Practical Lessons from Building a Highly Available Openstack Private Cloud
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Fall 2013, OpenStack Summit Hong Kong, November 5 2013
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Who are we?
Sebastian Kachel
IT-Cloud-Manager & IT-Operator
- Unix / Linux & SysAdmin / DevOps guy
- involved in OpenStack in 2012
- Based in Berlin, Germany
- One of the organizer from OpenStack-Meetup-Berlin

Florian Haas
CEO & Principal Consultant
- HA/Storage/Cloud guy, consultant, instructor
- hastexo co-founder & CEO
- Based in seat 10C, Economy Class
- Occasionally returns to home base near Vienna, Austria
What was our challenge to solve?
Ensure high availability for all services that we want use for our customers in a private cloud.
What’s this about?
Pixelpark AG

Full service agency for multimedia communications & e-business solutions

departments: concepts, project management, editorial, design, development & hosting
Solution from pixelpark’s high availability private cloud
Why OpenStack?
Why OpenStack?

- Benefits of cloud computing like on-demand, scalable & elastic
- Fixed, time based release cycles
- Open source
- Support
- Rapid development
- Cloud software that goes beyond IaaS

make it highly available
Why High Availability?
We provide service level agreements with high availability up to 99.99%.
How did we do it?
Storage
HA Storage

- Highly available storage as base data store to make it scale
Why Ceph?

- Distributed storage platform designed to provide excellent performance, reliability and scalability
- Guarantees reliable storage with no data loss
- Stores: Cinder volumes, Glance images, static data (S3) over radosgw & instances

Ceph is an excellent, reliable basis for cloud storage
How did we build our Ceph store?

- Working with 3 copies
- 1 Disk per OSD
- XFS filesystem
- Journaling on separate SSD
- Every storage node has 8x Gbit ports in trunk mode
OpenStack Block Storage
HA Block Storage

cinder-volume, cinder-api & cinder-schedule over two nodes
Pacemaker to monitor & control services

- cinder services in active/backup mode
Network
HA Network

quantum-dhcp-agent & quantum-l3-agent scalable over two nodes
Pacemaker to monitor & control network services

- quantum-dhcp-agents **active/active** over two nodes
- quantum-l3-agent **active/backup** distributed over two nodes
- quantum-plugin-openvswitch-agent **active/active** over two nodes
Services & APIs
HA OpenStack services and APIs
HA OpenStack services and APIs

Pacemaker cluster with two controller nodes to keep

horizon,
keystone,
glance,
nova,
RabbitMQ,
quantum-server & mysql database
always on
Compute
HA Nova guests

- rbd mount under /var/lib/nova/instances
- own pool in ceph-cluster
- 6 x 1GBit/s Ports on every compute
How did this affect our organization?
Lessons learned

- Implementing an OpenStack environment is a **challenge**
- Getting **training and support** is a good idea
- Ensure **quality**, work **efficiently**
- **Programmable infrastructure**
- Create a basis for **further innovation**
- Be ready for up & coming **technology**
- Sponsor an **OpenStack Meetup group**

Have fun!
Get in touch!

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Thank you!