HPC School - Beginner

S1-1 - Connection to ULHPC - Mac and Linux

High Performance Computing & Big Data Services

hpc.uni.lu

hpc@uni.lu

@ULHPC

LUXEMBOURG LET'S MAKE IT HAPPEN

UNIVERSITÉ DU LUXEMBOURG

Overview

The main steps are:

1. Install the necessary software to connect to the ULHPC
2. Create a pair of SSH keys to authenticate yourself on the ULHPC
3. Set your public key in our authentication system
4. Establish a first connection

Step 1 - necessary software

- Mac and Linux users have a pre-installed terminal
- You can install any other terminal however it is out of the scope of this lecture

Step 2 - Creation of the SSH key pair

- Start a terminal and type the following command: `ssh-keygen -t ed25519 -a 100`
- A new key pair should be created in a hidden folder of your home folder `~/.ssh`
- `~` (tilde) represents your user home directory
- You can list the files of that folder to ensure the presence of both
  - `~/.ssh/id_ed25519` (private key)
  - `~/.ssh/id_ed25519.pub` (public key)
- List the files via the following command: `ls ~/.ssh/`

Reminder: only share the public key file (`~/.ssh/id_ed25519.pub`)

Note: if you already have a pair of key, feel free to use it. However if you want to generate a new pair of key, be careful and set another key name or you may override and lose your existing key.

You can do: `ssh-keygen -t ed25519 -a 100 -f newname`

Full documentation available here: https://hpc-docs.uni.lu/connect/ssh/#ssh-key-generation

Step 3 - Give us your public key

IPA is the name of our authentication server: https://hpc-ipa.uni.lu

When your account has been created, you should have received an email with a link to IPA in order to set your account password.

Before being able to connect to the cluster, you need to add your public key to your account.

Full documentation available here: https://hpc-docs.uni.lu/connect/ipa/#upload-your-ssh-key-on-the-ulhpc-identity-management-portal

