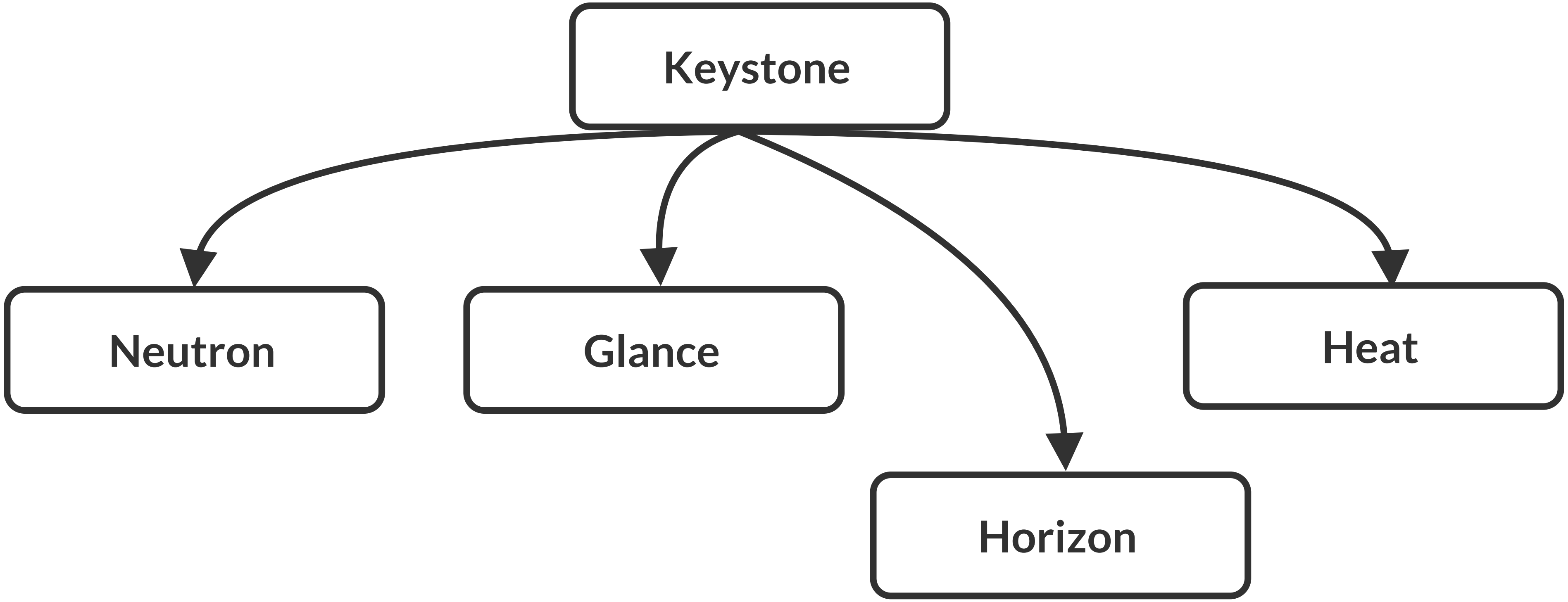
```
yum install openstack-keystone httpd mod_wsgi
vi /etc/keystone/keystone.conf
[database]
# ...
connection = mysql+pymysql://keystone:KEYSTONE_DBPASS@controller/keystone
[token]
# ...
provider = fernet
```

