

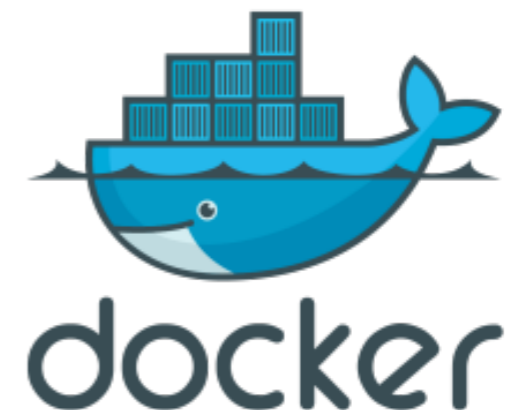
Kolla



What is Kolla

OpenStack deployment tool with

- Docker
- Ansible



Why Kolla?

- Platform independent
- RDO - package based -> containers in the middle -> fuel - monolithic
- Easy to use

Ansible

- Automation tool
- Uses roles, playbooks, templates and tasks
- Modules for Windows exist

```
[root@ansible work]# cat hosts
[web-server]
test1
[root@ansible work]# cat site.yml
- name: Install Packages
  hosts: web-server
  remote_user: root

  tasks:
  - name: Installing Latest version of Apache
    yum: name=httpd state=present

  - name: Copy default web page
    template: src=/root/work/index.html dest=/var/www/html
              owner=apache group=apache mode=0644

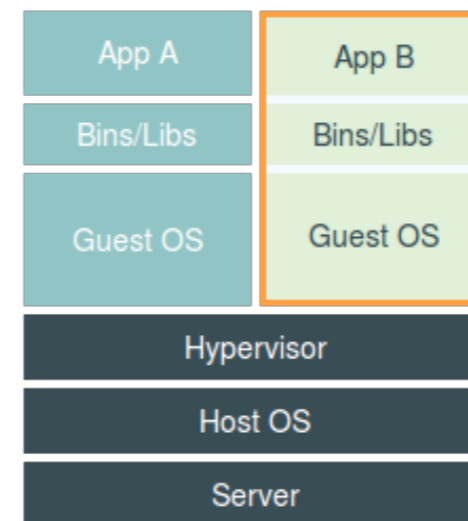
  - name: Start httpd
    service: name=httpd state=restarted enabled=yes

  - name: Install all PHP packages
    yum: name={{item}} state=present
    with_items:
      - php
      - php-fpm
      - php-mysql
      - php-xml

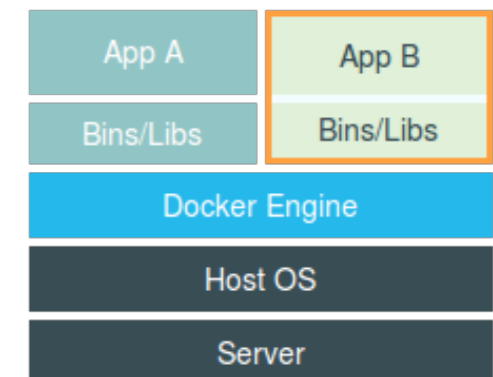
  - name: Install MySQL
    yum: name=mysql-server state=present
```

Docker

- Container platform
- Runs process containers that come in form of images
- Uses Dockerfiles for image building (image definitions)
- Namespaces, groups



VMs



Docker

The main idea

- Put OpenStack services inside Docker containers with Ansible
- We added Nova Hyper-V role (host services)
- <https://github.com/openstack/kolla-ansible>



Hyper-V + OpenStack

- Windows is a first class citizen of OpenStack
- No differences in process handling compared to Linux/KVM
- Started with Folsom release 2012
- Leveraging: speed, Windows Failover Clustering, S2D

Deployment workflow

1. Pull/build some Docker images via Dockerhub/private registry (source and binary images)
2. Some configuration (no worries, demo)
3. Deploy with Ansible (roles)

