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# USING NVHPC ON MARVIN



We already created your accounts.

- You should have got an email with a temporary password.
- But this password is not for Marvin itself but for the identity management system FreeIPA
- You need to set up a public/private key pair, upload the public key to FreeIPA and use the private Key to connect to Marvin

# GENERATE A KEY PAIR

- Open a terminal
  - Ctrl + Alt + T on Linux
  - Win → type in "cmd" → Enter on Win10 and up
  - Use the "Terminal" app on Mac
- Enter `ssh-keygen -t ed25519`
  - The default location and name for the key will be shown. It should be:
  - `/home/<your username>/.ssh/id_ed25519` on Linux
  - `C:\Users\<your username>\.ssh\id_ed25519` on Windows
  - `/Users/<your username>/.ssh/_ed25519` on MacOS

# GENERATE A KEY PAIR

- Change it if necessary. (A preexisting key with the same name will be overwritten without warning)
- Give the (private) key a passphrase
- The **.ssh** folder should now contain two new files
- A file with the name you just chose (that is your private key, don't give it to anyone)
- A file with the same name and the ending **.pub** (that is your public key)

# UPLOAD YOUR PUBLIC KEY (1/4)

Open a browser window:

- Go to <https://freeipa.hpc.uni-bonn.de/>
- Login! Your username is in the aforementioned email
- If you have not yet changed your temporary password, do it now
- Click on your name in the top right, then on "Profile"

# UPLOAD YOUR PUBLIC KEY (2/4)

Identity Policy Authentication Network Services IPA Server

Users Hosts Services Groups ID Views Automember Subordinate IDs

Active users » demouser\_hpc

✓ User: demouser\_hpc

demouser\_hpc is a member of:

Settings User Groups (1) Netgroups Roles HBAC Rules Sudo Rules Subordinate ids

Refresh Revert Save Actions

### Identity Settings

Job Title

First name \* Demo

Last name \* User

Full name \* Demo User

Display name Demo User

Initials DU

GECOS Demo User

Class

### Account Settings

User login demouser\_hpc

Password \*\*\*\*\*

Password expiration 2049-04-03 08:36:59Z

UID 5161

GID 5161

Principal alias demouser\_hpc@HPC.UNI-BONN.DE Delete

Add

Kerberos principal expiration YYYY-MM-DD hh : mn UTC

Login shell /bin/bash

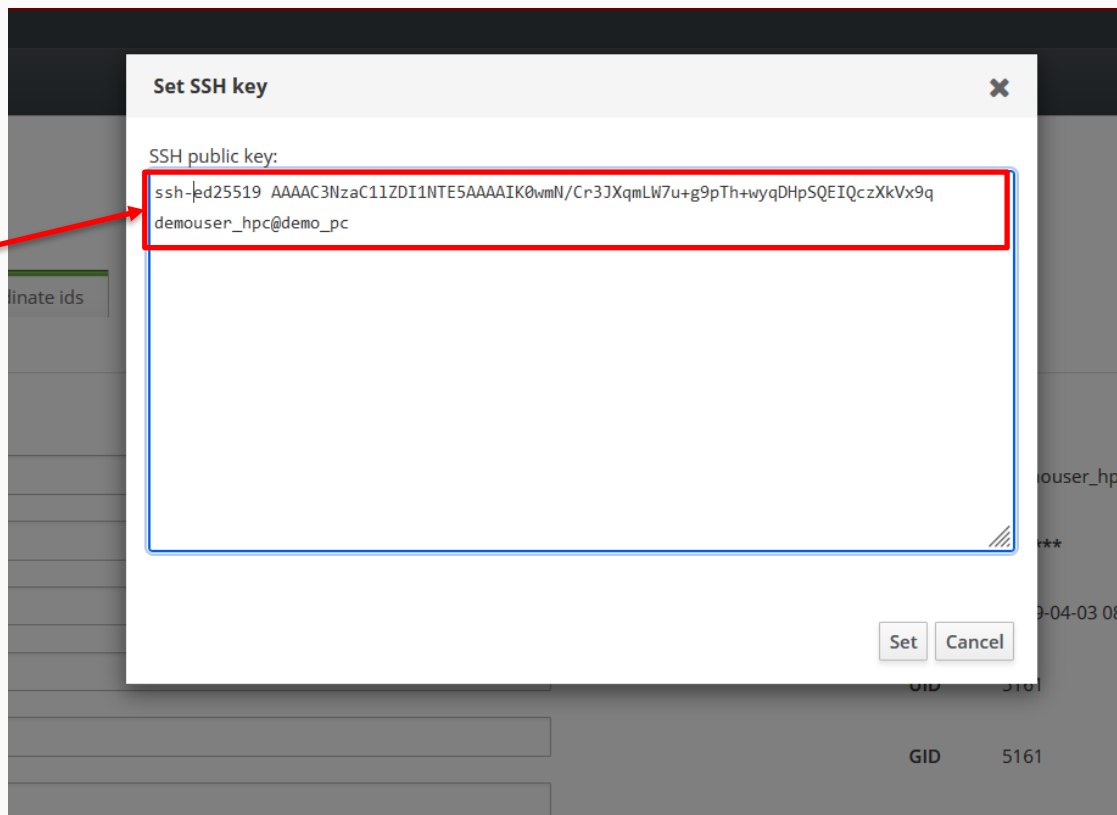
Home directory /home/demouser\_hpc

SSH public keys Add

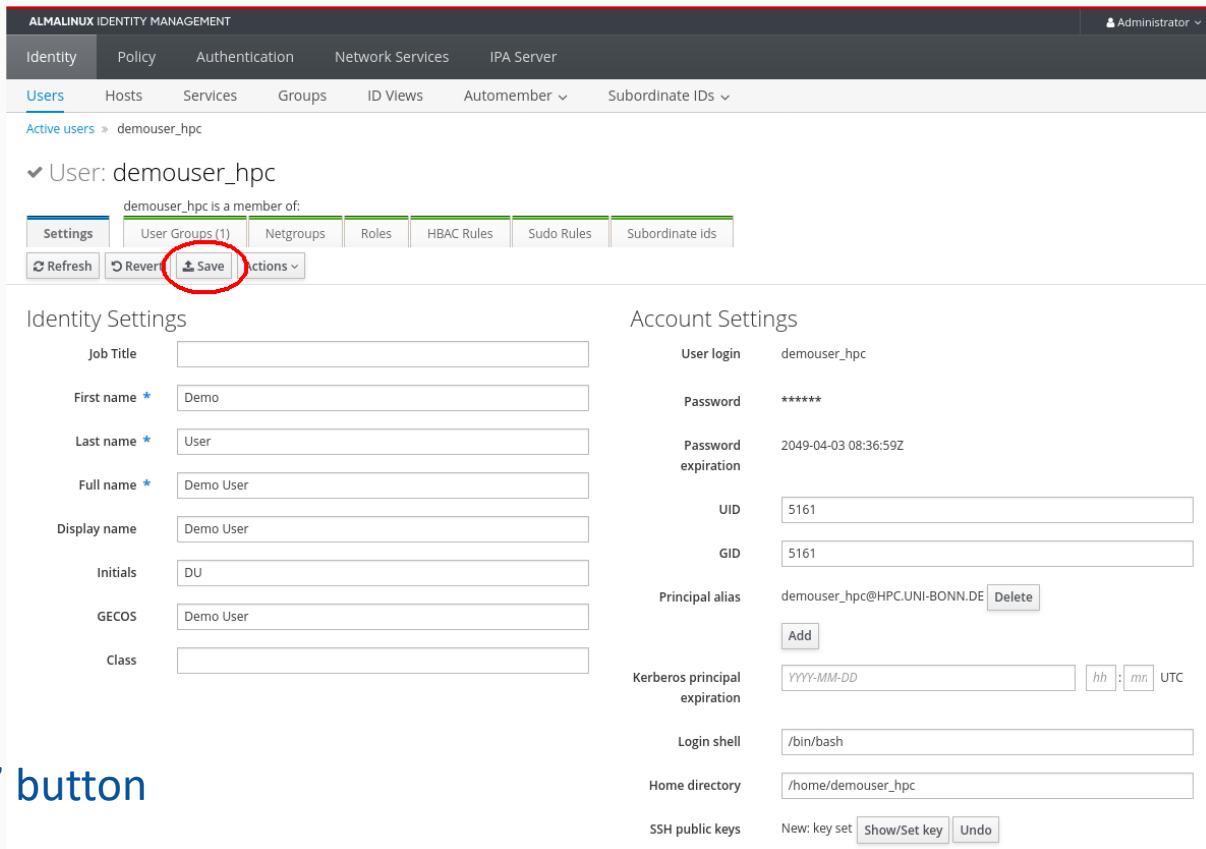
- Under "Account Settings" click the "Add" button next to "SSH public keys"

# UPLOAD YOUR PUBLIC KEY (3/4)

1. Open your public key file (\*.pub)
2. Copy its contents into the FreeIPA
3. Then click the "Set" button



# UPLOAD YOUR PUBLIC KEY (4/4)



ALMALINUX IDENTITY MANAGEMENT Administrator

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Add

Kerberos principal expiration  hh : mm UTC

Login shell

Home directory

SSH public keys New: key set Show/Set key Undo

→ Don't forget to click the "Save" button



# LOGIN ONTO MARVIN

- Open a terminal
  - Enter `ssh -i yourPrivateKeyFile`
- <Marvin username>@login03.marvin.hpc.uni-bonn.de (The GPU login node)
- You will be asked for the passphrase of your private key file
  - If your are still asked for your password to Marvin something went wrong
- The password will not work.

# USE THE NVIDIA TOOLKIT

- Open a connection to Marvin
- Load the NVHPC module: `module load NVHPC`
- Compile your code:
  - Fortran: `nvfortran`
  - C: `nvc`
  - C++: `nvc++`

# SCHEDULE A SLURM JOB

- Use the `sbatch` command to submit to send your job to the slurm queue
- Assuming that your job has been saved under `myjob.sh`
- You will send it as follow: `sbatch myjob.sh`
- Your slurm job (`myjob.sh`) should contain the following slurm parameters:

# SCHEDULE A SLURM JOB

```
#!/bin/bash
```

```
#SBATCH --ntasks=4
#SBATCH --nodes=1
#SBATCH --cpus-per-task=1
#SBATCH --job-name=myjobname
#SBATCH --time=0-05:00
#SBATCH --partition=mlgpu_debug
#SBATCH --output=myjobname.%A.out
#SBATCH --gres=gpu:1
#SBATCH --reservation=openmp_workshop2
#SBATCH --account=tmp_mattson_workshops
```

# THANK YOU FOR YOUR ATTENTION

[contact@hpc.uni-bonn.de](mailto:contact@hpc.uni-bonn.de)

<https://www.hpc.uni-bonn.de>