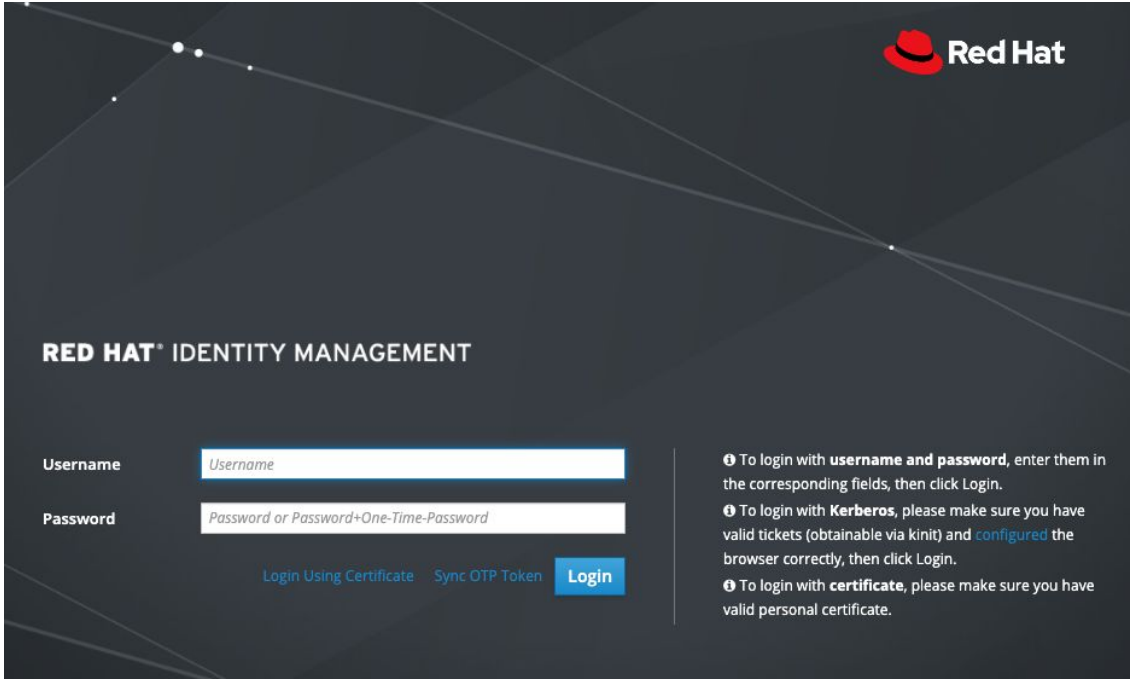
Step 3 - Give us your public key

- Log in on IPA with your password
- Select Identity / Users.
- Select your login (**this is not your UL account**, check your account creation email if you don't remember)
    - e.g., for me, it is `jschleich` and **not** `julien.schleich@uni.lu` or `julien.schleich`

Full documentation available here: https://hpc-docs.uni.lu/connect/ipa/#upload-your-ssh-key-on-the-ulhpc-identity-management-portal

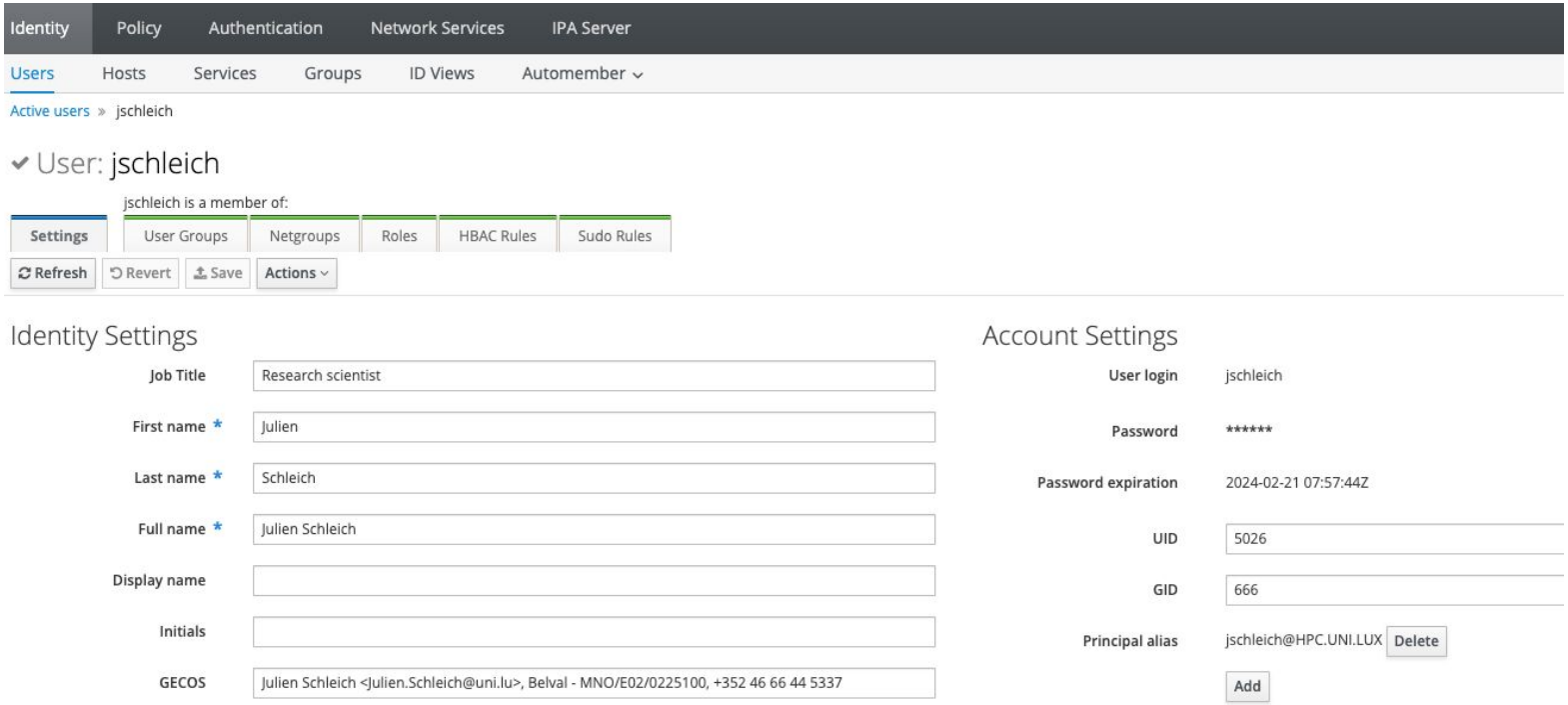
Step 3 - Give us your public key

Go to the following URL: https://hpc-ipa.uni.lu and enters your ULHPC username and password



