

X4 Configurator[®] Product Manual



A complete guide to the installation and use of *Thinklogical's X4 Configurator* web-based control system for the Thinklogical family of VX, MX and HDX Routers



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PREFACE

Conventions Used in this Manual

As you read this manual you will notice certain conventions that bring your attention to important information. These are **Notes** and **Warnings**. Examples are shown below.



Note: Important Notes appear in blue text preceded by a yellow exclamation point symbol, like this.

A note is meant to call the reader's attention to helpful information at a point in the text that is relevant to the subject being discussed.



Warning! All Warnings appear in red text, followed by blue text, and preceded by a red stop sign, like this.

A warning is meant to call the reader's attention to critical information at a point in the text that is relevant to the subject being discussed.

**BEFORE STARTING ANY PROCEDURE, IT IS RECOMMENDED
THAT YOU READ THE INSTRUCTIONS THOROUGHLY!**

X4 Configurator Software Package

Overview

X4 is a web-based control system for Thinklogical's® family of VX, MX, and HDX routers. It runs on a separate Windows or Linux computer and allows for easy configuration, management and control of any number of routers.

The installation files, rpm for Linux and exe for Windows, will be on the included CD and are also available from the Thinklogical FTP site: <http://ftp.thinklogical.com/ftp/VxRouter/X44/>
Please choose the latest version for your chosen platform (Linux or Windows).

Linux Installation

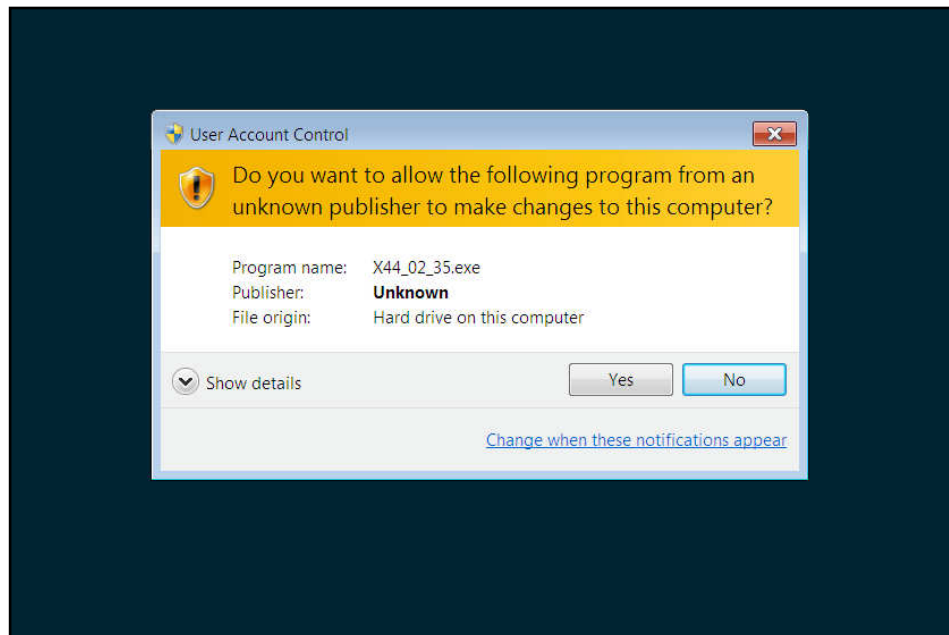
The Linux installation using **yum** or **rpm** is automatic and allows a few installation options:

First time installation: `rpm -I filename.rpm`

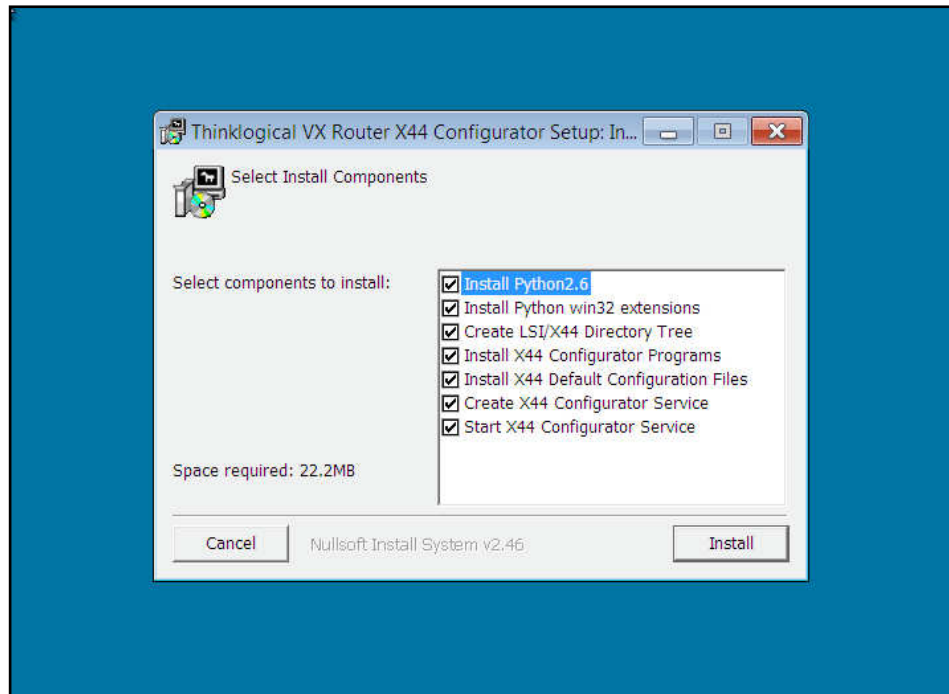
Upgrade existing installation: `rpm -U filename.rpm`

Windows Installation

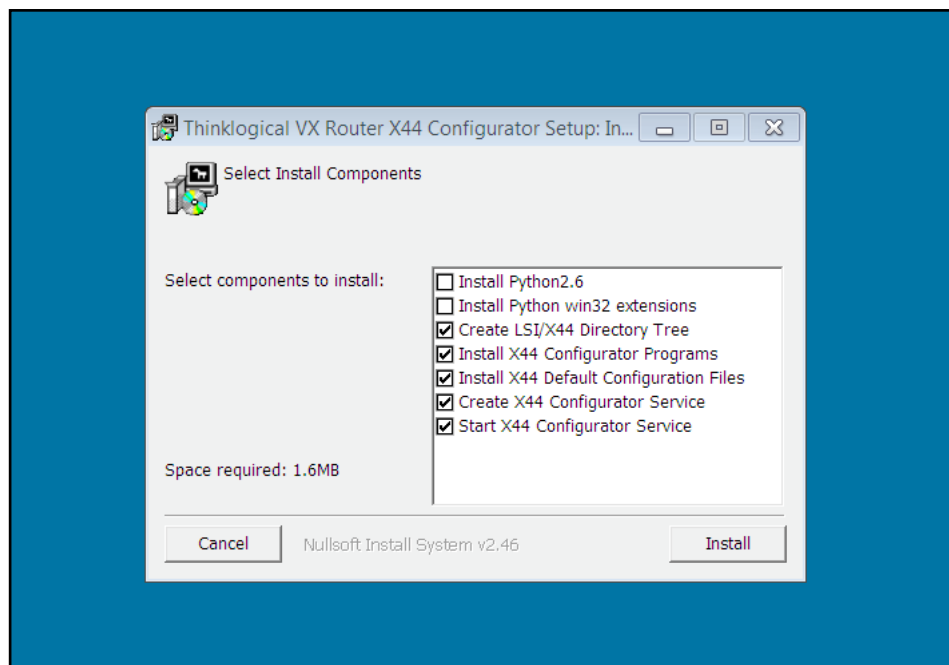
The Windows installation program will have a name similar to X44_02_41.exe
When executed, Windows may open a warning window as shown below:



Click the "Yes" button to continue.

