

NoMachine (NX) Portal

One can use either the ~~Chrome web browser~~ (Firefox is currently working), which has capabilities that are compatible with NoMachine, or one can install the NoMachine Enterprise client software. In some cases we have seen better performance with the stand alone client application, but since upgrading the beamline computers this advantage may have gone away. According to our IT group, the browser client gets a direct connection to the beamline host, which may provide a better experience when the cloud server at APS gets heavily loaded. We have anecdotal evidence that both are better and both are worse for a given time of day or user load.

Browser Interface (Shown in Chrome before update broke chrome <V87)

1. Open a browser tab.

Go to delos.aps.anl.gov. The nxwebplayer shown below will automatically be added and loaded. You should see a screen like the following.

Skip down to the Login section of this document


Argonne
NATIONAL LABORATORY

Advanced Photon Source **NoMachine Portal**

NOTICE TO USERS This is a Federal computer system and is the property of the United States Government. It is for authorized use only. Users (authorized or unauthorized) have no explicit or implicit expectation of privacy. Any or all uses of this system and all files on this system may be intercepted, monitored, recorded, copied, audited, inspected, and disclosed to authorized site, Department of Energy, and law enforcement personnel, as well as authorized officials of other agencies, both domestic and foreign. By using this system, the user consents to such interception, monitoring, recording, copying, auditing, inspection, and disclosure at the discretion of authorized site or Department of Energy personnel. Unauthorized or improper use of this system may result in administrative disciplinary action and civil and criminal penalties. By continuing to use this system you indicate your awareness of and consent to these terms and conditions of use. LOG OFF IMMEDIATELY if you do not agree to the conditions stated in this warning.

Connection to delos.aps.anl.gov **NOMACHINE**

Please type your username and password to login.

 Username

Password

☐ Save this password

OK

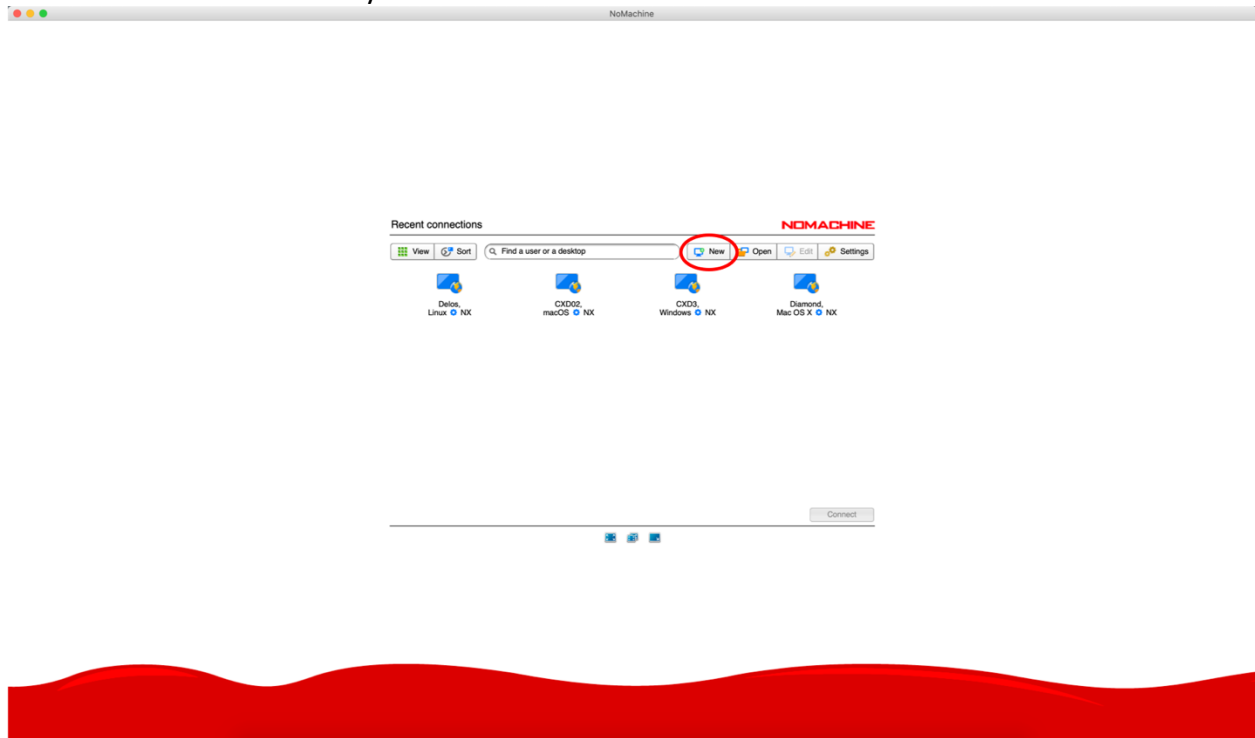
NoMachine Client Application Interface

1. Install NoMachine client software

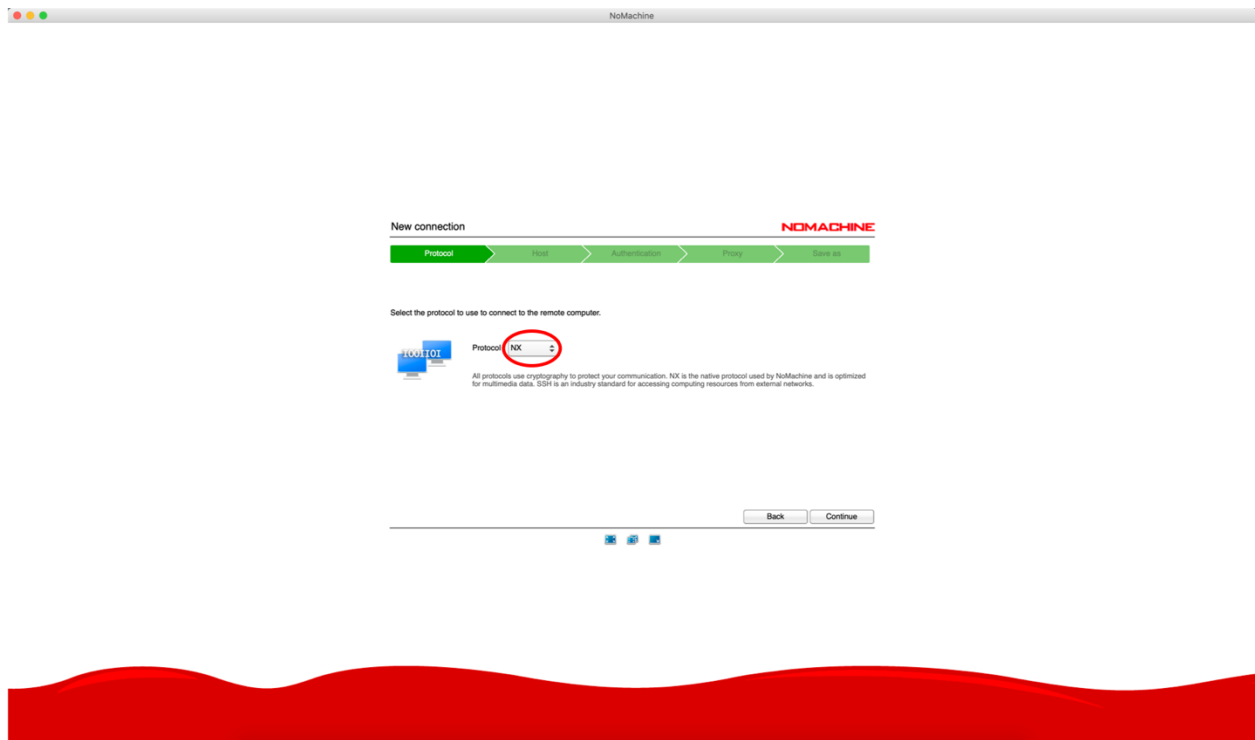
NoMachine (NX) Portal works with NoMachine client software and Chrome. We suggest to install the client software because it occupies less resources than Chrome. You can download the NoMachine software from <https://www.nomachine.com/product&p=NoMachine%20Enterprise%20Client>

2. Create a new connection (NoMachine client software only)

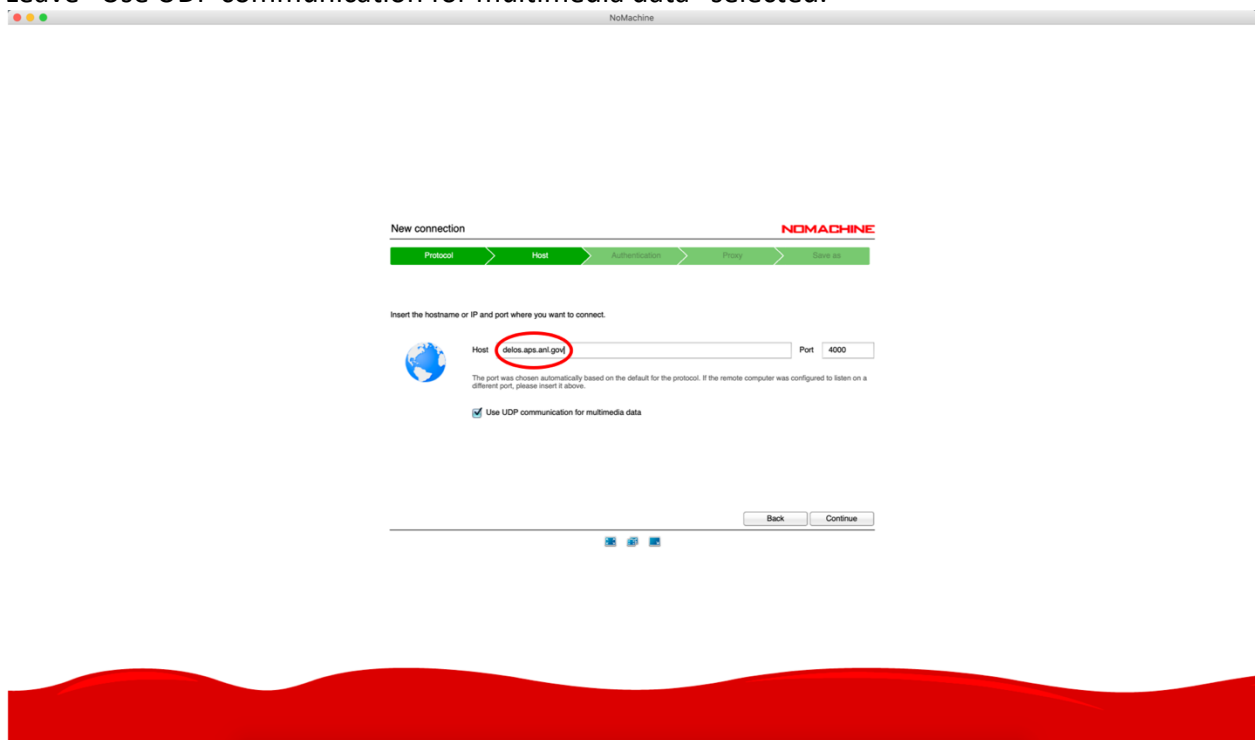
When you open the NoMachine client software, you need to create a new connection to the APS. Click the 'New' button to create a new one. The image below is a screenshot from a beamline staff, so more connections are listed than you will see.



