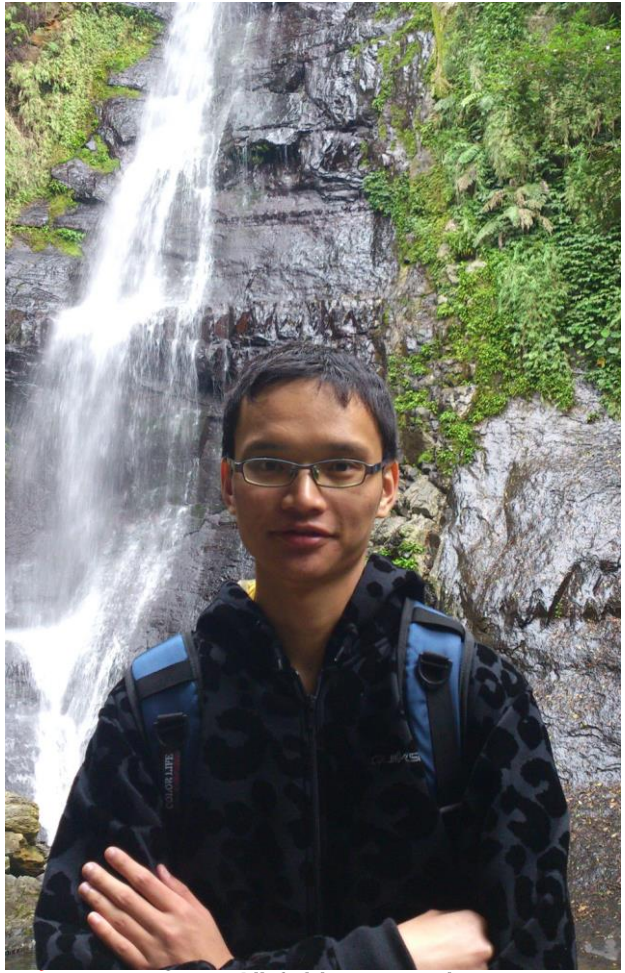
Kolla - the new way to deploy OpenStack



簡介

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Outline

What’s the Immutable Iinfrastructure?
Docker and Ansible
What’s Kolla?
How to deploy OpenStack using Kolla?

Projects to Deploy OpenStack

- Deploy on machine
  - puppet-openstack
- Deploy on lxc
  - openstack-ansible
- Deploy on docker
  - Kolla
- OpenStack on OpenStack
  - TripleO

