# Exoscale & VSHN for Research

## OCRE – Restena.lu

Monday, May 10th, 2021



Adrian Kosmaczewski – Developer Relations

- Pronounced ˈvɪʒn – like "vision"
- *The DevOps Company*
- Founded 2014, 40 VSHNeers located in Zürich
- Switzerland's leading DevOps, Docker & Kubernetes partner
- 24/7 support
- ISO 27001 certified
- ISAE 3402 Report Type 1 verified
- First Swiss Kubernetes Certified Service Provider

Just a few words about VSHN; that's how you pronounce the name, and we're "The DevOps Company". We've been in Zurich since 2014, we're 40 engineers and we're Switzerland's leading DevOps, Docker & Kubernetes partner, offering 24/7 support to our customers. We've got a few certifications, and most importantly, we were the First Swiss Kubernetes Certified Service Provider back in 2016.

Speaker notes

We're partners of many companies very active in the Cloud Native space, you might recognize some of the logos on this slide. Of all these, today we're going to talk about Exoscale extensively.

Speaker notes

Last but not least, we run our own "Platform as a Service" offering called "APPUiO". We've created our own suite of tools to manage lots of Kubernetes services from a central location, called "Project Syn". Last but not least, we have developed our own Kubernetes operator for backups, called K8up, which just like Project Syn is 100% open source on GitHub.

# Agenda

- Cloud Services Today

    1. DevOps

    2. Cloud infrastructure

    3. Kubernetes

    4. Infrastructure As Code

- Live Demo
- Questions & Answers

# 1. DevOps

- **Dev** elopment and **Op** eration **s**
- Continuous Integration and Deployment (CI/CD)
- Version Control
- Agile Collaboration
- Infrastructure as Code
- Automation

# 2. Cloud Infrastructure

- Compute
- Storage
- Security

Of course, this is the age of the multiplicity of cloud providers; we cannot leave aside the biggest three providers, together gobbling up more than 90% of the worldwide market.

However diverse, at its heart each cloud provider offers the same very similar set of basic building blocks:

- Compute services, in the shape of virtual machines using various operating systems such as Windows or Linux.
- Storage, usually in the shape of "buckets", with virtually unlimited sizes and with various costs depending on availability and speed.
- And finally, Security services to control the access to all of these pieces of infrastructure.

# Synergy



- Compute, storage, and security services
- Scalable Kubernetes Service (SKS)
- High availability
- Cost visibility



- Kubernetes Certified Provider
- Radical transparency
- 24/7 support
- Security

There are quite a few competitors in the cloud area, and Exoscale is our local partner in Switzerland. Our synergy allows both of us combined to cover the full spectrum of cloud computing needs of the research community.

How different are we? We give our customers "universal truths" instead of "vendor features". We strive for radical transparency, and we are geographically & culturally close to our customers.

Exoscale provides the usual services as mentioned previously, plus a large array of value added services, and even better, a very visible cost management solution. Coupled with VSHN security focus, 24/7 support and its unmatched Kubernetes expertise, we can guarantee a service level nobody else can.

Exoscale data centres are located exclusively in Europe.

Speaker notes

As shown in this map, Exoscale has datacenters throughout europe and is very well interconnected with GEANT, so that you're never more than a few milliseconds away from the closest Exoscale region.

# Services

- Compute, network, storage (SSD & S3), GPU, VPC
  - DE-FRA, DE-MUC, AT-VIE, CH-GVA, CH-ZRH, BG-SOF
  - Guaranteed data location
- Kubernetes
  - Exoscale Scalable Kubernetes Service (SKS)
  - APPUiO Red Hat OpenShift
  - APPUiO SUSE Rancher Kubernetes
- Database as a Service: MySQL/MariaDB/Galera, PostgreSQL, MongoDB, ElasticSearch, Redis, Memcached, Kafka...
- Software as a Service
  - GitLab, NGINX Plus WAF, Keycloak AAI, etc
- DevOps Support, Professional Services, Application Management

# Privacy & Security

- Swiss & European company, no US Cloud act applicable
  - Solves "Schrems II" / CJEU ruling problems
  - Exoscale: Swiss, part of A1 Telekom Austria Group, A1 Digital
- ISO 27001, ISO 27018 certified
- ISAE 3402 audit report available
- GDPR-compliant "data processing agreement (DPA)" available at no cost
- Already used by Government, Banking, Health/Medical and Education/Research
- 24×7 support available

VSHN

# Research References

## CERN

Helix Nebula Science Cloud (HNSci Cloud) / RHEA Project:
www.exoscale.com/syslog/cern-on-exoscale

## SWITCH

OpenShift- and Kubernetes- based Container-as-a-Service platform since 2018

## Swiss Federal Archives

Linked Data Platform lindas.admin.ch

## Other VSHN industry references

www.vshn.ch/en/partners/success-stories

Several research institutions already trust Exoscale and VSHN to deliver cloud services for them with unmatched availability, strong privacy and security, and competitive costs.

