

# Connecting to Cranfield HPC systems from off-campus using a Linux desktop

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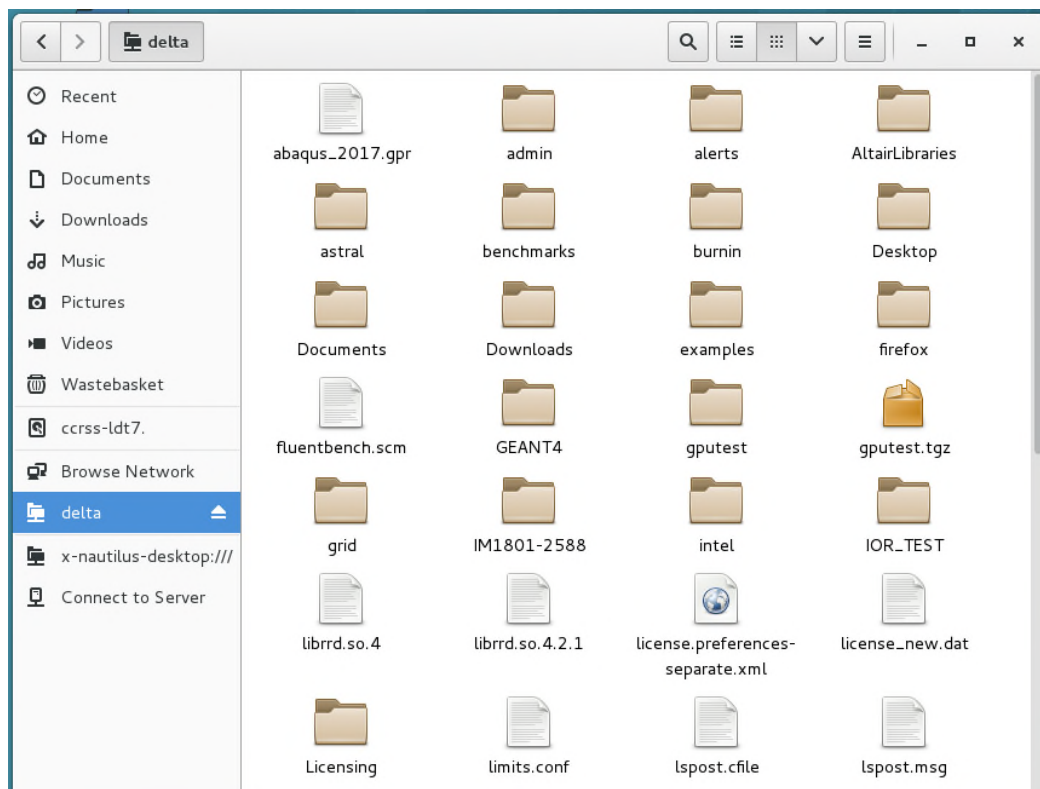
## Prerequisites

1. A working Linux Installation (this example uses Ubuntu)
2. Connection to the Internet

## Objectives

In order to be able to connect to the Linux HPC systems and your Linux desktop machine when off-campus, you will need to set up an SSH tunnel. This is because the HPC machines are not directly accessible from the Internet.

The tunnel configuration will only need to be performed once – unless you delete the contents of your Linux desktop's home folder.

