

# How to Mount HPC on your Local (Linux) Machine

Aliya Deri

September 4, 2014

## 1 Why?

When working on a remote cluster like HPC, many think they must give up their favorite smart IDE (e.g., Sublime, PyCharm, Eclipse) and instead use a comparatively dumb terminal editor (e.g., vim, emacs).

**This is false!**

Instead, you can mount your remote system on your local machine. This allows you to view your files through a normal GUI (e.g., Ubuntu's Nautilus), as well as use your favorite editor.

Note: your files are mounted, not copied over. This has a few benefits: For example, any huge files you've mounted will never take up space on your laptop! However, if the cluster is slow, you may sometimes notice lag in your editing.

## 2 How?

1. On your local machine, install the sshfs package. You can find a link to the package at the following link: <https://help.ubuntu.com/community/SSHFS>, directly under Installation and Setup.
2. Also on your local machine, add yourself to the fuse group.

```
sudo gpasswd -a $USER fuse
```

You can find out your USER variable by typing

```
whoami
```

After this step, you may need to restart your terminal or shell to register the change.

3. Make a folder where you want to mount your files. I'll call mine hpc.

```
mkdir ~\hpc
```

4. Mount the folder.

```
sshfs -o idmap=user $HPC_USER@hpclogin2.usc.edu:$HPC_DIR ~/hpc
```

HPC\_USER is, obviously, your HPC user name. HPC\_DIR specifies the exact path to the folder in HPC that you want mounted. (Often, your home directory in HPC is not the directory where you usually work.) For example, user Bob might use:

```
sshfs -o idmap=user bob@hpclogin2.usc.edu:$/auto/nlg-05/bob ~/hpc
```

You should be prompted for your password.

5. Sanity check: Did it work? Try it out!

On your local terminal, navigate to ~/hpc. Does it show the files on HPC? Try creating a test file, then ssh into HPC and check if it actually appeared. Delete the file over ssh, and it will disappear in ~/hpc. Open a file browser and drag some files from ~/hpc to your desktop.

Even more important: Try running an IDE on the HPC files from ~/hpc.

6. To unmount ~/hpc, simply run:

```
fusermount -u ~/hpc
```

7. So you don't have to remember all those commands, let's alias this in your ~/.bashrc.

```
vi ~/.bashrc
```

Go to the end and add the following, all in one line:

```
alias hpcmount='fusermount -u ~/hpc ;  
sshfs -o idmap=user $HPC_USER@hpc-login2.usc.edu:$HPC_DIR ~/hpc ; '
```

8. Close and reopen your terminal. Type hpcmount, and you will automatically unmount ~/hpc (in case it was already mounted) and remount it. Congrats!

### 3 Some more notes

- When you run a command from ~/hpc (your mounted folder), it will run on your local machine. That is, you cannot submit jobs to HPC from ~/hpc; if you have Python 2.7 running on your machine and Python 2.6 on HPC, running a script from ~/hpc will run Python 2.7.

However, running major jobs on your ~/hpc **will** waste HPC CPU and slow everyone down! It's a good idea to open another terminal tab, SSH into HPC, and run and submit jobs from the terminal there.

In short: Your mounted folder is for editing, not for running code!

- At some point you might turn off your computer without actually unmounting ~/hpc. If you leave an IDE open, it might get confused and try to save the open files in the (now empty) ~/hpc folder. The next time you run hpcmount, you will get a "nonempty" error.

Assuming you saved your files, you can just delete the files in `~/hpc` (or even `~/hpc` itself and `mkdir` again). But do doublecheck what you're deleting—if somehow you delete everything in `~/hpc` while it's mounted, you will lose everything on HPC as well!

- It's useful to also alias your HPC SSHing as well. To use `hpcssh` from terminal, add this to your `~/.bashrc`:

```
alias hpcssh='ssh $HPC_USER@hpc-login2.usc.edu ; '
```

- If you're having trouble, you can try contacting Aliya at `aderi@isi.edu`. You can also find more detailed and technical descriptions by starting here: <https://help.ubuntu.com/community/SSHFS>.