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HOW TO CREATE AN ACCESS TO THE HPC

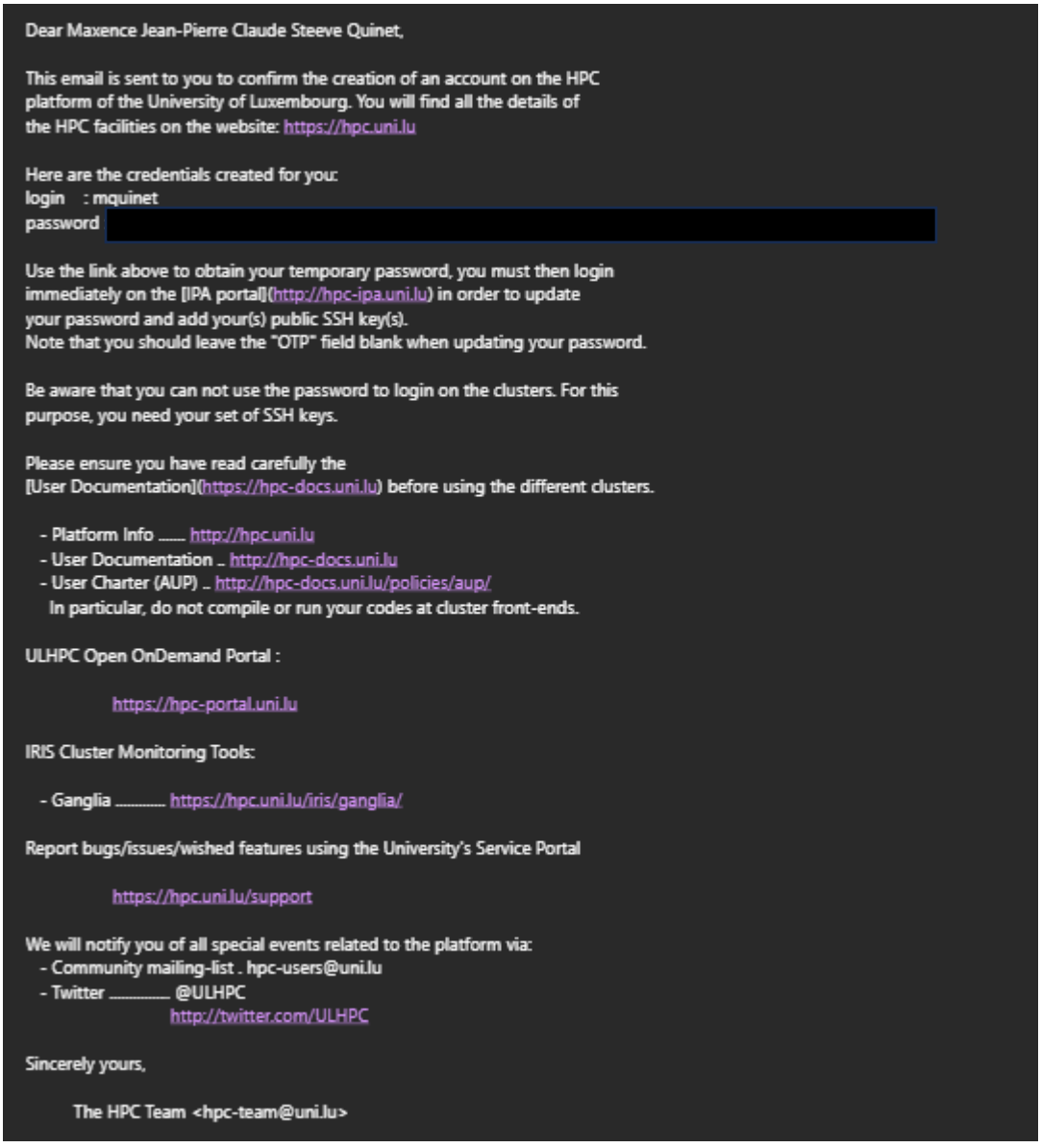
Step by Step explainations

Etape 1 : Send a request to HPC

The first step consist to send a mail to the address support of the HPC.