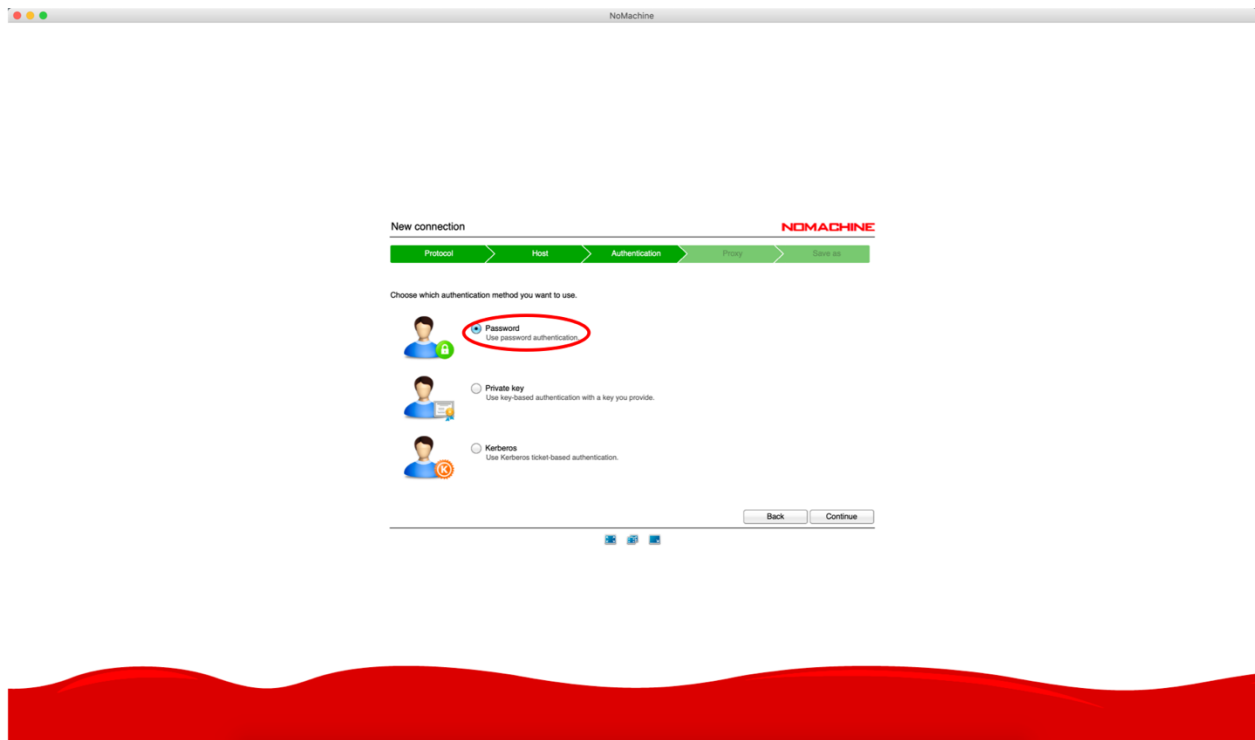
Leave 'Protocol' as 'NX'.



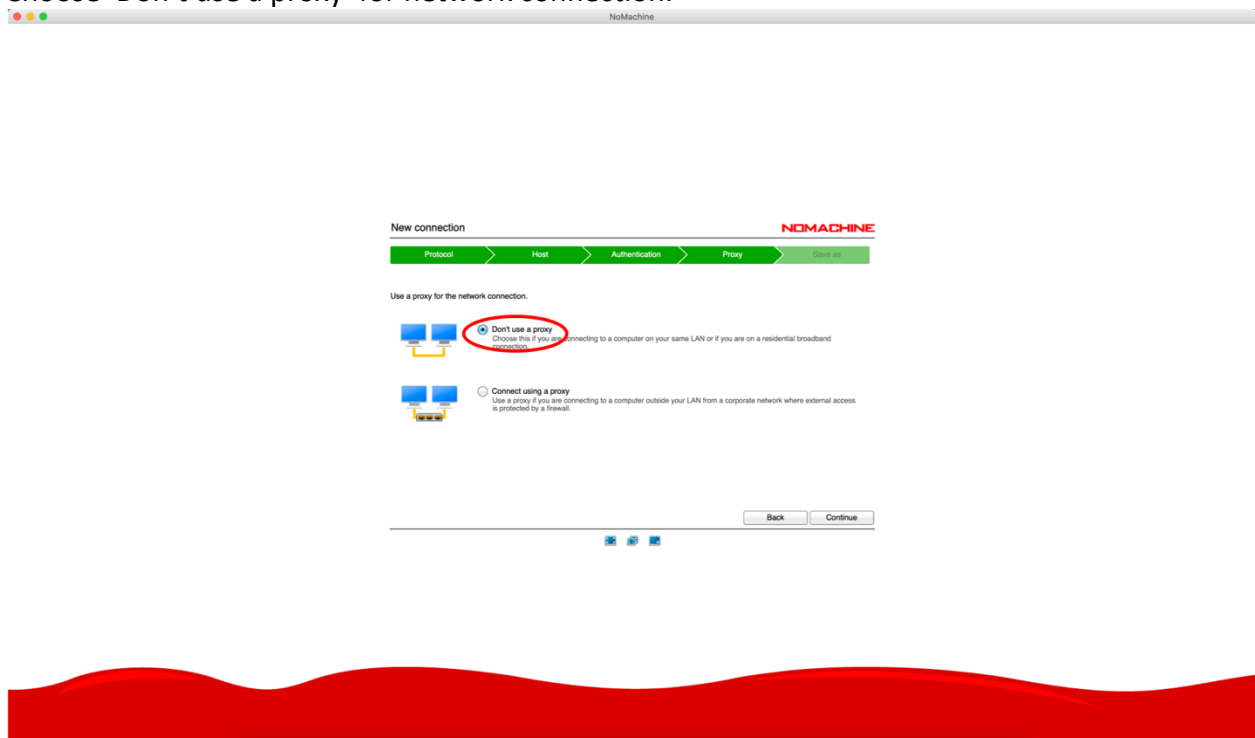
Set 'Host' as delos.aps.anl.gov.
Leave "Use UDP communication for multimedia data" selected.



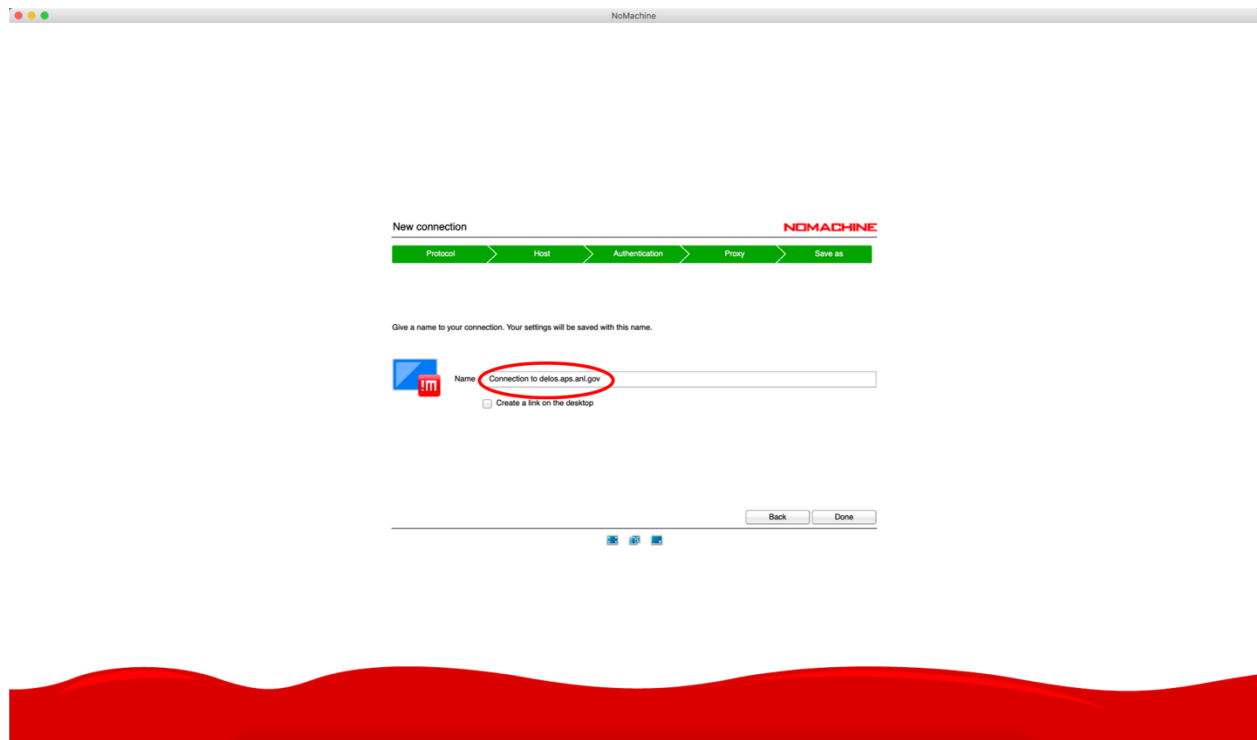
Check 'Password' for authentication.



