



bw|HPC – C5

Access: bwUniCluster, bwForCluster, ForHLR

Shamna Shamsudeen, SCC, KIT



UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386

Hochschule
für Technik
Stuttgart



Hochschule Esslingen
University of Applied Sciences

Universität
Konstanz



UNIVERSITÄT
MANNHEIM



Universität Stuttgart

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN



KIT
Karlsruher Institut für Technologie



ulm university universität
uulm



Outline

- Introduction
- Registration Processes
 - bwUniCluster
 - bwForCluster
 - ForHLR Phase I & II
- Login Steps
 - How to login on different clusters
- File Transfer & File storage
- Questions

1. Introduction

Introduction

- **bwUniCluster**
 - At tier (level) 3, Baden-Württemberg (BW) cluster for general purposes
 - Simple registration process

- **bwForCluster** (JUSTUS, MLS&WISO, NEMO, BinAC)
 - Also at tier 3, BW research clusters
 - Architecture optimized for certain scientific communities
 - Access process ensures using the suitable cluster and enhances user support

- **ForHLR I & II**
 - At tier 2, national research cluster
 - Access process ensures that applications fulfill requirements of parallelization

2. Registration



Registration

Different clusters → different registration processes

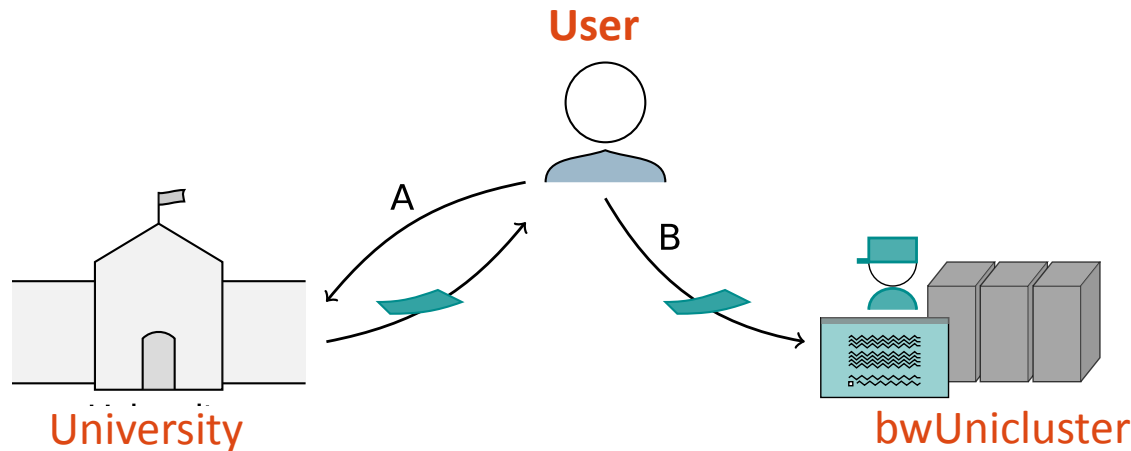
- bwUniCluster
- bwForCluster
- ForHLR Phase I & II

Outline

- Introduction
- Registration Processes
 - bwUniCluster
 - bwForCluster
 - ForHLR Phase I & II
- Login Steps
 - How to login on different clusters
- File Transfer & File storage
- Questions

Registration Process – bwUniCluster & extension

- Access only for members of shareholder universities.
- More Details: http://www.bwhpc-c5.de/wiki/index.php/BwUniCluster_User_Access



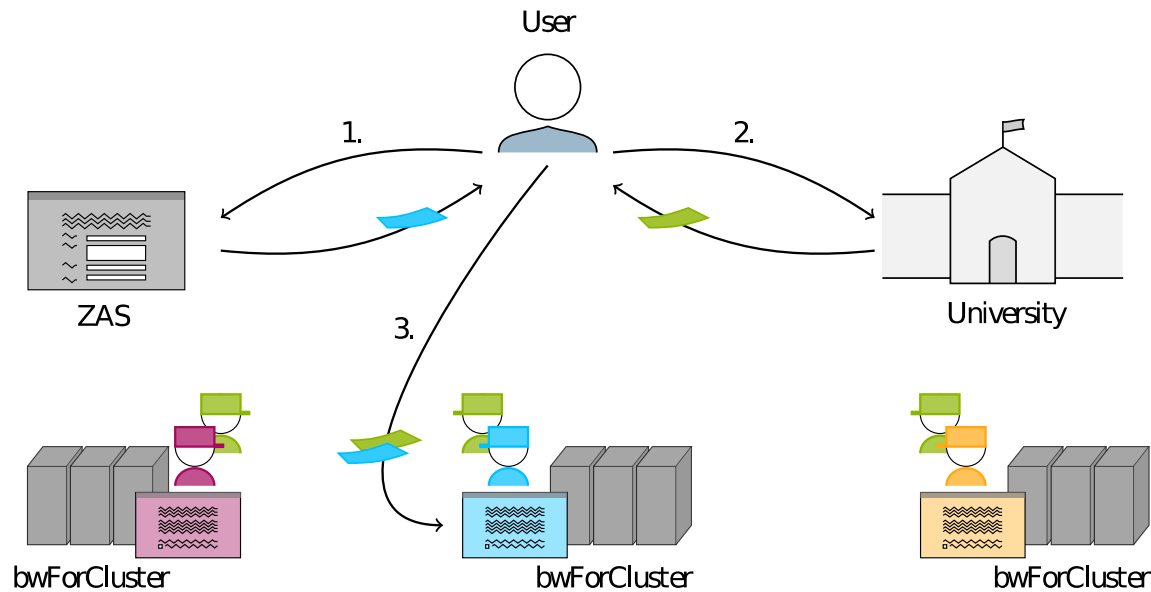
Step A: Obtainment of bwUniCluster entitlement

- Each university has its own entitlement granting policies!

