HPC.NRW

INTRODUCTION TO LINUX

(in an HPC context)

Version 20.09 | HPC.NRW Competence Network

VARIOUS TIPS

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INTRODUCTION TO LINUX

– Useful commands: `du`
  – Shows disk usage
  – Common options: `-h` (human-readable) `-s` (Show total), `-c` (Show individual files)
  – Example: `du -sch .`

– Counterpart: `df`
  – Disk free

- Useful commands: `history`
    - Lists previous commands (same as Up-Arrow/Down-Arrow)
    - Text file in your home directory: `~/.bash_history`
    - Advantage: searchable
    - Example: `history | grep <commandname>`
        - When you forget what options you used

– Useful commands: `ln -s`

- – Creates a symbolic link

- – Similar to Windows links

- – Visible with `ls -l` or `which`

- – Usage: `ln [Option] <Target> <Link name>`

- – Example: `ln -s myfile.txt mylink`

- – Also possible: "hard links" (not covered here)

- Useful commands: `watch`
    - Runs target command every 2 seconds
    - Any target command possible
    - Interval modifiable
    - Example: `watch tail mylog.txt` will show what is written to log file
    - Leave with Ctrl+C

– Useful commands: calculator `$(( ))`
  – For simple integer math
  – Example: `echo $(( 5 + 3 ))`

– Stream editor `sed`

 – For simple text operations (e.g. replacing text)

 – Example: `sed -i "s/old/new/g" example.txt`

  – `-i` Edit in place

  – `s` Replace (followed by three-slash syntax)

  – Search text "`old`", replace with "`new`"

  – `g` Repeat for all occurrences in file

 – Similar purpose and idea, but more powerful: `awk`

 – Both commonly used, I cannot recommend them due to complexity

– Software is often installed as packages
  – Organized in internet repositories
– Distro-dependent
  – Often maintain their own repository
– Not possible on cluster (exception: inside of application, e.g. Python, R)
– In general, three different package managers:
  – `apt-get` (Debian family), package format `.deb`
  – `yum` (Red Hat family), package format `.rpm`
  – `zypper` (Suse), package format `.rpm`