A server room with blue and purple lighting and server racks. The text is overlaid on the left side of the image.

Proposing a **Public Cloud**
infrastructure and using it
to heat a residential
neighborhood

Infomaniak quick overview

1994

Infomaniak is born,
in Geneva

+ 230

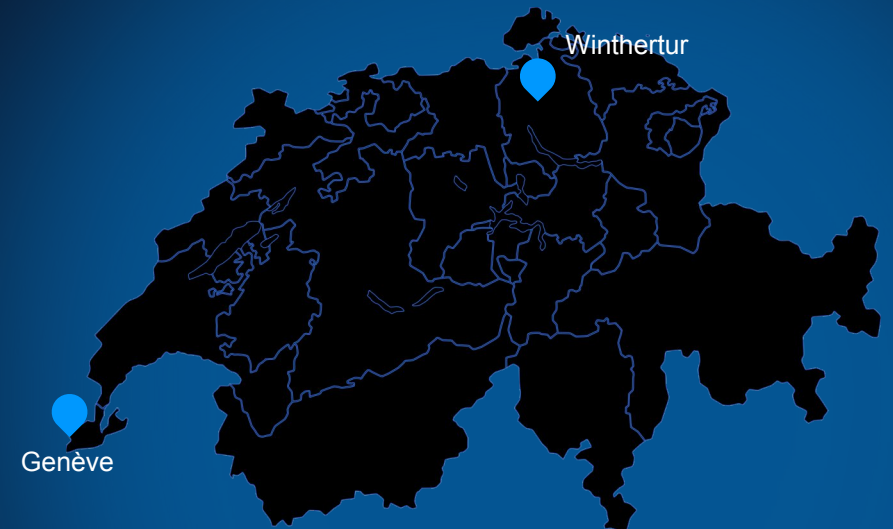
Staff, all located
in Switzerland

2 Datacenters

Geneva area

100%

Independent and
Switzerland based



What we do ?

- Hosting, domains and mail management
- Collaborative tools with kSuite
- Cloud Computing (IaaS, PaaS, BaaS, IAaaS...)
- Events & Marketing solutions
- Streaming services



Our vision

- Developing technological independence
- Make a lasting contribution to the regional economy
- Reducing our footprint as much as possible
- Proposing an alternative to GAFAM

