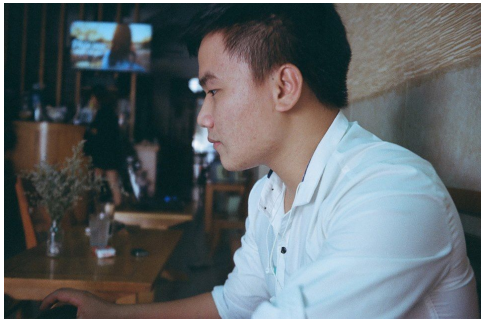
Kubernetes as a Service at VCCloud

Sa Pham @ VCCloud

Who am I?



- Co-organizer of Viet Nam Openstack
- Co-moderator of Docker Viet Nam (Docker Ha Noi)
- RnD about Cloud Computing: Openstack , Kubernetes, ..
- System Engineer at VCCloud / VCCorp
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Agenda

1. VCCloud and What we do at here ?
2. Kubernetes and Openstack
3. Kubernetes meet Openstack
4. Kubernetes as a Service at VCCloud.
5. Demo
6. Q&A - Networking

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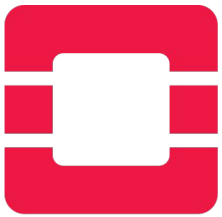
1. VCCloud and What we do here ?

- We have built Public and Private Cloud from 2012 based on Openstack

- We provide IaaS and CDN for Public Cloud

- More info: https://www.vccloud.vn/

Do you know Openstack?



openstack®

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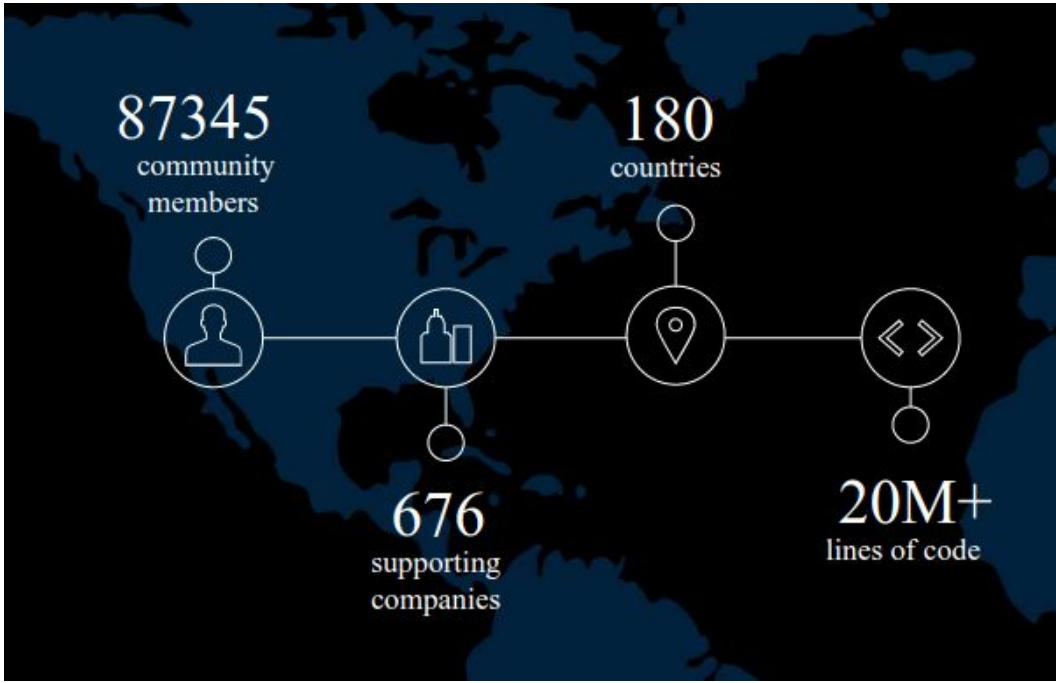
2. Kubernetes and Openstack - Openstack

- Open source software for creating private and public clouds.

- One of the fastest growing open source communities in the world.



