Setup client step-cli: Linux and Mac users

IMPORTANT: users with Ubuntu operating systems (but may happen also for other Linux distributions) should not run the command "sudo apt install step" because this will install a different software that will give errors when following the below instructions.

Configuration of the step client

To **configure *smallstep*** on your Linux system, you should run the following command in your local shell:

```
$ step ca bootstrap --ca-url=https://sshproxy.hpc.cineca.it --fingerprint 2ae1543202304d3f434bdc1a2c92eff2cd2b02110206ef06317e70c1c1735ecd


The root certificate has been saved in <path-to>/.step/certs/root_ca.crt.

The authority configuration has been saved in <path-to>/.step/config/defaults.json.
```

ATTENTION: if you have a previous version of *smallstep* installed and configured on your system, the client will ask if you want to **overwrite the existing configuration**. To save a copy of a previous version of *smallstep* installed and configured on your system, make a copy of the directory *.step.*

Activation of the ssh-agent

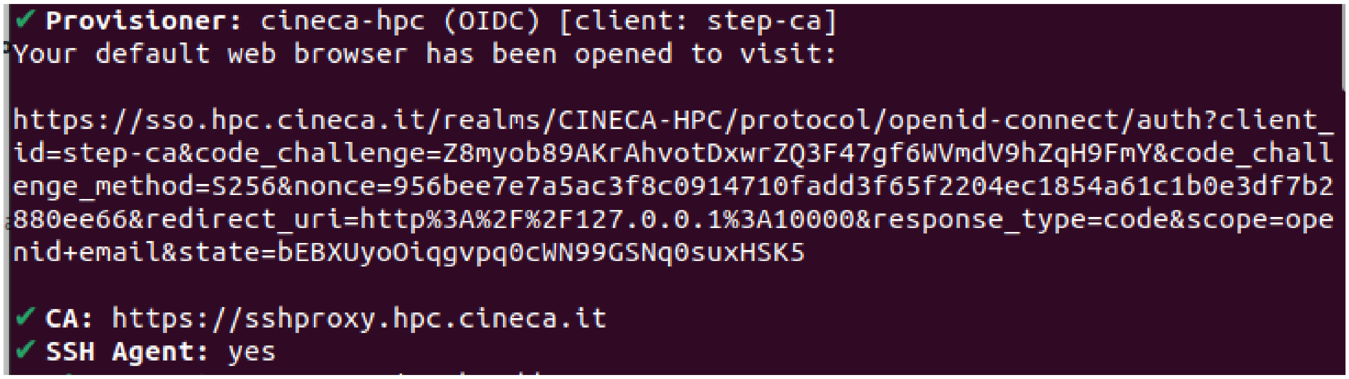
To use the certificate, the user should **activate the ssh-agent** running:

```
$ eval $(ssh-agent)
```

At this point, to **obtain the certificate** run:

```
$ step ssh login '<user-email>' --provisioner cineca-hpc
```

the command will report on the shell an output like the following one:

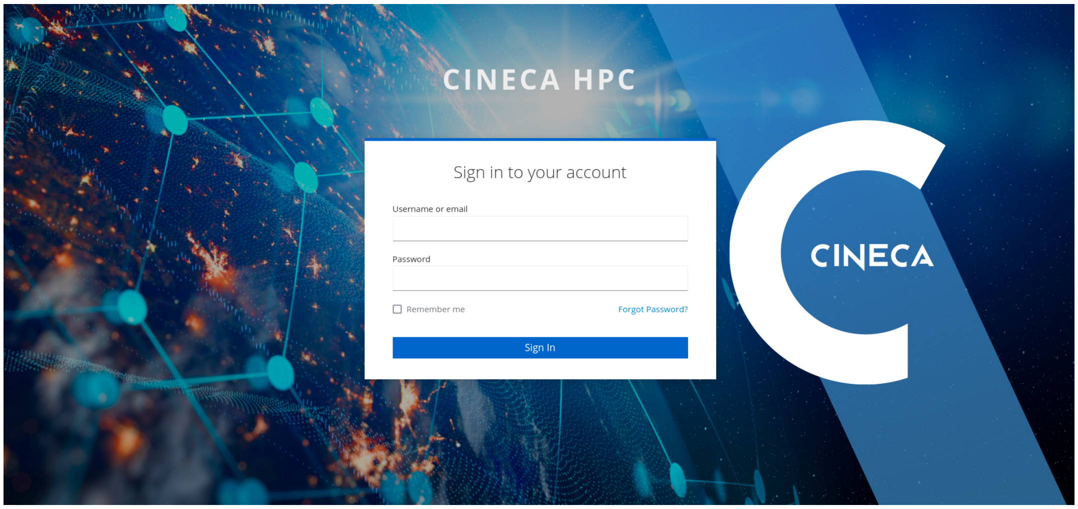


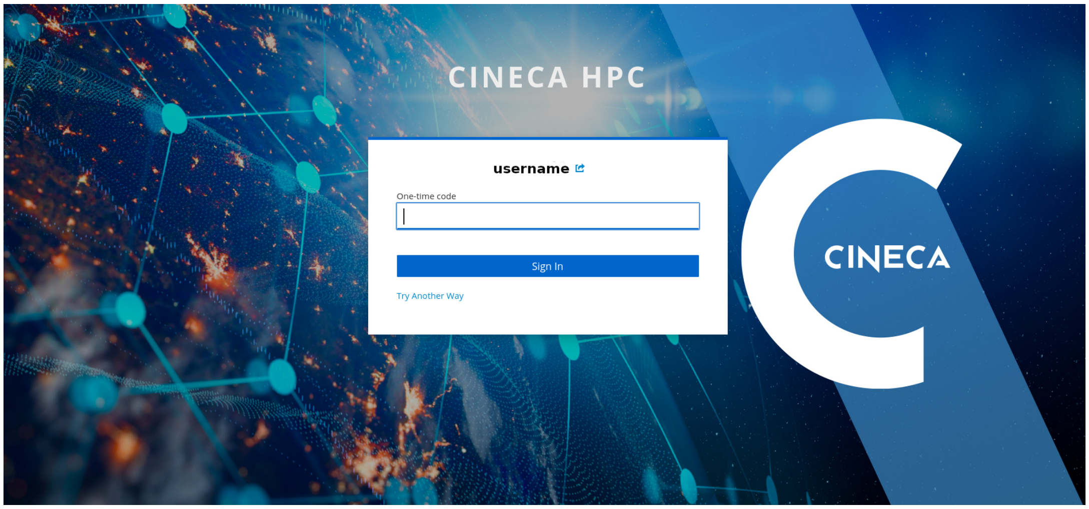
```
✔ Provisioner: cineca-hpc (OIDC) [client: step-ca]
Your default web browser has been opened to visit:

https://sso.hpc.cineca.it/realms/CINECA-HPC/protocol/openid-connect/auth?client_
id=step-ca&code_challenge=Z8myob89AKrAhvotDxwrZQ3F47gf6WVmdV9hZqH9FmY&code_chall
enge_method=S256&nonce=956bee7e7a5ac3f8c0914710fadd3f65f2204ec1854a61c1b0e3df7b2
880ee66&redirect_uri=http%3A%2F%2F127.0.0.1%3A10000&response_type=code&scope=ope
nid+email&state=bEBXUyoOiqgvpq0cWN99GSNq0suxHSK5

✔ CA: https://sshproxy.hpc.cineca.it
✔ SSH Agent: yes
```

Then the following page on keycloack will open automatically on the browser. The user has to put his/her cluster credentials (username and password) and push the button "Sign in". Then, keycloak will ask for the OTP code generated by the Authenticator (see Configure the OTP).





Once authenticated, you will see a **Success message on your browser** meaning that the certificate has been generated and it is available on your PC.