Step B: Web registration at <https://bwidm.scc.kit.edu/> + questionnaire (https://www.bwhpc-c5.de/en/ZAS/bwunicluster_survey.php)

- Login via bwIDM with your university account

Registration Process - bwForClusters



Step 1: Registration at „Central Application Site (ZAS)“

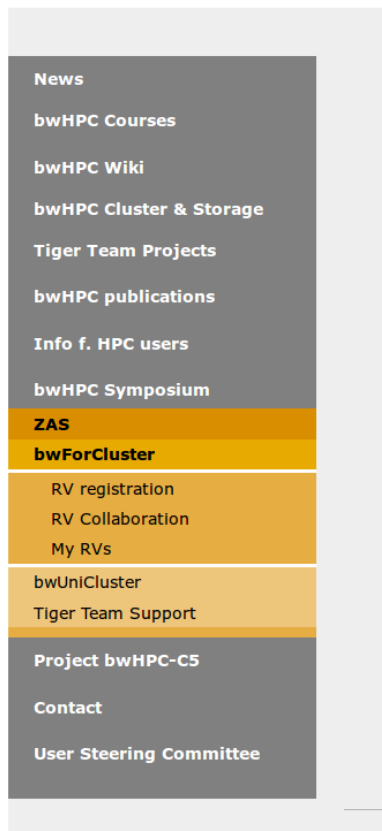
- Approval  of Cluster Assignment Team (CAT)

Step 2: Get bwForCluster entitlement  by own university

Step 3: Web registration at designated bwForCluster site

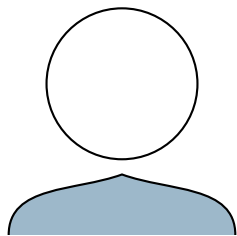
- e.g. <http://bwidm.rz.uni-ulm.de/>, bwForCluster JUSTUS (Computational Chemistry)

What is ZAS

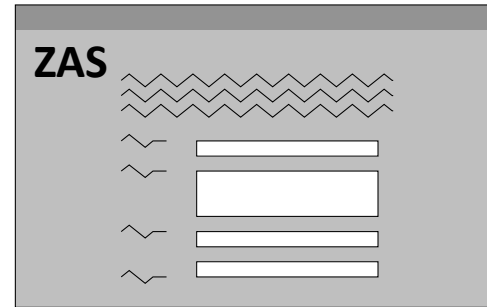


- Web interface of HPC clusters (in the state BW) to handle the user compute activities.
- Nomenclature:
 - RV = Planned compute activities (Rechenvorhaben).
 - RV Responsible: The person who does the registration of of the RV (applicant)
 - Cluster Assignment Team: aka CAT; assigns the exact cluster according to the RV requirement.
 - RV collaboration = The team (managers and coworkers)
- An RV approval is valid
 - Only on one bwForcluster for a period of one year after the approval
 - For all team members

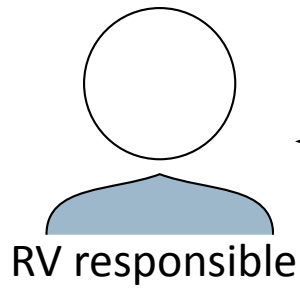
Registration Process: bwForCluster – Step 1a



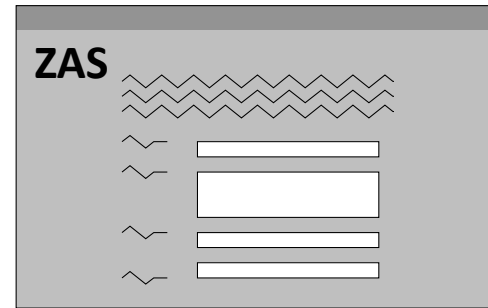
RV registration



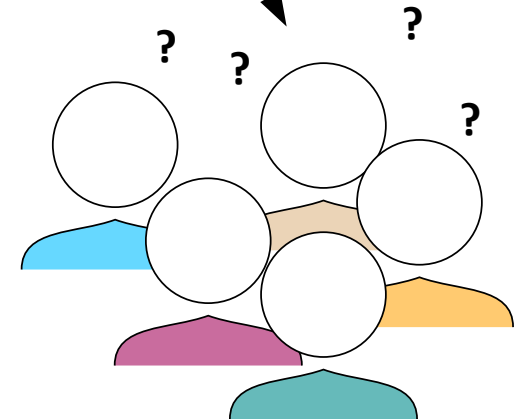
Registration Process: bwForClusters – Step 1b



