Command Line 2 : Server Communication

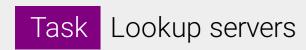
Goals

- 1. Connect to a server
- 2. Set up a Python environment on the server

Programme

- Basics of ssh
- Why Servers?
- Tutorial
 - The SSH Command
 - Security & Key authentication
 - SSH Connection
 - o Install conda

Why servers?



Advantages Disadvantages ...

Tutorial

SSH

The SSH package connects to remote servers using:

- a remote server address [host]
- a remote username [client]
- a generated key file

Try Get the ssh manual

Example commands

```
ssh client@host
ssh ben@uantwerpen.be

ssh -l client
host

ssh -i keygen_file \
    -l client \
    host
```

Security & Key authentication

ssh-keygen command

ssh-keygen -t rsa

- SSH keys are used to protect servers
- They are harder to predict than passwords
- Once saved, they are quicker to use
- They need to be inserted by server admin

Assemble SSH Command

User name

```
ssh -l client host
```

Authentication key

The key that you generated needs to be added to command

```
ssh -i ~/location/of/key_gen_file \
    -l client \
    host
```

Server Jumping

In some instance you will need to 'jump' from one server to another

```
ssh -J another_client@another_host \
   -i ~/location/of/key_gen_file \
   -l client \
   host
```

Connection

Learning Server Details

- Server Address: 10.118.157.177
- Jump Server client : student
- Jump server : srv2.flw.uantwerpen.be

Try Connect to the learning server

- open a terminal
- construct the ssh command
- check key, client name and host address

Example command

```
ssh -J another_client@another_host \
-i ~/location/of/key_gen_file \
-l client \
host
```

Getting to work

Downloading conda

wget https://repo.anaconda.com/archive/Anaconda3-2020.07-Linux-x86_64.sh

Try Follow the online instruction to install conda

Start a jupyter notebook

jupyter notebook

Try Connect to the jupyter notebook

Why doesn't the jupyter notebook work?

linking SSH ports

The SSH command can also link together ports using the -L flag.

Link local and remote ports

```
ssh -L port:localhost:port

ssh -L port:localhost:port \
    -l client \
    host
```

Example command

```
ssh -J another_client@another_host \
    -i ~/location/of/key_gen_file \
    -l client \
    -L port:localhost:port \
    host
```

Try: Add port linking to the above ssh command and connect to the jupyter notebook.

Extra: Saving Details in an SSH config file

The above commands can get quite long, so ssh offers a config file.

Create a config file locally

touch ~/.ssh/config

This simplifies connection

ssh learning_server

config file

```
Host jump_server
   HostName srv2.flw.uantwerpen.be
   User student
   IdentityFile ~/.ssh/id_rsa

Host learning_server
   HostName host_address
   User user_name
   IdentityFile ~/.ssh/id_rsa
   ProxyCommand ssh student@srv2_jump \
        -W %h:%p
```

Resources

- Tutorial on ssh keys
- SSH Config Tutorial
- <u>Documentation for conda install</u>
- <u>Documentation for generating keys on Windows</u>
- Open SSH Manual