Working Remotely
&
Synchronously

(How to work when it snows...)

Michael Hull
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Motivation: Working Remotely

Remote access to:

- Dice/afs filesystem
- Internal Resources, eg internal websites, svn
- Access to journals

Why:

- Working in external lab (eg wet lab)
- Conferences
- Working from home

- Self-managed machine
- Laptop

Motivation: Keeping things Synchronised

When using multiple computers:

- How do you ensure you are working on the latest version of files?
- Copying settings between computers.
- Form of backup

Aside: Dice vs Self Managed

You have the option of running either DICE, or converting to self-managed.

Cons:
printing, afs, backups, support
Pros:
control over software, diskspace

If you convert to self-manaaged, you will need these techniques to access your afs-filespace.

Remote access

Connecting from outside:

- SSH
- VPN
- AFS
-

Connecting internally:

- Remote Desktop-ing with VNC

Secure-Shell: SSH

·SSH is a very powerful (commandline) tool.

·SSH gives you a 'terminal' to a remote machine, as if you were sitting in front of it.

ssh username@hostname

·Clients for Linux (usually built-in), Mac (built-in), Windows (Putty[1])

·The informatics ssh-login server is:

ssh.inf.ed.ac.uk

•But note that it does not respond to pings.

[1] Putty Available from: http://www.chiark.greenend.org.uk/~sgtatham/putty/

Informatics ssh

From outside:
ssh s0897465@ssh.inf.ed.ac.uk

Logging into compute servers (from inside the network)

Informatics Student Compute Server:
ssh s0897465@student.compute

DTC Server:
ssh s0897465@jupiter1

X Forwarding

·The switch -X enables 'X-forwarding'

·This allows you to run graphical program on another computer, and have the gui forwarded to you computer.

ssh -X s0897465@jupiter1
gedit

[if -X does not work, often -Y will work. -Y is better, but not all servers support it.]

Copying Files

scp user@srchost:filename user@dsthost:filename

scp allows you to copy files from one computer to another.
srcHost: and dstHost: are optional if it is the local machine.

scp s0897465@ssh.inf.ed.ac.uk:myFile.pdf .

Aliases

- Avoid having to specify a username & long hostname each time: create a ~/.ssh/config

~/.ssh/config:

- ---

```
host bristol
user ktls0867
hostname someserver.bristol.ac.uk
```

- $ssh bristol

Public Key Authorisation

To avoid having to type in a password in: distribute your public key. [1]

- Keys are a string of text:

ssh-rsaAAAAB3NzaC1yc2EAAAABIwAAAQEAp1DpHt5RVQujamq3HG15H3WgWJE3xZ9qcUrWgrv/Mz8iXyvVTE6Lkw8Tz58x
B0FA3Das3doZIijqTLCzcHXDRnRFlrd8E87XfsEYsSnM7wAQO6VizgDyrDt/vdxhcrehEey5ZC11uCWpFMbu7F/kOD8KfboxUQODghr7rfFpW/zjXQ
Cw9cXk+6L11a85mhlC6I+nrhZRSkpSw6tIvXNn5zoPP1G2+1mzbDMwNx4i/KiSyjFdMfTpEPpSacbHa9TE7JUNnQ7HjtHUqqwbBwqarCgSyodPSL
RDiDb2r9RAISfE0S8VW9EjToo3t1foWEHvsZmLc2tqA5vcA6zmGejyGQ== michael@michael-ubuntu-macbook

You need to create a public/private key pair *on the machine you are logging in **from**:*
(Usually stored in *~/.ssh/id_rsa* and *~/.ssh/id_rsa.pub*)

- If they do not exist, they can be created with *ssh-keygen.*

- Copy the contents of *~/.ssh/id_rsa.pub* into *~/.ssh/authorized_keys* on the machine you want to log **into**.

See also **ssh-copy-id**

(This works for logging into informatics, but see[2])

[1] http://www.eng.cam.ac.uk/help/jpmg/ssh/authorized_keys_howto.html
[2] https://wiki.inf.ed.ac.uk/DICE/AFSProblemsSolutions

Mounting filesystems over ssh

It is possible to access your filespace over ssh, as if it were a directory:

Linux: SSHFS
(Gnome: built into GUI)
MAC: macfuse
Windows: winscp

Persistent Remote Jobs

nice should be a prefix all your jobs. eg. “nice matlab”

screen effectively 'dettaches' the shell from the terminal, which allows you to log in, start jobs, log out, log back in and re-open the shell that you started the jobs in.

nohup allows you to start processes, which will continue to run even when the shell session closes.

