INSTALLING AN SSH / X-WINDOW ENVIRONMENT ON A WINDOWS PC

Nicholas Fitzkee
Mississippi State University
Updated May 19, 2017

Installing Secure Shell (SSH) Client

The first thing you will need is SSH. SSH is a program for accessing UNIX/Linux servers on the internet, and it allows you to type commands as if you were sitting at the servers directly. You must have an account on the server, and for security purposes SSH encrypts all commands as well as passwords. As a user, you will run an SSH *client* to connect to an SSH *server* on the internet.

Many free SSH clients are available, but I find that "Secure Shell Client 3.2.9" by SSH Communications Security is the easiest to use. It is old, and the company hasn't updated the software in some time. Nevertheless, it has the functionality we need, and the program is free for non-commercial and academic users. While the program is not supported, you can find it many places on the internet, including the link below:

http://folding.chemistry.msstate.edu/files/win-x11/ssh_client-3.2.9.exe

This program can be installed like any other Windows program. Windows may complain that the program did not install correctly, but that's okay. Test it to see if it runs, and if it you get the screen below, everything worked fine.
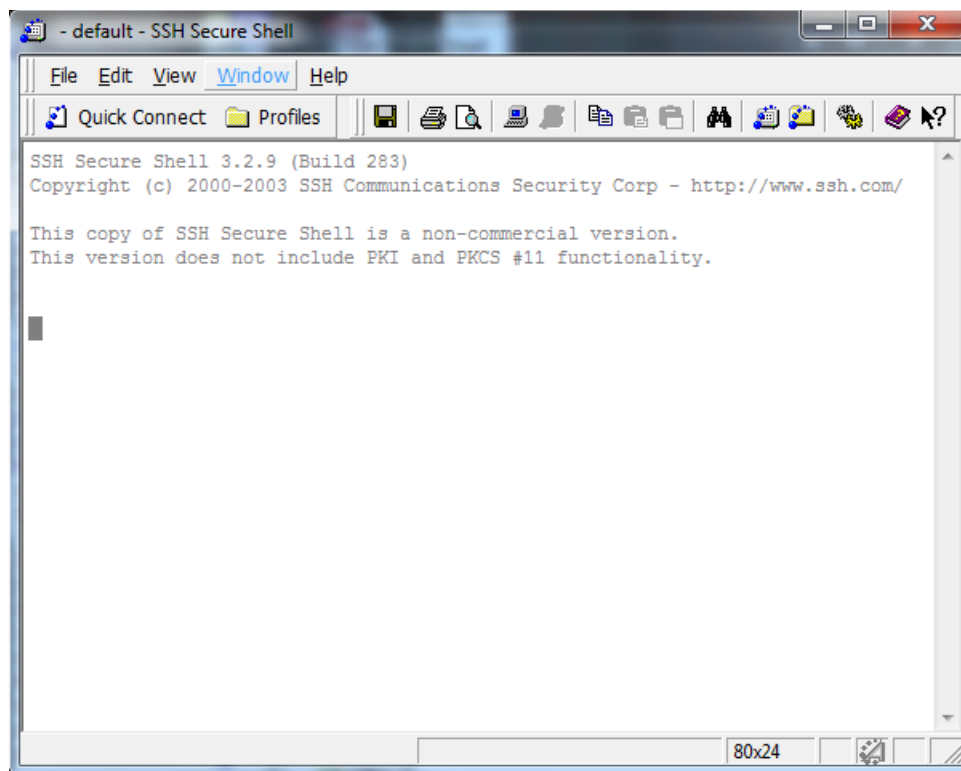
Configuring SSH to Accept X11 Forwarding

The next thing you need to do is to enable X11 forwarding as a default options on your SSH client. This can be done on an individualized basis per server, but it's easier to enable it by default.