← acronym / password

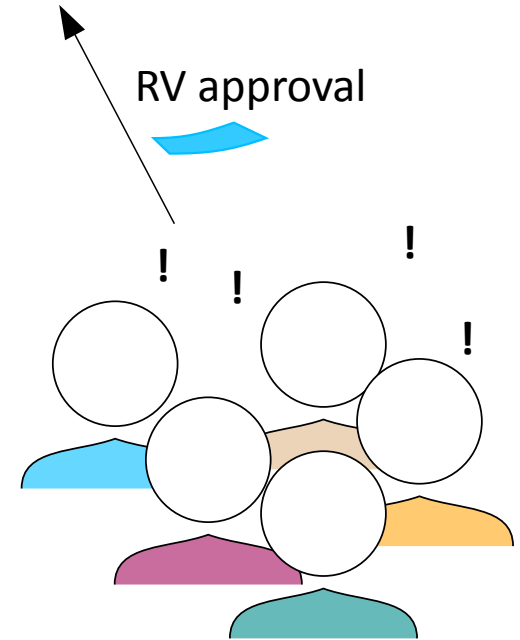
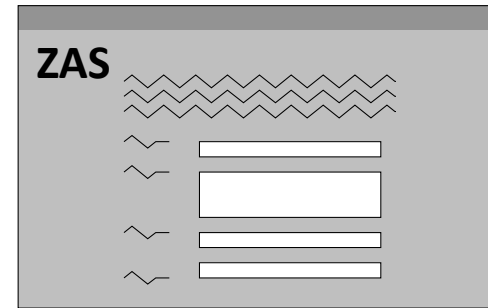
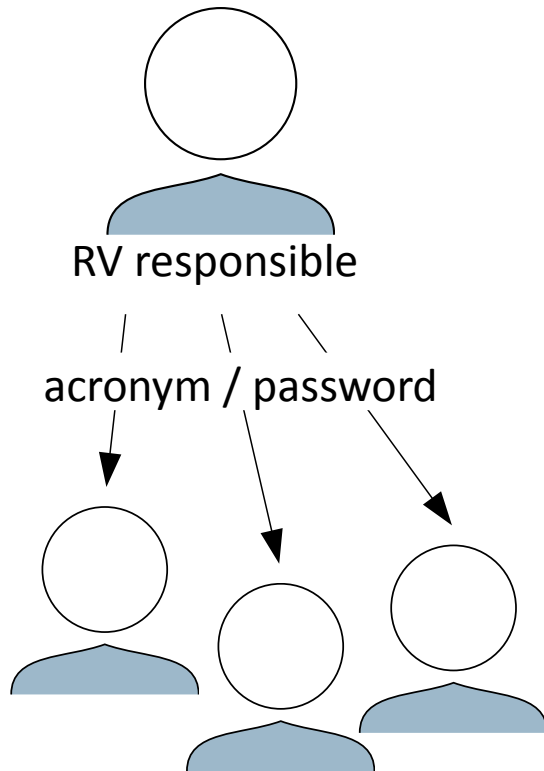


RV application

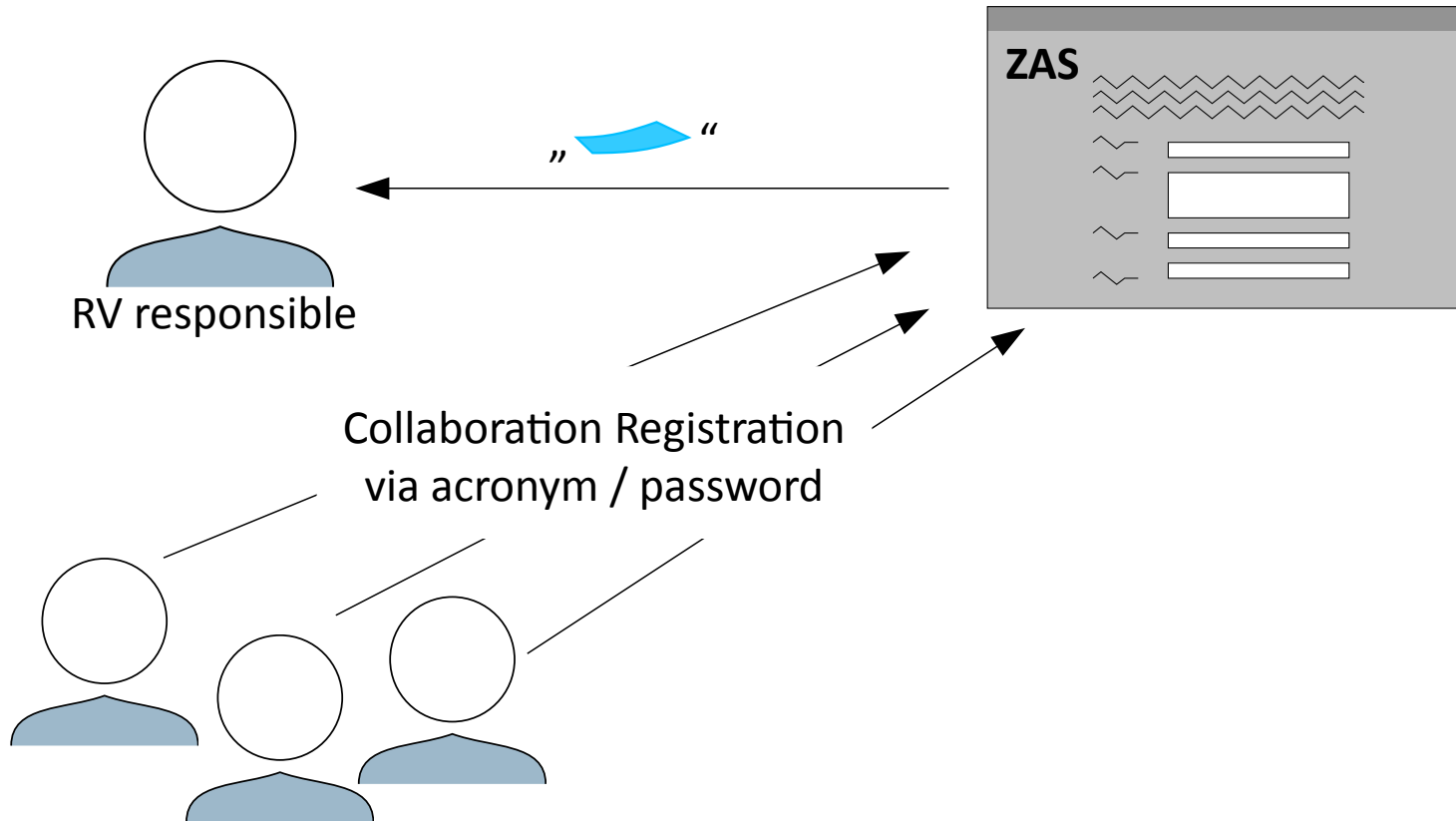


CAT (Cluster Assignment Team)