Step 3 - Give us your public key

Click on your username and a similar page should open:



Step 3 - Give us your public key

On the right side, find `SSH public keys` and click on the `Add` button

📚 Full documentation available here:
https://hpc-docs.uni.lu/connect/ipa/#upload-your-ssh-key-on-the-ulhpc-identity-management-portal

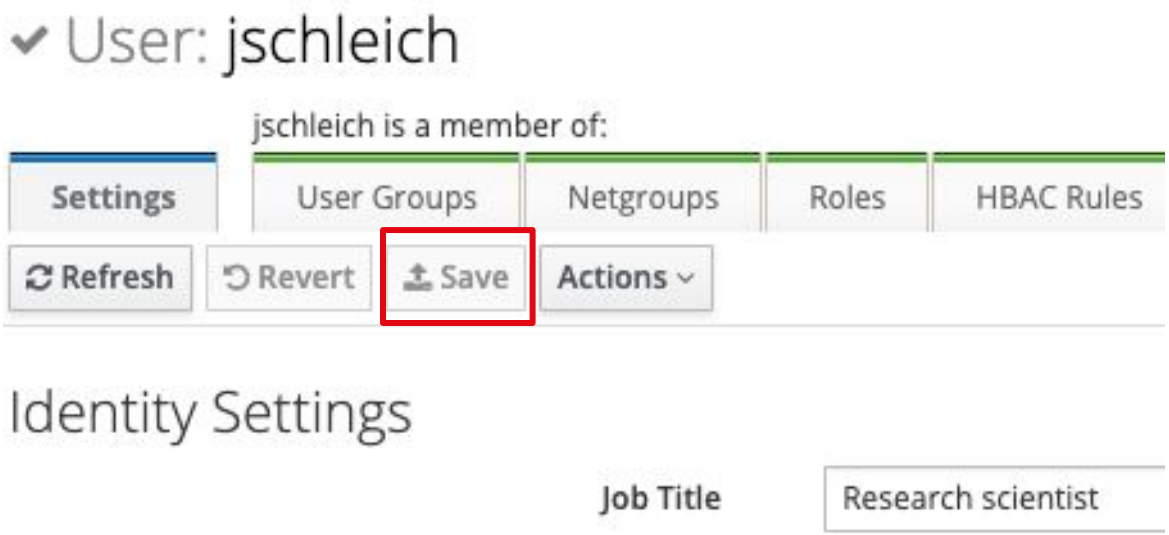
Step 3 - Give us your public key

Paste the content of your public key and click on `Set`

📚 Full documentation available here:
https://hpc-docs.uni.lu/connect/ipa/#upload-your-ssh-key-on-the-ulhpc-identity-management-portal

Step 3 - Give us your public key

Ensure that you clicked on `Save` before leaving IPA otherwise your key will not be taken into account.



📚 Full documentation available here:
https://hpc-docs.uni.lu/connect/ipa/#upload-your-ssh-key-on-the-ulhpc-identity-management-portal

Step 4 - First connection

To connect to the ULHPC via the ssh command, you can type:

- `ssh yourlogin@access-aion.uni.lu -p 8022` for AION
- `ssh yourlogin@access-iris.uni.lu -p 8022` for IRIS

In order to simplify the commands to this:

- `ssh aion-cluster`
- `ssh iris-cluster`

you can create a SSH configuration file which will contain the different, non-changing parameters.

