

Introductory Note 711 & 811

Remote Access to Computer Science Linux Files Using Secure Shell Protocols

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Abstract

Users of home computers, computers in halls of residence or of workstations on the campus network outside Cardiff School of Computer Science may want to access files in their Linux home directories.

This Note gives examples of how this can be done with Secure Shell SCP and SFTP protocols.

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1 Secure Shell File Access Protocols

Secure shell protocols can be used for terminal connection to remote computers, for remote command execution, and for copying files. File copying uses secure copy (SCP) or secure ftp (SFTP).

You can connect to the server `lapis.cs.cf.ac.uk` in Cardiff School of Computer Science to copy files to and from your Linux file space.

1.1 Applications

Linux, UNIX and MacOSX - The SSH programs for Linux, UNIX and MacOSX include shell commands `scp` and `sftp` which use SCP and SFTP protocols respectively. SSH program suites are often standard with these operating systems, or they can be obtained from www.SSH.com or www.OpenSSH.net, or from the systems' software repositories.

Run the Linux/UNIX/MacOSX commands in a terminal shell window.

Windows Commands - There are corresponding commands with the Windows SSH[®] Secure Shell Client, namely `scp2` and `sftp2`. This client can be obtained from www.SSH.com, or downloaded from

<http://www.mirror.ac.uk/mirror/ftp.ssh.com/SSHSecureShellClient-3.2.9.exe>.

The PuTTY suite for Windows also has equivalent programs, `pscp` and `psftp`. PuTTY is available from <http://www.chiark.greenend.org.uk/~sgtatham/putty/>.

Run these commands in a Windows command window.

Windows GUIs - In addition, there are two Windows graphical interfaces for file transfer using SCP protocols. The SSH[®] Secure Shell Client has a File Transfer mode, and an application called iXplorer is a graphical front end to `pscp`.

2 Copying files with SCP

With the Linux/UNIX/MacOSX terminal shell command `scp` and the Windows commands `scp2` or `pscp`, you can copy files and directories between your workstation and the School's Linux server `lapis`.

2.1 Examples

When you run any of these examples, you will be prompted for your password on `lapis`. You can use your University password. The examples show the `scp` command but substitute `scp2` or `pscp` as appropriate.

Copy a file "Student.java" from your home computer to your file space on the School's Linux servers:

```
scp Student.java scmxxx@lapis.cs.cf.ac.uk:Student.java
```

(where "scmxxx" is your user name).

Copy a file "getrecords.sql" from your Linux file space to your own workstation:

```
scp scmxxx@lapis.cs.cf.ac.uk:getrecords.sql getrecords.sql
```

Copy directory "example1" and its contents from your Linux file space to your own workstation:

```
scp -r scmxxx@lapis.cs.cf.ac.uk:example1 .
```

("." means copy the files to the *current directory* on your workstation. A new directory "example1" will be created there containing copies of the files and directories in the server's "example1").

Copy the contents of directory "mysite" from your home computer into directory "public_html" on the School's Linux server:

```
cd mysite
scp -r * scmxxx@lapis.cs.cf.ac.uk:project_html
```

(on Windows use "*.*)" instead of "*").

3 Copying files with SFTP

SFTP is a secure protocol with similar commands to the standard Internet File Transfer Protocol (FTP). However, it is **not** a secure route to standard FTP servers. It can be connected to servers running *secure* SFTP protocols only. Many sites which allow SSH terminal connection are also configured to allow SFTP connection. In our case, you can use SFTP to connect to the School's Linux server *lapis* to transfer files.

3.1 Examples

`sftp` and `sftp2` or `psftp` are traditional line-oriented commands which run in a terminal (or command) window. In the examples, substitute `sftp2` or `psftp` instead of `sftp` where appropriate.

Connect to *lapis*:

```
sftp scmxxx@lapis.cs.cf.ac.uk
```

You will be prompted for your password on *lapis*. You can use your University password. Once logged in, `sftp` issues a prompt "`sftp>`" when it is ready for a command from you.

