X-Win32 2010 User Guide

Table Of Contents

X-Win32 Manual

About X-Win32

What is X-Win32

After more than 20 years of development, X-Win32 has become the most advanced PC X server on the market. An X server allows remote graphical Unix and linux X application to be displayed on your local Windows machine. X-Win32 provides multiple protocols to connect to your remote system thus providing a complete solution for remote networking. For complete mobility, X-Win32 provides the LIVE protocol adding several key support features (suspend/resume multi user support, printing, sound support) not found in traditional X Server.

New In 2010

- LIVE Sessions
  - Sound Support
  - File Transfer Support
  - Remote Printing
- X11R7 support
- Single Window Mode
  - Support for Multiple DISPLAY Screens

- SSH
  - Increased SSH performance (3X faster than previous versions)
- OpenGL Version Upgraded

Changes From Previous Versions

- Screens centered on First Monitor
- Fixed PseudoColor emulation and added new 8 bit only mode
- Moved Port number options to the Advanced Tab of the Edit Connection Dialog
- Added support for XInereama extension
- Add "Start New Instance" to XDMCP Connections
- Redesigned Window Tab of X-Config
- Fixed Multiple Menus appearing when Right Clicking on the Title Bar
- Upgraded OpenGL from 1.1 to 1.2
- Apped OpenGL pixelbuffer support
- Fixed a case where system wake up support would trigger 100% CPU usage
- Fixed a rare case where SSH would hang when connecting

Features

- X11R7 support
- Single Window Mode
  - RANDR extension, dynamically resizes and rescales the Window
  - Support for Multiple DISPLAY Screens
  - DISPLAYS can be larger than the size of the Monitor
- Multiple Window Mode
- Screen Shot Tool
- Copy and Paste text and graphics
- Input
  - X Keyboard extension allows the use of over 130 keyboard configurations
  - Japanese IME support
- Network
  - IPSmart
- SSH, telnet, rexec, rlogin, rsh, XDMCP protocols supported
- SSH
  - MS Kerberos support
  - Key Based Authentication
  - Increased SSH performance (3X faster than previous versions)
- XDMCP
  - Broadcast, Multiquery, Indirect types
  - Sound Support
- LIVE Sessions
  - Suspend running X Sessions
  - Resume session from any LIVE client
  - Console Sessions
  - Sound Support
  - File Transfer Support
  - Remote Printing
  - Share running Session with multiple users
- 3D OpenGL Support

- Connection Auto Start Capability
- Font Server Support
- Font support for pcf, bdf and True Type font

Installation

Minimum System Requirements

- 233 Mhz Processor
- 64 MB RAM
- 60 MB available Disk Space (32 MB minimum install)
- Windows XP SP2 or later

Installation

Double click on **setup.exe** to begin the installation. The setup wizard will guide you through the installation. It is recommended to perform a Complete Install. Users have the ability to install X-Win32 with no translations and a minimum set of fonts. Note that remote applications do may not function correctly without the proper fonts.

MSI Installation Options

Users with Floating Licenses have the option to download msi versions of the X-Win32 installer. There are several command line options available to the msiexec installer.

From the command line run: **msiexec {Property}="{Value}" /qn /i "X-Win32.msi"**

where {Property} and {Value} are defined below

Property	Value	Description
SERIAL	User's floating license	Add the floating license to all users at install time.
NOAUTOUPDATE	TRUE	Disable the Update Tool

Getting Started

Starting X-Win32

After installation, Click on **Start Menu > Programs > X-Win32 ### > X-Win32** to launch X-Win32. The X server installs in a passive mode waiting for a Connection to be created and started. Note the program will run in 30 minute demo mode until a license is installed.

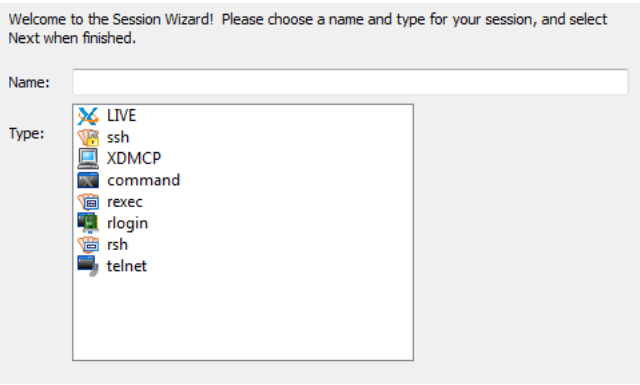
Starting X-Config

X-Config is the main configuration utility for X-Win32. It provides the ability to create and edit Connections and set various the X server options. Click on **Start Menu > Programs > X-Win32 ### > X-Config** to launch X-Config.

Creating Your First Connection

Before you can connect to a remote host, you must create a Connection using the X-Config utility. The Connections tab provides a means of creating a new connection. Connections are created and customized based on the method used.

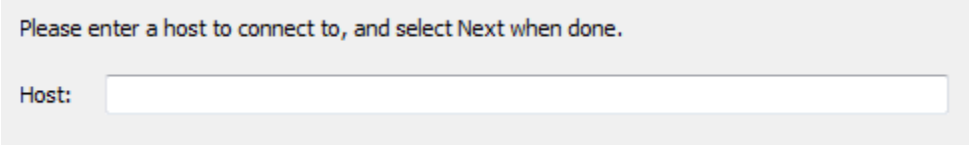
1. Start X-Config
2. Select the Connections tab.
3. Select the desired folder where the new session will be created.
4. Press the Wizard button.
5. In the Connection Method dialog, select the connection method, enter the name of the session and press Next.
   For help choosing a Connection Method, see the section Which Connection Method Should I choose?



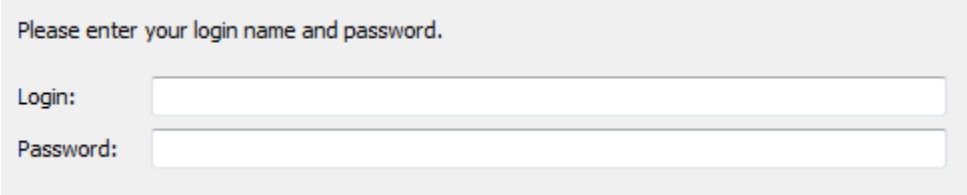
6. Please follow the steps described in the Connection specific section (LIVE, XDMCP, command, SSH, rexec, rlogin, rsh, or telnet) listed below.

LIVE

a. Enter the host to which the session will connect.

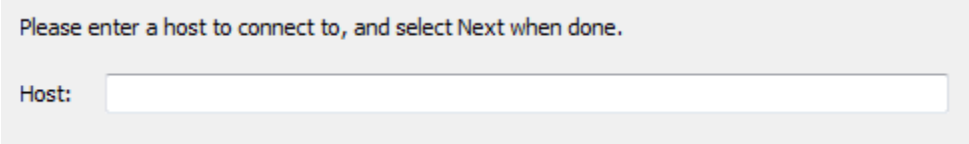


b. Enter your Login name and Password for that host.

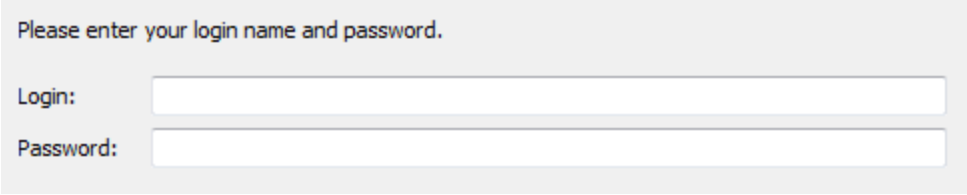


SSH, rexec, rlogin, rsh, and telnet

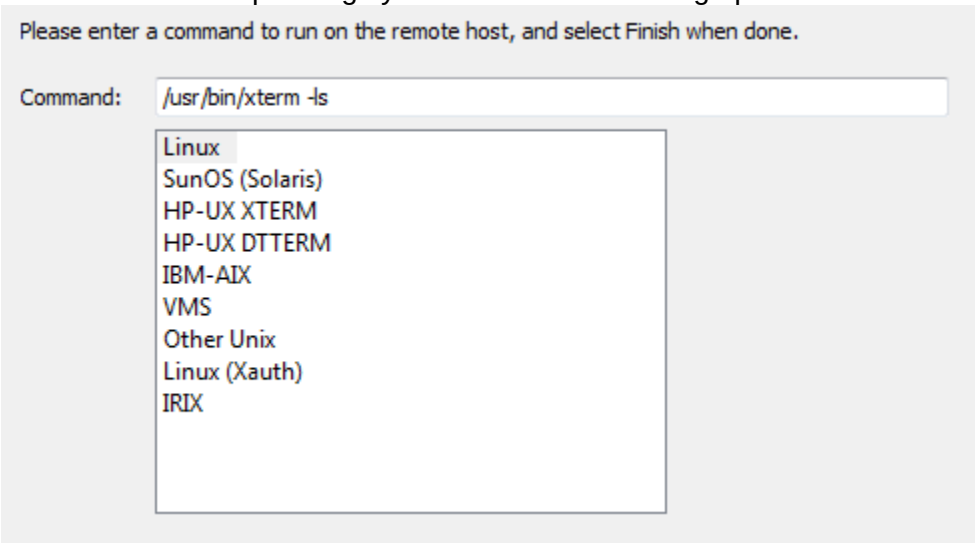
a. Enter the host to which the session will connect.



b. Enter your Login name and Password for that host. (If rsh was selected, the password will not be requested.)

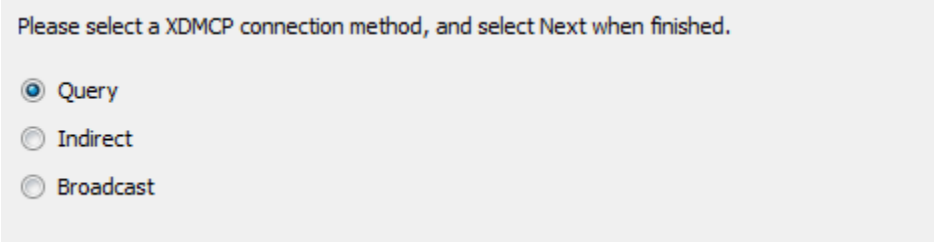


c. Select the operating system of the host to bring up a default terminal.

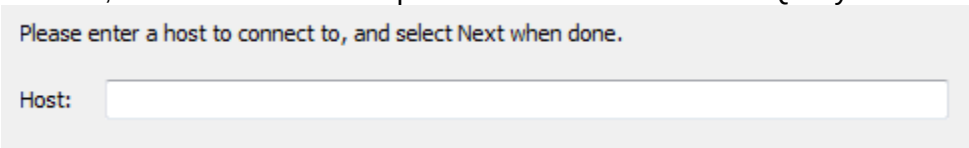


XDMCP

a. Select the XDMCP connection: Query, Broadcast, or Indirect.

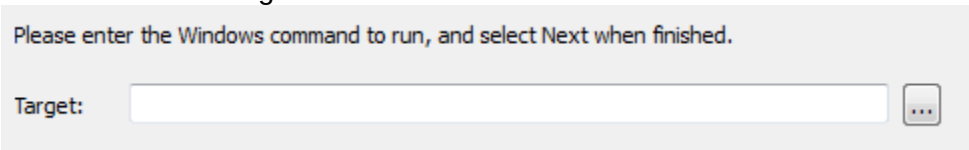


b. If Query or Indirect modes are selected, enter the host to which the session will connect, then click finish. Multiple hosts can be entered for Query mode.

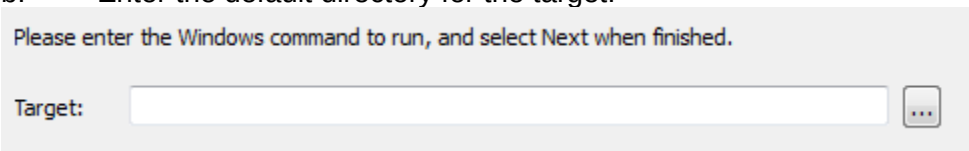


command

a. Enter the target command to run on Windows.



b. Enter the default directory for the target.



7. After completing the Wizard, your connection will be placed in the Connections Tab.
8. Highlight the Connection and press Launch to launch your connection.

Which Connection Method Should I Choose?

There are many networking protocols available when connecting to a remote host and X-Win32 ships with the most common ones. **SSH** was made as a secure replacement to telnet, rlogin, rexec and rsh, and has become the standard connection method for modern operating systems. It can display single applications or entire desktops. The **LIVE** protocol runs on top of SSH and adds extra features not found in typical

connection protocols (for example suspend and resume from multiple machines). For computer lab administrators on a LAN, **XDMCP** is still widely used to display full desktops. Only advanced users should select a Connection Method other than LIVE, SSH, or XDMCP. Consult your system administrator before selecting any of the other connections (rexec, rsh, telnet, rlogin). The command method is a special connection for running Windows applications which need X Server support through X-Win32.

Licensing and Registration

X-Win32 supports multiple licensing schemes: Node locked and Floating. Unlicensed versions of X-Win32 will run in 30 minute demo mode and do not allow LIVE functionality. Note: Flash versions of X-Win32 only have a VN option and will not run unlicensed.

License Types

Node Locked License

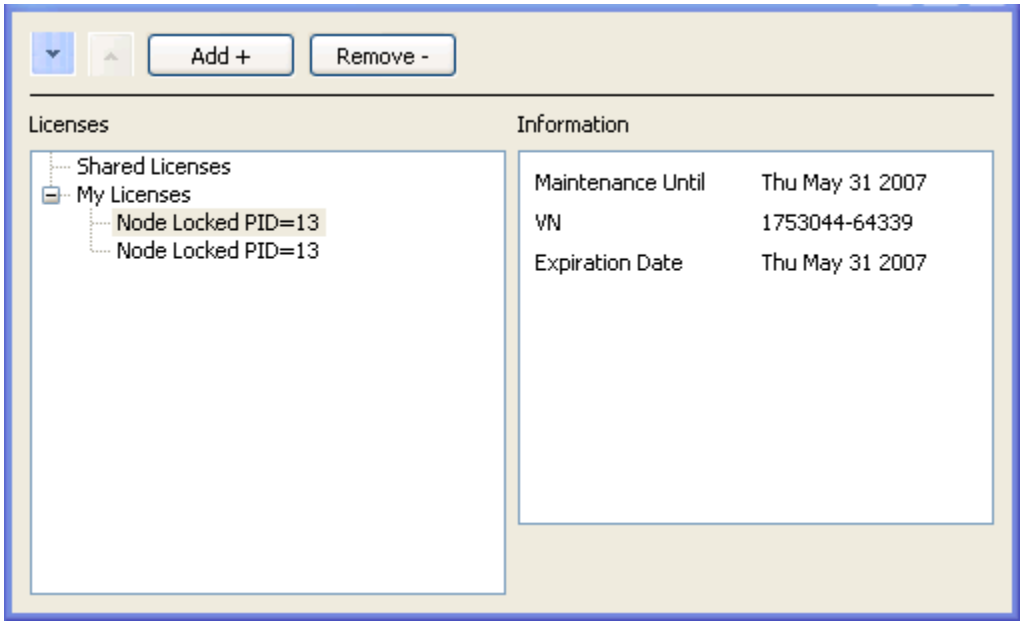
Node Locked licenses are generally 7 to 15 digits separated by one dash (ie. 12345-6789) and are directly tied to the hardware of the machine the X-Win32 license is installed on. X-Win32 can be uninstalled and reinstalled any number of times on the same machine without using a second license. However, changing hardware devices may cause a user to use up a registration. Reformatting a hard drive and adding an extra NIC may also cause X-Win32 to prompt a re-registration window in which the user will use up a registration. For more information see Registering a Node Locked License

Floating License

Floating licenses use a concurrent license scheme and are allowed to be installed on an unlimited number of computers on the network. A maximum number of users can run X-Win32 at the same time as specified in the license. If the number of licenses have been exceeded, X-Win32 will shutdown until a license on the network is freed up. Certain floating licenses may also be restricted to certain subnets. This is done at the discretion of the account administrator at the time of purchase. For more information see Registering a Floating License

License Monitor

The license Monitor allows the user to easily view and modify the current licenses installed in X-Win32. **Right Click on the System Tray icon > Support > Licenses** to bring up the License Monitor



Highlight a license. Information about your licenses is displayed on the box in the right side. The license with the asterisk is the license currently in use. Use the arrow buttons to move the licenses up and down in order of use. you can add and remove Personal licenses using the Add and Remove buttons respectively. Pressing the add button will bring up the registration wizard.