What’s the Immutable Infrastructure

Don’t modify image manually
Create new image when something changes

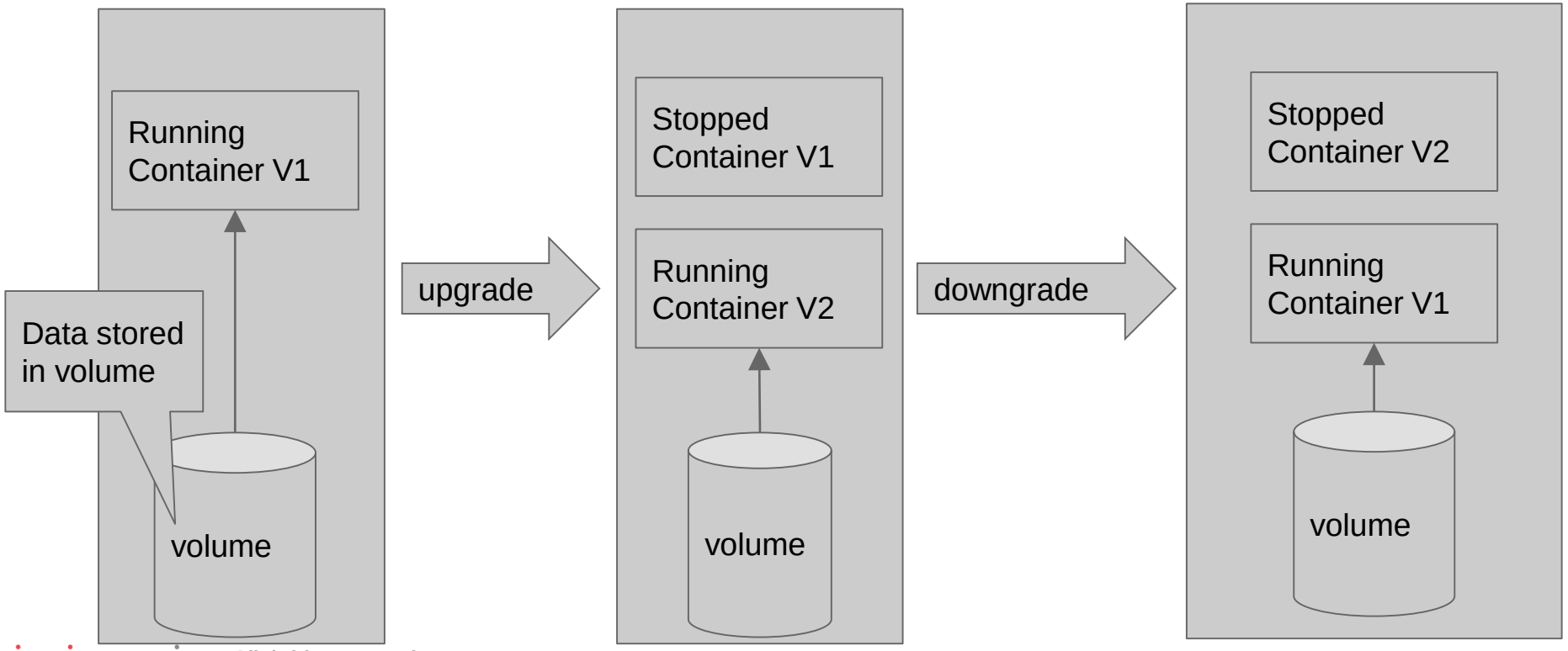
System Infrastructure is divided into "data" and "other".

Package “other” using

- Container
- Hypervisor

"Other" include “config”, “program”, “environment”.

"Other" are replaced at every deployment.



