

# Multicloud CI/CD with OpenStack and Kubernetes

OSDN 2018

# Hi, I'm Maxime

Cloud Consultant

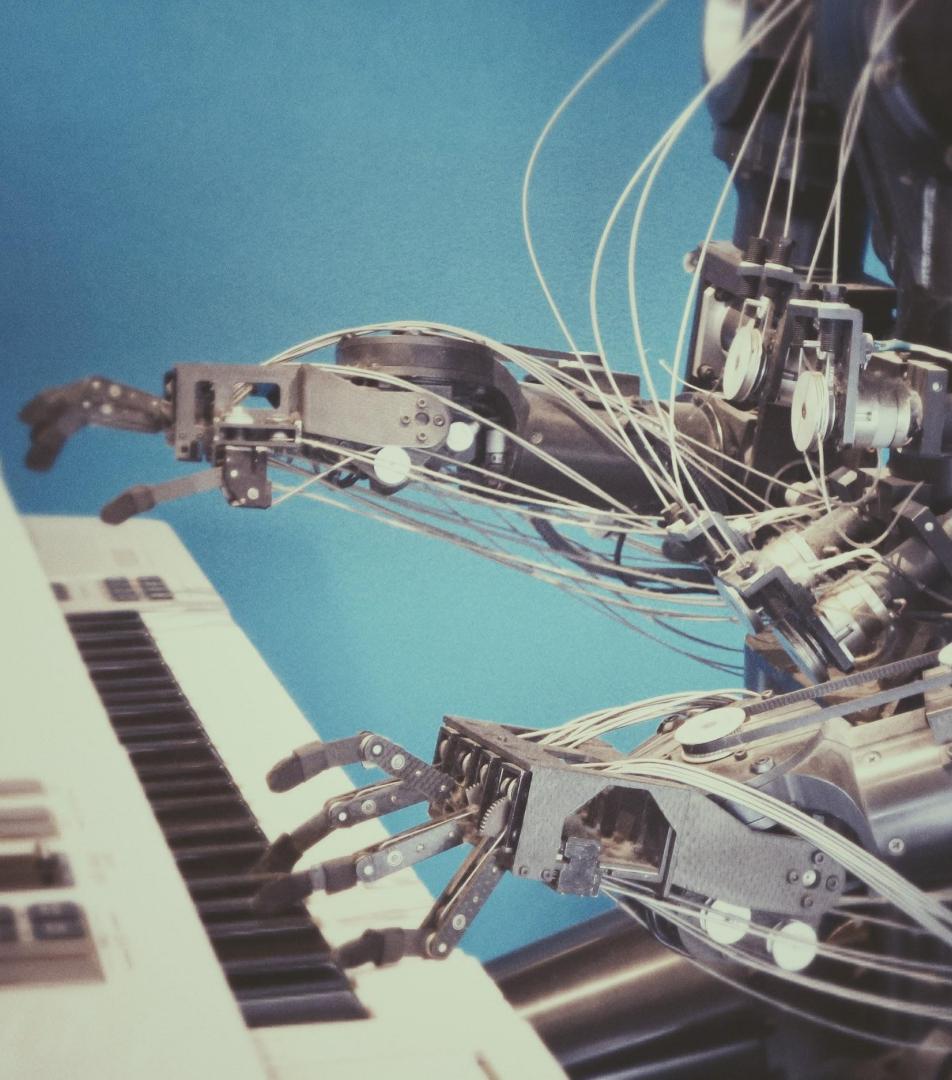
- OpenStack
- Kubernetes
- Ceph
- CI/CD

# Introduction

# Multicloud

- Several providers
- Resiliency
- Vendor lock-in
- Cost & Hybrid
- Features & Locations





