



Berner Fachhochschule  
Haute école spécialisée bernoise  
Bern University of Applied Sciences

## LFE-Demandmanagement Workshop HAFL

Thursday, 24th October 2019 16:00

HAFL Room A 2.05, Zollikofen

### **Team Linux Services, IT-Services**

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# BFH.science Introduction

# Overview

## **Traditional IT**

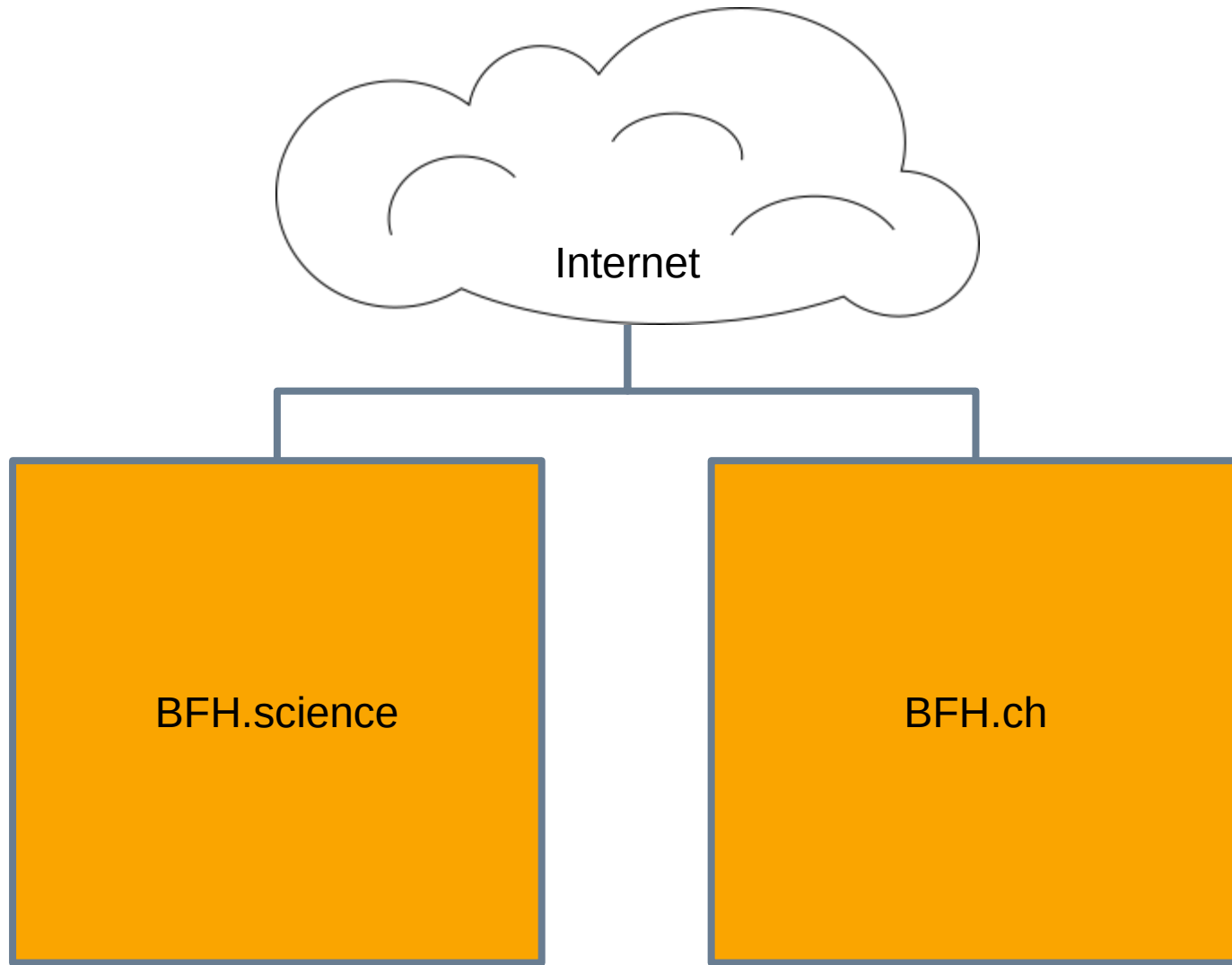
- ▶ Managed clients („you cannot install any software on your computer“)
- ▶ Network behind firewall (access from outside the organisation via VPN)
- ▶ *Taylored towards the needs of office workers*

## **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



## 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)











*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

# Overview

## **Filesharing**

- ▶ General, ways to go
- ▶ Alternatives

## **Nextcloud**

- ▶ Demo
- ▶ Prospect

# Filesharing - General



?