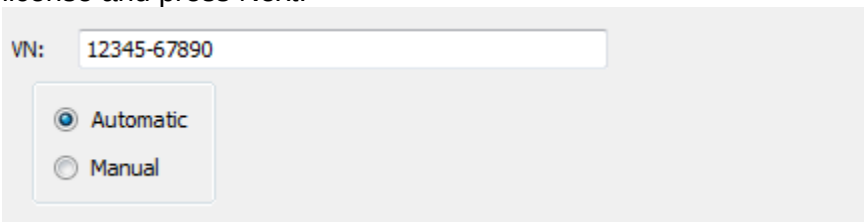
Registering a License

Registering a Node Locked License

1. X-Win32 must already be installed on your system
2. Start X-Win32. If your system is currently unlicensed, X-Win32 will automatically bring up the License Wizard (Skip to step 6)
3. Right Click on the System Tray Icon
4. Select Support > Licenses
5. Highlight My Licenses, Click Add
6. Select **Nodelocked (VN)**
7. If you have access to the Internet follow the steps in Automatic Registration. If not, follow the steps for Manual Registration.

Automatic Registration

1. Enter the VN number, which was provided when you purchased the X-Win32 license and press Next.

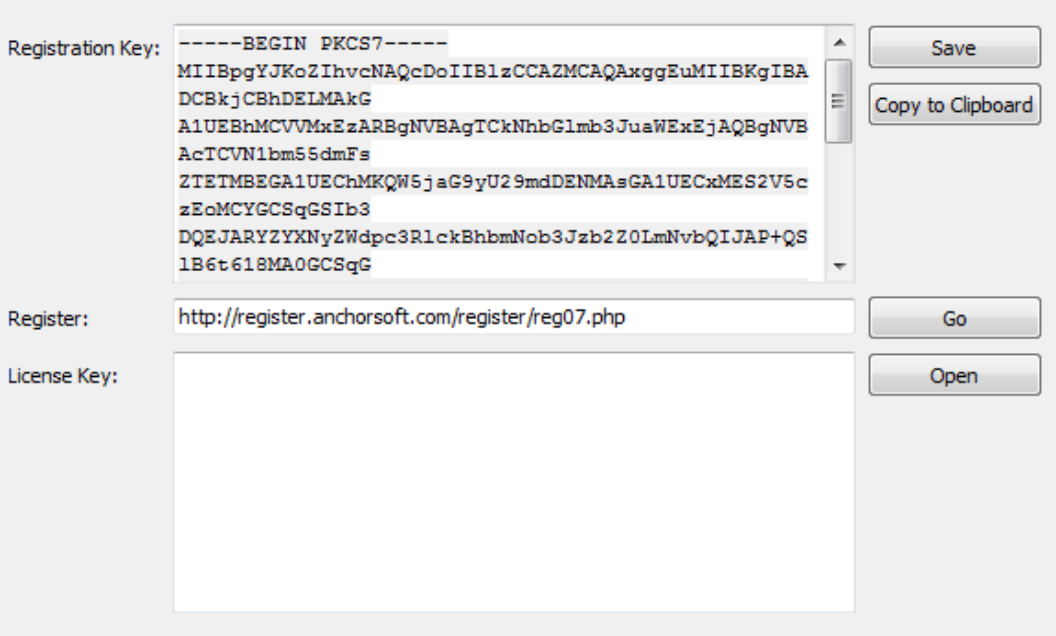


2. __PROODUCTNAME__ will automatically contact StarNet to register the license. Press the Finish button when done.

Manual Registration

Manual registration is available for computers which do not have access to the outsside Internet.

1. Enter the VN number, which was provided when you purchased the X-Win32 license and press Next.
2. The following Window is displayed



   Copy the **Registration Key** to a file.
3. On a computer with Internet access, go to the link that was specified in the **Register** field
4. Paste the **Registration Key** into the field on the webpage to get the **License Key**
5. Copy the **License Key** into the License Key Field and press Next
6. Press the Finish button to complete the registration.

Registering a Floating License

1. X-Win32 must already be installed on your system
2. Start X-Win32. If your system is currently unlicensed, X-Win32 will automatically bring up the License WIzard (Skip to step 6)
3. Right Click on the System Tray Icon
4. Select Support > Licenses
5. Highlight My Licenses, Click Add
6. Select **Floating**

7. Enter your floating license key into the text area and press Next.
8. Press Finish to complete your registration.

Registering a Floating License at Installation

Floating License customers have the option to download an *msi* version of X-Win32. This version allows a floating license to be added during the Installation process. This license is automatically available to all users on the system.

From the command line run: **msiexec SERIAL="<place floating license here>" /qn /i "X-Win32.msi"**

License Location

Licenses are stored in a file called License.config and are either local to the current user (default) or shared by all users.

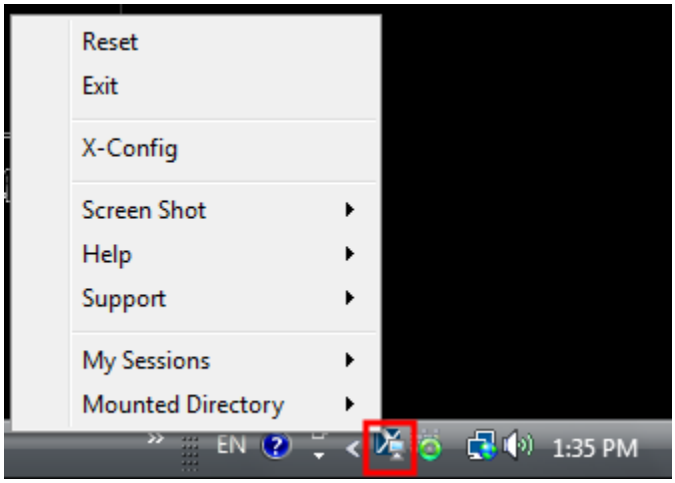
Current User	%APPDATA%\StarNet\PRODUCTNAME__
All Users	The X-Win32 installation directory (usually in Program Files)
Flash Version	The X-Win32 installation directory on the USB drive

To install a license for all users, simply copy the License.config file from the current user directory to the installation directory

System Tray

After X-Win32 is launched, an icon appears in the system tray. Placing the mouse over the icon will show the current DISPLAY number. Connections can be launched by left-clicking on the icon and selecting the proper Connection in the Menu. Right Clicking on the icon brings up a menu with more options which is described in the following section.

Right Click Menu



Menu Item	Description
Reset	Resets the X Server. Selecting this menu item will shut down all X Connections and put X-Win32 back in it's initial state
Exit	Exits X-Win32
X-Config	Opens X-Config
Screen Shot	Options available to take a screen shot (see Screen Shot Tool below)
Help	**Contents** Display this Help file **About** Displays information about X-Win32 including the build number, contact information, and licensing information **Update** Check for any updates available for the current version. Only Registered Versions of X-Win32 can check for updates.
Support	**Release Notes** Display the release notes for the current version **Request Support** Connect to the X-Win32 support page to submit an inquiry **Submit Bug** Connect to the X-Win32 support page to submit a bug **Log Viewer** The log viewer provides information regarding the X Server's current configuration, as well as any error messages that may have affected connections. The logs are found in %TEMP%\X-Win32 #.log **Licenses** Opens up the License Monitor. (See Licensing and Registration)
(Connections)	Predefined Connections can be launched from the system tray. A Connection in the PATH will appear as a menu item in the tray. Click on the menu item to launch the Connection

Screen Shot Tool

X-Win32 comes with an integrated screen shot tool to easily copy and paste graphics back and forth from Linux to Windows machines. Select a menu item to specify which part of the screen you want captured.

Menu	Description
FullScreen	Take a screen shot of the entire monitor.
Rectangle	Use the mouse to click and drag a rectangular box to highlight the section of the screen to be copied.
Window	Click on a window to copy its entire contents, with window border and all.

After an image has been captured, the screen shot review tool appears with the following available actions.

Menu	Description
Print	Send the image to the local Windows printer
Copy to Clipboard	Copy the image to the clipboard to be pasted in other applications such as Microsoft Word or MS Paint
Save to File	Save the image to a specified file in .png format
Close	Close the screen shot tool and do not save the image

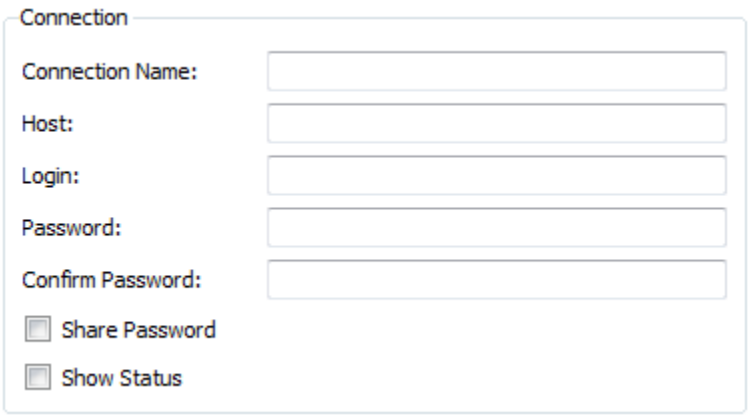
Connection Methods

Connection Method: LIVE

Description

LIVE Connections are special SSH connections that use the LIVE protocol to communicate. The LIVE protocol allows running connections to be suspended and resumed at any machine with a LIVE client installed. Compression technology also reduces the network bandwidth speeding up the session. Sessions can be shared so multiple users can Collaborate on the same running machine. The LIVE Server is installed on the remote host and runs allowing the session to stay active after the LIVE client has disconnected by the user or by a network/Windows failure.

General Options

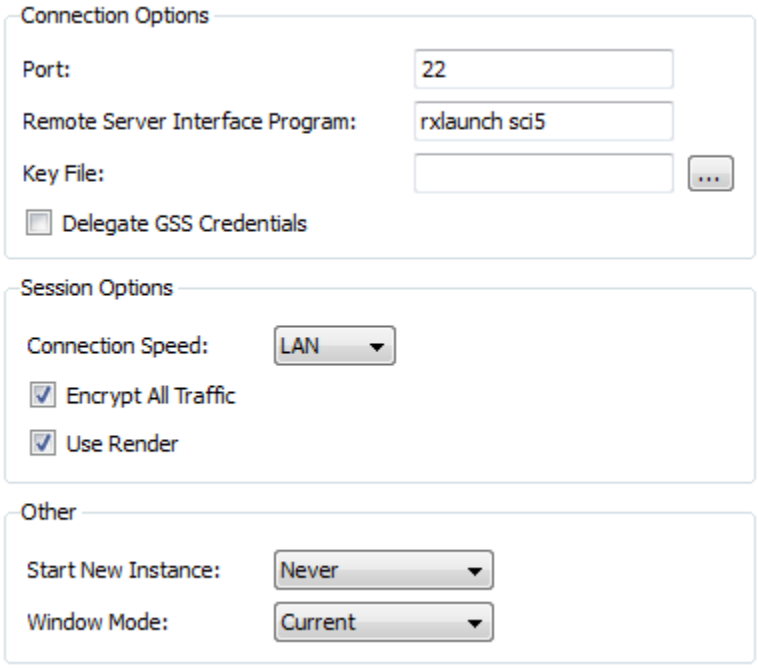


Property	Description
Connection Name	A name is required for each Connection.
Host	The remote hostname or IP address
Login	The user's login name on the remote host
Password	The password of the user's login
Confirm Password	Retype the password
Share Password	Check this option if you would like to share the session password with all users in the computer. *Default: Unchecked*
Command	Specify the application which will be run once the connection is made. If using Wizard, a default xterm command will be provided to open up a terminal emulator, which is suitable for most users. Otherwise, if using Manual configuration, the command will have to be entered. Any application on your remote system can be executed via the command field. Special variables can be used as replacements for common values.

Variable	Description
@MYIP@	The local IP address of the Windows machine
@DNUM@	The display number of the current instance of X-Win32
@DISPLAY@	The display address:display number (eg @MYIP@:@DNUM@) The display address is specified by the radio button in the Display Address section on the Network Tab. The Display Number is specified by the Display Number on the Network Tab
@IPSMART@	The resolved IP address of the computer when X-Win32 uses IPSmart

	@SESSION@	The Connection Name
Show Status	When starting a session the status dialog will appear showing the connection status. You can specify when you would like to see the status dialog appear. *Default: Unchecked*	

Advanced Options



Connection Options

Property	Description
Port	The port that the remote host is listening on. The default value is the well known port number of the specified protocol. Only change this number if you know that the remote host is listening on a different port for your connection.
Remote Server Interface Program	rxlaunch is the application that will launch the LIVE server. If rxlaunch is not in the user path (for example when the server is installed as a nonroot user) the full path to the rxlaunch application must be given in order to launch a LIVE session.
Key File	The private SSH key file to use when connecting to a remote host. If you have a public key set up on your remote system, specifying the private key will allow you to log in without the use of a password.
Delegate GSS Credentials	When using SSPI (MS Kerberos) authentication with SSH, Kerberos credentials will be sent to the

	remote host. This option is only available when using Microsoft's MS Kerberos. MIT Kerberos for WIndows is currently not supported. *Default: Unchecked*

Session Options

Property	Description
Connection Speed	Optimizes the graphical/compression settings of LIVE sessions according to the type of Network connection used. Change the option according to the speed of your network.
Encrypt All Traffic	LIVE Connections run over ssh connections. By default the LIVE Connection only uses ssh for authentication. THe DISPLAY is sent over unencrypted. This maximizes the performance of the connection. If your LIVE Connection is not launching properly, check this option to encrypt all traffic over the network. This will tunnel all traffic through the ssh port. *Default: Checked*
Use Render	Use the X render extension. Turning this option off will increase performance at the expense of graphical quality. *Default: Checked*

Other

Property	Description
Start New Instance	This option will start a new instance of X-Win32 with a new DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Window Mode	The Window mode can remain in the current configuration specified in the Window Section of X-Config, or be explicitly changed to Single or Multiple window mode. *Default: Current*
Show Log On Error	Show the SSH status log if an error occurs. *Default: Checked*

Ad Hoc Connections

A one time connection can be created from the command line to automatically launch a connection. This feature is generally used when a user would like to automate Connection launching via scripts. The format is provided below.

xwin32.exe -h HOST -u LOGIN -pp ENCRYPTED_PASSWORD -x UID

Property	Description
HOST	the hostname or IP address of the machine you are

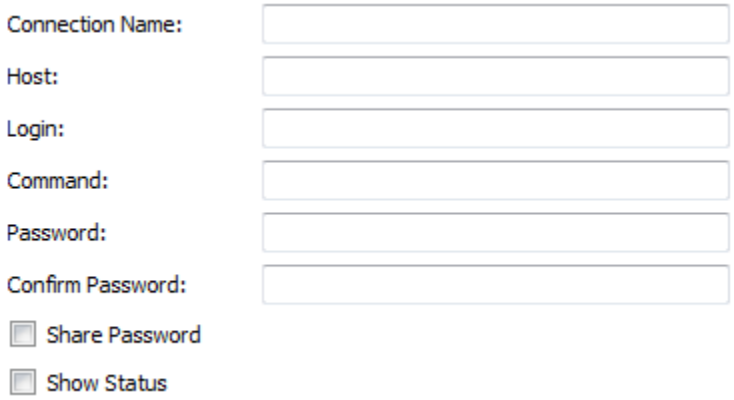
	connecting to
LOGIN	the username on the remote machine
ENCRYPTED_PASSWORD	(optional) This is your password which has been encrypted using the Windows CryptoAPI. Leave it blank if you do not have the encrypted password. You will be prompted for the password.
UID	The LIVE Session ID found in the UID tag of the LIVE session file on the remote server.

Connection Method: SSH

Description

Secure Shell (SSH) is a connection protocol which was intended as a replacement for telnet, rlogin, rsh, and rcp. It provides strong authentication and secure communications over insecure channels. SSH provides secure X connections and secure forwarding of arbitrary TCP connections. The X Window System also has a number of severe vulnerabilities. With SSH you can create secure X connections which are transparent to the end user. Using remote X clients with ssh is more convenient for users.

General Options



Property	Description
Connection Name	A name is required for each Connection.
Host	The remote hostname or IP address
Login	The user's login name on the remote host
Password	The password of the user's login
Confirm Password	Retype the password
Share Password	Check this option if you would like to share the session password with all users in the computer. *Default: Unchecked*
Command	Specify the application which will be run once the connection is made. If using Wizard, a default xterm command will be provided to open up a terminal emulator, which is suitable for

<table>
<tr><td></td><td>most users. Otherwise, if using Manual configuration, the command will have to be entered. Any application on your remote system can be executed via the command field. Special variables can be used as replacements for common values.