What we get

- Containers Containers Containers!



```

root@openstack-controller:/usr/local/share/kolla/ansible/roles/nova/tasks# docker ps
CONTAINER ID        IMAGE                                     COMMAND                  CREATED            STATUS              PORTS              NAMES
85a734fed0ea       cloudbaseit/ubuntu-binary-horizon:3.0.2  "kolla_start"          13 minutes ago    Up 13 minutes      horizon
a416e90d79f5       cloudbaseit/ubuntu-binary-heat-engine:3.0.2  "kolla_start"          13 minutes ago    Up 13 minutes      heat_engine
cfd0c6f3cdf2       cloudbaseit/ubuntu-binary-heat-api-cfn:3.0.2  "kolla_start"          13 minutes ago    Up 13 minutes      heat_api_cfn
6884ffb50151       cloudbaseit/ubuntu-binary-heat-api:3.0.2     "kolla_start"          13 minutes ago    Up 13 minutes      heat_api
4a3282514126       cloudbaseit/ubuntu-binary-neutron-metadata-agent:3.0.2  "kolla_start"          14 minutes ago    Up 14 minutes      neutron_metadata_agent
00841608eda0       cloudbaseit/ubuntu-binary-neutron-l3-agent:3.0.2  "kolla_start"          14 minutes ago    Up 14 minutes      neutron_l3_agent
0989140bd52c       cloudbaseit/ubuntu-binary-neutron-dhcp-agent:3.0.2  "kolla_start"          14 minutes ago    Up 14 minutes      neutron_dhcp_agent
cbc753f5b381       cloudbaseit/ubuntu-binary-neutron-openvswitch-agent:3.0.2  "kolla_start"          14 minutes ago    Up 14 minutes      neutron_openvswitch_agent
576701b264c6       cloudbaseit/ubuntu-binary-neutron-server:3.0.2  "kolla_start"          14 minutes ago    Up 14 minutes      neutron_server
c81de9297ca4       cloudbaseit/ubuntu-binary-openvswitch-vswitchd:3.0.2  "kolla_start"          14 minutes ago    Up 14 minutes      openvswitch_vswitchd
4f75a74b9b7f       cloudbaseit/ubuntu-binary-openvswitch-db-server:3.0.2  "kolla_start"          14 minutes ago    Up 14 minutes      openvswitch_db
5be9a765dce6       cloudbaseit/ubuntu-binary-nova-ssh:3.0.2      "kolla_start"          15 minutes ago    Up 15 minutes      nova_ssh
a53080d108b4       cloudbaseit/ubuntu-binary-nova-compute:3.0.2  "kolla_start"          15 minutes ago    Up 14 minutes      nova_compute
81a84088acd1       cloudbaseit/ubuntu-binary-nova-libvirt:3.0.2  "kolla_start"          15 minutes ago    Up 15 minutes      nova_libvirt
82f690f539c7       cloudbaseit/ubuntu-binary-nova-conductor:3.0.2  "kolla_start"          15 minutes ago    Up 15 minutes      nova_conductor
22f70fa01eca       cloudbaseit/ubuntu-binary-nova-scheduler:3.0.2  "kolla_start"          15 minutes ago    Up 15 minutes      nova_scheduler
dd55d988c9a3       cloudbaseit/ubuntu-binary-nova-novncproxy:3.0.2  "kolla_start"          15 minutes ago    Up 15 minutes      nova_novncproxy
e9759598c725       cloudbaseit/ubuntu-binary-nova-consoleauth:3.0.2  "kolla_start"          15 minutes ago    Up 15 minutes      nova_consoleauth
a38f1939a90a       cloudbaseit/ubuntu-binary-nova-api:3.0.2      "kolla_start"          15 minutes ago    Up 15 minutes      nova_api
ea14bf5e16b6       cloudbaseit/ubuntu-binary-keepalived:3.0.2    "kolla_start"          16 minutes ago    Up 16 minutes      keepalived
056ab5657225       cloudbaseit/ubuntu-binary-haproxy:3.0.2      "kolla_start"          16 minutes ago    Up 16 minutes      haproxy
ce2c824ab4c0       cloudbaseit/ubuntu-binary-kolla-toolbox:3.0.2  "kolla_start"          16 minutes ago    Up 16 minutes      kolla_toolbox
bf1d91ddd683       cloudbaseit/ubuntu-binary-glance-api:3.0.2    "kolla_start"          52 minutes ago    Up 52 minutes      glance_api
3aa701caf911       cloudbaseit/ubuntu-binary-glance-registry:3.0.2  "kolla_start"          52 minutes ago    Up 52 minutes      glance_registry
04e9f3151ab3       cloudbaseit/ubuntu-binary-keystone:3.0.2     "kolla_start"          52 minutes ago    Up 52 minutes      keystone
cc84fb844ff2       cloudbaseit/ubuntu-binary-rabbitmq:3.0.2     "kolla_start"          53 minutes ago    Up 53 minutes      rabbitmq
ce4e1f6e742d       cloudbaseit/ubuntu-binary-mariadb:3.0.2     "kolla_start"          53 minutes ago    Up 53 minutes      mariadb
82b52da680c5       cloudbaseit/ubuntu-binary-memcached:3.0.2    "kolla_start"          54 minutes ago    Up 54 minutes      memcached
43ebe70c1ac7       cloudbaseit/ubuntu-binary-cron:3.0.2         "kolla_start"          54 minutes ago    Up 54 minutes      cron
dbeca766a32c       cloudbaseit/ubuntu-binary-heka:3.0.2         "kolla_start"          54 minutes ago    Up 54 minutes      heka

```

Post-deployment & ops

- service configurations in `/etc/kolla/`
- host networking for containers
- Kolla tools (cleanup, prechecks, post-deploy, genpasswd)
- Best practices -> documentation

- `docker inspect nova_compute`

JSON -> network settings, container env variables, container state, volumes/mounts

```
"HostConfig": {  
  "Binds": [  
    "/etc/kolla/nova-compute:/var/lib/kolla/config_files:ro",  
    "/etc/localtime:/etc/localtime:ro",  
    "libvirtd:/var/lib/libvirt:rw",  
    "/lib/modules:/lib/modules:ro",  
    "/dev:/dev:rw",  
    "kolla_logs:/var/log/kolla:rw",  
    "nova_compute:/var/lib/nova:rw",  
    "/run:/run:shared"  
  ]  
}
```

Upgrades

- Kolla uses x.y.z format for versioning (image tags)
- Liberty was 1.0.0, Mitaka 2.0.0, Ocata is 4.0.0
- `openstack_release: 1.0.0.` -> `openstack_release: 1.1.0`
- `kolla-ansible upgrade`
- works for both major and minor versions

Notes

- Kolla != Magnum
- Since Ocata release Kolla-Ansible is a standalone project
- Founded during Kilo release
- Portability
- Images for big tent but not only
- Next step in Kolla evolution is Kolla-Kubernetes (dev phase)

Thank you!

Dan Ardelean

dardelean@cloudbasesolutions.com

Twitter: [@DomnulDan](https://twitter.com/DomnulDan)

cloudbase.it/blog