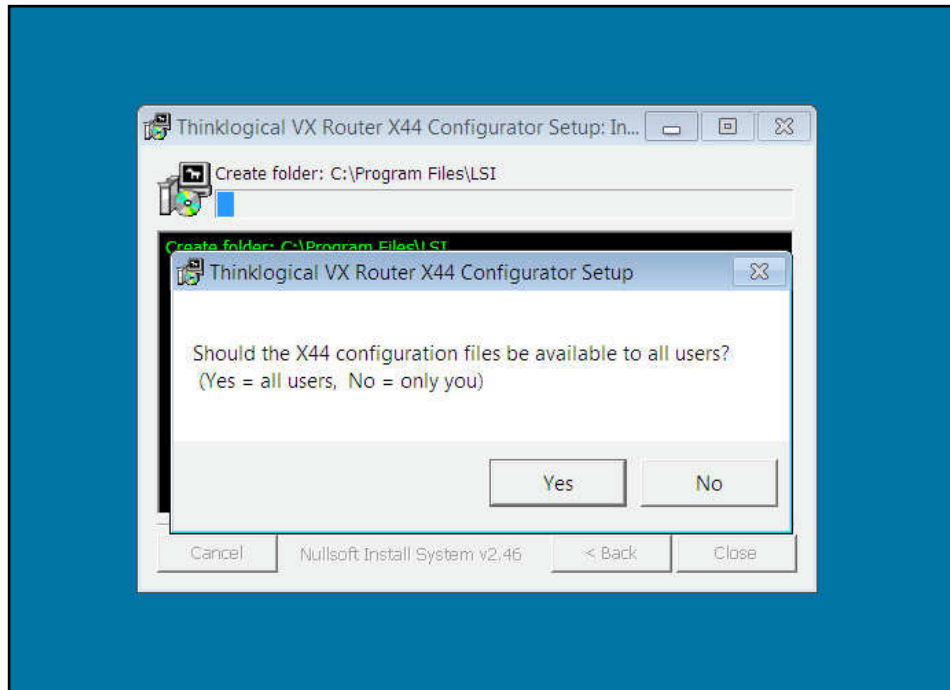


First installation

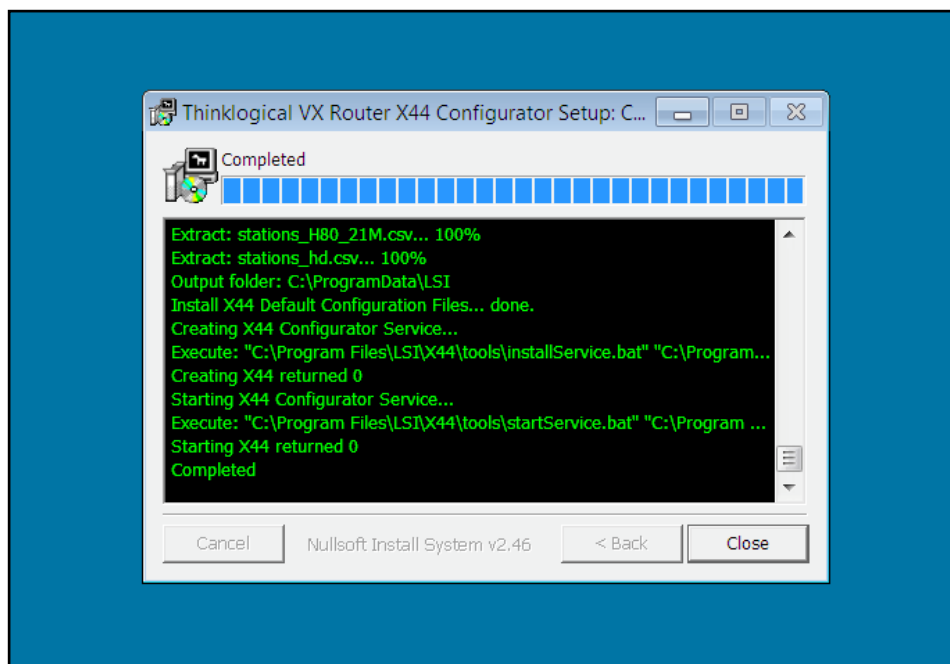


Installation if an update

If this is the first installation, then leave all the checkboxes checked. However, if this is an update from an earlier version, you can safely uncheck the first two boxes for “Install Python2.6” and “Install Python win32 extensions” as they will already be on your computer. Click Install.



Click “Yes”.



Please note the last five rows. The fifth from the bottom should read “Creating X44 returned 0” and the second from the bottom should read “Starting X44 returned 0”. If either of these lines does not show “returned 0”, then a problem was encountered during installation and X4 will not work.