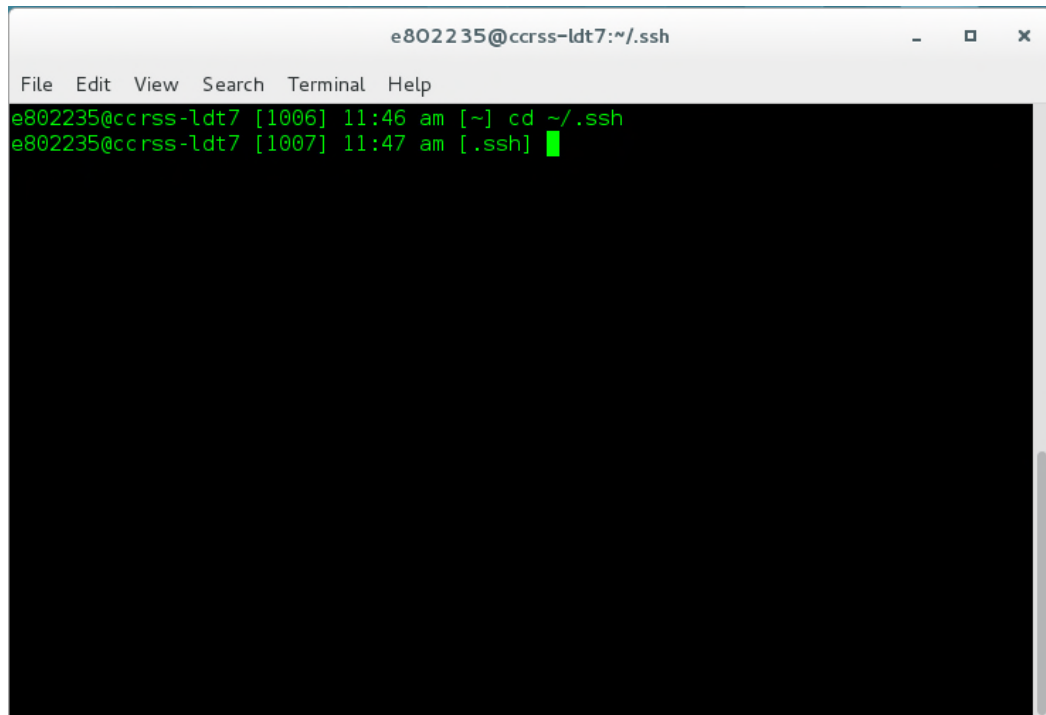


Example of Delta home folder once connected

## Configuring the tunnel

1. Open a Linux terminal window and change directory into the .ssh folder in your home directory:

```
cd ~/.ssh
```



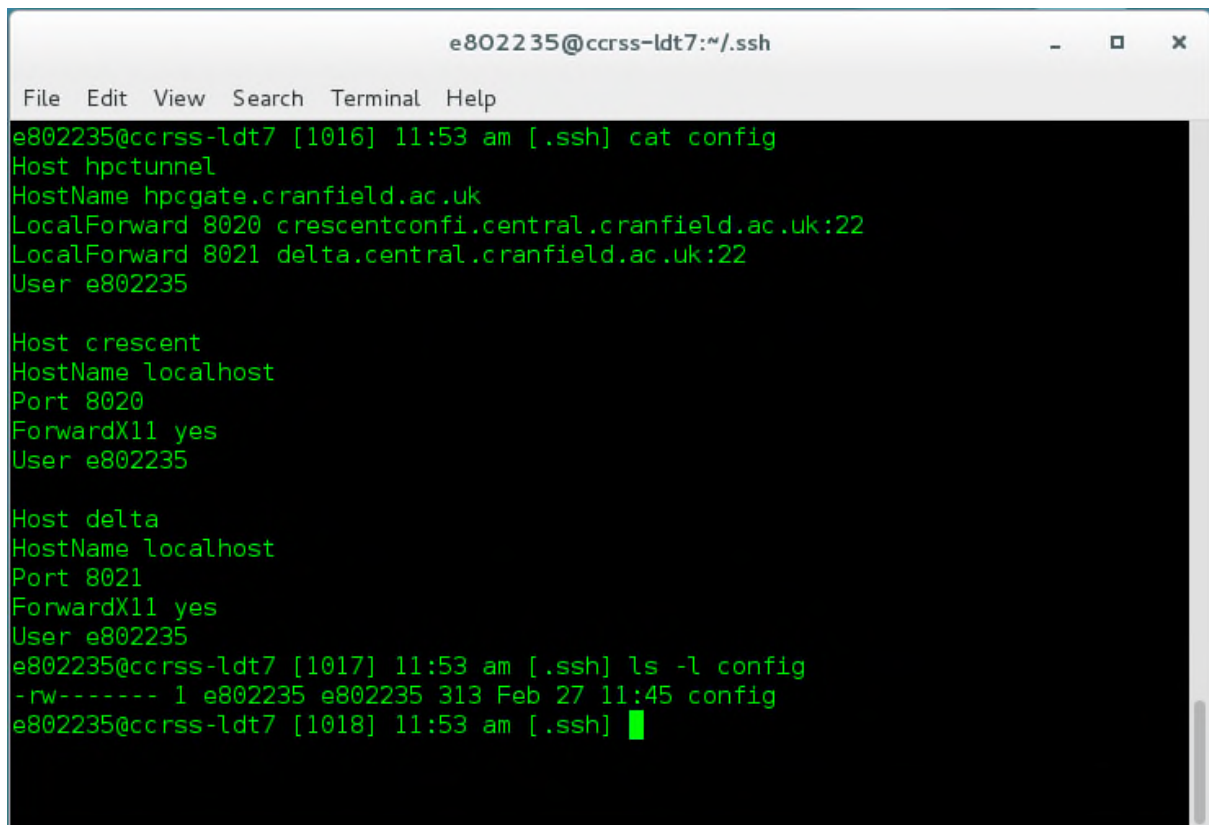
2. Use your favourite editor to create a file named “config” in this folder, and place the following text in this file (ensure you change the items below in **red** to your own username!):

```
Host hpctunnel
HostName hpcgate.cranfield.ac.uk
LocalForward 8020 crescent.central.cranfield.ac.uk:22
LocalForward 8021 delta.central.cranfield.ac.uk:22
User your-username
```

```
Host crescent
HostName localhost
Port 8020
ForwardX11 yes
User your-username
```

```
Host delta
HostName localhost
Port 8021
ForwardX11 yes
User your-username
```

The “config” file should look as follows (in this example my username is e802235):

A screenshot of a terminal window titled 'e802235@ccrсс-ldt7:~/ssh'. The window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The terminal output shows the user running 'cat config' and displaying the contents of