

**Instructions for Using Mplus on the Tusker Supercomputer
at the University of Nebraska-Lincoln Holland Computing Center**

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Request a Group or an Account

To use the computing resources at the Holland Computing Center, you must first have an account. To request an account, you must specify the group to which your account belongs. Groups are created for faculty or campus research groups only.

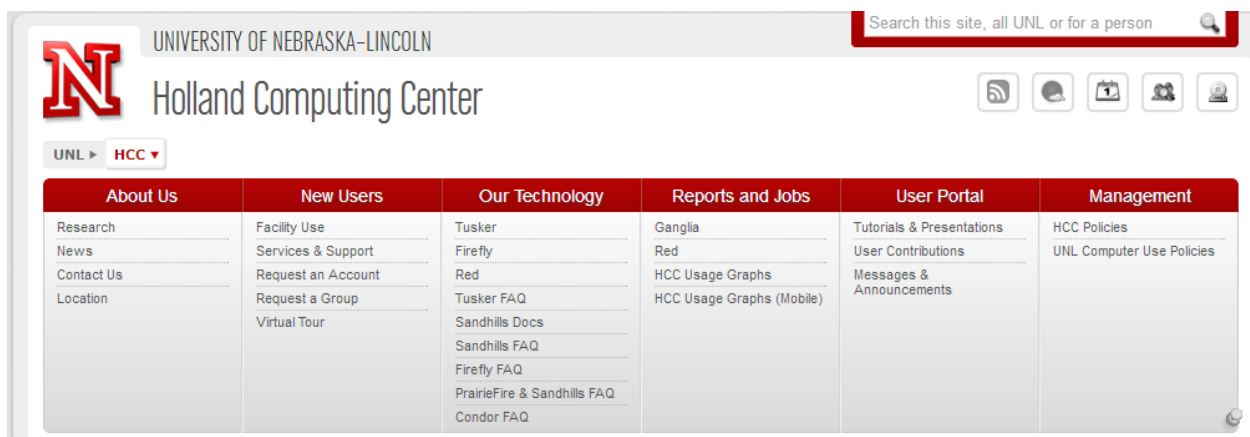
To request a group (typically for faculty):

Visit <http://hcc.unl.edu>. Under the New Users menu on the top of the page, click on Request a Group and fill out the requested information. You will receive an email within a few days from the HCC regarding the status of the group you wish to create.

To request an account (within a group):

Visit <http://hcc.unl.edu>. Under the New Users menu on the top of the page, click on Request an Account. You must select the group for your account before proceeding. If you do not have a group and you are a student, request a group name from your advisor or collaborating faculty member. If you are a faculty member, request a group directly from the HCC (see previous section). Once the group has been selected, fill out the requested information. The HCC will first contact the group owner for permission to add your account. You will receive an email from the HCC regarding the status of your account within a few days.

Screenshot of <http://hcc.unl.edu>.



Install Secure Shell Software on your Computer

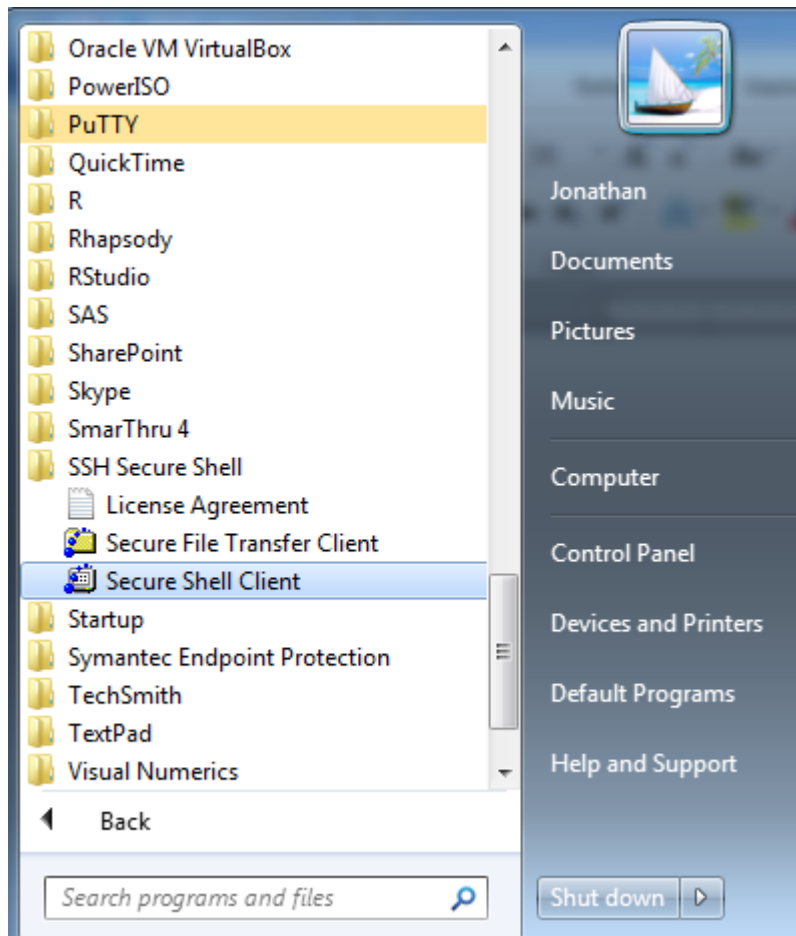
Connections to the Tusker server are through the Secure Shell Protocol. Such connections involve a terminal window for executing commands (similar to the old DOS prompt window) and a file-transfer window for uploading and downloading files from the server. This document uses the SSH Secure Shell program but others are available by searching Google for SSH programs.