Manual Installation

Keystone

https://www.openstack.org/software/project-navigator/openstack-components

Manual Installation



Keystone

Neutron

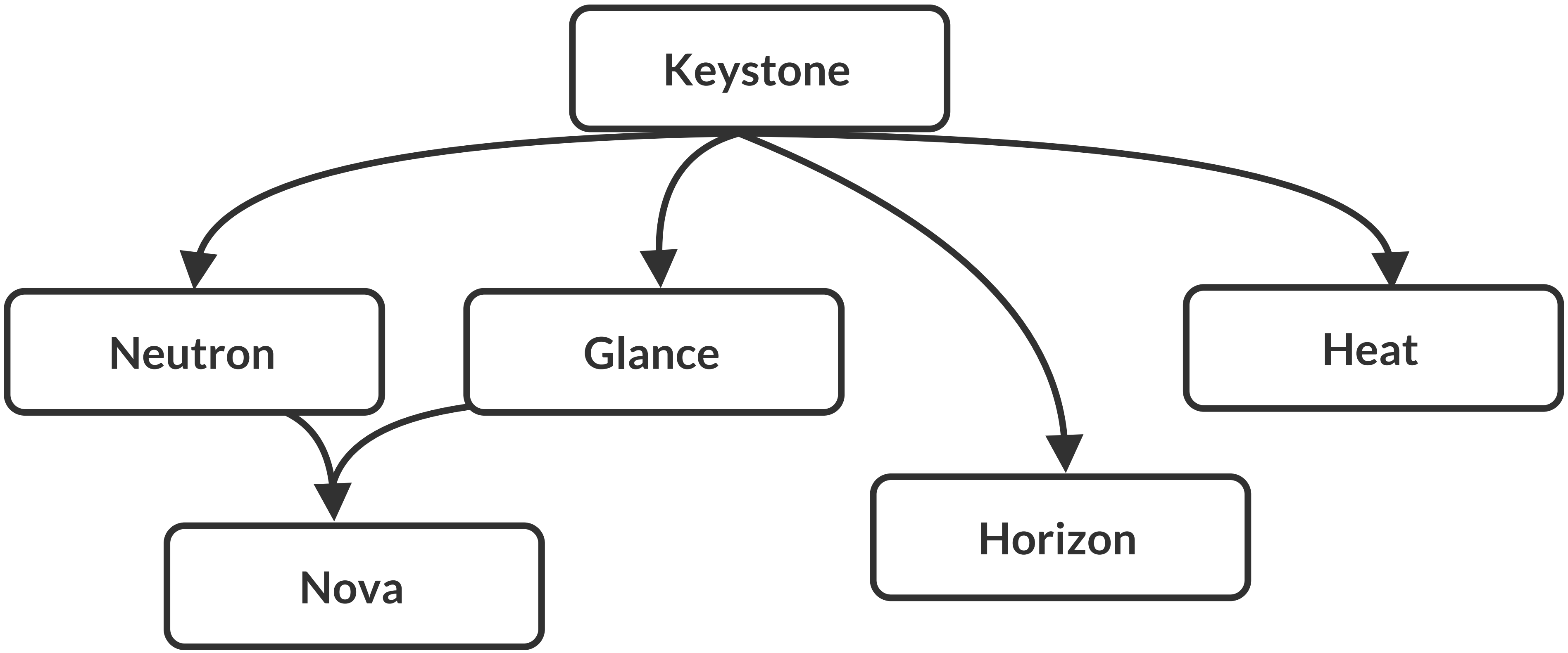
Glance

Horizon

Heat

https://www.openstack.org/software/project-navigator/openstack-components

Manual Installation



https://www.openstack.org/software/project-navigator/openstack-components

Kolla Ansible Requirements

- Ansible on the control node
- Python and pip (to install and run ansible and kolla code)
- gcc, libssl, libffi, etc
- Docker
- Passwordless ssh between the nodes

Kolla Ansible - Deployment Model

1 Setup the baseline OS

- Get OS Installed
- Install required tools
- Clone or pip install the kolla tools

2 Setup globals.yml and password.yml files

- Globals is a top level way of turning on and off services
- Passwords define default password (generated with kolla-genpwd tool)