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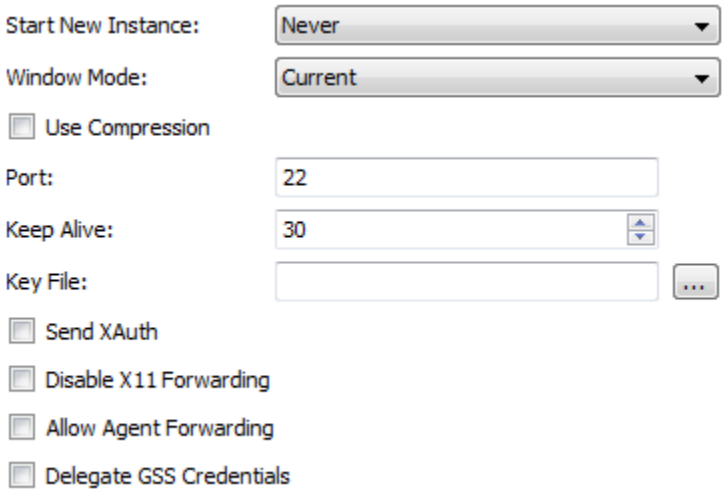
<tr><td>Show Status</td><td>When starting a session the status dialog will appear showing the connection status. You can specify when you would like to see the status dialog appear. Default: Unchecked</td></tr>
</table>

Advanced Options



Property	Description

Start New Instance	This option will start a new instance of X-Win32 with a new DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Window Mode	The Window mode can remain in the current configuration specified in the Window Section of X-Config, or be explicitly changed to Single or Multiple window mode. *Default: Current*
Use Compression	Enable SSH compression. This will decrease bandwidth usage at the expense of CPU usage. *Default:Unchecked*
Show Log On Error	Show the SSH status log if an error occurs. *Default: Checked*
Port	The port that the remote host is listening on. The default value is the well known port number of the specified protocol. Only change this number if you know that the remote host is listening on a different port for your connection. *Default: 22*
Keep Alive	Specify the time in minutes X-WIn32 will send a Keepalive message to the remote host. This will prevent the remote host or an intermediary (router, firewall etc) from closing the connection due to inactivity. *Default: 30*
Key File	The private SSH key file to use when connecting to a remote host. If you have a public key set up on your remote system, specifying the private key will allow you to log in without the use of a password.
Send Xauth	X-Win32 will send the Xauthority data as if the command *xauth -extract $DISPLAY* had been run.
Disable X11 Forwarding	Disables X11 Forwarding of SSH sessions. X11 Forwarding automatically encrypts the data sent by all commands run through the session. It automatically sets the DISPLAY environment variable on the remote host - there is no need to manually set teh DISPLAY. This option should only be used if you are manually setting your DISPLAY environment. *Default: Unchecked*
Allow Agent Forwarding	Allow your ssh key stored on your local windows system to be forwarded from machine to machine. You can connect to a remote unix/linux machine and then ssh to a different machine from there, using the same private key file. *Default: Unchecked*
Delegate GSS Credentials	When using SSPI (MS Kerberos) authentication with SSH, Kerberos credentials will be sent to the remote host. This option is only available when using Microsoft's MS Kerberos. MIT Kerberos for WIndows is currently not supported. *Default: Unchecked*

Ad Hoc Connections

A one time connection can be created from the command line to automatically launch a connection. This feature is generally used when a user would like to automate Connection launching via scripts. The format is provided below.

xwin32.exe —m
“5:MODULE:OPTIONS:HOST:LOGIN:ENCRYPTED_PASSWORD:COMMAND”

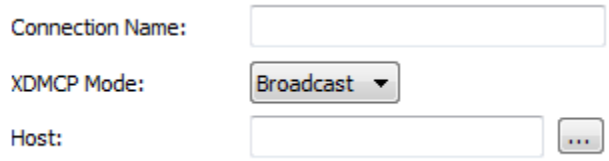
Property	Description
MODULE	the module you want to use to connect: *ssh*
OPTIONS	a limited number of user options are available in an encoded format. These numbers can be added together to enable multiple options. **256** Start in Single Window Mode **512** Start in Multiple WIndow Mode **1024** Send Xauth **4096** Start a New Instance **16384** Use Compression **65536** Disable X11 forwarding
HOST	the hostname or IP address of the machine you are connecting to
LOGIN	the username on the remote machine
ENCRYPTED_PASSWORD	(optional) This is your password which has been encrypted using the Windows CryptoAPI. Leave it blank if you do not have the encrypted password. You will be prompted for the password.
COMMAND	Specify the application which will be run once the connection is made

Connection Method: XDMCP

Description

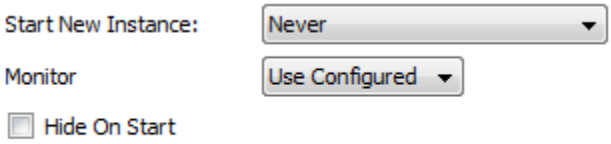
The X display manager control protocol (XDMCP) provides a means for a user sitting at one (client) computer running X to communicate with another (server) computer running an X display manager. Once a connection is established, the user can log in and run programs as if the user were sitting at the remote computer.

General Options



Property	Description
Connection Name	A name is required for each Connection.
XDMCP Mode	Specify the Connection mode for XDMCP **Query** — Send a direct XDMCP request to the remote host. The host names (or IP addresses) are known. **Broadcast** — Send an XDMCP Broadcast request on the LAN. Broadcast allows you to select from a list of available hosts that are willing to manage your workstation. All remote hosts that are willing to manage will be displayed **Indirect** — Indirect connects to the remote host, then displays a list of machines. You select to which machine to connect.
Host	The remote hostname or IP address. Multiple IP addresses can be specified by pressing the "..." button to the right of the the field. Press the + button to add a new IP address. The multiple hosts will be displayed in a list when the connection is launched.

Advanced Options



Property	Description
Start New Instance	This option will start a new instance of X-Win32 with a new

	DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Monitor	If your Windows system has multiple monitors, you can specify which monitor to display the XDMCP connection. More than one XDMCP connection can be delivered to one monitor. The maximum number of monitors is dependent on your Windows operating system. **Use Configured** — Use the Monitor as specified in the Window Tab of X-Config **(Monitor Number)** — Explicitly Specify which monitor to send the XDMCP session to
Hide on Start	Check this box if you want to hide the status dialog in the initial connection attempt. *Default: Unchecked*

Ad Hoc Connections

A one time connection can be created from the command line to automatically launch a connection. This feature is generally used when a user would like to automate Connection launching via scripts. The format is provided below.

xwin32.exe —m "4:HOST:"

Property	Description
HOST	The host you want to connect to. Note the trailing colon ':' is required. Leaving the HOSTS field blank creates an XDMCP broadcast. You can create a multihost query by separating each host with a comma ',' Indirect queries are created by prefacing the hostname with a tilde ~. ie ~HOST

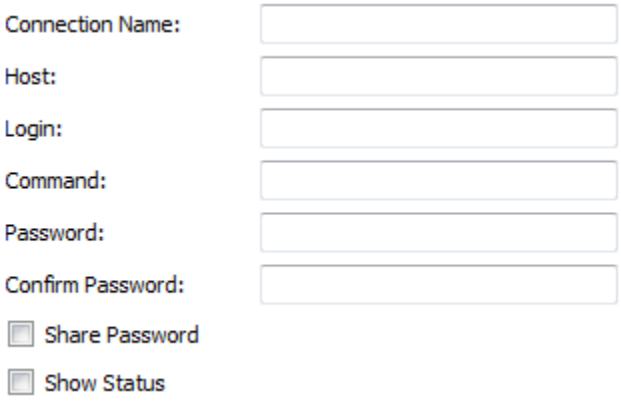
Connection Method: rexec

Description

Rexec (remote exec), allows you to execute non-interactive programs on another system. It is similar to rsh, but the difference between rsh and rexec is that rexec requires you to specify a valid password for the other system and rsh does not. All data in rexec is sent over unencrypted, including clear text passwords, and is an insecure

connection. Rsh has been replaced by the very similar SSH (secure shell) program on untrusted networks like the internet.

General Options



Property	Description
Connection Name	A name is required for each Connection.
Host	The remote hostname or IP address
Login	The user's login name on the remote host
Password	The password of the user's login
Confirm Password	Retype the password
Share Password	Check this option if you would like to share the session password with all users in the computer. *Default: Unchecked*
Command	Specify the application which will be run once the connection is made. If using Wizard, a default xterm command will be provided to open up a terminal emulator, which is suitable for most users. Otherwise, if using Manual configuration, the command will have to be entered. Any application on your remote system can be executed via the command field. Special variables can be used as replacements for common values. The DISPLAY for the remote command must be sent in order to properly connect.

Variable	Description
@MYIP@	The local IP address of the Windows machine
@DNUM@	The display number of the current instance of X-Win32
@DISPLAY@	The display address:display number (eg @MYIP@:@DNUM@) The display address is specified by the radio button in the Display Address section on the Network Tab. The

		Display Number is specified by the Display Number on the Network Tab
	@IPSMART@	The resolved IP address of the computer when X-Win32 uses IPSmart
	@SESSION@	The Connection Name
Show Status	When starting a session the status dialog will appear showing the connection status. You can specify when you would like to see the status dialog appear. *Default: Unchecked*	

Advanced Options

Property	Description
Start New Instance	This option will start a new instance of X-Win32 with a new DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Window Mode	The Window mode can remain in the current configuration specified in the Window Section of X-Config, or be explicitly changed to Single or Multiple window mode. *Default: Current*
Send Xauth	X-Win32 will send the Xauthority data as if the command *xauth -extract $DISPLAY* had been run. *Default: Unchecked*

Ad Hoc Connections

A one time connection can be created from the command line to automatically launch a connection. This feature is generally used when a user would like to automate Connection launching via scripts. The format is provided below.

xwin32.exe —m
“5:MODULE:OPTIONS:HOST:LOGIN:ENCRYPTED_PASSWORD:COMMAND”

Property	Description
MODULE	the module you want to use to connect *ssh*, *rexec* or *rsh*
OPTIONS	a limited number of user options are available in an encoded format. These — Start in Single Window Mode

	numbers can be added together to enable multiple options. **256** **512** Start in Multiple WIndow Mode **4096** Start a New Instance
HOST	the hostname or IP address of the machine you are connecting to
LOGIN	the username on the remote machine
ENCRYPTED_PASSWORD	(optional) This is your password which has been encrypted using the Windows CryptoAPI. Leave it blank if you do not have the encrypted password. You will be prompted for the password.
COMMAND	Specify the application which will be run once the connection is made

Connection Method: rlogin

Description

rlogin is a Unix protocol that allows users to log in on another host using a network. rlogin uses TCP port 513. rlogin has several serious security problems. All information, including passwords, is transmitted unencrypted (making it open to interception). The protocol partially depends on the remote rlogin client to provide information honestly (including source port and source host name). A corrupt client is thus able to rebuild this and gain access. The protocol lakes all means of authenticating other machines' identities, or ensuring that the rlogin client is running on a trusted machine, or if it is the real rlogin client. SSH should be used in place of rlogin if available.

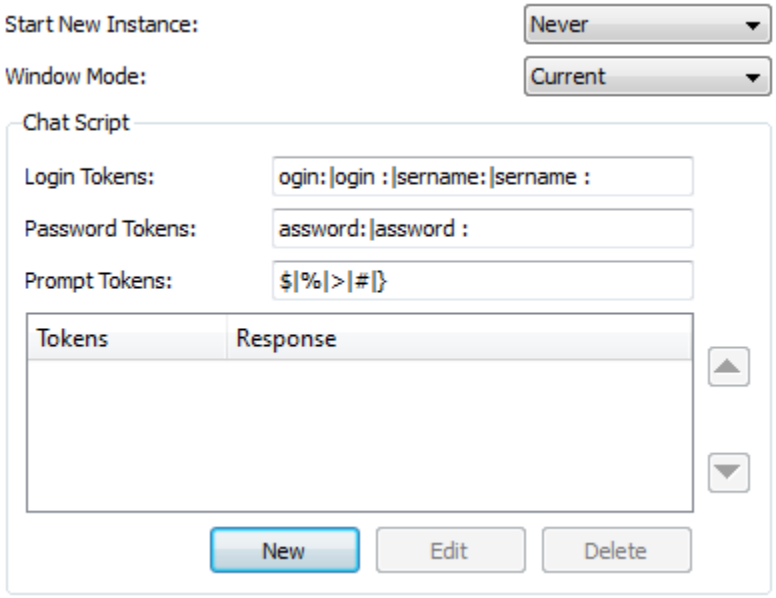
General Options

Property	Description
Connection Name	A name is required for each Connection.
Host	The remote hostname or IP address
Login	The user's login name on the remote host
Password	The password of the user's login
Confirm Password	Retype the password
Share Password	Check this option if you would like to share the session password with all users in the computer. *Default: Unchecked*
Command	Specify the application which will be run once the connection is made. If using Wizard, a default xterm command will be provided to open up a terminal emulator, which is suitable for most users. Otherwise, if using Manual configuration, the command will have to be entered. Any application on your remote system can be executed via the command field. Special variables can be used as replacements for common values. The DISPLAY for the remote command must be sent in order to properly connect.

Variable	Description
@MYIP@	The local IP address of the Windows machine
@DNUM@	The display number of the current instance of X-Win32
@DISPLAY@	The display address:display number (eg @MYIP@:@DNUM@) The display address is specified by the radio button in the Display Address section on the Network Tab. The Display Number is specified by the Display Number on the Network Tab
@IPSMART@	The resolved IP address of the computer when X-Win32 uses IPSmart

	@SESSION@	The Connection Name
Show Status	When starting a session the status dialog will appear showing the connection status. You can specify when you would like to see the status dialog appear. *Default: Unchecked*	

Advanced Options



Property	Description
Start New Instance	This option will start a new instance of X-Win32 with a new DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Window Mode	The Window mode can remain in the current configuration specified in the Window Section of X-Config, or be explicitly changed to Single or Multiple window mode. *Default: Current*
Hide on Start	Check this box if you want to hide the status dialog in the initial connection attempt. *Default: Checked*
Send Xauth	X-Win32 will send the Xauthority data as if the command *xauth -extract $DISPLAY* had been run. *Default: Unchecked*

Chat Script

Property	Description
Login Tokens	The session will scan for the string of characters that represents the login prompt. Each separate login token is separated by a pipe '|' symbol. If your session hangs at the login prompt, check if the login matches the login

	tokens. Add a pipe symbol, then the login your system uses.
Password Tokens	The session will scan for the string of characters that represents the password prompt. Each separate password token is separated by a pipe '|' symbol. If your session hangs at the password prompt, check if the password string matches the password tokens. Add a pipe symbol, then the password prompt string your system uses.
Prompt Tokens	The session will scan for the string of characters that represents the command prompt to start the interactive session. Each separate prompt token is separated by a pipe '|' symbol. If your session ends before the command prompt appears, check that the token is not outputted anywhere in the startup script.
Custom Tokens	In addition to the default tokens, Custom tokens can be created by pressing the "New" button and adding the Token to scan for and the Response to send back to the remote host.

Connection Method: rsh

Description

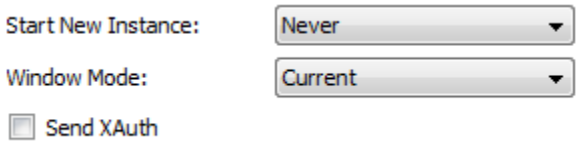
RSH (the Remote Shell Protocol) allows a user to execute commands on a remote system without having to log in to the system. Rsh uses host based authentication rather than passwords. The rsh protocol is insecure as sends unencrypted information over the network, among other things. Rsh has been replaced by the very similar SSH (secure shell) program on untrusted networks like the internet.

General Options

Property	Description
Connection Name	A name is required for each Connection.
Host	The remote hostname or IP address
Login	The user's login name on the remote host

Command	Specify the application which will be run once the connection is made. If using Wizard, a default xterm command will be provided to open up a terminal emulator, which is suitable for most users. Otherwise, if using Manual configuration, the command will have to be entered. Any application on your remote system can be executed via the command field. Special variables can be used as replacements for common values. The DISPLAY for the remote command must be sent in order to properly connect. **Variable** — **Description** **@MYIP@** — The local IP address of the Windows machine **@DNUM@** — The display number of the current instance of X-Win32 **@DISPLAY@** — The display address:display number (eg @MYIP@:@DNUM@) The display address is specified by the radio button in the Display Address section on the Network Tab. The Display Number is specified by the Display Number on the Network Tab **@IPSMART@** — The resolved IP address of the computer when X-Win32 uses IPSmart **@SESSION@** — The Connection Name
Show Status	When starting a session the status dialog will appear showing the connection status. You can specify when you would like to see the status dialog appear. *Default: Unchecked*

Advanced Options



Property	Description
Start New Instance	This option will start a new instance of X-Win32 with a new DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Window Mode	The Window mode can remain in the current configuration specified in the Window Section of X-Config, or be explicitly changed to Single or Multiple window mode. *Default: Current*

Send Xauth	X-Win32 will send the Xauthority data as if the command *xauth -extract $DISPLAY* had been run. *Default: Unchecked*

Ad Hoc Connections

A one time connection can be created from the command line to automatically launch a connection. This feature is generally used when a user would like to automate Connection launching via scripts. The format is provided below.

xwin32.exe —m "5:MODULE:OPTIONS:HOST:LOGIN::COMMAND"

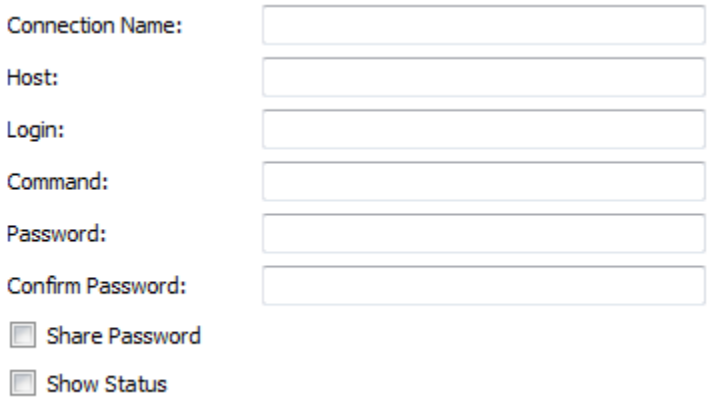
Property	Description
MODULE	the module you want to use to connect: *rsh*
OPTIONS	a limited number of user options are available in an encoded format. These numbers can be added together to enable multiple options. **256** Start in Single Window Mode **512** Start in Multiple WIndow Mode **4096** Start a New Instance
HOST	the hostname or IP address of the machine you are connecting to
LOGIN	the username on the remote machine
COMMAND	Specify the application which will be run once the connection is made

Connection Method: telnet

Description

Telnet is a common network protocol used for remote connections. It is an insecure protocol as all information including passwords is sent unencrypted over the network. SSH has largely replaced telnet and SSH should in general be used.