Firewall Considerations

If your firewall is enabled, you may require some additional configuration. By default, firewalls block connections on port 80, which is the standard for web communications. The easiest/fastest way to get around this is to disable the firewall, but this is not always acceptable. If you need your firewall enabled, you must open port 80.

In addition, Thinklogical VX routers periodically broadcast their connection status via UDP on port 17564. Firewalls normally block this as well, so the firewall requires a new inbound rule to let the status broadcast in.



NOTE: You may need administrator privileges to install this software and make the required changes to the firewall. Please speak to your network administrator or refer to your firewall program documentation for more information.

X4 Configurator Login

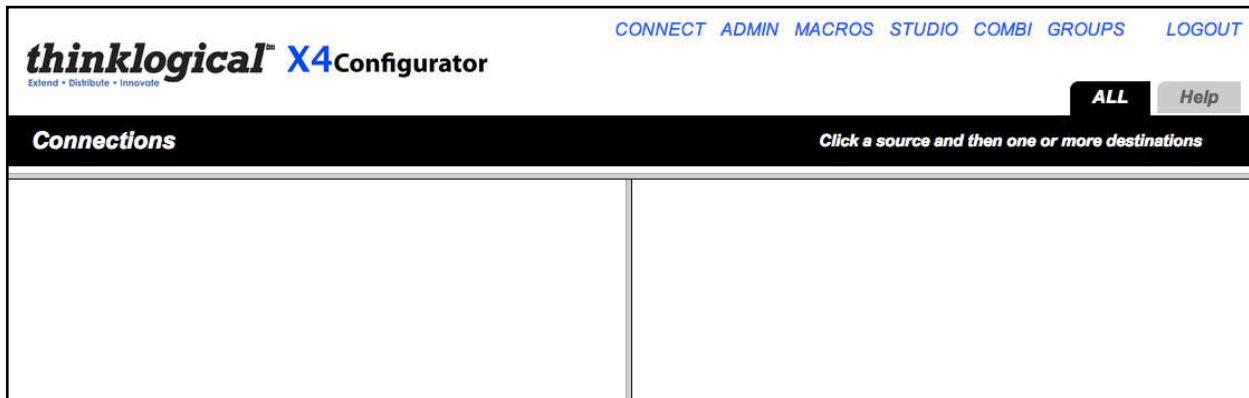
X4 is accessed via a web browser from any computer on the same network as the X4 server. Some of the administrative pages can be demanding on the JavaScript engine on the browser, so if it's running too slowly on your current browser, please try **Google Chrome**.

Set the browser's URL to the IP address of your server to load the page. Logins are required by default, so if this is your first access you may see this:

The default user name is “admin” and the password is “admin” (You can change this later.)

Introduction

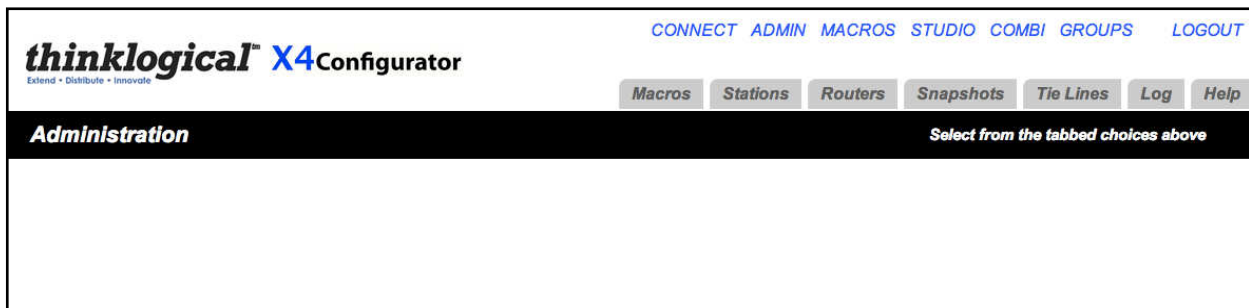
The first time you log in, the [CONNECT](#) page will load automatically.



This page is one of the pages used for connecting sources to destinations. However, the first time the program is accessed it will be unpopulated.