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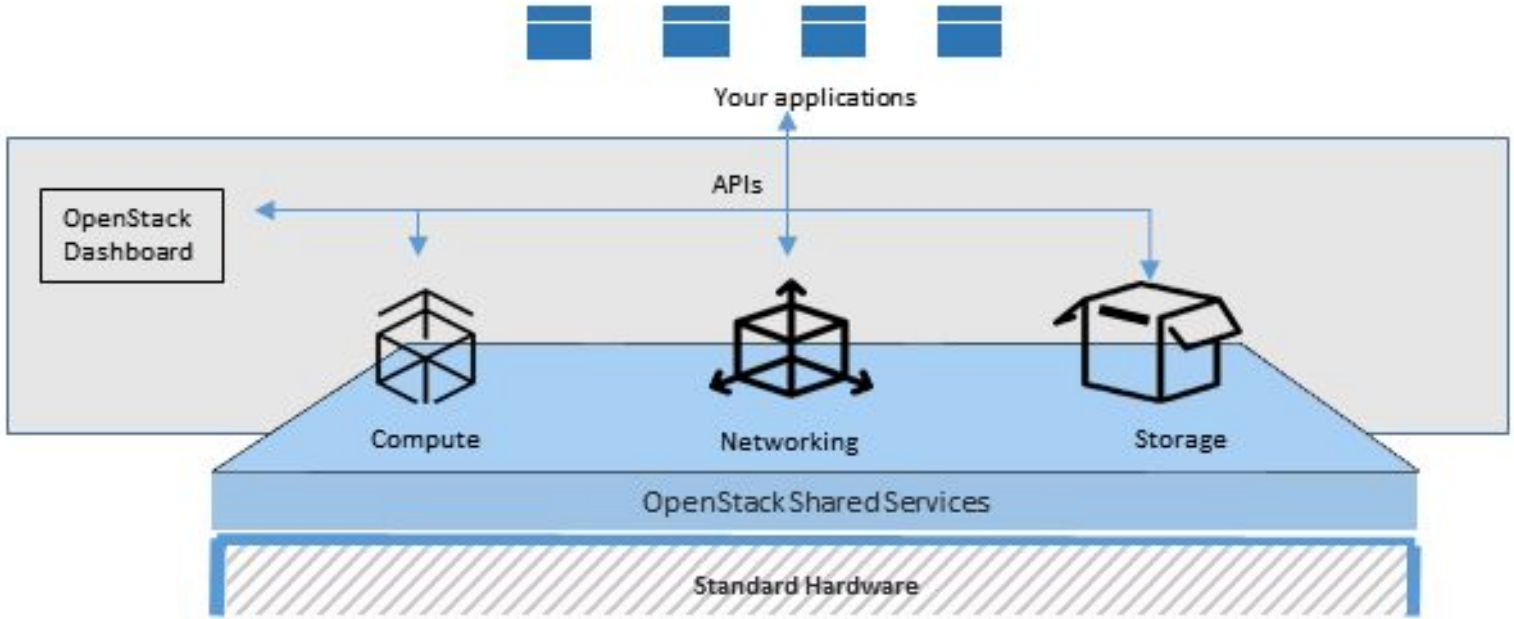
2. Kubernetes and Openstack - Openstack

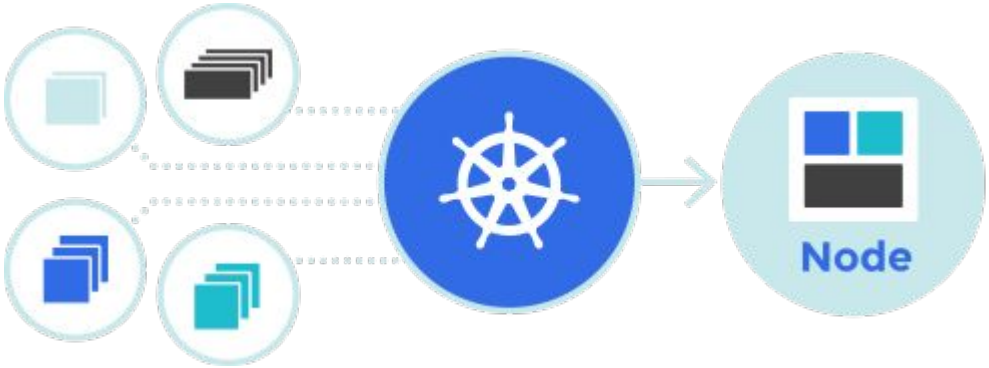
Openstack Architecture



source: https://tinyurl.com/yd2glf9n

2. Kubernetes and Openstack - Kubernetes

Kubernetes is an open-source system for automating deployment, scaling, and management of containerized applications.