Choose 'Don't use a proxy' for network connection.

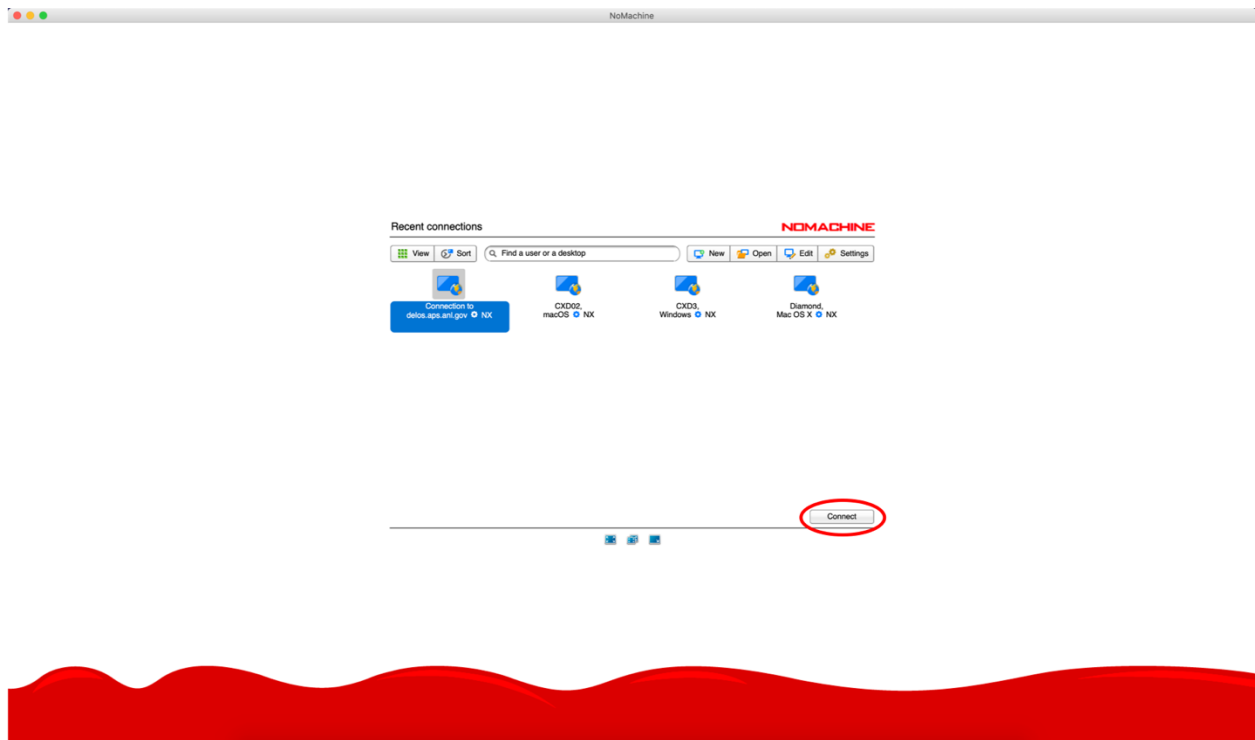


Give a name for this connection.



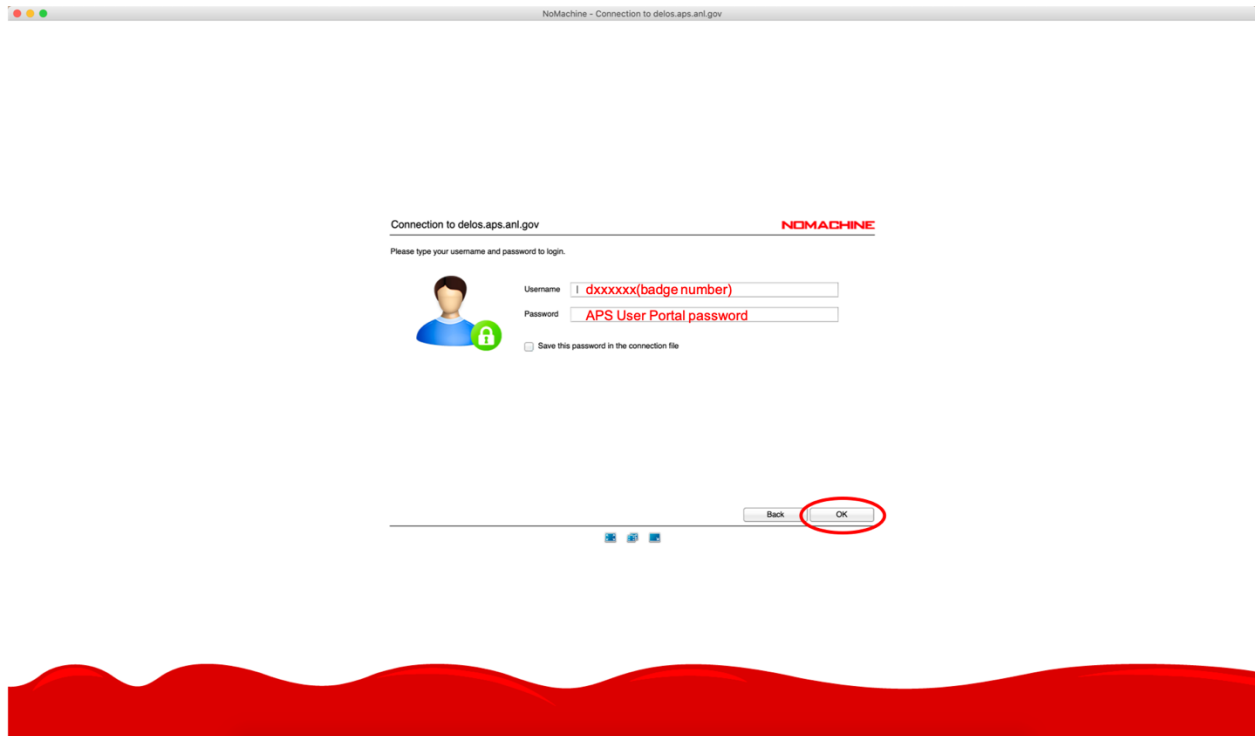
3. Connect to delos.aps.anl.gov

You can simply double click the icon which you created or select the icon and click the 'Connect' button.

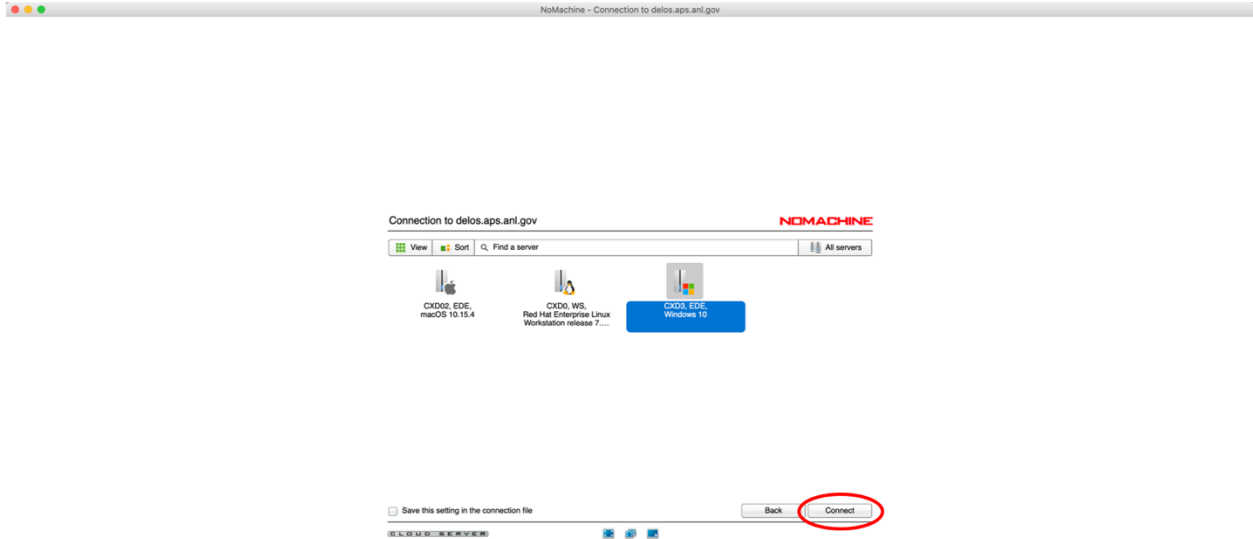


Login to delos.aps.anl.gov and attach to beamline

1. Your username is d+badge number and password is APS User Portal password, mostly often used for ESAF submission.



2. You can connect to CXD3 (beamline control computer, Windows) and CXD2 (analysis computer, Mac) by simply double clicking an icon or clicking the OK button after choosing an icon. CXD0 is the beamline linux computer. Here you will get your own virtual desktop and not need to compete for mouse and keyboard. But that also means that nobody use will see what you are doing. On CXD0 you can type `cxdusermenu` in a terminal and you should see a menu interface to open the familiar 34-ID-C controls screens.