(Note:problems with AFS for anything longer than 18hrs)

SSH Port Forwarding

Route your internet traffic over another computer, i.e. browse the internet as if you are using that computer.

1: Configure firefox to use host: localhosts, port:7777 as the SOCKS(5) proxy (leave the others blank). [Preferences->Advanced->Network-> Settings->Manual Proxy]

2: Setup the port-forwarding:

ssh -D 7777 username@server

This will let you read journals as if you are inside the uni network (Also possible to do with PUTTY)

http://www.devdaily.com/unix/edu/putty-ssh-tunnel-firefox-socks-proxy/1-putty-ssh-tunnel-introduction.shtml

VPN

Make a connection to the informatics network from outside, so it appears that you are connected internally.

Clients for Windows,Linux,Mac,

Documentation:
http://www.inf.ed.ac.uk/systems/network/OpenVPN/

** Be aware that with a naïve configuration – ALL your traffic will be routed through the university network!! **

Mounting AFS

It should be possible to connect to your afs filespace from anywhere

Instructions for Linux, Mac, Windows:

https://wiki.inf.ed.ac.uk/DICE/OpenAFSPilot
https://wiki.inf.ed.ac.uk/DICE/AFSInstallationNotes

AFS Credential Issues

By default, AFS requires that a password is entered every 18 hours to allow processes to continue using it.

This means that simulations/processes/daemons running longer than 18hrs will be unable to access the filesystem, and may/will crash

There are ways around this...

VNC

It is possible to setup remote desktop-ing using VNC :

The commands to set this up are here:
https://wiki.inf.ed.ac.uk/DocsByUsers/RemoteWorking

Note 1: You may need to ssh- into the machine with the VNC on it, and issue a 'renc' command (the last paragraph), before being able to be able to log in.
Note 2: processes using this machine may have problems with AFS credentials.

If you just need to access papers...

You can configure your browser to use a proxy that will make all the journal and university servers to think that you are connecting from a university computer.

Config file:
http://wwwcache.ed.ac.uk/config/proxy-config.pac

Synchronising Data

Problems:

· Using many computers (different OSes, DICE and non-DICE)

· Sharing files with collaborators (regular basis) and other people (one off)

· Seamless backing up of your files.

· Getting big files from other people over the internet.

Dropbox

· Runs on Windows, Mac and Linux (including DICE)
· Uploads your files to the cloud in the background
· Maintains 30 day history (revisions of files and undelete)
· Allows to share a folder between users.
· Allows to create a web link to any of your files (which you can use to share with others)
· Thanks to AirDropper allows you to request files from people (even big ones)

Dropbox

Limitations:

- Free version is limited to 2Gb, but if you register using this link you get an extra 250Mb:
https://www.dropbox.com/referrals/NTQxMjk1OTk?src=global

- It is a bit tricky to set it up on a DICE machine, but we have figured it out:
https://www.wiki.ed.ac.uk/display/intrescomp/How+to+install+Dropbox+on+DICE

Xmarks/LastPass
WebBrowser plugins to synchronise your bookmarks/logins across computers.

(Distributed) Version Control
To be covered. Services such as github and bitbucket offer space and excellent Uis. (Github repositories are public)

Rsync/Unison
Allow you to synchronise the changes in 2 directories on different machines.

Gmail
Can be configured to fetch your sms email, and send e-mails originating from your account. Accessible everywhere, v.fast searching,

VNC OLD

S1: Connect to the host which will act as the server over ssh.
ssh s0897465@student.compute
S2: Setup your VNC password
vncpasswd
S3: Launch the VNC Server:
vncserver

“New 'charlotte.inf.ed.ac.uk:1 (s0897465)' desktop is charlotte.inf.ed.ac.uk:1

S4: Log out of server (vnc server will still be running)

C1: Connect to the server:
vncviewer student.compute:1

Warning, this is not secure, it should only be used on trusted networks (e.g. within informatics). If you are worried about security, this can be tunneled over ssh. See for example:
http://www.cl.cam.ac.uk/research/dtg/attarchive/vnc/sshvnc.html