Full documentation available here: https://hpc-docs.uni.lu/connect/ssh/#ssh-configuration

Step 4 - First connection

The configuration file will look like this:

```
# ~/.ssh/config -- SSH Configuration
# Common options
Host *
    Compression yes
    ConnectTimeout 15

# ULHPC Clusters
Host iris-cluster
    Hostname access-iris.uni.lu

Host aion-cluster
    Hostname access-aion.uni.lu

# /!\ ADAPT 'yourlogin' accordingly
Host *-cluster
    User yourlogin
    Port 8022
    ForwardAgent no
```

Do not type it, next slide contain a link to that configuration file

Step 4 - First connection

- You should create the following file: `~/.ssh/config`
- This can be done in your terminal, e.g., using `nano ~/.ssh/config` **or any other text editor**
- You can copy paste the configuration from this documentation link.
- **Do not forget** to change `yourlogin` with your ULHPC username

Note for MacOS users: `~/.ssh` is a hidden folder as all folders starting with a dot '.' To display all hidden folder, your can press `Command + Shift + .`

📚 Full documentation available here: https://hpc-docs.uni.lu/connect/ssh/#ssh-configuration

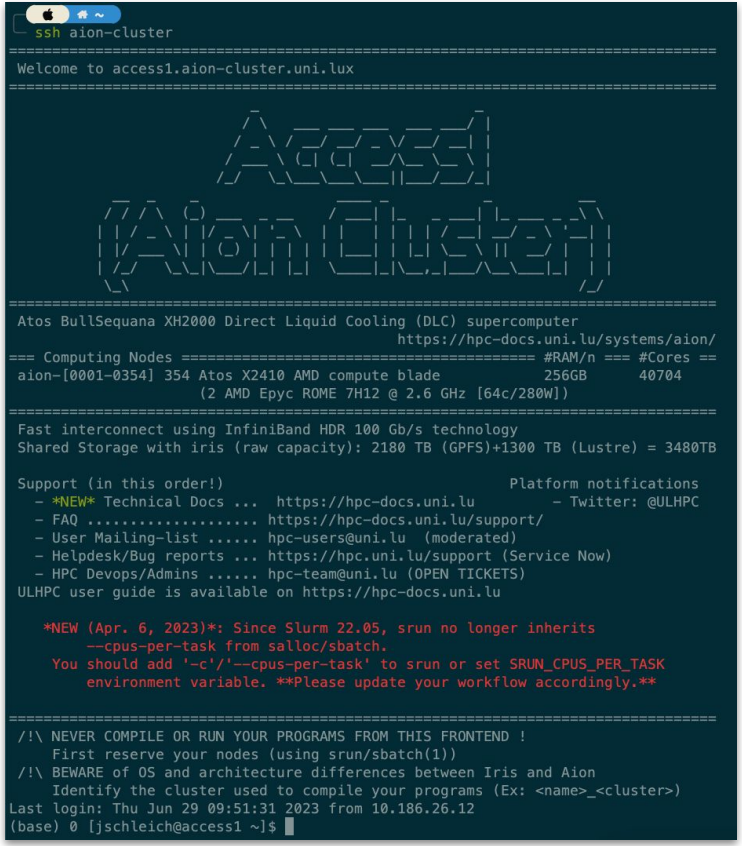
Step 4 - First connection

Upon your first connection, you will be prompted with the following message. Type yes to accept.

```
The authenticity of host '[access-aion.uni.lu]:8022 ([172.20.3.16]:8022)' can't be established.
ED25519 key fingerprint is SHA256:jwbW8pkfCzXrh1Xhf9n0UI+7hd/YGi4FlyOE92yxxe0.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
```

Step 4 - First connection

Success!



Troubleshooting

Connection timeout

You probably use an internet connection that filters out the 8022 port. Try to use Eduroam or ethernet.

No route to host

Check that there is no typo in your configuration

Permission denied

1. You may have forgot to copy your public key in IPA
2. Check if you copy pasted correctly your key in IPA
3. If you already had other SSH keys, ensure you use the correct key to connect

Connection the cluster - Troubleshooting

A different situation? Open a support ticket here

Provide as many details as you can about the issue and what you tried to solve it.