the .ssh/config file. The file contains three host entries: 'hpctunnel', 'crescent', and 'delta'. Each entry specifies the host name, local forward ports, and the user 'e802235'. After displaying the file, the user runs 'ls -l config', showing the file's permissions as '-rw-----' and its location as '1 e802235 e802235 313 Feb 27 11:45 config'. The terminal ends with a prompt 'e802235@ccrсс-ldt7 [1018] 11:53 am [ssh]'.

```
e802235@ccrсс-ldt7 [1016] 11:53 am [ssh] cat config
Host hpctunnel
HostName hpcgate.cranfield.ac.uk
LocalForward 8020 crescentconfi.central.cranfield.ac.uk:22
LocalForward 8021 delta.central.cranfield.ac.uk:22
User e802235

Host crescent
HostName localhost
Port 8020
ForwardX11 yes
User e802235

Host delta
HostName localhost
Port 8021
ForwardX11 yes
User e802235
e802235@ccrсс-ldt7 [1017] 11:53 am [ssh] ls -l config
-rw----- 1 e802235 e802235 313 Feb 27 11:45 config
e802235@ccrсс-ldt7 [1018] 11:53 am [ssh]
```

Some Linux versions require that the permissions on the config file are set so that only you can access it. If the permissions are not set as above then set the permissions –