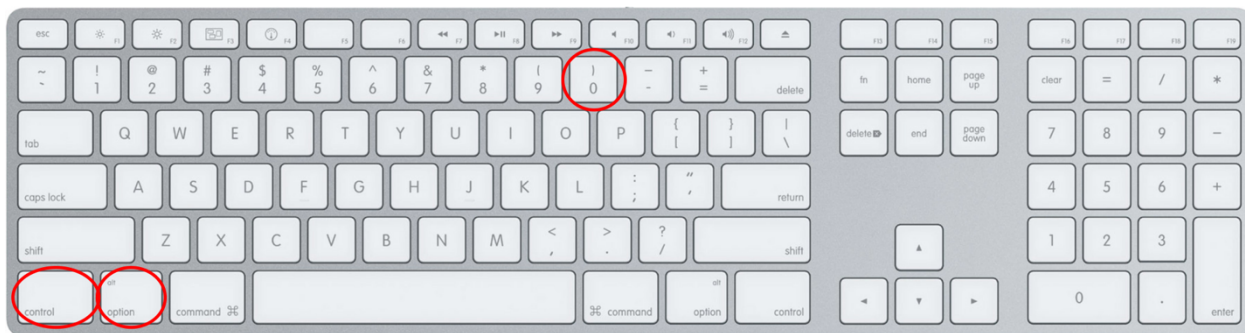


4. Initial settings for beamline connections.
It is best to mute audio on the server. Otherwise there is an annoying clicking sound at the beamline that bothers the staff.

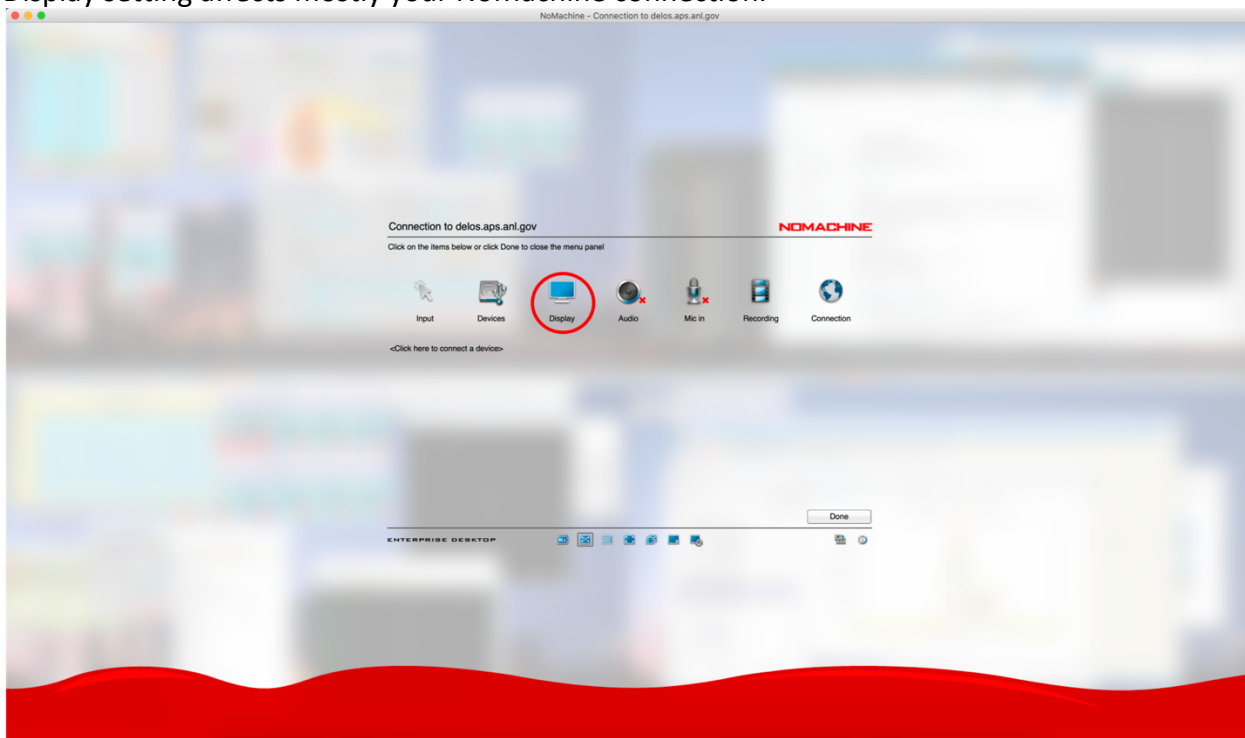


The screenshot shows the NoMachine connection window titled "Connection to delos.aps.anl.gov". The window has a red "NOMACHINE" logo in the top right corner. Below the title bar, there is a section titled "Display resolution" with a bar chart icon. The text explains that the remote machine has a different resolution than the client and offers options to preserve the remote resolution or change it while connected. A red circle highlights the "Change the server resolution to match the client when I connect" option. Below this, a diagram shows a sequence of steps: "Display" (with a monitor icon), "Change monitor fit to window" (with a monitor icon and a double-headed arrow), "Resize remote window" (with a window icon), "Fullscreen on all screens" (with a fullscreen icon), "Resize" (with a window icon), and "Change settings" (with a gear icon). Arrows indicate the flow between these steps. Below the diagram, there is a checkbox labeled "Don't show this message again for this connection" and an "OK" button, which is also circled in red. At the bottom of the window, there is a taskbar with several icons, including a clock and a network icon.

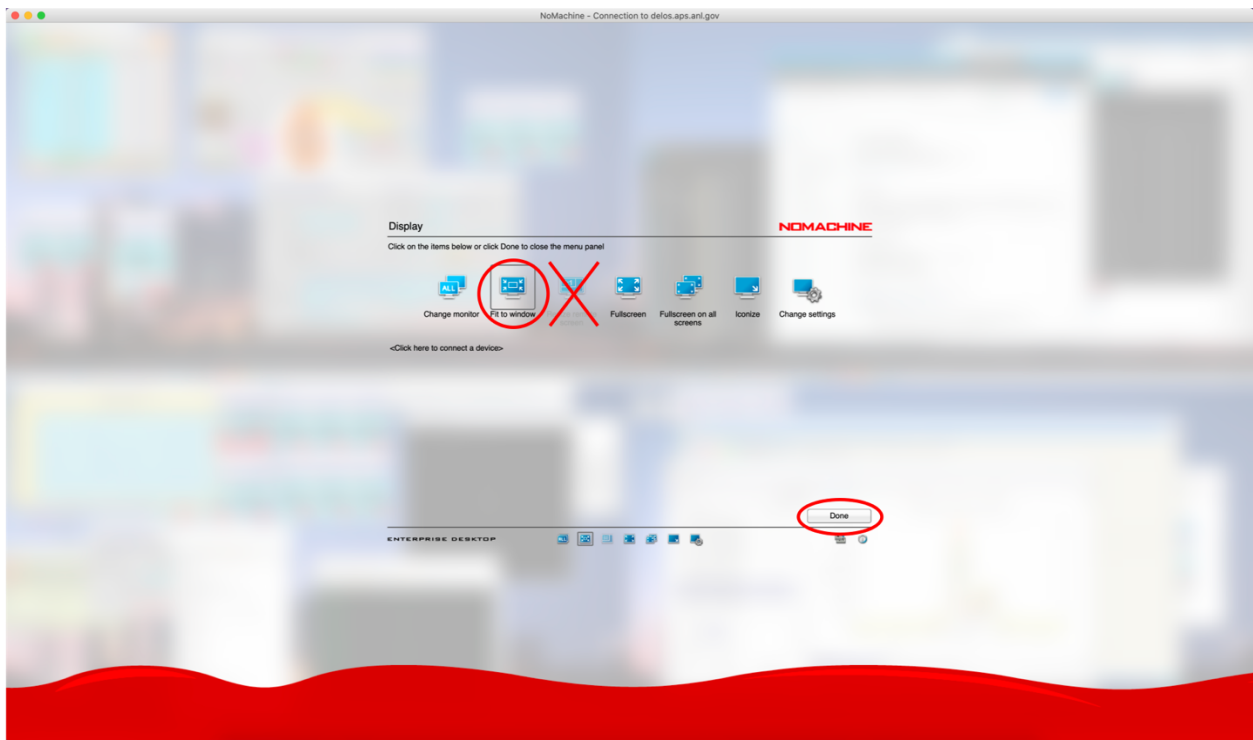
You can change settings using the noMachine control panel. Bring it up with combined key stroke, Ctrl+Alt+0 for Windows and control+alt/option+0 for Mac (see below). Also, if you position the mouse in the top left corner of the display a “tear-down” will appear. Clicking in the tear-down will bring up the menu screen.



Display setting affects mostly your NoMachine connection.



'Fit to window' option will change the apparent screen size to fit into your NoMachine window. There will be no scroll bar. **Don't choose 'Resize remote screen'**. This option will change the monitor resolution of the actual computer at the beamline and this affects everyone's screen resolution. This is important!



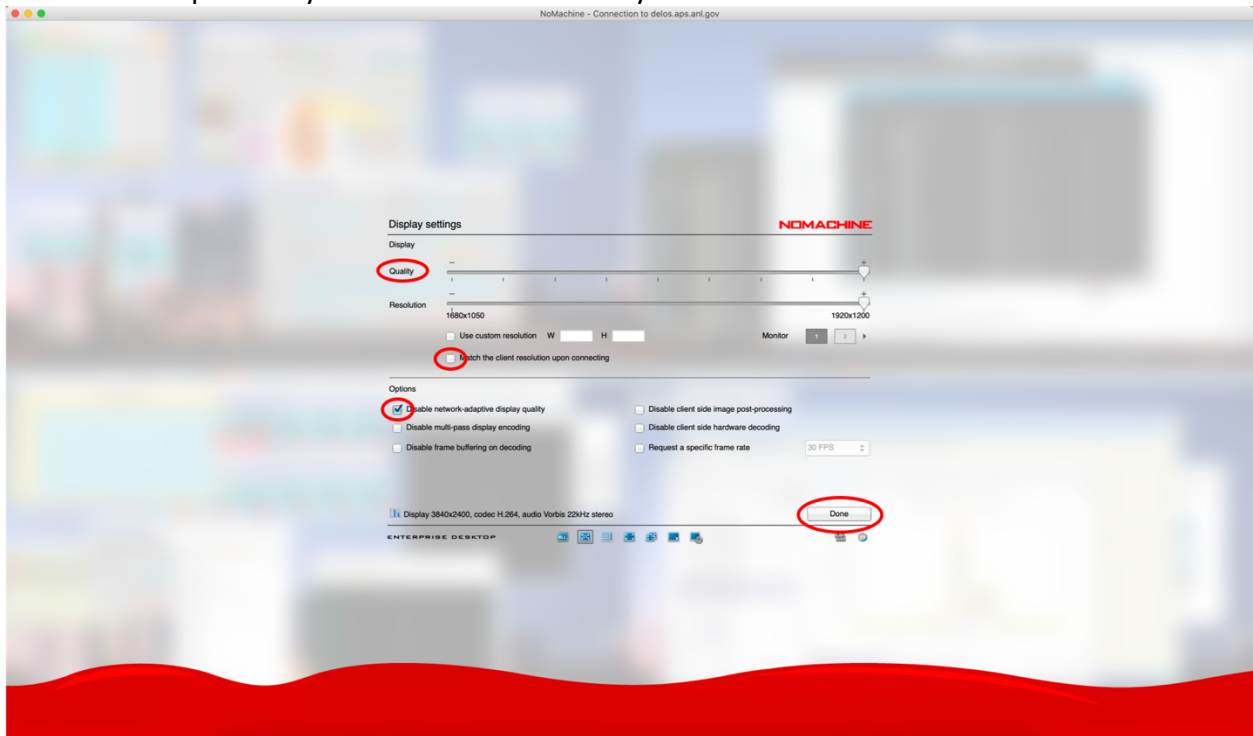
Click 'Change settings'.



