1 How To SFTP To LIONS

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Contents

1.1 Abstract

This document explains how to use the Secure File Transfer Protocol (SFTP), a subsystem of Secure Shell, or SSH. Old Dominion University is replacing the older File Transfer Protocol, or FTP, with SFTP because the former is less secure and prone to internet snooping; even modern web browsers no longer support the FTP protocol.

Please note that this document assumes you are completely familiar with using your computer and operating system, and that you know and understand files, folders (directories), Web sites, URLs, and usernames/passwords.

1.2 Some SFTP Terminology

When using SFTP, there are two software packages which are involved:

The SSH Server - this is software that is running on the remote site that you are trying to send files to or retrieve from. This package is normally OpenSSH, although there are others in use.

The SFTP Client - this is software that you run on your local desktop to communicate with the SSH Server.

With SFTP, there is no such thing as **anonymous** logins. All connections to the SSH server must be authenticated by using your LIONS user name and password. In addition, we have set up the SSH server with Monarch Key Two Factor Authentication so you need to have that set up prior to using SFTP. For setting up your Two Factor Authentication, please go to https://ww1.odu.edu/ts/access/two-factor-authentication/get-started for more details.

1.3 How to use SFTP

As mentioned, SFTP requires the use of "client software" which runs on your desktop to communicate with the server. The two common types of clients are **Graphical** and **Command line**.

1.3.1 Graphical SFTP clients

Graphical SFTP clients simplifies file transfers by allowing you to transmit files by dragging and dropping icons between windows. When you open the program, when prompted for the name of the SFTP host, enter either **sftp.lions.odu.edu** or **lin-login.lions.odu.edu** and when prompted, enter your LIONS user name and password.

Some common Graphical SFTP programs are

- WinSCP for Windows,
- Transmit for MacOS,
- Cyberduck for both Windows and MacOS, and
- gFTP client for UNIX/Linux platforms.

Note:

We do not recommend using FileZilla as that product does not have good two-factor authentication support.

1.3.2 Command line SFTP

The same people who brought you PuTTY also bring you PSFTP, which is their command line secure file transfer program available for Microsoft Windows, Apple MacOS and UNIX/Linux platforms.

You can also use SFTP in a command line format from your UNIX/Linux LIONS account or from a Windows command window. For example, to start SFTP, at the command line prompt, enter your user name (in this example, we're typing **foobar** as the user name - please use yours instead!), the 'at' symbol (**@**) followed by the name of the SFTP host **sftp.lions.odu.edu** or **lin-login.lions.odu.edu** and press Enter.

```
sftp foobar@sftp.lions.odu.edu
```

The SFTP site will display a required "Statement of Warning" followed by prompting you for your password, like so:

```
-- WARNING -- This system is for the use of authorized users only. Individuals
using this computer system without authority or in excess of their authority
are subject to having all their activities on this system monitored and
recorded by system personnel. Anyone using this system expressly consents to
such monitoring and is advised that if such monitoring reveals possible
evidence of criminal activity system personal may provide the evidence of such
monitoring to law enforcement officials.

(foobar@sftp.lions.odu.edu) Password:
```

Type in your password and press Enter (for security reasons, nothing will not display as you are typing your password).

If you got it wrong, SFTP will simply re-prompt you for your password:

```
(foobar@sftp.lions.odu.edu) Password:
```

If you take too long, you will receive a message closing the connection.

```
Connection closed.
```

If you got it correct, you will be prompted to enter your Monarch-Key Two Factor information which is configured for your LIONS user name. The following is an example, your prompt might be different on how you set it up.

```
(foobar@sftp.lions.odu.edu) Duo two-factor login for foobar

Enter a passcode or select one of the following options:

 1. Duo Push to XXX-XXX-1234
 2. SMS passcodes to XXX-XXX-1234

Passcode or option (1-2):
```

You can enter one of the following:

1. Option 1, Push a prompt to the Duo application on your smart phone.
2. Option 2, Enter a passcode generated from the Duo application on your smart phone
3. If you do not have access to a smart phone but you do have a security key like a YubiKey[1], you may use that as well. Make sure it is plugged into your computer, then press the button on the device. This will enter a long code which will be used as the second factor.

Once you enter one of your factors, you will be logged in and SFTP will show you that you are now connected with the `sftp>` prompt.

```
Connected to sftp.lions.odu.edu.
sftp>
```

1.3.2.1 Navigating Around The File System

After logging in, you can see a list of files and folders in the current server directory by typing either **dir** or **ls**.

```
dir
```

For example:

```
sftp> dir
bin     core     etc      index.html
noc     part1    part2    part3
part4   part5    part6    part7
pub     user
sftp>
```

[1] https://www.yubico.com/products/

If you enter **ls -l**, you will see a listing similar to the following with more details about the files listed.

```
sftp> dir
dr-xr-xr-x   2 foobar   bargroup        512 Nov 21 01:07 bin
-rw-r--r--   1 foobar   bargroup     991232 Feb 20 16:19 core
dr-xr-xr-x   3 foobar   bargroup        512 Dec 02 10:45 etc
-rw-r--r--   1 foobar   bargroup       1915 Feb 27 13:00 index.html
drwxrwsr-x   3 foobar   bargroup        512 Nov 25 10:14 noc
drwxr-xr-x   3 foobar   bargroup        512 Nov 17 15:44 part1
drwxr-xr-x   6 foobar   bargroup        512 Nov 17 15:43 part2
drwxr-xr-x   3 foobar   bargroup        512 Jan 12 16:03 part3
drwxr-xr-x   6 foobar   bargroup        512 Oct 21 19:20 part4
drwxr-xr-x   4 foobar   bargroup        512 Jan 11 12:02 part5
drwxr-xr-x   3 foobar   bargroup        512 Feb 03 11:45 part6
drwxr-xr-x   3 foobar   bargroup        512 Feb 03 11:46 part7
drwxr-xr-x   7 foobar   bargroup        512 Feb 13 09:37 pub
drwxr-xr-x   4 foobar   bargroup        512 Dec 02 10:45 usr
```

Subdirectories (folders) are indicated in the directory listing with a letter **d** in the first character position on the line.