To start, open "SSH Secure Shell Client" and select Edit → Settings… from the menu. You should see a menu similar to what is shown below. Under "Profile Settings → Tunneling" make sure that "Tunnel X11 Connections" is checked (shown below).
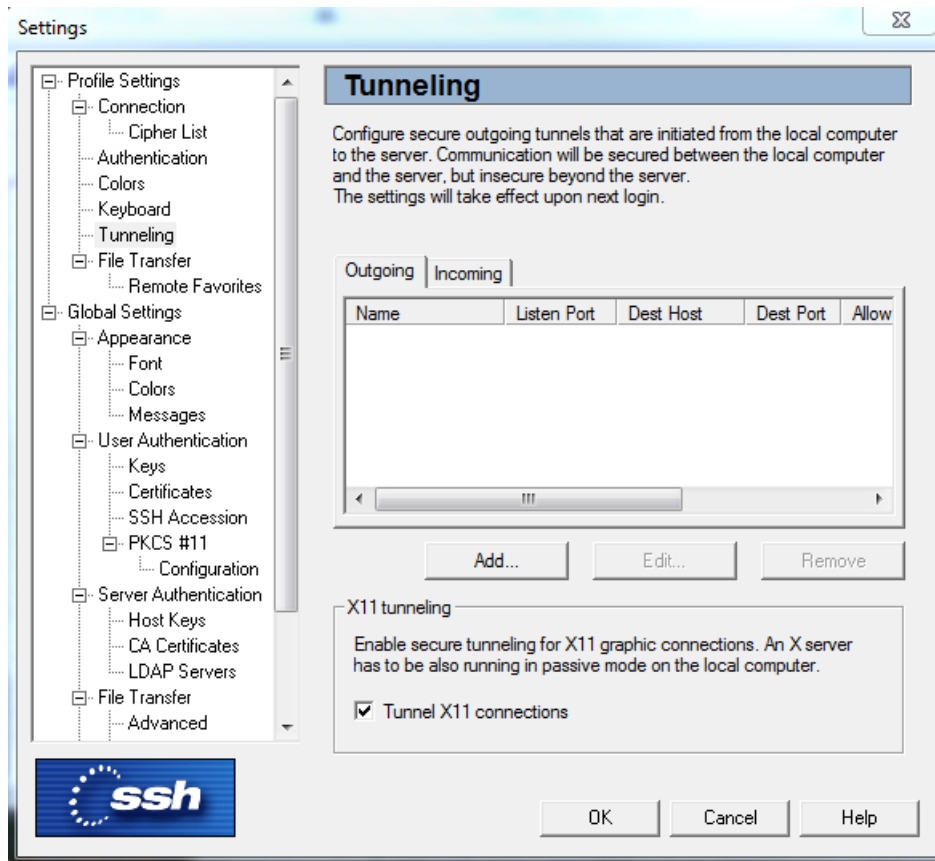