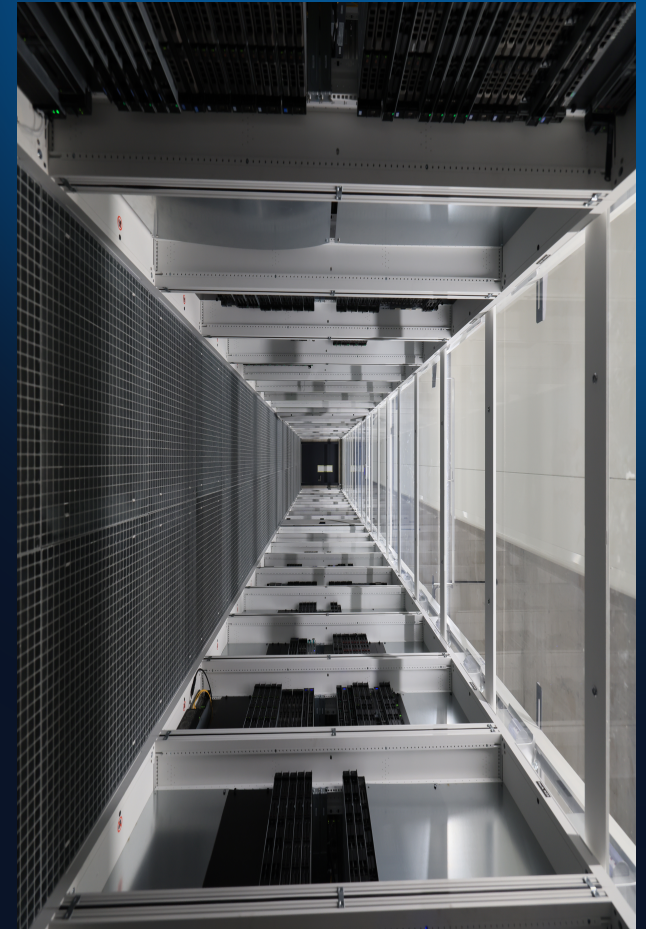
Datacenters

We operate and design our datacenters

- PUE < 1.1
- simple, efficient, replicable
- strong ecological engagement

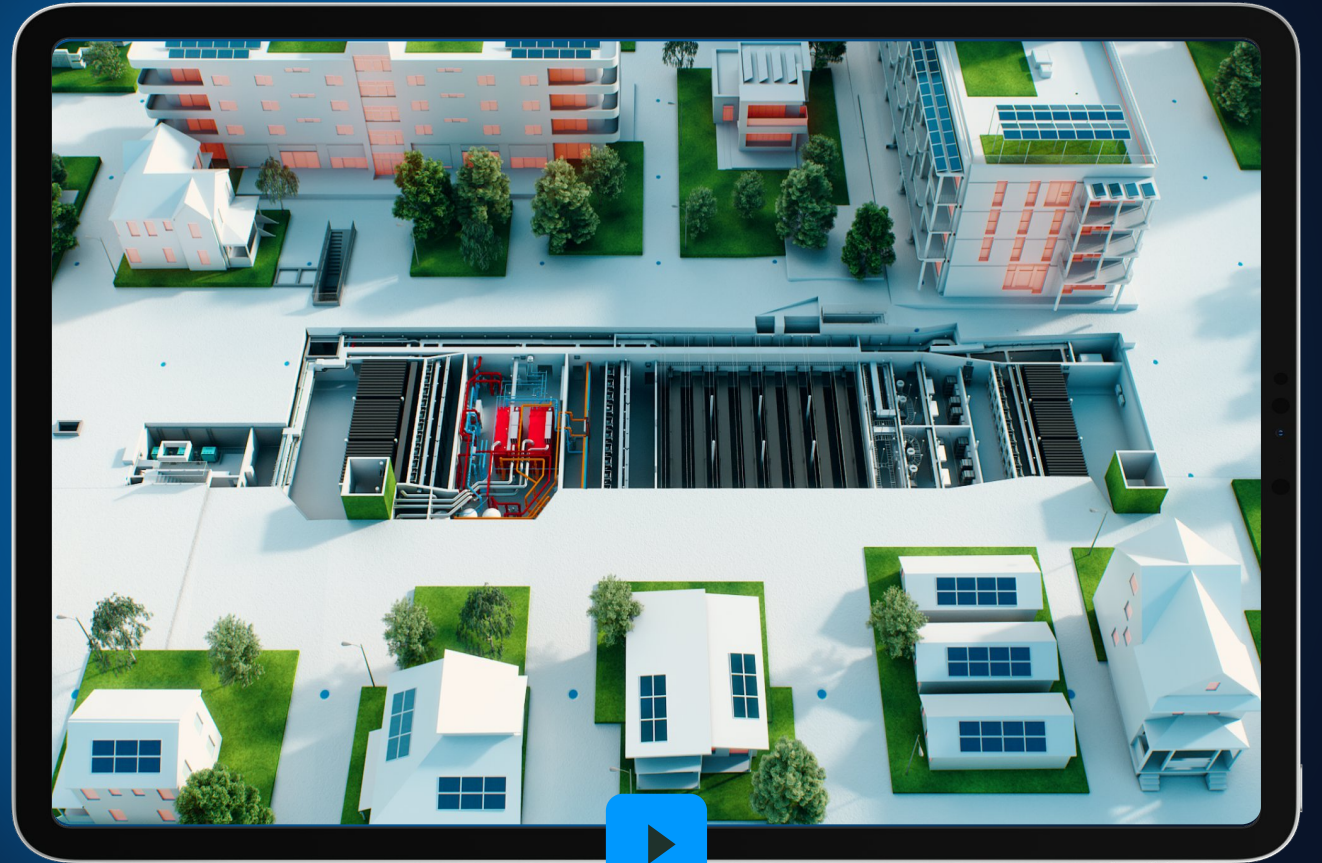
Principles

- Hardware is generating more and more heat
- Green electricity, solar power and free cooling is not enough
- We can reuse heat – other projects already did it
- Size matters for DCs – small DC integrated in town heart



Introducing D4

- Why datacenter number 4 ?
- Heating up to 6k homes / warming in winter, hot water in summer with Geneva thermal network
- First initiative which will reuse 100% of generated heat (including heat pump heating)
- We resell generated heat, so it's lowering DC global power budget



Let's make it standard !