3 Setup the all-in-one or multinode inventory

Kolla - Images

- **Image Type**
  - source
  - binary

- **Container OS**
  - CentOS
  - RHEL
  - Ubuntu
  - Debian
  - etc

- **Image**
  - mariadb
  - nova-compute
  - glance-api
  - etc

Kolla - Images

- **Image Type**
  - source
  - binary
- **Container OS**
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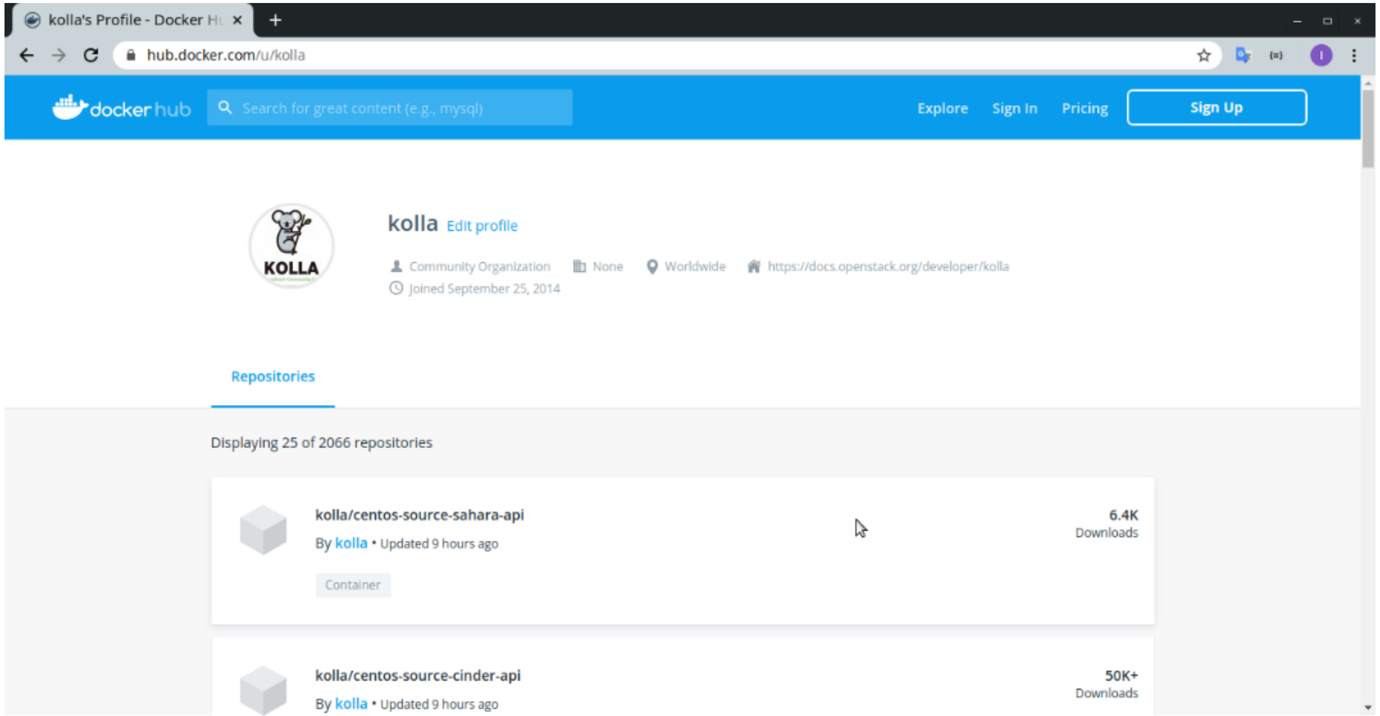
  - etc
- **Image**
  - mariadb
  - nova-compute
  - glance-api
  - etc

Image published to dockerhub under kolla namespace



kolla Edit profile

Community Organization · None · Worldwide · https://docs.openstack.org/developer/kolla