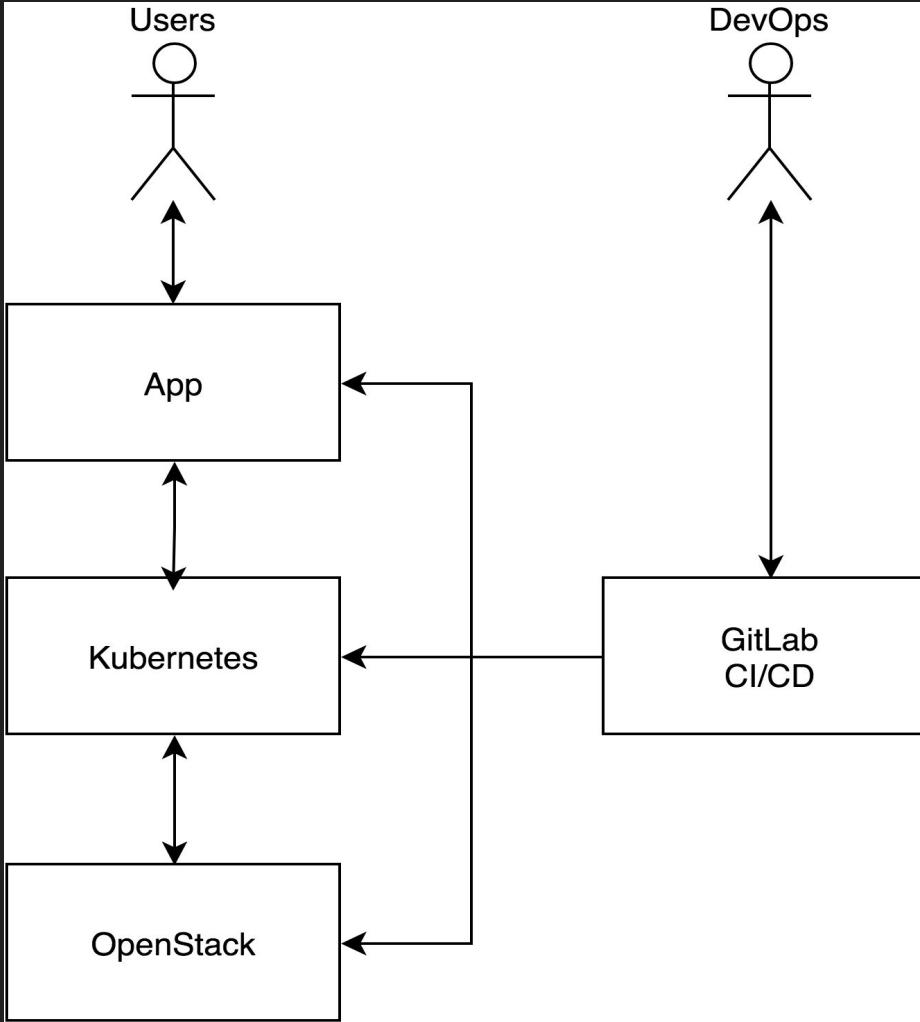
# CI/CD

- Fail fast
- Automation
- Consistency

# OpenStack & Kubernetes

- OpenStack
  - Open Infrastructure
  - API driven
  - 60 Public cloud AZs
- Kubernetes
  - Container ecosystem
  - Developer centric