Immutable Infrastructure Advantage

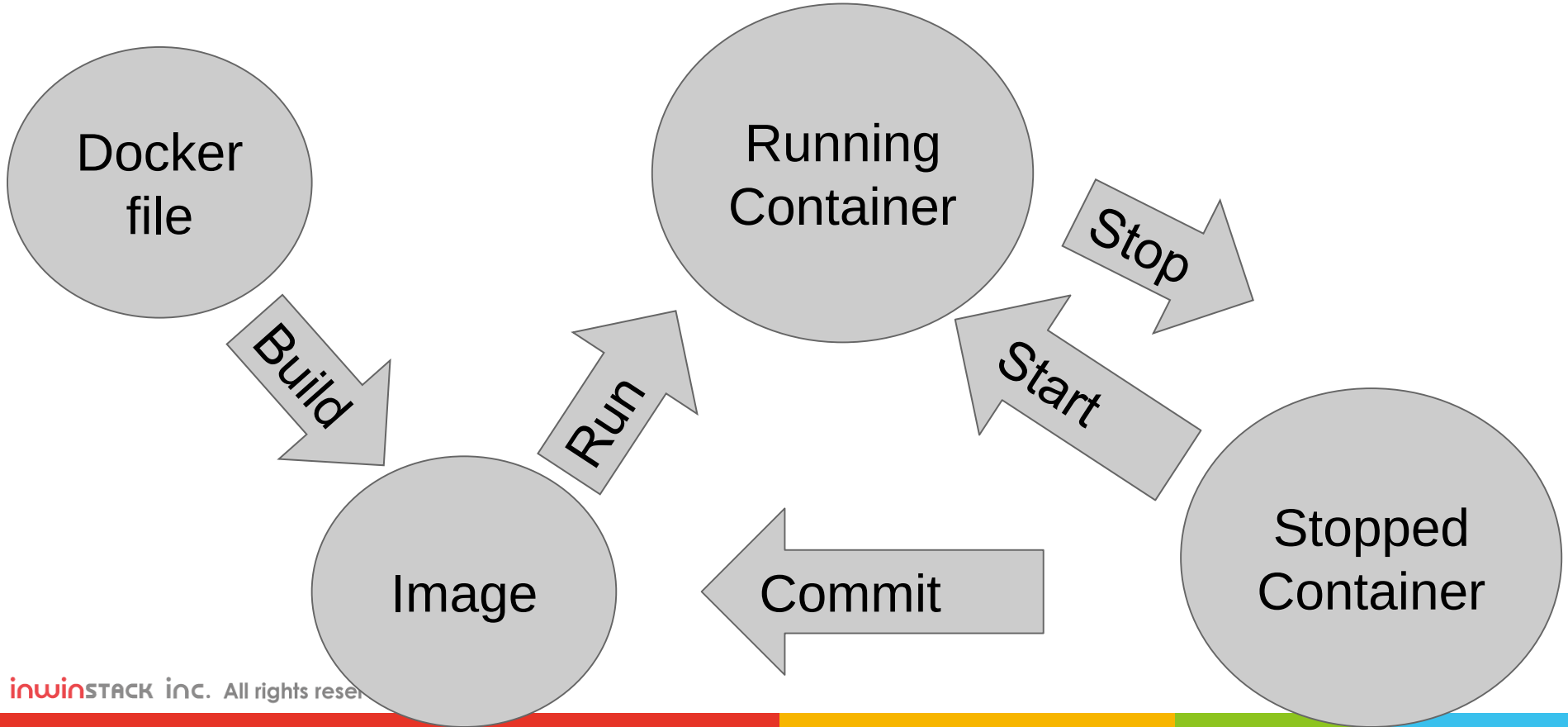
- Atomic deployments
  - Easy to upgrade
  - Easy to downgrade
  - Fault recovery
- Easy to track change

Immutable Infrastructure Downside

Create new image when something changes
Waste space

Docker

- Container
- Llighter, fast than hypervistor
- Build envirenment from Dockerfile
  - Version Controll
- Support named volume
- Based on libcontainer(runc)



Dockerfile Demo

```
FROM kollaglue/centos-binary-base:2.0.0

RUN yum -y install \
        MariaDB-Galera-server \
        MariaDB-client \
        rsync \
        galera \
        socat \
        hostname \
        percona-xtrabackup \
        pv \
        tar \
        expect \
    && yum clean all \
    && rm -rf /var/lib/mysql/*

COPY mariadb_sudoers /etc/sudoers.d/mariadb_sudoers
COPY extend_start.sh /usr/local/bin/kolla_extend_start
COPY security_reset.expect /usr/local/bin/kolla_security_reset
RUN chmod 755 /usr/local/bin/kolla_extend_start \
    && chmod 755 /usr/local/bin/kolla_security_reset \
    && chmod 750 /etc/sudoers.d \
    && chmod 440 /etc/sudoers.d/mariadb_sudoers \
    && usermod -a -G kolla mysql

USER mysql
```

Docker - run container

```
docker run -e MYSQL_ROOT_PASSWORD=pass  \
                -d mysql:5.7.12
```

Ansible

Deployment tool
Interpret
Yaml
Jinja2
Easy to write your own module in Python
Aagentless

Aansible Demo Sscript

```
- name: update sources.list for docker
  lineinfile: dest=/etc/apt/sources.list regexp="deb https://apt.dockerproject.org/repo"
              line="deb https://apt.dockerproject.org/repo ubuntu-{{ UBUNTU_VERSION }} main"
  sudo: yes


- name: install docker-engine
  apt: update_cache=yes name="docker-engine" state=present force=yes
  sudo: yes

- name: add user to docker group
  user: append=yes name={{ ansible_ssh_user }} groups=docker
  sudo: yes
```

variable

```
- name: remove vim from apt
  apt: name=vim state=absent
  when: (ansible_distribution == "Debian" or ansible_distribution == 'Ubuntu') and programming == true
  ignore_errors: yes
  sudo: yes
```

What's Kolla?