Joined September 25, 2014

Displaying 25 of 2066 repositories

kolla/centos-source-sahara-api
By kolla • Updated 9 hours ago
Container
6.4K Downloads

kolla/centos-source-cinder-api
By kolla • Updated 9 hours ago
50K+ Downloads

Tagged using release name or master (development)

```
docker pull kolla/centos-binary-nova-libvirt:train
```

Kolla Ansible - Configure

Copy kolla configuration to /etc/kolla

```
cp -r /usr/share/kolla-ansible/etc_examples/kolla/* /etc/kolla
```

Copy inventory

```
cp /usr/share/kolla-ansible/ansible/inventory/multinode ~/multinode
```

Generate Password

```
kolla-genpwd
```

Kolla Ansible - Configure

Globals.yml

```
kolla_base_distro: "centos"
kolla_install_type: "binary"
openstack_release: "train"
kolla_internal_vip_address: "10.10.10.100"
network_interface: "eth0"
neutron_external_interface: "eth1"
neutron_plugin_agent: "openvswitch"
enable_openstack_core: "yes"
enable_haproxy: "no"
enable_neutron_provider_networks: "yes"
nova_compute_virt_type: "qemu"
```

Inventory

```
[control]
controller ansible_user=student

[network]
controller ansible_user=student

[compute]
compute[1:2] ansible_user=student

[monitoring]
controller ansible_user=student

[storage]
controller ansible_user=student
```

Kolla Ansible - Deploy

Bootstrap

Bootstrap servers with kolla deploy dependencies

```
kolla-ansible -i multinode bootstrap-servers
```

Prechecks

Do pre-deployment checks for hosts

```
kolla-ansible -i multinode prechecks
```

Deploy

Deploy and start all kolla containers

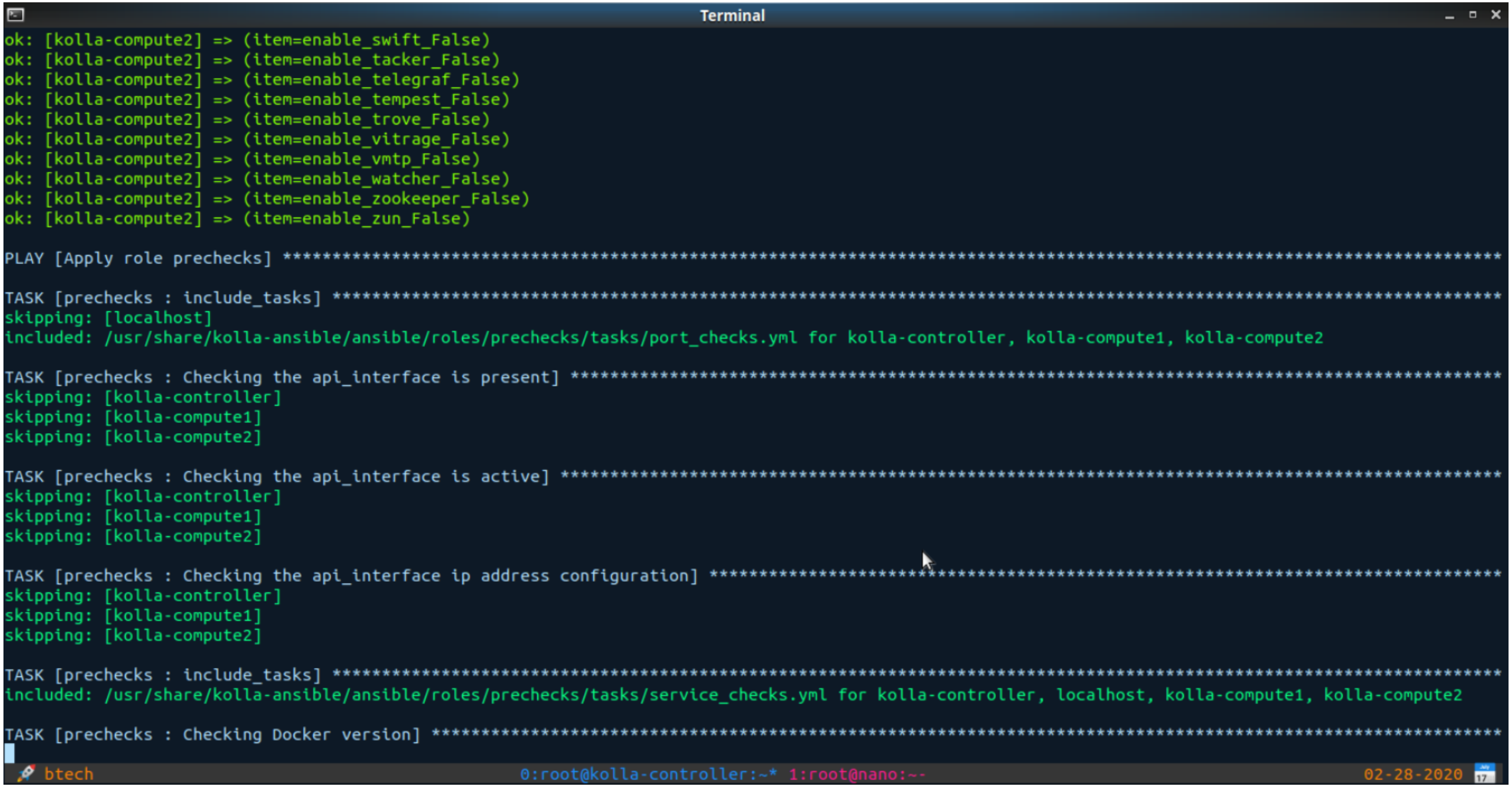
```
kolla-ansible -i multinode deploy
```