1. Download the SSH Secure Shell program from
<http://software.dartmouth.edu/Windows/Connectivity/SSHSecureShell.zip>.
2. Unzip the file you downloaded and double-click on the executable file to begin the installation.
3. Follow the prompts (the default options will work) through the end and click finish.

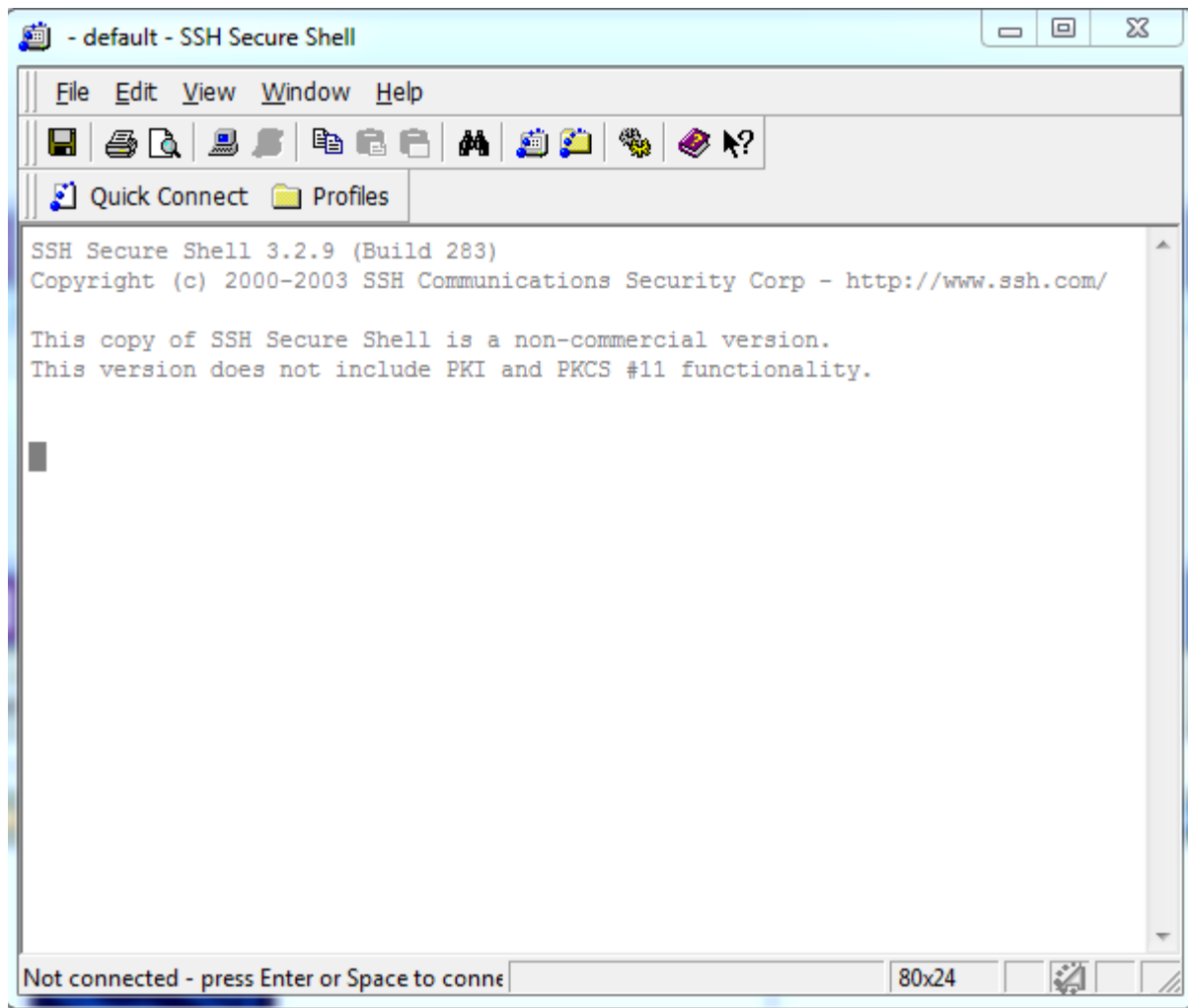
Connect to Tusker Using the SSH Terminal Client

To connect to the Tusker server using the SSH Terminal Client:

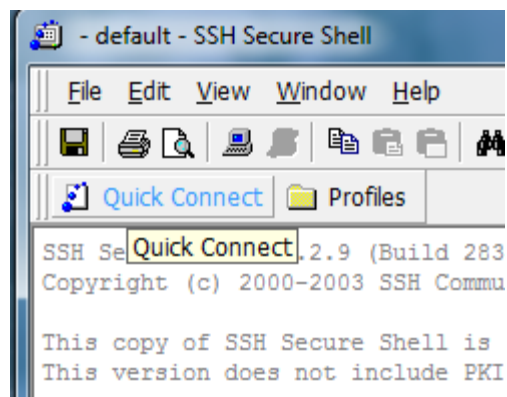
1. (In Windows) Start the SSH Terminal Client by going to Start...All Programs...SSH Secure Shell...Secure Shell Client



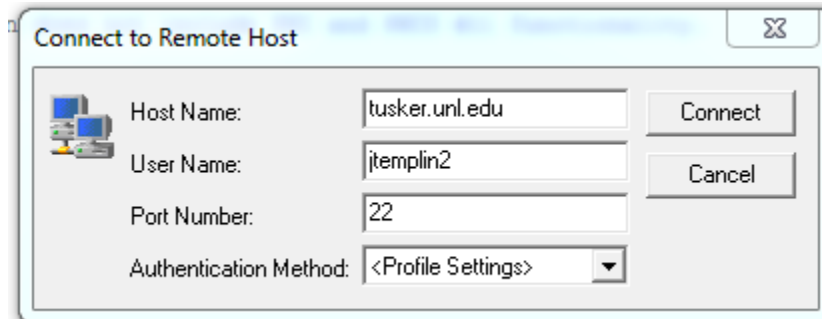
2. The SSH Client terminal window now appears:



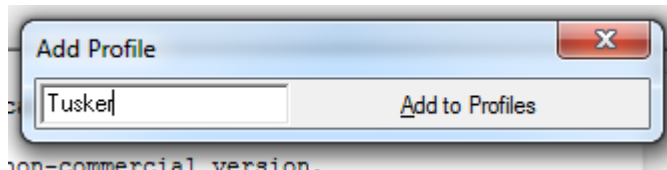
3. Click on "Quick Connect":



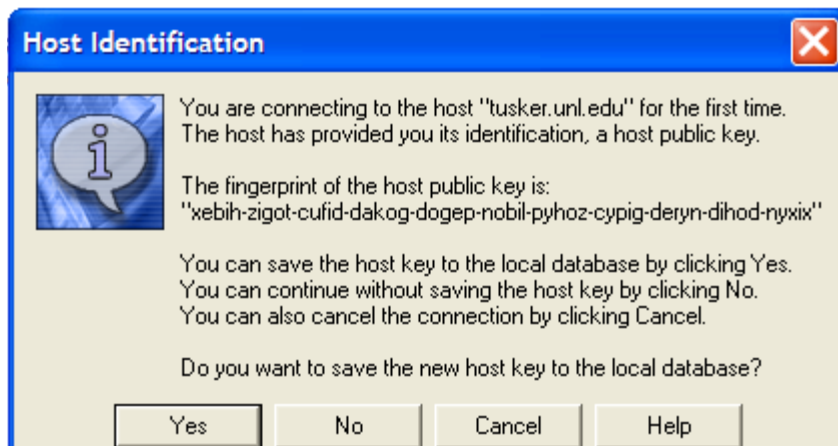
4. In the "Connect to Remote Host" box, under Host Name put tusker.unl.edu. Under User Name put your account name. Leave Port Number as 22 and do not select an Authentication Method. Click on the Connect button (you must be connected to the internet to continue). Note: this information is only requested the first time you connect and is saved in the Tusker profile:



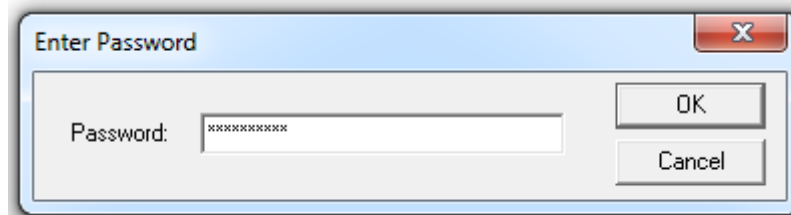
5. In the Add Profile box that appears, type the word "Tusker" and click "Add to Profiles". This will allow you to skip step #4 for future connections to Tusker. Note: this box only appears for a few seconds and then disappears. If you would like to add the profile after the box disappears, click on Profiles...Add Profile and the box will reappear.



