



Using SRB Tutorial

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The aim of this tutorial is to demonstrate how srb can be used to store files that may be accessed from multiple locations. This will be achieved by running srb commands on both a remote machine and your local machine.

1. Open two terminal windows and ssh to training-ui.nesc.ed.ac.uk. One terminal will be used to run srb commands on the remote machine grid-data.rl.ac.uk whilst the other terminal will run srb commands on training-ui.nesc.ed.ac.uk (referred to from this point as the local machine).

All of the commands used for this tutorial depend on GSI for authentication. Hence you must have a valid proxy with time left (see [here](#) for help).

2. In the terminal to be used for remote srb commands type the command

```
gsissh -p 2222 grid-data.rl.ac.uk
```

For clarity commands to be run on this remote machine will from here on be prefaced with "remote>", whilst commands to be run on your local machine will be prefaced with "local>".

3. The first stage is to create the configuration file that is used by srb to specify your default settings. This file in particular defines the default srb server location, the default user name to use and the method of securely connecting.

A script to automatically generate the configuration file has been provided for you. This script will also automatically copy the file to grid-data.rl.ac.uk for you. Just use the command

```
local> createMdas
```

Inspect the contents of the file using the command

```
remote> cat .srb/.MdasEnv
```

4. The simplest way to create the configuration file on your local machine is to just copy the version that has been created on the remote machine. First though the directory it needs to be stored in must be created

```
local> cd  
local> mkdir .srb
```

5. The NGS uses a system of accessing different groups of software, or modules, on request. To access the srb commands (called the Scomands) it is necessary to modify your remote environment to find the relevant commands:

```
remote> module load srb
```

6. Before running srb commands it is necessary to initialise your environment, using the Sinit command. This command is needed to handle multiple simultaneous srb sessions from the same host (not done in this tutorial). Run the commands

```
remote> Sinit
local> Sinit
```

7. Before transferring a file into srb storage a file must be first created. Create a file using the below command

```
remote> hostname > myfile1.ngs13
```

8. Transfer myfile1.txt into your default (top level) directory, or collection in srb terminology.

```
remote> Sput myfile1.ngs13 .
```

You can check if the file is now stored in srb by using

```
remote> Sls
```

9. This file may now be easily accessed and read from your local machine

```
local> cd
local> Sget myfile1.ngs13 .
local> cat myfile1.ngs13
```

10. New collections (directories) may be easily created using the Scommands and files copied into them.

```
local> Smkdir mydir.ngs13
local> hostname > myfile2.ngs13
local> Sput myfile2.ngs13 mydir.ngs13
```

11. It is also possible to read a file from srb without having to copy the file out of srb first

```
remote> Scat mydir.ngs13/myfile2.ngs13
```

12. Having now covered basic usage a couple of more advanced topics can be covered. These final topics all involve commands being run on the local machine although they could as easily be run on the remote machine.

The first of these advanced topics is replication. SRB allows files to be replicated to additional data stores (vaults). When working with files that are replicated in multiple vaults the SRB commands will (by default) choose which copy to use. The primary benefits of file replication are firstly that a copy that is 'close' to where a job is running will be quicker to access. Secondly the reliability of access to the file is improved (e.g. a vault can fail without you losing access to your file). The default vault that has been used in the previous steps has been ral-ngs1 but there is also a vault at oxford-ngs1. Run the following commands to see replication in action:

```
local> Sls -l myfile1.ngs13
local> Sreplicate -S oxford-ngs1 myfile1.ngs13
local> Sls -l myfile1.ngs13
local> SgetD myfile1.ngs13
```

13. The previous commands have in general only referred to handling single files or collections. A potentially more realistic scenario is when a collection (and sub collections) needs to be synchronized with a local copy. Synchronizing (as opposed to copying everything) prevents un-needed transfers into and out of SRB. SRB uses checksums of each file to identify files that need updating. As a preparatory step it is helpful to tell SRB to generate checksums on each file in the collection to be synchronized (this only needs to be done once).

The first step is to test if any checksums already exist:

```
local> Schksum -l -r mydir.ngs13
```

The "0" in your output means the checksum has not yet been generated. Generate the checksum with

```
local> Schksum -f -r mydir.ngs13
```

and then *list the checksums* again to see the difference.

To synchronize the contents of the remote collection "mydir.ncess" to the local folder "srb" use the commands:

```
local> cd srb
local> ls
local> Srsync -r s:mydir.ngs13 .
local> ls
```

The "s:" indicates that the following file or collection is in SRB.

Finally create a new local file and then re-synchronize the local folder with the collection in SRB:

```
local> hostname > newfile.ngs13
local> Srsync -r . s:mydir.ngs13
local> Sls
```

14. The final topic to be discussed in this tutorial is deleting files and collections. To completely remove a file (or collection) from SRB is a two step process. To remove the file "newfile.ncess" first use the command

```
local> Srm mydir.ngs13/newfile.ngs13
```

which moves the file to your "trash" collection (c.f. the windows recycle bin). The contents of your trash collection can be viewed using:

```
local> Sls /ngs/trash/home/<srbname>.ngs
```

To remove files from your trash collection use the command:

```
local> Srmtrash
```

List the contents of your trash collection to see that the contents are now empty. Since this tutorial is about finished *delete all the files and collections you have created in SRB*.

15. When you are finished using srb it is sensible to exit the session and (optionally) unload the NGS srb module

```
local> Sexit
remote> Sexit
remote> module unload srb
remote> exit
```

Where Now?

If you have time left at the end of the practical then you are encouraged to explore the user guides, tutorials and presentations found at http://datacentral.sdsc.edu/user_guide.html.



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