General Options

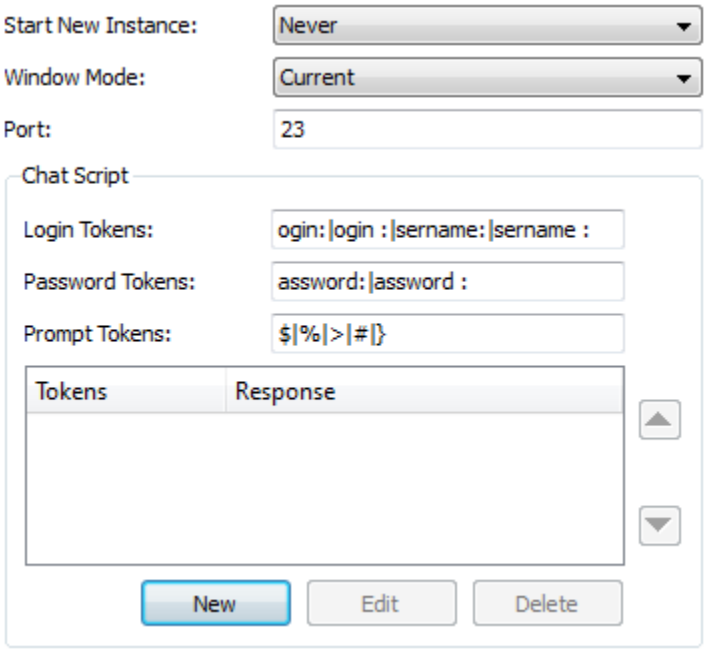


Property	Description
Connection Name	A name is required for each Connection.
Host	The remote hostname or IP address
Login	The user's login name on the remote host
Password	The password of the user's login
Confirm Password	Retype the password
Share Password	Check this option if you would like to share the session password with all users in the computer. *Default: Unchecked*
Command	Specify the application which will be run once the connection is made. If using Wizard, a default xterm command will be provided to open up a terminal emulator, which is suitable for most users. Otherwise, if using Manual configuration, the command will have to be entered. Any application on your remote system can be executed via the command field. Special variables can be used as replacements for common values.

Variable	Description
@MYIP@	The local IP address of the Windows machine
@DNUM@	The display number of the current instance of X-Win32
@DISPLAY@	The display address:display number (eg @MYIP@:@DNUM@) The display address is specified by the radio button in the Display Address section on the Network Tab. The Display Number is specified by the Display Number on the Network Tab
@IPSMART@	The resolved IP address of the computer when X-Win32 uses IPSmart

	@SESSION@	The Connection Name
Show Status	When starting a session the status dialog will appear showing the connection status. You can specify when you would like to see the status dialog appear. *Default: Unchecked*	

Advanced Options



Property	Description
Start New Instance	This option will start a new instance of X-Win32 with a new DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Window Mode	The Window mode can remain in the current configuration specified in the Window Section of X-Config, or be explicitly changed to Single or Multiple window mode. *Default: Current*
Port	The port that the remote host is listening on. The default value is the well known port number of the specified protocol. Only change this number if you know that the remote host is listening on a different port for your connection. *Default: 23*
Send Xauth	X-Win32 will send the Xauthority data as if the command *xauth -extract $DISPLAY* had been run. *Default: Unchecked*

Chat Script

Property	Description
Login Tokens	The session will scan for the string of characters that represents the login prompt. Each separate login token is

	separated by a pipe '|' symbol. If your session hangs at the login prompt, check if the login matches the login tokens. Add a pipe symbol, then the login your system uses.
Password Tokens	The session will scan for the string of characters that represents the password prompt. Each separate password token is separated by a pipe '|' symbol. If your session hangs at the password prompt, check if the password string matches the password tokens. Add a pipe symbol, then the password prompt string your system uses.
Prompt Tokens	The session will scan for the string of characters that represents the command prompt to start the interactive session. Each separate prompt token is separated by a pipe '|' symbol. If your session ends before the command prompt appears, check that the token is not outputted anywhere in the startup script.
Custom Tokens	In addition to the default tokens, Custom tokens can be created by pressing the "New" button and adding the Token to scan for and the Response to send back to the remote host.

Connection Method: command

Description

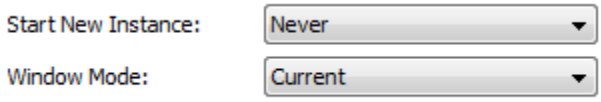
The command connection method provides the ability to run local applications on the Windows machine that require X-Server support. The DISPLAY is set by the X Server. Specify the target (program) to run and Start In (directory of where to run the program).

General Options

Property	Description
Connection Name	A name is required for each Connection.
Target	Specify the local application to run. The application should be specified in double quotes (") Command line parameters to this application should be specified outside the quotes.

	Example: *"C:\cygwin\bin\xterm" -ls -bg blue*
Start In	Specify the initial directory to start in after launching the application.
Show Status	When starting a session the status dialog will appear showing the connection status. You can specify when you would like to see the status dialog appear. *Default: Unchecked*

Advanced Options



Property	Description
Start New Instance	This option will start a new instance of X-Win32 with a new DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Window Mode	The Window mode can remain in the current configuration specified in the Window Section of X-Config, or be explicitly changed to Single or Multiple window mode. *Default: Current*

Ad Hoc Connections

A one time connection can be created from the command line to automatically launch a connection. This feature is generally used when a user would like to automate Connection launching via scripts. The format is provided below.

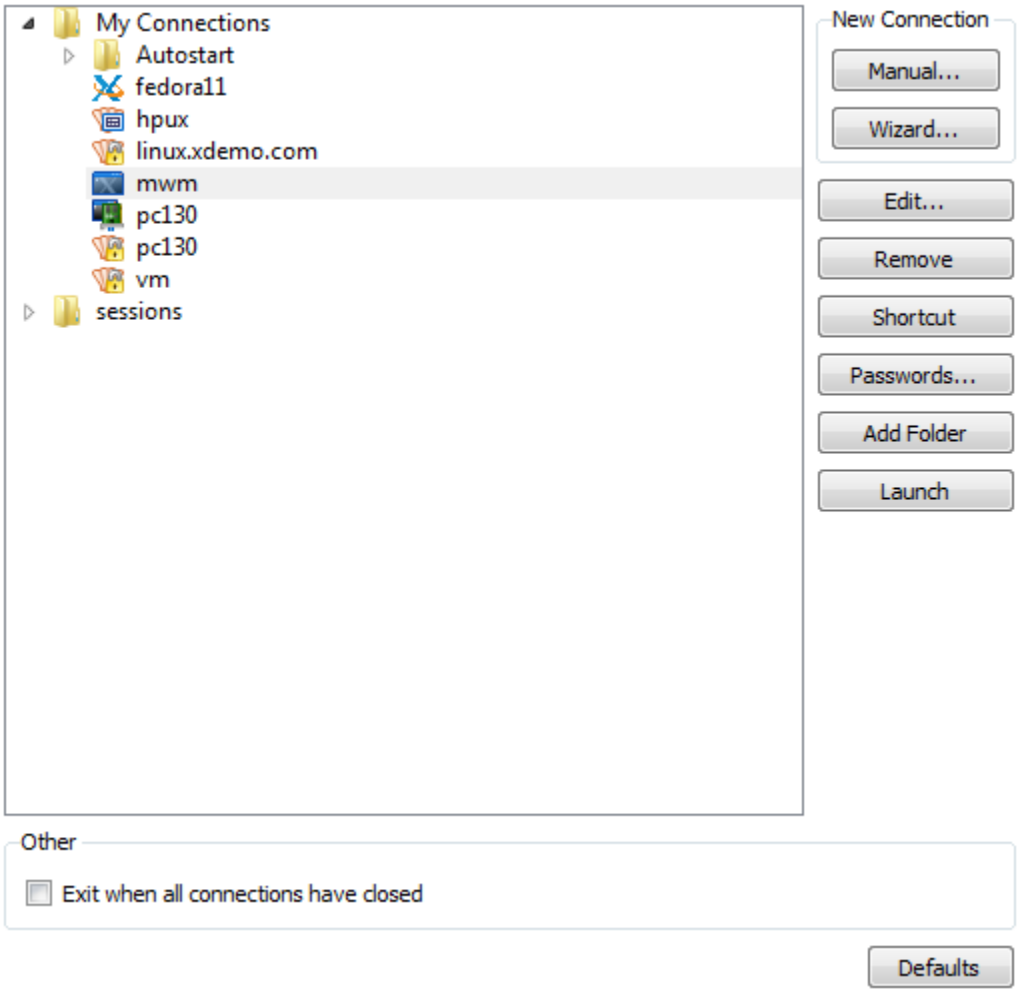
xwin32.exe —m "5:command:TARGET:PATH"

Property	Description
TARGET	The windows application you will run through X-Win32
START	The working directory your application will start in

X-Config

Connections

The Connection Tab is the most important Tab in X-Config. This tab allows a user to create edit and launch connections to remote hosts.



Creating a New Connection

Unless a connection is made via X-Config, X-Win32 will run in Passive mode. While in Passive mode, X-Win32 waits to display any incoming connections. Typically a user will create a connection and launch the connection to actively connect to a remote system. There are several methods available to create a new Connection as described below.

Method	Description
Manual	Click on the ***Manual*** button to Manually create a new Connection. All information is left blank for the user to fill in himself. Descriptions of the connection Properties can be found in each Connection Type's respective chapter.
Wizard	Click on the ***Wizard*** Button to have a step by step guide in creating a session. The options in the Wizard Connection are limited to make a basic connection. For full options, choose the Manual Configuration method
Cloning	In the Connections Tab, right click on an already created connection to

Connections	bring up the menu. The menu option Clone will give submenus for Manual and Wizard. Selecting a submenu item will bring up the Manual or Wizard connection method with the connection options prefilled which the user can change as needed.

Launching Connections

After a Connection has been created, it must be launched in order to connect to the remote host. There are several methods available for launching connections via X-Config

- Highlight the Connection and press the ***Launch*** button
- Right Click on the Connection and press the ***Launch*** menu item

After you have launched the connection, X-Win32 will attempt to connect to your remote host. If an error occurs, the error will be displayed in the Status Dialog box.

Launching a Connection When X-Win32 Starts

Connections placed in the Autostart folder under My Connections will automatically be launched when X-Win32 starts up. This makes it very convenient to quickly connect to your remote system.

Creating Shortcuts to Launch Connections

.xw32 files have file associations with X-Win32. Double clicking on a .xw32 file will cause X-Win32 to automatically launch the Connection. A user can create a shortcut to the file in X-Config by highlighting the Connection and clicking the ***Shortcut*** button in the Connections tab. Double clicking on the created shortcut will launch the connection.

Editing Connection Settings

Once a new Connection has been made, a user can edit the Connection Properties by highlighting the Connection and pressing the *Edit* button, by right-clicking on the Connection and selecting *Edit* or by double clicking on the Connection. A dialog box will appear with all the Connection settings which can be changed as needed. Note that these settings can only be changed if the user has write permission on the directory where the Connections are stored.

Removing Connections

Connections are stored in .xw32 files on the user's system. Connections can be removed by highlighting the connection and pressing the *Remove* button, or by right-clicking on the connection and selecting the *Remove* item. A user can also delete the .xw32 file from the system to remove the Connection.

Adding Folders

.xw32 files store the Connection options and can be stored in any directory on your system. Click on the *Add Folder* button to add a new path. The *Name* field is the name that will be displayed in X-Config and in the system tray. The location is the path to the specified directory. Use this option to centrally locate Connections for multiple users on a system or in a domain.

Password Manager

The Password Manager allows a user to quickly change the passwords of multiple Connections. This is an important feature if you connect to multiple servers and your password changes often (for example expiring passwords). Click on the *Passwords* button in the Connection Tab to Launch the Password Manager.

Selecting Connections

When the Password Manager Launches, a dialog showing all the current Connections with Password Properties appears. A user can manually check Connections the that he wants updated, or he can search for selected Connections using the *Select* button. Options to Select multiple Connections are listed below

Option	Description
Login	Select all Connections with the specified Login name. This selection can be combined with *Old Password* or *Not Stored* to further filter the Connections
Old Password	Select all Connections with the Stored Password that matches the text in this field.
Not Stored	Select all Connections where there is no Password saved

Updating Passwords

After you have selected your Connections, press the *Update* button to update your Connections with a new Password. A dialog box will appear asking for the new Password. Enter in and confirm the new Password and click the OK button to update your Passwords

Clearing Passwords

After you have selected your Connections, press the *Clear* button to erase the Passwords from the system. The Connection will now launch with no Password stored. The user will be prompted to enter in the password after the connection has been launched.

Exit when all connections have closed

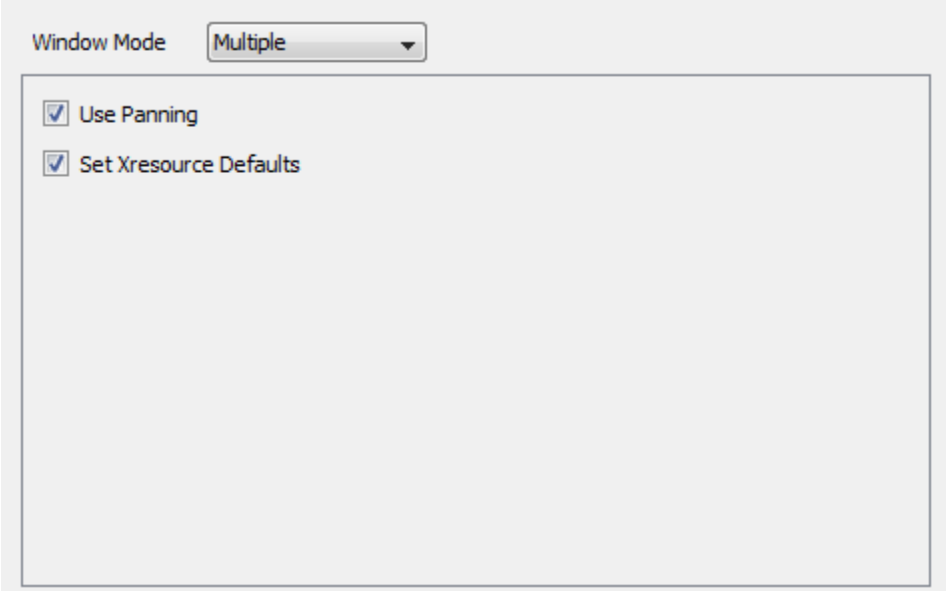
Automatically shut down X-Win32 when there are no more active connections.

Window

Multiple Window

Each individual application will run in its own separate window. There is no main root window. The application looks contains its own windows title bar and can be moved and resized accordingly.

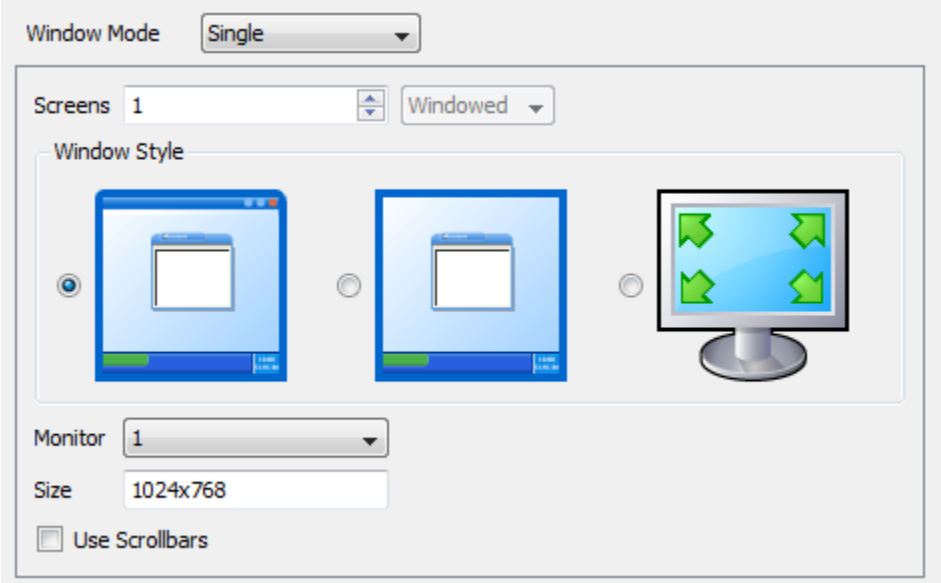
Note: XDMCP sessions always run in single window mode. There is no multiple window option for a default XDMCP session.