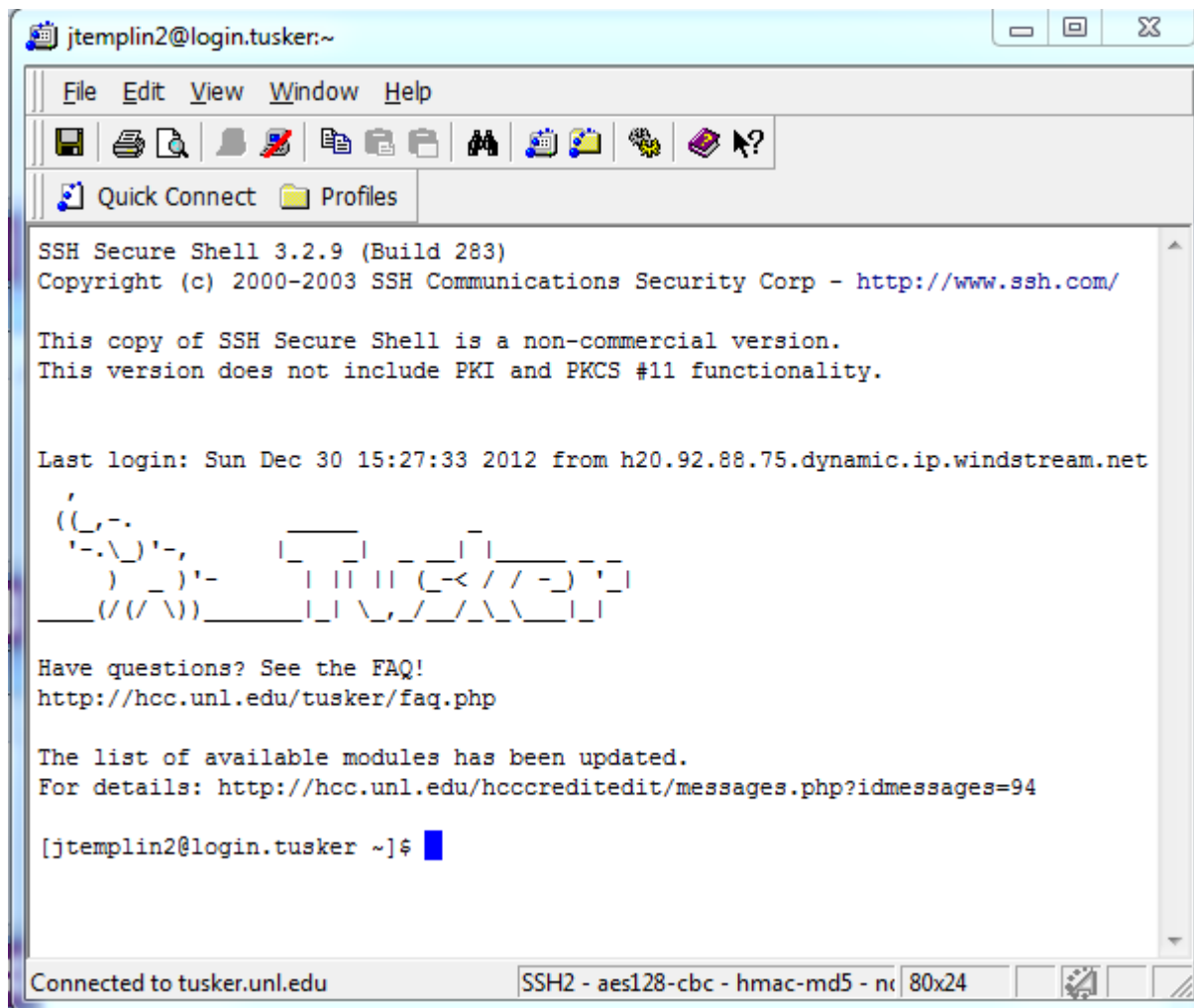
6. If this is your first time connecting to Tusker you will be asked to identify the host machine. When you see the Host Identification box, press the Yes button. You will not see this again.



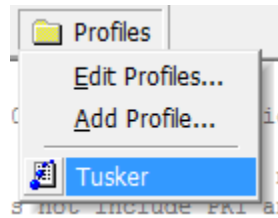
- Once the SSH program connects to the Tusker server, you will be prompted to enter your password. Note: your password is unique to your HCC account and is not the password for your UNL ID. **This prompt will appear all subsequent times you connect to Tusker:**



- Once connected successfully, you will see the following prompt in the SSH Client window:



9. If you have created a profile (under step #5), then the next time you would like to connect to Tusker, click on Profiles...Tusker and you can omit step #4.



