NX

Description

NX is an enterprise-class solution for secure remote desktop access. NX is developed by NoMachine The Desktop Virtualization Company provided by NoMachine free of charge.

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NX at the Advanced Photon Source

NX is used to remotely control APS Linux and Solaris workstations.

Supported Operating Systems

NX Client

- Windows
- Mac OS
- Linux
- Solaris

NX Server

- Linux
- Solaris

How NX Works at the APS



Instructions for Linux, Solaris, and Mac Clients

1) Launch the NX Client with command: startnx

startnx - Starts an NX session

Usage: startnx [REMOTE_HOST] [--SESSION_TYPE] [WIDTH] [HEIGHT]

SESSION TYPES

--kde K Desktop Environment

--gnome GNU Object Model Environment

--cde Common Desktop Environment

--shadow Attach to the remote machine's running desktop environment

SPECIAL RESOLUTIONS

fullscreen Use entire screen on the client

- available Use all available desktop space on the client
- remote Use the remote machine's resolution

Examples:

startnx duck.aps.anl.gov --kde 1024 768

startnx duck.aps.anl.gov --kde fullscreen

Following the above examples, to start an NX session you must specify the name of the remote machine you want to connect to. You must also specify the session type.

Optionally, you may specify the width and height of the desktop for the NX session. The default width is 1024 and the height is 768 for a total resolution of 1024x768.

Terminal	
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>T</u> erminal Ta <u>b</u> s <u>H</u> elp	
bash-3.2\$ startnx duckkde 1024 768	\frown
Discovering Network	
Hostname: puffin.aps.anl.gov IP: 164.54.51.42 164.54.51 164.54	
Launching NX	
Session: duck.aps.anl.gov.nxs	
Server host value="duck" Server port value="22" Session value="unix" Desktop value="kde" Resolution value="1024x768"	
bash-3.2\$	
	\leq

2) Type your username and password and click Login.

	NX _ X	
NOMACHINE		
Login	username	
Password	*****	
Session	somemachine.aps.anl.gov	
	☐ Login as a guest user	
Confi <u>g</u> ure	<u>L</u> ogin <u>C</u> lose	

Instructions for Windows Clients

NOTE: These instructions and screen shots are for the Tectia SSH client v6.0.2.84. Other versions of SSH will work, but screens will not match what it documented below. The Tectia SSH and NX clients need to be installed before attempting this procedure. Also note that the SSH client is only needed when connecting to a remote host at the APS from an off-site computer or from external networks.

In the procedure documented below you will create a "FreeNX on tin" profile, which will allow you to remotely connect to the system tin.aps.anl.gov via ssh to apollo tunneling X11 through SSH. You will need to substitute the remote host you need to connect to for tin.aps.anl.gov in the screens below.

1) Configure and launch SSH client

Select "Add Profile".

SSH Tectia Configuration		-DX
General G	Add profile Add folder Move Rename Determine	ete
(ashi tectia	OK Apply Cancel H	lelp

Name it "FreeNX on tin" and select "OK". The profile name is meant to be descriptive.

SSH Tectia Configuration		? ×
Enter profile name:		
FreeNX on tin		
	ОК	Cancel

On the "Connection" tab, Select "Specify host name" and enter apollo.aps.anl.gov Select "Specify user name" and enter your username Leave port number set to "22".

SSH Tectia Configuration	
General G	Connection Authentication Ciphers MACs Server Proxy Tunneling Configure basic settings for the connection. New settings will take effect upon next login. Host Name • Specify host name • Prompt user for the host name User Name • Use current Windows user name • Prompt user for the user name • Prompt user for the user name • Prompt user for the user name • Outing user for the user name • Advanced • Port number • 22 Compression • None> • Innel using profile • Innel using profile • Innel using profile • Innel using profile
	Add profile Add folder Move Rename Delete
	Appiy Cancel Help

Select the "Tunneling" tab, Under "Forwarding Options", de-select "Use Defaults" and select "Tunnel X11 connections".

SSH Tectia Configuration	
General Default Connection Proxy Rules Logging Connection Profiles FreeNX on tin rigel westbrk Ser Authentication Keys and Certificates Key Providers Server Authentication Host Keys CA Certificates LDAP Servers CRL Prefetch Automatic Tunnels	connection Authentication Ciphers MACs Server Proxy Tunneling Image: Construction of the c
	AddEditDelete
	Create Shortcut
	Add profile Add folder Move Rename Delete
Cashi tectia	OK Apply Cancel Help

Under "Local Tunnels", select "Add" and add the following local tunnel: For Listen Port enter "9999" For Destination host enter "tin.aps.anl.gov" For Destination port enter "22" Select "OK"

	Local Tunnel	×
	Type TCP Listen port 9999 Allow local connections only Destination host tin.aps.anl.gov Destination port 22 OK Cancel	
SSH Tectia Configurati	on	
General Connection Proxy Rules Logging Connection Profiles FreeNX on tin "rigel westbrk Ouser Authentication Keys and Certificate Key Providers CA Certificates LDAP Servers CRL Prefetch Automatic Tunnels	ionnection Authentication Ciphers MACs Server Presson Forwarding Options Use Defaults Image: Configure local tunnel X11 connections Image: Configure local tunnels that are initiated from the local computer to the Communication will be secured between the local computer and the beyond the server. The settings will take effect upon next login. Local tunnels Remote tunnels Listen port Dest host Dest port Server Presson Server YES	xy Tunneling he server. server, but unsecured
	Add Edit.	Delete
	Add profile Add folder Move Ren	ame Delete
(ash tectia		Cancel Help

Select "Apply" to save these settings

Launch the ssh client and select the appropriate profile, in this case "FreeNX on tin"



Enter your password



You will now have established an SSH session with apollo.aps.anl.gov which is configured to forward X11 traffic from tin.aps.anl.gov.