# Overview

**App**  
Business logic

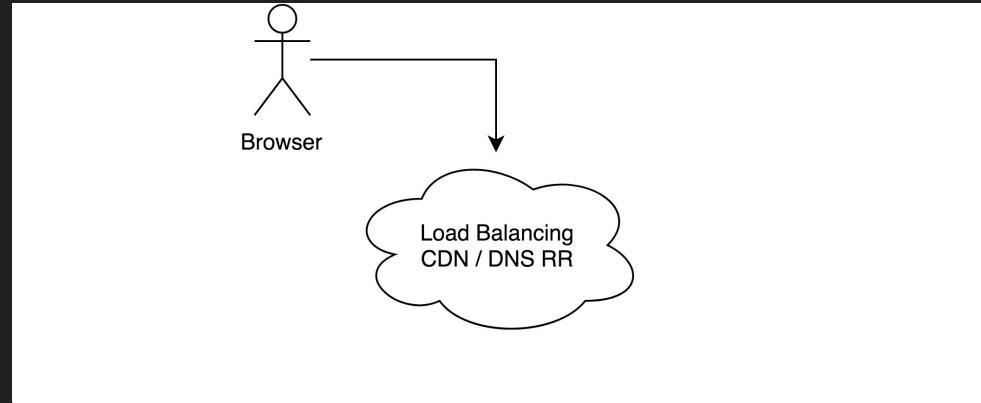
**Kubernetes**  
Container platform

**OpenStack**  
Infrastructure as a Service

# Multicloud architecture

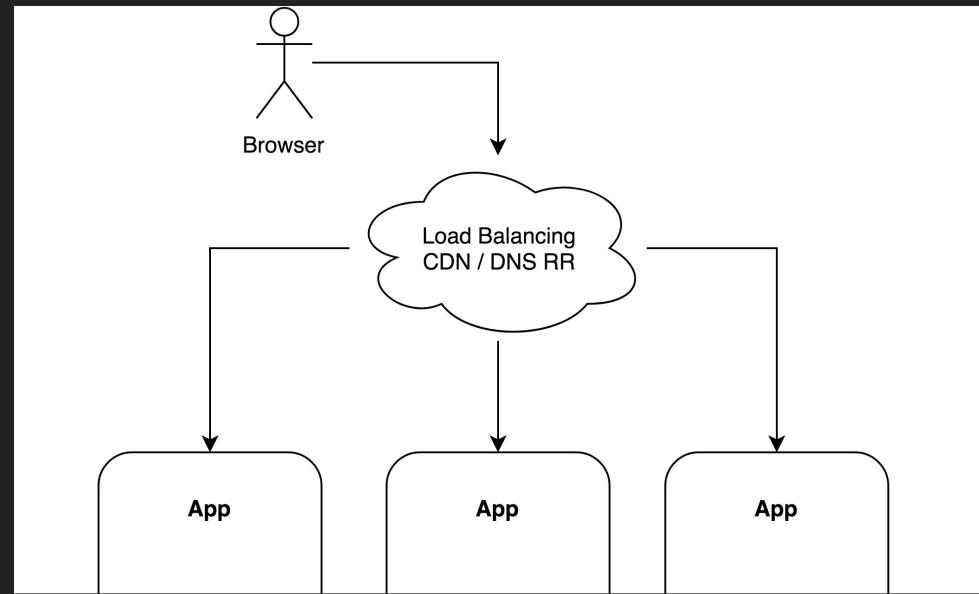
# The edge

- DNS name
- Global load balancing
  - CDN
  - DNS
    - Geo routing (Route53, Dyn)
    - DIY Dynamic DNS
    - Round Robin