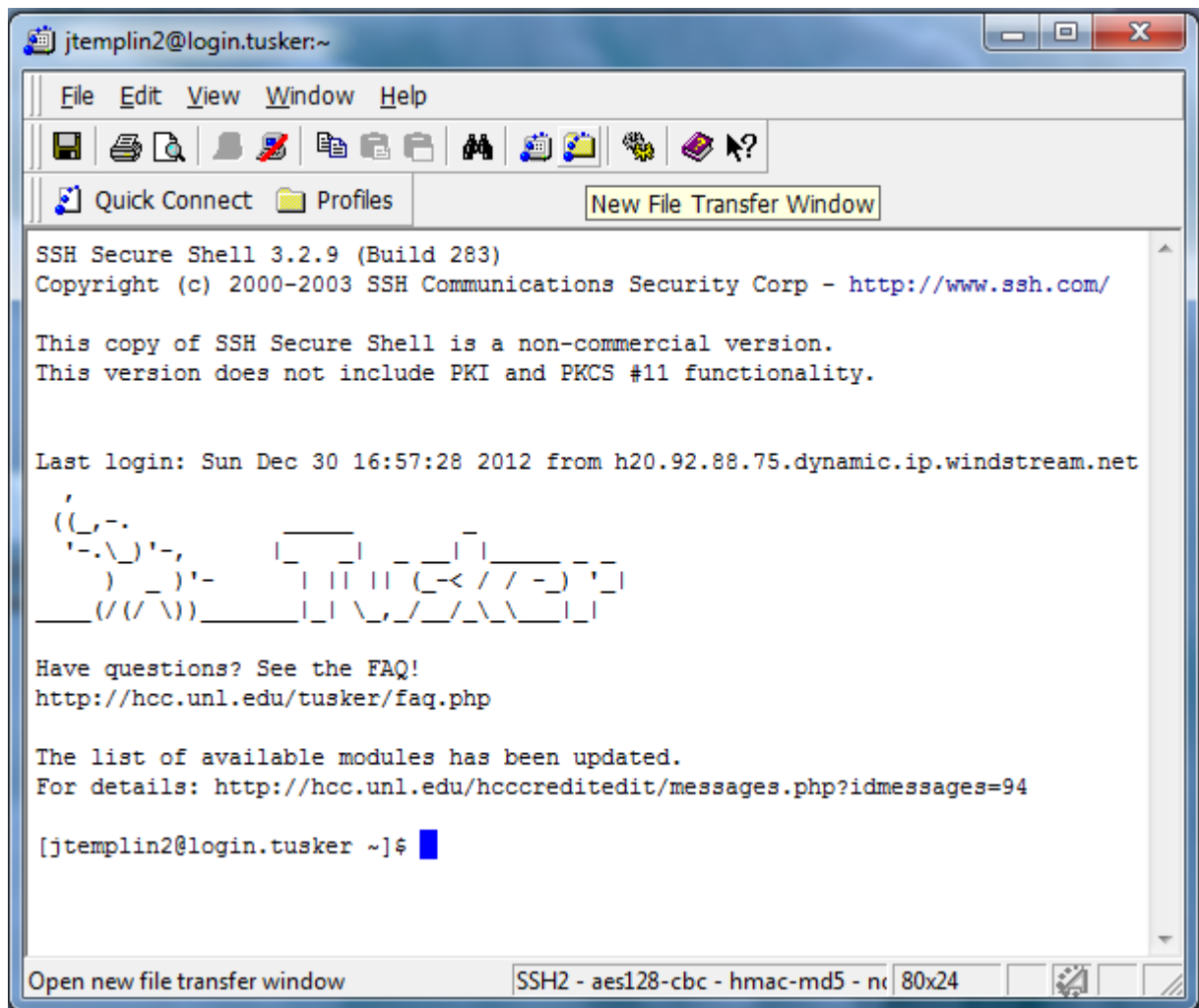
Open to Tusker Using the SSH File Transfer Client

Once you have connected to Tusker with the SSH Client, the next step is to connect with the SSH File Transfer Client. The SSH File Transfer Client is a menu-based program that uploads and downloads files to and from the Tusker server.

