Connect to Seacat Server

Please note that we have changed the way the Seacat server works. **Unlike the old Seacat server, you no longer have access to the full Gnome or KDE desktops.** You will run commands from the terminal window that will pop out windows for GUI programs, but your bash shell is preconfigured for Cadence, Silvaco, and Synopsys programs.

COE IT is responsible for the program running correctly, but you should refer questions about how the programs work to your professor. We have included a section below listing basic Linux commands along with links to several sites that would assist you in learning Linux.

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2. **Instructions for Mac**
    a. Mac OS X already has the necessary SSH software on the system, so there is no installation for SSH connections. Simply **open terminal and use the command**:

    ```
    ssh -X eRaiderID@seacat.ece.ttu.edu
    ```

        i. Remember to use your eRaider ID above!

    b. If you get the "unable to reach display" error, you need to install XQuartz from www.xquartz.org.
    c. Continue to the Verify your Connection below.

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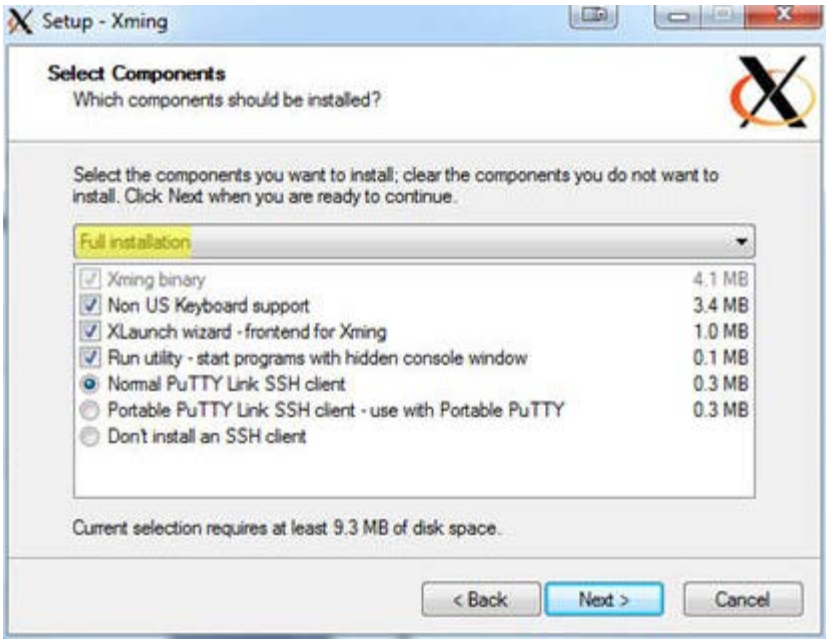
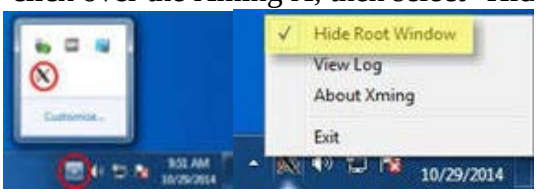
3. **Instructions for PC**
    a. **Download software:**
        i. **Xming** **http://sourceforge.net/projects/xming/files/Xming/**
        ii. **Xming fonts** **http://sourceforge.net/projects/xming/files/Xming-fonts/**
        iii. **PuTTY installer** "Windows installer for everything except PuTTYtel" **http://www.chiark.greenend.org.uk/~sgtatham/putty/download.htm**
    b. **Install Xming** with defaults for full installation, but do not launch yet:



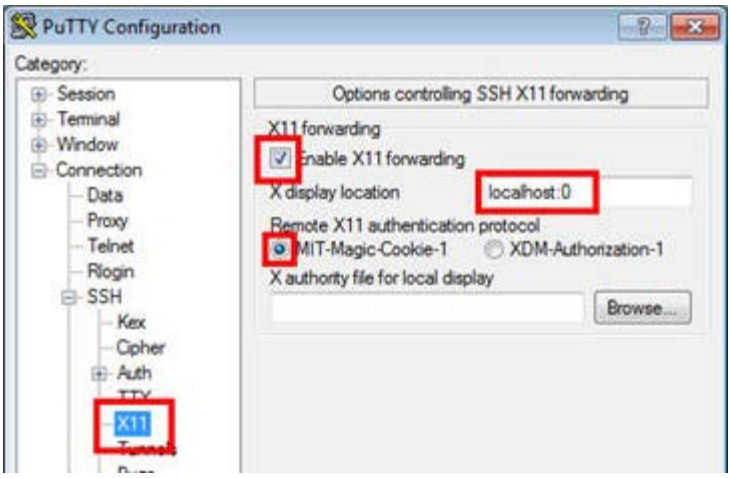
c. **Install Xming Fonts**. Select all fonts except Cyrillic fonts.
d. **Install PuTTY with default options**
e. **Start Xming.**
f. You should **see the firewall prompt.** Be sure to check both public and private networks:

If you don't see this prompt and can't connect, refer to the notes section for authorizing Xming through the local firewall.