Post-Deploy

Do post deploy on deploy node

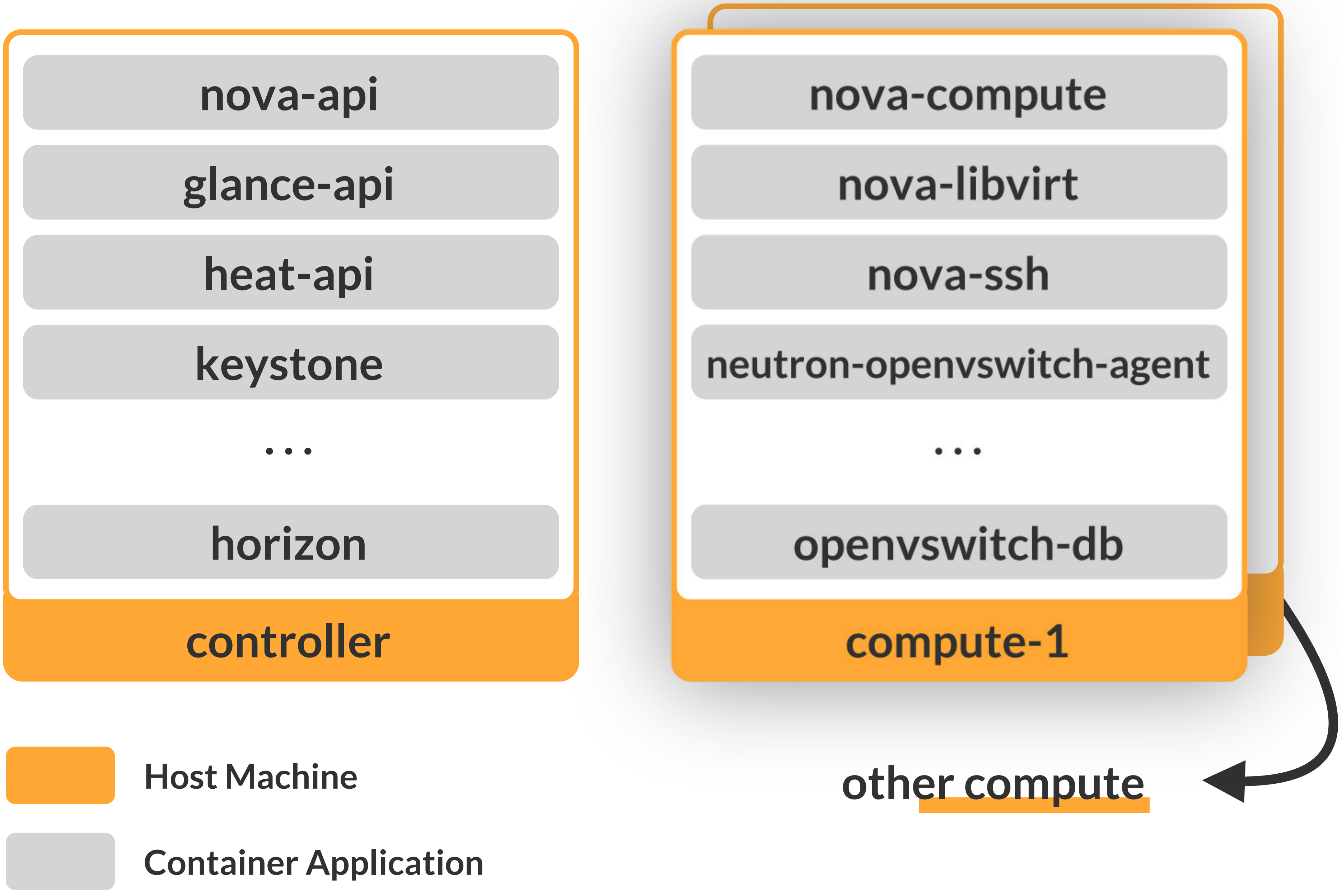
```
kolla-ansible -i multinode post-deploy
```

