Connecting to *NIX at NJIT

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1. OSL (Open System Lab)

The term OSL at NJIT denotes Linux machines physically located on the 2nd floor of the GITC building in a laboratory that is known as Open Systems Laboratory (OSL in short). The machines have DOMAIN names oslX.njit.edu or oslXY.njit.edu, where X,Y are digits mapping to integers from 1 to around 31. A given domain name maps to a unique IP address starting with 128.234.44.51 for osl1.njit.edu, but note that osl31.njit.edu might map to 128.234.44.47, which is non-intuitive. In this document, for the sake of the discussion to follow I will be using example machines osl7.njit.edu, osl21.njit.edu. Therefore, X=7 in the former case and X=2 and Y=1 in the latter case. *If you plan to connect to any one of those machines by visiting NJIT's GITC building, skip Section 2 below. If you are inside NJIT, and you are using a wired connection skip Section 2 below.* Some URL(Uniform Resource Locator) of interest are as follows.

0. NJIT computer policies as applicable to the CS Department and other NJIT unit are available, as of this writing, at

   https://ist.njit.edu/student-computers

1. The URL for downloading NJIT's copy of MobaXterm, a Windows secure shell client (ssh) is shown below. The URL provides also information about using ssh on Mac OSX and Linux. We do not discuss these options. One may also download a copy of MobaXterm of limited functionality directly from the manufacturer. In that case you may not even need to install MobaXterm; for more see manufacture/publisher's web site.

   https://ist.njit.edu/accessing-afs

2. The URL for 'accessing AFS' which means connecting to a linux machine at NJIT is shown below

   https://ist.njit.edu/afs

3. The NJIT VPN URL with links to downloadable VPN clients for Windows,MacOSX and Linux and instructions is shown below.

   https://ist.njit.edu/vpn

4. The NJIT URL with info on *nix commands is shown below.

   https://ist.njit.edu/common-UNIX-commands

2. VPN

NJIT people have three options in connecting to an OSL NJIT machine:

(a)   Visiting the OSL Lab on the 2nd floor of GITC,
(b)   Using within NJIT a laptop with a wired internet connection,
(c)   Using within NJIT a laptop with a wireless internet connection,
(d)   Using from OUTSIDE of NJIT a laptop.

The discussion to follow applies only to case (d) and in some rare cases to case (c) and both would be referred to as being 'outside of NJIT'. You may skip this section if your situation is under case (a) or case (b).

If you plan to connect to an OSL machine from outside of NJIT you must

(1)   Detect if a VPN client has been installed previously on your machine. We expect Computing students can figure out whether a VPN client is preinstalled or previously installed (by you) on their machine (Setting->Programs). If it is not, first download a VPN (Virtual Private Network) client though URL 3 of Section 1, and install it. Installation is done once and might require a reboot or a restart.
(2)   Activate VPN if a VPN client is preinstalled on your machine but is currently deactivated (this is a rare case, since by default it is activated at boot time). If you know how to deactivate it, you should know how to activate it.

On my laptop the windows taskbar is at the bottom of the screen, and the Windows icon is on the bottom left corner and the time and date on the bottom right corner. In the bottom

right area of the taskbar you might see the icon shown below.
If not find a up-arrow in the right are of the task bar click
on it and see if the icon is depicted. For me, it appears as
shown below in Figure 1. This means that the VPN client is
ACTIVATED but it is not in USE (not connected to the NJIT
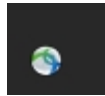network). If the VPN client was in USe the icon would appear
as in Figure 4 instead.

Figure 1.

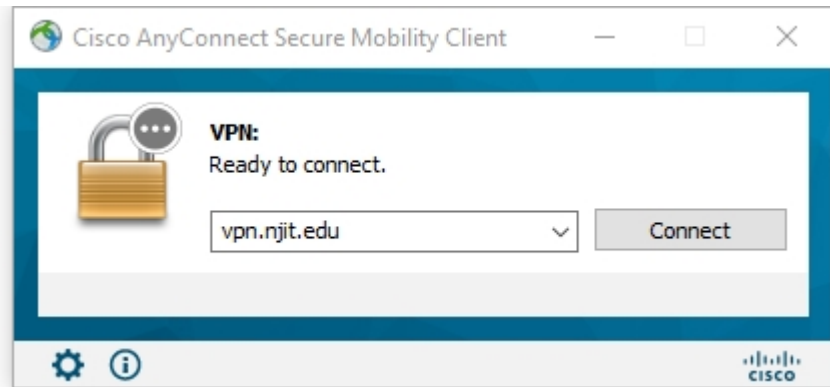1. You may click on this icon and the following pop-up with
   might appear (Figure 2).