It will create a ticket which ask an access to the HPC. To get it, you must have a good reason, like be student, be member of a professional team etc…

Then, you will receive this kind of mail :



Dear Maxence Jean-Pierre Claude Steeve Quinet,

This email is sent to you to confirm the creation of an account on the HPC platform of the University of Luxembourg. You will find all the details of the HPC facilities on the website: https://hpc.uni.lu

Here are the credentials created for you:
login : mquinet
password [redacted]

Use the link above to obtain your temporary password, you must then login immediately on the [IPA portal](http://hpc-ipa.uni.lu) in order to update your password and add your(s) public SSH key(s).
Note that you should leave the "OTP" field blank when updating your password.

Be aware that you can not use the password to login on the clusters. For this purpose, you need your set of SSH keys.

Please ensure you have read carefully the [User Documentation](https://hpc-docs.uni.lu) before using the different clusters.

- Platform Info ..... http://hpc.uni.lu
- User Documentation .. http://hpc-docs.uni.lu
- User Charter (AUP) .. http://hpc-docs.uni.lu/policies/aup/
  In particular, do not compile or run your codes at cluster front-ends.

ULHPC Open OnDemand Portal :

https://hpc-portal.uni.lu

IRIS Cluster Monitoring Tools:

- Ganglia ..... https://hpc.uni.lu/iris/ganglia/

Report bugs/issues/wished features using the University's Service Portal

https://hpc.uni.lu/support

We will notify you of all special events related to the platform via:
- Community mailing-list . hpc-users@uni.lu
- Twitter ..... @ULHPC
  http://twitter.com/ULHPC

Sincerely yours,

The HPC Team <hpc-team@uni.lu>

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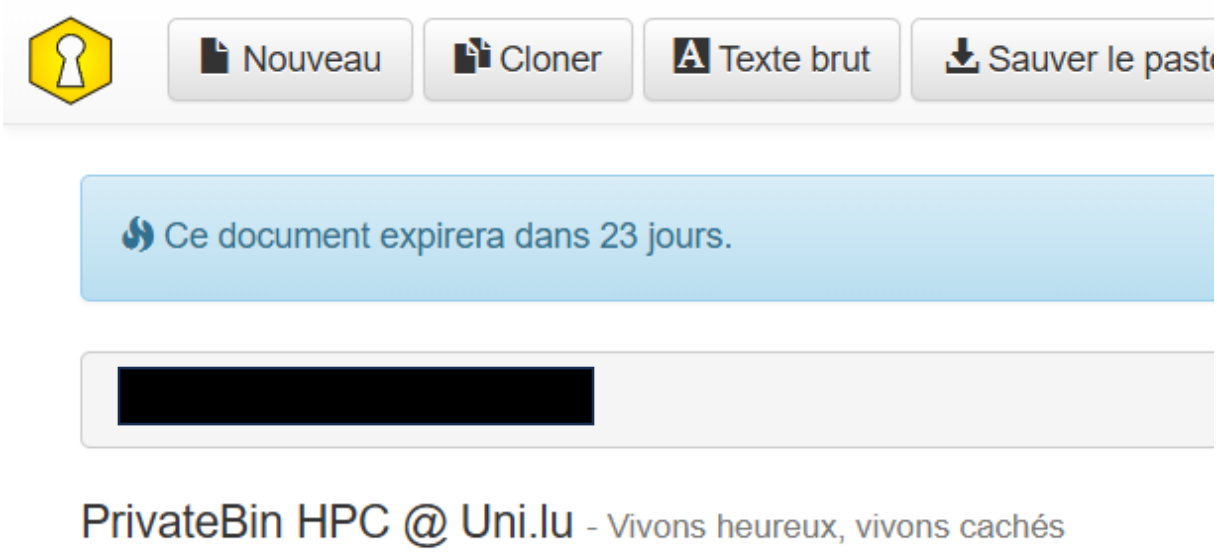
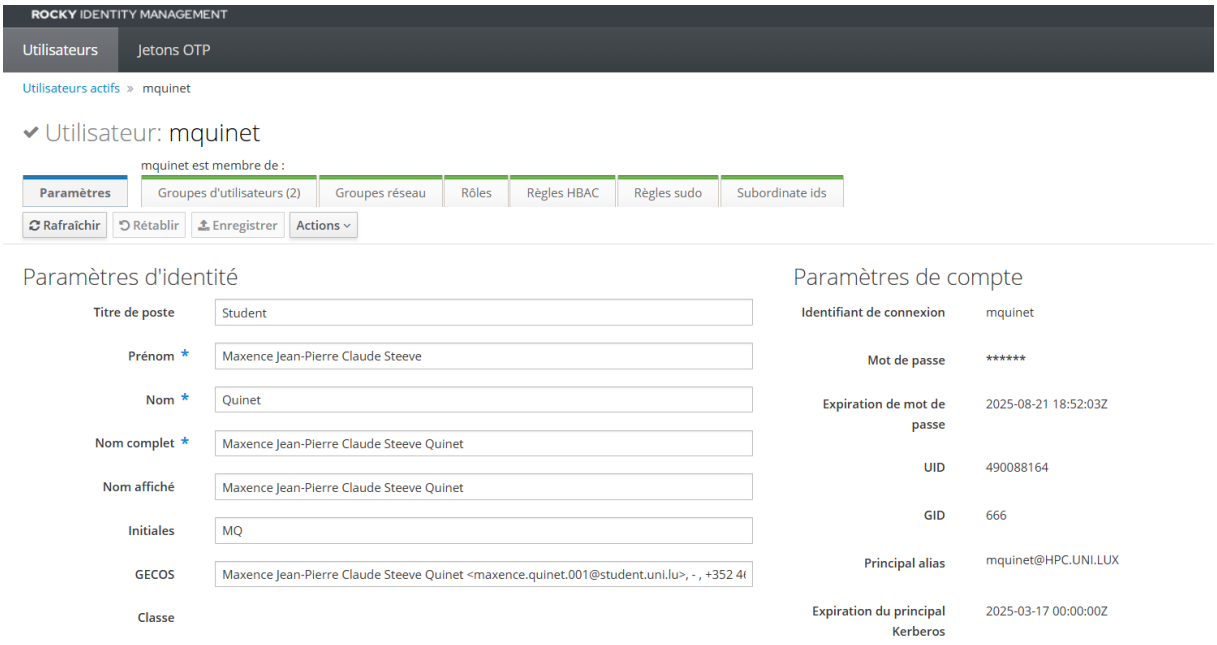
The link close to your password will contains your first temporary password (which works only once).



