

## Remote Display: Configuring an Apple computer to Display VNMRJ via the Network

Updated notes for Mac OS 10.14.6, 11, and 12beta

This installation and the associated configuration files should allow remote display of VNMRJ on to personal and/or lab computers. Previously “X11” was installed by default through Mac OS’s underlying unix foundation via the X11 application. Apple stopped providing direct X11 software in 2012 with MacOSX 10.8 (mountain lion).

X11 is now provided via XQuartz (<https://www.xquartz.org>). Please download and install the latest version before attempting any of the following



Make sure the following exists on your machine:

```
/Applications/Utilities/XQuartz
```

If it has not been installed on your system, you will need to install from the link above. Older MacOS (e.g. < 10.8) needed the install package: X11User.pkg, from the MacOSX installation CDs or DVD, or from Apple before going any further. Previous versions would have /Applications/Utilities/X11. It was possible to have both X11 and XQuartz installed, but this could cause issues and conflicts with confirmation files.

Configuration for Remote Sessions.

1. Open a terminal window and type:

```
echo $SHELL
```

the computer will hopefully return one the following statements as output:

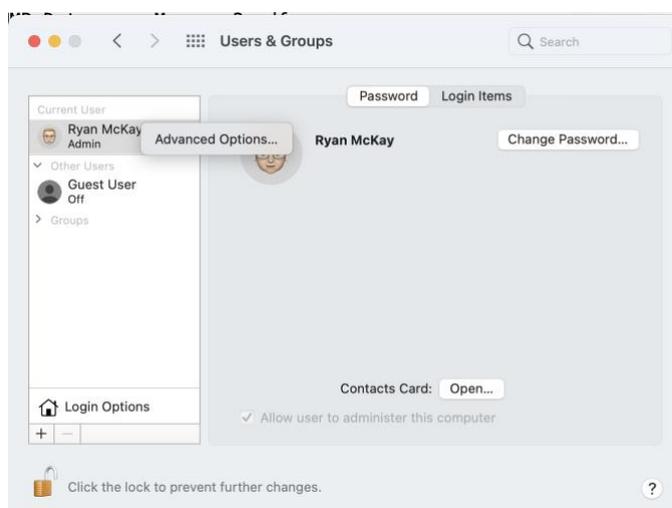
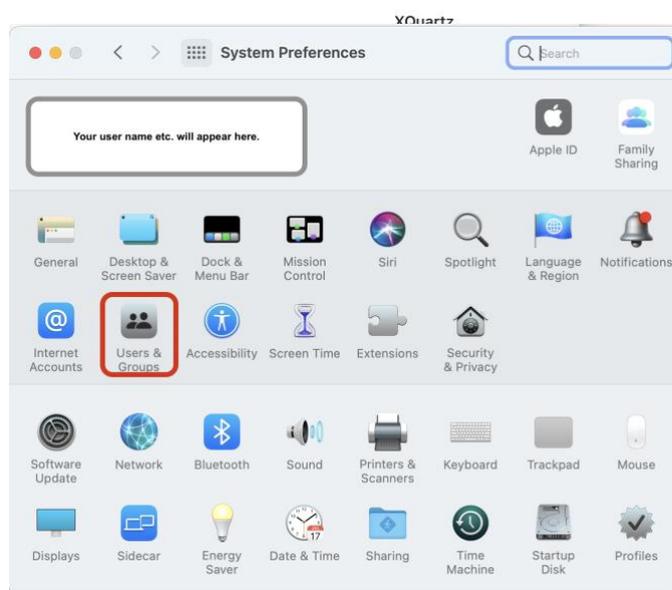
```
/bin/bash
```

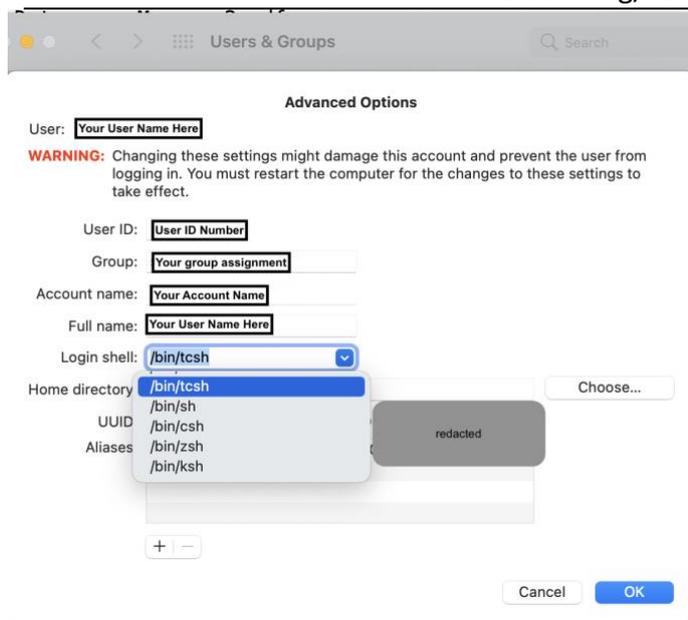
```
/bin/csh
```

```
/bin/tcsh
```

On Mac OS the shell is established in the background and only those using the Unix layers will even be aware of it. To set your default shell go to: **System Preferences** and select “**Users and Groups**” (see red box in attached screen shot).