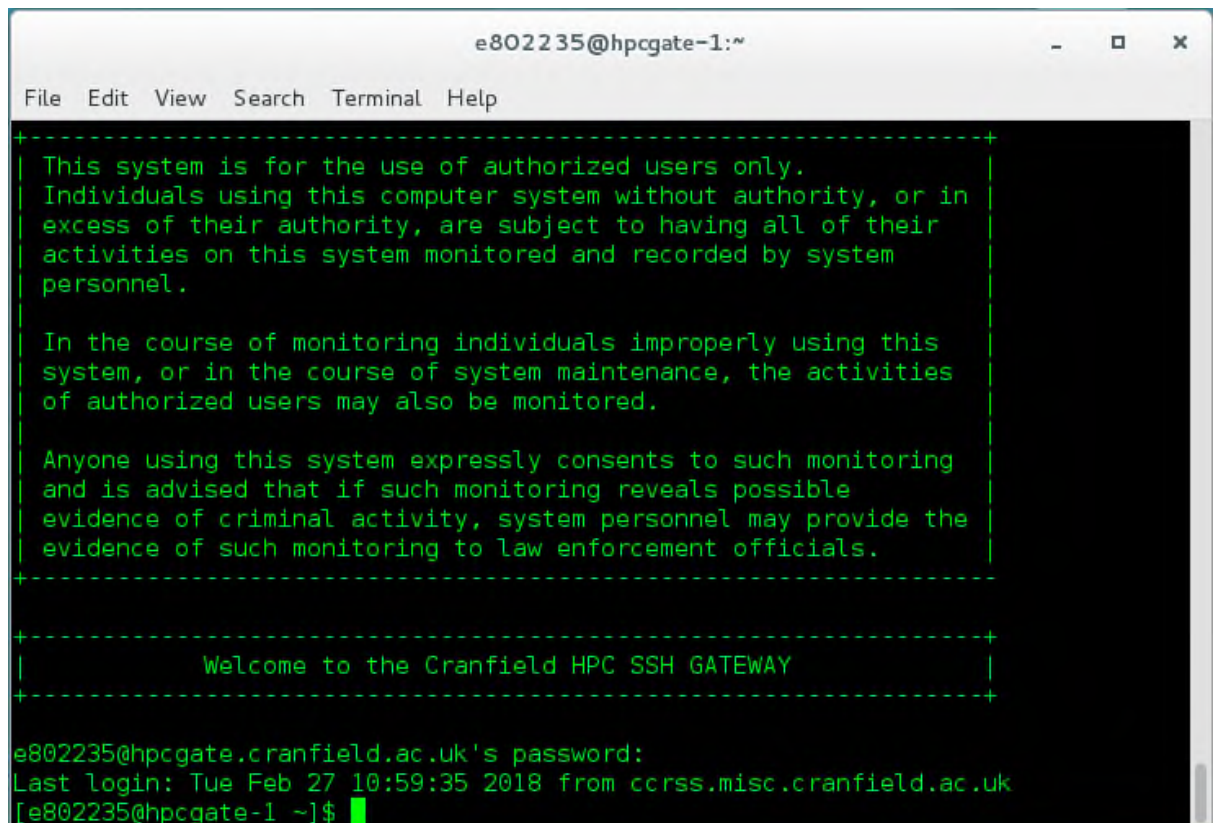
`chmod u=rw,go= config`

## Opening the tunnel

Before you can start using the HPC machines remotely, you need to open the tunnel you configured in the previous section.

1. Open a Linux terminal window and SSH to the tunnel:

```
ssh hpctunnel
```



```
e802235@hpcgate-1:~  
File Edit View Search Terminal Help  
-----  
This system is for the use of authorized users only.  
Individuals using this computer system without authority, or in  
excess of their authority, are subject to having all of their  
activities on this system monitored and recorded by system  
personnel.  
  
In the course of monitoring individuals improperly using this  
system, or in the course of system maintenance, the activities  
of authorized users may also be monitored.  
  
Anyone using this system expressly consents to such monitoring  
and is advised that if such monitoring reveals possible  
evidence of criminal activity, system personnel may provide the  
evidence of such monitoring to law enforcement officials.  
-----  
Welcome to the Cranfield HPC SSH GATEWAY  
-----  
e802235@hpcgate.cranfield.ac.uk's password:  
Last login: Tue Feb 27 10:59:35 2018 from ccrss.misc.cranfield.ac.uk  
[e802235@hpcgate-1 ~]$
```

Enter your password when prompted.