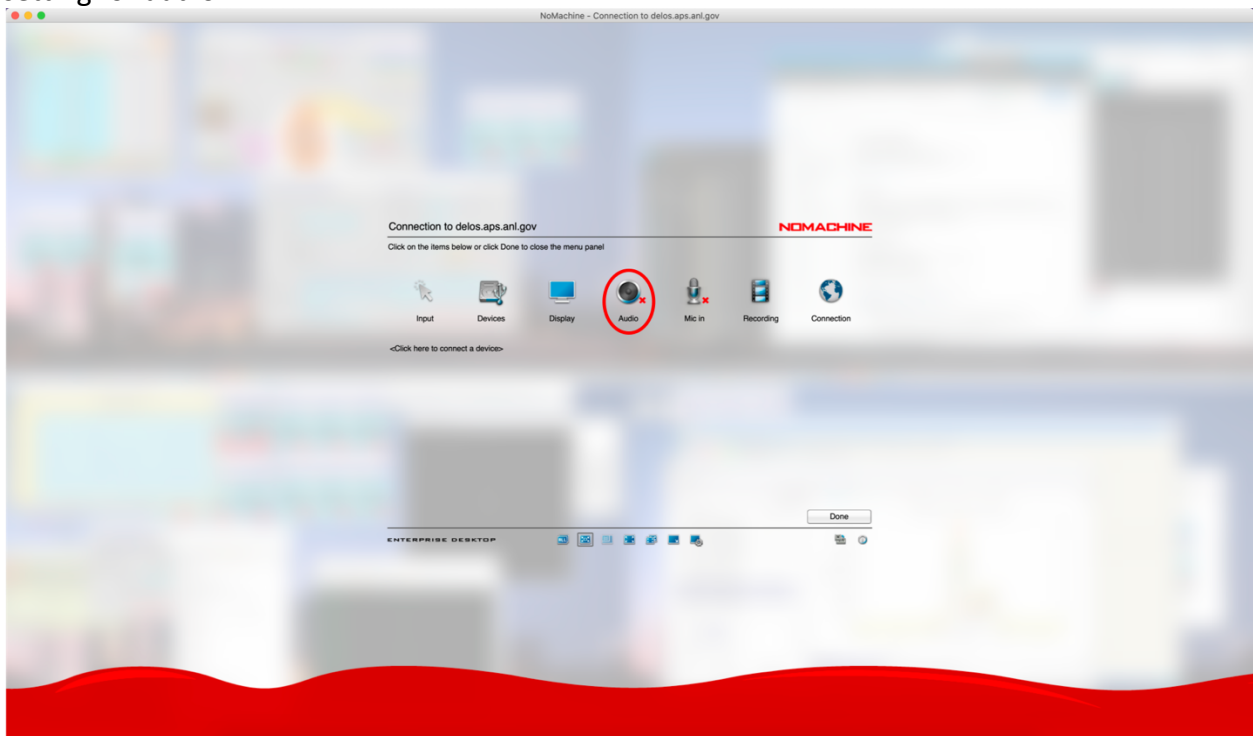
These setting options are not perfectly optimized, however, they seem to work. You can slide a bar for 'Quality' of your image depending on your internet speed. Setting Quality to the max setting means no compression. So you may want to have it one tick to the left.

Leave a check box for 'Match the client resolution upon connecting'.

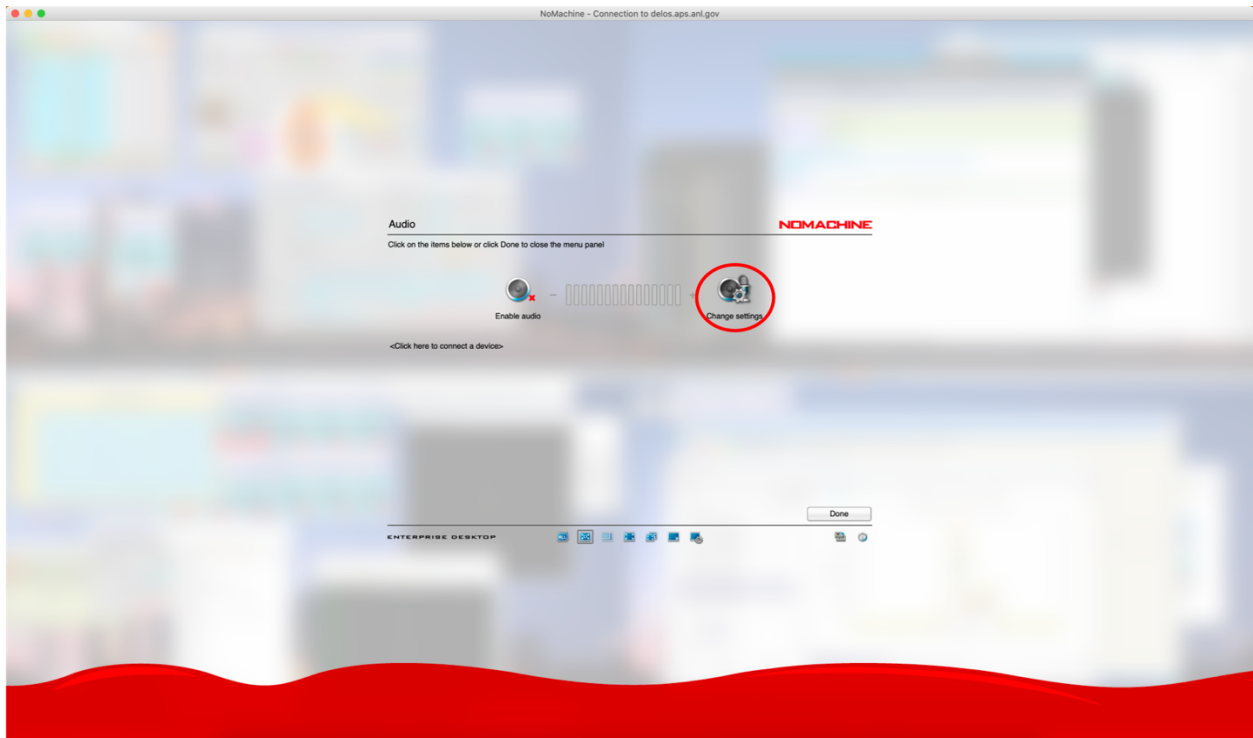
In the option, disabling network-adaptive display quality seems to work well. If you enable this by leaving the check box empty, you will see frequent screen resolution changes on your monitor. You can check all options if you want. Let us know if you learn what works best.



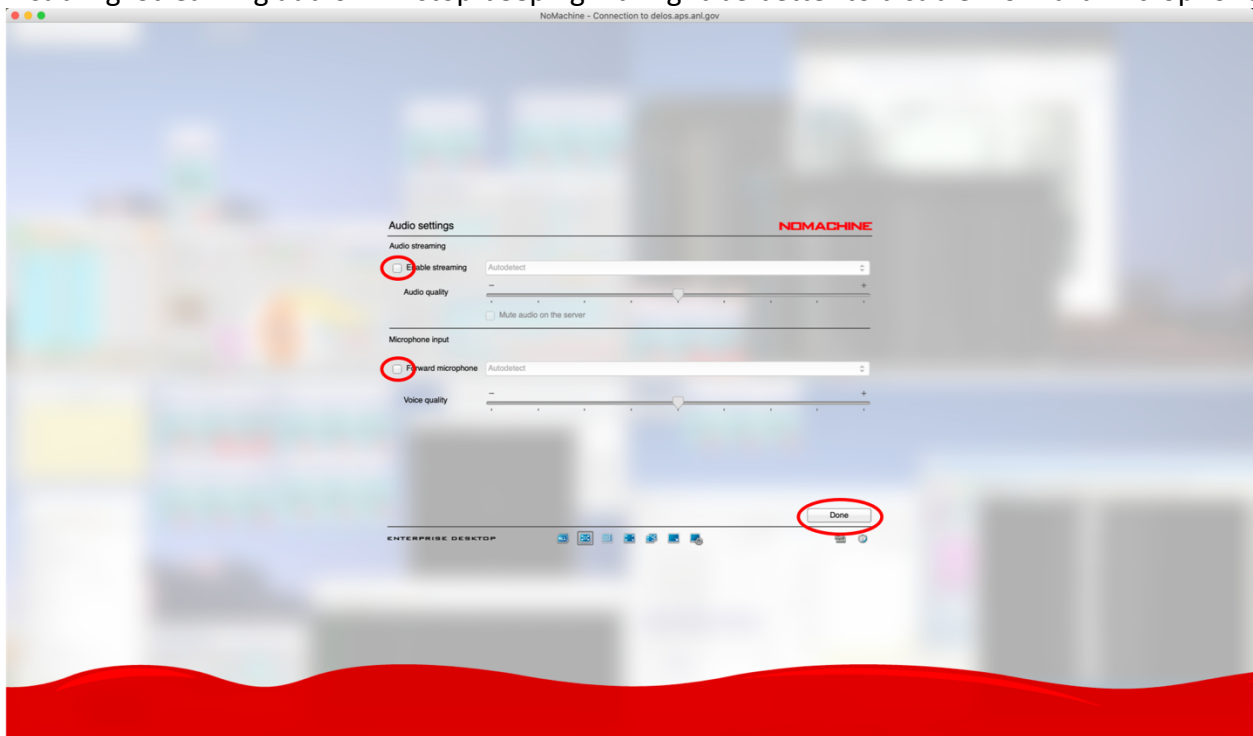
If your computer continuously beeping when you are on NoMachine connection, you need to change setting for audio.