Propery	Description
Use Panning	Panning allows windows that appear partially off screen in Multiple Window Mode to be gently nudged back on screen. When a window is off screen, move the cursor into the region of the X window and press against the edge of the screen. The window will slowly move back on screen.
Set Xresource Defaults	Notifies the remote host that X-Win32 can accept the default *color* options of applications that use Xresources. Uncheck if you have set up your own custom color resources in the .Xresource file.

Single Window

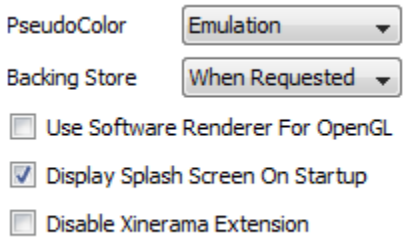
Single Window mode launches a root window defined by the height and width in the Geometry section of the single Window tab. All connections will launch in this main window. In order to move or resize the applications displayed in single window mode, a window manager (such as twm, gnome-wm or kwin) needs to be running. Typically, single window mode is only used to display a full remote desktop.



Property	Description
Screens	X-Win32 can be configured to accept DISPLAYS with multiple screens (192.168.5.2:0.0, 192.168.5.2:0.1, 192.168.5.2:0.2 etc). Select the number of screens you would like to use to enable multiple screen support. Multiple Screen support is only available in Standard Window Style (See below for more options) **Windowed** Each screen will appear in its own window and can be moved independently of the other screens **Tabbed** All screens are contained in one window and can be switched by clicking on the tab with the screen number you would like to view.
Window Style	**Standard** Select this option to run X-Win32 in Single Window mode as a large single window as specified by the Height and Width options in the Geometry section. **No Decoration** Select this option to run single window mode with no titlebar, but still show the task bar. **Fullscreen** Select this option if you want the single window to take up the entire screen size. This option is best suited for systems with multiple monitors
Monitor	On systems with multiple monitors this option allow single window to be sent to a monitor specified by the number, or to span all monitors. The maximum number of monitors is dependent on the local workstation and its Windows operating system. Windows provides the numerical identification of each monitor, in Display Properties.
Size	Specify the screen size HEIGHTxWIDTH in pixels (eg 1024x768)

Use Scrollbars	By default, X-Win32 uses the RANDR extension to resize a single window. Certain applications do not behave correctly with the RANDR extension. The "Use Scrollbars" option adds scrollbars to the single window allowing the viewable area to be resized and shrunk as needed but still maintaining the X applications original size.

Other Options



Property	Description
PseudoColor	Legacy X applications used colormaps to define the visuals **Emulation** — Use 24 bit TrueColor as the default visual and emulate the 8 bit PseudoColor on top of it **Root Visual** — Make PseudoColor the default visual. Any application that does not specify its Visual will default to PseudoColor. 24 bit TrueColor is still supported if specified **Only** — The X Server will run in 8 bit only mode. There is no 24 bit TrueColor.
Backing Store	Some X-applications may request backing store on windows that are complicated to draw, which can slow down the response of the display. When a window is obscured, hidden behind another window, it must be redrawn when it is returned to the front. When cached, CPU usage is significantly decreased, and display time is accelerated. **Off** — Disables the feature. Information of the windows will not be saved. **When Requested** — Only uses backing store if the X application requests it. This is the default setting. **Always On** — Causes the X server to use backing store on all windows, even if the X application does not request it. This is recommended for slower network connections, such as dial-up.

Use Software Renderer for OpenGL	OpenGL commands will be processed by the system's Video Card. Check this option to use the OpenGL rendering as provided by the Windows software.
Display splash screen on startup	Checking this option displays the splash screen when X-Win32 is launched
Disable Xinerama Extension	On certain Solaris machines, the Xinerama extension causes issues with mozilla and CDE. Check this box to disable the Xinerama extension if you are having issues with Solaris systems.

Network

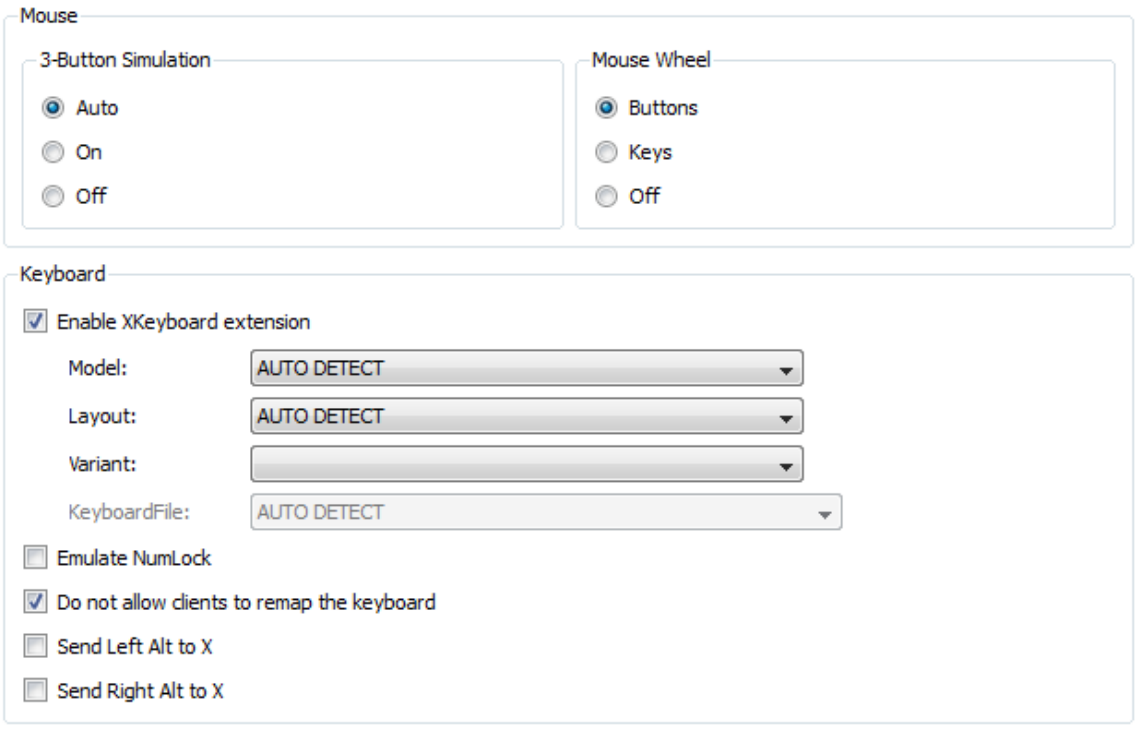
The network can be configured to specify exactly how the DISPLAY environment can be configured. A user can specify the IP address to use and which Display number to start at. Sound support authentication can also be enabled for certain connections.

Property	Description

Display Address	Assigns the address that X clients will use **Automatic** — Sets the Display address to the IP address used by the local windows machine **IPSmart** — IPSmart is used to acquire and deliver the address of the X-server (your local workstation), instead of the firewall between your X-server and the remote host. This creates a direct, functional connection between your workstation and the remote host. The remote host receives the IP address of your workstation, instead of the firewall enabling you to seamlessly pass your computer's display to the remote connection. **Override** — Send the display to the IP address specified in the Override field. An X server must be running on the system specified.
Base Display Number	Each X Server (X-Win32 or otherwise) listens on a Display Number. With multiple X Severs on a host, this number is used to reference the proper X Server.
Activate Sound Output	Enable Sound Support in XDMCP sessions **Allow all hosts to play Sound** — All sounds sent to X-Win32 are automatically accepted and played **Prompt for hosts** — Prompt the user to allow sounds from a specific remote host **Use ESound Authentication only** — Use hosts in esd_auth file only

Input

The mouse, keyboard and numerical keypad, can be configured to fully adapt to the applications that run on remote servers. This may be needed when the three button mouse is needed for the remote application, the application is setup for a keyboard interface to a different language, the numerical keypad needs to be setup for the application.



Mouse

Property	Description
3 Button Simulation	Older Mice only had 2 buttons. The middle mouse button could be simulated by clicking both the left and right mouse button at the same time. 3 button simulation gives the user the choice to set this feature if needed. **Auto** — Auto is the default setting for mouse input. X-Win32 detects the number of buttons on the mice and sets the functionality to on or off accordingly. **On** — When On is enabled, the middle button of a 3-button mouse is simulated by simultaneously clicking the left and right mouse buttons. This 3-button feature is often needed for remote applications. **Off** — When Off is selected, no configurations are applied; the mouse is used as is. This should only be used when you are using a 3-button mouse at your local workstation - most remote applications are setup to interact with a 3-button mouse.
Mouse Wheel	This option allows the mouse wheel functionality to be

	emulated using arrow keys **Buttons** — Buttons is the default option. Mouse wheel up and down are set. **Keys** — Keys maps the MouseWheelUp to the Up arrow. MouseWheelDown is mapped to the down arrow. **Off** — MouseWheelUp and MouseWheelDown are turned off. The remote application will only detect 3 available mouse buttons.

Keyboard

Property	Description
Enable XKeyboard Extension	The X Keyboard Extension allows X-Win32 to use X Keyboard Maps which extend the ability of typical key maps. These key maps allow specific keyboard configurations for which match most keyboards in use today. Turning off the X Keyboard extension will allow old style key maps to be specified manually. Options for the X Keyboard extension include: **Model** — Select the default keyboard model. If set to Automatic, X-Win32 will choose the keyboard model based on the Windows system settings. **Layout** — Select the keyboard language. If set to Automatic, X-Win32 will choose the keyboard language based on the Windows system settings **Variant** — Select the keyboard variant. If set to Automatic, X-Win32 will choose the keyboard variant based on the Windows system settings
Emulate Numlock	Send the actual number when using the keypad rather than the keypad button. For example when Emulate NumLock is enabled, and you press the "7" button on the keypad, the key send will be the same keycode as "7" on the top of the

	keyboard. With emulate NumLock disabled, the keycode sent will be KP_7. On certain Operating Systems (most notably AIX), the NumLock button is treated as a keyboard modifier (like SHIFT or ALT) and modifies all keys on the keyboard. Enabling this feature works around this issue. The default setting is disabled.
Do not allow clients to remap the keyboard	Allow the remote host to re-map the local Windows keyboard. Uncheck this option if using Xmodmap
Send Left Alt to X	Checking this option will allow the Left Alt button to be sent to the remote host rather than being intercepted by the Windows Operating system.
Send Right Alt to X	Checking this option will allow the Right Alt button to be sent to the remote host rather than being intercepted by the Windows Operating system.

Japanese IME Support

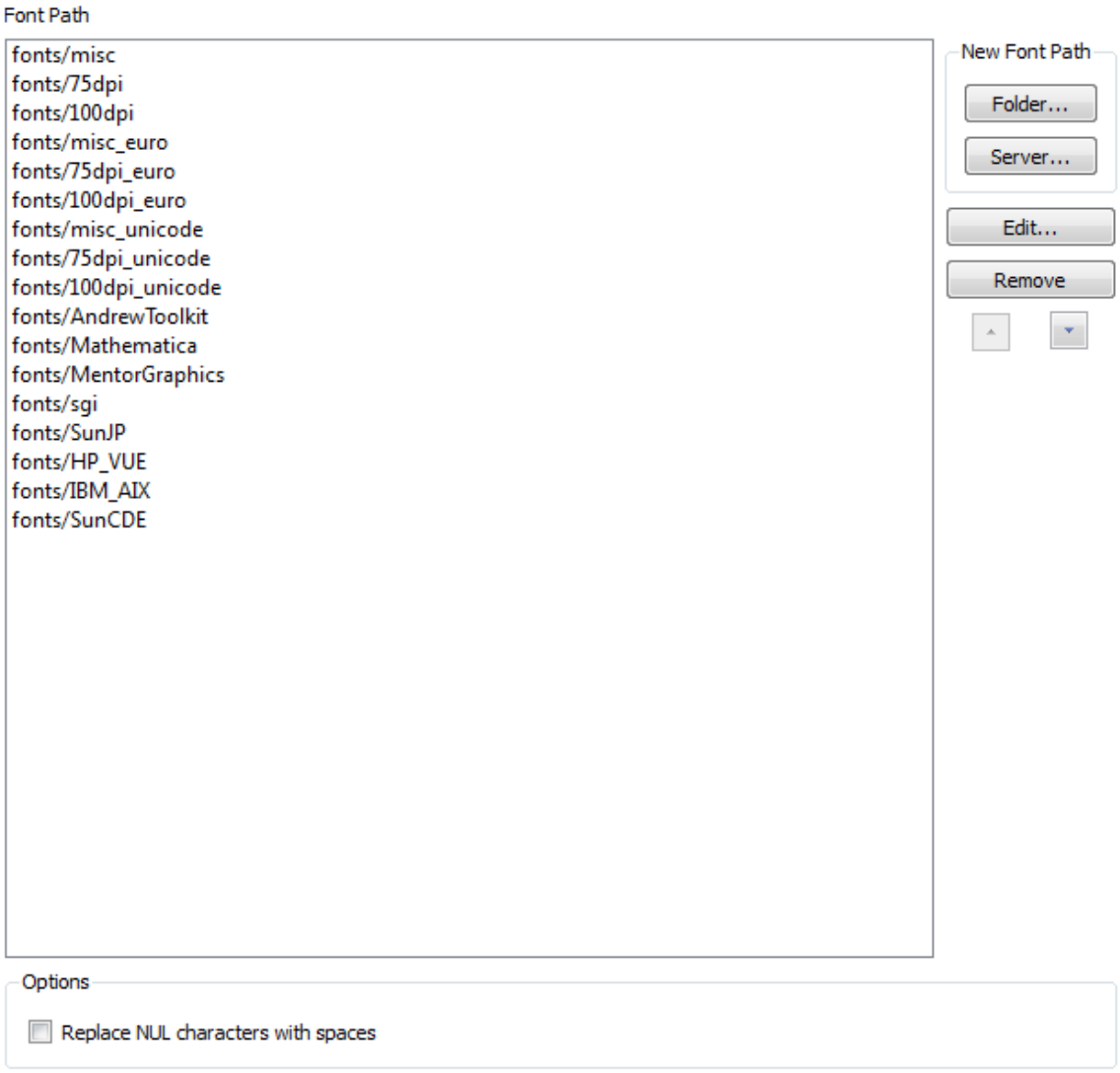
IME support is available by default in single window mode. Follow these steps in multiple window mode to enable IME support:

1. Open an xterm
2. LC_CTYPE=ja_JP XMODIFIERS=@im=XIME <command>

This will set the input method to support IME. You can also export these environment variables (LC_CTYPE and XDMODIFIERS) in your login profile.

Font

Fonts must be rendered in order for remote applications to function properly. Remote applications access fonts available from X-Win32 on the Windows side., not the remote host where the application resides. X-Win32 ships with the most typical fonts needed by almost all applications. Usually no new fonts need to be installed. However, in certain circumstances, a specific application may use a custom fontset which X-Win32 does not supply. In this instanceX-Win32 provides the ability to add extra fonts to remote applications through a font path.



Adding a Font Directory

Adding a Font Folder

If the fonts needed are located on the local Windows machine, press the ***Folder*** button to add the folder where these fonts reside. The font folder must have a fonts.dir file and the fonts should be in .pcf.gz or .bdf formats.

Adding a Font Server

For fonts located on remote systems, X-Win32 can connect to a font server. This font server must be up and running for X-Win32 to connect to it. Press the ***Server*** button and put in the host name or IP address of where the font server resides. Optionally change the port number if your server is not using the standard port.

Editing the Font Path

Highlight a font path and press the ***Edit*** button to change the location of the path. If it is a font server, you can change the hostname or IP Address.

If you have added custom font directories to the font path you may want X-Win32 to choose them first. Highlight a specific directory and use the UP and DOWN arrows to move the directory in the list. Directories at the top of the list are chosen first. NOTE: Font servers should always be placed at the bottom of the list as a remote connection is needed to access the fonts. Fonts from font servers will generally take longer to render than fonts located on the Windows machine, thus slowing down productivity.

