# WHAT DOES **OPENSTACK BRING TO A CONTAINERS** WORLD



# **HELLO!**

# I am Thierry Carrez

Also known as ttx on IRC and @tcarrez on Twitter

# • INTRODUCTION

The confusion we are setting out to clear





### THE HYPE TRENDS



### **THE ZERO-SUM THINKING**





# THE RISE OF CONTAINERS CREATED A LOT OF CONFUSION

Are containers replacing VMs? Is OpenStack not relevant anymore? Why use OpenStack for cloud-native apps? Does OpenStack run *on*, or *over* containers?



# 2. PERSONAS

Our cast of characters





# THE APPLICATION DEVELOPER

- Writes the applications that run your business
- Cares about speed
- Likes to use the latest tools
- Does not want to care about infrastructure
- Does not obsess over cost or lock-in



# THE APPLICATION OPERATOR

- Handles deployment, monitoring, scaling
- Cares about performance, reliability
- Wants solid and proven tools
- Does not want to micromanage infrastructure
- Concerned about lock-in



# THE INFRASTRUCTURE PROVIDER

- Even in serverless, someone has to rack servers
- Can be public or private infrastructure
- Does not want to care about specific workloads
- Cares about cost and evolution

# **3.** TECHNOLOGIES AND NEEDS

How different tools answer different questions



- A packaging format
- Convenient deployment tooling
- A marketplace of packages



- A packaging format
- Convenient deployment tooling
- A marketplace of packages





- Deployment platform for containerized apps
- Designed around operational best practices
- Manages application lifecycle and scaling



- Deployment platform for containerized apps
- Designed around operational best practices
- Manages application lifecycle and scaling



# WHAT ABOUT ERLICH'S NEEDS?

- Provide programmable infrastructure
- Give Dinesh and Bertram access to it
- Two options: specific or open infrastructure





# OPEN INFRASTRUCTURE

- Options, options, options
- Shared networking & storage
- Advanced services
- Multi-tenancy
- Interoperability / bursting
- Scaling
- Seamless operations
- Whatever comes next



- Programmable infrastructure
- Open infrastructure
- Interoperable infrastructure
- Future-proof infrastructure

# **PRACTICAL** EXAMPLES

How OpenStack helps the infrastructure provider answer the needs of container-age developers and operators

# Ø





















NOVA



# NOVA + IRONIC



### **COEaaS**

OpenStack					



### **COEaaS**



OpenStack	





### **COEaaS**



### OpenStack



# MAGNUM



# RUN THIS CONTAINER



# RUN THIS CONTAINER





### ZUN





- Kuryr bridges to Neutron networking
- Native Cinder volumes support



# STACKUBE





STACKUBE



# STACKUBE

# **5.** INCEPTION

OpenStack is an application too, or how Erlich becomes Bertram

# **OPENSTACK IS A COMPLEX APP**

- Lots of scale-out micro-services
- Deployment is complex
- Upgrade is difficult
- OpenStack on OpenStack (TripleO)



- A packaging format
- Convenient deployment tooling
- A marketplace of packages



### OpenStackAnsible

Deploy OpenStack in "fat" containers using Ansible

Kolla (original)

Deploy OpenStack in light Docker containers, using Ansible



- Deployment platform for containerized apps
- Designed around operational best practices
- Manages application lifecycle and scaling



# **OPENSTACK ON KUBERNETES**

### Kolla-K8s

OpenStack deployment framework using Docker containers, deployed onto a Kubernetes substrate

### OpenStack Helm

Collection of OpenStack charts you can deploy with helm onto a Kubernetes substrate



### Containers

Are a packaging format with nifty tooling, answering the needs of application developers

### **Containers on OpenStack**

Containers can be run on OpenStack-provided infrastructure, allowing them to share networking and storage with other types of compute resources in rich environments

### **Kubernetes**

Is a best-practice application deployment system, answering the needs of application operators

### Kubernetes on OpenStack

Kubernetes clusters can be deployed (manually or through provisioning API) on OpenStack resources, giving their pods the benefits of shared infrastructure

### OpenStack

Is an open infrastructure framework enabling all sorts of infra solutions, answering the needs of infrastructure providers

### OpenStack on Containers and Kubernetes

Operators of OpenStack can leverage container and Kubernetes technologies to facilitate their deployment and management of OpenStack itself



### DIFFERENT COMPLEMENTARY TECHNOLOGIES



# **THANKS!**

# Any questions?

You can find me at @tcarrez & thierry@openstack.org

# 

Presentation template by SlidesCarnival, licensed under CC-BY 4.0 Stock Photographs by UnSplash, licensed under CC-ZERO 1.0 Persona headshots courtesy of piedpiper.com