Berner Fachhochschule
Haute école spécialisée bernoise
Bern University of Applied Sciences

# LFE-Demandmanagement Workshop TI

Thursday, 14th November 2019 16:15

Raum 208, Quellgasse, Biel

**Team Linux Services, IT-Services**

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# BFH.science Introduction

# Overview

**Traditional IT**

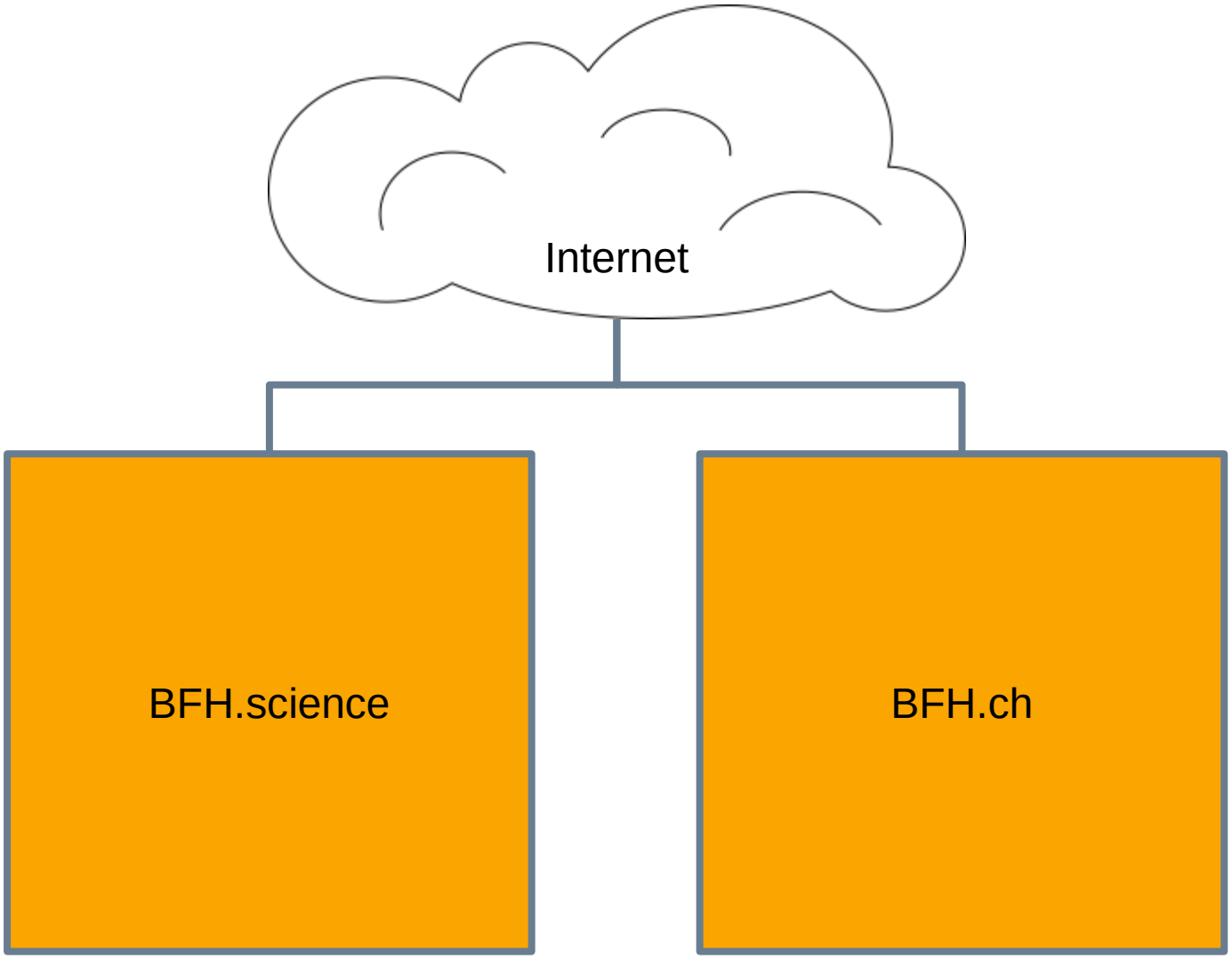
- Managed clients („you cannot install any software on your computer“)
- Netwok behind firewall (access from outside the organisation via VPN)
- *Taylored towards the needs of office workers*

