

Remote Login to Lab Machines

1.) Duo - Two Factor Authentication

If you have not configured Duo previously, you will need to go to: <https://myaccount.sc.edu>

- Login using your USC Network ID and proper password.
- Answer and/or establish security questions
- Go to the multifactor tab
- Enter your phone number, select mobile (+OS) or landline and click add phone.
- A line entry for the phone will appear, click "activate" and follow on screen instructions.

From this page you can also generate one-time passwords should you not wish to use a phone, just click generate code and you can use this when logging in from a remote location.

2.) Connect to USC VPN

For instructions provided be UTS see the following guide:

[UTS Guide: What is a VPN?](#)

To download the VPN client go to <https://my.sc.edu/software/>, login using your University credentials then go to Software for Home -> Security -> Cisco AnyConnect VPN for Students - Personal Use. Download and install the application, if you encounter any issues with this process you should reach out to [UTS](#). Make sure you are following the instructions provided by UTS, you should only install the Core and VPN packages, all other packages are unnecessary for operation of the University VPN.

3.) Secure Shell (SSH)

SSH is a UNIX-based command interface and protocol for securely getting access to a remote computer. I will not spend a lot of time discussing SSH because it is a technology that has been around for some time and there are numerous resources online that serve as an introduction to SSH.

To connect to one of the Department machines (assuming you are on the local intranet) the following command should allow you to connect to one of the Linux workstations.

```
ssh -p222 $USER@$HOSTNAME.cse.sc.edu
```

The \$USER is your university username.

The list of available \$HOSTNAME(s) can be found at the following:

<http://cse.sc.edu/resources/workstations>

Note you will be required to login using your USC credentials to access this webpage.

Not sure what to use for ssh?

- Linux - native terminal, often launched with ctrl+alt+t
- Mac - native terminal, often launched with super+spacebar, search for 'terminal'
- Windows - I recommend [MobaXterm](#) as it offers the best user experience

4.) Transferring the file to your computer for submission

For submitting the file created in the linux machine, we need to pull that file from the linux computer into our local machine. And after that, submit it to dropbox.

To pull the file, we need to **use the [scp](#) command**. Syntax for pulling a file from a remote computer:

```
scp -P<port> <user>@<host>:<remote_file_location> <local_destination_path>
```

For **example**:

```
scp -P222 rmaustin@l-1d43-01.cse.sc.edu:~/someFile.txt .
```

Which is assuming that my userid is *rmaustin*, that I will pull the file from the machine *l-1d43-01.cse.sc.edu*, that I want to pull the file *someFile.txt* which is located in my HOME directory (also known as `~`) and that I want to save it in my current directory in my local computer (also known as `.`).

After executing that previous example, the command will copy 'someFile.txt' to my local machine in the current directory. Notice that the `.` at the end is necessary. As mentioned, it means to transfer the file to the *current directory* in my local machine (you can pick any other destination path if desired).

Also notice that **you have to specify the whole path of the file** which in this example was '~/someFile.txt'.

Remember that you need to type this command from a local terminal. That means, without doing the ssh connection to the linux machine (And you DO need the VPN active). After typing the command, and then your password, you will need to approve the DUO Push notification, which will be sent automatically.

After that, the file should be located in the `local_destination_path` that you specified.

Tip: After transferring the file, Mac users can type `open .` to open the Finder in the current directory and your file may be there (if `.` was selected as the `local_destination_path`). Windows users can use `explorer .` or you can just open the explorer/finder and go to the location that you used.

Lastly: scp is a headless command. This means after authenticating with your password you will not see a Duo two-factor prompt. Instead it will automatically use Duo push so you will need to have your phone handy, press accept and the file(s) will transfer.

5.) Mac user addendum - passing X-Interfaces back to your local machine

Natively OSX does not support passing back X interfaces to the local machine, usage of the -Y flag will essential be ignored until you do the following.

- From the App Store install Xcode
- Open up a terminal
 - Run `xcode-select --install`
- Install Mac Ports (appropriate OSX version can be obtained directly from <https://www.macports.org>)
- In the terminal again run `sudo port install xorg-server`
- Logout completely from your desktop session
- Log back in and open up your terminal

Now going forward you can use the following

IE: `ssh -p222 -Y rmaustin@l-1d43-01.cse.sc.edu`

Note the `-Y` flag as this will pass back all X-interfaces to your local machine, IE: run something like `quartus` or `hugin` from the connected terminal window and the client will open up on your local desktop.