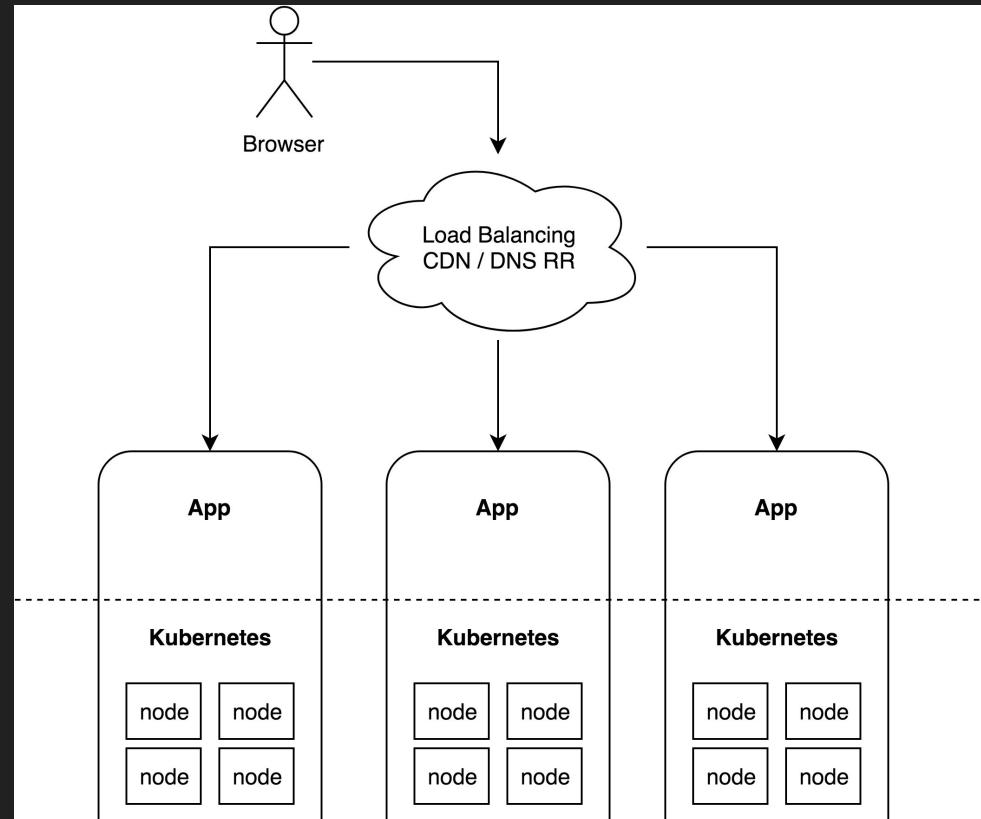
# The app

- 12 factor
- Dockerized
- HTTP based
- Distributed



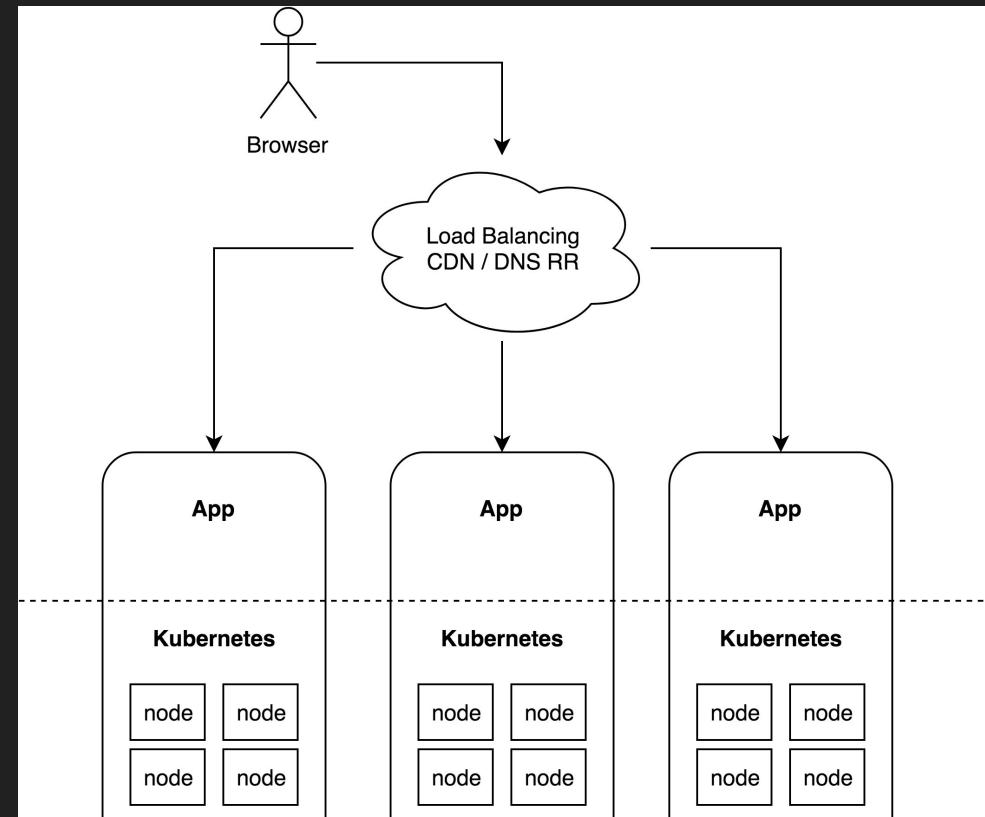
# Kubernetes

- Cloud abstraction
- 1 cluster per location
- Ingress
- Federation...