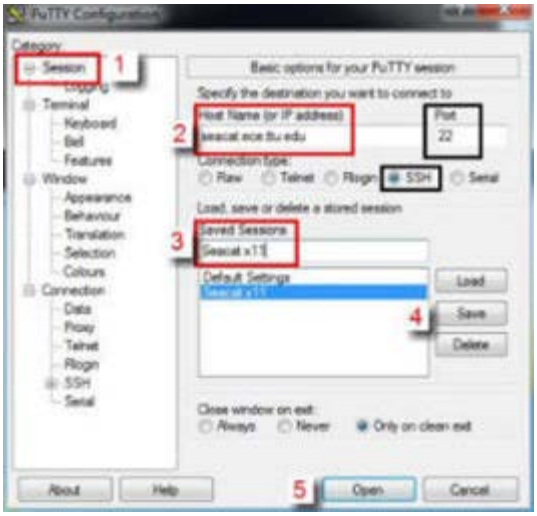
g. **Xming should start** without popping up a gray hatch window that would fill your screen.
NOTE: If you see the gray window, you will need to find the Xming icon in your system tray and right click over the Xming X, then select "Hide Root Window".



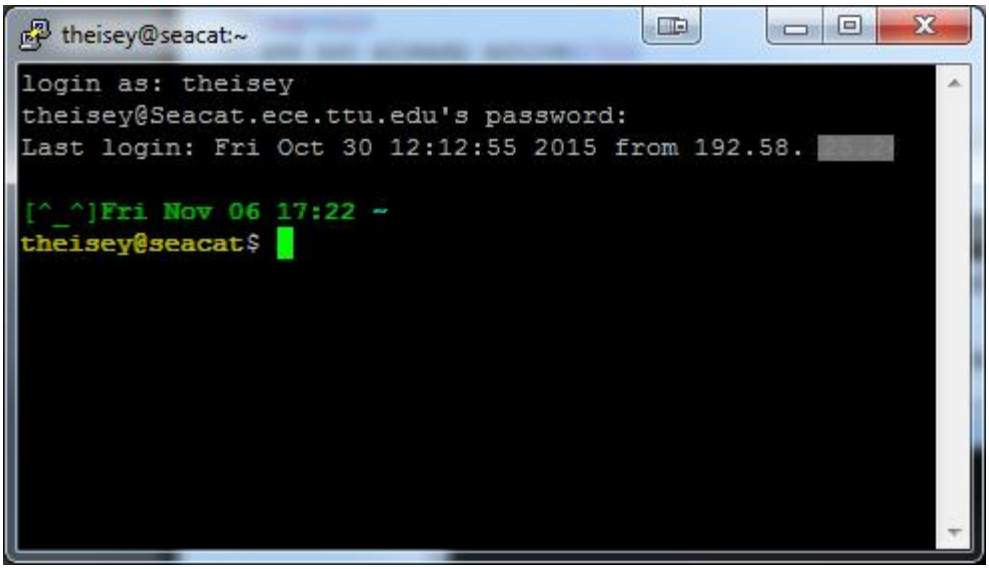
h. **Configure PuTTY:**
   i. Start PuTTY - Start button | All Programs | PuTTY | PuTTY
   ii. Expand Connection, then SSH, then X11. Check "Enable X11 Forwarding" and "MIT-Magic-Cookie-1", then enter "localhost:0" in the X display location:



iii. Configure Session:
   1. Click on Session
   2. Host Name = seacat.ece.ttu.edu, Port = 22, Connection Type = SSH
   3. Enter Seacat X11 in Saved Session
   4. Click Save.



i. **To connect to Seacat:**
   i. Start Xming and PuTTY if they are not already active
   ii. Click Session if it's not already selected
   iii. Click the Seacat X11 session name
   iv. Click Load, then Open
   v. A terminal window should open:



vi. Log in with your eRaider ID as the user and your eRaider password for the password. If you succeed, the system will show the prompt. (The yellow and green prompt is my custom prompt.)
** NOTE: There can be a delay between entering your ID and the prompt for password, especially if you are connecting from off campus.

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4. Verify Your Installation

a. If you are not connected and logged into Seacat, connect now. For the following commands, capitalization matters! PATH, Path, and path are seen as different commands!
b. Type the command

```
xeyes
```

you should see the cursor block move to the next line, pause briefly, and then the xeyes should show on your screen. (Two large eyes that follow your cursor.)
c. Optional steps to verify you have the proper environment set for our software:
   i. To verify your path is set up correctly, type the command:

```
echo -e ${PATH//:/\\n}
```

   and you should see a long list of directories scroll through your window. Verify that /usr/cadence, /usr/silvaco, and /usr/synopsys folders are listed.
   ii. To verify your libraries are in the LD_LIBRARY_PATH, type the command:

```
echo -e ${LD_LIBRARY_PATH//:/\\n}
```

   and you should see a list of folders that start with /usr/cadence/, /usr/silvaco/, /usr/synopsys.
   iii. To verify the environmental variables are set up properly in bash, type the following commands:

```
echo $CDS_ROOT
echo $SFLM_SERVER
echo $SYNOPSYS
```

   You should see the following answers: "/usr/cadence/SPB166", "silvacolm:3162", "/usr/synopsys"
   iv. To test video motion and speed, type the following command:

```
LIBGL_DEBUG=verbose glxgears
```

   This will spawn a window with three rotating gears. Your SSH terminal will output the video frame

rate every five seconds. Let this run for a minute or so, then press control-z to stop the list. Close the gears window. If this runs and you get 30-60 or more FPS, it's good to go.

d. *** See the Troubleshooting section if you encounter problems.

