Linux: Basic Concepts and Command Line Usage
Unit 3

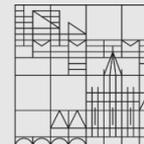# **Outline**

- file transfers (and how to avoid them)
- simple bash for loops
- text file manipulation
- simple plotting

Linux Shell

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File transfer

- From localhost to cluster:
    - `scp` (secure copy) or `sftp` (secure file transfer program)
    - Recursively copy entire directory: `scp -r`

- Linux / OS X
    - Open terminal at your computer:
    ```
    $ scp <sourcefile> <username>@<host>:<targetfile>
    e.g. scp ~/file.txt your_account@justus.uni-ulm.de
    :~/
    ```
    or
    ```
      $ sftp <username>@<host>:<targetdir>
    ```

    - Copy your bwUniCluster folder $HOME/transfer to your local computer:
    ```
    $ scp -r ab1234@bwunicluster.scc.kit.edu:~/transfer
    .
    ```
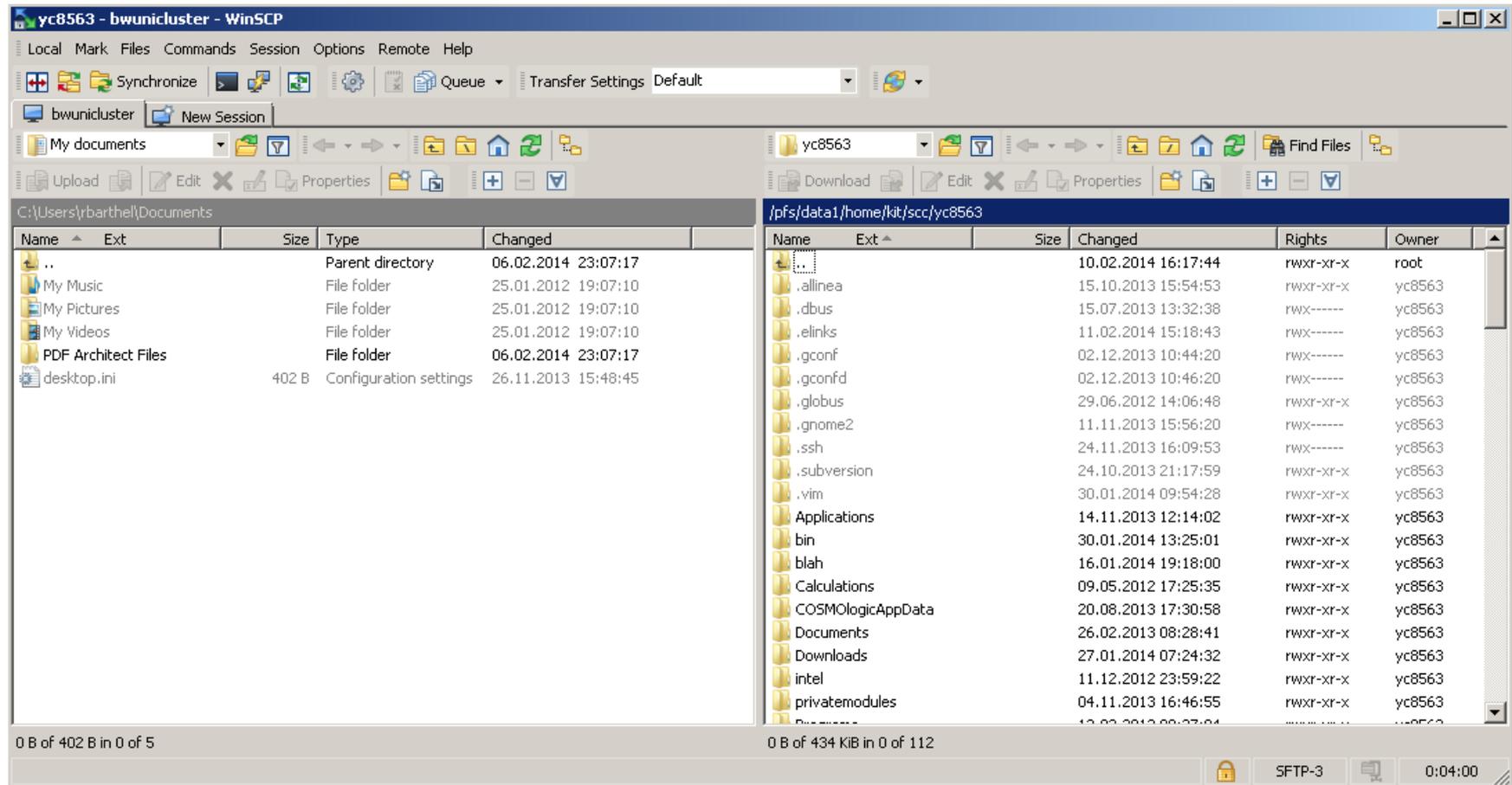
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File transfer – SCP (2)

