Connecting to the ODU “Turing” Cluster

Section Terminology

- **remote connection** - This refers to a connection that is made over a network between two computers
- **ssh** - Secure Shell, a type of remote connection
- **terminal** - an application window, that accepts text commands
- **username** - In this document, when the term “username” is used, it is referring to a users MIDAS account user name (i.e. the part of your ODU email address before the @ symbol)
- **password** - In this document, when the term “password” is used, it is referring to a users MIDAS account password (i.e. the ODU email account password)
- **X window system (X11)** - a set of software libraries and applications that allow images on a local or remote Linux/Unix computer, to be displayed {Note: The X window system is not the same thing as the Microsoft Windows set of operating systems.}

Introduction to Remote Connections

The Turing cluster runs a Linux operating system that allows users to remotely connect through a secure shell (**ssh**). The **ssh** connection can be created through a terminal window of a Linux/Unix based system (i.e. Macintosh OSX, Ubuntu, Oracle (historically Sun) Solaris, etc.). Microsoft Windows based systems; however, require the installation of additional software known as an application client to connect to the cluster.

Apple Macintosh OSX **ssh** connections through Terminal.app

The Apple Macintosh OSX operating system kernel is a hybridized version of a Unix(BSD) implementation named Darwin. This means the operating system has a terminal application included in a standard installation, that can be used to connect to the Turing cluster. The “Terminal.app” is located in the “Utilities” folder, nested under the “Applications” folder. Once opened, the **ssh** command can be run directly from the prompt. In order to run applications in X11 (as of OS 10.7 Mountain Lion) there is a required installation of the Apple Public Source application XQuartz. XQuartz can be downloaded from the website [https://xquartz.macosforge.org](https://xquartz.macosforge.org). If the user is on the ODU network with reduced user privileges (i.e. a user is unable to install programs), a request to install the software can be made to the ITS group through the email address [itshelp@odu.edu](mailto:itshelp@odu.edu).

Connect using Terminal.app
1. Open "Finder" → “Applications” → “Utilities” → “Terminal”

2. At the command prompt type **`ssh username@turing.hpc.odu.edu`**
   
   * If a prompt asks “Are you sure you want to continue connecting (yes/no)”, type **yes** and press [Enter].

3. A prompt will ask “username@turing.hpc.odu.edu’s password:”

4. Type in your password and press [Enter]. {Note: You will not see anything change on the screen as you type your password}.

5. At this point you will see a cursor blinking next to a prompt similar to “[username@turing1 ~]$”. That means you have successfully logged into the Turing cluster.
Connect using Terminal.app with XQuartz for X11 windowing

1. Open “Finder” → “Applications” → “Utilities” → “Terminal”

2. At the command prompt type “\texttt{ssh -X username@turing.hpc.odu.edu}”
   * If a prompt asks “Are you sure you want to continue connecting (yes/no)?”, type \texttt{yes} and press [Enter].

3. A prompt will ask “username@turing.hpc.odu.edu’s password:”
4. Type in your password and press [Enter]. {Note: You will not see anything change on the screen as you type your password}.

5. At this point you will see a cursor blinking next to a prompt similar to “[username@turing1 ~]$”. That means you have successfully logged into the Turing cluster.

6. To test XQuartz X11 windowing, you may type the command `xterm`. If a second terminal window opens then the connection is functioning properly.
   {Note: If an error appears that says “xterm Xt error: Can’t open display:” then XQuartz has either not been installed, or not installed properly.}

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**Exiting/Closing the connection**

1. Type “**exit**” into the window, and then press [Enter]

2. Click “Terminal” in the menu bar (top right corner of desktop) and select “Quit”

**GNU/Linux and Unix `ssh` connections through Terminal**

There are many varieties (also known as “distributions” and/or “forks”) in both GNU/Linux (i.e. Ubuntu, RedHat, Arch, Debian, Mint, Fedora, Suse, Slackware, GNU, etc.) and Unix (Solaris, BSD, HP-UX, etc.) operating systems. Due to the inability to account for every variant, this section was written in a generic manner. Either graphical or text based one united component exists in all versions and that is an area where commands can be directly entered know as
the terminal, console, or command window. In text based distributions, the terminal is the initial command prompt in which the user interfaces. In graphical user interface (GUI) based distributions the terminal is often found by right-clicking the desktop and selecting “Terminal” from the contextual menu that appears. {Note: If terminal cannot be found using the above techniques, please search the internet using your search engine of choice to find out how to locate the terminal application.}

Connect using ssh in Terminal

1. Open a Terminal window
   {Note: Please read above information if questions exist about this step}

2. At the command prompt type "ssh username@turing.hpc.odu.edu"
   
   * If a prompt asks “Are you sure you want to continue connecting (yes/no)”, type yes and press [Enter].
   ** If the above command returns “ssh: command not found” the application package for ssh may not be installed in your system or your path may not include the “/usr/bin” directory. In either case you may submit a request for help at itshelp@odu.edu for assistance.

3. A prompt will ask “username@turing.hpc.odu.edu’s password:”

4. Type in your password and press [Enter]. {Note: You will not see anything change on the screen as you type your password}.

5. At this point you will see a cursor blinking next to a prompt similar to “[username@turing1 ~]$”. That means you have successfully logged into the Turing cluster.

Connect using ssh in Terminal with X11 windowing

1. Open a Terminal window
   {Note: Please read above information if questions exist about this step}

2. At the command prompt type “ssh -X username@turing.hpc.odu.edu”
   
   * If a prompt asks “Are you sure you want to continue connecting (yes/no)”, type yes and press [Enter].
   ** If the above command returns “ssh: command not found” the application package for ssh may not be installed in your system or your path may not include the “/usr/bin” directory. In either case you may submit a request for help at itshelp@odu.edu for assistance.

3. A prompt will ask “username@turing.hpc.odu.edu’s password:”

4. Type in your password and press [Enter]. {Note: You will not see anything change on the screen as you type your password}.

5. At this point you will see a cursor blinking next to a prompt similar to “[username@turing1 ~]$”. That means you have successfully logged into the Turing cluster.

6. To test X11 forwarding type “xterm” at the prompt and press [Enter]
7. If a second terminal window opens then the connection is functioning properly.
   {Note: If an error appears, the X11 package may not be installed on your system. If
   the system is supported by ITS a request can be submitted to itshelp@odu.edu. If the
   system is not supported by ITS, an internet search for “installing X11” in your operating
   system of choice may be of assistance.}

Exiting/Closing the connection
3. Type “exit” into the window, and then press [Enter]