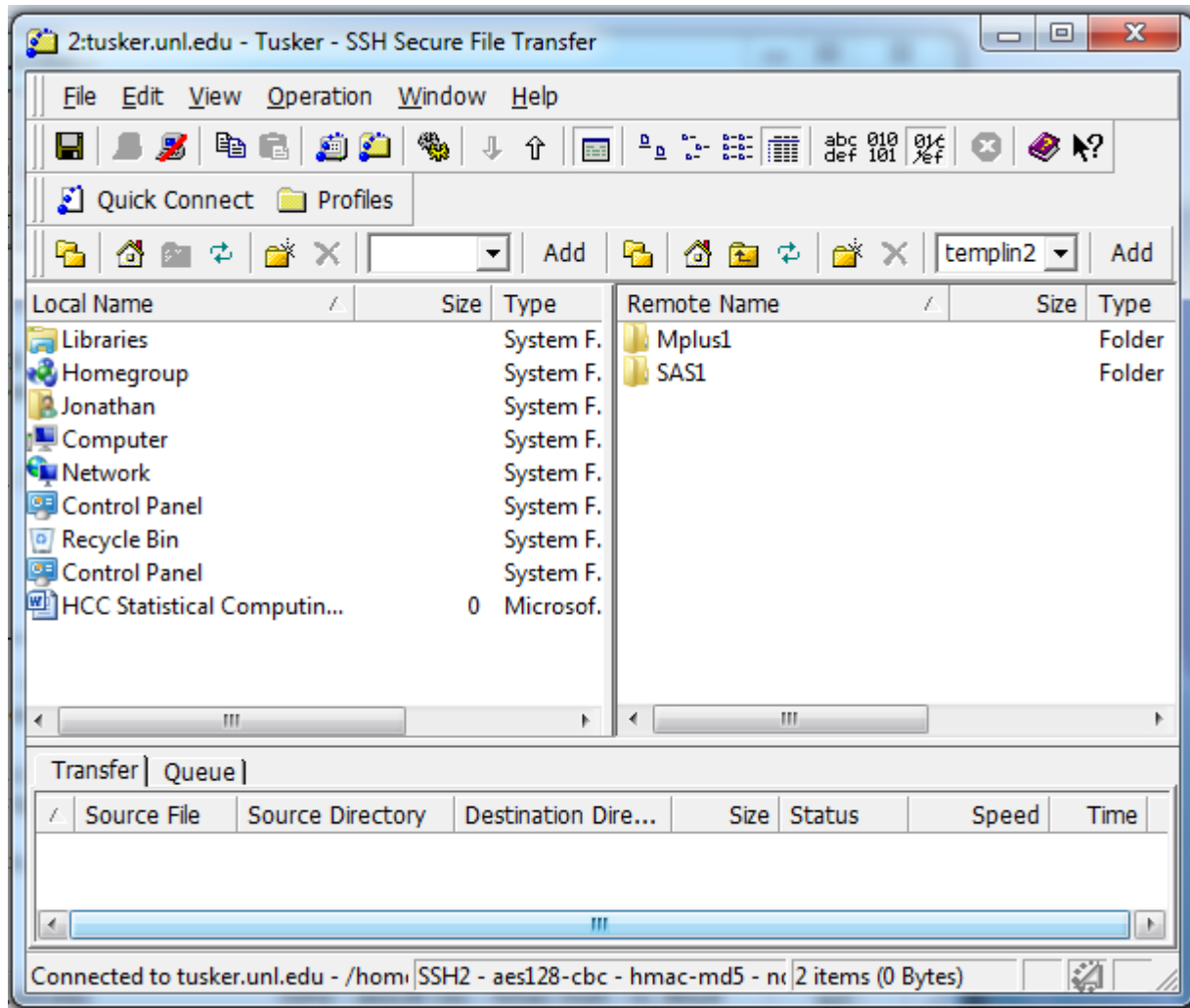
1. Connect to Tusker using the SSH Client Terminal (the previous step).
2. Once connected to Tusker, click on the icon with a yellow folder underneath blue dots



You can find this icon in the middle of the screenshot below.



3. Once pressed, a new window appears:



The window on the left is your computer. The window on the right is the home directory of the Tusker server. To move files from one to the other, first find the files by navigating through the folders and directories. After that, drag and drop from one to the other. You will see the file appear in the “transfer” box at the bottom of the screen.

Notes on the Tusker Server

- Visit <http://hcc.unl.edu/hcccreditedit/faq.php?tp=Tusker> for a list of Tusker FAQs.
- The server uses Linux so all commands entered must be Linux commands. For a tutorial on Linux, visit <http://www.ee.surrey.ac.uk/Teaching/Unix/>.
- A few commonly used Linux commands:
 - To change your password from the initial version given to you by the HCC type the passwd command
 - Note: you will not see any characters on the screen when you type your new password
 - ls – lists all files and folders in the current directory
 - pwd – lists the address of the current directory
 - cd /folder1/folder2 – changes directory to folder1/folder2

Running Mplus on Tusker

Running Mplus on Tusker involves the following:

- Uploading of the data file (using the SSH File Transfer Client)
- Uploading of the Mplus syntax file (using the SSH File Transfer Client)
- Execution of Mplus (using the SSH Client Terminal)
- Downloading of the Mplus output file (using the SSH File Transfer Client)

Mplus syntax files (ending by default with .inp), data files, and output files (ending by default with .out) are plain-format text files. This example begins by creating a simple input and data file. You can omit this step if you have your own files. For ease of access, all instructions will be for files placed in a folder on the desktop. This guide assumes you are using Windows (XP or more recent).

1. On your (local) computer, create a folder named “Mplus Tusker” on your desktop:

- a. Right click on the desktop and select New...Folder from the dropdown menu.
- b. Type “Mplus Tusker” for the folder name.
- c. Open the folder by double clicking on the icon on the desktop.

2. Within the Mplus Tusker folder, create the Mplus input file:

- a. Right click within the folder window and select New...Text Document from the dropdown menu.
- b. Name the file test.inp (if a prompt asks you about changing the extension, click yes)
 - i. Important note: if your new file does not end in .txt before renaming the file, your computer has disabled viewing of file extensions. Complete the following instructions to enable viewing of extensions before continuing.
 - ii. Within the folder, press the Alt key.
 - iii. On the menu that appears at the top of the window, select Tools...Folder Options.
 - iv. In the Folder Options box, select the View tab.
 - v. Uncheck the box beside “Hide extensions for known file types”.
 - vi. Click “Ok”.
 - vii. Rename the new text file you just created and make sure it reads test.inp.
- c. Open test.inp by double clicking on the icon in the folder.
 - i. Important note: if you see a “windows cannot open the file” box appear, you must select the program to use by default to open files ending in .inp.
 - ii. Click the radio button next to “Select a program from a list of installed programs”.
 - iii. Press Ok.
 - iv. Find the WordPad program from the list of programs and select it by clicking on the icon. WordPad is a basic text editor that comes with Windows.
 - v. Press Ok.
 - vi. A blank file should now open in WordPad.