**LFE (Lehre, Forschung, Entwicklung)**

- Install software („quickly try a new program“)
- Accessible from outside (example: send sensor data to a server)
- Store large amounts of data, number crunching
- *Needs flexibility*

**Separation**

- Traditional IT: bfh.ch
- Science DMZ: bfh.science


Internet
BFH.science
BFH.ch

# Science DMZ: bfh.science

- Different hardware servers
- Different Infrastructure:
  - Different network (no connection between bfh.science and bfh.ch)
  - Different storage (\\bfh.ch\data\LFE*)
  - Built on Linux (flexibility and scailability)

  => maximum flexibility for you
- Full stack automatisation

  => fast response to your demands

- Initially a lot of work for us.
  - Hardware (servers, cables,...)
  - Software (design, configuration, automatisation,...)


(3.86PB of HDDs)


10TB
EXOS


SUPERMICR
SUPERMICR
SUPERMICR

*Imagine photos of software configuration here*

# Timeline

**2019**

- January: Start
- Network („Internet access“)
- Basic services („What is needed to install Linux servers“)
- Storage („Ceph cluster“)
- Linux („Platform for R“)
- Number cruncher („R“)
- Nextcloud („Fileshare“, like SWITCHdrive or Dropbox)

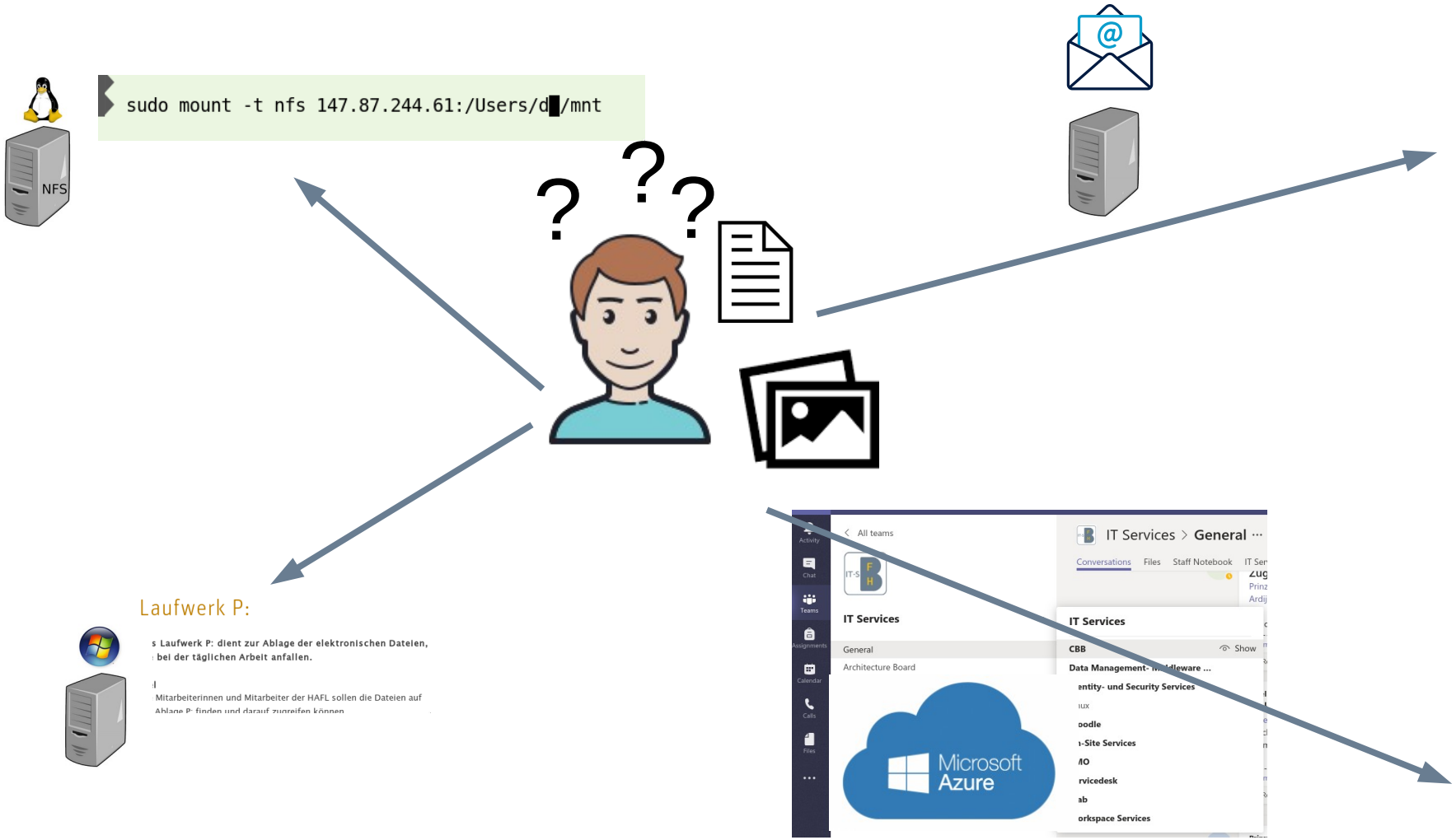
**2020**

- Cloud / Virtualisation („Click your own server“)
- … *Tbd*

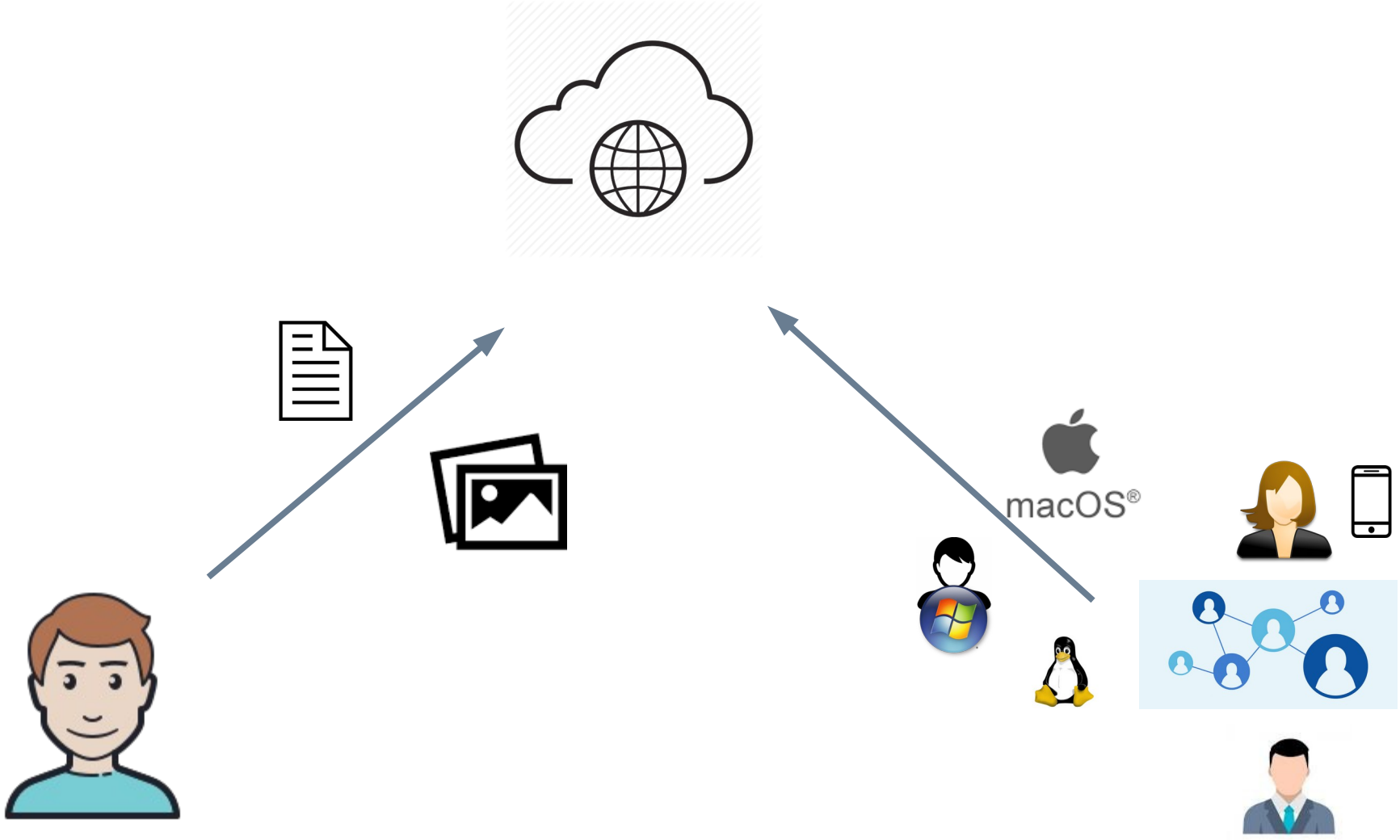
See: https://timeline.bfh.science/ for more details