Removing a Font Directory

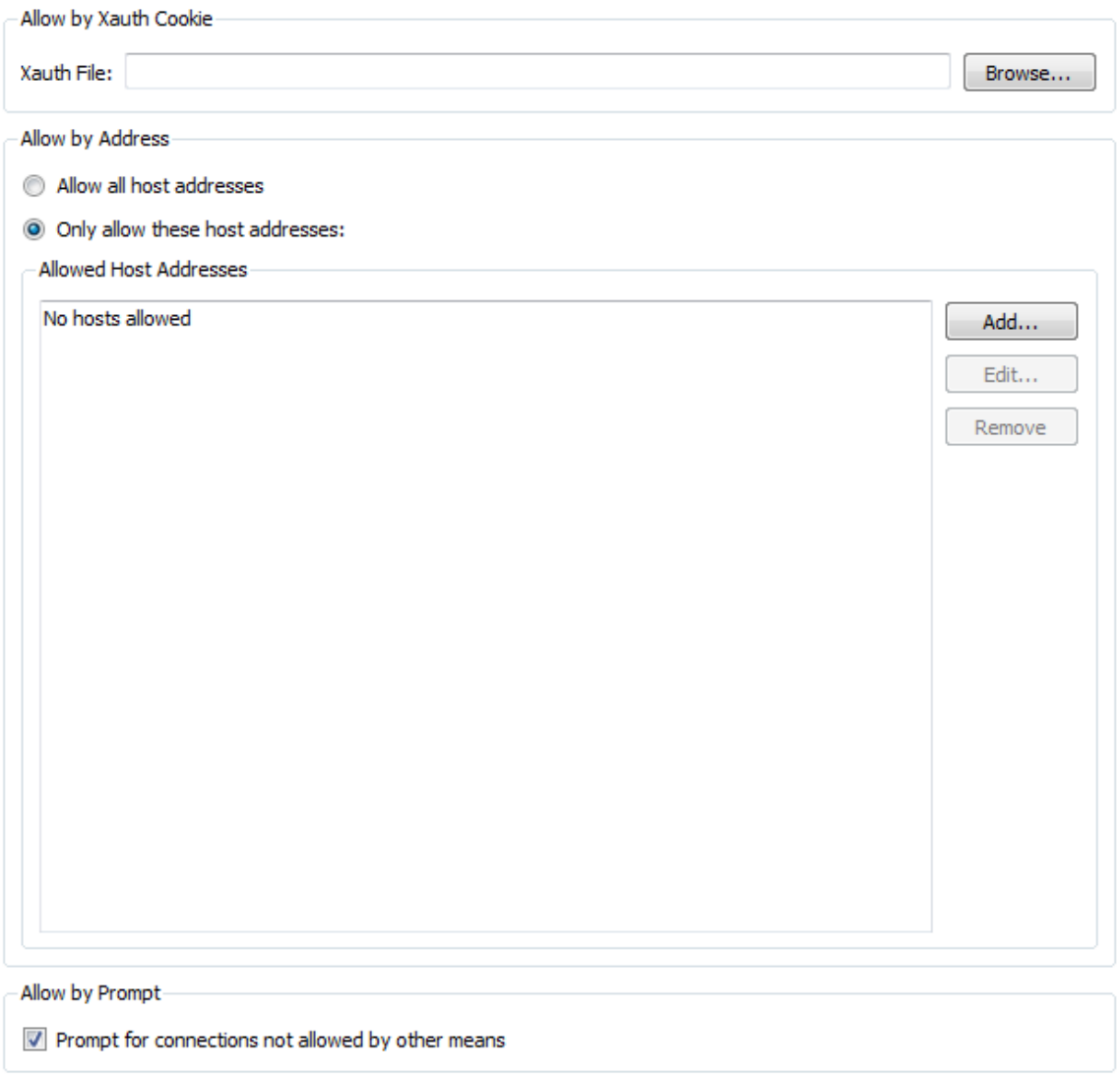
Highlight the font directory and press the ***Remove*** button to remove the directory from the list.

Replace NUL Characters With Spaces

NUL characters by default have no corresponding glyph (rendered font), and thus can appear as any character, usually an empty box. Check this box to force a NUL character to be rendered as a blank space.

Security

The Security tab contains options which specify which connections are allowed to be displayed on the X Server



Property	Description
Allow by Xauth Cookie	Xauth Cookie authorization is based on MIT-MAGIC-COOKIE-1 (also known as magic cookie method), in which the UNIX program Xauth views and transfers cookies. The X-server obtains the cookie, which is a 16-byte random number. When the X-application connects, it sends the cookie. If the 16 bytes sent by the application are the same as the bytes in the X-server, the client is authorized. **Xauth File** — The Xauth cookie is a file named Xauthority that is stored in your home directory. This file is a password for the X-Win display - do not assign that file group or world read or

	write permissions. The correct permissions for this file are read and write, only for the local user (you).
Allow By Address	Allows remote clients to connect based on the host name or IP address.
	Allow all host addresses — All remote clients requests will automatically be accepted **Only allow these host addresses** — Add hosts to the allowed host list. Only hosts on the list will be authorized to connect.
Prompt for connections not allowed by other means	When a client is not authorized via Xauth, Address, or SSH with X11 forwarding, a request will occur with each connection attempt - allow or deny that connection.

XServer.config file

The XServer.config file is the XML based configuration file for X-Config.

Default Config Options for All Users

Administrators may want configure the default options for all users which are different than the installed options. Simply Copy the XServer.config file from the Current user directory to the Installation Directory to make these options available to all new users..

Directory	Location
Current User	%APPDATA%\StarNet\PRODUCTNAME__
All Users	The X-Win32 installation directory (usually in Program Files)

Advanced Configuration Options

Several advanced options are available in XServer.config that are not available though the X-Config Configuration Utility. Only Advanced Users should edit this file.

Property	Value	Description
<NoAutoUpdate>	TRUE	Do not check for updates when X-Win32 starts
<WaitForSecondButton>	{int}	The amount of time in milliseconds X-Win32 should wait before checking if the second mouse button was clicked. With only a 2 button mouse (for example when using a

		laptop), you may run out of time when trying to click the second mouse button to enable the 3 button mouse emulation. Add this option to enable more time.
<XDPI>	{int}	Most applications use number of pixels to specify the size and shape of application User Interfaces. However, certain applications use the Dots per Inch (DPI) in order to specify certain sizes. Add this option for force the X DPI settings to the specified value.
<YDPI>	{int}	Most applications use number of pixels to specify the size and shape of application User Interfaces. However, certain applications use the Dots per Inch (DPI) in order to specify certain sizes. Add this option for force the Y DPI settings to the specified value.

LIVE User Guide

X-Win32 LIVE Sessions

LIVE sessions are special sessions that allow session persistency. These sessions can be suspended and resumed at a later time or terminated ending the session. The LIVE Server runs on the remote host allowing the session to stay active even after the LIVE client has disconnected.

The LIVE server starts automatically when a LIVE client connects. The LIVE client connects to the LIVE server via SSH. The client runs the rxsci5 program, which in turn starts rxserver-bin, if it isn't already running. Communication between the LIVE components on the server are through files and named sockets in a directory named .nx-{-hostname} in your home directory, which is created automatically. You do not need to start anything after installation. It will automatically exit when you terminate your last running session.

For security reasons, each user runs his own instance of the LIVE server (rxserver-bin).

The LIVE Server is available for Linux, Linux-64, Solaris, Solaris-x86, HPUX, and AIX.

LIVE sessions require the LIVE server component to be installed on the remote UNIX/Linux host in order to function

What is session Persistency

Session persistency means that even though X-Win32 has disconnected from the host machine, the LIVE session is still actively running on the host machine.

For example, you can start a long running compilation project through a LIVE session, suspend the session, and reconnect at a later time when the compilation has finished. With other connection methods closing the window will automatically terminate your session requiring you to start the compilation over from the beginning.

Session Mobility

Sessions can be transferred from Windows computer to Windows computer allowing session mobility. A session can also be started on a Unix/Linux machine and reconnected to from a windows machine. For complete mobility, sessions can be stored on the remote Unix/Linux machine.

Session Sharing

Multiple users can now connect to the same LIVE session to work and collaborate together at the same time. Users can choose to take control of the desktop, or they can simply view the desktop itself.

There are two components to the shared LIVE session Master and Slave. The user who wants to share the session creates a Master session, while the people who want to connect to the session create Slave sessions.

LIVE Server Installation

Installation Options

The LIVE Server is available at the StarNet website:
LIVE Server 5.0: http://www.starnet.com/support/live/server.php?version=5.0

For step by step instructions to install the LIVE Server, please refer to the System Specific Installation Instructions in the *LIVE Server Administrator's Guide*. The LIVE Server is available for Linux, Linux-64, Solaris, Solaris-x86, HPUX, and AIX.

Root Installations

If you are an administrator on the Linux machine on which you will install the Live Server, it is recommended that you use the root installation. This will install using RPM (or other system specific packages), which will automatically check dependencies, and install the server into the place where all users can test it.

Non Root Installations

Individual users who do not have root access can still test the LIVE functionality by installing the non-root package, which is a compressed tar file that will be installed in your home directory. The *Remote Server Interface Program* of the LIVE Connection must be edited in order to point to the the location of the LIVE Server Installation (rxlaunch sci5)

Post-Installation Testing

Ensure that sshd is installed on your remote system. You can test this out by running the command: ssh localhost. If you can log in through localhost your system has ssh installed

To test if the LIVE Server was installed correctly, run the command as a **non-root user:** rxlaunch sci5.

A message such as

<?xml version="1.0" encoding="UTF-8"?><Messages
should appear.

If no errors appear, the LIVE Server is running correctly. Otherwise, check to see that you have met the system requirements for your Unix OS and have all the proper libraries installed.

Notes

The LIVE server starts automatically when a LIVE client connects. The LIVE client connects to the LIVE server via SSH. The client runs the rxsci5 program, which in turn starts rxserver-bin, if it isn't already running. Communication between the LIVE components on the server are through files and named sockets in a directory named .nx-{-hostname} in your home directory, which is created automatically. You do not need to start anything after installation. It will automatically exit when you terminate your last running session.

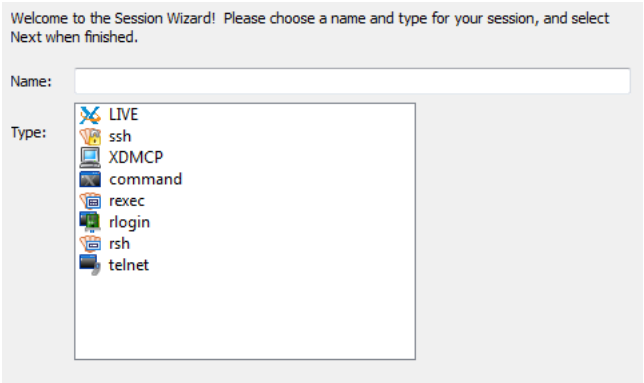
For security reasons, each user runs his own instance of the LIVE server (rxserver-bin).

Creating Your First LIVE Connection

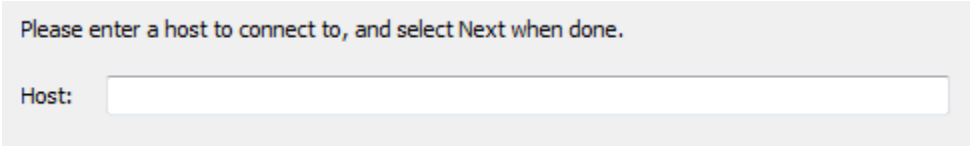
This section provides step by step instructions to Create and Launch a LIVE session. This section assumes that the LIVE Server has been already been installed as root on the remote system. For more information, see LIVE Connection, and LIVE Server Installation

1. Click on **Start Menu > Programs > X-Win32 ### > X-Config** to launch X-Config.

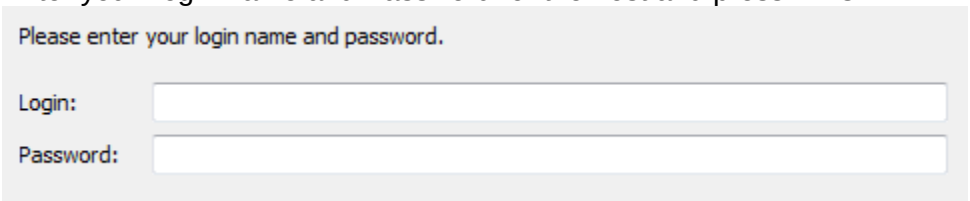
2. Select the Connections tab.
3. Select the desired folder where the new session will be created.
4. Press the Wizard button.
5. In the Connection Method dialog, select the LIVE connection method and enter the name of the session and press Next.



6. Enter the host to which the session will connect.

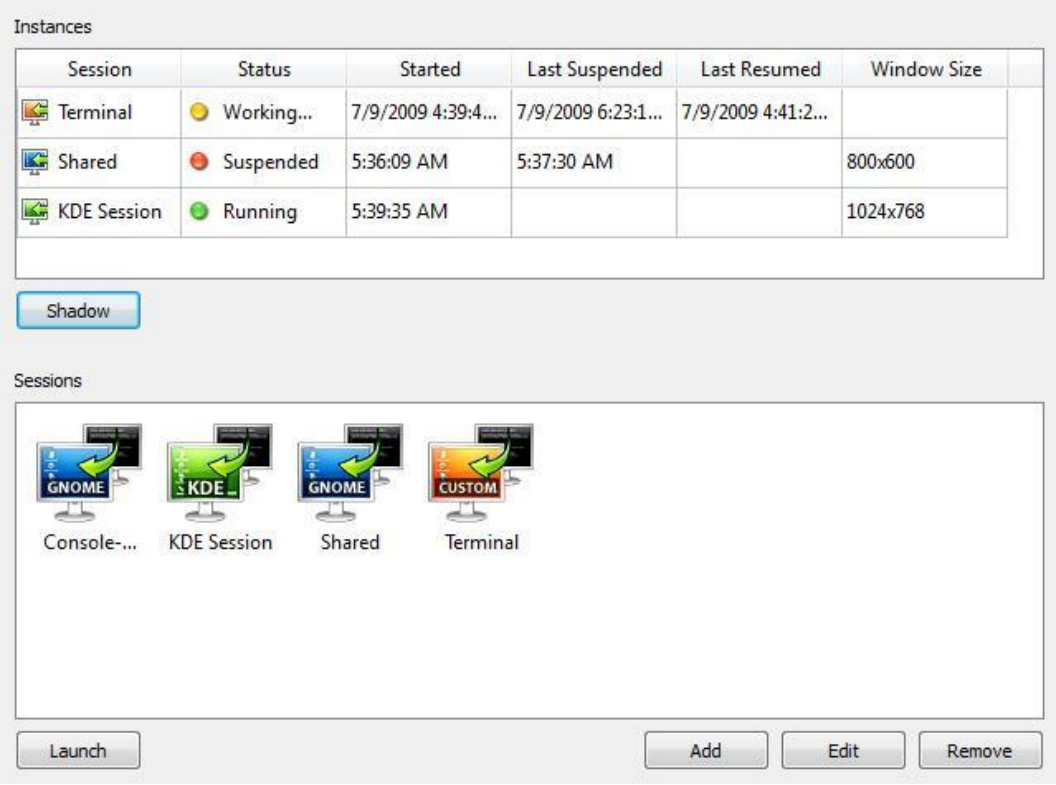


7. Enter your Login name and Password for the host and press Finish.

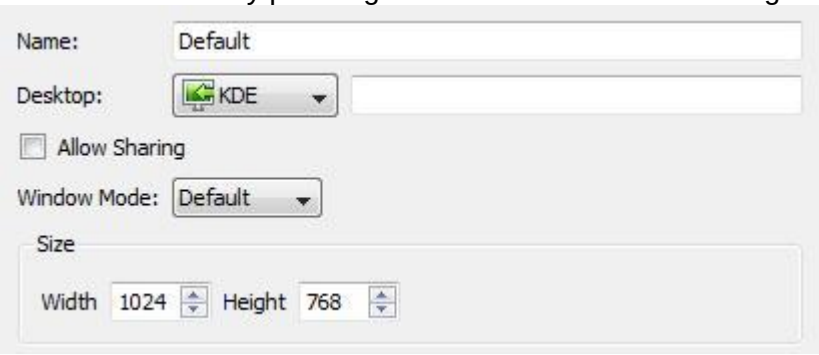


8. After completing the Wizard, your connection will be placed in the Connections Tab.
9. Highlight the Connection and press Launch to launch your connection. *Note LIVE Connections cannot be launched until a license is installed.*

10. The Session Browser will Appear



11. Define a Session by pressing the **Add** button. The following screen appears



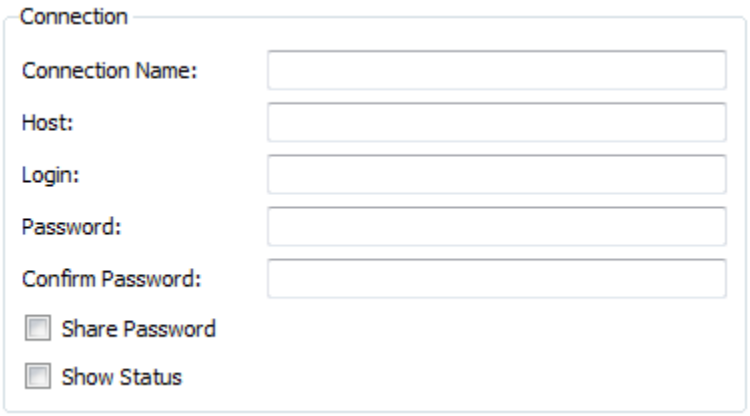
12. Select the Desktop type of your Remote Host (KDE, GNOME, or CDE)
13. Press the **Save** button.
14. An icon will appear in the Sessions window. Double click on your newly created Session to launch a new Instance.
15. Right Click on the instance in the Session Browser to Suspend or Terminate the Instance.
16. Double Clicking on a Suspended Instance will resume the Instance.