If you lose track of where you are, type the following command to show the current working directory on the server:

```
pwd
```

To change directories on the server, type

```
cd directoryname
```

To go back up to the previous directory level, type

```
cd ..
```

To change the local directory (the one where you originally typed the ftp command), type

```
lcd directoryname
```

1.3.2.2 Downloading/Uploading Files

To send a file from your current (local) directory to the server (into its current directory) type

```
put filename
```

To get a file from the server's current directory into yours, type

```
get filename
```

1.3.2.3 Quitting SFTP

To leave the SFTP client, type:

```
quit
```

at the sftp> prompt.

If you want to see the various SFTP commands, you can enter the question mark (?) as shown[2].

```
sftp> ?
Available commands:
bye                                Quit sftp
cd path                            Change remote directory to 'path'
chgrp [-h] grp path                Change group of file 'path' to 'grp'
chmod [-h] mode path               Change permissions of file 'path' to 'mode'
chown [-h] own path                Change owner of file 'path' to 'own'
df [-hi] [path]                    Display statistics for current directory or
                                   filesystem containing 'path'
exit                               Quit sftp
get [-afpR] remote [local]         Download file
help                               Display this help text
lcd path                           Change local directory to 'path'
lls [ls-options [path]]            Display local directory listing
lmkdir path                        Create local directory
ln [-s] oldpath newpath            Link remote file (-s for symlink)
lpwd                               Print local working directory
ls [-1afhlnrSt] [path]             Display remote directory listing
lumask umask                       Set local umask to 'umask'
mkdir path                         Create remote directory
progress                           Toggle display of progress meter
put [-afpR] local [remote]         Upload file
pwd                                Display remote working directory
quit                               Quit sftp
reget [-fpR] remote [local]        Resume download file
rename oldpath newpath             Rename remote file
reput [-fpR] local [remote]        Resume upload file
rm path                            Delete remote file
rmdir path                         Remove remote directory
symlink oldpath newpath            Symlink remote file
version                            Show SFTP version
!command                           Execute 'command' in local shell
!                                  Escape to local shell
?                                  Synonym for help
sftp>
```

[2]This output is from the UNIX/Linux version of SFTP, your personal program may display something different.

1.4 Web SFTP Tutorial

This is a very brief tutorial on how to upload your files from a Windows(tm) platform over to the LIONS `public_html` directory for display on the web. Note that this is very command line driven and does not discuss GUI SFTP clients.

1. Place the documents that you wish to upload into your "My Documents" folder. This will make things easier later on.

2. Click the "Start" menu, then "Run". In the dialog box under "Open:", type `cmd` and press Enter. This will start up the Command Prompt. You should see a C prompt which looks like this:

   ```
   C:\Documents and Settings\yourusername
   ```

   where *yourusername* is your local account on your machine.

3. Issue

   ```
   cd my documents
   ```

   to go into your "My Documents" folder.

4. Type the following to start the SFTP session to the LIONS SFTP server. Replace `user` with your LIONS user name.

   ```
   sftp user@sftp.lions.odu.edu
   ```

   Text similar to the following should now appear:

```
-- WARNING -- This system is for the use of authorized users only. Individuals
using this computer system without authority or in excess of their authority
are subject to having all their activities on this system monitored and
recorded by system personnel. Anyone using this system expressly consents to
such monitoring and is advised that if such monitoring reveals possible
evidence of criminal activity system personal may provide the evidence of such
monitoring to law enforcement officials.

(user@sftp.lions.odu.edu) Password:
```

Type in your password and press Enter (it will not display anything, for security reasons).

You will next be prompted to enter your Monarch-Key Two Factor information. As before the following is an example, your prompt might be different on how you set it up.

```
(user@sftp.lions.odu.edu) Duo two-factor login for user

Enter a passcode or select one of the following options:

 1. Duo Push to XXX-XXX-9876
 2. SMS passcodes to XXX-XXX-9876

Passcode or option (1-2):
```

Once you enter one of your factors, you will be logged in and SFTP will show you that you are now connected with the `sftp>` prompt.

```
Connected to sftp.lions.odu.edu.
sftp>
```

5. Next, type the following to change path to your `public_html` directory:

   ```
   cd public_html
   ```

6. To upload files, type the `put` command followed by space and the name of the file to upload. For example, if you're uploading a file called `index.htm`, you would type the following:

   ```
   put index.htm
   ```

   Note that the main document in `public_html` must be either `index.html` or `index.htm`, otherwise when you use a browser to go to your home directory, you will receive a 403 Forbidden error message.

   When the put command is finished, a message similar to the following will appear:

   ```
   sftp> put index.htm
   Uploading index.htm to /nfs/lions.odu.edu/home/u/user/index.htm
   index.htm                          100%   10     0.3KB/s   00:00
   sftp>
   ```

7. Continue using `put` to upload the rest of the files.

8. When you're finished, type 'quit' and you will exit:

   ```
   sftp> quit
   ```