Kolla Ansible - Deploy



```
ok: [kolla-compute2] => (item=enable_swift_False)
ok: [kolla-compute2] => (item=enable_tacker_False)
ok: [kolla-compute2] => (item=enable_telegraf_False)
ok: [kolla-compute2] => (item=enable_tempest_False)
ok: [kolla-compute2] => (item=enable_trove_False)
ok: [kolla-compute2] => (item=enable_vitrage_False)
ok: [kolla-compute2] => (item=enable_vmtp_False)
ok: [kolla-compute2] => (item=enable_watcher_False)
ok: [kolla-compute2] => (item=enable_zookeeper_False)
ok: [kolla-compute2] => (item=enable_zun_False)

PLAY [Apply role prechecks] ******************************************************************************************************************************

TASK [prechecks : include_tasks] *************************************************************************************************************************
skipping: [localhost]
included: /usr/share/kolla-ansible/ansible/roles/prechecks/tasks/port_checks.yml for kolla-controller, kolla-compute1, kolla-compute2

TASK [prechecks : Checking the api_interface is present] *************************************************************************************************
skipping: [kolla-controller]
skipping: [kolla-compute1]
skipping: [kolla-compute2]

TASK [prechecks : Checking the api_interface is active] **************************************************************************************************
skipping: [kolla-controller]
skipping: [kolla-compute1]
skipping: [kolla-compute2]

TASK [prechecks : Checking the api_interface ip address configuration] ***********************************************************************************
skipping: [kolla-controller]
skipping: [kolla-compute1]
skipping: [kolla-compute2]

TASK [prechecks : include_tasks] *************************************************************************************************************************
included: /usr/share/kolla-ansible/ansible/roles/prechecks/tasks/service_checks.yml for kolla-controller, localhost, kolla-compute1, kolla-compute2

TASK [prechecks : Checking Docker version] ***************************************************************************************************************

 btech                                       0:root@kolla-controller:~* 1:root@nano:~-                                                     02-28-2020
```