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Kubernetes (K8s)

Container orchestration

Open source system to deploy containerized applications

- What you should already know:
  - Docker , build docker containers
  - Run your application in a container
- What kubernetes will do for me?
  - Manage the lifecycle of containers
  - Schedule the containers to the hosts
  - Attach storage volumes to the containers
  - Setup networking

Who

Where

Running Kubernetes?

Google Cloud Platform

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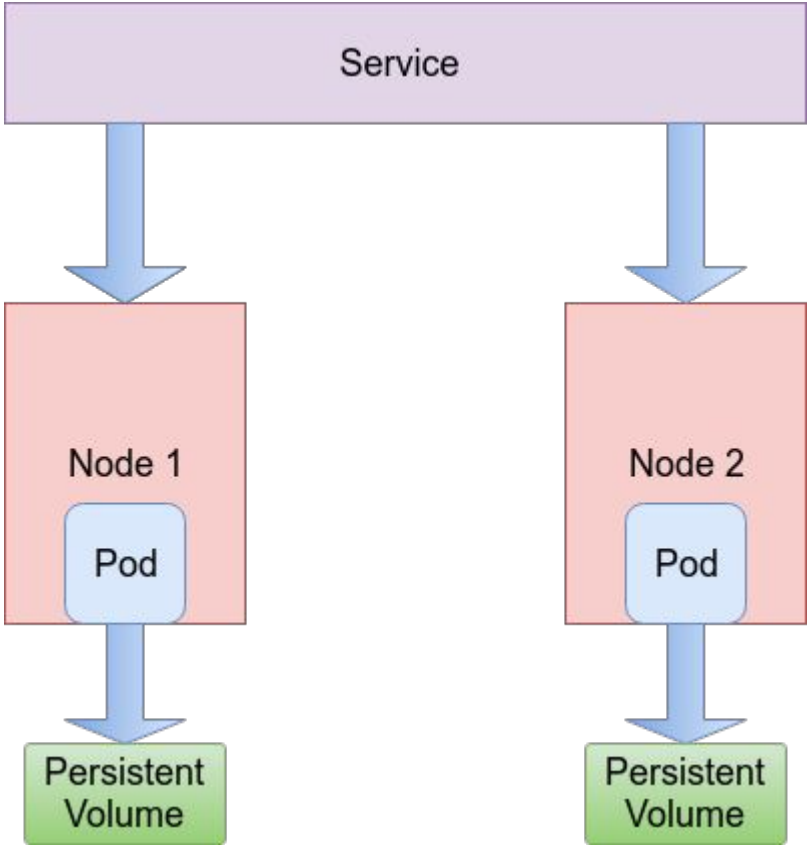
How do you deploy a application on Kubernetes?

How do you deploy a application on Kubernetes?

- Expose Service ?
- Persistent Volume ?



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Kubernetes on Large Cloud Provider