Figure 2.

2. The Connect message (Figure 2) on the button indicates not
   only that your machine is disconnected (i.e. the VPN client
   is not in use), but also indicates that your clicking on it
   will allow a connection to take place and thus start using
   VPN. You are then ready to click Connect. In the next step
   you need to have ready your myUCID credentials (login and
   password) which must not have expired. After you click
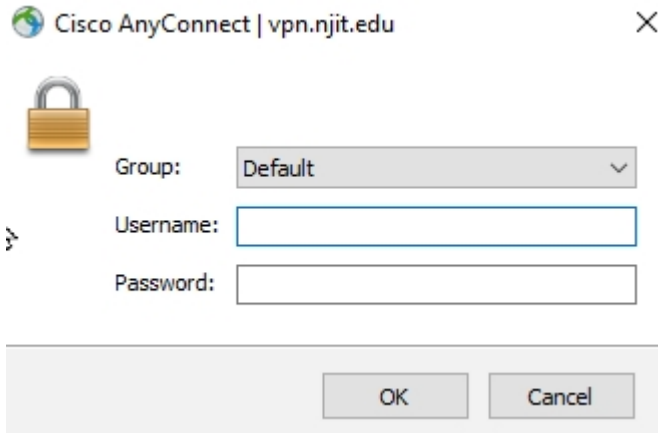   connect the pop up window of Figure 3 is shown.

Figure 3.

3. The Username: field might have been pre-populated with your
    UCID. If not type in your myUCID login in the Username:
    field, and then type in your myUCID password under
    Password: The use of the TAB button of the keyboard can help
    you moving around quickly. The Group: option can be left
    Default or you select an alternative according to the user
    instructions available during the installation process.
4. If you have supplied the correct info a connection will be
   established and VPN would be in use and the popup window
   will disappear. At that point if you try to locate the VPN
   icon using the instructions prior to step 1, the icon has a
   lock on it as shown below in Figure 4.

Figure 4.

    5.If there was an active connection prior to step 2, and
there will be an active connection after step 3, the window of
Figure 2 would have looked like Figure 5. The button reads
Disconnect since VPN is in use vs Connect in Figure 2 when VPN
was not yet in use. You can click on Disconnect to terminate
the VPN connection when it is of no need any more. An
alternative is to locate the icon in Figure 4, click on it to
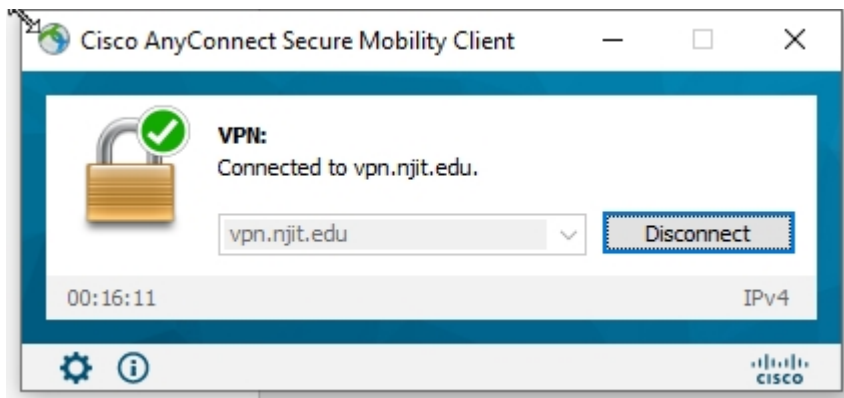disconnect the in-use VPN session.

Figure 5.

At this point if you outside of NJIT you have a VPN session in use. The next section deal with a secure shell (ssh) client and how it can be used to connect to an OSL machine.

3. Secure Shell Client

By now, you are either in Case 2.b or 2.c or 2.d. If you are in case 2.a you do not need a ssh client you can login directly to an OSL machine and each OSL machine has its own preinstalled. If you are in Case 2.b you have skipped the rest of the discussion of Section 2. In case 2.c (rare) or case 2.d you have completed successfully step 3 there and you hava a VPN session that is in-use (and of course active).

This mean you have an authenticated network connection-based presence at NJIT.

Download and Install a Secure Shell client (ssh) utilizing URL 1 of Section 1. An alternative is through URL 2. OSX and Linux machines have one pre-installed. The one available for Windows has file transfer capabilities using a graphical interface. Thus for a Windows machine you may install MobaXterm, available to all at NJIT, or go to the commercial MobaXterm web-site and download the limited feature free version found there. NJIT provides some info through the link below that also includes info for OSX users.

https://ist.njit.edu/how-connect-afs-mobaxterm

The discussion below is for a Windows client using Mobaxterm.