- d. Copy and Paste the following text into the test.inp file open in WordPad:

TITLE:

Test Mplus File

DATA:

FILE = test.dat;

VARIABLE:

NAMES = x;

OUTPUT:

SAMPSTAT;

- e. Save the file and exit WordPad.

3. Within the Mplus Tusker folder, create the Mplus data file:

- a. Right click within the folder window and select New...Text Document from the dropdown menu.
- b. Name the file test.dat (if a prompt asks you about changing the extension, click yes)
 - i. Important note: if your new file does not end in .txt before renaming the file, your computer has disabled viewing of file extensions. Complete the following instructions to enable viewing of extensions before continuing.
 - ii. Within the folder, press the Alt key.
 - iii. On the menu that appears at the top of the window, select Tools...Folder Options.
 - iv. In the Folder Options box, select the View tab.
 - v. Uncheck the box beside "Hide extensions for known file types".
 - vi. Click "Ok".
 - vii. Rename the new text file you just created and make sure it reads test.dat.
 - viii.
- c. Open test.dat by double clicking on the icon in the folder.
 - i. Important note: if you see a "windows cannot open the file" box appear, you must select the program to use by default to open files ending in .dat.
 - ii. Click the radio button next to "Select a program from a list of installed programs".
 - iii. Press Ok.
 - iv. Find the WordPad program from the list of programs and select it by clicking on the icon. WordPad is a basic text editor that comes with Windows.
 - v. Press Ok.
 - vi. A blank file should now open in WordPad.

d. Copy and Paste the following text into the test.dat file open in WordPad:

1
2
3
4
5

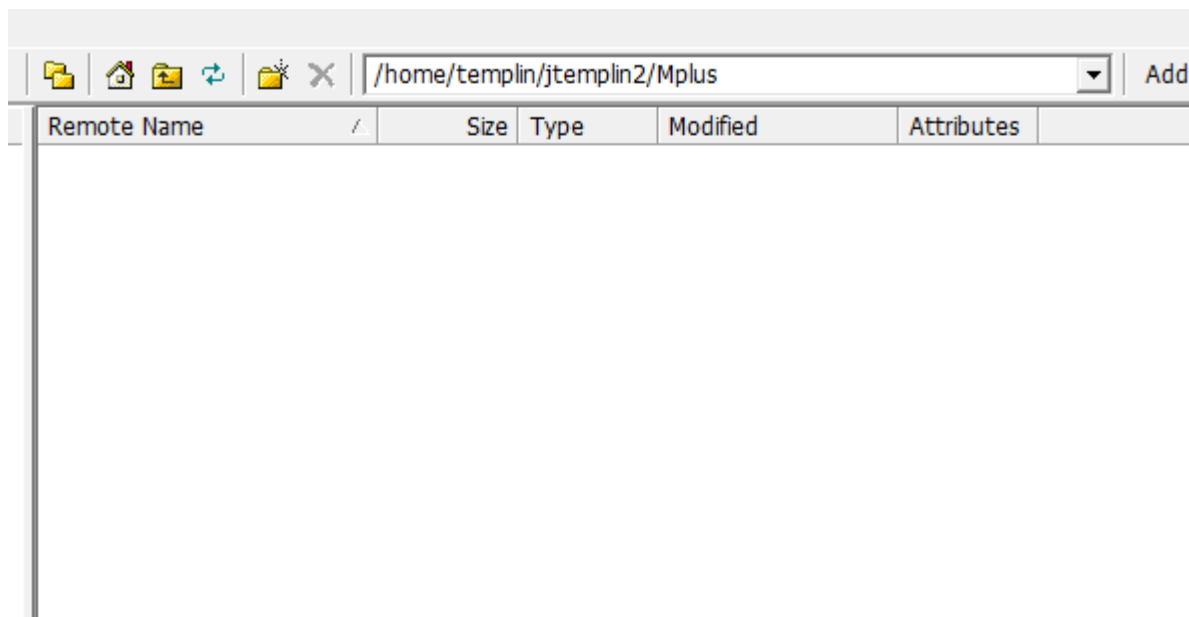
e. Save the file and exit WordPad.