Containerized OpenStack

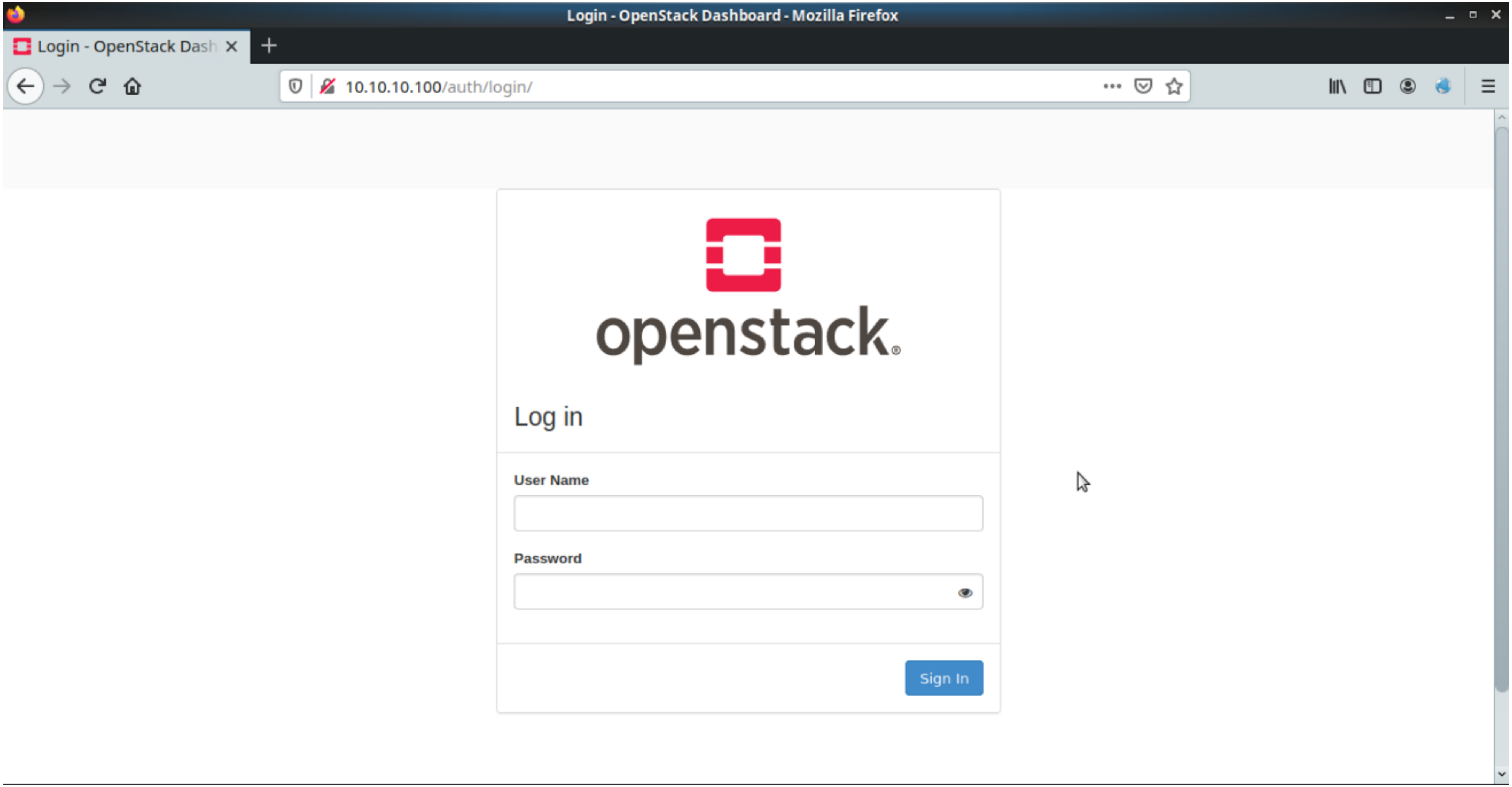


Kolla Ansible - Destroy

Destroy Destroy Kolla containers, volumes and host configuration

```
kolla-ansible -i multinode destroy
```