You will then see a list of users. If you control-click or right-click on the person you will see a hidden “Advanced Options” (see second attached screen shot).





Once you select that “Advance” option you’ll see the following control panel (see third attachment screenshot) for users and can select the default shell for your account. Each different shell will have different ways of setting up Unix parameters. In this example, we are showing the “tcsh” as example, however the “bash” shell is default.

2. If the shell that you are using is **/bin/bash** (this is often the default shell in macOS) enter the following on the terminal command line:

```
pico .bashrc
```

on the terminal window command line and then hit enter.

3. Create a shortcut that will open a remote session to the NMR data station *d601.chem.ualberta.ca* by entering the following line within the `.bashrc` file:

```
alias xxxnmr= 'xhost +d601.chem.ualberta.ca; ssh -X xxxnmr@d601.chem.ualberta.ca'
```

-where **xxxnmr** is your group’s login name for the NMR spectrometers and data stations (e.g. *gennmr* for the *gennmr* user account). Ensure that the above statement is entered as only one line within the `.bashrc` file, and not more than one line. Press the key combination **ctrl-x** then answer **y** to accept the changes and finally hit **enter** to write the changes. Restart the shell by typing:

```
bash
```

on the terminal command line.

4. If the shell that you are using is **/bin/csh** or **/bin/tcsh** enter the following on the terminal command line:

```
pico .cshrc
```

and then hit enter. Create a shortcut to open a remote session to the NMR data station *d601* by entering the following line within the `.cshrc` file:

```
alias xxxnmr 'xhost +d601.chem.ualberta.ca; ssh -X xxxnmr@d601.chem.ualberta.ca'
```

-where **xxxnmr** is your group’s login name for the NMR spectrometers and data stations (e.g. *gennmr* for the *gennmr* user account). Ensure that the above statement is entered as only one line within the `.cshrc` file, and not more than one line. Press the key combination **ctrl-x** then answer **y** to accept the changes and finally hit **enter** to write the changes. Restart the shell by typing:

```
tcsh            or        csh
```

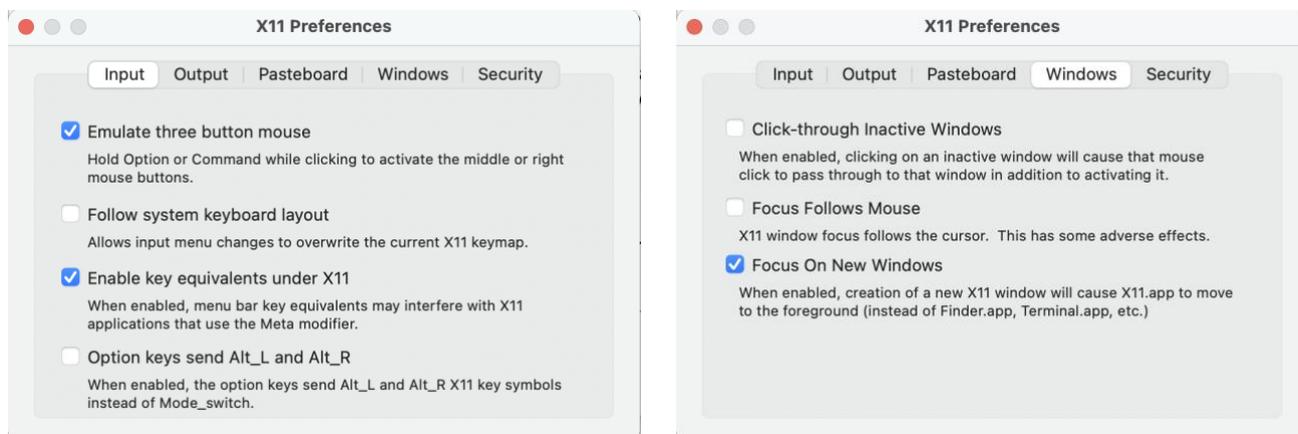
on the terminal command line.

5. Start XQuartz (or X11), when X11 opens it may appear full screen, if not, you may change the preferences of X11. Under the file menu of X11 select Preferences, then select the output tab

and ensure that the box that reads Full Screen mode is checked. You can now quit X11.

Remember the key combination option-apple-a will return you back to your regular desktop. This is optional and not required, but you may want to use.

6. There are several window control options you may want to set in XQuartz/X11. Below are



examples, you may want to experiment and set to your preference. For example, some users prefer “Focus Follows Mouse”, and some benefit from “Click-through Inactive Windows”.

7. Now you can open XQuartz/X11 and you should be able to follow the directions located in the "Remote\_Display\_of\_NMR\_Data\_on\_a\_Mac" document.