Similarly, from the main window, select "Profiles → Edit Profiles." Then, select "Quick Connect," and find the Tunneling tab (shown below). Here again, make sure the "Tunnel X11 connections" is set. Note that you won't have any other profiles defined in your software, so you can ignore the profiles that I have listed below.
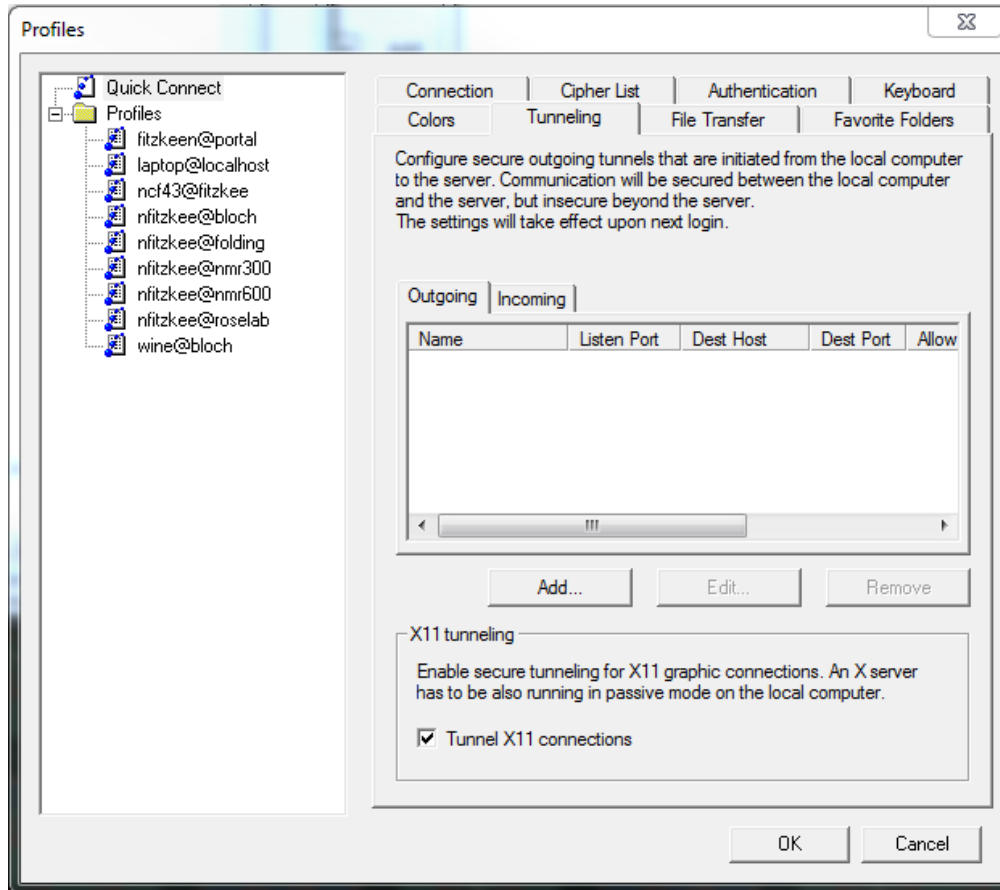