Copy file "`Course.java`" from your home workstation to your file space on the School's Linux network:

```
put Course.java
```

List the contents of your home directory on *lapis*:

```
dir
```

Copy file "`questions.pdf`" from your file space on *lapis* to your home computer:

```
get questions.pdf
```

Terminate `sftp`:

```
quit
```

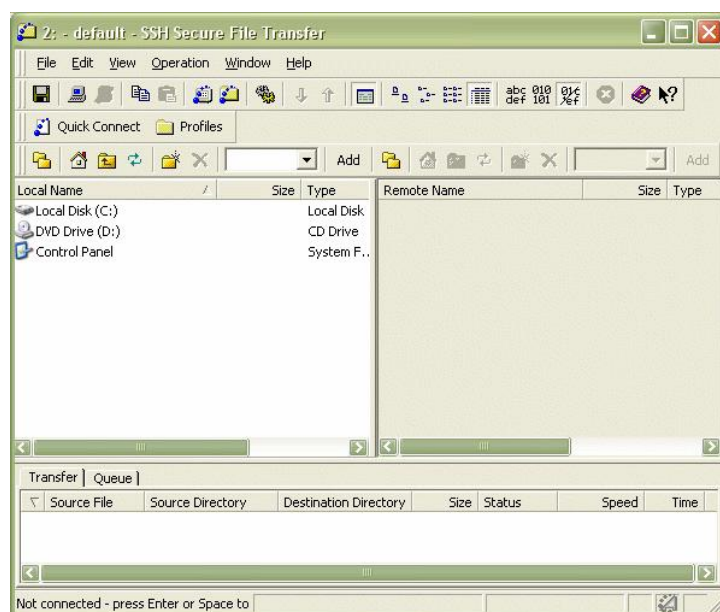
4 SSH® Secure File Transfer Client on Windows

The SSH® Secure Client for Windows from SSH.com is a terminal client and file transfer client. You can download a self-extracting installation file for this from <http://www.mirror.ac.uk/mirror/ftp.ssh.com/SSHSecureShellClient-3.2.9.exe>.

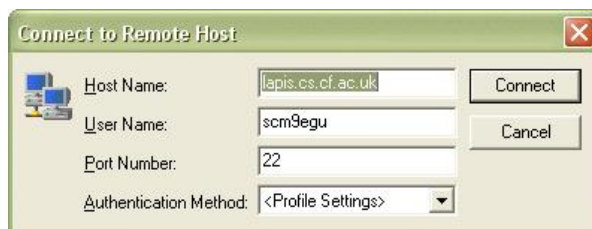
Start the SSH Secure File Transfer Client from the *Programs* menu or from its icon.



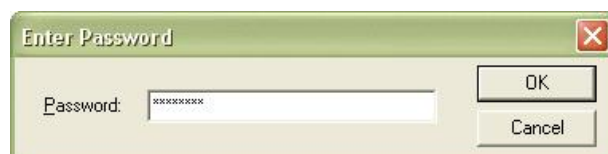
The file transfer window shows the local file system in a panel on the left and the remote file system in a panel on the right. Initially it isn't connected to a remote computer, so the right panel is empty.



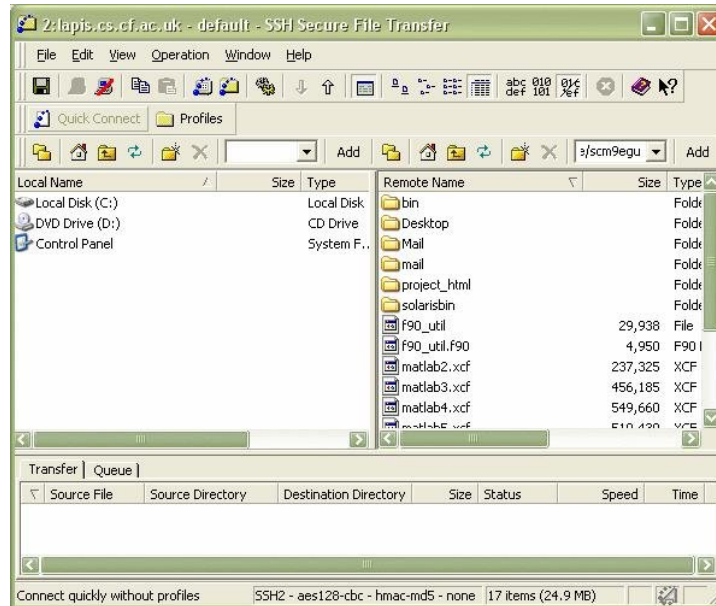
Click on *Quick Connect* to get a connection dialogue window. Type `lapis.cs.cf.ac.uk` as the host name and enter your Linux user name in the *User Name* field. Make sure the *Port Number* is 22. Click on **Connect** to connect the file transfer application to `lapis`.



