

September, 24th 2018

Sebastian Bretschneider

Cloud Infrastructure Architect

Cloudstack + Ceph: our way



About Me

- Sebastian Bretschneider
- Since 2011 Cloud infrastructure architect at itelligence
- Cloudstack
- Ansible
- Ceph
- Linux
- Infrastructure



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CloudStack Berlin & Dresden, Germany
<https://www.meetup.com/german-CloudStack-user-group>

Ceph Dresden, Germany
<https://www.meetup.com/de-DE/Ceph-Dresden/>

Ansible Dresden, Germany
<https://www.meetup.com/Ansible-Dresden>

itelligence Worldwide in Numbers

Founded



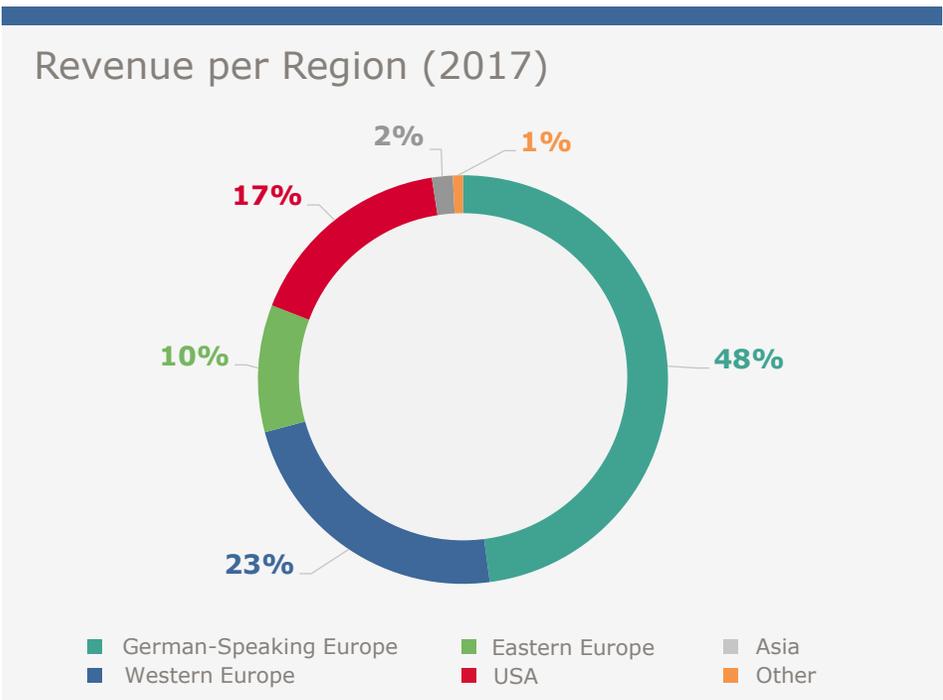
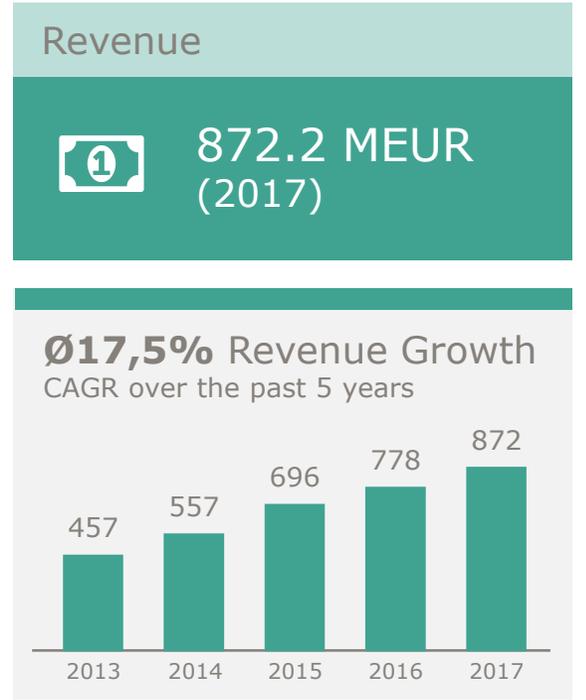
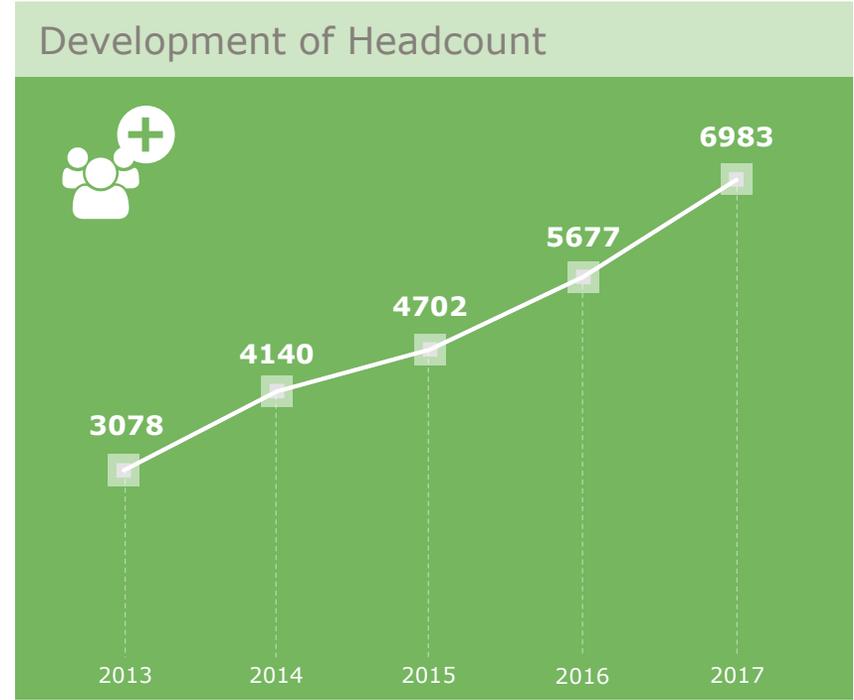
1989