There are blue names across the top of the page along the right side, starting with [CONNECT](#) and ending with [LOGOUT](#). These are links to the other pages. This document will describe each of them as needed.

The first step will be to click the [ADMIN](#) link. A new page will load that looks like this:



Above the black stripe are tabs for the administrative functions beginning with **Macros** and ending with **Help**. Clicking on a tab will highlight it and load the settings for modifying the settings associated with that tab. Click the **Routers** tab and continue to the page.

ADMIN: Routers

On the [ADMIN](#) page, the **Routers** tab allows you to configure X4Configurator for your routers. The router (or router simulator program) must be already running and on the network. The setup process will attempt to communicate with the router over the network and will fail if the router does not respond or is a different type than the one you selected.

thinklogical X4Configurator

CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros Stations **Routers** Snapshots Tie Lines Log Help

Administration *Select from the tabbed choices above*

Import Export **SAVE** Cancel

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any *column header* to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Routers (version: X4.4)

Router Name:	Type:	IP Address:	Socket:	Enabled:	Default Stations:	Sync Format:	House Sync:	Sync Status:
					CREATE		card not installed	

ADD Tie Line Table

If this is a fresh install, there will be no routers declared yet. Click on the gray row beneath the column header “Router Name:” and enter the name you will use for your router. If you click on the entries for the remaining fields, you will be offered pop-up lists of choices. For this example, we will use a VX80.

Import Export **SAVE** Cancel

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any *column header* to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Routers (version: X4.4)

Router Name:	Type:	IP Address:	Socket:	Enabled:	Default Stations:	Sync Format:	House Sync:	Sync Status:
A					CREATE		card not installed	

ADD Tie Line Table

Next, choose the router type by clicking in the 'Type' gray box.

Import Export **SAVE** Cancel

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any *column header* to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Routers (version: X4.4)

Router Name:	Type:	IP Address:	Socket:	Enabled:	Default Stations:	Sync Format:	House Sync:	Sync Status:
A					CREATE		card not installed	

Router Type

- VX 40
- VX 80
- VX 160
- VX 320
- VX 320V
- VX 640
- HDX 80
- HDX 576
- MX 48

ADD Tie Line Table

Clicking in the *IP Address:*, *Socket:*, and *Enabled:* boxes will pop up choices for each of those fields.

Import Export **SAVE** Cancel

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any *column header* to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Routers (version: X4.4)

Router Name:	Type:	IP Address:	Socket:	Enabled:	Default Stations:	Sync Format:	House Sync:	Sync Status:
A	VX 80				CREATE		card not installed	