IK & OpenStack

- OpenStack in numbers
- Debian packaging ~500 packages
- OCI : OpenStack Cluster installer¹
 - Quick full cluster deployment
 - Easy cluster customization

credits: zigo@debian.org

```
ocicli cluster-set <cluster-name> -cpu-model EPYC-Rome
```

+ 32k
Cores in production

+ 18k
OpenStack instances running now

+ 40PB
Data stored in OpenStack Swift

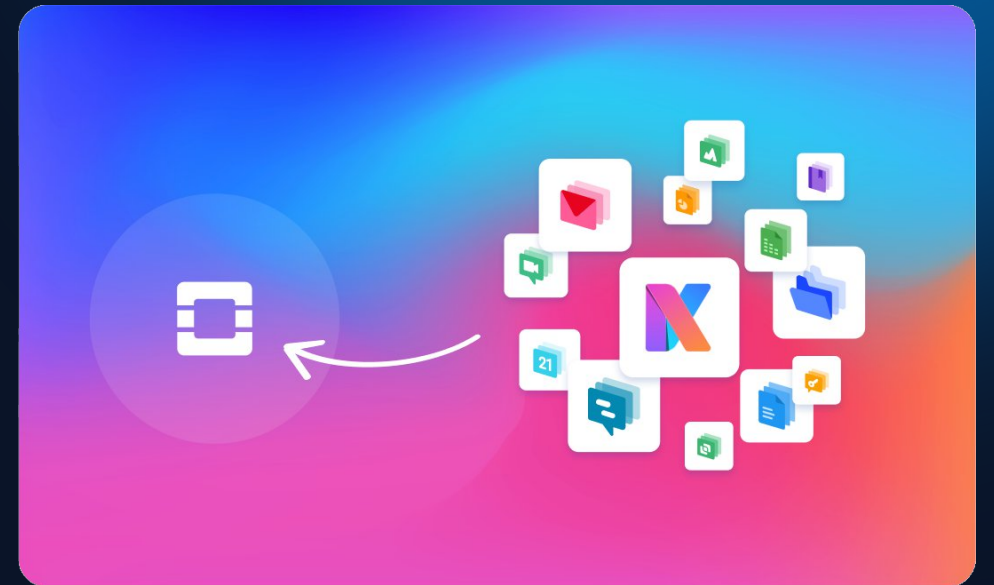
2013
First OpenStack cluster in production

1. <https://salsa.debian.org/openstack-team/debian/openstack-cluster-installer>

OpenStack: the foundation of our Services

OpenStack is our backend for:

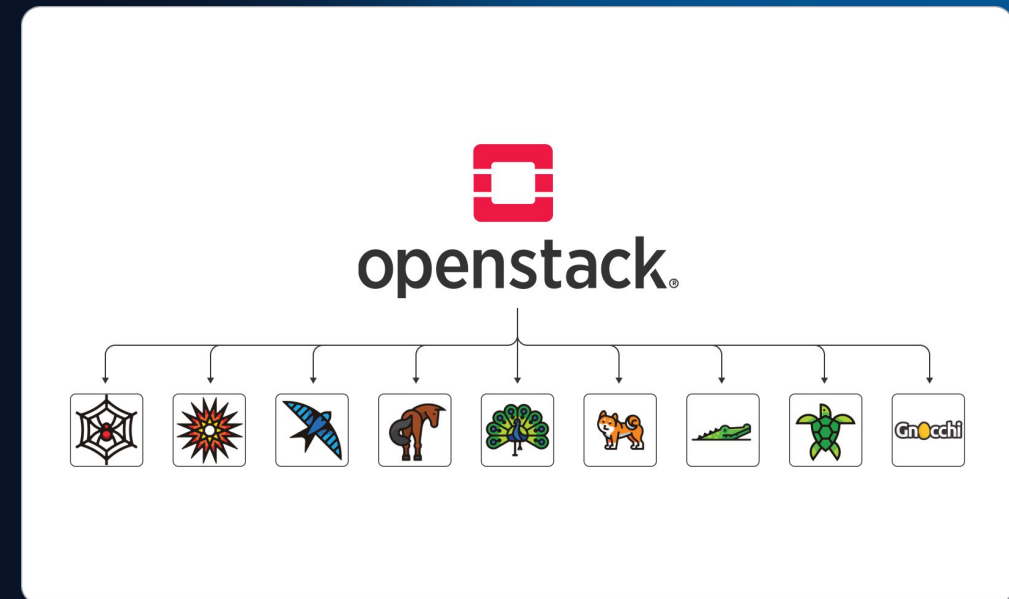
- VPS since 2013
- Storage (SwissTransfer, SwissBackup, kDrive, ...) since 2016
- Internal IaaS service since 2018 (DevOps, CI/CD, K8S clusters, production for most of our services)



Public Cloud

- Stats since 2021
- Customer on-boarding
 - Clear documentation / working with partners
 - Easy resources creations / network case
- Deployed services
 - Standard feature set
 - Adding components requires reflexion
- Coming soon
 - KaaS managed Kube as a Service
 - New region in DC4