# Filesharing - Ways-to-go



- attachment too big
- considered as spam
- asynchronous handling
- inconsistency

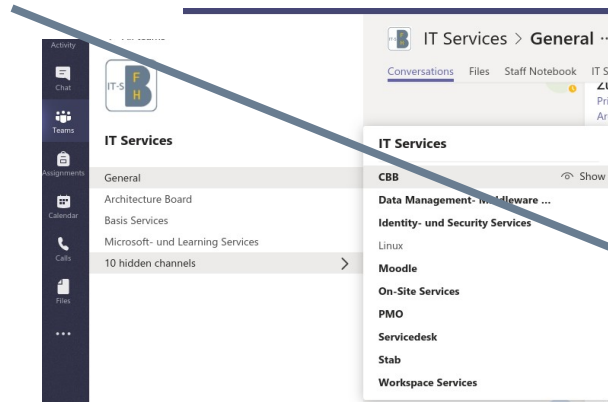


## Laufwerk P:

Das Laufwerk P: dient zur Ablage der elektronischen Dateien, die bei der täglichen Arbeit anfallen.

Ziel!  
Die Mitarbeiterinnen und Mitarbeiter der HAFL sollen die Dateien auf der Ablage P: finden und darauf zuzurufen können

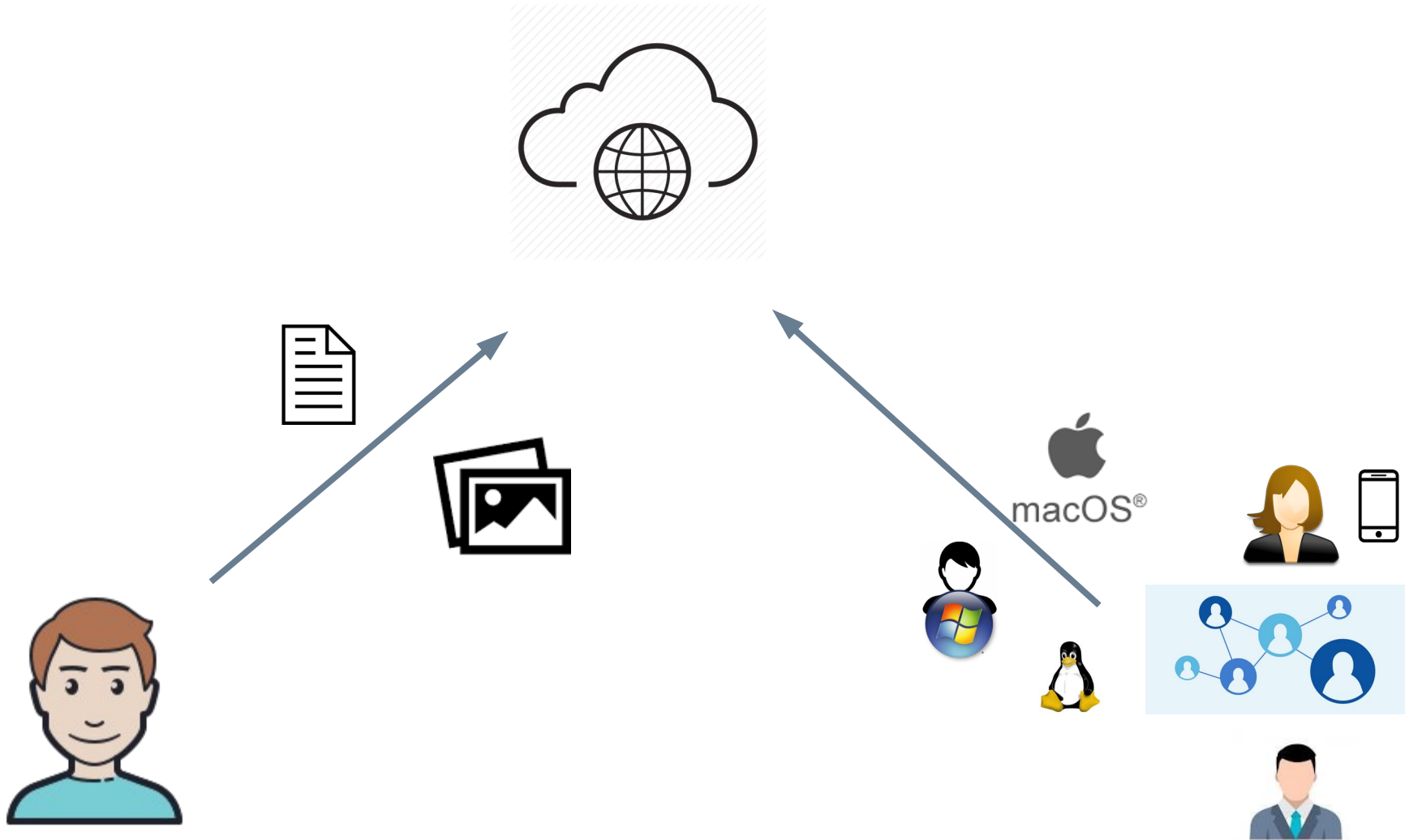
```
sudo mount -t cifs //bfh.ch/data /mnt user=  
sudo mount -t nfs 147.87.244.61:/Users/d/mnt
```