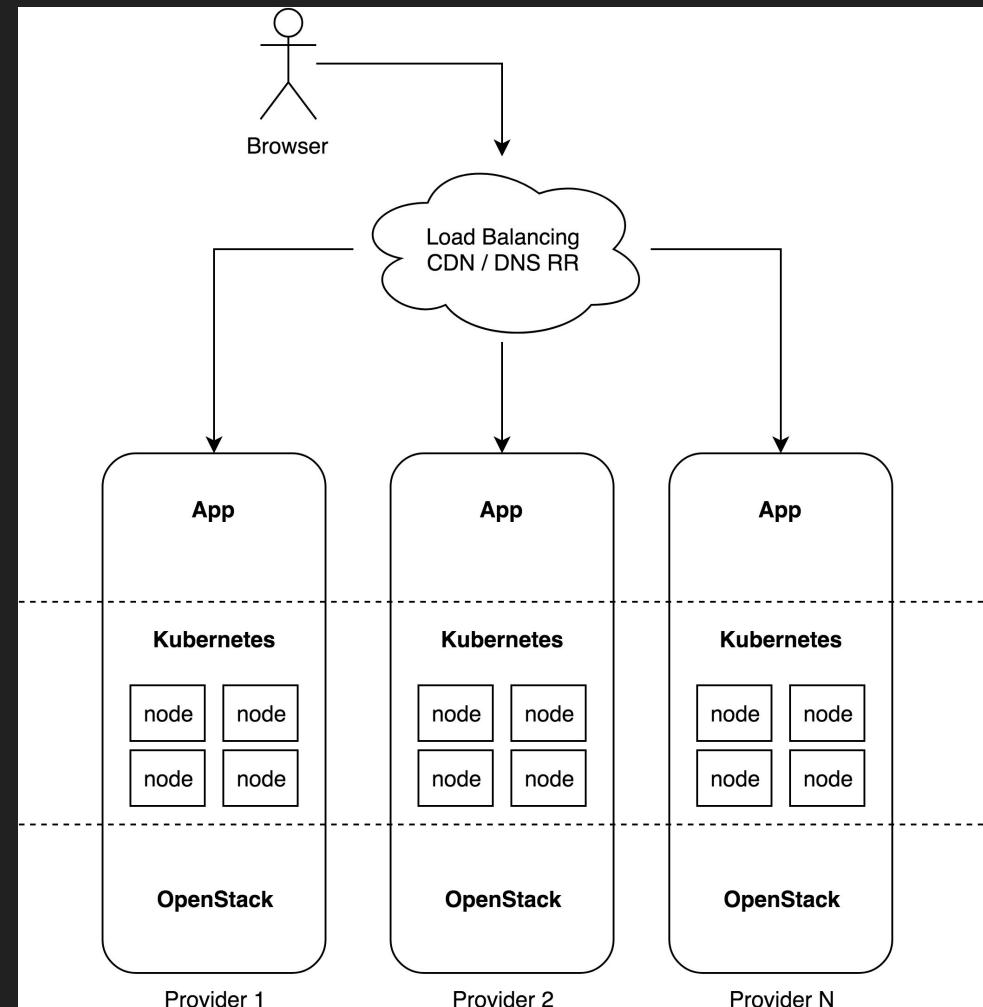
# Kubernetes federation

- Authentication federation
  - OpenID or Webhook
  - --oidc-issuer-url
  - --oidc-client-id
  - kubectl --auth-provider=oidc
    - or Kubeross
- Kubefed
  - One API to rule them all
  - V1 discontinued
  - V2 in development
    - Kube v1.11+
    - Beta Q4?
- DIY - GitLab