# Nextcloud Introduction

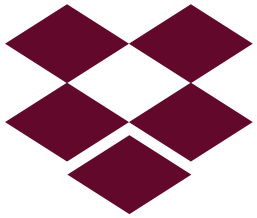
# Filesharing – Actual Situation



# Filesharing – Needs



## Cloud solutions



opentext™ HIGHTAIL

STORGRID

OneDrive

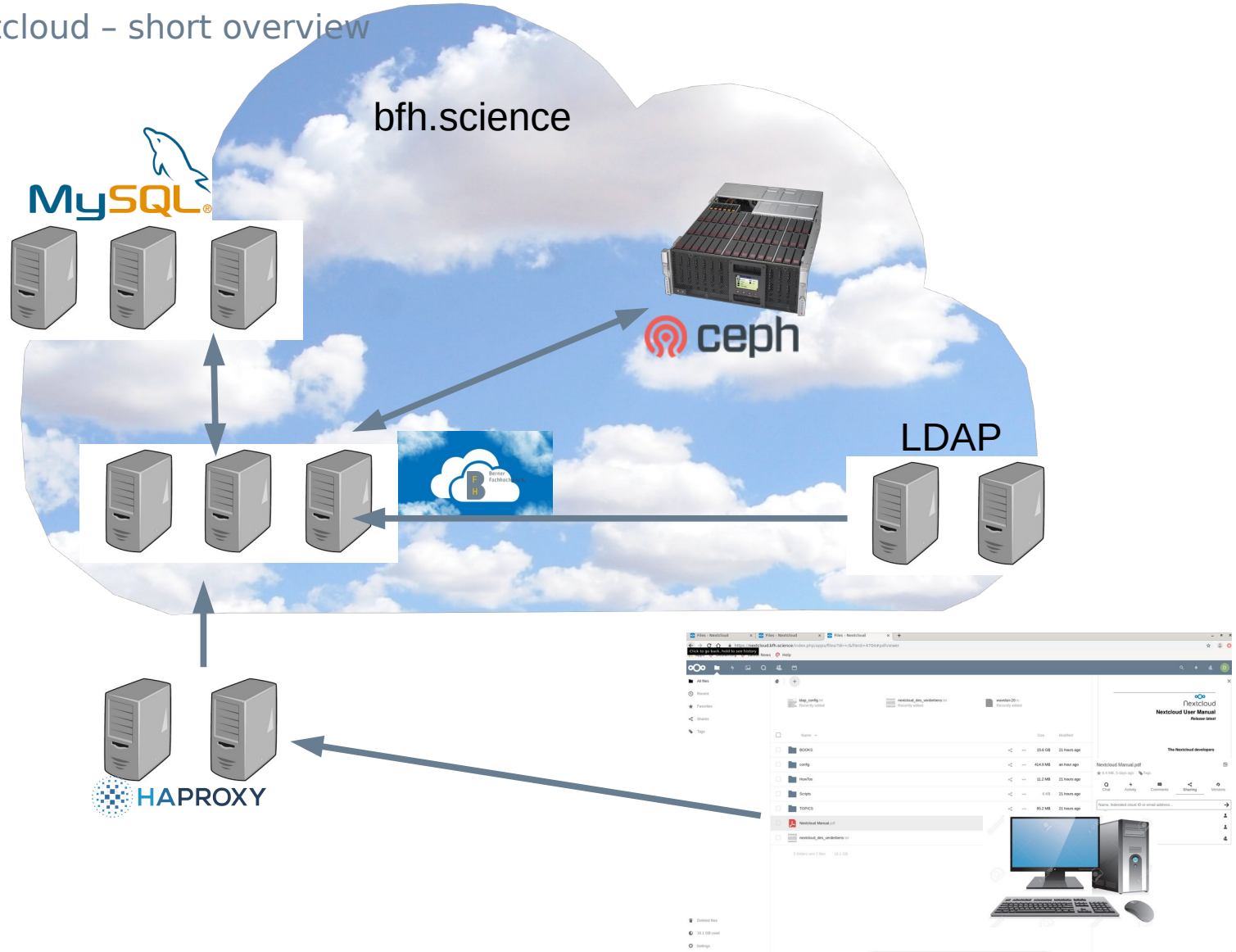
Seafile

ownCloud

WeTransfer

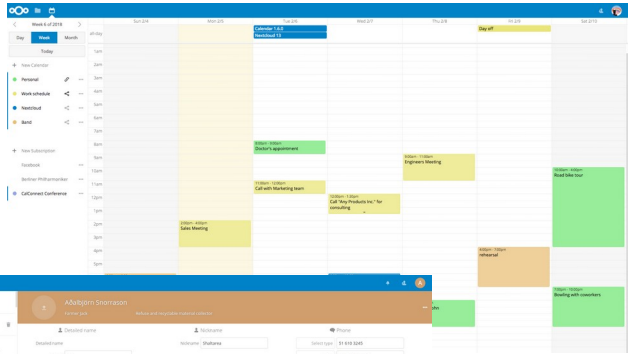
Nextcloud

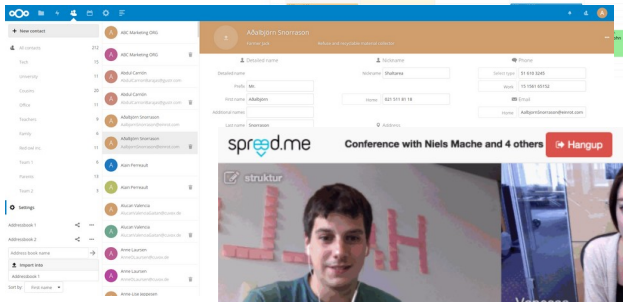
# Nextcloud – short overview

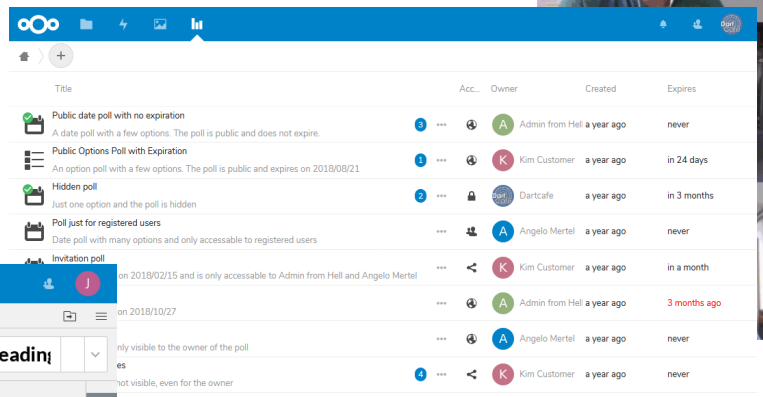


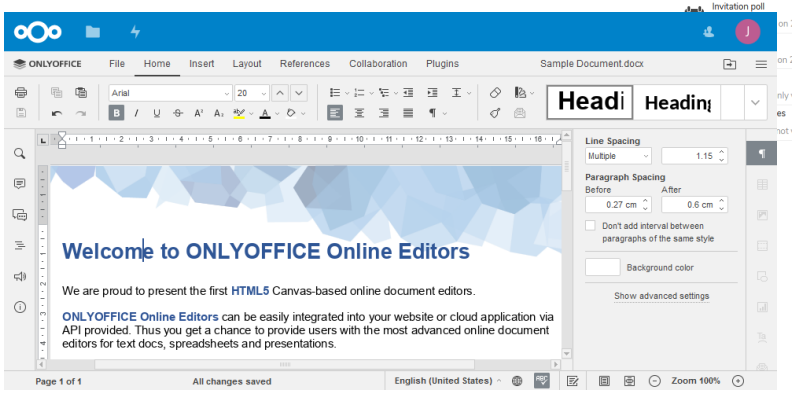
# Prospect

- 31.12.19: File Sharing in production
- Additional features possible in 2020/2021:
  - Calendar
  - Contacts
  - Chat/Video
  - Polls
  - Office
  - ...






Nextcloud

# OpenStack Introduction


- Virtualisation and Services Platform
- Private cloud
- Focus: Self Service


## Hardware

### Ceph Cluster: 12 Servers

- HDDs: 360x 10TB: brutto 3.6PB, netto 1.2PB
- NVMe SSDs: 144x 1.6TB: brutto 230TB, netto 115TB
- 2020: adding another 144x SSDs, doubling the SSD capacity