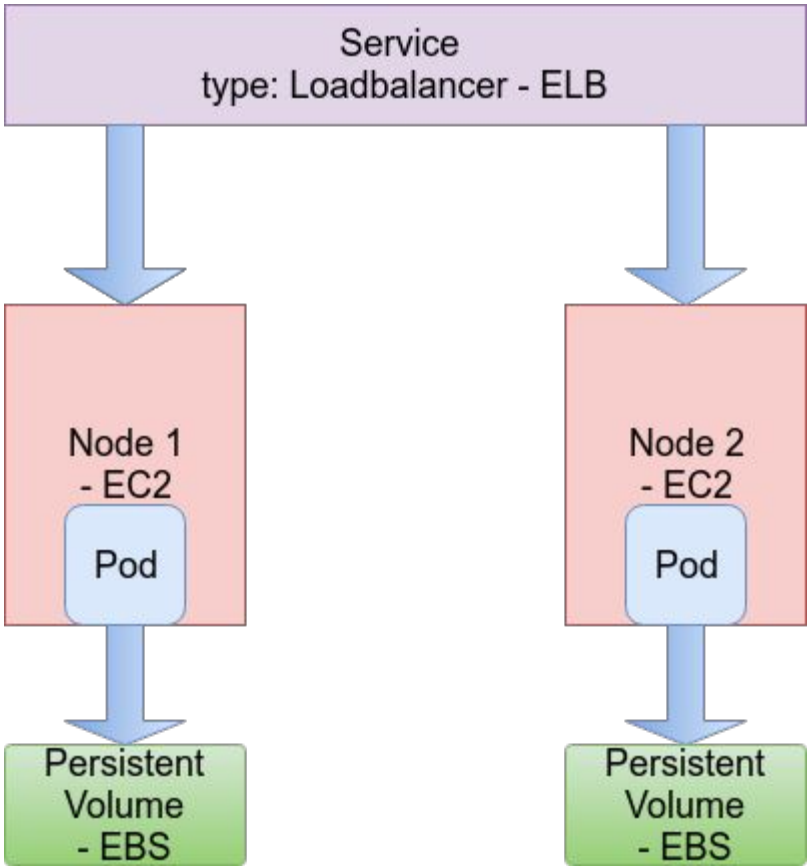
on AWS

- IAM for AuthN/AuthZ

- EBS for Persistent Volume

- EC2 for Worker Node

- ELB for Expose Service



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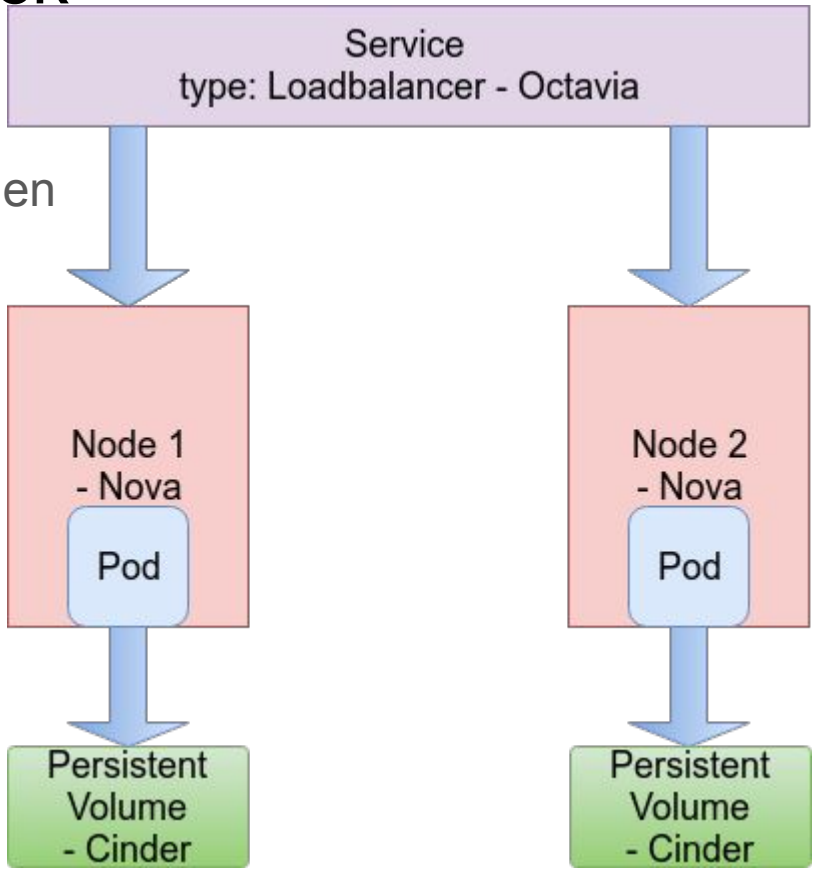
3. Kubernetes meet Openstack

K8s can interact with Openstack API

- Using keystone (identity service) for authen
- Create volumes
- Create load balancers
- Set routes in router



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4. Kubernetes as a Service at VCCloud

Think about magnum

- Too slow to provision a cluster
- Too difficult for end user

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4. Kubernetes as a Service at VCCloud

- Easy to launch a cluster
- Kubernetes deployment will take a few minutes
- Whole configuration will be done automatically
- We can auto-scale kubernetes cluster on request
- Expose service to internet using LoadBalancer