Yay



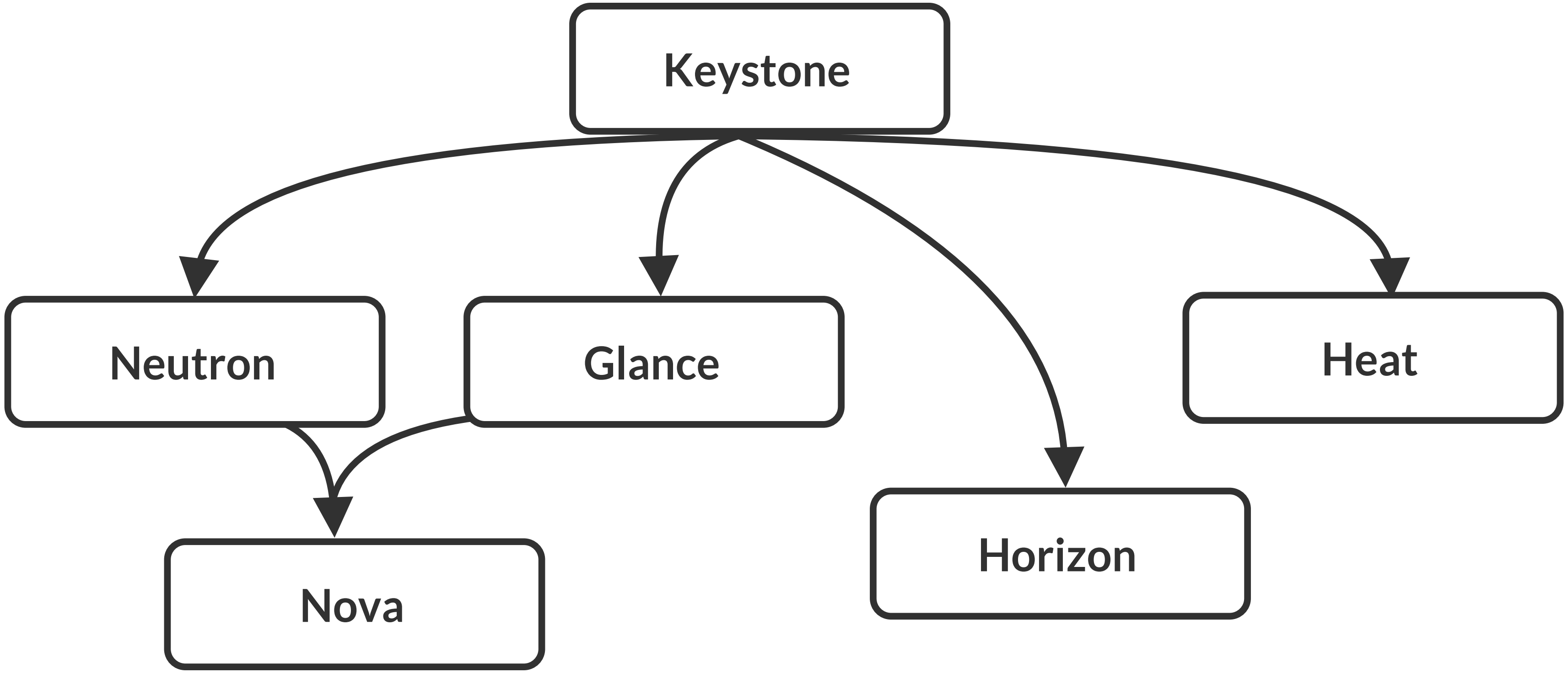
Log in

User Name

Password

Kolla-Ansible

Setup Baseline OS → Configure Kolla → Deploy



It's demo time !

Thank You.

Question ?

Bogor, Feb 2020

The End.