Then click 'Change settings'.



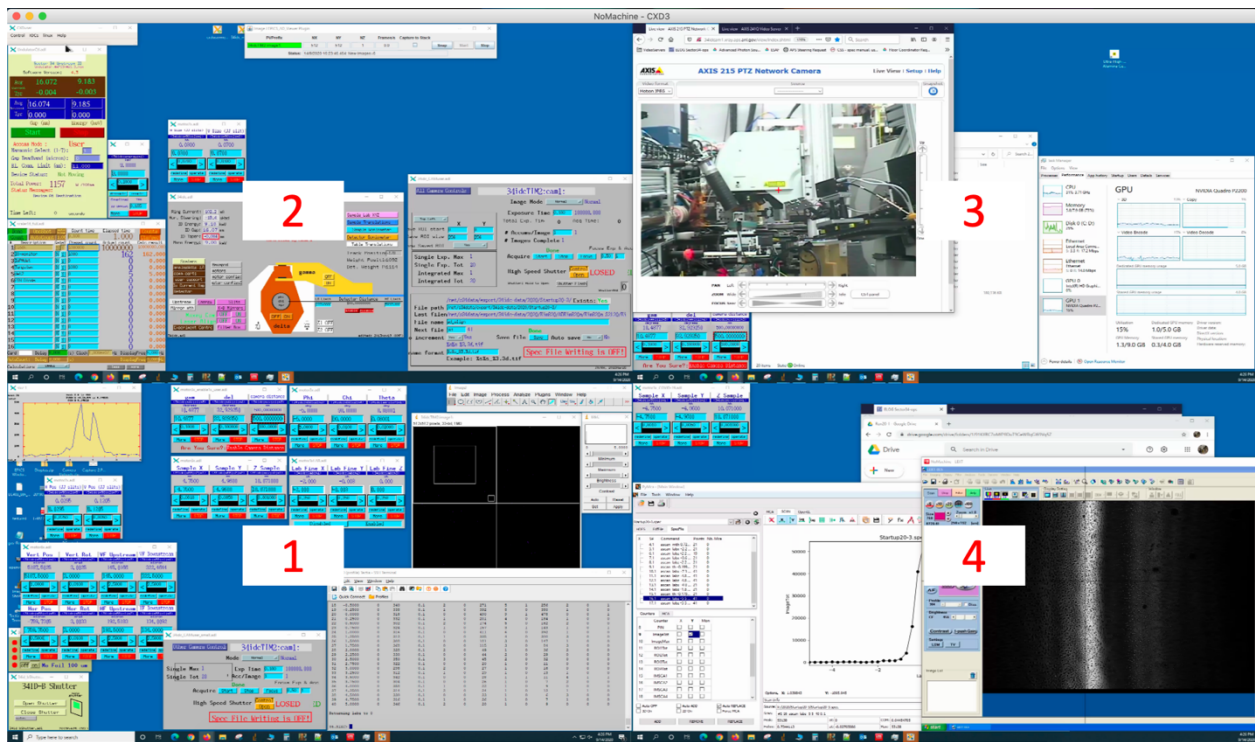
Disabling 'Streaming audio' will stop beeping. It might be better to disable 'Forward microphone'.



6. Switching monitors

You can look at all 4 monitors of the beamline control computer (CXD3) simultaneously on your screen. You can also switch to view an individual monitor. Combined key stroke, Ctrl+Alt+a (Windows) and control+alt/option+a (Mac), will bring all 4 monitors in your NoMachine screen. See '5. Control panel' to check keyboard layout for both Windows and Mac.

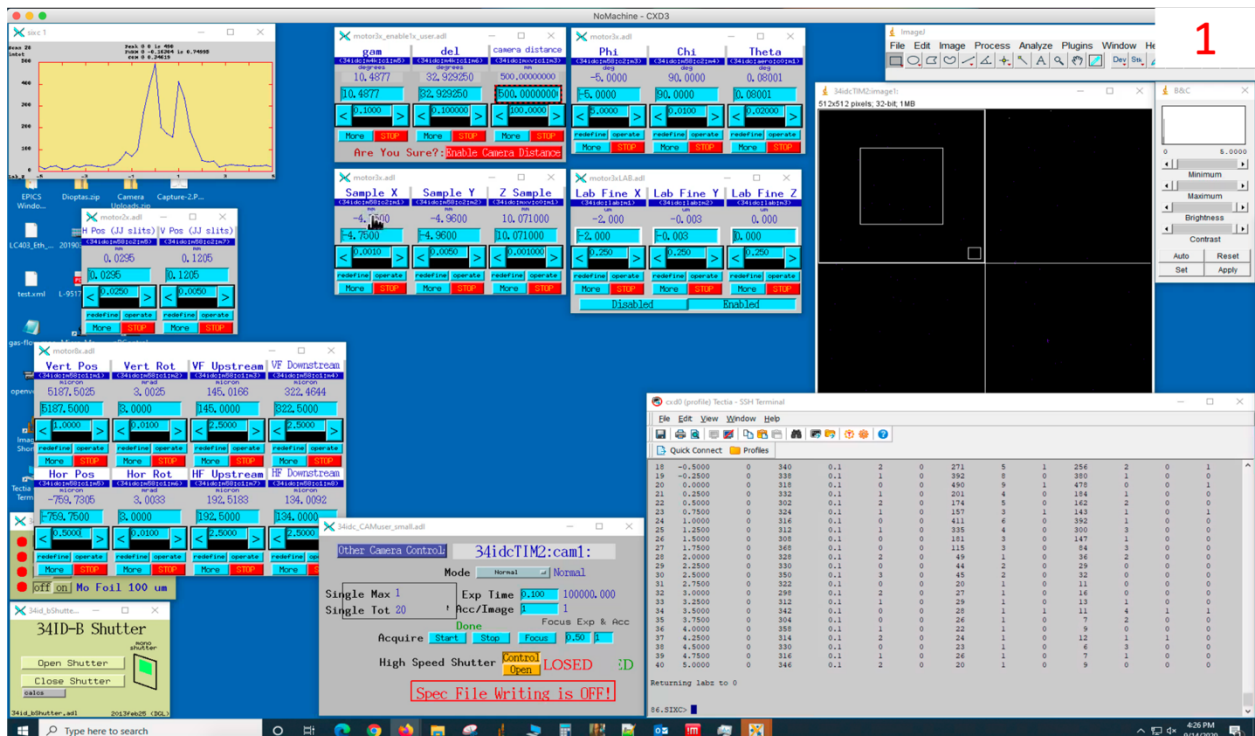
It may not be easy to read text if you don't have a big monitor. But this mode is very useful when you move windows across monitors.



You can have individual monitor 1, 2, 3, and 4 of CXD3 using Ctrl+Alt+1,2,3,4 (Windows) and control+alt/option+1,2,3,4 (Mac), respectively. CXD2 has only 2 monitors.

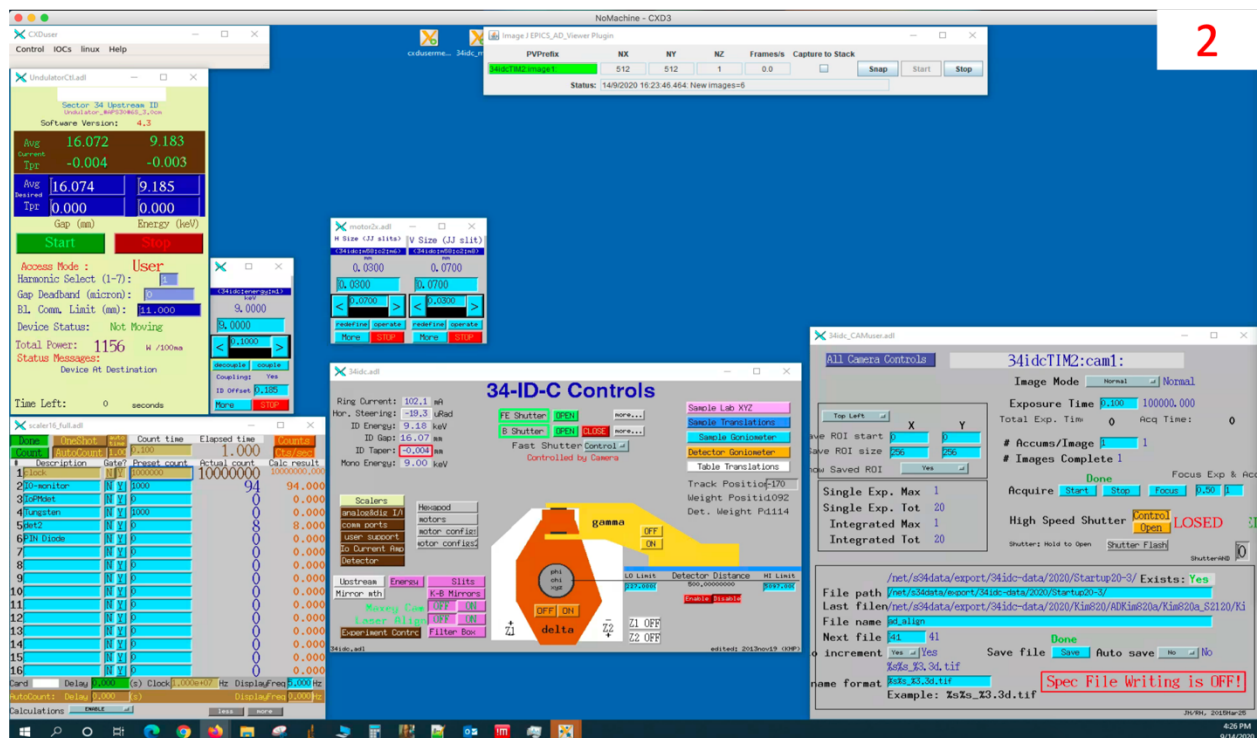
Monitor 1

This is where we typically have the spec terminal and area detector view along with motor controls.



