

SSH FileSystem

- there is a filesystem client based on the SSH File Transfer Protocol
- advantages
 - since most SSH servers already support this protocol it is very easy to set up: i.e. on the server side there's nothing to do
 - on the client side mounting the filesystem is as easy as logging into the server with ssh
- features:
 - implemented in userspace (although there is a kernel implementation if required)
 - multithreaded: more than one request can be on it's way to the server
 - allows large reads (max 64k)
 - caches directory contents

How to mount a filesystem

- once sshfs is installed, running it is very simple:

```
$ mkdir mountpoint
$ sshfs hostname: mountpoint
```

Example of ssh filesystem

```
$ df -h .
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda3       57G  2.7G  51G   6% /home
$ mkdir foo
$ sshfs fred@mcgreg.comp.glam.ac.uk:/home/fred/Sandpit /h
Password:
$ df
Filesystem      1K-blocks      Used Available Use% M
/dev/sda1       9614116    2372668   6753076    26% /
udev            10240         52    10188     1% /
devshm         518260         0   518260     0% /
/dev/sda3      59020704   2816436  53206140     6% /
sshfs#fred@mcgreg.comp.glam.ac.uk:/home/fred/Sandpit
7999999992         0 7999999992     0% /

$ cd foo
$ ls
autopassword          MorlocSounds.tar
autopassword.tar.gz  MPlayer-1.0pre7t
build                 MPlayer-1.0pre7t
build-32              oa051
```

Example of ssh filesystem

```
$ cd ..
$ fusermount -u foo
$ df
Filesystem      1K-blocks      Used Available Use% M
/dev/sda1       9614116    2372668   6753076    26% /
udev            10240         52    10188     1% /
devshm         518260         0   518260     0% /
/dev/sda3      59020704   2816436  53206140     6% /
$
```

Summary of ssh

- ssh uses public/private key encryption
 - all usernames, passwords and data are encrypted
- can be used to tunnel any TCP port across the ssh port (22)
 - contents of this port is encrypted
 - can also tunnel X11 traffic across this port
 - ssh has a basic ftp client (`sftp`)
- sshfs exists and can be installed (client side on GNU/Linux, MacOS, FreeBSD)
 - no server side additions are needed

rsync

- a fast, versatile, remote (and local) file-copying tool
 - it computes the differences between the various files and only transmits these
 - thus minimising the network throughput required
 - uses the ssh protocol
- ```
$ rsync -t *.c foo:src/
```
- `-t` preserves time
- copies all `*.c` files onto remote machine `foo` into directory `src`

## rsync

- ```
$ rsync -az username@remote.machine.com:/directory /local
```
- copy all files (recursively)
 - use archive format, preserve ownerships, symbolic links, devices
 - compress data before transmission, uncompress data after reception
- above mechanism is a very useful method of providing per user remote backups
- can install a rsync daemon (if desired)
 - easier to perform system backups or multiple user backups