# OpenStack

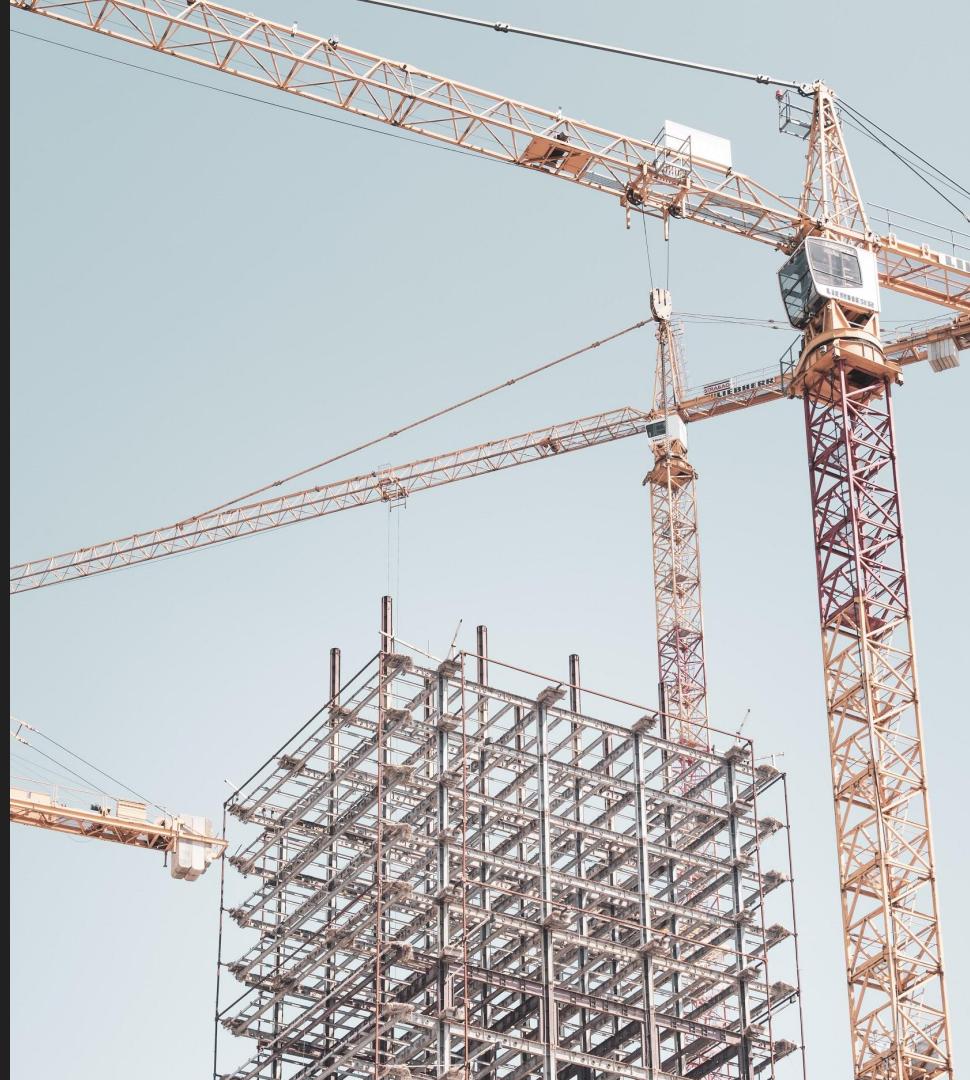
- Nova
  - Servers / Instances
  - Security Groups
  - Key pairs
  - Server Groups (optional)
- Neutron
  - Network & Subnet
  - Router
  - Floating IPs