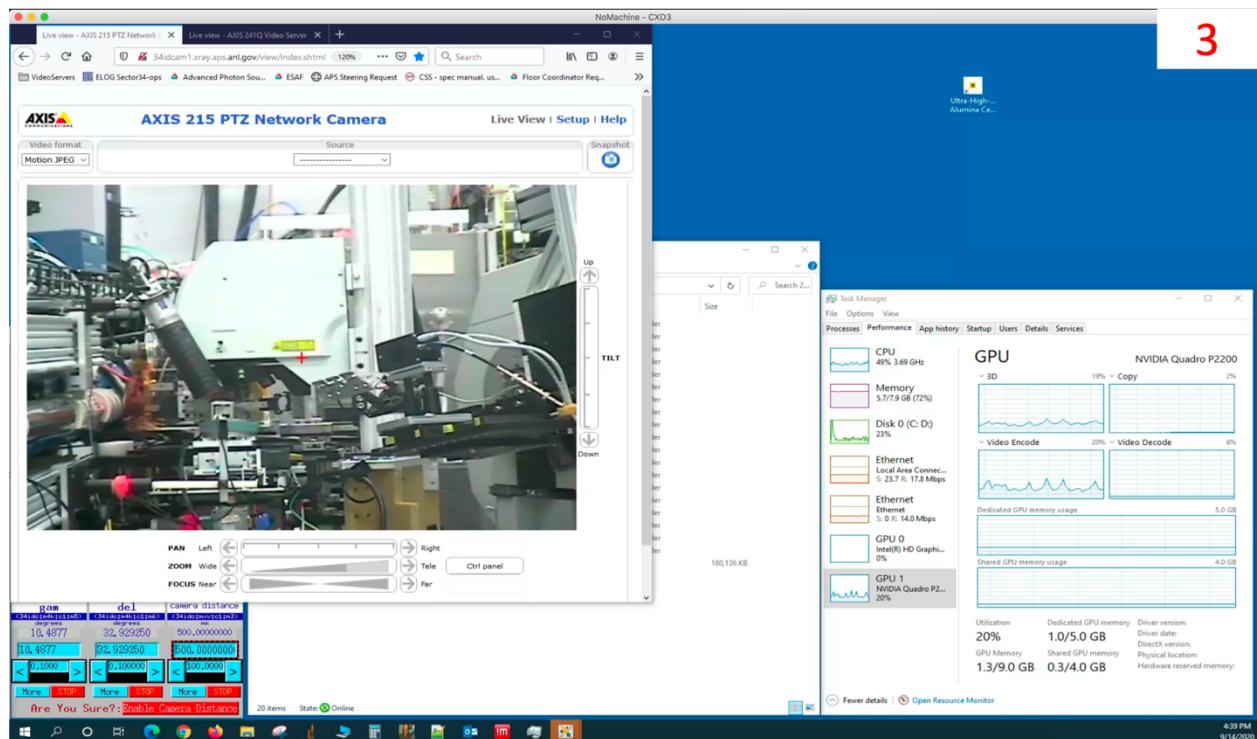
Monitor 2

The usual location for less frequently used controls.



Monitor 3

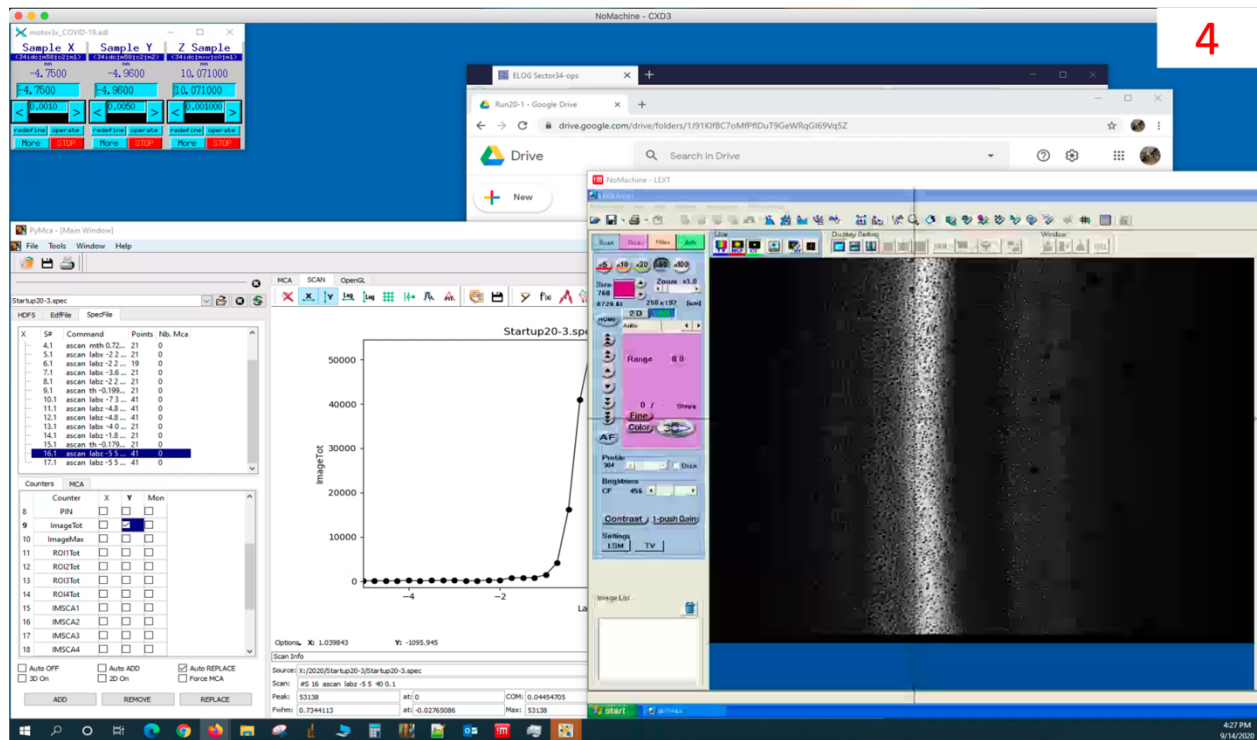
Generally where file managers are opened, web browsers and importantly the pan/tilt/zoom camera that lets you see what is going on inside the hutch. The Tischler cam is also available on a video web server that is on the bookmark bar of Firefox, if it is not already open in another tab.



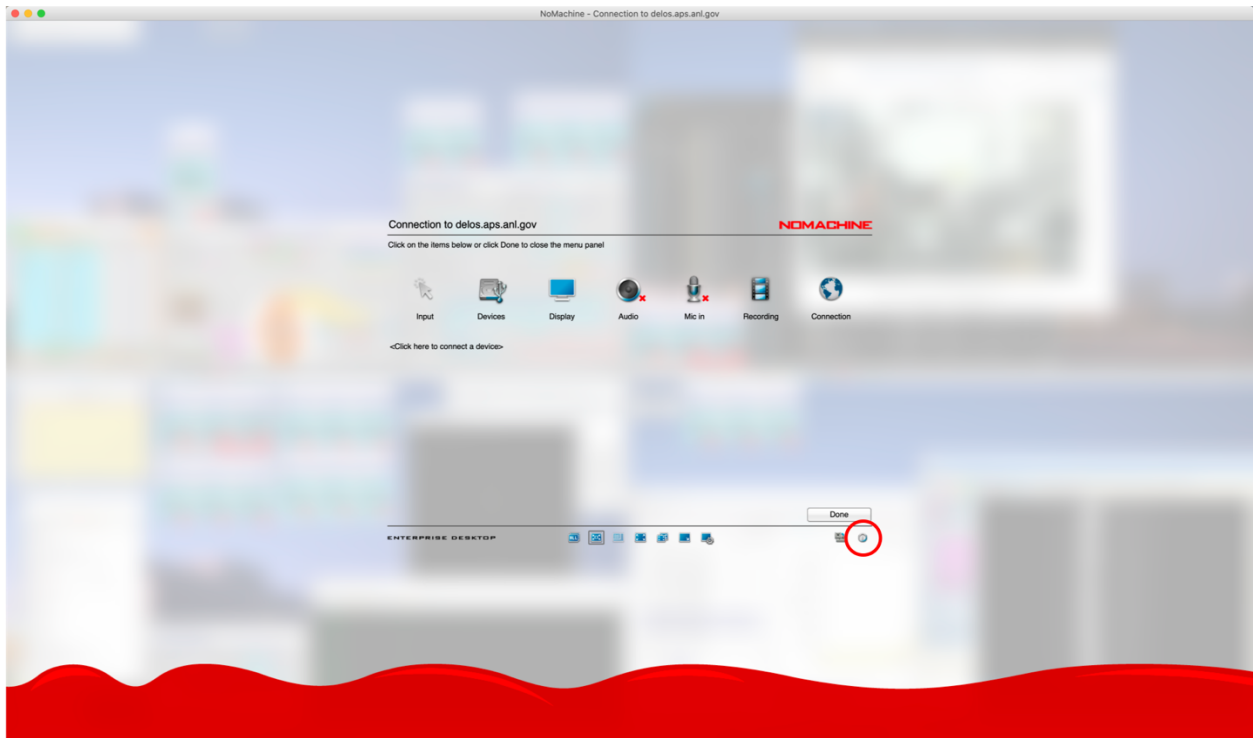
Monitor 4

The microscope control computer is on another NoMachine connection (right bottom). Be careful when you use combined key stroke on this CXD3 monitor. Don't type Ctrl+1 for Windows (control+1