IP Address

- 192.168.13.15
- 192.168.13.17
- 192.168.13.19

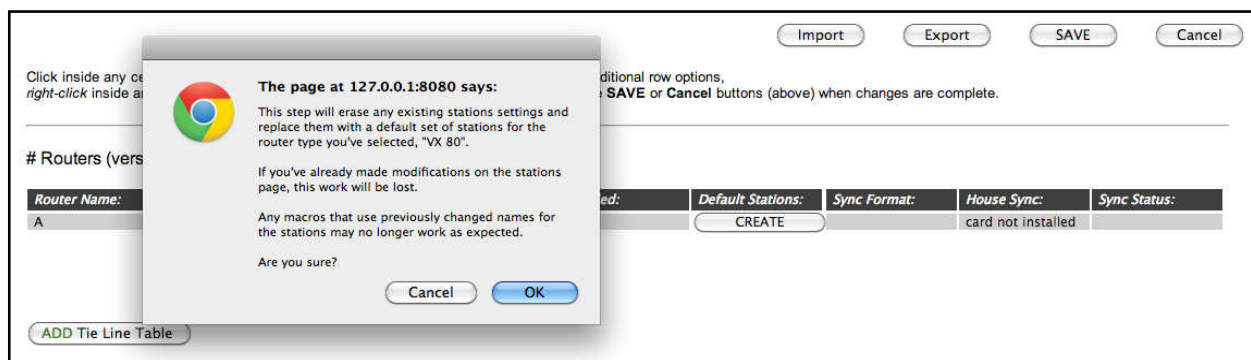
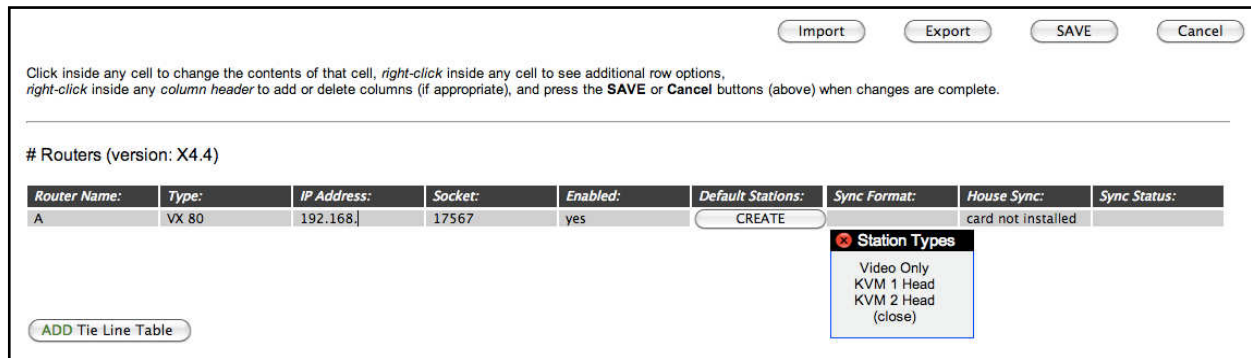
ADD Tie Line Table

When the router's name, type, IP address, socket, and enabled fields are complete, click the **SAVE** button near the top right corner.

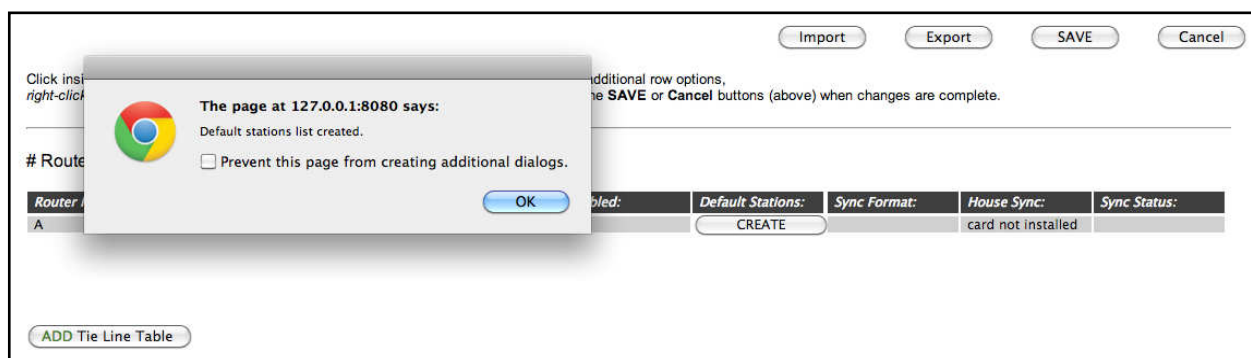
Next, we will create some “stations.” **Stations are source and destination elements that can be connected.** A station can contain a single port or multiple ports, and a single station can include ports located on multiple routers.

For this example we will create a default set of stations that has a single video head with keyboard and mouse (KVM 1 Head).

Click the 'CREATE' button under *Default Stations:*, then click on 'KVM 1 Head'.



Here is a last chance - if you've already configured your stations, you may not wish to overwrite them with the defaults. Since we haven't created any yet, click OK.



The new stations have been created. We can inspect and change them by clicking the **Stations** tab.

ADMIN: Stations

As we've seen before, stations are the sources and destinations that can be connected together. Click the [ADMIN](#) link and then the **Stations** tab to get to the stations page.

