

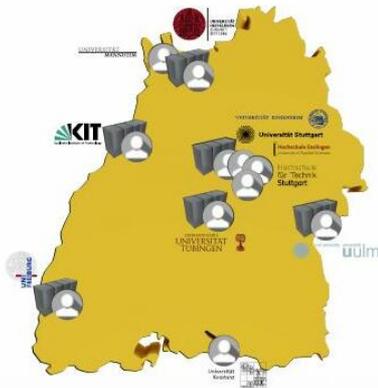
bwUniCluster -first steps



bwHPC support team Hohenheim

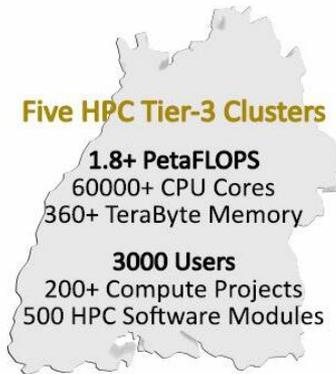
bwUniCluster in a nutshell

Baden-Württemberg Federated HPC



- Federated Clusters**
Science customized multicluster infrastructure
 - Federated Support**
Competence centers, Tiger teams, HPC courses
 - Federated Software**
Unified user environment, Federated software mgmt.
 - Federated Services**
Federated identity mgmt., Wiki/Information portals
- bwHPC Governance**

Baden-Württemberg High Performance Computing

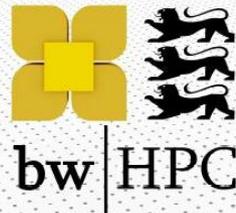


Five HPC Tier-3 Clusters

1.8+ PetaFLOPS
60000+ CPU Cores
360+ TeraByte Memory

3000 Users
200+ Compute Projects
500 HPC Software Modules

www.bwhpc.de



- The bwUniCluster ist part of the Baden-Württemberg High Performance Computing infrastructure, funded by the state of Baden-Württemberg
- Provides computational ressources to members of several universities (including Hohenheim) - free of charge
- Many computations per user at the same time (in parallel) by distributing them across many computation nodes/cores

Access the cluster (Linux/macOS)

Prerequisites: Your user name **ho_name** + your service password for bwUniCluster, 2FA device at hand to generate TOTP number, command line, inside the Hohenheim network

- Command line: Log in via `ssh -X ho_name@bwunicluster.scc.kit.edu` (-X enables X11 forwarding, works also w/o it)
- Enter a current (T)OTP number and your service password

```
Your OTP: 240919  
Password: █
```

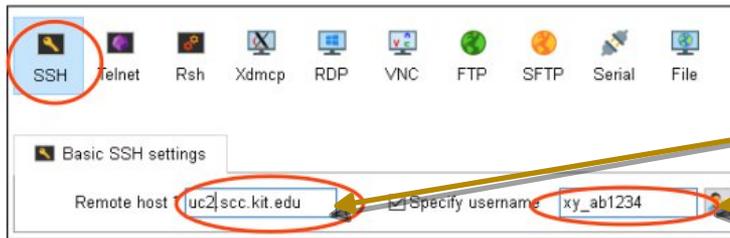
You're in! This is the command line of the bwUniCluster 2.0.

```
password.  
*****  
*  
*  [bwunicluster]  *  
*  (KITE 2.0, RHEL 8.2, Lustre 2.12.6_ddn51)  *  
*  wiki: https://wiki.bwhpc.de/e/bwUniCluster_2.0  *  
*  ticket system: https://www.bwhpc.de/supportportal  *  
*  email: bwunicluster@bwhpc.de  *  
*  training: https://training.bwhpc.de  *  
*  email: training@bwhpc.de  *  
*  *****  *  
*  Last login: Wed Nov 10 13:51:24 2021 from 2001:7c0:2702:61::12a  *  
*  News für Standort  *  
*  *****  *  
[ho_@uc2n994 ~]$ █
```

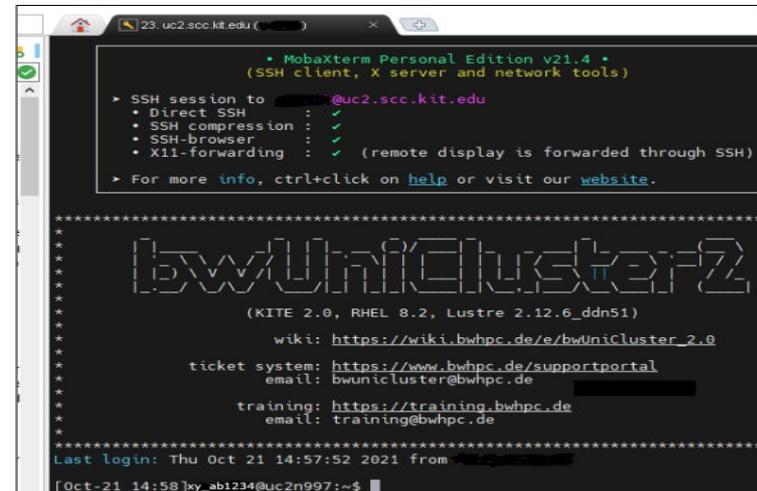
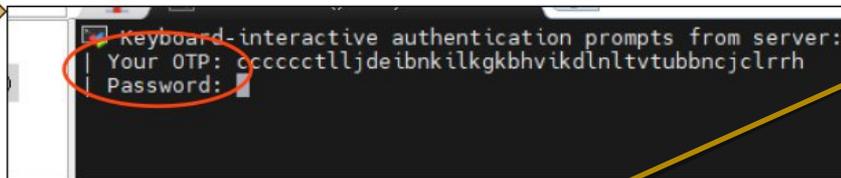
Access the cluster (Windows, via MobaXterm)

Prerequisites: user name **ho_name**, service password bwUniCluster, (T)OTP from 2FA device, command line, MobaXterm terminal, inside the Hohenheim network

1. Open SSH tab
2. Log in on host **bwunicluster.scc.kit.edu** with your own user name **ho_name**



1. Enter (T)OTP and your service password
2. **DON'T** save password (safety...)
3. You're in!



- For using the bwUniCluster, you will usually write scripts of bash commands to execute.
- Simple easy-to-use text editor: **nano <filename>**. If you open a non-existing file it will create this file (as soon as you save within nano). Usually available on any Linux.
- **nano** has not many functions/options. A much more performative editor is **vim** (which we will not need today)
 - `vim <filename>` opens the file
 - There is a built-in 25-30 min tutorial of vim, which is started by command **vimtutor** (resp. **vimtutor -g <language>**)

You will need your 2FA device again
(and you need to be in the university network)!

- Linux/MacOS: Use scp
 - From bwUniCluster to your computer
scp <ho_name>@bwunicluster.scc.kit.edu:<remote file> <local file>
 - From your computer to bwUniCluster
scp <local file> <ho_name>@bwunicluster.scc.kit.edu:<remote file>
- Windows: via MobaXterm

After entering the command, you will be prompted for an (T)OTP and your service password

non-Hohenheim users: User name has different prefix

External mounts, software compilation

- Under linux systems (e.g. Ubuntu): You can mount a folder from bwUniCluster on your local computer via **sshfs** - see details
 - In German: <https://wiki.ubuntuusers.de/FUSE/sshfs/>
 - In English: <https://embraceubuntu.com/2005/10/28/how-to-mount-a-remote-ssh-file-system-using-sshfs/>
- You can copy code/software to the bwUniCluster and compile programs. However, you have no sudo rights