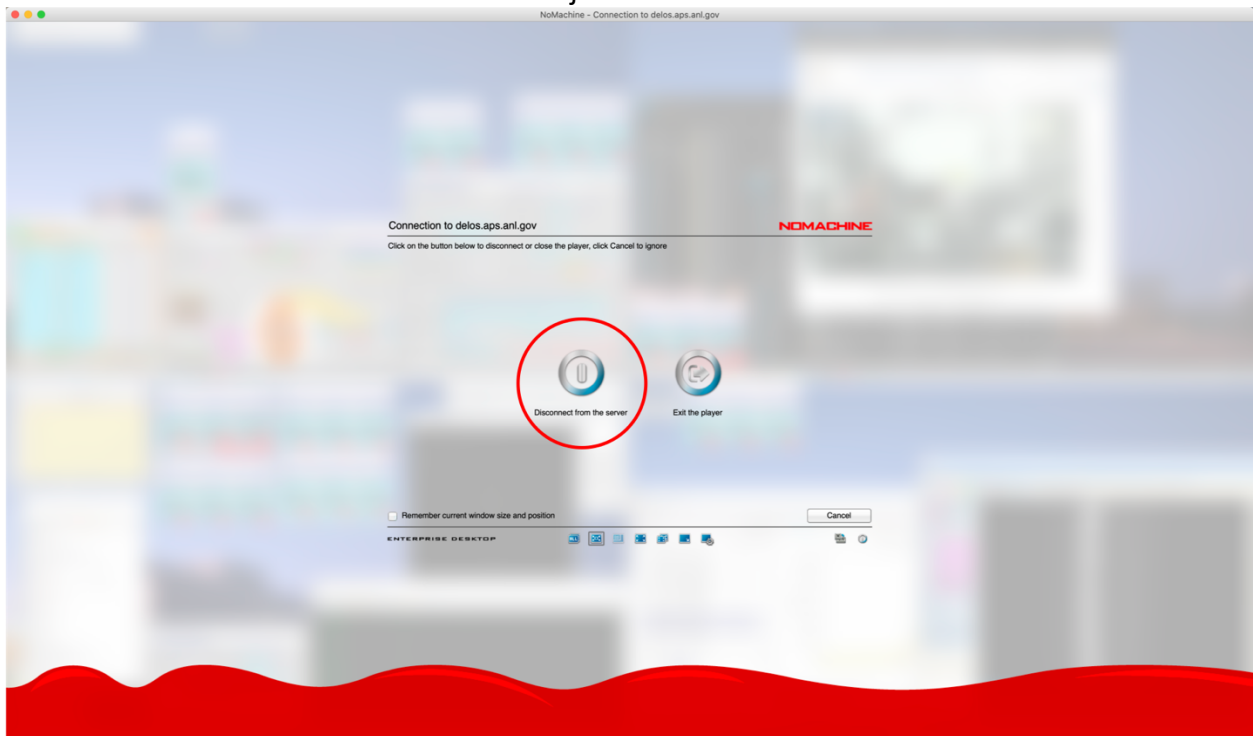
for Mac) when the mouse cursor is on the microscope NoMachine window. This will remove the cross hair which indicates where the center of rotations are.



7. We have made duplicate versions of some of the motor control and detector control screens to allow us to have them on separate monitors. So typically we leave detector arm controls on the screen with the hutch view for making long range moves of the detector. We also leave coarse motion XYZ on the screen with the microscope view for aligning samples. Let us know if we should add others.
8. Tips
It is better to reduce the number of live images streaming from the server to have more clear screens. When you don't need to watch inside the hutch with the web camera, bring another tab with static image on it to the front. Even if you are not looking at this monitor the live image stream is still being sent out and taking resources. You can also turn off TV and CF mode of the microscope when you don't need to look at the sample.
9. Log out
You need to bring the control panel using Ctrl+Alt+0 for Windows and control+alt/optn+0 for Mac. Click a button says disconnect under 'Done' button.

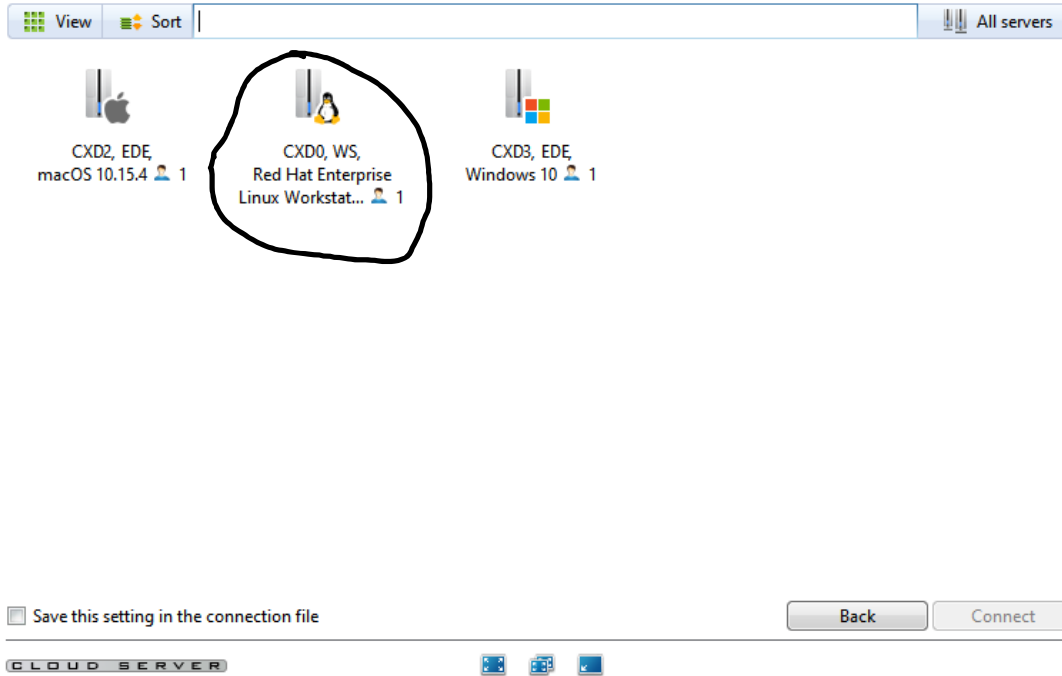


Then click 'Disconnect from the server'. Or just close the window.

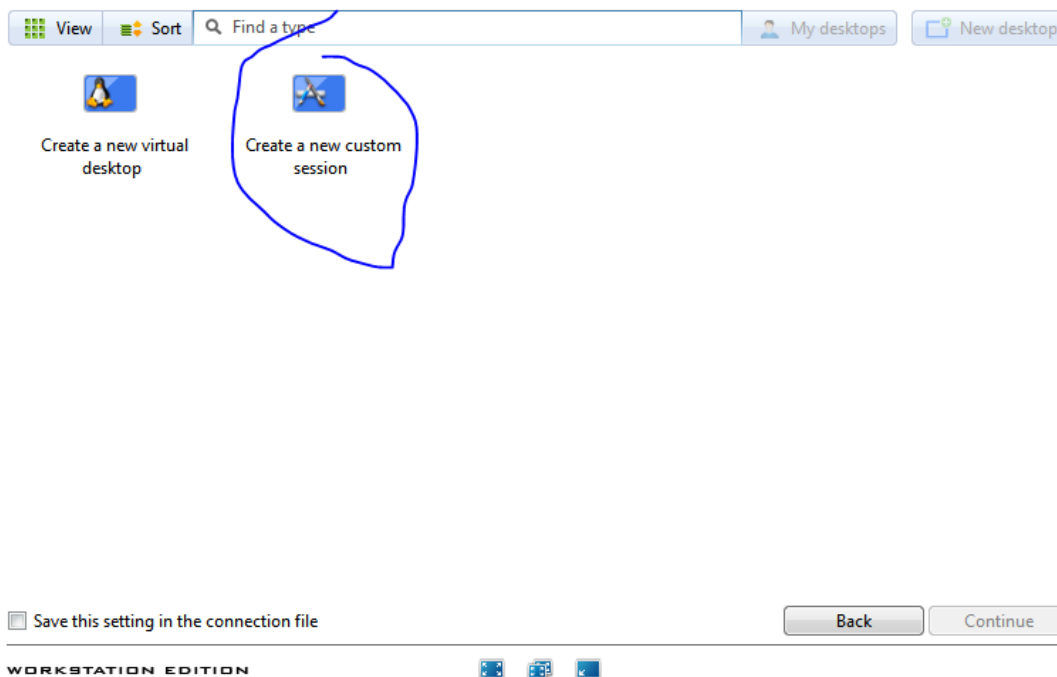


Connect to CXDO with simple terminal interface for slow connections.

Connect to delos.aps.anl.gov as described above. You should see CXDO listed as an available connection. If not, let Ross or Wonsuk know and they can add you.



Double click on CXDO and select the “Create a new custom session” as below.



Now, instead of leaving the default select the “Run the following command” option and enter “xterm” into the option box.

If you leave the “Run the command in a floating window” option ticked you will need to have an x-server on your local computer. XQuartz on the Mac or something like Xming on Windows. Linux comes with one.

If you select the “Run in a virtual desktop” you will get a terminal in a noMachine window and it will not look great, but be functional. You will have to sort out the Display settings. Fit to Window, as described above for the whole desktop, is probably your best bet.

Custom session

NOMACHINE

Application

☐ Run the console

☐ Run the default X client script on the server

☒ Run the following command

xterm

Options

☒ Run the command in a floating window

☐ Run the command in a virtual desktop

☐ Save this setting in the connection file

Logged in as d224972 Logout

BackContinue

WORKSTATION EDITION

If you are lucky you should see an xterm window pop up somewhere on your desktop. You will be logged into CXDO as your badge number user. To access the spec screen session you need to change your terminal to the cxduser beamline account. Below is the screen shot of that operation. The linux command su is short for “set user”. You want to set user to the cxduser account. Enter the standard beamline password (sector hash sectornumber as a hint). Then connect to the screen session in which spec is running. See below.

xterm

bash-4.2\$ su cxduser

Password:

bash-4.2\$ screen -x spec