# Cloud agnostic tools

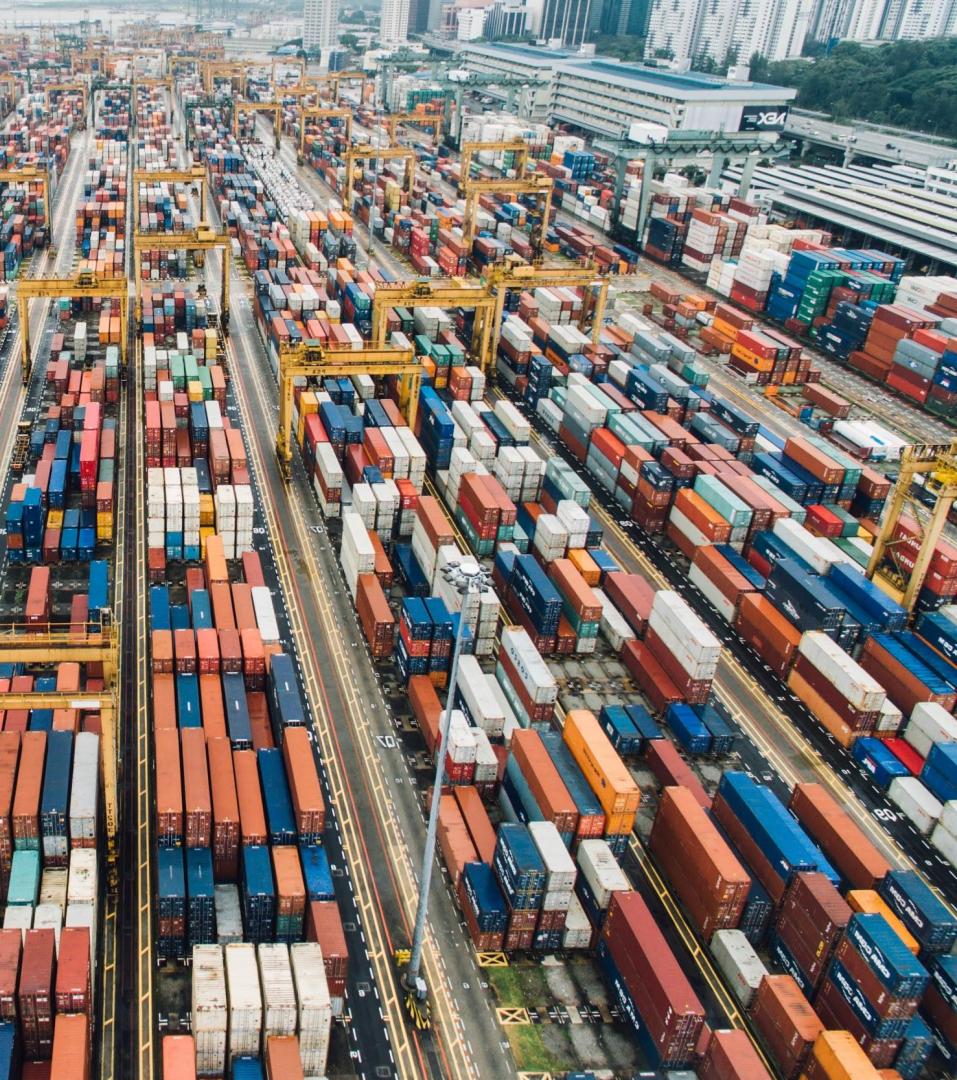
# Infra tools

- Heat
  - OpenStack native
  - How about non-openstack clouds?
  - Smaller ecosystem
- Ansible
  - Cloud modules os\_server,  
os\_floating\_ip, ...
  - Lots of clouds: AWS, GCP, VMware
- Terraform
  - Infra as a code
  - Execution plan
  - Even more cloud platforms



# Kubernetes install tools

- **Magnum**
  - OpenStack only
  - Smaller ecosystem
- **Kops**
  - No OpenStack support, AWS only
- **Rancher**
  - No OpenStack support
- **Kubespray**
  - Support: OpenStack, AWS, Azure, baremetal, VMware, ...
  - Ansible playbook
  - Terraform plans

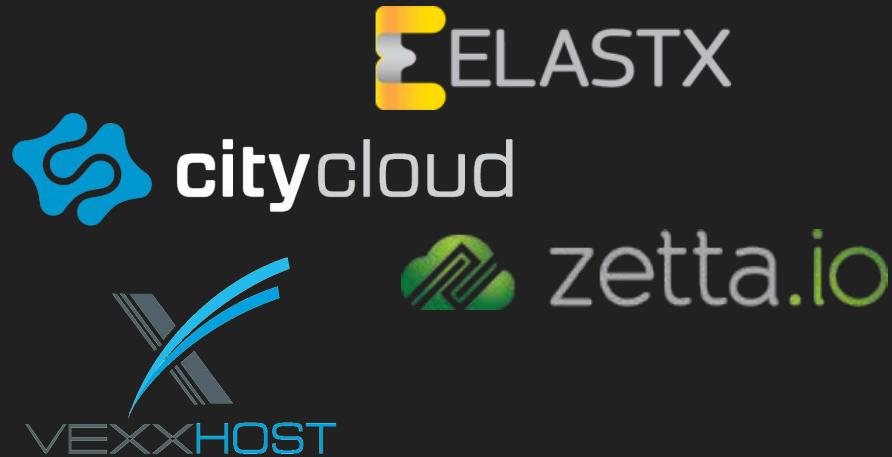


# Demo

Source: [gitlab.com/multicloud-openstack-k8s](https://gitlab.com/multicloud-openstack-k8s)