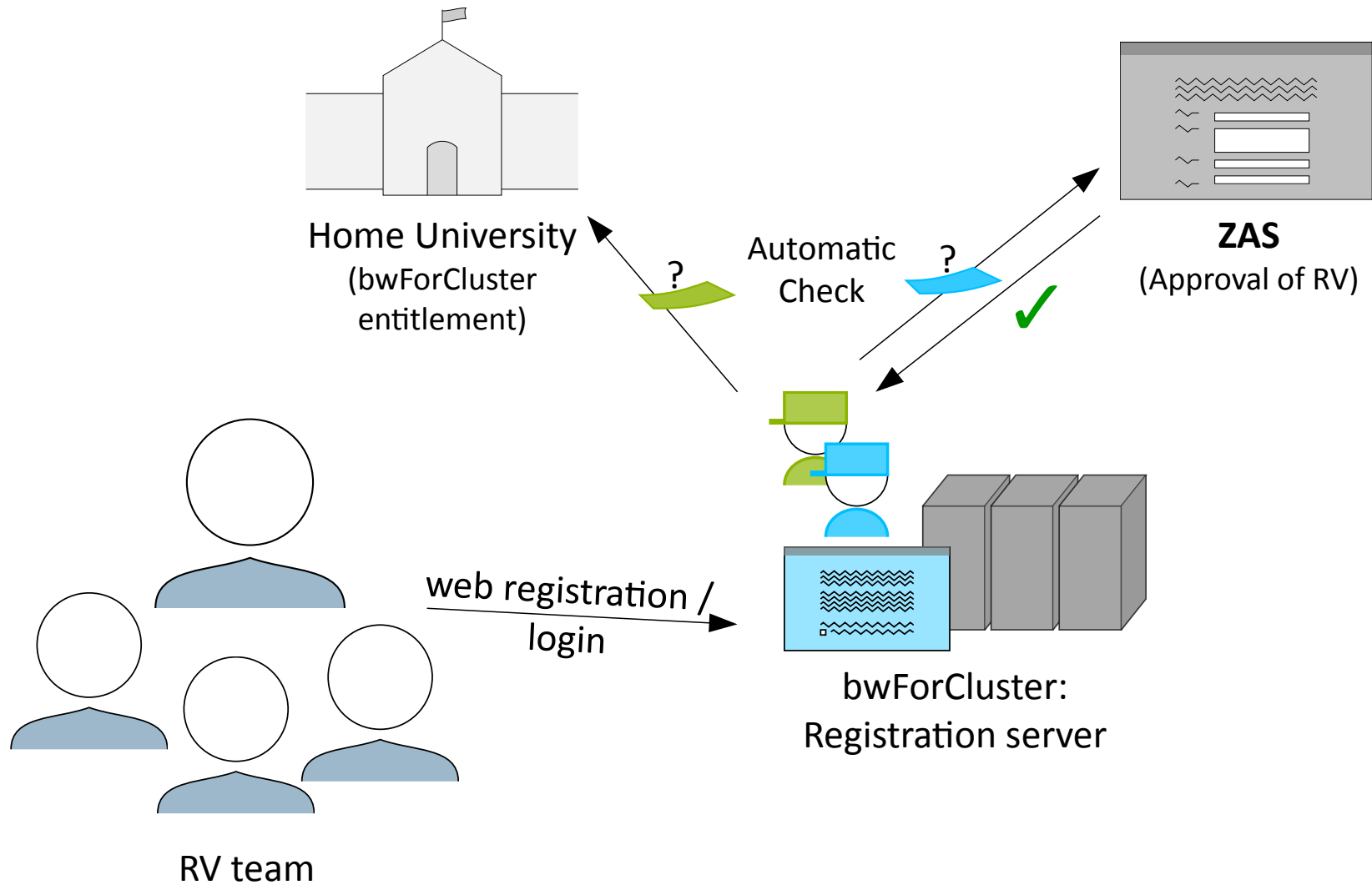
Registration Process: bwForClusters Step 1c



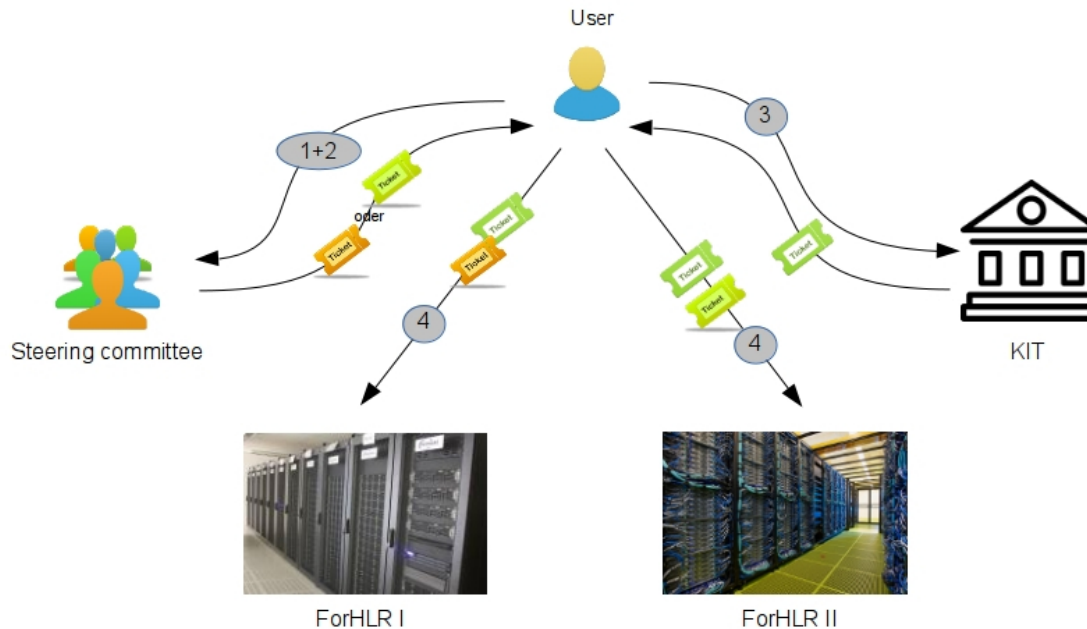
Registration Process: bwForClusters – Step 1a