IMPORTANT: the temporary certificate is valid for 12 hours. If you reboot your PC the certificate is lost and you need to download a new one launching again the "step ssh login ..." command.

It is possible to **check for the presence of a valid certificate** both via ssh-agent and the step command as follow:

```
$ ssh-add -L


ecdsa-sha2-nistp256-cert-v01@openssh.com
AAAAKGVjZHNhLXNoYTItbmlzdHAyNTYtY2VydC12MDFAb3BlbnNzaC5jb20AAAAgYjJfSnpeTTNrMHB4Lm9yX3YjZWNxXyRxcHM9blRzU1gAAAAIb
mlzdHAyNTYAAABBBAJRZ11/PIo0VJknlFMDa5BIaJp/w0OWd95ueZbWlQ4uG92aSZ+K8aKgkyDiOGla3x7l+saVT
/pIR+x3zBgvwgkLrbmYufPPVAAAAA
EAAAAUbS5tb3Jnb3R0aUBjaW5lY2EuaXQAAAAMAAAACG1tb3Jnb3R0AAAAAGILhpwAAAAAYgv3HAAAAAAAAACCAAAAFXBlcm1pdC1YMTEtZm
9yd2FyZGluZwAAAAAAAAAXcGVybWl0LWFnZW50LWZvcndhcmRpbmcAAAAAAAAAFnBlcm1pdC1wb3J0LWZvcndhcmRpbmcAAAAAAAAACnBlcm
1pdC1wdHkAAAAAAAAADnBlcm1pdC11c2VyLXJjAAAAAAAAAAAAAAABoA
AAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAAIbmlzdHAyNTYAAABBBAE3K7f5piMLWXDm9c6kd+VAJmBClKXkQ9i
/8E1UA9DcBFofX+r9JyBOULZSDkGtr84oqpNX0fa5DMCar3AQp1YAAABkAAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAABJAAAAIDg33ohPQ6BgzV1A
TGsSVSbRwrbYa8LprV2EEHk4mMgWAAAAIQCkd8QKYS+zbeyD1nXeuRAXVWJXJeoxMScgDVx2
qqu2Mg== <user-email>


$ step ssh list


256 SHA256:x+QEW8xmDBtRjVRtAukc7v7zKEHef/9joyFP9n/gZtk <user_email> (ECDSA-CERT)
```

To **examine the validity** of the certificate run:

```
$ step ssh list --raw  '<user_email>' | step ssh inspect


-:
        Type: ecdsa-sha2-nistp256-cert-v01@openssh.com user certificate
        Public key: ECDSA-CERT SHA256:TdhIpD5KFZD37roGYcDstS7180TruOnNgNJeS8eJJPk
        Signing CA: ECDSA SHA256:e0ZF6AnnUzi0g7Db9nOaXxkEjRq9D6Ka4tV04XqiIgM
        Key ID: "<user_email>"
        Serial: 841532770994081620
        Valid: from 2022-02-15T11:55:24 to 2022-02-15T19:55:24
        Principals:
                <username>
        Critical Options: (none)
        Extensions:
                permit-X11-forwarding
                permit-port-forwarding
                permit-pty
```

An alternative mode of creation of the step certificate

If it is necessary to avoid using ssh-sgent you can download your certificate launching the following command in any path of your local PC (we suggest in ~/.ssh folder):

```
step ssh certificate 'user-email' --provisioner cineca-hpc my_key
```

You can change my_key with the name you prefer.

A password to encrypt the private key is requested on the shell command line

```
"Please enter the password to encrypt the private key:"
```

Please, choose a password and memorize it. It will be requested at login.

Three keys will be generated in the path where you executed the above command.

To use the keys to access the cluster you can place the three files in the ~/.ssh folder, or you have to specify -i <path-to-keys> and enter as passphrase the password selected in the previous step:

```
$ ssh -i /path/my_key <username>@login.<cluster>.cineca.it

"Enter passphrase for key 'my_key''
```

Remember that also these keys have an **availability of 12 hours**.