# 3. Kubernetes

EXOSCALE  Cloud A  Cloud B  On premises

# 4. Infrastructure As Code

Kubernetes provides portability for your applications. But what about your infrastructure? How should your teams specify the compute, storage, and security parameters of your applications?

Thanks to infrastructure as code, teams can define in a textual format how their servers are configured, launched, and connected to one another, and teams can replicate those parameters in various providers.
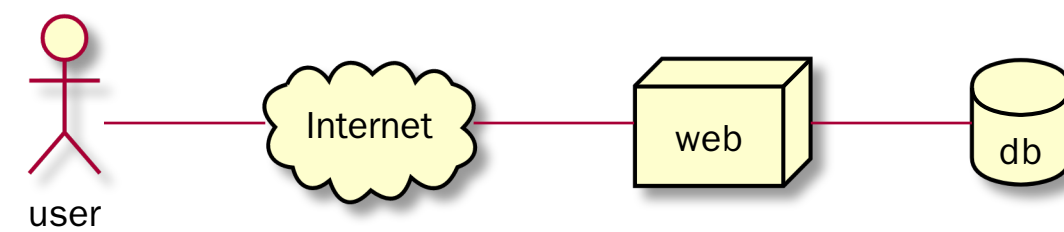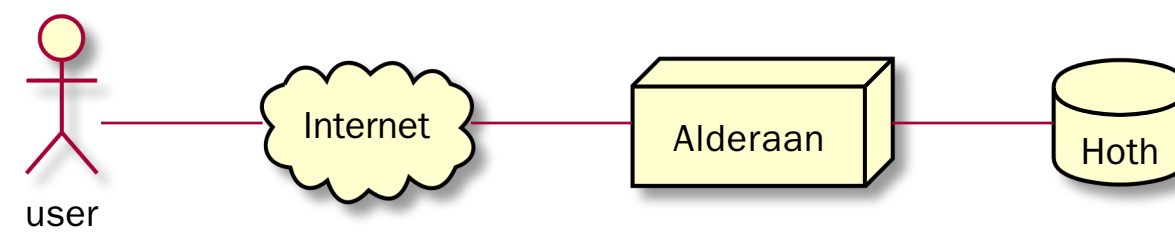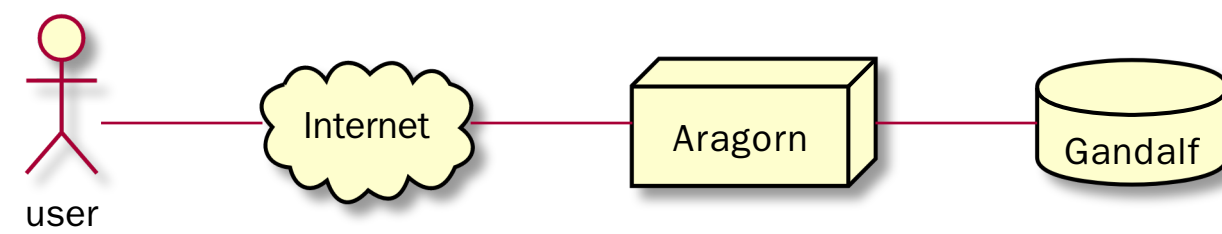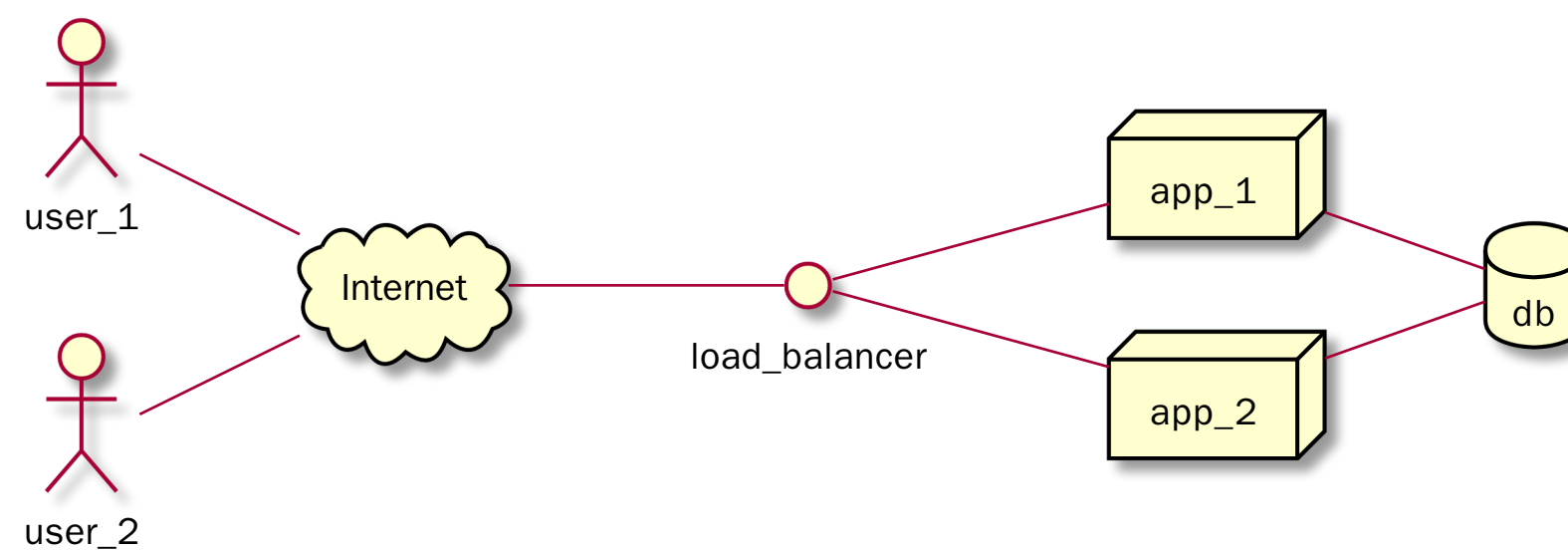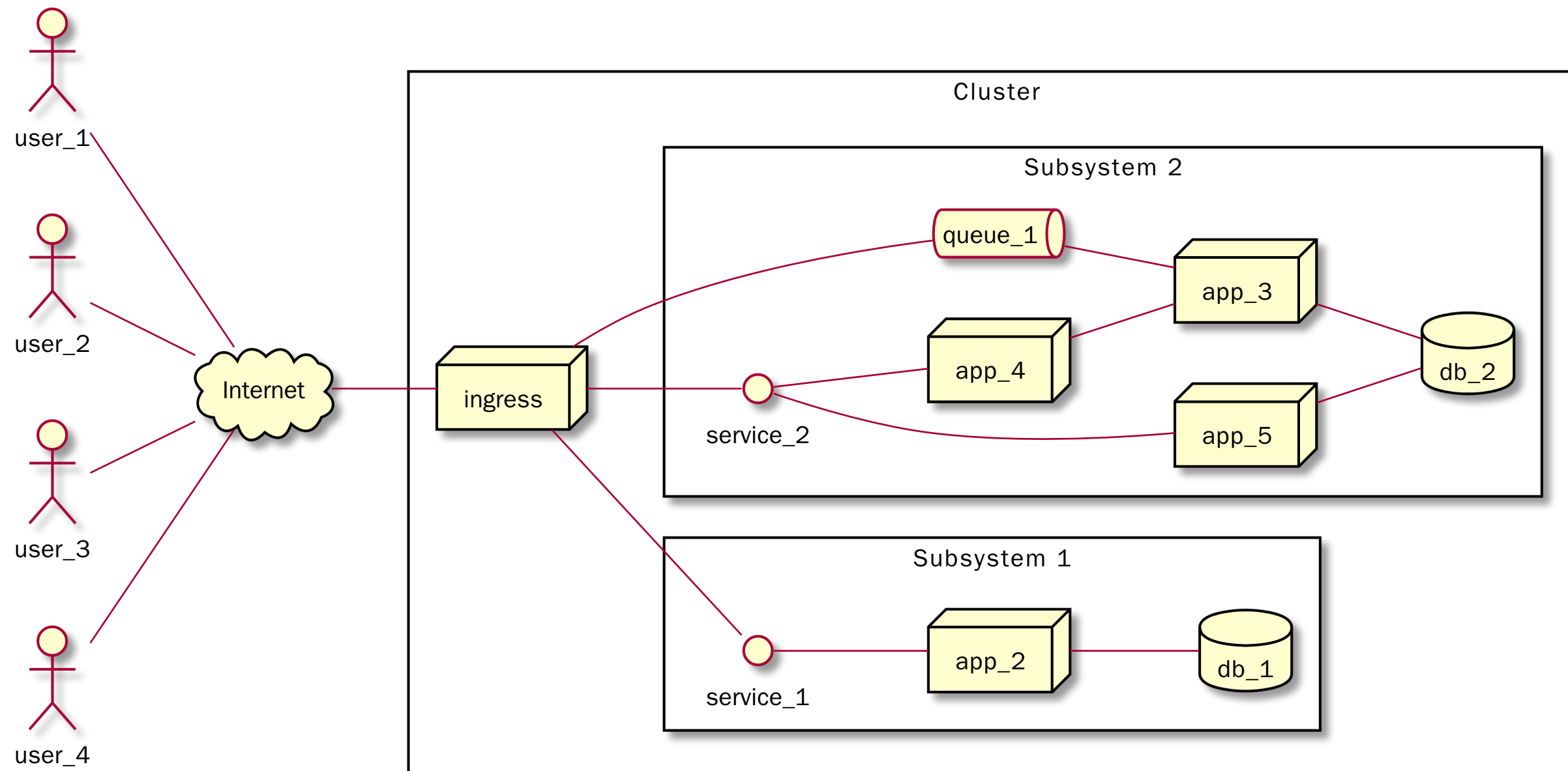
# 1990s