Registration Process: bwForClusters – Step 3



Registration Process – ForHLR I & II



Step 1: „Online Proposal Form“. (<http://www.scc.kit.edu/forschung/4971.php>)
(granting preliminary access)

Step 2: Peer-reviewed extended project description (3-5 pages).
PDF-file must be send to forhlr-projects@lists.kit.edu

Step 3: Fill out of the [ForHLR access form](#) for each project collaborator.
Form must be send to SCC-Service desk or scanned to haefner@kit.edu

Step 4: Personal registration for ForHLR I & II on website <https://bwidm.scc.kit.edu>

3. First Steps - Login

Login

MS Windows

■ **GUI:** [MobaXterm](#), PuTTY

■ Connection via **ssh**

UserID: [**<prefix>_<username>**]

Host, e.g. bwUniCluster:

`bwunicluster.scc.kit.edu`

or

`uc1.scc.kit.edu`

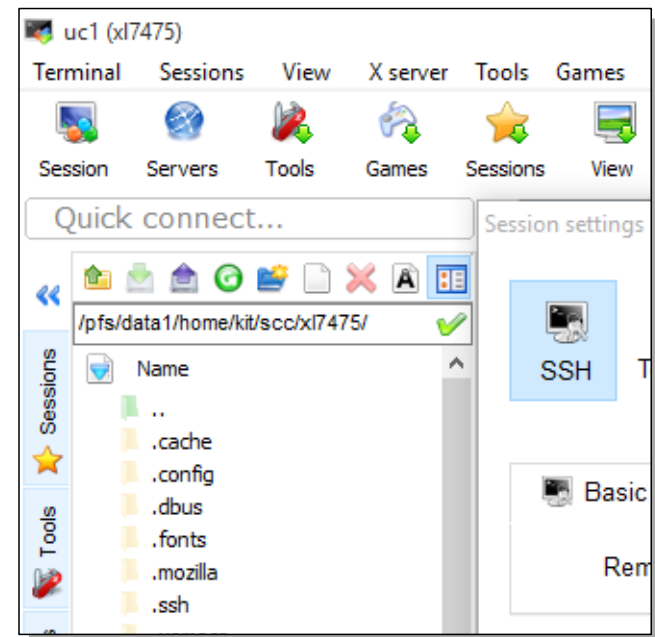
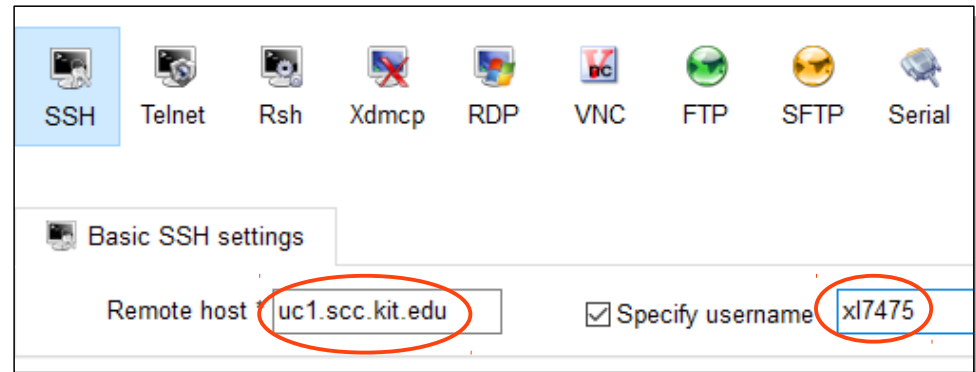
or

`uc1e.scc.kit.edu`

Linux / macOS

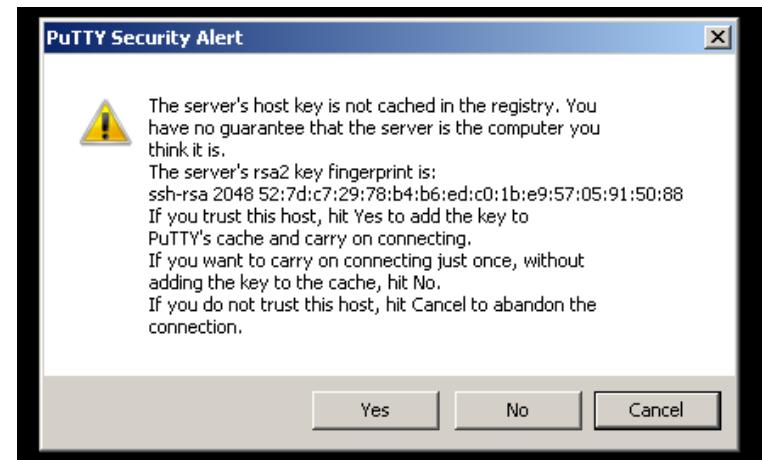
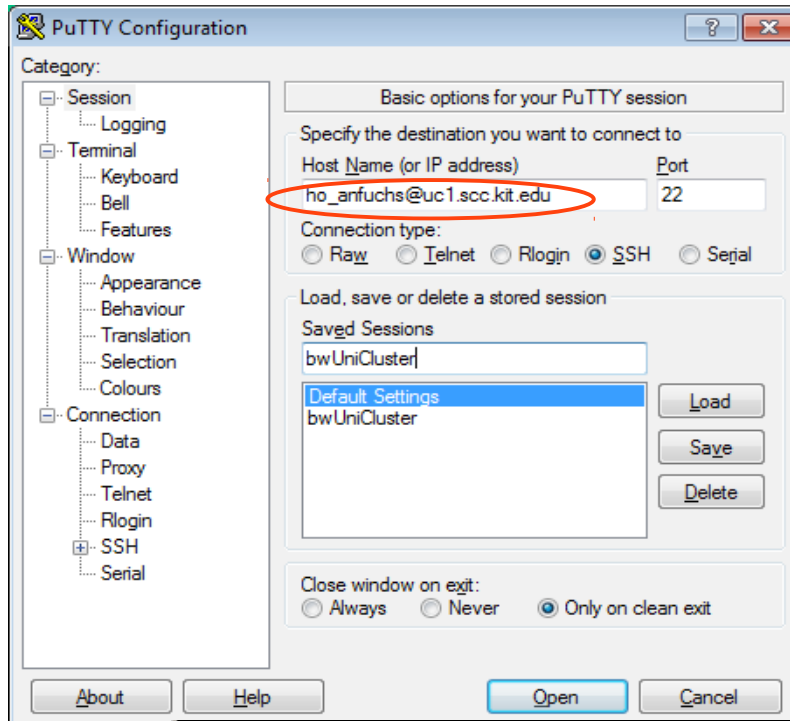
■ Command line interface (CLI)

```
$ ssh -X xy_ab1234@uc1.scc.kit.edu
```