Employees



6,900+

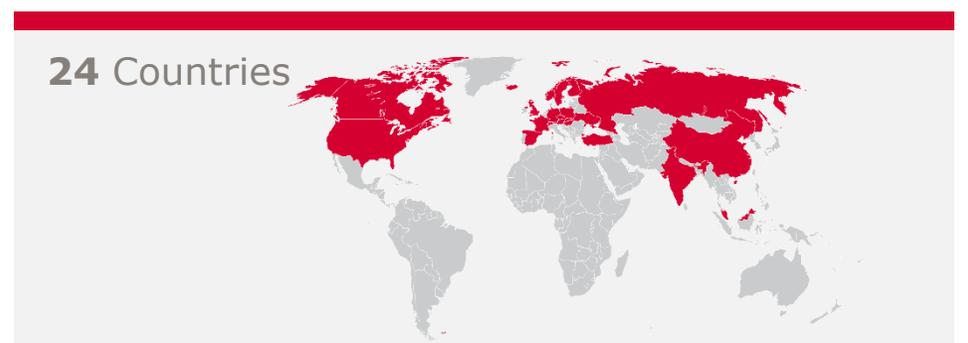
(as of Dec 2017)



Customers



6,000+



A Closer Look at the Market



Our vision

To deliver powerful SAP solutions to the world.



Our mission

With our full-service SAP portfolio we reduce IT complexity and bring simplicity to the IT landscape.

Global, regional, and local capacities and competencies

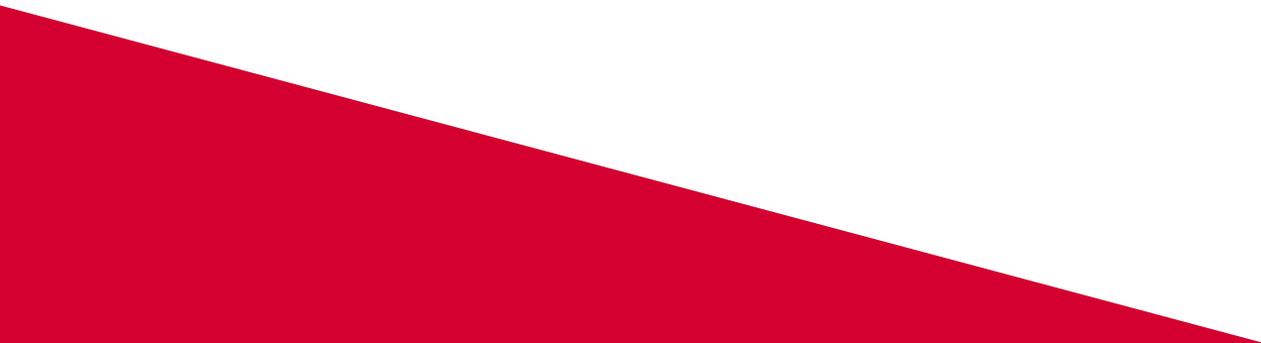
25+ years of extensive **process, industry, and IT expertise**

Winner of numerous **SAP Pinnacle Awards**



Agenda

1. Build new cloud environment
2. it.cloud environment – initial attempt
3. Brief notes on CloudStack
4. Brief notes on CloudStack storage
5. it.cloud environment - storage hardware setup
6. Ceph
7. Final it.cloud environment



Build new cloud environment

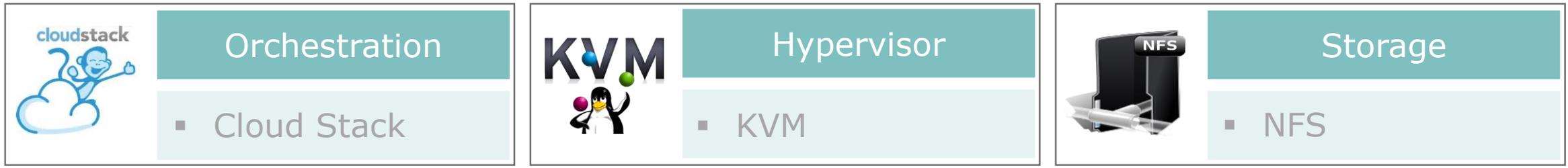
▪ Basic requirements

- Storage
- Network
- Hypervisor
- Orchestration
- Open Source

▪ Starting position

- Test Environment
- Limited budget
- Consumer Hardware
- No time

it.cloud environment – initial attempt



Brief notes on CloudStack

- IaaS cloud computing platform
- Deploy/manage networks + VMs + Storage
- User + Account Management
- Resource Accounting
- API
- User Interface
- VMware, KVM, XenServer, Hyper-V, LXC
- Open Source

