Connecting to BioHPC from outside of Cornell without Cornell Netid or Cornell VPN

NOTE: This way of connecting to BioHPC Lab is for external users that do not have Cornell Netid. If you have Cornell Netid you should connect using Cornell VPN.

NOTE: There are three login servers available cbsulogin.biohpc.cornell.edu and cbsulogin2 and cbsulogin3 (on same domain: biohpc.cornell.edu). You can substitute cbsulogin with two others in the text below.


First, install software needed to connect to BioHPC Lab as described in our online documentation (Putty for connecting to workstations, FileZilla or WinSCP for file transfer, MobaXterm for X-Windows). You may want to install RealVNC VNC Viewer (Free edition) if you prefer to have access to the fully functional Linux desktop environment; the other option is to use the default Java applet.

Reserve workstation you want to use via our web pages (http://biohpc.cornell.edu/lab/labres.aspx). In this document we will assume your workstation is cbsum1c2b001, please substitute the name of your reserved workstation when setting up the connection.

There are three scenarios, depending on the software you will use.

(a) **Using terminal and command line software only**

Set up your Putty to connect to the login node, cbsulogin.biohpc.cornell.edu

![PuTTY Configuration](image-url)
You will be asked for user id and password. Once your terminal session on the login node is established, type the command

```
ssh cbsum1c2b001
```

which will connect you to your reserved workstation (you will be asked password again). Remember to substitute example workstation name with your reserved workstation name! Now you will be able to work on you workstation with command line software. Once you are done, please disconnect from both the reserved workstation and cbsulogin (press “Ctrl-D” twice).

(b) Using command line software and X-Windows software with MobaXterm.

Set up your Putty to connect to cbsulogin.biohpc.cornell.edu as above, but before connecting scroll down the left panel, expand “Connection”, “SSH”. Click on “X11” and make sure “Enable X11 forwarding” is checked:

Click “Open”. Once connected to the login node (cbsulogin.biohpc.cornell.edu), type the command

```
ssh -X cbsum1c2b001
```

which will connect you to your reserved workstation (you will be asked password again). Remember to substitute example workstation name with your reserved workstation name! Now
you will be able to work on your workstation with command line software and X-Windows software, just start MobaXterm on your local computer and then GUI software on BioHPC Lab machine. Once you are done, please disconnect from both the reserved workstation and cbsulogin (press “Ctrl-D” twice).

(c) **Using VNC connection (Linux remote desktop).**

Start your VNC connection by clicking on “Connect_VNC” on the action list of your reservation (“My Reservations” page). The Java applet will NOT connect, but please keep the browser window open if you want to use Java applet (rather than RealVNC viewer) for VNC connection.

Set up your Putty to connect to cbsulogin.biohpc.cornell.edu as above, but before connecting scroll down the left panel, expand :“Connection”, “SSH”. Click on “Tunnels”, and fill tunneling information as below (remember to substitute workstation name!):

![PuTTY Configuration](image)

Click “Add” and Putty will display forwarding information as below:
The above screenshots show the forwarding for RealVNC Viewer and port 5901. Please check what port has been assigned to your connection, it is the rightmost number in the reservations table on “My Reservations” page. If you plan to use Java applet please also forward corresponding port in the 5800 range, i.e. subtract 100 from the 59XX port number. Screenshot for proper port tunneling for Java applet is below:
Click “Open” to connect to the login node (cbsulogin.biohpc.cornell.edu). Once connected, type the command

```
ssh cbsum1c2b001
```

which will connect you to your reserved workstation (you will be asked password again). Remember to substitute example workstation name with your reserved workstation name! Now you will be able to work on you workstation with command line software and X-Windows software. Once you are done, please disconnect from both the reserved workstation and cbsulogin (press “Ctrl-D” twice).

In the RealVNC Viewer type “localhost:5901” as the address and connect. Replace 5901 with the port number displayed on the rightmost column in the “My Connections” page for your reservation.

(d) Using other network services restricted to Cornell campus.

There are a lot of services that are restricted to Cornell campus network for security reasons, for example R-Studio servers, custom websites run on reserved or hosted workstations. You can access them with ssh tunneling from your external computer. For example, R-Studio server on
BioHPC computers (if started) uses network port 8015. Other services use different ports – in the examples below simply substitute port 8015 with the port of your service.

Set up your Putty to connect to one of the login nodes, cbsulogin.biohpc.cornell.edu (or cbsulogin2, cbsulogin3).

Before connecting scroll down the left panel, expand: “Connection”, “SSH”. Click on “Tunnels”, and fill tunneling information as below (remember to substitute server name with your server!):
Click “Add”, and the information will be added to the tunneling.
Now you can click “Open” and proceed as usual with PuTTY ssh connection. Once connected you can use local port 8015 as a gateway to your R-Studio server on cbsulm16 port 8015, to use it just enter [http://localhost:8015/](http://localhost:8015/) in your local web browser. NOTE: local port number may be different than the remote port number, the remote port number must correspond to the network service port number, but the local one is arbitrary.

2. Connecting from Unix Computers (Linux, Mac).

Reserve workstation you want to use via our web pages ([http://biohpc.cornell.edu/lab/labres.aspx](http://biohpc.cornell.edu/lab/labres.aspx)), just as any user. For this document let’s assume your workstation is cbsum1c2b001, please substitute your workstation name when setting up the connection.

(a) **Using terminal and command line software only**

Connect to cbsulogin.biohpc.cornell.edu using ssh (replace “mylabid” with your BioHPC user id):

```
ssh mylabid@cbsulogin.biohpc.cornell.edu
```
Once connected, type second ssh command: `ssh cbsum1c2b001`

Remember to substitute example workstation name with your reserved workstation name! You are now ready to work with command line programs. Once done, please disconnect both connections.

(b) **Using command line software and X-Windows software.**

Connect to cbsulogin.biohpc.cornell.edu using ssh:

```
ssh -X -t -t mylabid@ cbsulogin.biohpc.cornell.edu "ssh mylabid@cbsum1c2b001 -X"
```

You will be asked for password twice. Remember to substitute example workstation name with your reserved workstation name and “mylabid” with your Lab ID! You are now ready to work with command line and X-Windows programs. Once done, please disconnect both connections.

(c) **Using network services restricted to Cornell campus.**

There are a lot of services that are restricted to Cornell campus network for security reasons, for example R-Studio servers, custom websites run on reserved or hosted workstations and VNC. You can access them with ssh tunneling from your external computer. For example, R-Studio server on BioHPC computers (if started) uses network port 8015. Other services use different ports – in the examples below simply substitute port 8015 with the port of your service.

To tunnel to R-Studio server running on cbsulm16.biohpc.cornell.edu on port 8015 you need to open a terminal window and type the following command

```
ssh -N -L 8015:cbsulm16:8015 biohpcid@cbsulogin.biohpc.cornell.edu
```

Of course you need to substitute cbsulm16 with your server name, biohpcid with your BioHPC user id and you may replace cbsulogin with cbsulogin2 or cbsulogin3. After connection is established you can access R-Studio server by typing url `http://localhost:8015/` in your local computer web browser. You can use different port number for local port, for example you can use 8080 if you want, and the command will be then

```
ssh -N -L 8080:cbsulm16:8015 biohpcid@cbsulogin.biohpc.cornell.edu
```

The local url will be then `http://localhost:8080/`