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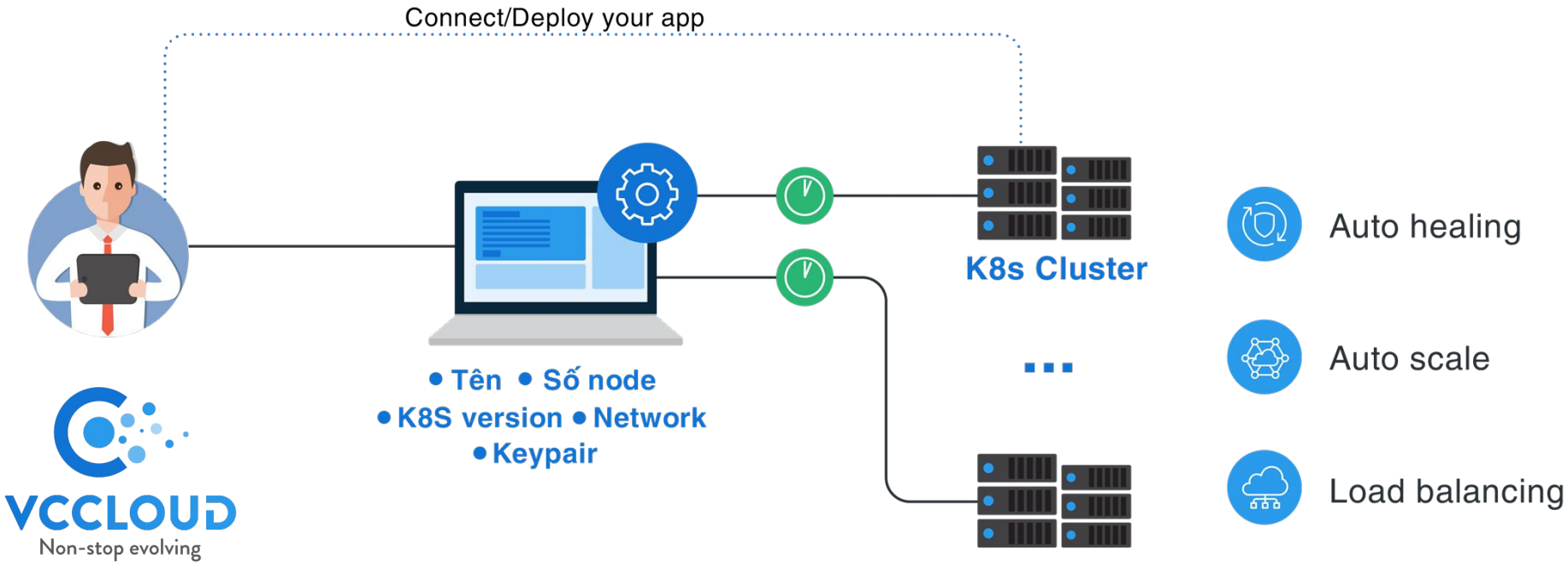
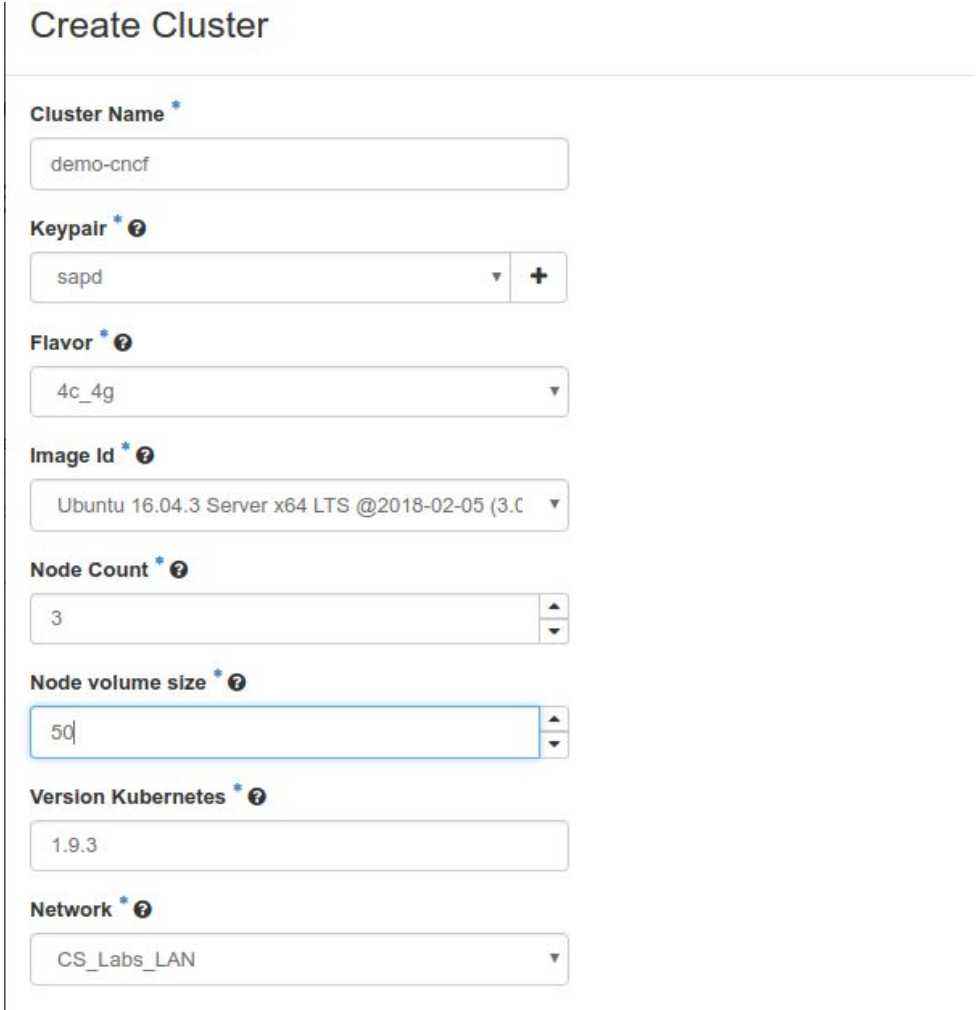
4. Kubernetes as a Service at VCCloud

