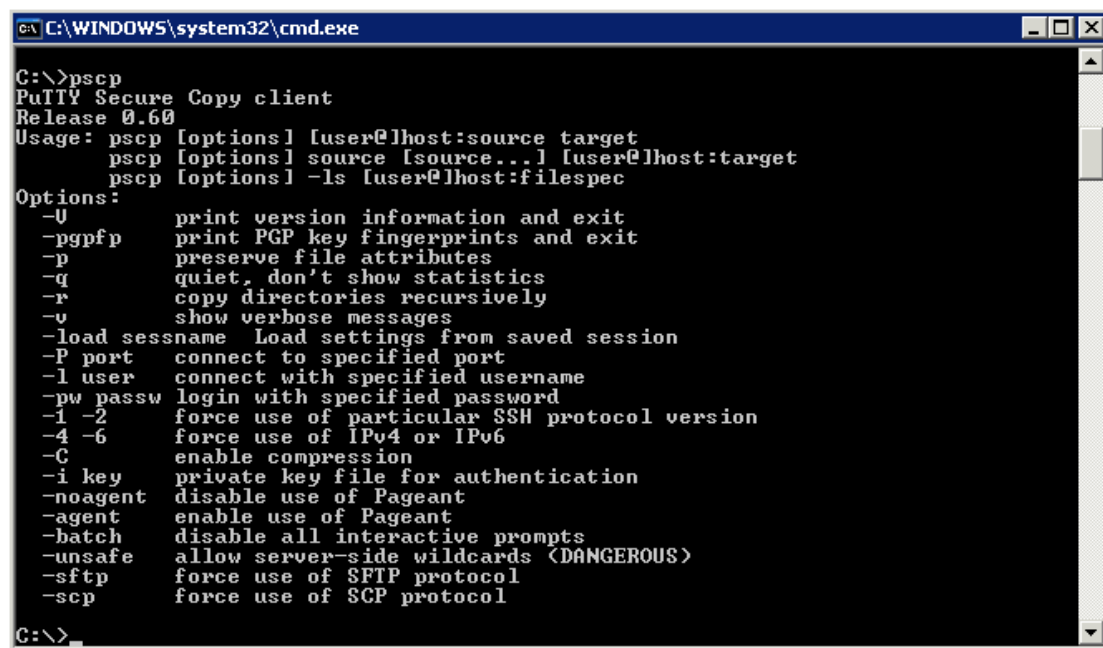# Transferring and Copying Files

You already know how to copy files from one location to another on the same system using the `cp` command. But what if you want to copy files from your local workstation to a Linux server or between Linux servers? For that you can use SCP or SFTP.