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5. Troubleshooting

a. If you cannot contact the Seacat server from outside campus (home, coffee shop, etc.), but you can connect when on campus, you may need to use TTU VPN services to get through your service provider's firewall. Check www.askit.ttu.edu for instructions on configuring VPN.

b. If you get the error "**PuTTY X11 proxy: unable to connect to forwarded X server:**" or an error that says "**Cannot connect to Display**" ensure:

   i. (PC) Xming is running and that you've configured PuTTY according to the steps above. You can stay logged in, start Xming, and try the command again.

   ii. (Mac) XQuartz is running and that you've used the correct SSH command -

```
ssh -X eRaiderID@seacat.ece.ttu.edu
```

c. If run a a shell other than bash, you will need to convert and add the commands in the file **~/sample.bashrc** to your default settings for the other shells. The Cadence, Silvaco, or Synopsys programs need these settings to run correctly. COE IT will not assist or support your use of other shells.

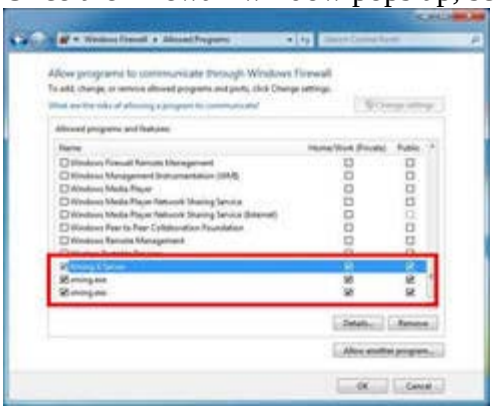
d. If you get a file not found error when trying to run a Cadence, Silvaco, or Synopsys program, type "echo $PATH" to see if your path includes the program you're seeking. For example, if you're trying to run Cadence Virtuoso, the path should include /usr/cadence/IC616/Tools. Compare your path with the actual file structure for the program in the /usr/ folder.

e. PC Firewall errors - If you cannot connect to Seact from anywhere, you will need to check your firewall settings:

   i. Start button, then type Firewall in the search bar. (You can also open the control panel and search for Firewall from there.)

   ii. Click "Allow a program through Windows Firewall" in the search results

   iii. Once the Firewall window pops up, scroll down the software list to Xming X Server and Xming.exe.



   iv. Check both Private and Public networks next to all Xming entries.

   v. Close the Firewall and control panel windows you opened, then test the connection.

f. If none of these steps addresses your issue, send a detailed email from your TTU account to support.coe@ttu.edu and our server administrators will look into the problem.

a. Please note that we cannot assist you with operation of the engineering software. You will need to consult your professor, TA, or instructions for these issues.
b. Be sure to include your location (at home, on campus WiFi, Engineering computer labs, etc.), your computer's operating system, any errors you see, and any unexpected responses with your email.

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6. Basic Linux Environment

a. **General Environment:**
   i. You will need to be familiar with basic Linux commands and file structure to use this system. The desktop environments are not available, but you can spawn gui programs from the command line.
   ii. The operating system is Red Hat.
   iii. The default supported shell is bash.
b. **Program locations:**
   (NOTE: The path to individual programs will be in folders underneath the root folders listed below, usually based on the latest version. When we update the system, we will change these subdirectories and the Linux master environment profile. We will update the programs between semesters, unless there is an urgent security update.)
   i. Cadence Root /usr/cadence
   ii. Silvaco Root /usr/cadence
   iii. SynopsysRoot /usr/synopsys
c. **Shared Data and faculty folders** - /data/shared
d. **Useful GUI programs:**
   a. file manager - "nautilus --no-desktop --browser"
   b. editor - "gedit"
   c. Arc manager - "file-roller"
e. **Recommended training and reference sites:**
   i. TTU's Computer-Based Training system http://cbt.ttu.edu
   ii. Intro to bash shell http://www.techotopia.com/index.php/Using_the_Bash_Shell_on_Red_Hat_Enterprise_Linux
   iii. Command line introduction http://www.linfo.org/command_line_lesson_1.html
   iv. List of Linux commands http://www.linfo.org/command_index.html
   v. Intro to Linux for newbies http://www.linfo.org/newbies.html
   vi. Linux for Beginners http://www.linuxtopia.org/online_books/linux_for_beginners_index.html

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