When you have finished this, click okay, and confirm that you want to save your changes.

Creating a Quick Connect Profile

Now that the software is installed, you should make sure that it's working. Select "Quick Connect" from the main window, and enter the server name and your user name for that server. When you click Okay, you may be presented with a window asking you whether you want to add the encryption key to the local database. Select "Yes." Provided that the server does not change, you will never be asked this again for this connection. An example of the prompt is shown below:
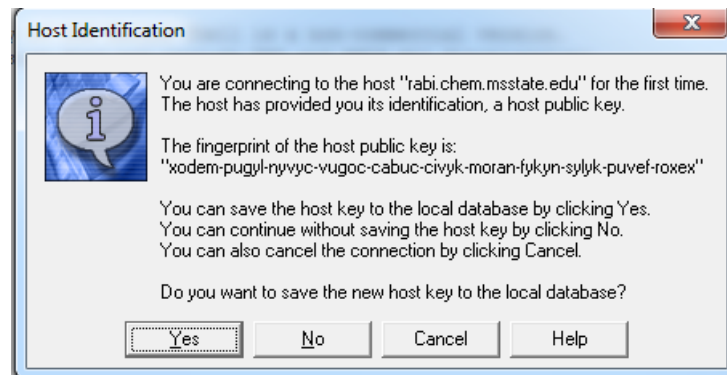
After you click "Yes," you will be asked for your password. Enter it, and you should be logged in. You will see a new window pop up, asking you to save this session into the profiles. If you enter a name here (e.g. the name of the server) you will be able to connect more quickly in the future by selecting "Profiles → Server Name." Creating a profile remembers the server address as well as your user name, but for security reasons it does not remember your password.
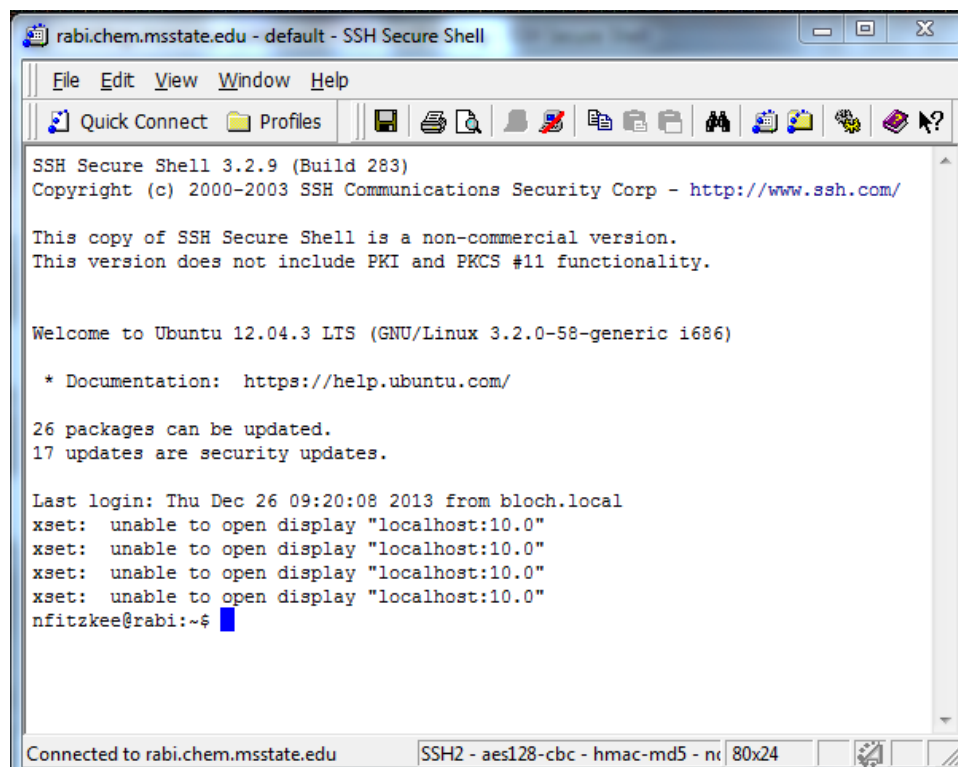
At this point, you can enter any commands you like at the UNIX prompt. For a good UNIX tutorial, you can check out the following website:

http://www.ee.surrey.ac.uk/Teaching/Unix/

I also provide a simple UNIX Cheat Sheet for my lab, linked below. You can find many others on the web as well.

http://folding.chemistry.msstate.edu/files/win-x11/unix_cheat_sheet.pdf

Configuring X11 on your Desktop

X11 is a program that allows you to run Windowed programs (like Firefox, PDF viewers, text editors, etc.) on another server. The program itself runs on the UNIX server, but the graphics are displayed on your computer. It's a very powerful feature that makes UNIX a very convenient operating system. For example, an expensive software package (like MatLab) could be installed on the UNIX server, and you could run it in a Window remotely just as if you were at the server yourself.

We need to install a program called "Xming" in order to install the X11 server on your machine. Note the change in vocabulary: The program, or "client" runs on the UNIX server. Its graphics commands are "tunneled" through your SSH connection so that the X11 server can process them and display them on your screen.

To install X11, you should visit the Xming site and download the latest version for your computer:

http://sourceforge.net/projects/xming/

The installer for Xming works as you would expect for most Windows installers. Simply follow the installation instructions, selecting the default options (unless you want to change the installation directory, the defaults are perfectly fine).

The first time you start Xming, you will likely be presented with a security screen, displayed on the next page. Because Xming sends and receives graphical information to and from the remote computer, it needs to open a port on your computer's firewall. To ensure compatibility, you should allow this type of communication (as displayed in the image). Note that, whenever you open a port on a firewall, you expose yourself to some risk: Hackers could potentially exploit bugs in Xming to access your computer. However, Xming is fairly robust, and I have seen no recent reports of hackers taking advantage of it. Additionally, the additional layers of network security on most campus networks serve as additional protection from internet hackers. Therefore, the risks here are fairly small.