# Demo regions

- Stockholm - ElastX
- London - CityCloud
- Oslo - Zetta
- Montreal - VexxHost



# Demo setup

- DNS RR
- Terraform
- Kubespray
- GitLab CI w/ Auto DevOps
  - docker build && helm install

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# Demo

# Wrap Up

# Wrap Up

- Kubefed v2 is coming
- OpenStack interop is hard
  - Neutron routers
  - Floating IPs
- Common denominator vs Exceptions

# Thank you!



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## KOPS

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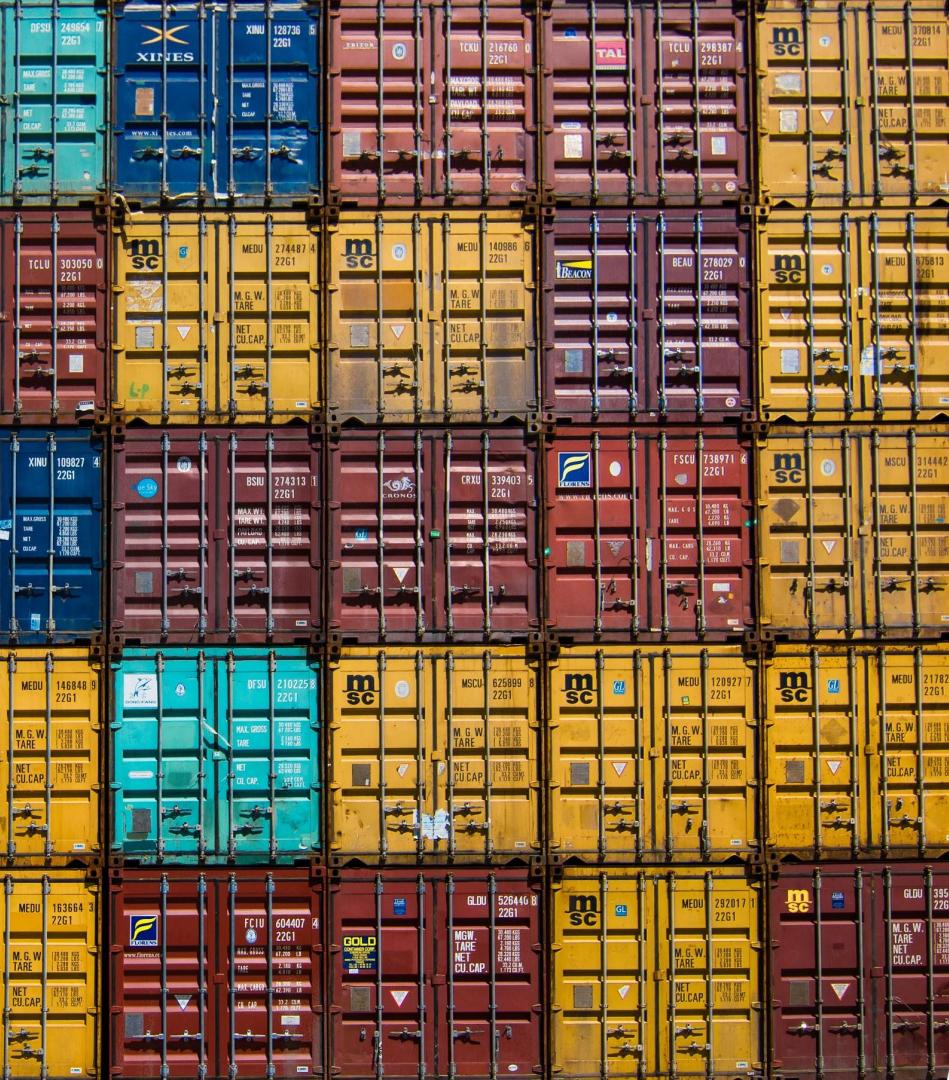
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