VCCloud Kubernetes Service (VKS) was born



Start a new k8s cluster



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Client Config

- Get client config via VKS-API

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Access Kubernetes cluster

```
→  cncf ls
99t9cHqe7TPmsfKQzb6rxe0I.conf
→  cncf set -x KUBECONFIG ~/Desktop/cncf/99t9cHqe7TPmsfKQzb6rxe0I.conf
→  cncf kubectl get node
NAME                                    STATUS    ROLES     AGE       VERSION
vks-sapd-demo-cncf-9gc7ph92-master      Ready     master    3m        v1.9.3
vks-sapd-demo-cncf-9gc7ph92-minion-0    Ready     <none>    2m        v1.9.3
vks-sapd-demo-cncf-9gc7ph92-minion-1    Ready     <none>    2m        v1.9.3
vks-sapd-demo-cncf-9gc7ph92-minion-2    Ready     <none>    50s       v1.9.3
→  cncf
```

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Persistent Volume

- Docker container run into Openstack instance
- Persistent volumes is cinder volumes
- K8s will attach volume to the right openstack instance were docker container is scheduled

```
volumes:
  - name: cncf-volume
    cinder:
      volumeID: 672a9323-1a4d-450d-8074-69f9bdd46ad5
      fsType: ext4
```

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Storage Class

```
→  cncf cat demo-storage-class.yml
kind: StorageClass
apiVersion: storage.k8s.io/v1
metadata:
  name: hdd1
provisioner: kubernetes.io/cinder
parameters:
  type: HDD1 # change for your cloud volume type
  availability: nova
```

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Persistent Volume Claim

Use storage class in Persistent Volume Claim

```
➜  cncf cat demo-pvc.yml
kind: PersistentVolumeClaim
apiVersion: v1
metadata:
  name: cncf-volume-claim
spec:
  accessModes:
    - ReadWriteOnce
  volumeMode: Filesystem
  resources:
    requests:
      storage: 16Gi
  storageClassName: hdd1
➜  cncf
```

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Load balancer

```
→  nginx cat nginx-svc.yml
kind: Service
apiVersion: v1
metadata:
  name: nginx
  annotations:
    service.beta.kubernetes.io/openstack-internal-load-balancer: "true"
spec:
  selector:
    app:  test-nginx
  type: LoadBalancer
  ports:
  - name:  http
    port:  80
    targetPort:  80
```

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5. Demo

It is time for real demo example

Q & A

Thankyou