🗑 FreeNX on Tin (profile) - SSH Tectia	- Terminal	
Eile Edit View Window Help		
🔲 🖨 🖪 🔎 🖉 🖻 🖻 📥	🖃 🛃 🚳 🏀 🥏	
📔 👔 Quick Connect 📄 Profiles		
SSH Tectia - Terminal 6.0.2.84 Copyright (c) 2000-2008 SSH Commun:	ications Security Corp - htt	p://www.ssh.com/
Licensed to CD-ROM customer, N/A		
Last login: Mon Sep 8 12:24:51 20 NOTICE T	08 from 401clo185.anlgh) USERS	
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. apollo%		
Connected to FreeNX on Tin	aes128-cbc - hmac-md5 - none	80x27

2) Configure and launch NX

Once you have established the ssh session with apollo, launch the NX client and configure as follows: Select "Next"



Enter a "Session" name, in our example: tin.aps.anl.gov. The session name is meant to be descriptive. Enter "Host" name as "localhost" and port "9999"

Select "Next"

Session		
	Insert name of the session. Your configuration settings will be save with this name.	ed
	Session tin.aps.anl.gov Insert server's name and port where you want to connect.	
	Host localhost Port 9999 Select type of your internet connection.	
	MODEM ISDN ADSL WAN LAN	
	< <u>B</u> ack <u>N</u> ext > <u>C</u> ancel	

In the next screen, select the remote system's operating system, graphical desktop environment, and specify the graphics resolution. Select "Available Area" to use the entire screen. Select "Next"

🎇 NX Connection Wiza	rd 📃 🔍
Desktop	
NOMACHINE	Using NX Client you can run RDP, VNC and X desktops, depending on what the service provider has made available.
	Select size of your remote desktop.
	Authorization credentials are always encrypted at the time connection is established. To enhance performance, you can disable the encryption of the data traffic.
	Disable encryption of all traffic
	< <u>B</u> ack <u>N</u> ext > <u>C</u> ancel

Select "Create shortcut on desktop", if you prefer. Select "Finish"

🙀 NX Connection Wizar	d	_ 🗆 🗙
Configuration completed		
NOMACHINE	Congratulations, connection to 'localhost' will be saved as 'tin.aps.anl.gov'. You may further configure your session by running the Advanced Configuration dialog.	
	 Create shortcut on desktop Show the Advanced Configuration dialog 	
	< <u>B</u> ack <u>Einish</u>	Cancel

Once the configuration is saved, you will be presented with the NX login screen: Enter your password and select "Login":

III NX		×	
NOMACHINE			
Login	westbroo		
Password	******		
Session	tin.aps.anl.gov]	
	厂 Login as a guest user	_	
Configure	Login <u>C</u> lose		

The NX session will go through various stages:

Setting up environment Connecting to localhost Connected to localhost Waiting authentication Downloading session information

The first time you connect to a specific remote host, you will asked whether you want to continue connecting. Select "Yes" to continue:



If there are no errors, you will be logged into the full graphics environment of the remote host, tin.aps.anl.gov in our example.



Instructions for using NX Connection Wizard

NOTE: Using the NX Connection Wizard is **NOT** necessary on **Linux**, **Solaris**, **and Mac clients** since "startnx" creates the session for you when connecting to the remote machine. These instructions have been included for reference if you happen to use the wizard.

1) Linux and Solaris: Launch the NX Connection Wizard at shell prompt:

nxclient -wizard

IR	NX Connection Wizard 📃 🗖 🗙
Welcome	
NOMACHINE	Welcome to NX Client Connection Wizard which will guide you through the steps needed to setup your login. Please select the Next button to start.
	< <u>B</u> ack <u>Next ></u> <u>C</u> ancel