Once logged in, the SSH tunnel is in place and you may minimise this terminal window (do not close the window or the connection will be broken).

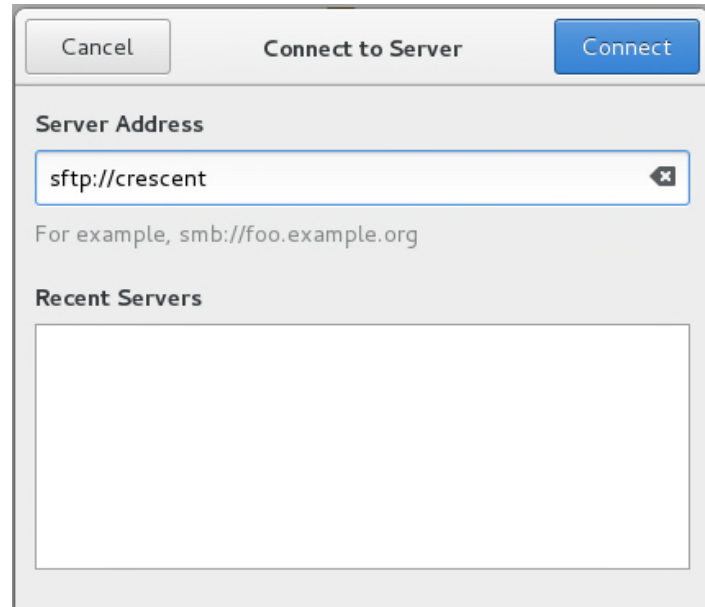
## Command line access

If you simply need command line access to Crescent or Delta you can simply use the tunnel created in the previous step and type either “Crescent or “Delta” at the command prompt to access the appropriate machine (example below for Crescent):

[illegible]

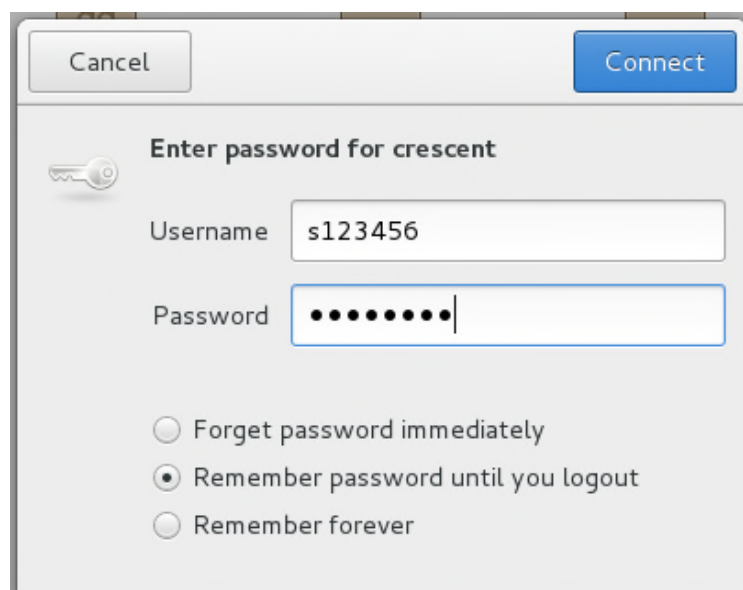
## GUI File Access

If you need to access your Crescent or Delta files from the Linux desktop, you need first to have the HPC tunnel running – there is no need to log in to Crescent or Delta from the tunnel.



Assuming you have the tunnel running you can access your Crescent (or Delta) files as follows (from the Linux desktop Connect to Server option):

You will be prompted for your University username and password:



Once authenticated you will see your Crescent (or Delta) home folder.