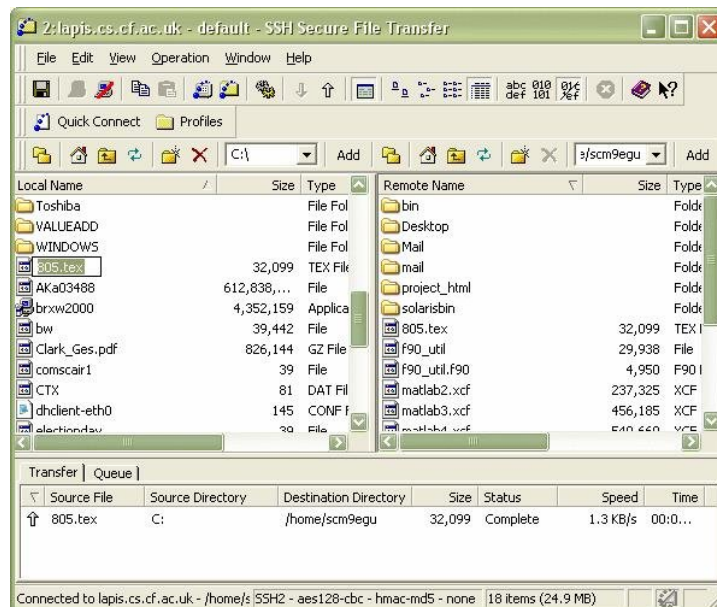
Once the connection is made, you will be asked for your password. You may use your University password.



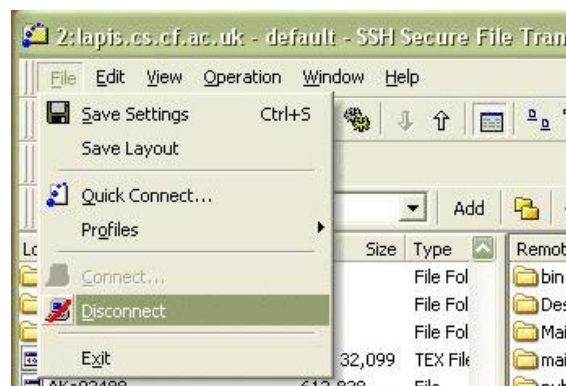
Now the panel on the right fills with icons showing the files in your Linux home directory.



To copy files to or from the Linux server, `lapis`, simply hold down the left mouse button when the pointer is over a file and *drag* it to the other panel. The transfer log at the bottom of the window lists the file name and shows you where it has been copied, indicating with an arrow whether it has been *uploaded* to the server for *downloaded* from it.



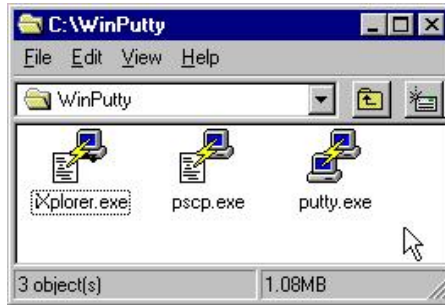
When you have finished, *disconnect* the file transfer application from the server by using the *File* pull-down menu. Click on if a confirmation dialog appears.



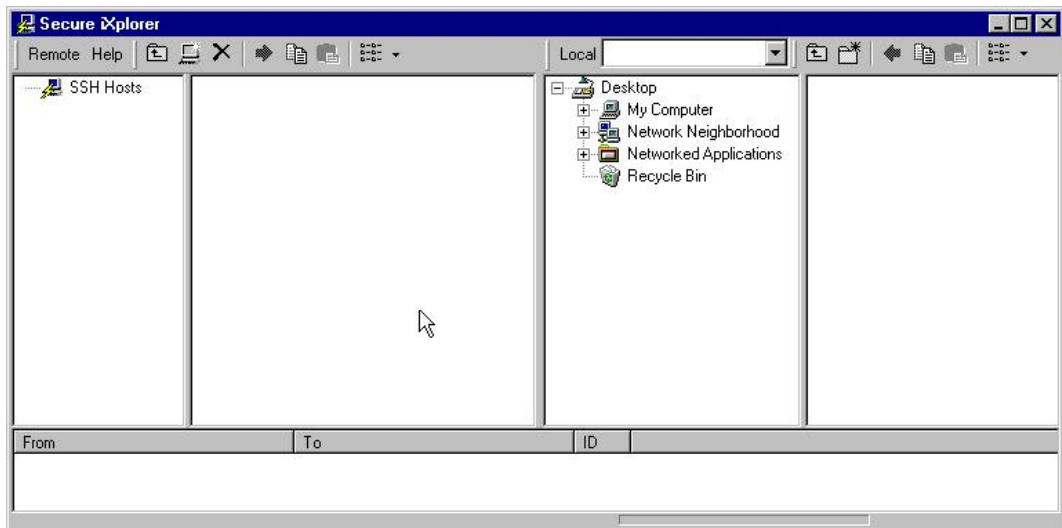
5 iXplorer Windows File Transfer Application

iXplorer is a front-end to pscp. Obtain `iXplorer.exe`, `pscp.exe`, `putty.exe` and `plink.exe` from <http://www.chiark.greenend.org.uk/~sgtatham/putty/>. Place them all in a single directory on your Windows PC.

