



Berner Fachhochschule
Haute école spécialisée bernoise
Bern University of Applied Sciences

LFE-Demandmanagement Workshop S

Tuesday, 12th November 2019 16:00

Room 131, Hallerstrasse, Bern

Team Linux Services, IT-Services

Daniel Baumann <daniel.baumann@bfh.ch>

David Kunz <david.kunz@bfh.ch>

Sakirnth Nagarasa <sakirnth.nagarasa@bfh.ch>

Katharina Drexel <katharina.drexel@bfh.ch>

Simon Spoehel <simon.spoehel@bfh.ch>

BFH.science Introduction

Overview

Traditional IT

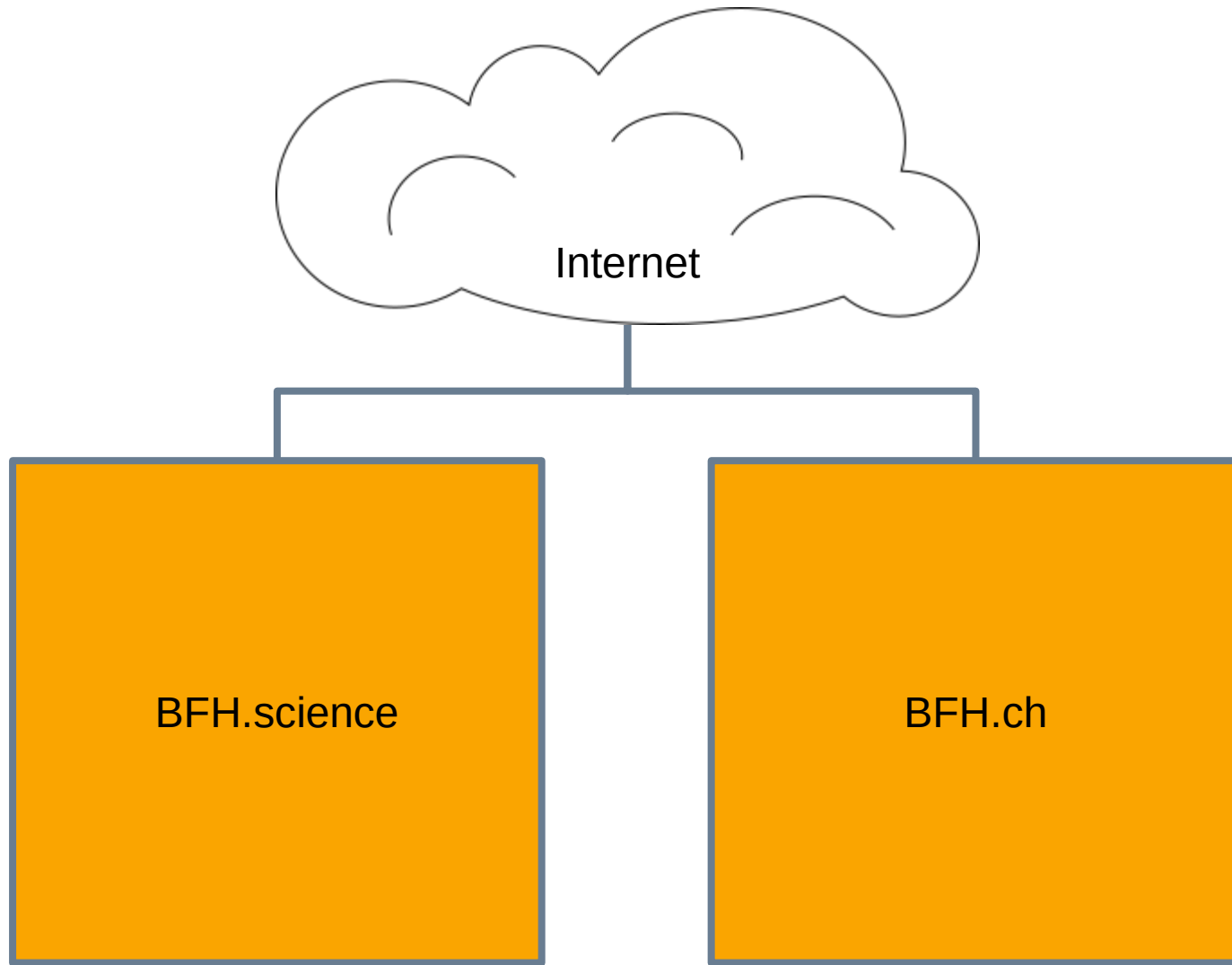
- ▶ Managed clients („you cannot install any software on your computer“)
- ▶ Network behind firewall (access from outside the organisation via VPN)
- ▶ *Taylored towards the needs of office workers*

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

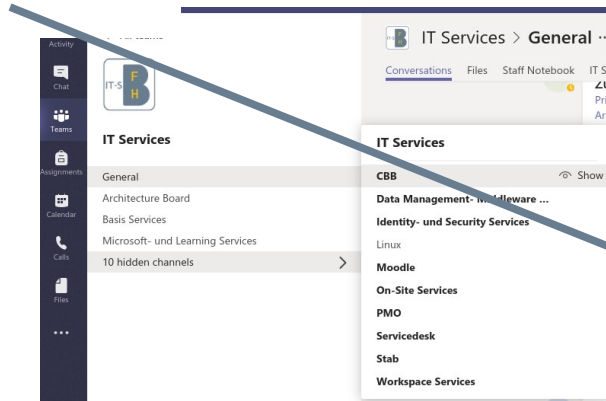


Laufwerk P:

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

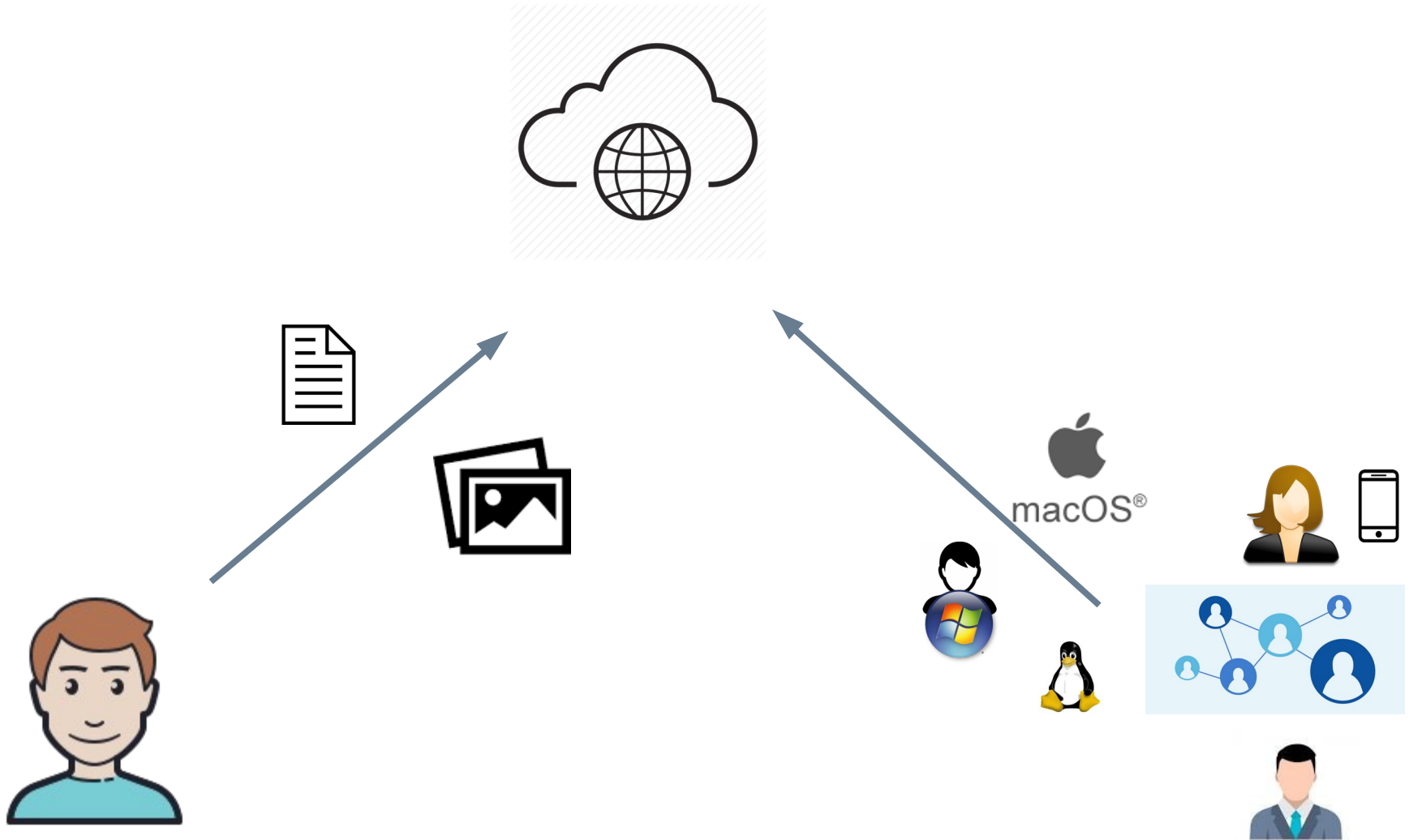
Ziel!
Die Mitarbeiterinnen und Mitarbeiter der HAFL sollen die Dateien auf der Ablage P: finden und darauf zuzurufen können

```
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. The top navigation bar includes icons for home, lightning bolt, camera, search, user, and calendar. The left sidebar contains navigation options: All files, Recent, Favorites, Shares, and Tags. The main area displays a file list with columns for Name, Size, and Modified. The file list includes folders like BOOKS, CONFIG, Documents, HowTos, and Scripts, and files like 0_bfhcloud.jpeg, Lenovo-driver-updater.exe, and Nextcloud Manual.pdf. A summary at the bottom indicates 5 folders and 4 files (including 1 hidden) totaling 381.1 MB.

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
0_bfhcloud.jpeg	130 KB	3 minutes ago
Lenovo-driver-updater.exe	12.5 MB	7 days ago
Nextcloud Manual.pdf	6.4 MB	7 days ago

5 folders and 4 files (including 1 hidden) 381.1 MB

Deleted files
381 MB used

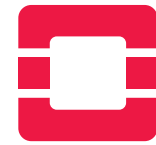
Prospect

- Test setup refinement
- Rollout in production



OpenStack Introduction

OpenStack



openstack®

- ▶ Virtualisation
- ▶ Private cloud
- ▶ Self service

Virtualisation



Now

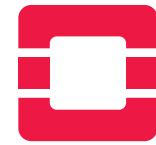
- ▶ „Only“ containers and only Debian

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

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
```