500 k Created 6k Instances up 1.2 k Cores 150 TB Ram 250 TB Ceph NVMe



Public Cloud Challenges

- We are kind, we first opened our Public Cloud **widely**
 - Free Tiers **affluence**
 - Large **quotas**
 - No bandwidth **limitations (fair use)**
- Abuses **experiences**
 - Quotas
 - Mining
 - Customers **privacy : how to detect crypto-mining ?**
 - Mineguard, AI-based cpu signature tool **deployment**
 - API rate **limiting**

	Quota 1	Quota 2	Quota 3
Instances	10	50	200
Memory	20	200	500
Cores	64 GB	1TB	2 TB
GB	1 000	10 000	50 000
GPUs	×	✓	✓

Infra architecture

We have operational motivations

- Security **vulnerabilities**
- Hardware **outage / replacement**

Tips

- Distributed Storage (Ceph) not **local / no ephemeral**
- Network **BGP to the host**
- Large networking operation **no down time**
- Same CPU model on **hypervisors**
- HA API **endpoints / DB**

Example: moving a datacenter (February 2024)



D2 moving to D4

2 396
Instances

3 808
Core

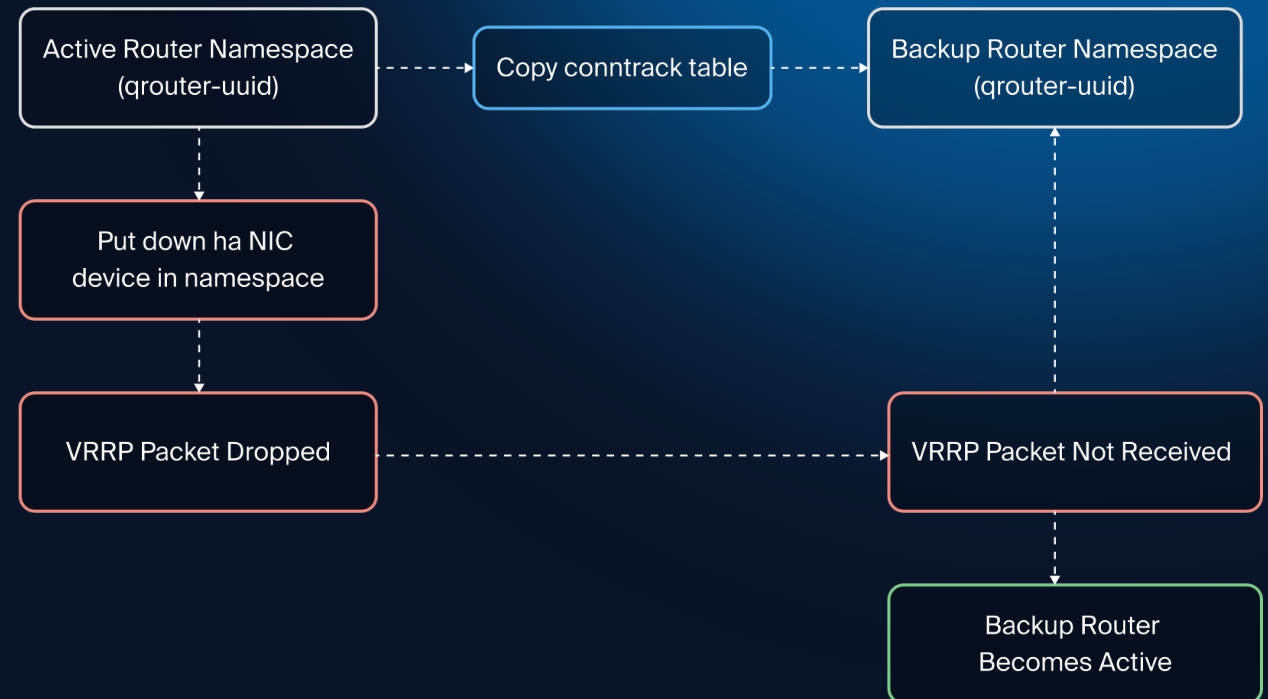
57
Computes

1/3 of our
Swift Storage

Networking operation

Emptying network-nodes

- Python tool based / IPv4 as now ¹
- Neutron HA routers
- VRRP / Keepalived usage
- Namespaces interactions
- Contrack implementation
- Switching routers



1. <https://salsa.debian.org/openstack-team/services/neutron-ha-tool>

Questions?

infomaniak The Ethical Cloud 