A official OpenStack project to deploy OpenStack

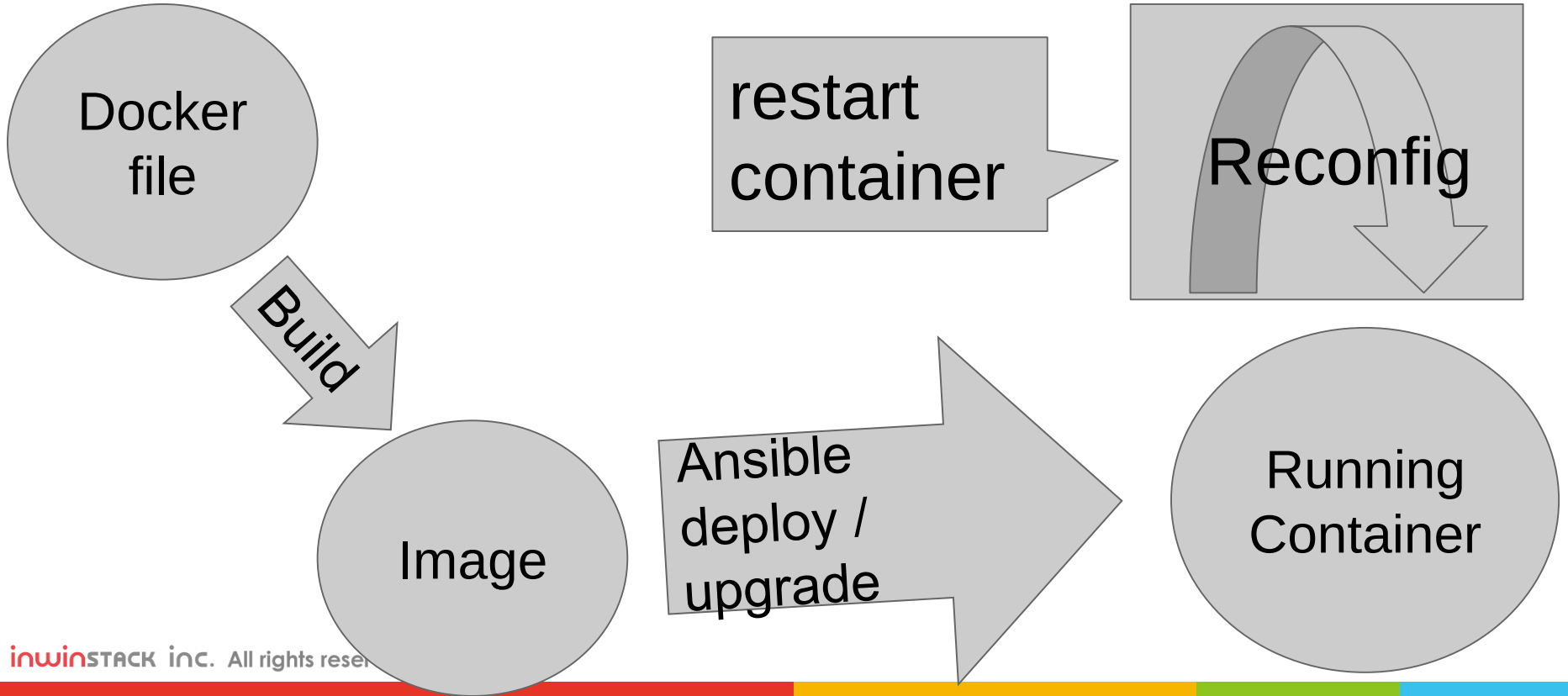
Immutable infrastructure

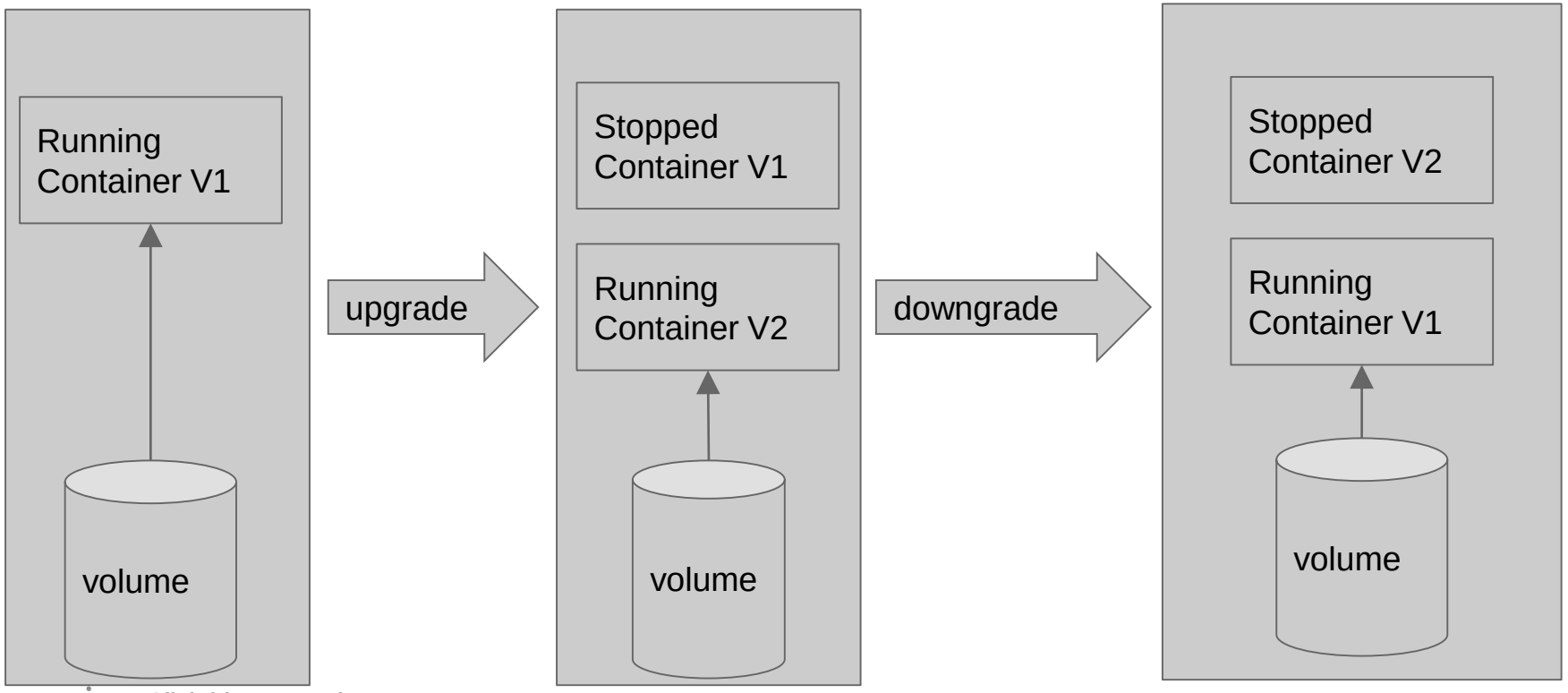
Deploy/upgrade quickly

Community support

Kolla uses

- Docker
  - provide environments
- Ansible
  - generate config
  - run image





Kolla Support

Ceph
HA
elasticsearch+kibana
kubernetes(coming soon)