Login via PuTTY: depreciated

- Because: does NOT provide means to display natively GUI, use [MobaXterm](#) instead



```
*****
*
* KIT News:
* 2014-02-06:
* - seminar about bwHPC/bwUniCluster (+ hands-on) on February 19th 2014
*   http://indico.scc.kit.edu/indico/event/Info-Veranst_2014-02_bwUniCluster
*
*****
[Feb-16 10:12] yc8563@uc1n996:~$ █
```

X11 Tunneling

- Run programs at the cluster, display the GUI at home.
- Linux / macOS

```
$ ssh -X xy_ab1234@uc1.scc.kit.edu
```

enables X11 forwarding

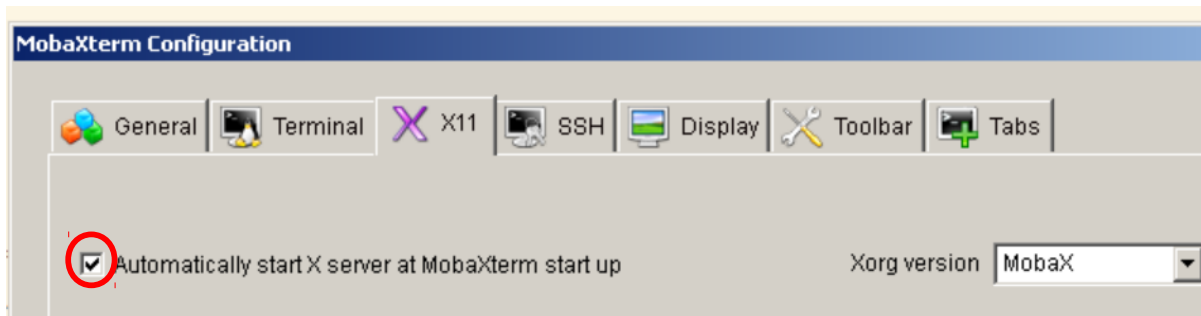
```
$ ssh -Y xy_ab1234@uc1.scc.kit.edu
```

enables trusted X11 forwarding

```
$ ssh -X -C xy_ab1234@uc1.scc.kit.edu
```

Adds compression to improve slow connections

- MS Windows
 - MobaXterm automatically starts X server



- PuTTY needs Xming (commercial)
- Other alternative: Cygwin/X

File transfer

File transfer - Linux

<pre>\$ scp <sourcefile> <targetfile></pre>	secure copy (remote file copy program)
<pre>\$ scp -r <sourcedir> <targetdir></pre>	recursively copy entire directories
<pre>\$ sftp <targetdir> \$ put get <sourcefile></pre>	secure file transfer program upload/download file

■ Example: Transfer [paket.tar](#) from local to bwUniCluster

■ **scp:**

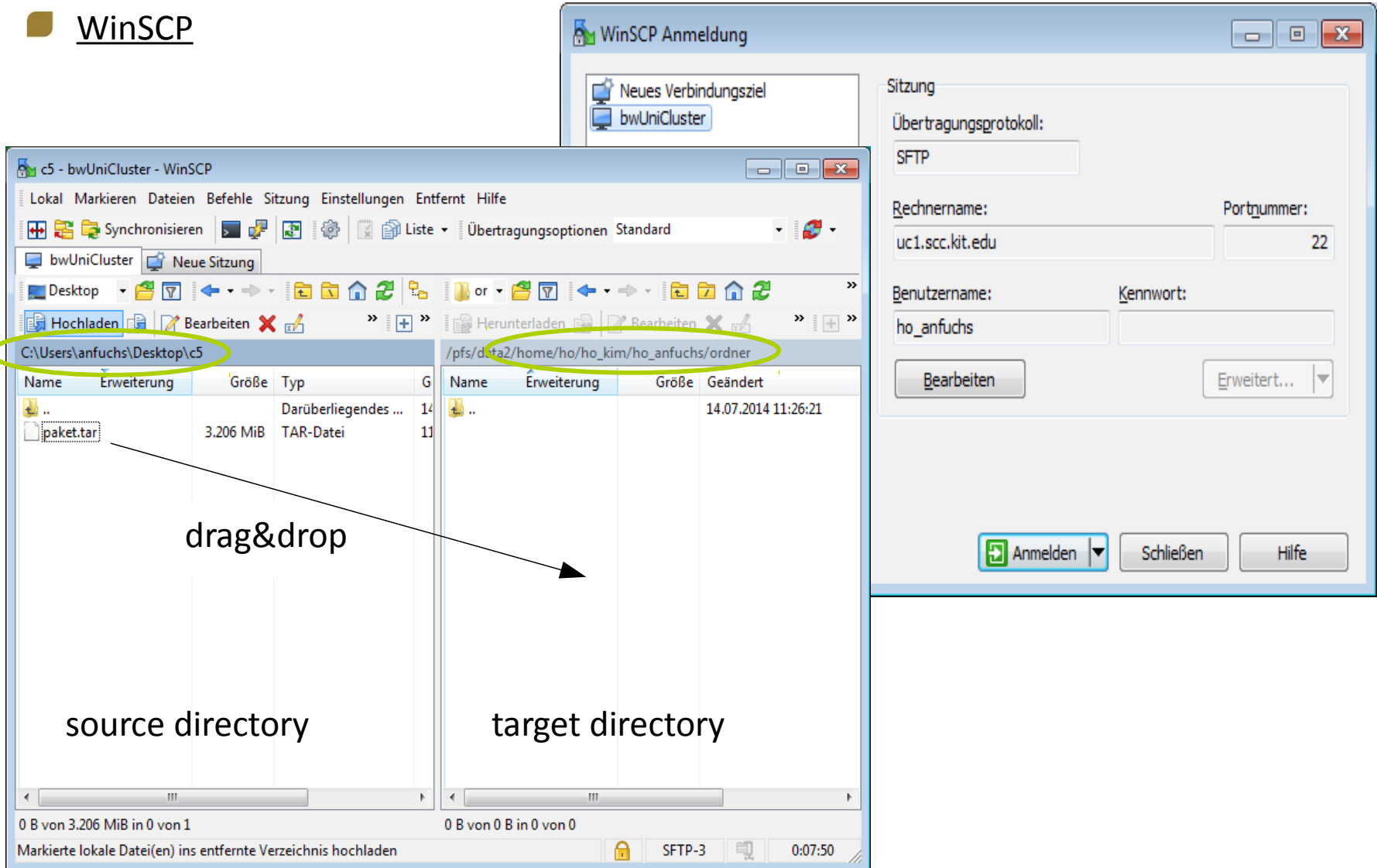
```
$ scp paket.tar xy_ab1234@uc1.scc.kit.edu:dir/  
xy_ab1234@uc1.scc.kit.edu's password:
```