Connection Method: LIVE

Description

LIVE Connections are special SSH connections that use the LIVE protocol to communicate. The LIVE protocol allows running connections to be suspended and resumed at any machine with a LIVE client installed. Compression technology also reduces the network bandwidth speeding up the session. Sessions can be shared so multiple users can Collaborate on the same running machine. The LIVE Server is installed on the remote host and runs allowing the session to stay active after the LIVE client has disconnected by the user or by a network/Windows failure.

General Options

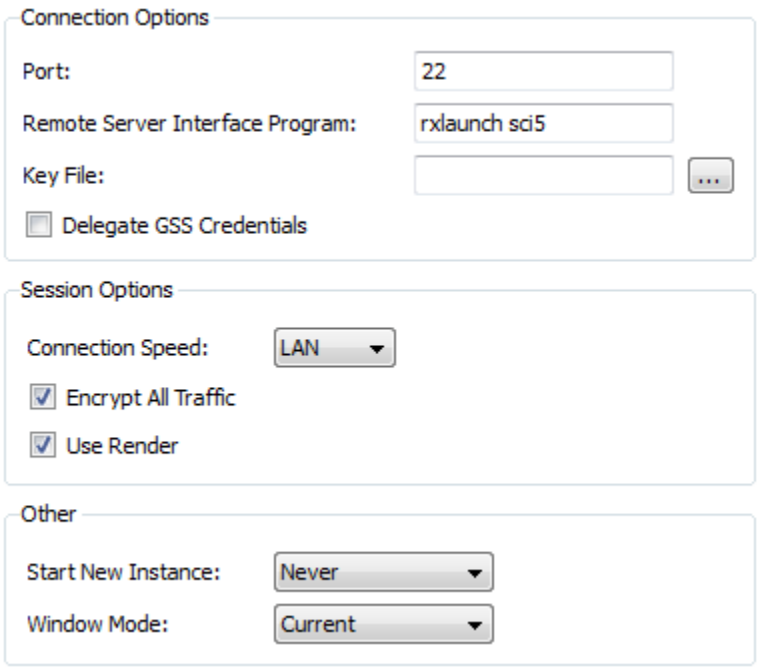


Property	Description
Connection Name	A name is required for each Connection.
Host	The remote hostname or IP address
Login	The user's login name on the remote host
Password	The password of the user's login
Confirm Password	Retype the password
Share Password	Check this option if you would like to share the session password with all users in the computer. *Default: Unchecked*
Command	Specify the application which will be run once the connection is made. If using Wizard, a default xterm command will be provided to open up a terminal emulator, which is suitable for most users. Otherwise, if using Manual configuration, the command will have to be entered. Any application on your remote system can be executed via the command field. Special variables can be used as replacements for common values.

Variable	Description
@MYIP@	The local IP address of the Windows machine
@DNUM@	The display number of the current instance of X-Win32

	@DISPLAY@	The display address:display number (eg @MYIP@:@DNUM@) The display address is specified by the radio button in the Display Address section on the Network Tab. The Display Number is specified by the Display Number on the Network Tab
	@IPSMART@	The resolved IP address of the computer when X-Win32 uses IPSmart
	@SESSION@	The Connection Name
Show Status	When starting a session the status dialog will appear showing the connection status. You can specify when you would like to see the status dialog appear. *Default: Unchecked*	

Advanced Options



Connection Options

Property	Description
Port	The port that the remote host is listening on. The default value is the well known port number of the specified protocol. Only change this number if you know that the remote host is listening on a different port for your connection.
Remote Server Interface	rxlaunch is the application that will launch the LIVE

Program	server. If rxlaunch is not in the user path (for example when the server is installed as a nonroot user) the full path to the rxlaunch application must be given in order to launch a LIVE session.
Key File	The private SSH key file to use when connecting to a remote host. If you have a public key set up on your remote system, specifying the private key will allow you to log in without the use of a password.
Delegate GSS Credentials	When using SSPI (MS Kerberos) authentication with SSH, Kerberos credentials will be sent to the remote host. This option is only available when using Microsoft's MS Kerberos. MIT Kerberos for WIndows is currently not supported. *Default: Unchecked*

Session Options

Property	Description
Connection Speed	Optimizes the graphical/compression settings of LIVE sessions according to the type of Network connection used. Change the option according to the speed of your network.
Encrypt All Traffic	LIVE Connections run over ssh connections. By default the LIVE Connection only uses ssh for authentication. THe DISPLAY is sent over unencrypted. This maximizes the performance of the connection. If your LIVE Connection is not launching properly, check this option to encrypt all traffic over the network. This will tunnel all traffic through the ssh port. *Default: Checked*
Use Render	Use the X render extension. Turning this option off will increase performance at the expense of graphical quality. *Default: Checked*

Other

Property	Description
Start New Instance	This option will start a new instance of X-Win32 with a new DISPLAY number.. The options for Start New Instance are Never, Always, Needed, and Prompt. *Default: Never*
Window Mode	The Window mode can remain in the current configuration specified in the Window Section of X-Config, or be explicitly changed to Single or Multiple window mode. *Default: Current*
Show Log On Error	Show the SSH status log if an error occurs. *Default: Checked*

Ad Hoc Connections

A one time connection can be created from the command line to automatically launch a connection. This feature is generally used when a user would like to automate Connection launching via scripts. The format is provided below.

xwin32.exe -h HOST -u LOGIN -pp ENCRYPTED_PASSWORD -x UID

Property	Description
HOST	the hostname or IP address of the machine you are connecting to
LOGIN	the username on the remote machine
ENCRYPTED_PASSWORD	(optional) This is your password which has been encrypted using the Windows CryptoAPI. Leave it blank if you do not have the encrypted password. You will be prompted for the password.
UID	The LIVE Session ID found in the UID tag of the LIVE session file on the remote server.

LIVE Sessions

LIVE sessions are special sessions that allow session persistency. These sessions can be suspended and resumed at a later time or terminated ending the session. The LIVE Server runs on the remote host allowing the session to stay active even after the LIVE client has disconnected.

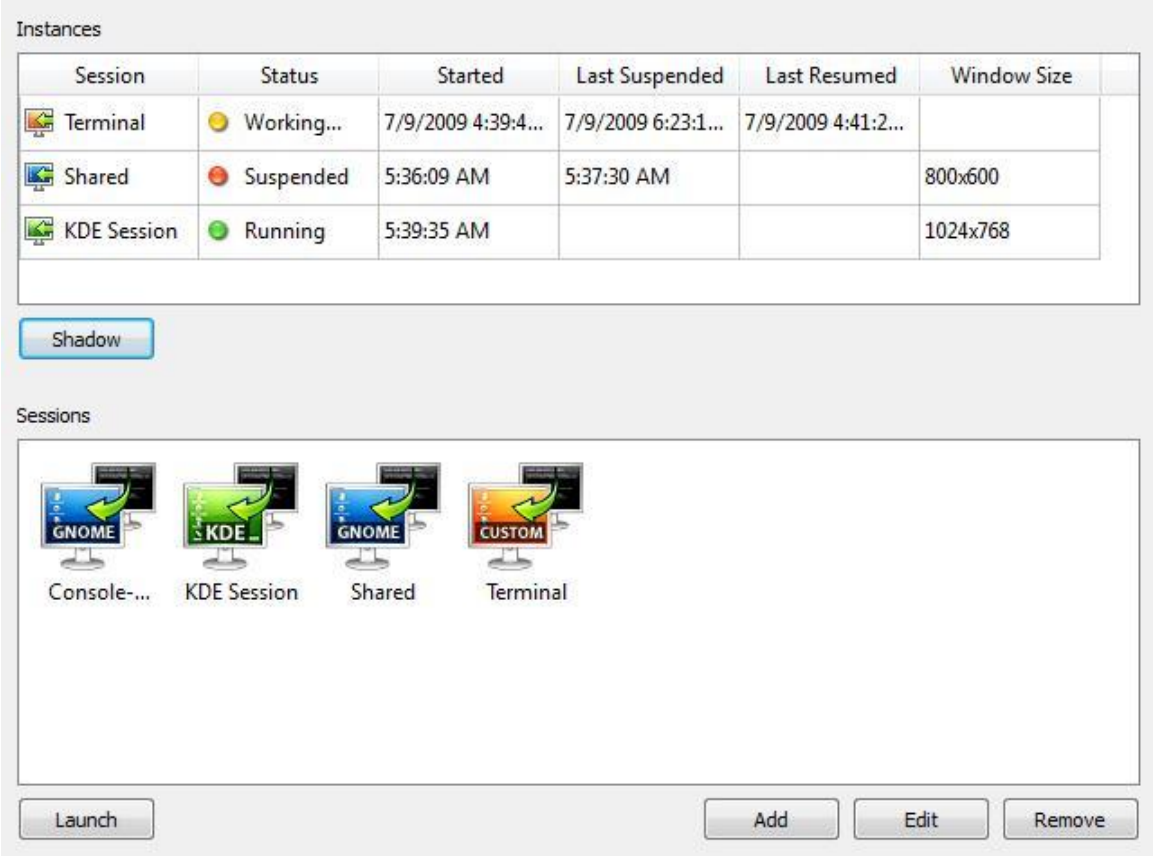
The following Table Shows some of the advantages of LIVE Sessions.

Persistence	Session persistency means that even though X-Win32 has disconnected from the host machine, the LIVE session is still actively running on the host machine. For example, you can start a long running compilation project through a LIVE session, suspend the session, and reconnect at a later time when the compilation has finished. With other connection methods closing the window will automatically terminate your session requiring you to start the compilation over from the beginning.
Mobility	All LIVE Session are stored on the remote Unix machine. Users can reconnect from any machine which has the LIVE client installed by simply logging into the machine using LIVE. A user can even start his session on the Unix machine, suspend it and reconnect to it from a Windows machine via X-Win32
Collaboration	Multiple users can now connect to the same LIVE session to work and collaborate together at the same time. Users can choose to take control of the desktop, or they can simply view the desktop itself.
Compression	LIVE Sessions use a special protocol which cuts down on the amount of round trip X traffic thus increasing performance and lowering bandwidth.

LIVE sessions require the LIVE server component to be installed on the remote UNIX/Linux host in order to function

The LIVE Session Browser

After connecting to a server via LIVE, the session Browser appears. Users can create, edit, or remove LIVE sessions. New Instances of LIVE Sessions can be launched. Running Instances can be resumed, suspended, or terminated, and users can connect to Multi-User Instances to collaborate. The LIVE Browser interface is shown below



Instances

The top window shows all the currently running instances of a LIVE Session. The status column shows the current status of each instance. Running sessions are currently connected. Suspended sessions are currently disconnected and processing in the background. Working sessions are in the intermediate state of running and suspended. Multiple instances of each session are allowed and defined by their start time. If there are currently no running instances, this window will appear blank.

Double click on an instance to connect.

Multi-user Instances

Multiple users can connect to a running instance if Sharing is enabled in the LIVE Session. To connect to a shared instance click on the *Shadow* button and enter the secret key that was provided to you by the creator of the instance.

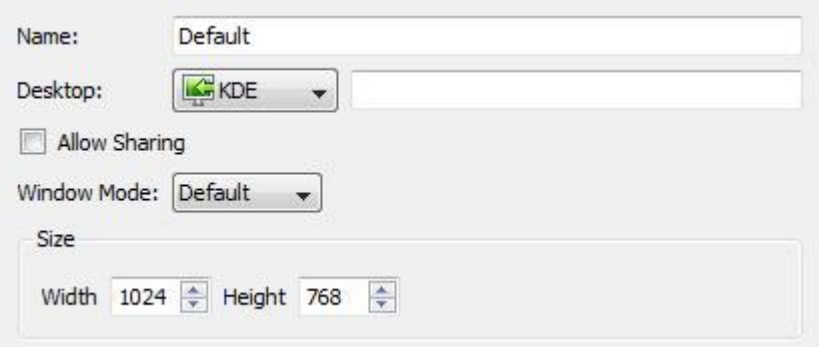
Sessions

LIVE Sessions are templates stored on the remote Unix/Linux system which contain the default information to Launch a LIVE Session Instance.

To launch a new Instance of a LIVE Session, double click on the session icon, or highlight the session and press *Launch*

Defining a Session

1. Press the *Add* button, or highlight an existing session and press the *Edit* button.
2. The following screen appears



Session Options

Property	Description
Name	The name of the session.
Desktop	Three standard Unix/Linux desktops (**GNOME**, **KDE**, **CDE**) are included by default. A fourth type **Custom** allows for individual applications (specified in the field to the right) to be launched from the LIVE Server. Note: LIVE sessions assume that the desktop's launching application is located in the user's $PATH. If not, the fully qualified path name must be added in the field to the right.
Allow Sharing	Allow multiple users to connect to a running instance.
Window Mode	The display mode of the Instance

	• **Default:** LIVE Instances run in a window whose initial size is specified in the Size options • **Fullscreen:** LIVE Sessions are borderless taking up the entrie screen • **Rootless:** Each application runs in it's own individual window
Height	Window Height in pixels
Width	Window Width in pixels

Indirect Sessions on Gateway Servers

For users who want to install the LIVEServer on a gateway and then connect to the internal network using ssh, an Indirect method is recommended. Launching an instance of the session will automatically ssh to the internal machine thus indirectly connecting.

1. Create a new LIVE Session using the LIVE Session Browser
2. Select Desktop: *Custom*
3. Enter the following command
   ssh -X [-l Username] Hostname Command

   -l Username: The username on the remote host. This can be different than the username of the LIVE session. If -l Username is omitted, the current user’s name will be submitted.

   Hostname: The remote host specified as a hostname or IP address.

   Command: The remote command to be run, for example xterm or gnome-desktop.
4. The user will be prompted for a password when connecting to the second host.

Saving Sessions

LIVE Sessions can be global to all users or local to the current user. When defining a new session two options are available: *Save* and *Save as Global.* The sessions are stored in different directories specified in the LIVE.conf configuration file. Users must have proper directory permissions to *Add*, *Edit*, or *Remove* sessions

Suspending Instances & Reconnecting

Instances are automatically suspended when the LIVE server detects that a client has disconnected, either manually, or by an error (such as the Windows machine shutting down or the network getting disconnected). Users can reconnect to a suspended instance without loss of data.

Suspending Instances

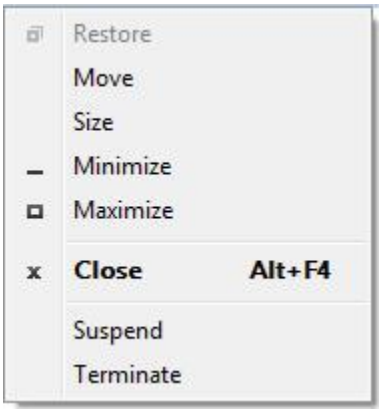
Enter the key combination CONTROL+ALT+T to bring up the Suspend prompt.

Select the *Suspend* button to suspend the instance

NOTE: Closing the Desktop window also brings up this dialog

Rootless

Rootless instances run in multiple windows. Suspend an instance by right clicking on the title bar of any LIVE window and selecting *Suspend* in the Menu.

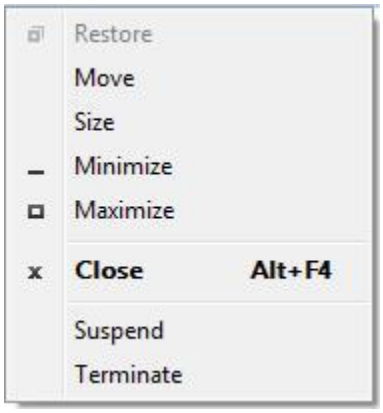


Terminating Instances

If running a desktop log out using the standard Unix/Linux Desktop logout procedure (for example pressing the logout button in GNOME).

Rootless

Rootless instances run in multiple windows. Terminate an instance by right clicking on the title bar of any LIVE window and selecting *Terminate* in the Menu. All windows associated with this LIVE instance are terminated. The instance will also be terminated if there are no more client windows connected.



Terminating Instances from the Command Line

Each running instance runs its own nxagent process. Sending a TERM signal to an nxagent will terminate the associated session. The pid of an nxagent associated with a given session can be found using ps (or pidof, pgrep etc).

The rxserver.log file contains both the pid and the associated display number of a specific instance in the following lines.