Brief notes on CloudStack storage

- **Primary Storage**

- Depends on Hypervisor

- **Secondary Storage**

- NFS
- SMB/CIFS
- S3
- Swift

Storage media \ hypervisor	VMware vSphere	Citrix XenServer	KVM	Hyper-V
Format for Disks, Templates, and Snapshots	VMDK	VHD	QCOW2	VHD Snapshots are not supported.
iSCSI support	VMFS	Clustered LVM	Yes, via Shared Mountpoint	No
Fiber Channel support	VMFS	Yes, via Existing SR	Yes, via Shared Mountpoint	No
NFS support	Yes	Yes	Yes	No
Local storage support	Yes	Yes	Yes	Yes
Storage over-provisioning	NFS and iSCSI	NFS	NFS	No
SMB/CIFS	No	No	No	Yes
Ceph/RBD	No	No	Yes	No

it.cloud environment - storage hardware setup

- **NFS Host**

- 6 SATA Disk
- 2TB per Disk
- Software RAID 1
- LVM

- **Disadvantages**

- Not scalable
- Single point of failure
- No maintenance
- Bugs
- Performance
- Testing become productive



- **Conclusion**

- Possible for POC / testing
- Productive not working

What about CEPH?

- Scalable
- Maintenance of Hosts
- No migration necessary
- Performance
- High Availability
- Open Source

First attempt

- **3 Nodes**

- Debian Wheezy
- Btrfs
- Hammer
- 3 mons / no mds

- **Migration**

- NFS to CEPH
- offline

- **+ 2 Nodes**

- Increase Cluster

Lessons learned

- **Debian**

- Kernel
- Btrfs

- **Btrfs**

- Useless df
- Cluster free space wrong

- **Hypervisor**

- CEPH client
- Kernel parameters
- Libvirt

Rebuild

- **Initial situation**

- All customer VMs already running on CEPH
- Low performance
- No downtimes

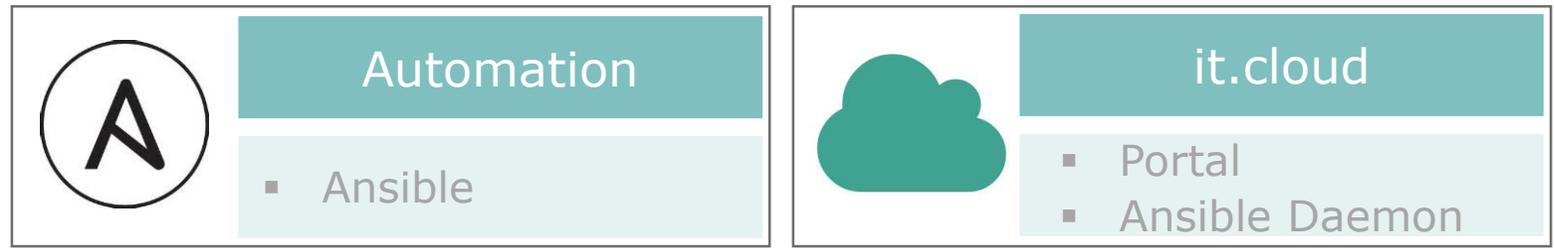
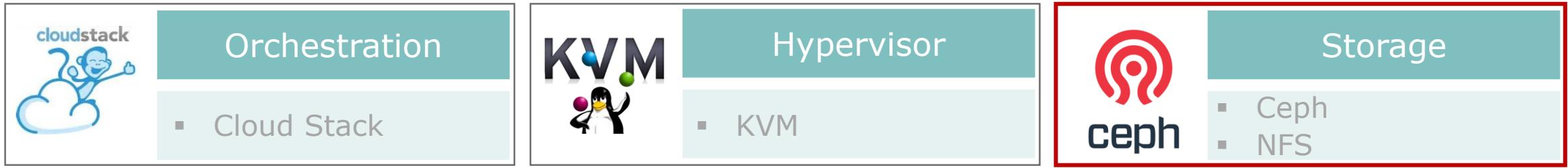
- **Todo**

- Cross fingers!
- Install new OS on all Cluster nodes
- Move Monitors
- Recreate all OSD with XFS
- Make all Hypervisors to CEPH clients
- Configure OS

- **Result**

- Cluster works
- No Customer downtimes
- Performance increased

Final it.cloud environment



What else

- Ceph Demo Cluster

- ARMv8
 - Luminous
 - OSD on USB Sticks
 - Bluestore
-
- Ansible Automation

<https://github.com/se-bre/ansible-ceph>



Questions?

Contact

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