

Remote Access to your Workstation

For security reasons, access to your Lorentz workstation is only possible within the Lorentz Institute intranet. Remote access can occur either securing your connection via an intermediate step called *SSH tunneling* (AKA *port forwarding*), through the [Lorentz Institute VPN service](#) or via the [Lorentz Institute Remote Workspace](#).

Following are some examples that demonstrate the concept of SSH tunnelling. For alternative methods of connection, please see the relevant documentation. SSH access to our servers requires you to set up [two-factor authentication](#) (2FA) on your account for security reasons.



The examples below have been tested with OpenSSH v7.3+.

SSH tunneling

By means of an SSH tunnel you can transport any arbitrary data over an encrypted SSH connection. Members of the Lorentz Institute can use this technique to gain remote shell access to their workstation across our firewall which would prevent access otherwise.

How does it work?

You must have an ssh client installed on your personal device – e.g. laptop, PC – in order to establish a <i>tunnelled</i> connection.
The Lorentz Institute has a dedicated server (SSH server) ready to listen to any (authenticated) client connections.
Once a client-server connection is established, a given application contacts the SSH client on a chosen port on which the client is listening.
The SSH client in turns forwards all encrypted application data to the server which finally communicates with the actual application server.

For remote ssh connections to your IL workstation, the steps above can be summarised into the following. Establish an ssh client-server to our SSH server and instruct your SSH client to forward any new SSH-connection data that will be sent to an arbitrary port number to go via our SSH server. The server will then relay this information to the SSH server running on your workstation.

Example 1

Establish an SSH connection to `workstation.lorentz.leidenuniv.nl` via our SSH server `styx.lorentz.leidenuniv.nl`

```
ssh -o ProxyCommand="ssh -W %h:%p username@styx.lorentz.leidenuniv.nl"
username@workstation.lorentz.leidenuniv.nl
```



For connections that will use the DISPLAY environment variable (think of any application with a GUI), add the option -X to your SSH commands.

Example 2

As in *Example 1* but this time using your client ssh configuration file usually located at `$HOME/.ssh/config` on GNU/Linux systems

```
# cat $HOME/.ssh/config
Host workstation.lorentz.leidenuniv.nl workstation
    ProxyCommand /usr/bin/ssh -W %h:%p styx.lorentz.leidenuniv.nl
    User username
```

Once this configuration is in place, a simple `ssh workstation` will get you to your workstation.

Example 3

Establish a web browser connection to a jupyter notebook on `workstation.lorentz.leidenuniv.nl` port YYYY.

Configure your local `$HOME/.ssh/config` as below

```
Host styx
    HostName styx.lorentz.leidenuniv.nl
    LocalForward YYYY localhost:YYYY

Host workstation
    HostName workstation.lorentz.leidenuniv.nl
    ProxyJump styx
    LocalForward YYYY localhost:YYYY
```

Browse to <http://localhost:YYYY>.

Example 4

Establish a web browser connection to a Jupyter Notebook session running on node `marisXX` when outside the IL intranet ¹⁾

```
Host lorentz
    HostName ssh.lorentz.leidenuniv.nl
    User username

Host maris
    HostName xmaris.lorentz.leidenuniv.nl
```

```
ProxyJump lorentz
User username
```

```
Host marisXX
  HostName marisXX.lorentz.leidenuniv.nl
  ProxyJump maris
  User username
  LocalForward YYYY localhost:YYYY
```

Browse to <http://localhost:YYYY>.

SSH access/tunnelling behind firewalls

There are situations in which SSH could be forbidden by firewall settings of the internet service provider. Think of countries which limit freedom of speech for example. Luckily Lorentz Institute provides its members with a special access server to overcome these restrictions.

In a nutshell, IL offers SSL-wrapped SSH access, that is it conceals SSH connections using the SSL protocol which is the protocol used by the world wide web to serve https connections.

1)

This method will only work if you have a slurm-controlled running jupyter session on marisXX. See [xmaris](#).

You are strongly encouraged to use [xmaris OOD](#) facilities nonetheless.

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