### OpenStack: 12 Servers

- CPUs: 528 Cores, 1056 Threads
- RAM: 6TB
- Network: 240gbit/s
- 2020: adding another 12 Servers, doubling all available ressources

## Features


- Bare Metal Provisioning Service (ironic)
- Load balancer (octavia)
- Indexing and Search (searchhlight)
- Workflow service (mistral)
- Messaging Service (zaqar)
- Resource reservation service (blazar)
- Alarming Service (aodh)
- Big Data Processing Framework Provisioning (sahara)
- Database as a Service (trove)
- Instances High Availability Service (masakari)
- Instances High Availability Service (murano)
- Software Development Lifecycle Automation (solum)
- Backup, Restore, and Disaster Recovery (freezer)
- ...

# Project time

# Available ressources

**For the period 1. April – 31. July 2020**

- Team Linux (bad9, dxk1, kud3, nas3, shs1) only.
- For each person: estimated days per week available for projects (=new things we do for you).
- Subtract holidays and infrastructure maintenance.
- There is a **total of 20 weeks worktime** available for projects of BFH for this period.

  (we count everything in weeks)
- We will distribute the 20 weeks according to size and users among the BFH departments.
- You priorize what we will do in this time for you

## Zielperiode: 1. April 2020 bis 31. Juli 2020 = 17 Wochen

| Person | Job | Project work (day/week) | Project time (days) | Project time (weeks) |
|---|---|---|---|---|
| bad9 | 100.00% | 1 | 17 | 3 |
| dxk1 | 90.00% | 3 | 51 | 10 |
| kud3 | 100.00% | 3 | 51 | 10 |
| nas3 | 60.00% | 2 | 34 | 6 |
| shs1 | 80.00% | 3 | 51 | 10 |
| **Brutto** | **430.00%** | | | **39 Weeks** |

| Tasks | Work | |
|---|---|---|
| Holiday proportionately | 1.5w/Person/Quarter | - 8 Weeks |
| Debian infrastructure | 1d/w | - 3 Weeks |
| Base infrascructure | 2d/m | - 2 Weeks |
| other work | | - 6 Weeks |
| **Netto** | | **20 Weeks** |

Thank You for Your Attention.

❤ Source Code is freely available

git clone https://git.bfh.science/users/bad9/slides