1. Invoke Mobaxterm. A window as shown in Figure 6 will pop up. Depending on your settings and customizations looks might be different. Click on the button with the message **Start Local Terminal**
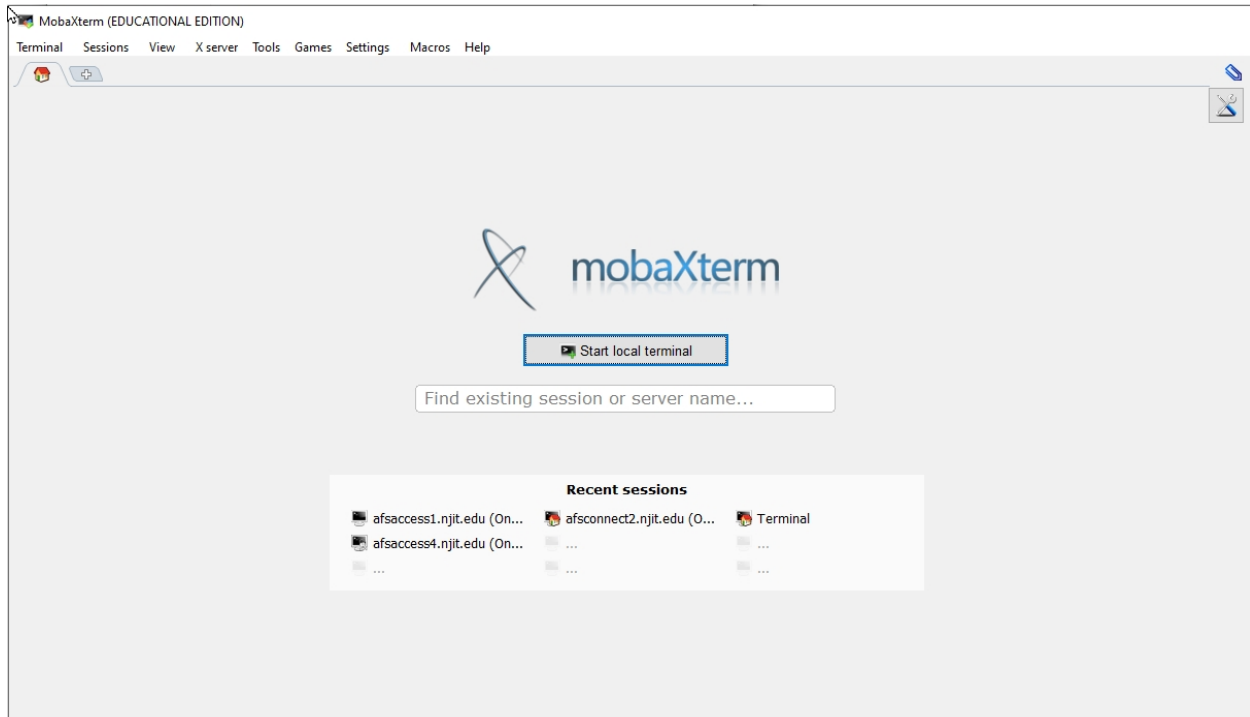

Figure 6.

2. After clicking the button, a window like the one shown below in Figure 7 pops up. That window has a varying prompt that ends with a right arrow and then next to the right arrow you may usee a blinking cursor in the form of a rectangular box. This is a window running on your local computer, a client application. The prompt is a request by the application for you to provide input. We might call the application a shell.
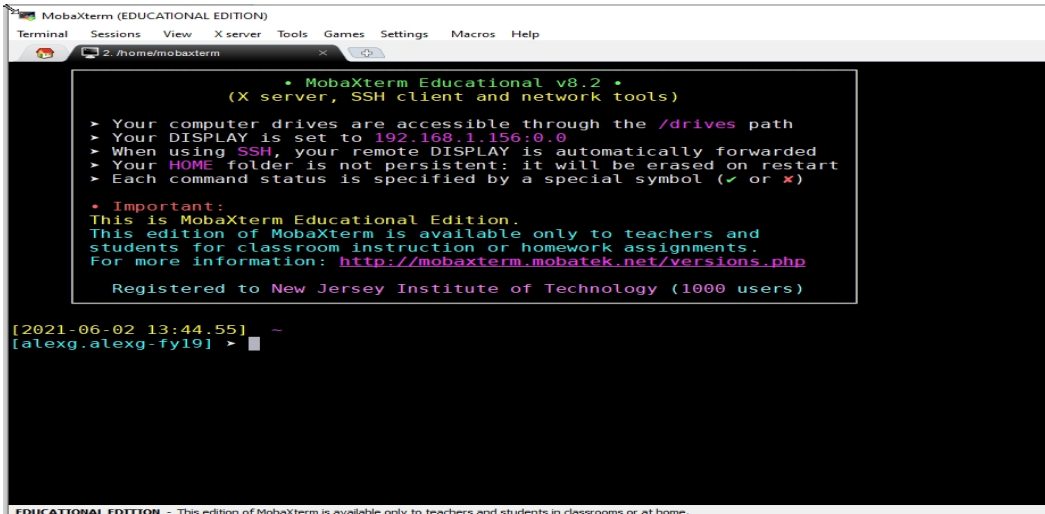
Figure 7.