Then you can go into your user interface :

And finally, you're connected :



Step 2 : Create SSH Key to create an access to the HPC servers

Now that we are authorized to use the HPC, we have to create an access.

For that, we have to create SSH key. By the way, it's normally better to use an UNIX system, so use MacOS or Linux.

But sur Windows, we can also use WSL2. The installation is quite simple.

To create a SSH Key, you have to use this command:

ssh-keygen -t rsa -b 4096 your@email.address

In my case, I had already created a ssh key for my WSL

So I only had to do :

ls ~/.ssh

```
maxenceqnt@LAPTOP-2K0GFBPT:~$ ls ~/.ssh
config  id_rsa  id_rsa.pub  known_hosts  known_hosts.old
maxenceqnt@LAPTOP-2K0GFBPT:~$
```

And as you can see, I got public and private keys.

The private key must NEVER be shown to someone.

The public key ONLY can be shared.

Then, you have ton print your public key

cat ~/.ssh/id_rsa.pub

```
maxenceqnt@LAPTOP-2K0GFBPT:~$ cat ~/.ssh/id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAACAQCvALr4+YVJWhs1hYzjCLoWGeFr85FG71QkFYWC+SxVk+tcRr/iKTPlcigxCzwZhwMC+pPMHvi4HoMmdy97
1JP35dMcuA/dcyuyu0bGi8ThtwVhIpKV2re9CLkzTa5b+rFpHrVDCs8GnaHFAhQgu4goiBvC/4pTQroz89Dl0TquyZj2nfGR4Ecfez2IcMf3pD2YoSOQRvOw
RrFfK0pZOTcAbmJGXe4D6xZNASQi++UyDwLi4MWp/90043Emc+6UBJFhoSF1GOO18w0xQWiZZb9hfOR/1P9cDJK54rQdCd8FiA7fGT6rwF2I2V3pjATpMnTx
SfaKFNptog1L4OfwHCmIbwrOMVfRrx7wHFYKgYLAoKG6o3Vnq43YzhkskyJjvlO1jHCmyz4Qa8W1ndjypZQoQSSy60UdR9KztfShQLfJC6VpusKqmbZl9S56
snNxmF4uhVq/JjBIZFwGhz1lU0GoZ04oRgEEJ5fwuMKcSEcQVh64j6zUTHyOJZyP7NM/jIZFJql6svzIG9FU8W21hl62IEs3118INHZ7GcbLqQ+IzZ0zlC2C
k7TiJ00fqvNLP88tnosp6eoZiqQTjl2XWVqZaEV8QjjwDY73qK4jkLMQv/u6ZbJkFfyBE9v0L8MsZS0hePFE0cZ27/Za3E2bj+R6Hl24CeUrjY0z4R6K84uW
Fw== maxence.qnt@outlook.fr
```