■ **sftp:**

```
$ sftp: xy_ab1234@uc1.scc.kit.edu:dir  
xy_ab1234@uc1.scc.kit.edu's password:  
Connected to uc1.scc.kit.edu.  
Changing to: ${HOME}/dir  
sftp> put paket.tar
```

File transfer – MS Windows (1)

 WinSCP



The WinSCP interface is shown with the following details:

- Local Directory (Source):** C:\Users\anfuchs\Desktop\c5
- Remote Directory (Target):** /pfs/data2/home/ho/ho_kim/ho_anfuchs/ordner
- File List (Local):**

Name	Erweiterung	Größe	Typ	G
..			Darüberliegendes ...	14
paket.tar		3.206 MiB	TAR-Datei	11
- File List (Remote):**

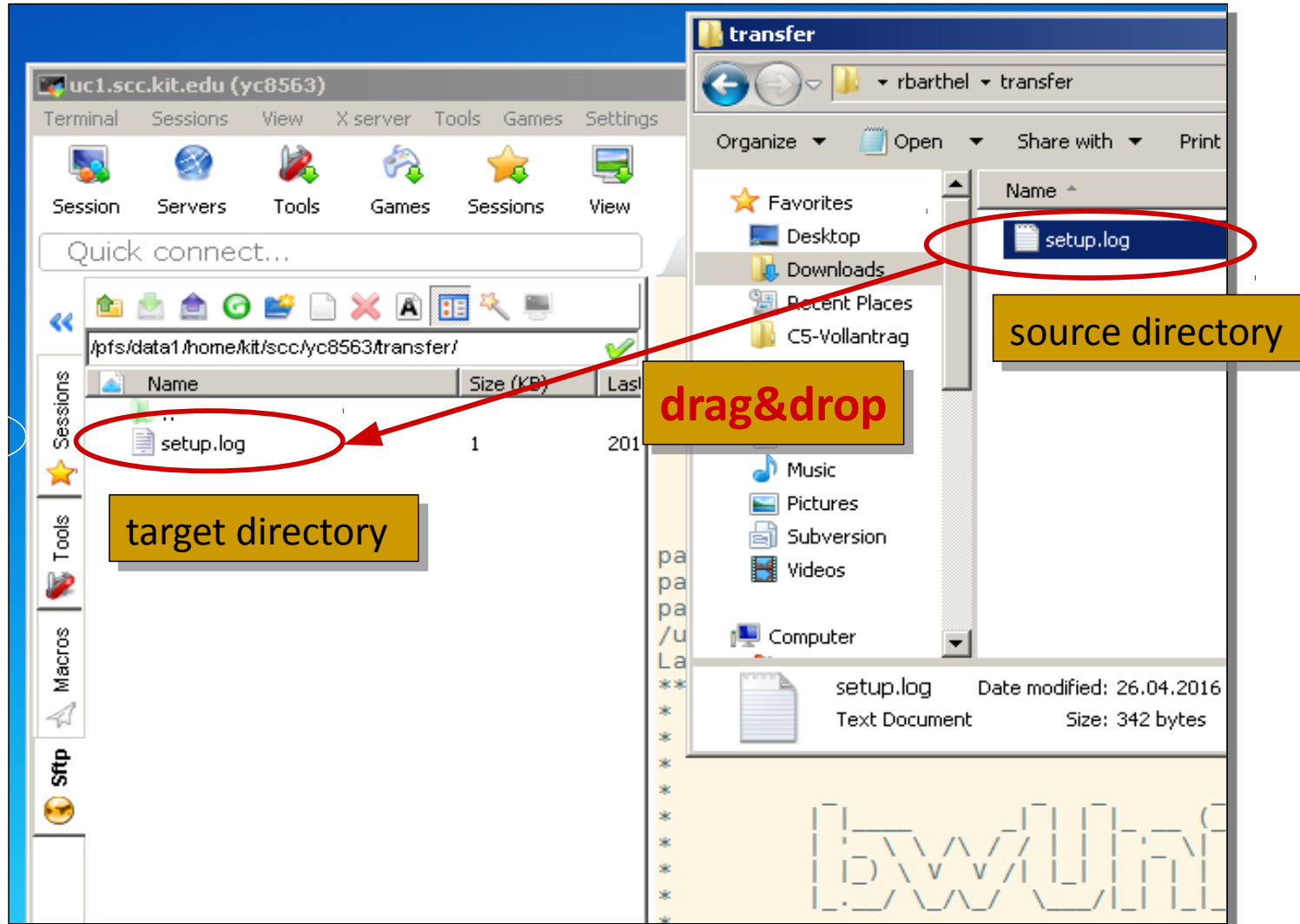
Name	Erweiterung	Größe	Geändert
..			14.07.2014 11:26:21
- Transfer Status:** 0 B von 3.206 MiB in 0 von 1
- Protocol:** SFTP-3
- Time:** 0:07:50

