Remote access to ALBA beamline desktops using NoMachine NX





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Author: IT Systems – Computing Division

Contents

Remote access to ALBA beamline desktops using NoMachine NX1
Requirements and recommendations
Remote access availability at the beamlines3
Hardware requirements3
Internet connection
Configuring the Nomachine Enterprise client in your PC4
Install the NoMachine Enterprise Client in your PC4
Summary of configuration parameters for Nomachine Enterprise Client4
Step-by-step configuration of the NoMachine Enterprise Client5
Configuring the connection to the beamline desktop PC7
Establish a connection to the beamline desktop PC7
Troubleshooting and frequently asked questions13
I don't remember my username or password13
I get the error "No available sessions" after entering my user and password
How do I access the NX settings (display, keyboard, etc) menu?
I can only see one of the remote monitors in the beamline14
I have multiple monitors at my PC, how can I use them all for the remote sessions?16
I have multiple monitors at my Mac, but the NoMachine session can only use one of them 17
When trying to connect I get the error "Please upgrade your NoMachine installation to version 7 or later and retry"



Requirements and recommendations

Remote access availability at the beamlines

Some of the ALBA beamlines offer the possibility to connect remotely to the beamline workstations in order to operate the control systems remotely.

As a first step, you should **ask your local contact at the beamline** if you wish to schedule a remote access session. He will inform you about the procedures to follow and any possible safety issues. In case of approval, your access will be enabled for the agreed date.

Hardware requirements

It is recommended you **use at least one high resolution monitor** (**1920x1200, 24'' or bigger**). Some beamline workstations use 2 monitors so ideally you would use 2 to minimize the amount of horizontal scrolling required for operating the different GUIs.

As for the PC, the NX software is designed to work on computers with minimal hardware resources. Any relatively modern PC (less than 10 years old) should be more than enough, the NX recommendation is at least an i3 with 2 GB of RAM.

Internet connection

Only a **residential Internet connection (ADSL/Fibre/Cable) with basic speed** is required. During our tests, we were able to successfully operate the beamline at good speed even while using the lowest speed ADSL connection available in Spain back in 2016 (Movistar ADSL Basico with 8 Mbps download and 300 Kbps upload.)

IMPORTANT: The **outgoing access to the port 8080** should be open so that the NX software can connect to ALBA. If your institution has a central firewall restricting outgoing connections, please check with the IT department that they allow outgoing connections to port 8080 of the host remotenx.cells.es.

Configuring the Nomachine Enterprise client in your PC

Install the NoMachine Enterprise Client in your PC

Download the NoMachine Enterprise Client for your OS from the NoMachine website.

There are clients available for Windows, Mac OS X and Linux:

https://www.nomachine.com/download-enterprise#NoMachine-Enterprise-Client



Installation of the software should be pretty straightforward, just follow their instructions.

Summary of configuration parameters for Nomachine Enterprise Client

Protocol: **NX** Host: **remotenx.cells.es** Port: **8080** Use UDP communication for multimedia data: **No, leave unchecked** Authentication method: **Password** Use HTTP Proxy: **Don't use a proxy** Connection name: **ALBA remote access**

The following pages explain how to configure the client step by step.

Step-by-step configuration of the NoMachine Enterprise Client

1. Start the software and add a new connection:

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Machines	NOMACHINE
Add	View 🖉 Order 🗞 Settings
No computers were found on your local network. <click a="" connection="" create="" here="" to=""></click>	🔍 Search again

- 2. Choose the following parameters:
 - Host: *remotenx.cells.es*
 - Port: *8080*
 - *NX* as the protocol

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ALBA remote access, Add co	nnection	NOMACHINE
Address Name, host, port and protocol Configuration Authentication and multimedia Info Model, OS and product version	Machine address ALBA remote access Direct connection over the Internet. Give a name and save the settings for your connection. Name ALBA remote access Host remotenx.cells.es Port 8080	C Add Protocol NX
	Coad a configuration or a recording file	

3. Go to configuration and choose the following parameters:

- Choose "Password" authentication
- Uncheck the "Use UDP communication for multimedia data".
- Once done, click add

