

INTRODUCTION TO LINUX

(in an HPC context)

Version 20.09 | HPC.NRW Competence Network

SSH CONNECTIONS

HPC.NRW Competence Network

INTRODUCTION TO LINUX

- Clusters typically accessed via Secure Shell (SSH) protocol
- Most commonly OpenSSH software
- Available for all operating systems
 - Linux: original
 - Mac OS: basically identical
 - Windows 10 (since 2019): integrated in cmd/Powershell
- Additional tools, especially on Windows: Putty, MobaXTerm

- Connect with `ssh` command: `ssh [options] <username>@<hostname>`
- You will be asked for password
 - Alternative: set up public/private key pair
- Can specify configurations to simplify login
- Console-based, but opening windows is possible
- Multiple simultaneous connections possible

- OpenSSH allows setting presets
- Directory `~/.ssh` contains config file
 - Simply named `config`
 - Editable text file
- One preset per cluster
 - Specify username
 - Other options (many possibilities)
- Use `ssh <presetname>` instead of `ssh [options] <user>@<host>`

- Login with public/private key pair instead of password
- Convenient
 - Good for automated connections
- Potentially more secure
- Only as secure as your PC
 - **Treat private key file like a physical key**

- You generate key pair
 - On your PC
 - Tool `ssh-keygen` (comes with OpenSSH)

- You copy public key to cluster
 - `ssh-copy-id` (comes with OpenSSH)
 - Windows: manually copy and paste key

- When logging in, OpenSSH will select key

- Run SSH key generator
 - On local PC, type `ssh-keygen`
 - Enter filename for new key
 - Should be inside `~/.ssh` directory
 - Caution: will overwrite without asking
 - Enter passphrase
 - Can be left empty, but not recommended
 - Confirm passphrase

- On local PC, use the `ssh-copy-id` command
 - Syntax: `ssh-copy-id -i <keyfile> <user>@<host>`
 - Not available in Windows

- Alternative: copy manually
 - On local PC, open public key file with text editor
 - One line of text, three parts: algorithm, key, comment
 - On cluster, open `~/.ssh/authorized_keys`
 - Paste line, adjust comment as needed

- When logging in, key will be used automatically
 - May specify key file manually if needed (option `-i`)
 - If you get asked for password, key was not recognized

- Tips:
 - Use one key per PC (in case of theft/compromise)
 - Not recommended to leave passphrase empty
 - But only needs to be entered once