SCP is secure copy and SFTP is SSH file transfer protocol. Sometimes SFTP is referred to as secure file transfer protocol. SCP and SFTP are both extensions of the secure shell (SSH) protocol. This means that if you have SSH key authentication configured for SSH, it will also work with SCP and SFTP.
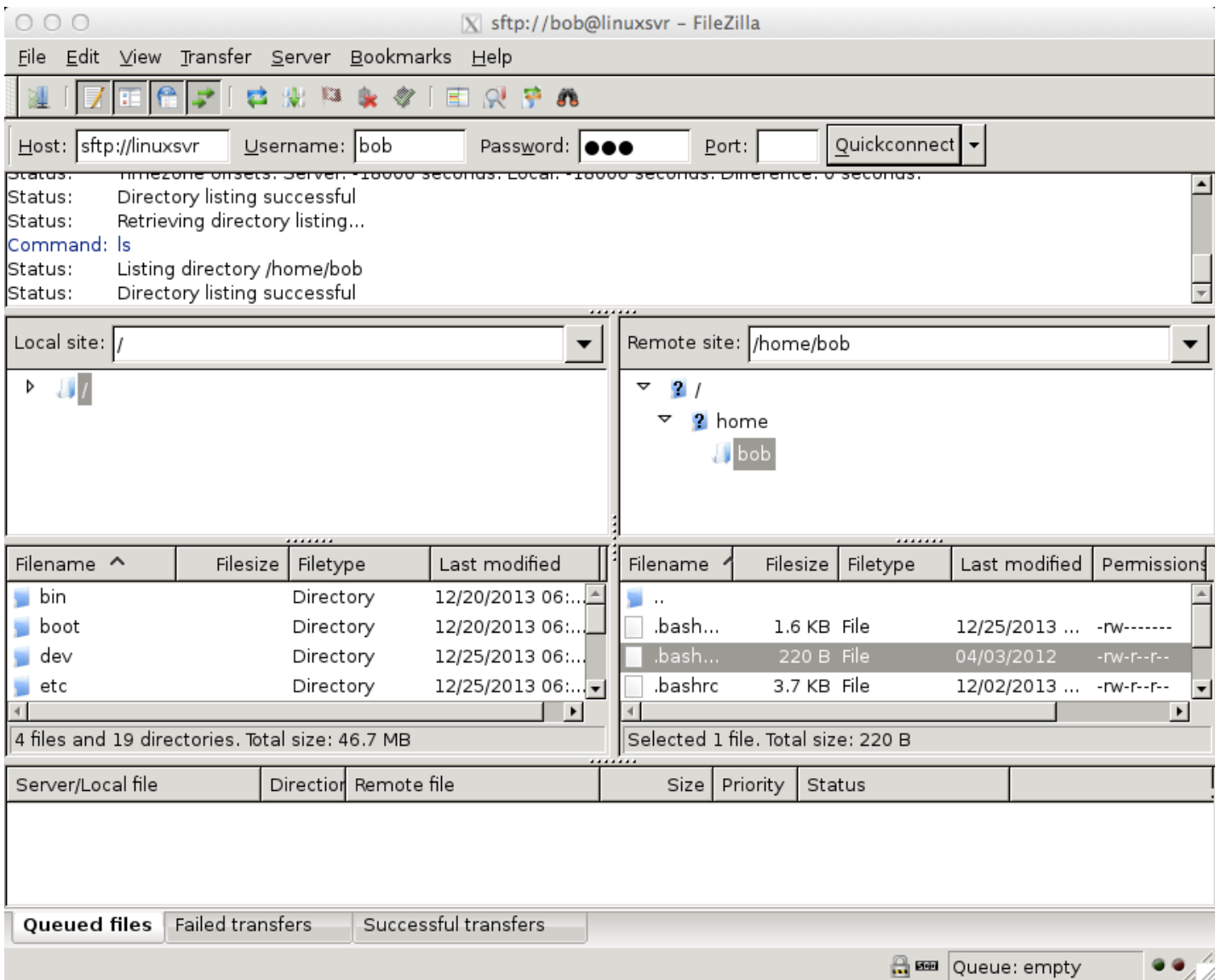
In order to use SCP or SFTP you need a client. Mac and Linux come with `scp` and `sftp` command line utilities. If you are running Windows, you can use the PuTTY Secure Copy Client (`pscp.exe`) and the PuTTY Secure File Transfer client (`psftp.exe`) programs. Command line utilities aren't your only option. There are graphical clients for each platform as well. Some run on Windows, Linux, and Mac like FileZilla, while others only run on one platform like WinSCP for Windows.

`scp source destination` - Copy source to destination.

`sftp [username@]host` - Connect to host as username to begin a secure file transfer session.