Mac: Applications Folder on HD --> NX Connection Wizard.app

•			Q	
Network	Name	Date Modified	Size	Kind
Croups A	Internet Connect.app	Jan 28, 2008, 10:21 AM		Application
Groups _	🚮 iPhoto.app	Jan 28, 2008, 10:07 AM	222	Application
Public	iSync.app	Jan 28, 2008, 10:21 AM		Application
Morgan HD	뒔 iTunes.app	Apr 1, 2008, 3:48 PM		Application
	强 iWeb.app	Jan 28, 2008, 10:07 AM		Application
Desktop	iWork '06	Nov 10, 2006, 4:11 AM		Folder
DAVECYL	🔊 Mail.app	Apr 1, 2008, 3:48 PM		Application
Applications	🙀 Microsoft AutoUpdate.app	Apr 4, 2006, 6:23 AM		Application
Populations	Microsoft Office 2004	Jul 5, 2006, 6:15 AM		Folder
Documents	III NX Client for OSX.app	Feb 5, 2008, 5:02 AM		Application
Library	🙀 NX Connection Wizard.app	Sep 13, 2005, 1:14 PM		Application
Utilities	NX Session Administrator.app	Sep 13, 2005, 1:14 PM		Application
inerf data	Office 2004 for Mac Test Drive	Dec 23, 2005, 3:02 PM		Folder
ipen_uata	🐝 OmniOutliner.app	Aug 18, 2006, 3:47 AM		Application
projects	() 4

2) Type a name for the new NX session. The Session name should be the name of the remote machine you are trying to connect to.

3) Enter the Host name of the remote machine you want to connect to. Click Next.

I	NX Connection Wizard 📃 🗖 🗙
Session	
NOMACHINE	Insert name of the session. Your configuration settings will be saved with this name. Session hawk
	Insert server's name and port where you want to connect. Host hawk.aps.anl.gov Port 22 Select type of your internet connection.
	< <u>B</u> ack <u>N</u> ext > <u>C</u> ancel

- 4) Choose your desktop type.
- a. In the left drop down list, choose Unix as the desktop type for a clean fresh desktop.

b. In the right drop down list, choose KDE or GNOME when connecting to Linux workstations or CDE when connecting to Solaris workstations.



5) If you want to connect to a user session that is already running on the remote host, choose <u>Shadow</u> in the left drop down list. Click Next when you are finished choosing your desktop type.

NOMACHINE	Using NX Client you can run RDP, VNC and X desktops, depending on what the service provider has made availab Shaqow Settings
	Select size of your remote desktop. As on the server VI: 800 # H : 600
	Authorization credentials are always encrypted at the time connection is established. To enhance performance, you ca disable the encryption of the data traffic.
T	Disable encryption of all traffic

6) Now, make sure you uncheck "Create shortcut on desktop". You will need to launch NX with the provided APS NX script: startnx. Click Finish.



7) The NX login prompt will appear on your screen. Click Close.

	NX _ X			
NOMACHINE				
Login	username			
Password	*****			
Session	somemachine.aps.anl.gov			
Login as a guest user				
Confi <u>q</u> ure	<u>L</u> ogin <u>C</u> lose			

8) You may now connect to the session you just created by using the command:

startnx [REMOTE_HOST] [--SESSION_TYPE] [WIDTH] [HEIGHT]

	Terminal	_ 5	⊐ ×	
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>T</u> erminal Ta <u>b</u> s	<u>H</u> elp			
bash-3.2\$ startnx duckkde 102	4 768		ſ	~
Discovering Network				
Hostname: puffin.aps.anl.gov IP: 164.54.51.42 164.54.51 164.54				
Launching NX				
Session: duck.aps.anl.gov.nxs				
Server host value="duck" Server port value="22" Session value="unix" Desktop value="kde" Resolution value="1024x768"				
bash-3.2\$ 🗌				
				\vee

Example NX session running:



NX Panning

The panning feature in NX can be used when the remote display on the server machine is running at a higher resolution than the display on the local client machine. For example, if the NX server is running a resolution of 1920x1200 and the local NX client machine is running 1440x900, the difference in the two resolutions will form a virtual space on the client machine that can be easily panned.

To activate the panning feature, press the following key combination once:

ctrl + alt + r

To pan the virtual space, do the following:

Hold **ctrl** + **alt** while at the same time press and hold the **Left** mouse button. **Drag** the mouse to move around the virtual space.

Note About FreeNX

ROME, Italy, July 11th, 2007 - A number of reports and blog entries exist on the Internet making the claim that NX is difficult to install and configure. Other reviews claim that the sotware is not available for certain Linux distributions where it is indeed officially supported by NoMachine, or that it doesn't work as expected in certain environments. NoMachine would like to emphasize the fact that these reports refer to the installation of FreeNX and NOT NoMachine NX, as the authors seem to imply. NoMachine NX and FreeNX are not the same software and, although FreeNX relies on the open-source components designed and developed by NoMachine, NoMachine does not endorse or control in any way the evolution of FreeNX.

NoMachine also points out that, although FreeNX aims to stay compatible with NoMachine NX, it has notable differences in the underlying operations, in the configuration and in the placing of the files. Lack of continuous development by the FreeNX community has also caused intermittent incompatibilities between the NoMachine NX Client and some versions of FreeNX. The impossibility of the FreeNX users to upgrade the client, has forced NoMachine to keep available versions of the software that have been naturally replaced with more sophisticated and bug-free versions, causing further headaches to our busy support personnel. We therefore invite our users to cleanly uninstall any FreeNX component before installing NoMachine NX and to verify that they are using NoMachine NX Server and not FreeNX before submitting their inquiries to NoMachine, as it would appear that the two are being easily and confusingly compared.

The NoMachine Team