

# Connecting to Research Computing Systems with SSH

Prerequisites: Getting a Research Computing Account – <http://apply.rc.rit.edu>

The primary mechanism for connecting to Research Computing systems, submitting work, and monitoring progress, and retrieve results is `ssh`. We have our `ssh` authentication mechanism tied into RIT's LDAP service, so you don't have to remember a separate username and password for RC services – it's the same as your RIT credentials! If you don't know what those are, you probably need to get in touch with ITS first.

The following steps will walk you through how to setup `ssh` on your local desktop or laptop and connect to Research Computing for the first time.

Once you've finished this document, you'll probably be interested in *File Management - Getting your files to and from RC systems* or *Using the bash shell and running software*.

## Linux and Mac OSX - openssh

### The basics

Connecting is simple. Just open a terminal and type the following:

```
$ ssh username@ion.rc.rit.edu
```

Where `username` is your actual RIT username (i.e., `abc1234`). You will be prompted for your password; enter your RIT password.

Once you've entered those, you should be presented with a prompt on the remote Research Computing machine `ion.rc.rit.edu`, the cluster headnode.

If you're unfamiliar with how to use a Linux system, you may next want to read the document on *Using the bash shell and running software*.

### X11-forwarding

If you're going to be doing interactive graphical work, you will want to enable the forwarding of X11 windows. You can do this simply by specifying the `-Y` option, like so:

```
$ ssh -Y username@ion.rc.rit.edu
```

**Note:** On Mac OS X, you must also install Xquartz (<http://xquartz.macosforge.org/landing/>).

## Windows - putty.exe

### The basics

Unlike for Linux and Mac OSX, there is no in-built `ssh` client for Windows. You'll need to download and install `putty`, which you can [download from here](#).

Once you've installed it, open the program and where it prompts you for a host, enter `ion.rc.rit.edu`.

Click 'connect' and you should be prompted for your RIT username and password.

Once you've entered those, you should be presented with a prompt on the remote Research Computing machine `ion.rc.rit.edu`, the large memory computer.

If you're unfamiliar with how to use a Linux system, you may next want to read the document on *Using the bash shell and running software*.

### X11-forwarding

If you're going to be doing interactive graphical work, you will want to enable the forwarding of X11 windows.

First, [download and install Xming-mesa](#). Once installed, you'll need to make sure this program is running *before* you connect with `putty`. It is a background application and will only run with a little status icon in your system tray.

Once `Xming-mesa` is installed and running, open up `putty` again, but before connecting you'll need to navigate to the menu item on the left side of the window and 'enable X11 forwarding'.

Once this is done, you can connect as before. You can test that this works by running the following on `lmc.rc.rit.edu`:

```
$ xclock
```

If a clock appears on your desktop, then you have correctly configured X11 forwarding.

# Windows - MobaXterm

## The basics

PuTTY is nice if you're living in 2003. MobaXterm has so many more features than PuTTY that make it ideal for tons of workflows (<http://mobaxterm.mobatek.net/features.html>). The free version is available as an installer and as a portable application (no installer; just double-click and go). You can download the free version from <http://mobaxterm.mobatek.net/download-home-edition.html>. Just start the program and you can pretend you're using a Linux system. In other words, see the SSH instructions for Linux above.

## X11-forwarding

In MobaXterm, click the large 'X server' icon near the top right of the window (not to be confused with the 'X' that closes the program). Once it turns green, you're set. You can proceed to the X11-forwarding section of the Linux instructions.