You can see my public key above in the picture. If you use an ED25519 key (which is, at this moment of this tutorial, the most securised RSA protocol), use this command :

cat ~/.ssh/id_ed25519.pub

Now copy your SSH key from your terminal and paste it into your user interface of your HPC

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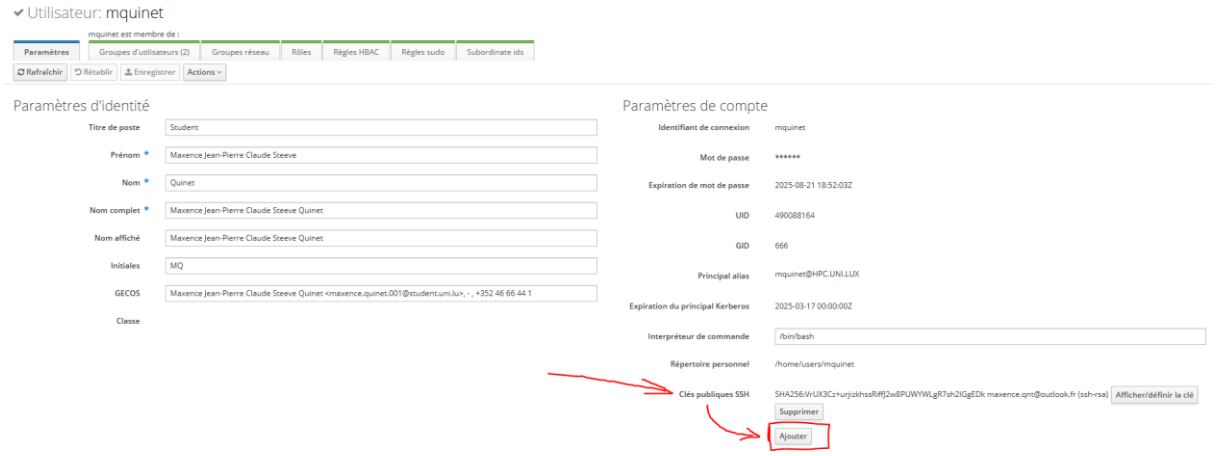

You ssh key is now added to your account.

