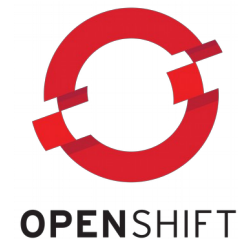
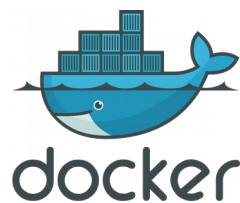
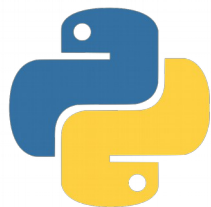




# Swiss Python Summit 2017

## Scalable Python with Docker, Kubernetes, OpenShift

Aarno Aukia  
VSHN AG





# Agenda

- About Aarno / VSHN
- How were we running python before
- Shortcomings & wishes
- What is Docker, Kubernetes, OpenShift ?
- Why use them ?
- Demo



## Who

Aarno Aukia, CTO & co-founder

ETH → Google → Atrila → VSHN

@aarnoaukia <http://about.me/aarno>

VSHN - the DevOps Company

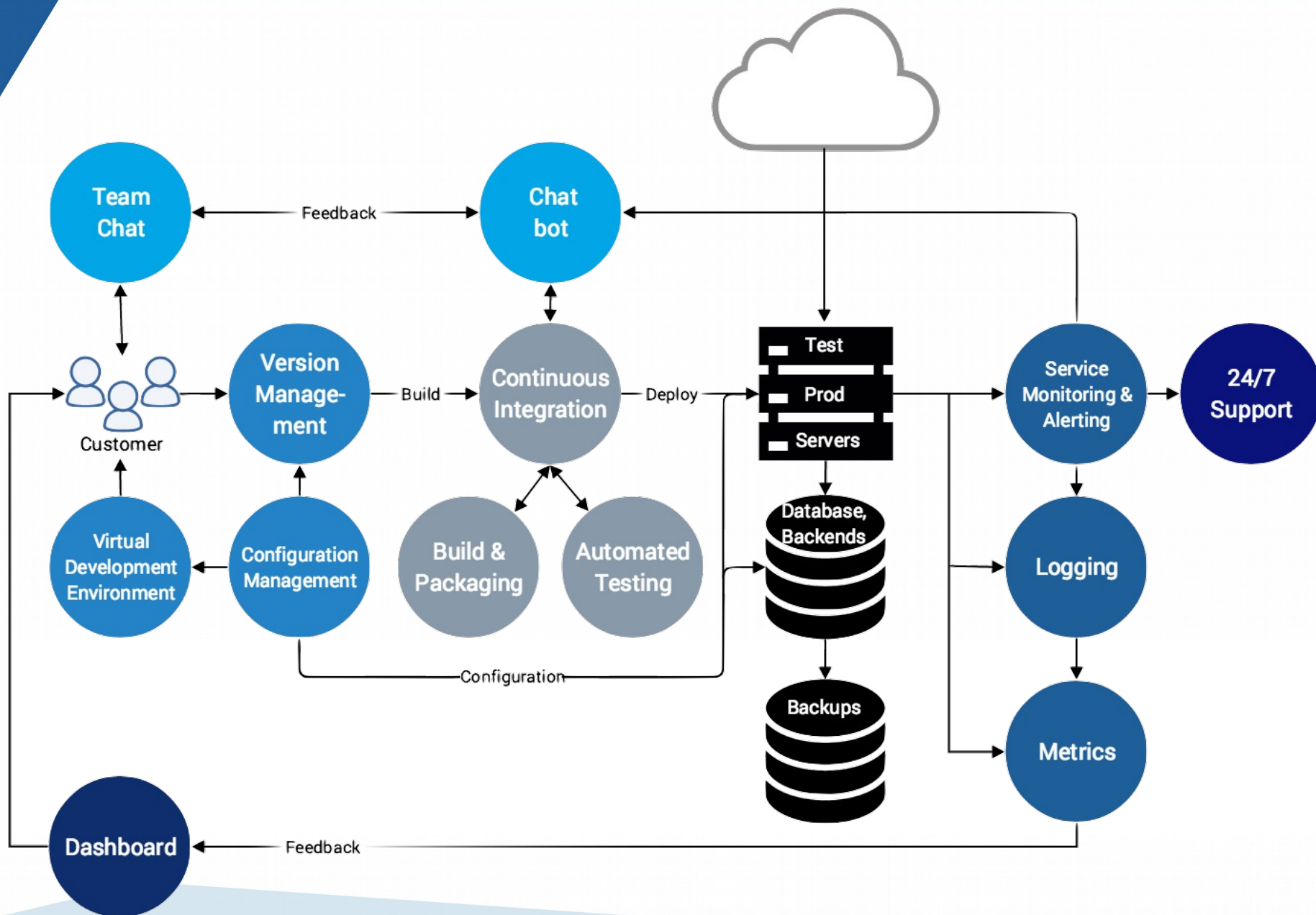
Since 2014: 18 people in Zürich

Running web applications on-premises and in the clouds making both visitors and developers happy

<https://vshn.ch> @vshn\_ch



# How are we running python applications ?







# How were we running python applications ?

Virtual servers

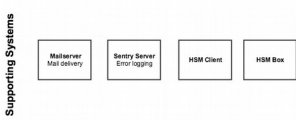
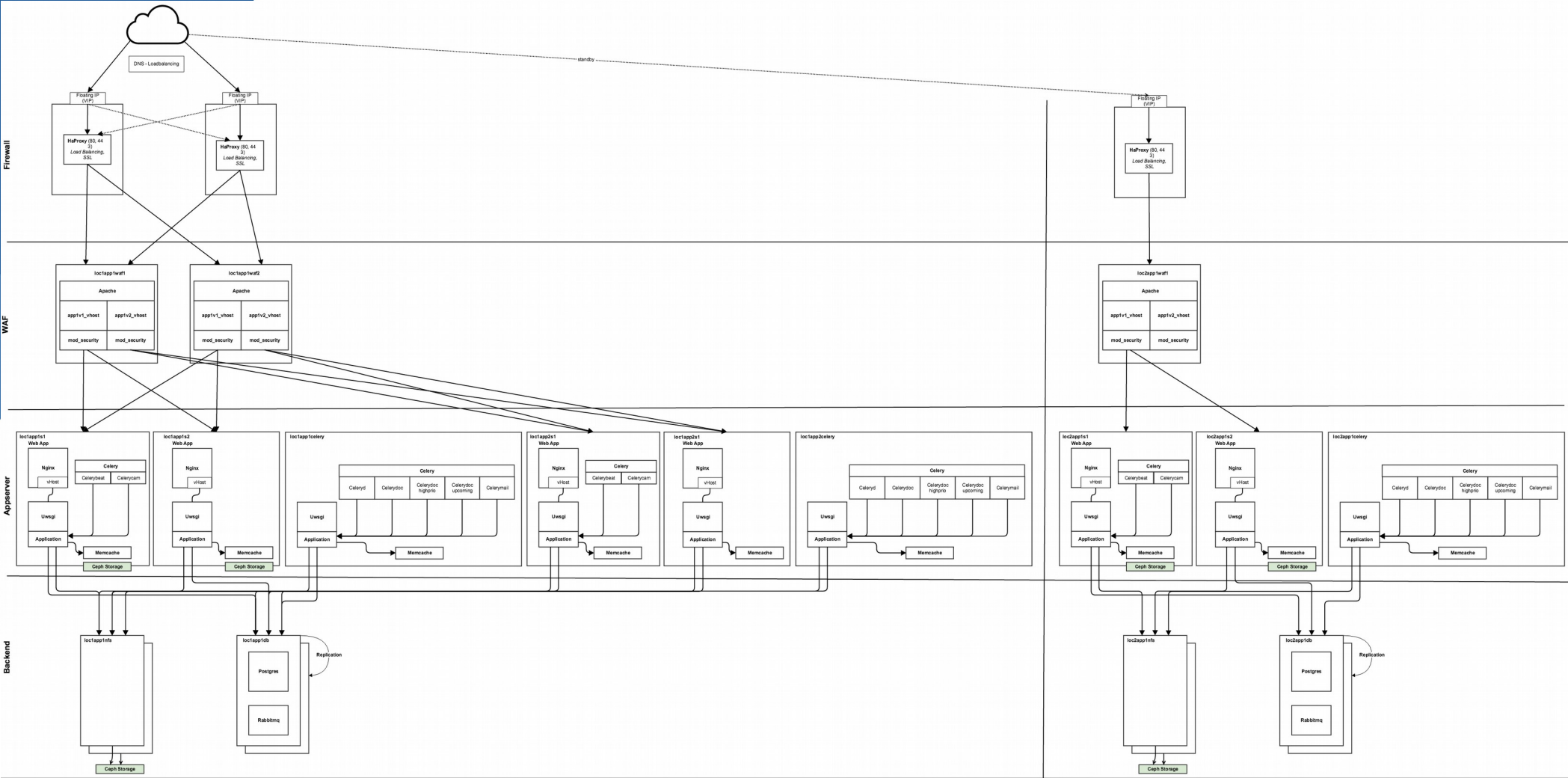
Web-/App-/Cache-/Queue-/DB-services  
managed by Puppet & Ansible