Open the directory where `iXplorer` and `pscp` are located on your PC and double-click on the `iXplorer` icon to start it.



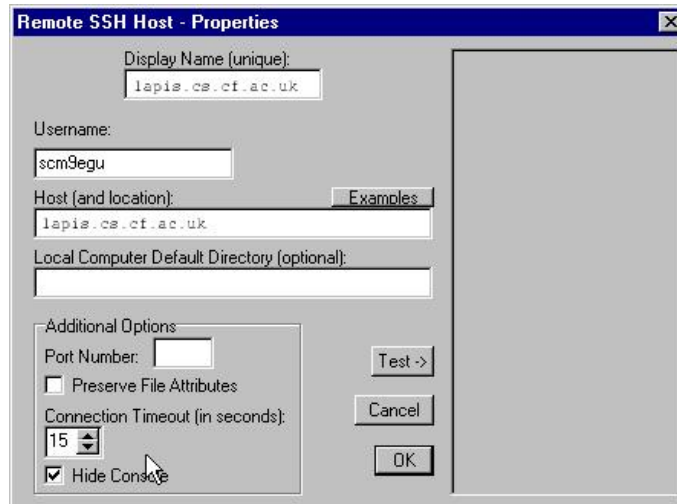
The `iXplorer` window has three panels. On the right is an explorer hierarchy for the local PC showing its desktop, the network and the files on the PC itself. On the left is a similar hierarchy for remote secure shell hosts. At the base is a log window showing file movements between the local host and remote hosts.



Initially, there are no entries under `SSH Hosts`. Click on the `Add SSH Host` icon to configure a new remote host.

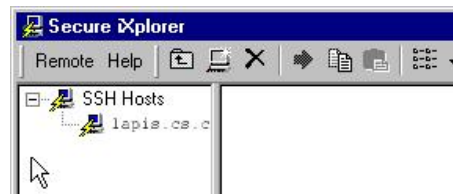


The *Add SSH Host* icon starts a properties window where you enter details of the remote host. Enter `lapis.cs.cf.ac.uk` as the name of the host and as the display name and enter your Linux user name in the user name field.



If you are on a slow connection or if you have very many files in your directory on `lapis`, it is wise to increase the *Connection Timeout* beyond the 15 seconds given as default.

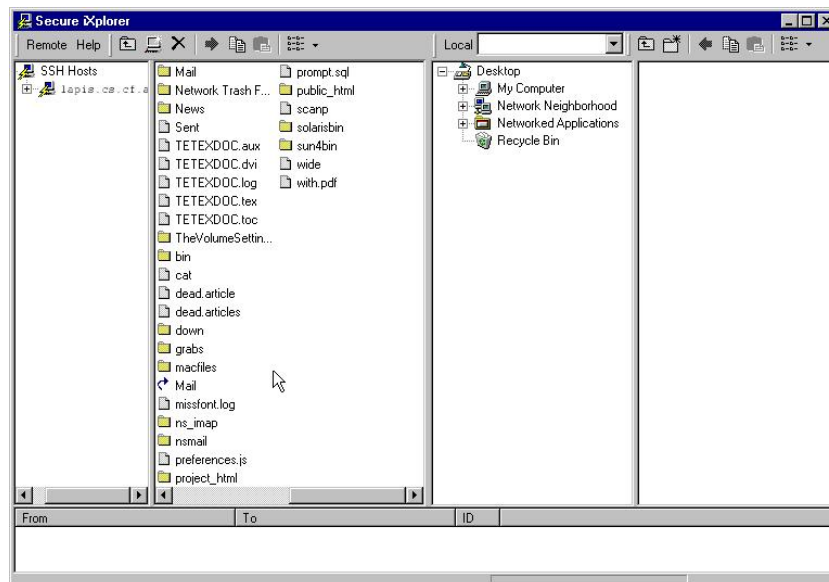
Now `lapis` will appear in the remote hosts panel.



Double click on the icon alongside `lapis` to open a connection. You will be prompted for your password.



The contents of your `lapis` directory appear in the remote host panel.



To copy files to or from `lapis`, simply click on the file with the left mouse button, hold the button down and drag from the local to remote panel or vice versa.

When you have finished, locate the iXplorer icon docked in the task tray at the bottom right of the screen.



Right-click the mouse and select `Exit` to terminate iXplorer.

6 Other Ways of Connecting to Your Home Directory

There are other ways to connect to your home directories on Linux or Novell using SMB (CIFS – Microsoft Networking) protocols and WebDAV protocols. See Notes 713, 714, 715, 716 and 717.