III NoMachine		– 🗆 X
ALBA remote access, Add co	nnection	NOMACHINE
Address Name, host, port and protocol Configuration Authentication and multimedia Image: Configuration in the second secon	Machine configuration Image: ALBA remote access Direct connection over the Internet. Authentication Image: Use password authentication Use key-based authentication with a key you provide Use key-based authentication with a PKCS11 smart card Use Kerberos ticket-based authentication Multimedia Use UDP communication for multimedia data NoMachine will use UDP for multimedia, if possible.	 Add Modify Modify Modify Modify

4. Your Nomachine Enterprise client is now configured and the NX connection to ALBA is ready to be used.

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Configuring the connection to the beamline desktop PC

Establish a connection to the beamline desktop PC

1. Start the NoMachine Enterprise Client software on your PC. To continue you can double Click on *ALBA remote access, or* Click on *ALBA remote access* to select this connection and then click the *Connect* button to continue:

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ALBA remote access				

2. On the very first time you use this connection, you will get a prompt for verifying the host authenticity. You can simply click *OK* to continue.



From now on the software will recognize this host fingerprint and you will no longer get the prompt above.

3. Now you should authenticate with your username and password.

Typically, these credentials are provided to you the first time you visit ALBA for an experiment, with the recommendation to set your own password as well. They are the same credentials used to remotely download your experiment data using SFTP.

If you don't remember the username or password, it is possible to reset it from the User Office portal (My Visits \rightarrow Account Management), otherwise please ask your local contact at the beamline.

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ALBA remote access	NOMACHINE	
Please type your username and password to login as a system us	ser.	
Username u2015xxxxxx		
Password Save this pass	•••••	
	Cancel OK	

4. Now, you should get a screen listing the available *Physical displays*.

If you don't see any available desktop and instead get a message stating *"No available sessions"*, you should change from *My desktops* to *All desktops* at the View icon at the top-right of the screen:

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ALBA remote access		IINE
E Browse Connect Q. Find a node	View LA	Order
Server:		
 		
ALBA remote access, Collecting-XALOC, Processing-XALO, This cloud server ED, Debian GNU/Li, ED, openSUSE 12.1, 0 Running 4 2 Running 4 0		
Save the selected node in the connection file		
Cogged in as user afraile		
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Now you should be able to locate the Physical display of the beamline PC and connect to it:

- For Xaloc (BL13): Use the machine labelled *Collecting* to perform data acquisition and the machine labelled *Processing* for data processing.
- For other beamlines: Typically only one machine is available, otherwise please check with your local contact who will tell you to which one you should connect to.

5. After initiating the connection to the Physical display, you will have to wait for the local user running the beamline PC to authorize your connection to join the existing session:



6. Once the current beamline user authorizes the connection, you will be shown the desktop of the beamline PC.

But on the first connection, you will also get a brief tutorial about how the software works, just click on OK:

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	ALBA remote desktop	NOMACHINE	
	Show the menu by clicking on th	e edge of the window	
		Or do the same by pressing CTPL+ALT=0	
	1		
	Change the screen settings on	and the strate party in	
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	Don't show this message again	OK	
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After the tutorial ends, you will get a full view of the desktop in the beamline PC.

7. In case you only see one of the three monitors in the beamline, you should adjust the NX Display settings.

First of all type the keyboard shortcut *CTRL*+*ALT*+*0* (*number zero*) to bring up the NX settings screen (*CTRL*+*Option*+*zero* if connecting from a Mac). Then click on Display:

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Click the items belo	w or <mark>click the "<</mark> " bac	k button to close the	e menu.				
	-to		0.	.			
Input	Devices	Display	Audio	Mic in	Recording	Connection	
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Next go to Select remote display:

III NoMachine - ALBA remote access	- 🗆 X
C Display	NOMACHINE
Click the items below or click the "<" back button to close the menu.	Change settings

And finally choose ALL to display all remote monitors in your PC:



In case you have multiple monitors, you should also enable the option *Fullscreen on all screens* in the *Display* menu:



Troubleshooting and frequently asked questions

I don't remember my username or password

Your username is the "u" letter plus the <proposalid>, i.e: u2014xxxxxx.