Now that Xming is installed, you probably want it to start up when you log in. That way, it will be waiting for you when you SSH to a remote computer. Of course, if you don't want Xming to start up, you can skip this step.

The first thing is locating your startup folder. This is a little tricky on recent versions of windows, but the approach below should work on Vista, Windows 7, and Windows 8/10. To open your startup folder, click on the start button (Windows Vista/7) or bring up the start screen (Windows 8), or the start menu (Windows 10). Since Windows XP, the start button no longer says "Start," so I've put a picture of the icons you need to click below:

Windows 7/Vista Start Button

Windows 8/10 Start Button

Once you have the start menu or start screen up, start typing – don't try to click anywhere, just type the following text: **shell:startup** This text will bring up the location of your startup folder, which contains programs that are run when you login.

Once your startup folder is loaded, click on the start button again, except this time, type:
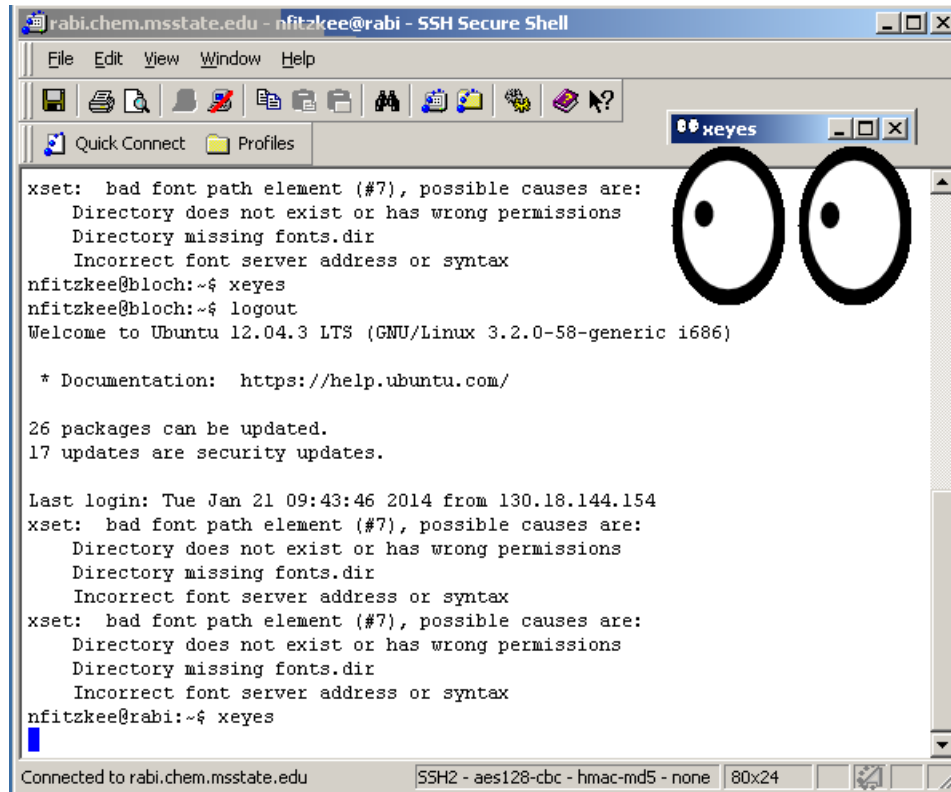
%programdata%\microsoft\windows\start menu\programs\Xming

Now, all you need to is copy the Xming shortcut from the programs directory into your startup folder. Once this is done, Xming will load every time you log into your account.

Testing Your Configuration

Now that you've installed Xming and it is running, it's time to test whether X11 and SSH can both play nicely together. Once again, you want to SSH to the server. If you saved a profile last time, it should be quicker, and it won't ask you about saving the key, either.

When you reach the command prompt, type the command "xeyes." Provided everything worked, you should get a set of "eyes" that follow your mouse pointer around. If so, congratulations! If not, double check the instructions above, and if you still have questions, talk to me.