3. Start writing using the keyboard a shell command that will be read by the client application (shell) of your Windows client machine. The command that you will type will be read by the client application (shell) and executed. The client application will then establish a Secure Shell connection to a remote OSL machine as specified by you. As soon as a connection is established you would be writing down commands apparently on the client, but the window would be hosted by the remote host (machine/server), and the commands would be be read and executed by the remote host instead .

For the example here we pick as a remote host (server) osl7.njit.edu.
The syntax of what you should type starting at the cursor's position is
➢ ssh   myUCID@host-name

where

myUCID   is your UCID login name, and

host-name   is the remote host name to which you want to connect. For this example host-name is osl7.njit.edu .

   Do not forget to press ENTER at the end of the typed line and every typed line.

A Warning message might be generated the first time you connect to this host and a password prompt is output for you to provide your UCID password. The blinking cursor box

is waiting for your myUCID password. Type it in and Do not forget to press ENTER at the end of the password.
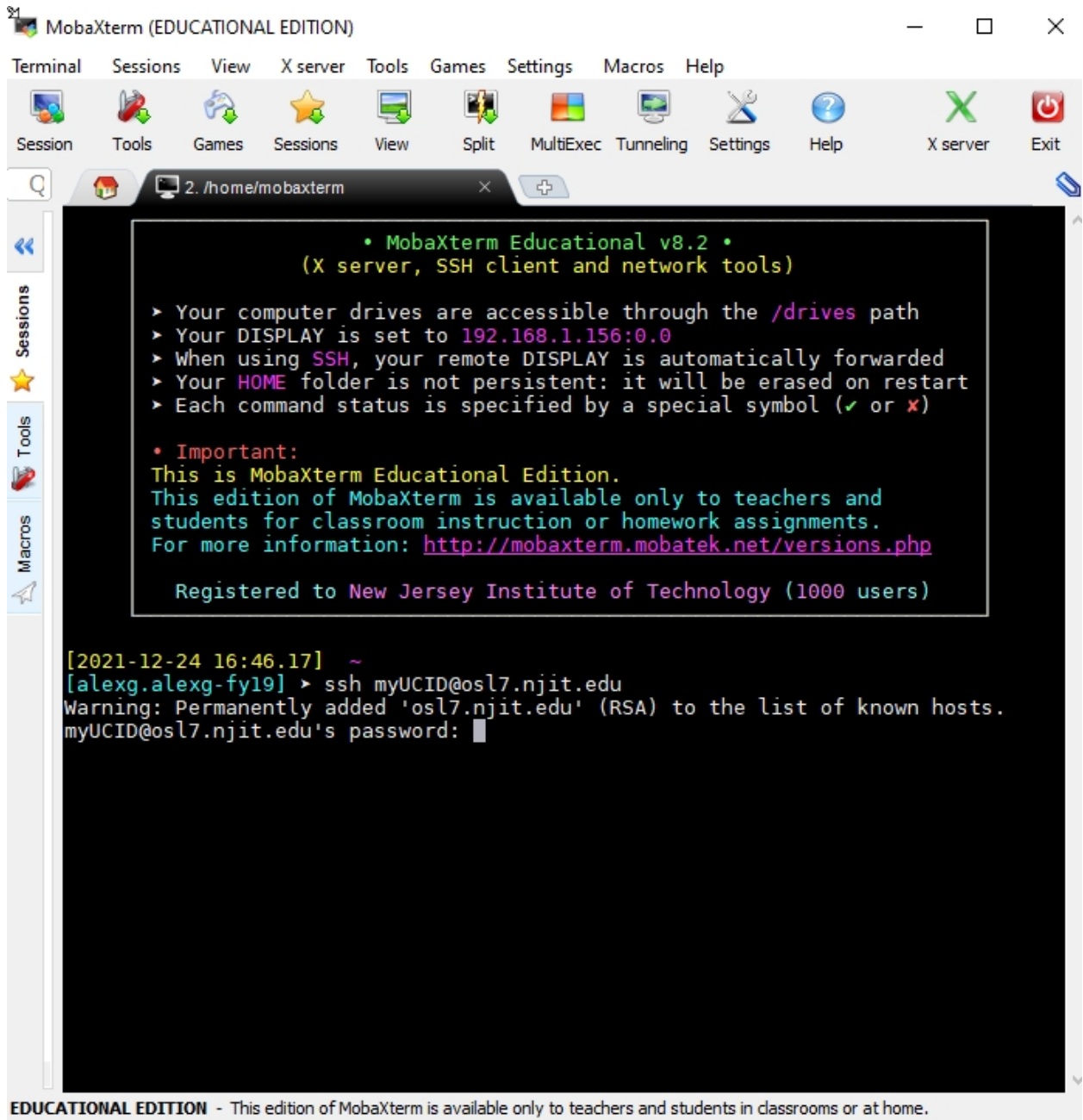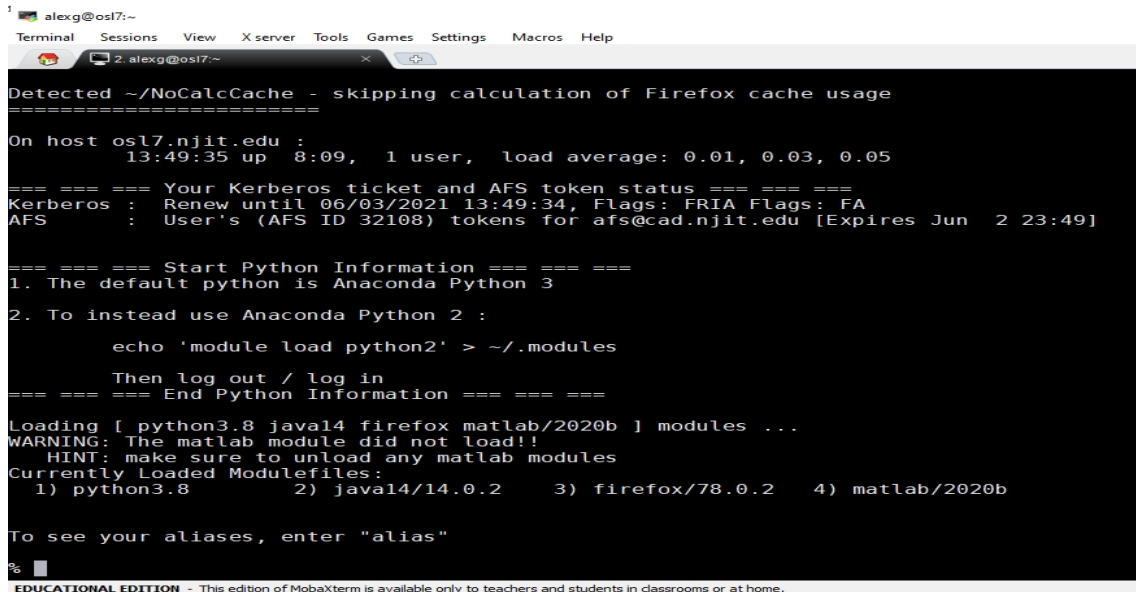
See Figure 8 below.

Figure 8.

4. After you typed your password and pressed ENTER you are logged on to the machine in question (of the given host-

name). The screen might or might not look like as in Figure 9. Looking at Figure 9 in the third line from the top you might read a "On host osl7...." verifying that you indeed got connected to osl7.njit.edu as intended.

The windows of Figure 9. is a window hosted by the remote host. Although you will be typing commands in the client machine, your input will be read and executed and interacted by the remote host.

The remote host window has a diffrent prompt
At the very bottom of the screen that is Figure 9 you see the prompt which FOR ME (but maybe NOT FOR YOU) is the percent symbol % and after a space you may see the blinking cursor waiting for your input . The prompt and the cursor are customizable.

Figure 9.

You might explore other options of MobaXterm. Moreover it is possible to upload files (from client to remote host) or download files (from remote host to client). You might see on the left side or the right side of the window the file sytem directory area for your account. Read the Mobaxterm manual or instructions as made available by NJIT or through the Mobaxterm web-site for more.**You are then ready to start interacting with the remote host. To terminate the session type exit.**