# 1990s

# 1990s

# 2000s

Things started getting complicated in the 2000s; thanks to technologies like NGINX, developers could now have several instances of their applications to serve a growing base of users.

Teams started to grow, so knowledge had to start spreading throughout the team. But most of the work required was still artisanal in nature, hard to replicate and maintain.

# 2010s and 2020s

# HashiCorp Terraform

```
locals {
  zone = "ch-gva-2"
}

resource "exoscale_sks_cluster" "demo" {
  zone          = local.zone
  name          = "demo"
  version       = "1.20.5"
  description   = "Webinar demo cluster"
  service_level = "pro"
  cni           = "calico"
  addons        = ["exoscale-cloud-controller"]
}

resource "exoscale_security_group" "sks_nodes" {
  name        = "sks_nodes"
  description = "Allows traffic between sks nodes and public pulling of logs"
}
```

Terraform is the name of the *de facto* standard for infrastructure as code. As shown on this example, a Terraform file contains a human-and-machine readable representation of a cloud deployment, in terms of compute, storage, and security settings.

Terraform works with all major providers out-of-the-box, but there exist extensions for many more providers. This example in particular targets Exoscale, and is a fragment of a representation of compute and security infrastructure located in the Exoscale datacenter in Geneva, Switzerland.

# Demo Time!

1. Creating a Kubernetes cluster on Exoscale

2. Deploying an application

3. Scaling the application horizontally

VSHN

# Summary

- DevOps is the standard methodology for managing cloud applications
- Kubernetes is the standard platform for cloud applications
- Terraform is the standard tool for infrastructure as code
- Exoscale is the standard cloud platform for cost- and privacy-savvy teams
- VSHN is the standard DevOps team to take care of your cloud applications

Speaker notes

This is a quick summary of the most important things we've seen today.

VSHN

Connect to www.vshn.ch/ocre and get your trial voucher now! We also provide cloud-agnostic and Kubernetes-related custom training, some of which is already available in our YouTube channel vshn.tv. Contact us if you would like to have a tailored training session for your team!

Thanks a lot for your attention!

# Thanks!

EXOSCALE    VSHN

- **Trial voucher** www.vshn.ch/ocre
- **Training sessions**: reach out to us, or check vshn.tv
- **Download slides** bit.ly/restena-ocre-exo-vshn

Adrian Kosmaczewski – Developer Relations – adrian@vshn.ch

VSHN AG – Neugasse 10 – CH-8005 Zürich – +41 44 545 53 00 – vshn.ch – info@vshn.ch