4. Connect to Tusker using the SSH Client Terminal Program (follow instructions in previous section of this document)

5. Open the SSH File Transfer Client (follow instructions in previous section of this document)

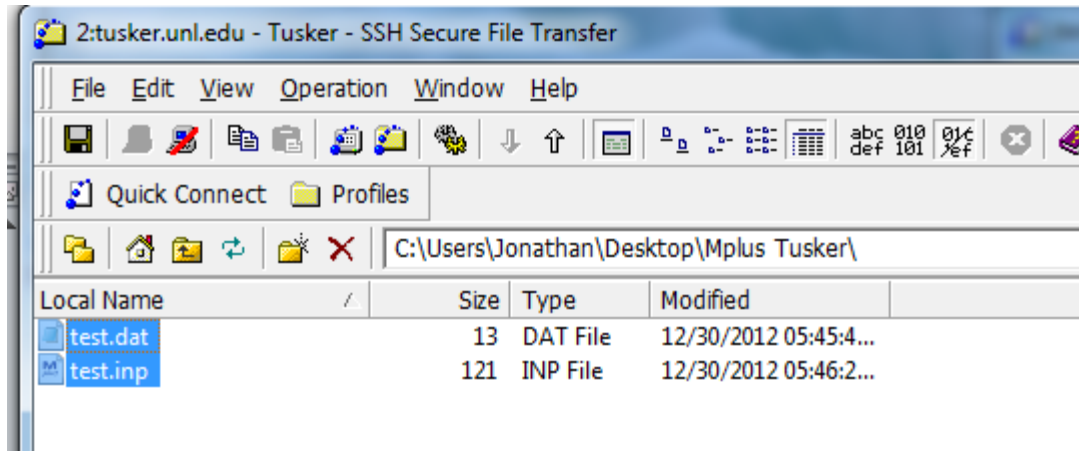
6. Create a new folder for this analysis on Tusker using the SSH File Transfer Client:

- a. In the right hand side of the SSH File Transfer Client window, right click and select New Folder from the dropdown menu.
- b. In the box next to the folder icon, name the folder Mplus and press Enter.
- c. Double click on the new folder and note the path in the dropdown box above the right hand side (the one shown below is /home/templin/jtemplin2/Mplus). The path is needed to execute Mplus. Please note that paths are case-sensitive and space-sensitive.



7. Transfer the newly created Mplus syntax file (test.inp) and Mplus data file (test.dat) on your (local) computer to the newly created Mplus folder on the Tusker server using the SSH File Transfer Client:

- a. On the left hand side, find the Mplus Tusker folder (if placed on the desktop it should be in the window already – if not, you must find the location on your local computer):
- b. Double click the Mplus Tusker folder
- c. Highlight the data and syntax files (note: pressing control while clicking allows multiple files to be highlighted):



- d. Drag and drop these files to the window on the right hand side. In the transfer box at the bottom you will see the status of the upload:

Transfer Queue						
	Source File	Source Directory	Destination Directory	Size	Status	Speed
↑	test.dat	C:\Users\Jonathan\Desktop\Mplus Tusk...	/home/templin/jtemplin2/Mplus	13	Queued	0.0 kB/s
↑	test.inp	C:\Users\Jonathan\Desktop\Mplus Tusk...	/home/templin/jtemplin2/Mplus	121	Queued	0.0 kB/s

8. Using the SSH Client Terminal, type the following commands at the prompt:

- a. Type: module load mplus/7.0
 - i. Note: Linux is case sensitive so the command above must be exactly the same.

```
[jtemplin2@login.tusker ~]$ module load mplus/7.0
[jtemplin2@login.tusker ~]$
```


- ```
Last login: Sun Dec 30 17:13:36 2012 from h20.92.88.75.dynamic.ip.windstream.net

'
((,-.
'-._) '-, |_____| _|_ ____|_
) _) '- | || || (-< / / -_) '_|
____(/ (/ \)) _____|_|__/\/___|_

Have questions? See the FAQ!
http://hcc.unl.edu/tusker/faq.php

The list of available modules has been updated.
For details: http://hcc.unl.edu/hccc credited it/messages.php?idmessages=94

[jtemplin2@login.tusker ~]$ cd /home/templin/jtemplin2/Mplus
[jtemplin2@login.tusker Mplus]$
```

- ```
Mplus VERSION 7 (Linux)
MUTHEN & MUTHEN


Running input file 'test.inp'...

Beginning Time: 18:05:40
Ending Time: 18:05:40
Elapsed Time: 00:00:00

Refer to 'test.out' for warning(s).
[jtemplin2@login.tusker Mplus]$
```

9. Using the SSH File Transfer Client, download the output file from the Tusker Server to your local machine:



- a. Click on the  icon above the right hand window to refresh the window on the right hand side (the Tusker server directory).
- b. Click on the file named test.out (the Mplus default output file for the test.inp syntax file).
- c. Drag and drop the test.out file from the right-hand window (the Tusker server) to the left hand window (the Mplus Tusker directory on your local computer).
- d. Double click the test.out file in the left hand window
 - i. Important note: if you see a “windows cannot open the file” box appear, you must select the program to use by default to open files ending in .out.
 - ii. Click the radio button next to “Select a program from a list of installed programs”.
 - iii. Press Ok.
 - iv. Find the WordPad program from the list of programs and select it by clicking on the icon. WordPad is a basic text editor that comes with Windows.
 - v. Press Ok.
 - vi. A blank file should now open in WordPad.