An initial password is typically provided to you the first time you visit ALBA for an experiment, with the recommendation to set your own password as well.

If you don't remember the password or need to change it, it is possible to reset it from the User Office portal (My Visits \rightarrow Account Management), otherwise please ask your local contact at the beamline to reset it for you.

I get the error "*No available sessions*" after entering my user and password

If you don't see any available desktop and instead get a message stating *"No available sessions"*, you should change from *My desktops* to *All desktops* at the top-right of the screen:



Now you should be able to locate the Physical display of the beamline PC and connect to it:

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ALBA remote access	NOMACHINE
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XALOC-pcbl1305, EDE, openSUSE 12.1 (x86_64)	
Save this setting in the connection file	Back Connect
	\sim

How do I access the NX settings (display, keyboard, etc...) menu?

Once the remote session to your desktop is open and running, to access the Menu Panel, enter the key combination Ctrl+Alt+0 (Ctrl+Alt+zero) or move your cursor to the page-peel in the top right-hand corner of the window. When connecting from Mac systems, the keyboard shortcut for bringing up the menu is Ctrl+Option+0 (Ctrl+Option+zero)

You can also check this Nomachine article describing all the available NX settings in detail .

I can only see one of the remote monitors in the beamline

In case you can only see one of the monitors in the beamline, you should adjust the NX Display settings.

First of all type the keyboard shortcut *CTRL*+*ALT*+*0* (*CTRL*+*ALT*+*zero*) to bring up the NX settings screen (use *CTRL*+*Option*+*zero* if connecting from a Mac). Then click on *Display*:

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ALBA remote desktop	N		
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	ê. 🖬	0	
Input Devices Display Audio	Mic in Recording	Connection	
«Click here to connect a device»			
		Done	
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	ALBA remote desktop Click on the item below or click Dore to close the menu panel para Dorice Duplay Auto Auto	ALBA remote desktop Club on the items below or club. Done to close the menu parall para para para Porice Porice Clugbay Audio	<section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><image/><text><text></text></text></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header>

Next go to Change Monitor:

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	Click on the items below or click Done to close the menu panel	And in case of the local division of the loc
and the second division of the second divisio		-
	Change monitor in to window Resize remote Fullscreen on all Iconize screen screens	Change settings
	<click a="" connect="" device="" here="" to=""></click>	
		Done
	ENTERPRISE SERVER	0

And finally choose ALL to display all the remote monitors in your PC:



Once you have configured the view of the three monitors, you can easily switch between them by scrolling horizontally to the edge of the screen.

I have multiple monitors at my PC, how can I use them all for the remote sessions?

In case you have multiple monitors, you should enable the option *Fullscreen on all screens* in the *Display* menu:

NoMachine - ALEA remote desktop		
	Display	NOMACHINE
	Click on the items below or click Done to close the menu panel	and the second se
		-
	Change monitor Fit to window Resize remote Fullscreet Fullscreen on all conize screen screens	Change settings
	«Click here to connect a device»	
		Date
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I have multiple monitors at my Mac, but the NoMachine session can only use one of them.

In some computers running Mac OS X, an application window can only use a single monitor by default. This is related to a specific Spaces configuration that you can rearrange following these:

First go to System Preferences / Mission Control



You'll see an option "Displays have separate Spaces" which is checked by default:



You should uncheck this option and leave it like this:



Then proceed to log out and log back in, and you should now be able to use all your local monitors in Nomachine.

When trying to connect I get the error "*Please upgrade your NoMachine installation to version 7 or later and retry*"

In the summer of 2021 we have upgraded the NoMachine server, which now requires the clients to be version 7 or later.

Please download the latest version of the NoMachine Enterprise Client for your OS from the NoMachine website and upgrade it:

https://www.nomachine.com/download-enterprise#NoMachine-Enterprise-Client



Installation of the software should be pretty straightforward, just follow the onscreen instructions.