

Remote access to the workstations (Cornell users):

(non-Cornell users should also consult <http://biohpc.cornell.edu/lab/doc/BioHPCLabexternal.pdf>)

For Microsoft Windows Users:

1. Install the following software:

1. putty: <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>
Download and put the executable anywhere on your computer.
2. FileZilla (<http://filezilla-project.org/>) or WinSCP (<http://winscp.net/eng/index.php>)
Download the client installation package and install.
3. MobaXterm (optional for graphic user interface):
<http://mobaxterm.mobatek.net/download.html>
Download the client installation package and install.
4. VPN: Install VPN only if you are accessing the workstations from a computer outside Cornell Campus. Follow the instruction at <http://www.cit.cornell.edu/services/vpn/howto/install.cfm>
5. Real VNC (optionally Java): required only if you want to use VNC connection.

2. Connection by ssh

1. Reserve a workstation through the web site <http://biohpc.cornell.edu>.
2. Set up putty for the first time. If this is the first time you use putty, you will need to enter the address of the workstation. A) under "host name", enter "XXX.biohpc.cornell.edu" (replace "XXX" with the machine name, all names start with "cbsu", i.e., cbsumm15.biohpc.cornell.edu); B) under "Saved Session", enter the machine name, i.e., cbsumm15; C) click SSH->X11 in the left panel, check the box "Enable X11 forwarding"; D) If you prefer the black text on white background, you can change the color setting. Click "Colours", set "Default Foreground" to "0 0 0", "Default Bold Foreground" to "0 0 0", "Default Background" to "255 255 255", "Default Bold Background" to "255 255 255". E) Click "session", click "save"
3. You can double click the saved "host" to start a session.
4. If you want to access the workstations from outside Cornell campus, you need to start VPN before you run putty.
5. If the software takes long time to finish, disruption in network connection to the remote session could terminate the job. To prevent this from happening, make sure to use "nohup" or "screen" command . E.g. nohup mycommand >& log & (For detailed information, read this web site <https://en.wikipedia.org/wiki/Nohup> or https://en.wikipedia.org/wiki/GNU_Screen). We recommend to use "screen", as there are some instances where programs will not run properly with nohup.
6. **X-windows software:** If you want to use a software with a graphical interface, eg. 454 assembler or Galaxy, you need to start X-windows software. Start "MobaXterm" on your program menu. From your putty window, you can directly type in the command. Eg. "gsAssembler"

3. Connection by VNC

You can access your Linux workstations using VNC protocol and operate remotely in a graphical desktop environment. You need to go to "[My Reservations](http://biohpc.cornell.edu/lab/labresman.aspx)" page (<http://biohpc.cornell.edu/lab/labresman.aspx>) and click on "Connect VNC" for a workstation you want to connect to. It will initialize your VNC session. If your password is not yet stored in VNC you will be asked first to enter it before the next page loads. In order to connect to your VNC session you can use VNC Viewer from Real VNC. When your session is initialized the page will display further instructions, including port number to which you need to connect. Launch your Real VNC Viewer, type machine name and port number into appropriate fields and connect.

You can control the resolution of your VNC window using a pull-down just below the reservations table on "My Reservations" page. There is also a "custom" option allowing you to set a custom resolution. The VNC resolution cannot be changed once it is started. To change the resolution you would have to cancel the session, reset the resolution, and then start it again.

VNC connections are persistent, i.e. when you close the VNC window your desktop continues to run as long as your reservation is active. You can reconnect at any time from any computer with VNC client installed. NOTE: If your VNC window is plain black after reconnecting just click anywhere inside, desktop locks out after some inactivity time (like screensaver). If by any reason you want to restart your VNC session (for example you killed your desktop and now cannot do anything) just click on "Reset VNC" for your reservation on "My Reservations" page.

4. Transferring files between the workstation and your desktop computer

Use the FileZilla or WinSCP software to transfer files between the workstation and your local computer.

There are three dedicated machines for remote login and file transfer only (ssh/sftp only, no VNC logins are accepted), cbsulogin.biohpc.cornell.edu, cbsulogin2.biohpc.cornell.edu, and cbsulogin3.biohpc.cornell.edu these machines can be used for file transfer to and from your home directory and they do not require a reservation. These machines are also available from outside of Cornell.

Important Note: After you reserve a BioHPC computer and start to work on a project, make sure to copy the large data files from your home directory to the /workdir on your reserved computer. You need to create your own directory under /workdir. Contact a CBSU staff if you do not know what is a local disk. PLEASE DO NOT RUN ANY COMPUTATIONS ON OR UNDER HOME DIRECTORY.

You can also use **Globus Online** to transfer data to and from your BioHPC Lab home directory. Please refer to [this document](http://biohpc.cornell.edu/lab/doc/Globus_at_BioHPC_Lab.pdf) (http://biohpc.cornell.edu/lab/doc/Globus_at_BioHPC_Lab.pdf) for details.

For MAC users:

1. Install the following software:

FileZilla: https://filezilla-project.org/download.php?show_all=1

Chicken of the VNC (optional, for VNC) <http://sourceforge.net/projects/cotvnc/>

XQuartz (if you want to run X-windows software using ssh tunneling, instead of VNC) <https://www.xquartz.org/>

2. Connection by ssh

Launch the terminal window. Type “ssh labid@XXX.biohpc.cornell.edu” (replace the “XXX” with the workstation that you just reserved, which begins with “cbsu”, for example, “ssh labid@cbsumm15.biohpc.cornell.edu”). Enter user name and password when prompted.

If you want to use a software with **graphical interface**, eg. 454 assembler or Galaxy, you need to setup x-windows tunneling. First, you will need to make sure XQuartz is installed on your system. Then, add the -X option to your ssh command, which allows transfer of graphical data, for example: “ssh -X labid@cbsuXX.biohpc.cornell.edu”. After that, you can directly type in the command. Eg. “gsAssembler”, and the graphical window should pop up.

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You can control the resolution of your VNC window using a pull-down just below the reservations table on “My Reservation” page.

VNC connections are persistent, i.e. when you close the VNC window your desktop continues to run as long as your reservation is active. You can reconnect at any time from any computer with a VNC client installed. NOTE: If your VNC window is plain black after reconnecting just click anywhere inside, desktop locks out after some inactivity time (like screensaver). If for any reason you want to restart your VNC session (for example you killed your desktop and now cannot do anything) just click on "Reset VNC" for your reservation on "My Reservations" page.

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Important Note: After you reserve a BioHPC computer and start to work on a project, make sure to copy the large data files from your home directory to the /workdir on your reserved computer. You need to create your own directory under /workdir. Contact BioHPC staff if you do not know what is a local disk. PLEASE DO NOT RUN ANY COMPUTATIONS ON OR UNDER HOME DIRECTORY.

You can also use **Globus Online** to transfer data to and from your BioHPC Lab home directory. Please refer to [this document](http://biohpc.cornell.edu/lab/doc/Globus_at_BioHPC_Lab.pdf) (http://biohpc.cornell.edu/lab/doc/Globus_at_BioHPC_Lab.pdf) for details.