Config in GIT, separate repo from  
application

Local VM with vagrant from same config  
for development



# Customer project with python, celery, postgres





## Shortcomings

Scaling up/down servers takes manual effort & time

Python/Postgres/Apache/RabbitMQ versions/plugins defined by configuration management for each server, not for each project/deployment and have to be communicated separately

Adding new components is complex, lots of moving parts and risk



## Wishful thinking...

Solves build-ship-run workflow, integrates in CI/CD, DevOps & self-service

Handles the standard software platform problems: scaling, hitless deployment, monitoring, backup, etc

Open standards: 100% open source, backed by big community

No lock-in, free to choose any provider, works on any infrastructure

Extensible with API





# Docker



# docker

Lightweight container runtime

Package code, runtime, plugins, libraries

'Dockerfile' describes image,  
Automatically built, quickly started

Helps you to use 12-Factor-App pattern  
(explicit entrypoint, port, volume  
configurations)

<https://blog.vshn.ch/2016/11/docker>

<https://github.com/docker/docker>

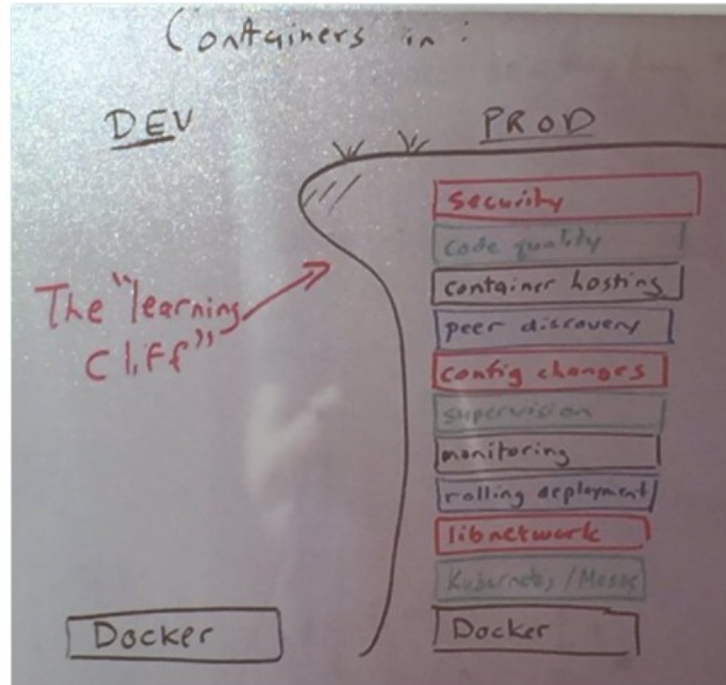


## 12 Factor App Patterns: <https://12factor.net/>

- Use **declarative** formats for setup automation
- Have a **clean, portable contract** with the underlying operating system
- Are suitable for **deployment** on modern **cloud platforms**
- **Minimize divergence** between development and production, enabling **continuous deployment**
- And can **scale up** without significant changes to tooling, architecture, or development practices.



# From container to production ?



**Michael Ducey**  
@mfdii

[Follow](#)

Containers in Dev vs Prod

10:27 PM - 10 Feb 2016

↩️ ↻️ 1,624 ❤️ 1,357



# Kubernetes



## kubernetes

Container orchestrator:

'here is a container, run 3 of these with this config and give me a loadbalancer'

'distribute all my containers over these servers and make sure they can talk to each other'

'here is a new version of this container, update all my services without interruption'

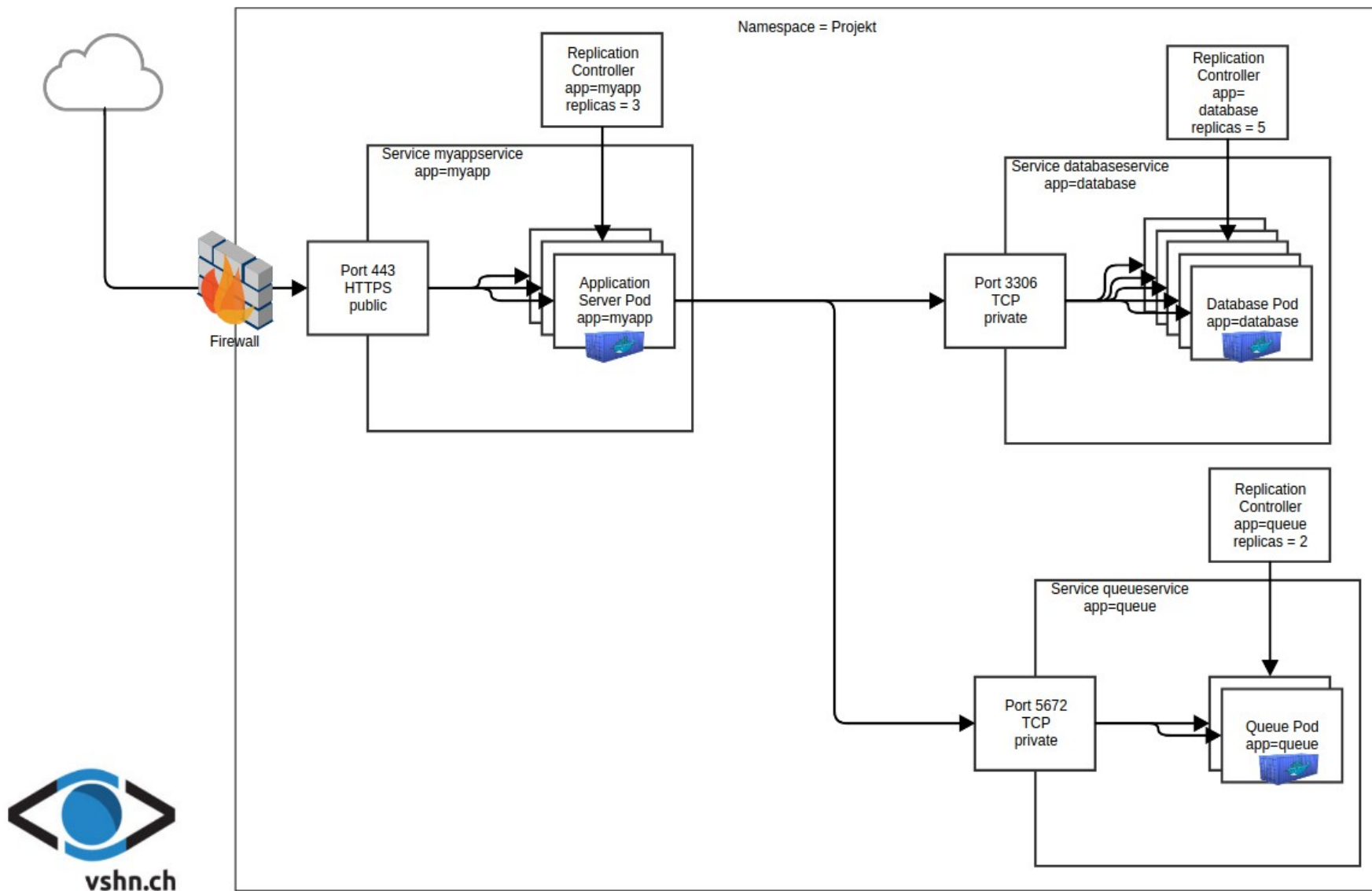
<https://blog.vshn.ch/2016/08/openshift>