Info: Proxy running in server mode with pid ‘pid_number’
Info: Waiting for connection from ‘127.0.0.1’ on port ‘<Display_number + 4000>’

NOTE: It is not recommended to terminate desktop instances from the command line as each desktop has it's own logout procedure which will be skipped if the nxagent process is killed possibly causing data errors

LIVE Console Sessions

LIVE Console is the first X server solution to allow Linux and Sun Solaris workstation desktops to be re-displayed on Windows PCs. No other X server can do this. LIVE Console is the first in a series of connectivity tools for Linux and Unix-based workstation users. Besides the redisplay of their desktop LIVE Console offers two additional key functionalities:

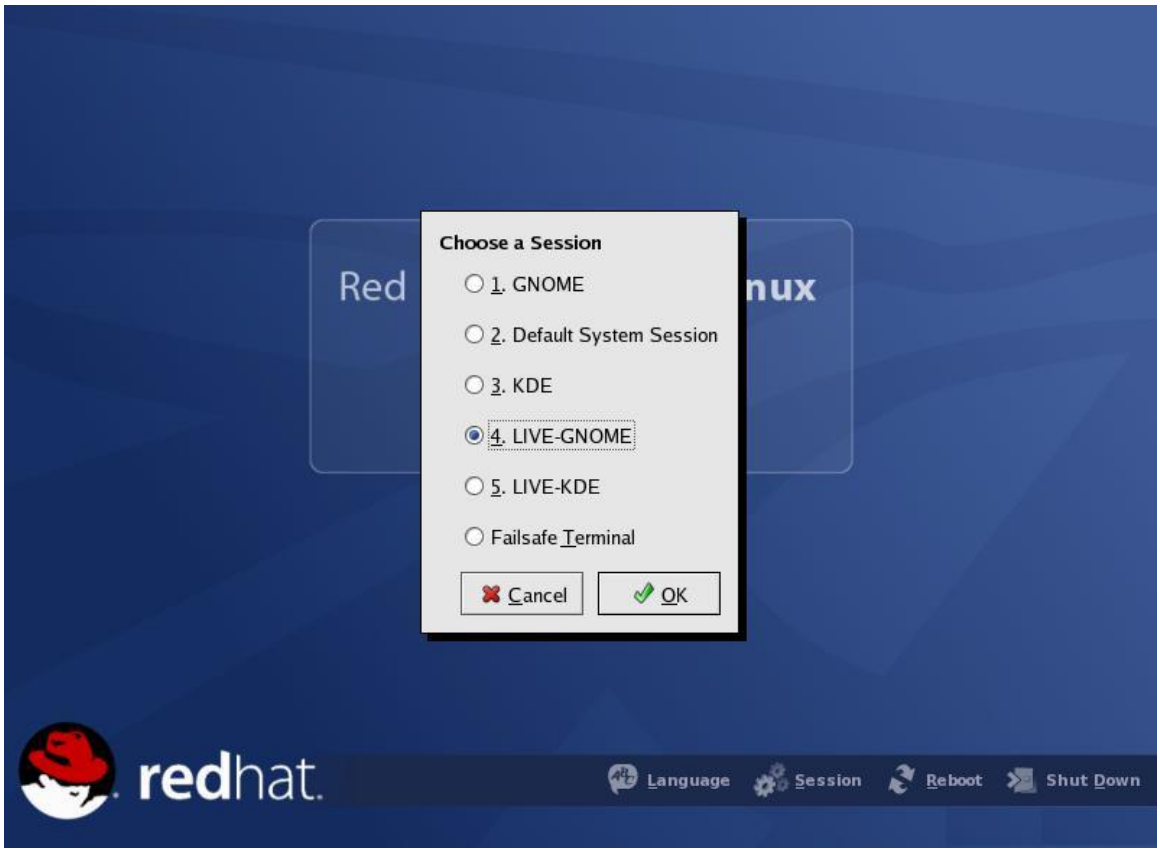
- Suspend/Resume Desktop – For security reasons, many companies require desktops be logged out when the user leaves his office for meetings or goes home. That means he has to terminate any running applications. LIVE Console allows the user to log-out of his Linux/Solaris desktop and log back in at a later time while open applications continue to run in the background.

- Simultaneous Multiple User Accounts – With LIVE Console, multiple consoles can be running simultaneously. One user can log out to allow another user to work on a workstation. The first user's desktop and the applications on it continue to run in the background.

Installing the LIVE Server as root automatically grants end user access to the LIVE Console. The desktop session runs in full screen mode just like a normal session. However, since it is running through the LIVE server, the session is persistent. Users can Suspend their sessions (by pressing CNTL+ALT+T) allowing others to log in to the same physical computer. User can also reconnect to their sessions remotely using any of the LIVE clients.

Logging in to the LIVE Console

When logging in directly from the Unix/Linux side, click on the option to change your session. New session types will be placed in the Session Chooser prefaced with LIVE (for example LIVE-Gnome). Select the LIVE session and log in normally.

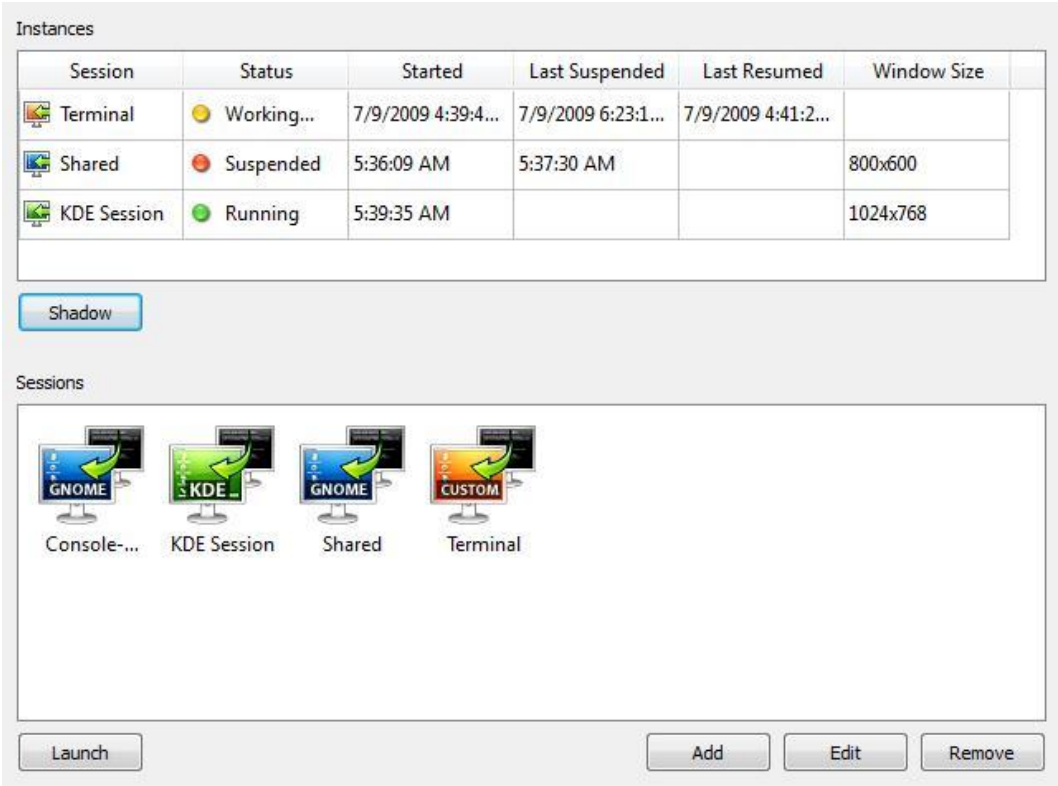


Users can also start a Console Session from a remote host. See the next section for details.

Reconnecting Remotely to a Console Session

1. Create a LIVE Connection.

2. Connect to the remote host.
3. In the Instance Browser (top Window), double click on "Console-{desktop type}"



4. You will be reconnected to the running session.

LIVE Connection File Format

LIVE Connection files are stored in .xw32 files on the windows side in %APPDATA\StarNet\X-Win32\Sessions or in a Connection PATH defined in X-Config.

The file is XML based with the following format.

```
<Session>

    <HideOnStart>false</HideOnStart>
    <Module>live</Module>
    <Name>LIVE Session Name</Name>
    <NewInstance>never</NewInstance>
    <ShowStatus>on likely error</ShowStatus>
    <Uuid  value="{41e29704-3e67-475f-8700-f375ef6ed3af}" />
    <WindowMode>default</WindowMode>
                <Settings>
                    <AuthKeyFilename>c:\path\to\key\file</AuthKeyFilename>
```

```
                        <CommandLine>xterm</CommandLine>
                        <DelegateGSSCredentials>true</DelegateGSSCredentials>
                        <DesktopType>APP</DesktopType>
                        <Host>hosname.com</Host>
                        <Login>ppanayot</Login>
                        <Password>User's  password encrypted with Microsoft
            CryptoAPI</Password>
                        <RSI>LIVEServer/bin/rxlaunch sci5</RSI>
                              <ShowLog>false</ShowLog>
                        <ShowStatus>false</ShowStatus>
                        <Tunnel>false</Tunnel>
                  <UseRender>false</UseRender>
      </Settings>
</Session>
```

Required Tags

The following options are required when creating a new Connection

Property	Description
<Module>	[live] Sets the connection method to LIVE
<Name>	{string} Name of the session that appears in X-Config
<NewInstance>	[never | prompt | needed | always] Defines when to start a new instance of X-Win32 if an instance is already running.
<Uuid value="{unique id}">	Uuid takes an attribute "value" which is the universal unique identifier (UUID) of the session. Example: <Uuid value="{41f29734-3e65-475f-8700-f375ef6ed3af}" />
<WindowMode>	[default | single | multiple] Window mode to start X-Win32 in. This is different than the window mode for LIVE sessions and should stay at default.
<HideOnStart>	[true | false] Hides the connection dialog when a session is launched
<ShowStatus>	[on likely error | false] Show the connection status log
<Settings>	The child nodes of this tag specify all the type specific options for different LIVE sessions. See Type Specific Options for information on included tags. If settings is empty (ie <Settings />) the default session type used is a local session.

Optional Tags

The following tags are optional. If the tag is omitted, default value is used.

Property	Description
<Host>	{string} Remote host to connect to. This can be a hostname or IP address.
<Login>	{string} User name on remote host
<Password>	{string} User's password encrypted with Microsoft CryptoAPI. The password is NOT saved in clear text. The password itself is encrypted by the Windows machine. The password will not be able to be decrypted if the .xw32 file is transferred to another machine.
<AuthKeyFilename>	{string} Path to the SSH keyfile if using Key based authentication
<DelegateGSSCredentials>	[true | false] Set to true if using Kerberos authentication. DEFAULT: false
<RSI>	{string} Fully qualified path to the Remote Server Interface Program rxlaunch sci5. If the LIVE Server was installed as root, omit tag. DEFAULT: rxlaunch sci5
<ShowLog>	[true | false] Show the ssh connection log if an error occurs. DEFAULT: true
<Tunnel>	[true | false] Use ssh tunnelling (Encrypt All Traffic). DEFAULT: false
<UseRender>	[true | false] LIVE Server will use the Render extension. Recommended always be set to true. DEFAULT: true

<Session> Specific Options

Optional Tags for all LIVE sessions

Property	Description
<AlwaysStart>	[true | false] Always start a new LIVE instance when launching the session. DEFAULT: false
<HostOnly>	[true] Makes this a Hosted session. This session will make a connection to the remote host to view the Server side

	sessions
<HostSession> (Optional)	{string} Name of the server side session to automatically run on connection

Appendix

Troubleshooting Guide

This page contains quick links to the most common questions affecting users. For full details on issues, please consult the online FAQ

Getting Started

Sessions

Connection Issues

Licensing

General Questions

Getting Started

- What are the Default Connection Ports
- Creating My First Session
- Starting SSH on Unix Machines
- Enabling X11 Forwarding on SSH
- Automatically Launch Connections when X-Win32 is Started
- Starting X-Win32 from the Command Line

Sessions

- **LIVE**
  - LIVE Server Installation
  - Converting OpenSSH private key to X-Win32 format
  - LIVE Server Solaris Installation
  - rxsci.log Balloons Out of Control
  - LIVE Address in use
- **XDMCP**
  - Enabling XDMCP
  - Running XDMCP Sessions Through a Firewall

- Waiting for query response from host

Connection Issues

- Cannot Connect to a Host on a Restricted Network
- XDMCP Fails to Connect: Cannot Open Display

Licensing

- Node Locked Versus Floating Licenses
- Floating License Registration
- Node Locked License Registration
- Push Deployments for Floating Licenses
- MSI Installation
- Installing Licenses for Multiple Users on a System
- Location of the License.config file

General Questions

- Copy and Paste from Window to Unix
- Command Line Variables for Sessions
- Advanced Features
- Disabling Auto Updates

Command line arguments

X-Win32 can take several command line arguments for launching existing sessions and creating ad hoc one time use sessions.

Launching Sessions From the Command Line

Sessions are stored in .xw32 files in directories on your system. To launch a session from the command line, use the **--session** command line option followed by the session file

For example, if the session is named linux.xw32 and is located in the "C:\sessions" directory, the correct syntax would be:

xwin32.exe --session "C:\sessions\linux.xw32"

The .xw32 file extension is also associated with xwin32.exe by default, so typing the session file name directly will also launch the session.

Ad Hoc Sessions

Occasionally, it is necessary to create a new session without actually saving the session to the file first. X-Win32 provides the ability to create an ad hoc session when these circumstances arise. Ad hoc sessions are meant to be quick single use sessions without major customizations. If more advanced features are needed, consider creating a session in X-Config and then running the session from the command line using the **--session** command line argument.

Ad hoc Connections are available for the following Connection Methods: LIVE, SSH, XDMCP, rexec, rsh, and command

The session format differs by connection method and is defined in each method's respective session

Language Support

This section lists the languages that are available for the Keyboard Input. Over 130 languages are automatically detected by X-Win32. Additional languages that are supported through configuration are listed below.

Languages Supported by X-Win32

- Afrikaans (af)
- Arabic (ar)
- Chinese - Simplified (zh_CN, mainland China and Singapore)

- Chinese - Traditional (zh_TW, Taiwan)

- Czech (cs)
- Danish (da)
- Danish (da)
- Dutch (nl)
- Finnish (fi)
- French (fr)
- German (de)
- Greek (el)
- Hebrew (he)
- Hindi (hi)
- Hungarian (hu)

- Italian (it)
- Japanese (ja)
- Korean (ko)
- Norwegian (no)
- Polish (pl)
- Portuguese (pt)
- Russian (ru)
- Slovak (sk)
- Spanish (es)
- Swedish (sv)
- Thai (th)
- Turkish (tr)
- Ukrainian (uk)
- Vietnamese (vi)

Languages Supported by Installer User's Interface

This set of languages does not include the following: Afrikaans, Arabic, Hebrew, Hindi, Ukrainian, Vietnamese.

- Chinese - Simplified (zh_CN)
- Chinese - Traditional (zh_TW)
- Czech (cs)
- Danish (da)
- Dutch (nl)
- Finnish (fi)
- French (fr)
- German (de)
- Greek (el)
- Hungarian (hu)
- Italian (it)
- Japanese (ja)
- Korean (ko)
- Norwegian (no)
- Polish (pl)
- Portuguese (pt)
- Russian (ru)
- Slovak (sk)
- Spanish (es)
- Swedish (sv)
- Thai (th)
- Turkish (tr)

For a list of the supported fonts and the associated keyboard layouts, see http://www.starnet.com/products/xwin32/languages.php.

Contact StarNet

StarNet Main Office

Web Site

http://www.starnet.com

Address

StarNet Communications

1270 Oakmead Parkway, Suite 301

Sunnyvale, CA 94085-4044

Customer Support

Web Site

http://www.starnet.com/support

- FAQs, latest upgrades, and new information regarding X–Win32's most recent developments.
- A customer support ticket system you can access online through X-Win32.

Sales Department

Telephone

(408) 739 0881

The Sales Department is available 8:00 AM - 5:00 PM PST, Monday through Friday.

Fax

(408) 739 0936

Email

SalesDept@StarNet.com

Customer Service

Customer support and submitting bug reports online can be accessed through the X-Win32 support menu.

Customer support is provided at no charge for the duration of the license. For information about registering your license, see Licensing and Registration.

Online Customer Service

1. Start X-Win32. For information, see Start X-Win32.
2. Right-click the X-Win32 Icon in the tray.
3. In the pop-up menu, select Support.
    - For customer support, highlight Request Support.
    - To report a bug, highlight Submit Bug.
4. The Open a New Support Case window opens in your web browser.
5. Enter your contact information and your request in the Message text box, then press the Send Email button.

For faster service, please include system information, such as the operating systems of your workstation and the remote server, and the application you were accessing.

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4. Contacts

There are two mailing lists related to FreeType:

- o freetype@freetype.org

  Discusses general use and applications of FreeType, as well as future and wanted additions to the library and distribution.

  If you are looking for support, start in this list if you haven't found anything to help you in the documentation.

- o devel@freetype.org

  Discusses bugs, as well as engine internals, design issues, specific licenses, porting, etc.

- o http://www.freetype.org

  Holds the current FreeType web page, which will allow you to download our latest development version and read online documentation.

You can also contact us individually at:

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Robert Wilhelm <robert.wilhelm@freetype.org>

Werner Lemberg <werner.lemberg@freetype.org>