Annotations:

- drag&drop:** An arrow points from the 'paket.tar' file in the local directory to the remote directory.
- source directory:** Labeled below the local directory pane.
- target directory:** Labeled below the remote directory pane.

File transfer – MS Windows (2)

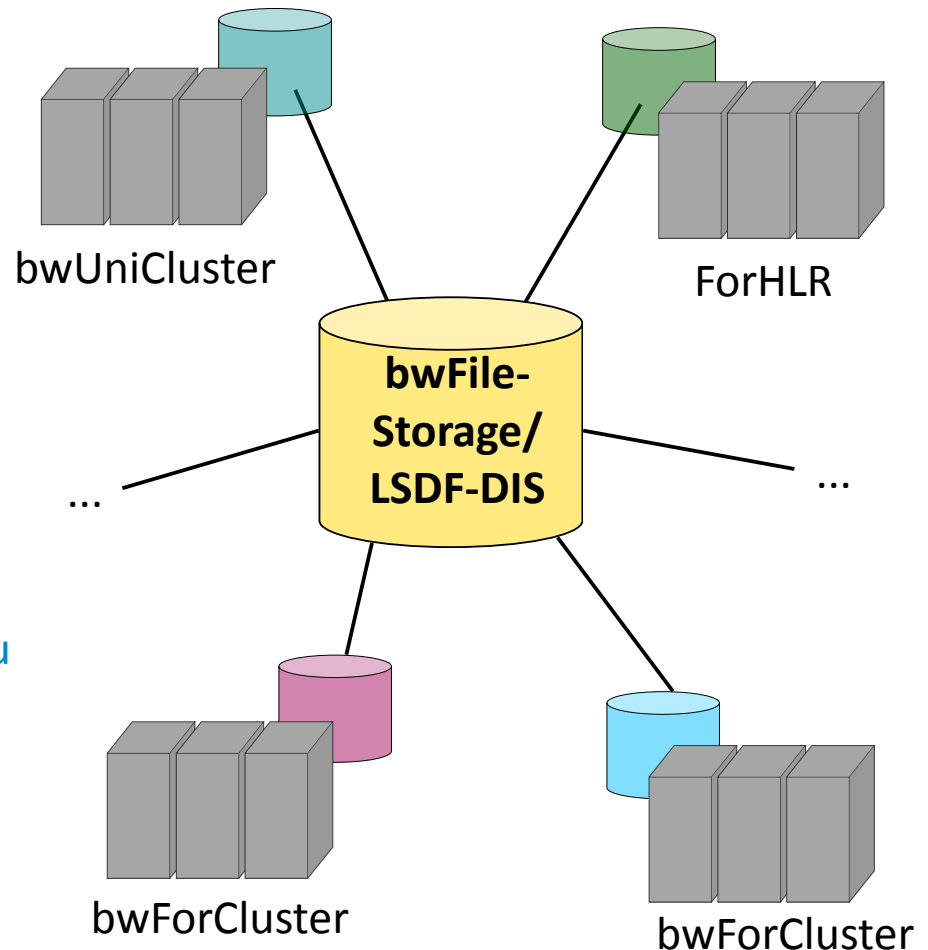
MobaXterm + MS Windows Explorer



bwFileStorage

BwFileStorage / LSDF-DIS

- Central storage located at KIT
- 100GB disk space per user
- Requirements
 - bwFileStorage entitlement
 - web registration at <https://bwidm.scc.kit.edu>
- Hosts
 - Via web: <https://bwfilestorage.lsd.f.kit.edu>
 - Via ssh: `bwfilestorage-login.lsd.f.kit.edu`
- Transfer tools
 - scp, sftp, rsync, https,
 - rdata @ bwUnicluster, ForHLR



bwFileStorage: rdata

- File system operations on „data mover“ nodes
- Supported commands:
`cp, rm, ls, rsync, mv, mkdir, ...`
- Environment variables:
 - `$BWFS=/bwfilestorage/ka/ka_scc/ab1234/`
- Example:
`$ scp file ka_ab1234@bwfilestorage.lsd.fkit.edu:`
`$ rdata cp file $BWFS`
- Performance with a file size of 20000 MB:
 - `scp` : 2min 24s (139 MB/s)
 - `rdata cp` : 1min 5s (308 MB/s)

FAQ

- “I cannot login”, why?
 - Login at registration server of your cluster
 - e.g. bwUniCluster → <https://bwidm.scc.kit.edu>

The image shows two screenshots from the bwUniCluster web interface. The left screenshot is titled 'bwUniCluster' and contains a descriptive paragraph about the service, followed by a list of menu items: 'Servicedescription', 'Registry Info' (highlighted with a red box), and 'Set Password'. A red arrow points from the 'Registry Info' box to the right. The right screenshot is titled 'User' and shows a sidebar menu with 'Index' and 'User Properties' (highlighted with a red box). A red arrow points from the 'User Properties' box to the left. Below the two screenshots, the text 'Check info given at: Registry Info, Index, User Properties' is written in blue, with a red arrow pointing from this text to the 'Registry Info' box in the left screenshot.

- @ bwUniCluster: Check if you’ve done the questionnaire within 14 days after the registration.

4. Questions