<https://github.com/kubernetes/kubernetes>



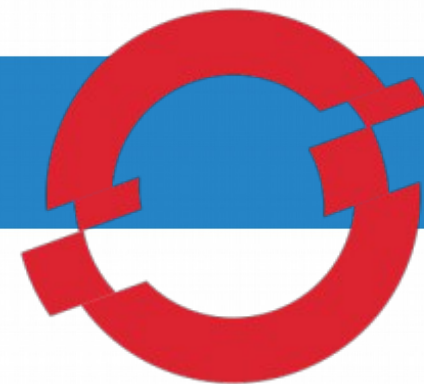


# Container orchestration





# OpenShift



**OPENS SHIFT**

How to get the application in the container ?

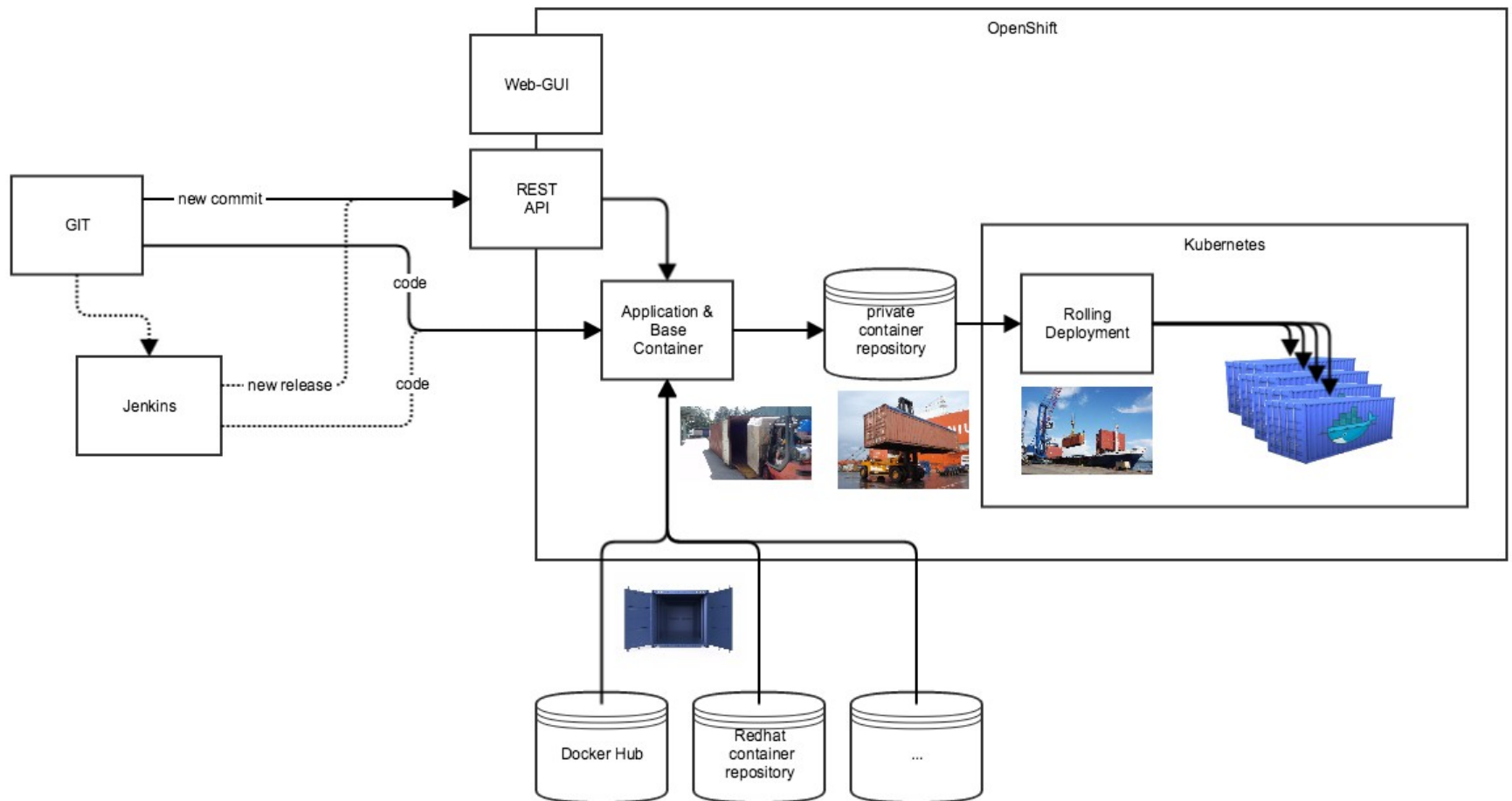
Web-GUI, CLI client, REST-API

<https://blog.vshn.ch/2016/08/openshift>

<https://github.com/openshift/origin>



# OpenShift





## Why?

You have full control over the container contents → no more old versions by the hosting provider

You control the build, deploy, run process from the GUI/CLI/API

Plattform takes care of seamless deployment, SSL, load balancing, scaling, system updates, monitoring, backups, hardware, storage, network, etc

You don't need to handle Docker, Kubernetes, OpenShift internals if you don't want to





## APPUiO by VSHN

Managed Docker, Kubernetes, OpenShift

Flavours: Big shared platform in the cloud, private platform in the cloud or on-premises

Hosted in Switzerland (ISO/FINMA-certified) or wherever you want (AWS, Azure, on-premises, etc)

Community for Developers and Operations, Dev & Ops = DevOps

Free monthly half-day training TechLabs

Starting at CHF 40/mt



## Get a free year of APPUiO

- Get a free demo-account:  
<http://appuio.ch>
- Get a free-tier-account (soon)
- Enter the draw for a year of APPUiO M  
(1GB application RAM, 5GB SSD Storage)
- <http://bit.ly/pyappuio>





# Demotime

## Links:

<https://github.com/arska/python-helloworld>

<https://github.com/arska/flask-helloworld>

<https://github.com/arska/cherrypy-helloworld>

<https://github.com/openshift/django-ex>



## Bonus

Creating a template:

```
oc export bc,is,svc,dc --as-  
template=mytemplate -o json
```





Thanks!



We're looking fo  
Python DevOps Engineers !  
<http://bit.ly/pydevops>

Talk to @aarnoaukia or @andrekeller\_ch