If you are looking for a more interactive experience where you can examine the local and remote file systems, use SFTP. With SCP you need to know what files you want to transfer before using the command. Here is a sample SFTP session.

```
bobby@laptop:/tmp $ sftp bob@linuxsvr
bob@linuxsvr's password:
Connected to linuxsvr.
sftp> pwd
Remote working directory: /home/bob
sftp> ls -la
drwxr-xr-x    4 bob   bob    4096 Dec 25 19:00 .
drwxr-xr-x    4 root  root   4096 Dec  2 22:01 ..
-rw-------    1 bob   bob      52 Dec 25 19:00 .Xauthority
-rw-------    1 bob   bob    1504 Dec 25 18:53 .bash_history
-rw-r--r--    1 bob   bob     220 Apr  3  2012 .bash_logout
-rw-r--r--    1 bob   bob    3655 Dec  2 22:02 .bashrc
-rw-r--r--    1 bob   bob     675 Apr  3  2012 .profile
drwx------    2 bob   bob    4096 Dec 25 19:00 .ssh
sftp> lpwd
Local working directory: /tmp
sftp> lls
file1.txt
sftp> put file1.txt
Uploading file1.txt to /home/bob/file1.txt
file1.txt                                               100%
18     0.0KB/s   00:00
sftp> ls
file1.txt
sftp> ls -la
drwxr-xr-x    4 bob   bob    4096 Dec 25 19:02 .
drwxr-xr-x    4 root  root   4096 Dec  2 22:01 ..
```

```
-rw-------    1 bob   bob     52 Dec 25 19:00 .Xauthority
-rw-------    1 bob   bob   1504 Dec 25 18:53 .bash_history
-rw-r--r--    1 bob   bob    220 Apr  3  2012 .bash_logout
-rw-r--r--    1 bob   bob   3655 Dec  2 22:02 .bashrc
-rw-r--r--    1 bob   bob    675 Apr  3  2012 .profile
drwx------    2 bob   bob   4096 Dec 25 19:00 .ssh
-rw-rw-r--    1 bob   bob     18 Dec 25 19:02 file1.txt
sftp> quit
bobby@laptop:/tmp $
```

Using `scp`, you can copy from your local system to a remote system, from a remote system to your local system, or from one remote system to another remote system. Here is how that looks.

```
bob@linuxsvr $ scp test.txt linuxsvr1:~/
test.txt      100%   35KB  35.3KB/s   00:00
bob@linuxsvr $ scp linuxsvr1:~/test.txt .
test.txt      100%   35KB  35.3KB/s   00:00
bob@linuxsvr $ scp linuxsvr1:~/test.txt linuxsvr2:/tmp/test-copy.txt
bob@linuxsvr $
```

SCP and SFTP aren't the only ways to transfer files to remote systems. Sometimes FTP (file transfer protocol) is enabled. In such cases you can use the built-in `ftp` command on Linux and Mac and a graphical client like WinSCP for windows. Just be aware that FTP is not using a secure transfer protocol like SCP and SFTP. This means that your login credentials are sent in plain text over the network. Also, the files that you upload and download are not encrypted either. If given the choice between SCP/SFTP or FTP, use SCP/SFTP.

```
bobby@laptop:~$ ftp linuxsvr
Connected to linuxsvr.
220 ubuntu FTP server (Version 6.4) ready.
Name (linuxsvr:bobby): bob
331 Password required for bob.
Password:
230 User bob logged in.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> pwd
257 "/home/bob" is current directory.
ftp> quit
221 Goodbye.
```

If FTP is not enabled, you will see a "Connection refused" error message.

```
bobby@laptop:~$ ftp linuxsvr
ftp: connect: Connection refused
ftp> quit
bobby@laptop:~$
```

Deep dive

- Cyberduck - FTP and SFTP client for Mac and Windows.
- FileZilla - FTP and SFTP client for Mac, Linux, and Windows.
- FlashFXP - FTP and SFTP client for Windows.
- FireFTP - FTP and SFTP client Firefox that is Mac, Linux, and Windows compatible.
- PuTTY
  - PSCP.EXE - SCP client for Windows
  - PSFTP.EXE - SFTP client for Windows
- Transmit - FTP and SFTP client for Mac.
- WinSCP - FTP and SFTP client for Windows.

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