- for Windows user → install WinSCP: http://winscp.net
- run WinSCP
- Host Name:
  bwunicluster.scc.kit.edu
- File protocol:
  SFTP
- Username:
  ab1234
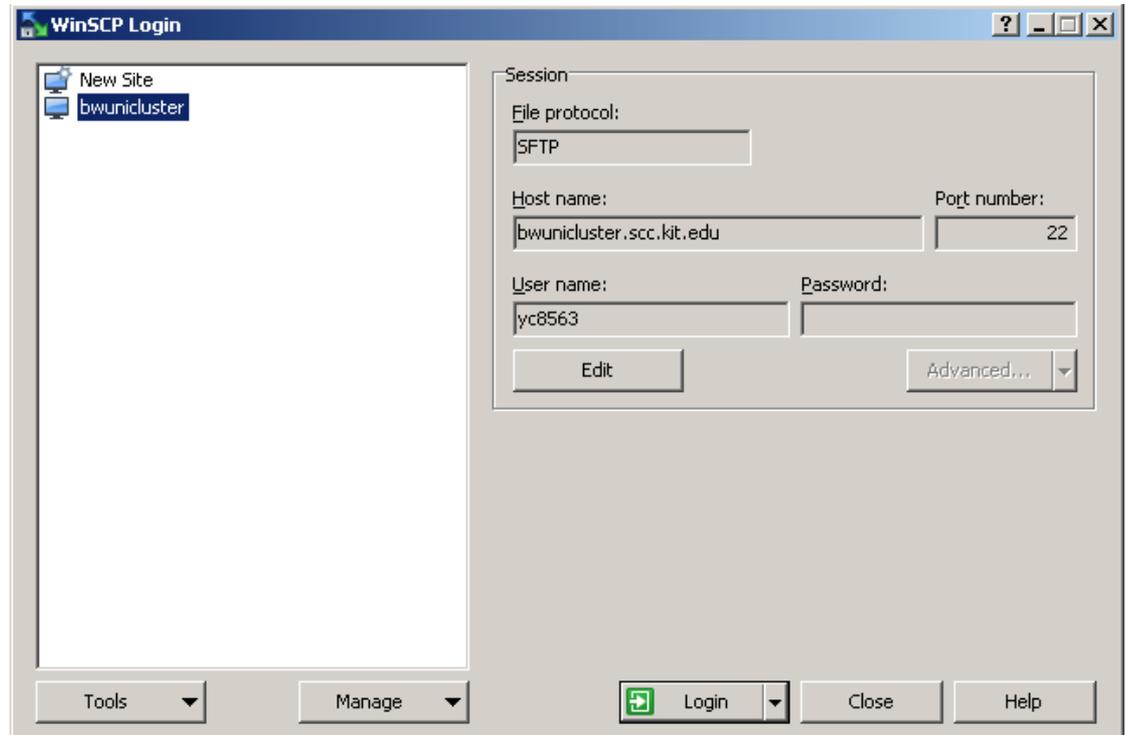
File transfer – SCP (2)

- for Windows user → install WinSCP: http://winscp.net
- run WinSCP

for loops

- Print the numbers 1, 2 and 3
  - ```
    for counter in 1 2 3; do echo $counter; done
    1
    2
    3
    ```

- Submit all job scripts in the current directory
  - ```
    for script in *.moab; do msub $script; done
    ```

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Extracting from Text

- grep and sed can do simple tasks
- awk scripts can do pretty much
- complicated scripting preferred in scripting languages like perl, python, go ...

- very typical:
  awk '/blubb/{print $3 }' # prints 3rd column of any line containing "blubb"

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Simple Plotting

- Text file "myfile" with two rows of numbers
- Run gnuplot, then
  ```
  gnuplot> plot "myfile"
  ```

- gnuplot can do much more, but **is** limited.

  --> use more sophisticated programs if you know you need complex graphs

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Further reading

- Login and more info about HPC-Resources
  - `www.bwhpc-c5.de/wiki/index.php/Main_Page`

- Beginner tutorial:
  - `http://ryanstutorials.net/linuxtutorial/`

- Advanced tutorial:
  - `http://mywiki.wooledge.org/BashGuide`
  - `http://mywiki.wooledge.org/BashSheet`

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Thank you!