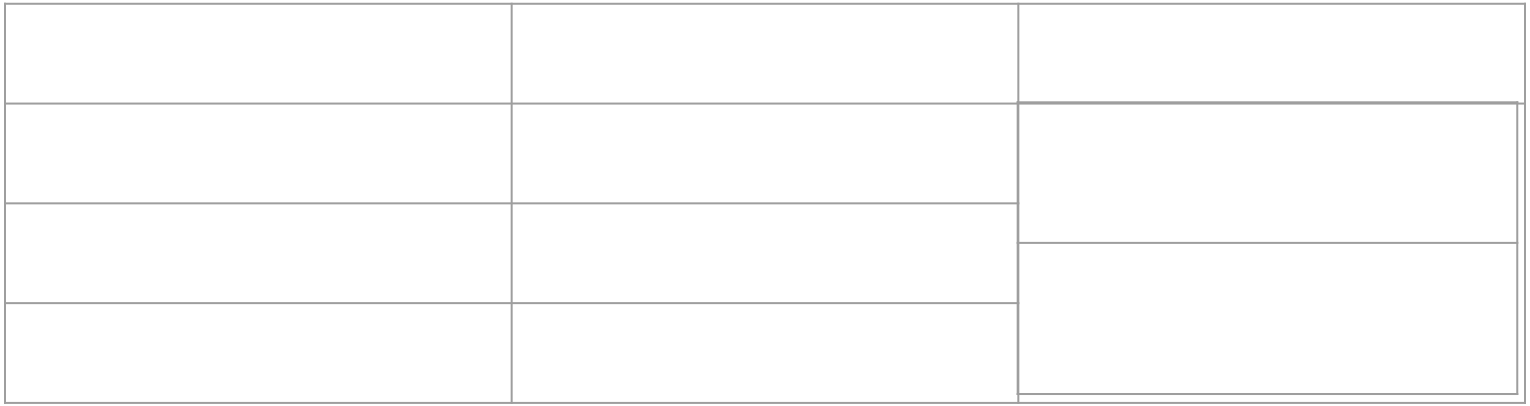
Deploy OpenStack

Build image
Deploy image

Build image

- Image type:
  - source: install from code
  - binary: install from package manager
- Base image:
  - Ubuntu
  - CentOS
  - …
- Install openstack in docker image
  - You can build image anywhere in anytime.

Build image



Deploy(Run) Image

- Run container using ansible
- Kolla uses Ansible to
  - generate openstack config
  - run container
- Support “pull image” to accelerate deploying

Kolla - step by step

tox -e genconfig
globals.yml
password.yml
kolla-build.conf

Kolla - step by step

sudo cp -rf etc/kolla /etc

Kolla - step by step

tools/build.py -base ubuntu -type source --tag 1.2.3 --registry 192.168.1.3 --push

- tag => openstack_release(in globals.yml)
- registriy => docker_registry(in globals.yml)
- base => kolla_base_distro(in globals.yml)
- type => kolla_install_type(in globals.yml)
- About 20 mins for my computer

Kolla - step by step

modify /etc/kolla/globals.yml
 kolla_base_distro
 kolla_install_type
 openstack_release
 kolla_internal_vip_address
 network_interface
 neutron_external_interface
 enable_XXX

Kolla - step by step

modify docker config
 allow insecure-registry
 mount flags = shared

Kolla - step by step

sudo mount --make-shared /run

Kolla - step by step

sudo tool/kolla-ansible prechecks

Kolla - step by step

sudo tool/kolla-ansible deploy

About 3 mins for my computer (All in one)

Kolla - step by step

/etc/kolla/config/nova/myhost/nova.conf
/etc/kolla/config/glance.conf
  optional
  customize your openstackh

Kolla - step by step

sudo tool/kolla-ansible reconfigure

Summary

- Kolla
  - Immutable infrastructure
  - Deploy / upgrade quickly
  - Community support
  - support Ceph
  - HA