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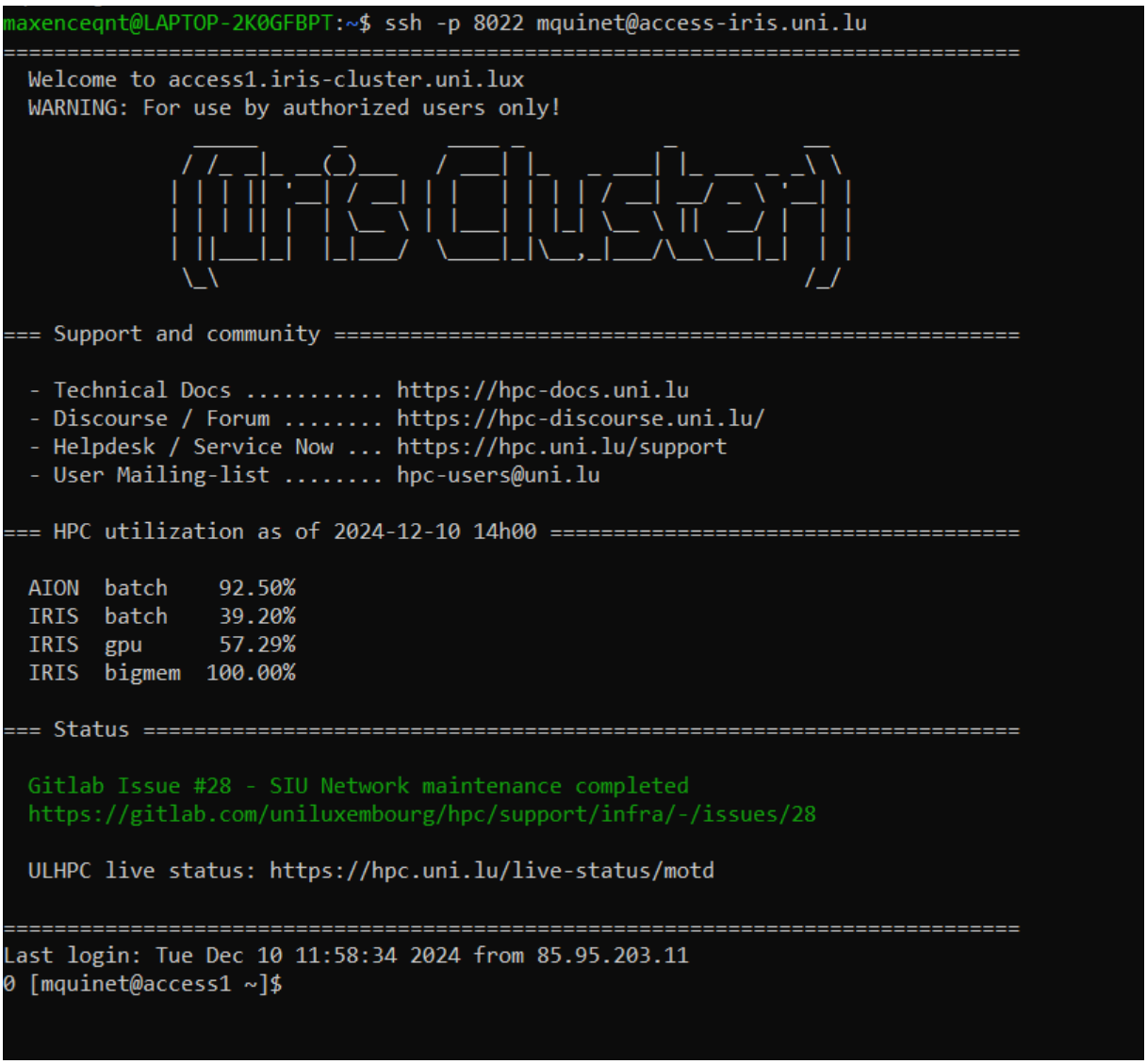
Step 3 : Finalise the access from the WSL terminal

Now that we have created an SSH key, we will log in with it.
Logging in with email and password is not secure enough; you need to connect via SSH.

To do so, type the command:

ssh -p 8022 yourlogin@mail_adress

Note: The default port is 22, but the HPC server runs on port 8022. That's why you need to specify it.



And there you go! You are connected!

To avoid typing this command over and over again, we will configure a connection file.
Go back to your default WSL terminal by exiting the IRIS server (type exit).
Once you are back in your WSL terminal, type:

cd ~/.ssh

Then tap :

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ls ~/.ssh

This will display all the folders/files inside your .ssh directory. There should be no config file yet, so we will create one.
To create it, type the command:

touch config

Then, we will edit it by typing the command:

nano config

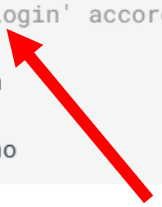
Then copy / paste this text (WARNING, it may be not works for you as each HPC can use another workload manager. In my case, it was **SLURM Workload Manager**.)

```
# ~/.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
```



The config file must have restricted permissions for SSH to work. Type the command:

chmod 600 config

AND THAT'S IT! NOW, YOU CAN SIMPLY CONNECT USING THE COMMAND:

ssh iris-cluster

Now, you can use the HPC.

Start by creating your environment using micromamba or conda.

Then install the dependencies, create your first bash file, and put some jobs to the HPC !