

INTRODUCTION TO LINUX

(in an HPC context)

Version 20.09 | HPC.NRW Competence Network

THE COMMAND LINE

HPC.NRW Competence Network

INTRODUCTION TO LINUX

- A line where you type commands
- Other terms:
 - CLI (command line interface)
 - Console / Terminal
 - Shell
- Advantages
 - Simple (nearly always works)
 - Easy to program (in comparison to GUI)
 - Fast and efficient to use (if you know the commands)
- Disadvantage: lots of memorizing (vs. GUI buttons)

- Linux: console below everything
- Programs within shells within shells
- Important for user: be aware where you are
 - Things not available in parent shell by default
 - What gets stopped if you close shell

```
[js056352@login1 ~]$
```

User name
Who is using this

Host name
What computer are you on?

Working directory
Where on the computer are we?

Command prompt

- Indicates system is ready to receive input
- `$`: convention (also `>`)

```
[js056352@login1 ~]$ hostname -f  
login1.cm.cluster  
[js056352@login1 ~]$ █
```

Options

- Command-specific
- Several conventions

Command

- What to do
- Typed by user

New command prompt
Execution completed

Output

- What the command returns
- No rules

Running

```
[js056352@login1 ~]$ sleep 1h  
█
```

<Enter> run command

<Up - Arrow> navigate command history back in time

<Down - Arrow> navigate command history forward in time

<Tab> auto-completion (a.k.a. “tab completion”)

- If enough letters to identify command: completes command
- More than one possibility: nothing shown
- Second Tab to list possible completions

<Ctrl-C> abort current command.

- Always case-sensitive
 - Popular source for errors
- Command line options:
 - Usually start with dash
 - Common convention: single dash for “short options”, double dash for “long options”
 - Example: `sbatch --time 0:30:00` is identical to `sbatch -t 0:30:00`
 - Note: specific commands may deviate from convention

- Internet (seriously)
 - Very extensive community
 - Stack Overflow/Stack Exchange
- Man page:
 - `man <command name>`
- Built-in help:
 - Often `-h` or `--help` option
 - Often identical to man page

- Console has no “Undo” button
- Usually no “Are you sure you want to delete” dialog
- If root: can theoretically destroy entire system

- Never run a command which you don't understand
 - “Lol, try `sudo rm -rf /`” – many idiots on the internet
- Make sure you are in the right directory
- Make sure you are not root unless necessary
- Check for spelling errors