Who is who ?

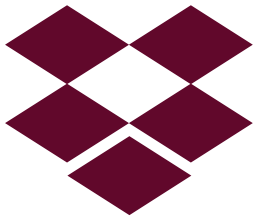


# Filesharing - Ways-to-go



## Filesharing - Alternatives

### Cloud solutions



# Nextcloud - Demo



- Demo internal setup

The screenshot shows the Nextcloud file manager interface. On the left, there is a sidebar with navigation options: All files, Recent, Favorites, Shares, and Tags. The main area displays a file list with columns for Name, Size, and Modified. The files listed are:

Name	Size	Modified
BOOKS	348.4 MB	2 days ago
CONFIG	0 KB	3 days ago
Documents	2.5 MB	7 days ago
HowTos	11.2 MB	3 days ago
Scripts	6 KB	2 days ago
<b>0_bfhcloud.jpeg</b>	130 KB	3 minutes ago
Lenovo-driver-updater.exe	12.5 MB	7 days ago
Nextcloud Manual.pdf	6.4 MB	7 days ago

At the bottom of the file list, it shows: 5 folders and 4 files (including 1 hidden) 381.1 MB. On the left sidebar, there is a 'Deleted files' section and a status indicator showing '381 MB used'.

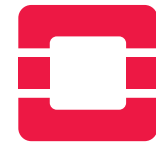
## Prospect

- Test setup refinement
- Rollout in production



# OpenStack Introduction

OpenStack



openstack®

- ▶ Virtualisation
- ▶ Private cloud
- ▶ Self service

## Virtualisation



### **Now**

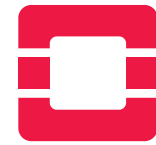
- ▶ „Only“ containers and only Debian

### **Virtualisation**

- ▶ Like VirtualBox and VMware
- ▶ OpenStack allows to run any Linux distribution and Windows the Science DMZ

*However, in a first step we will only support Debian!*

## Private Cloud



openstack®

- ▶ „Having the benefits of a cloud in-house“
- ▶ Manage OpenStack resources as users or groups
- ▶ Cheap and uncomplicated (no billing involved)
- ▶ Fast because everything is close together (Network: High bandwidth and low latency)





- ▶ „Easier and faster for you, better for us“
- ▶ The process is:
  - Login to dashboard with BFH credentials
  - Select what you want (name, public/private, resources, operating system)
  - Click „create“, a few seconds later the „virtual computer“ is ready for you
- ▶ For this to work, behind the scenes some tasks have to be done
- ▶ For containers you have to wait for us to create them, with OpenStack you can do it on your own.

## Project time

## Available resources

### **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 prioritize what we will do in this time for you

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

<b>Person</b>	<b>Job</b>	<b>Project work (day/week)</b>	<b>Project time (days)</b>	<b>Project time (weeks)</b>
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
<b>Brutto</b>	<b>430.00%</b>			<b>39 Weeks</b>

<b>Tasks</b>	<b>Work</b>	
Holiday proportionat	1.5w/Person/Quarter	- 8 Weeks
Debian infrastructure	1d/w	- 3 Weeks
Base infrascructure	2d/m	- 2 Weeks
Other work		- 6 Weeks
<b>Netto</b>		<b>20 Weeks</b>

Thank You for Your Attention.

♥ Source Code is freely available

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