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Extend • Distribute • Innovate

CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros **Stations** Routers Snapshots Tie Lines Log Help

Administration Select from the tabbed choices above

Import Export SAVE Cancel

Click inside any cell to change the contents of that cell, right-click inside any cell to see additional row options, right-click inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL						

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL						

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL		fuchsia
Src 2	A	UR-002	UT-002		ALL		lime
Src 3	A	UR-003	UT-003		ALL		blue
Src 4	A	UR-004	UT-004		ALL		red
Src 5	A	UR-005	UT-005		ALL		purple
Src 6	A	UR-006	UT-006		ALL		orange
Src 7	A	UR-007	UT-007		ALL		yellow
Src 8	A	UR-008	UT-008		ALL		green
Src 9	A	UR-009	UT-009		ALL		navy
Src 10	A	UR-010	UT-010		ALL		aqua
Src 11	A	UR-011	UT-011		ALL		fuchsia
Src 12	A	UR-012	UT-012		ALL		lime
Src 13	A	UR-013	UT-013		ALL		blue
Src 14	A	UR-014	UT-014		ALL		red
Src 15	A	UR-015	UT-015		ALL		purple

This page is designed to operate like a simple spreadsheet. Any value can be changed by clicking in it and typing a new value. Values can be copied and pasted, but only one at a time.

For more powerful editing options, see the chapters **Import/Export Station Configurations** and **Configuring via Spreadsheet**.

The first table, starting with the column “Width”, sets up values that will be common for all the stations on certain pages. We can ignore it for now.

The second and third tables are also safely ignored for now. We will return to them later.

The fourth table, starting with the column header *Source Name*: defines the source stations. Since we created a default set with a single video and a data return channel for a VX80 named “A”, we will find sources named Src 1 through Src 40. Each source will have two ports; the first for video and the second for the data return.

Source stations can be added or deleted by right-clicking on an existing station row and selecting Insert, Append, or Delete from the pop-up menu. Existing station rows can be copied and pasted using the same menu.

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE
Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL							
Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL							
Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL		fuchsia
Src 2	A	UR-002	UT-002		ALL		lime
Src 3	A	UR-003	UT-003		ALL		blue
Src 4	A	UR-004	UT-004		ALL		red
Src 5	A	UR-005	UT-005		ALL		purple
Src 6	A	UR-006	UT-006		ALL		orange
Src 7	A	UR-007	UT-007		ALL		yellow
Src 8	A	UR-008	UT-008		ALL		green
Src 9	A	UR-009	UT-009		ALL		navy
Src 10	A	UR-010	UT-010		ALL		aqua
Src 11	A	UR-011	UT-011		ALL		fuchsia
Src 12	A	UR-012	UT-012		ALL		lime

Scrolling down the page, we find the next and final table, which is for destination stations.

<div>Import Export SAVE Cancel</div>							
Src 29	A	UR-029	UT-029		ALL		navy
Src 30	A	UR-030	UT-030		ALL		aqua
Src 31	A	UR-031	UT-031		ALL		fuchsia
Src 32	A	UR-032	UT-032		ALL		lime
Src 33	A	UR-033	UT-033		ALL		blue
Src 34	A	UR-034	UT-034		ALL		red
Src 35	A	UR-035	UT-035		ALL		purple
Src 36	A	UR-036	UT-036		ALL		orange
Src 37	A	UR-037	UT-037		ALL		yellow
Src 38	A	UR-038	UT-038		ALL		green
Src 39	A	UR-039	UT-039		ALL		navy
Src 40	A	UR-040	UT-040		ALL		aqua
Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	
Dst 1	A	UT-041	UR-041		ALL		
Dst 2	A	UT-042	UR-042		ALL		
Dst 3	A	UT-043	UR-043		ALL		
Dst 4	A	UT-044	UR-044		ALL		
Dst 5	A	UT-045	UR-045		ALL		
Dst 6	A	UT-046	UR-046		ALL		
Dst 7	A	UT-047	UR-047		ALL		
Dst 8	A	UT-048	UR-048		ALL		
Dst 9	A	UT-049	UR-049		ALL		
Dst 10	A	UT-050	UR-050		ALL		
Dst 11	A	UT-051	UR-051		ALL		
Dst 12	A	UT-052	UR-052		ALL		
Dst 13	A	UT-053	UR-053		ALL		
Dst 14	A	UT-054	UR-054		ALL		
Dst 15	A	UT-055	UR-055		ALL		
Dst 16	A	UT-056	UR-056		ALL		
Dst 17	A	UT-057	UR-057		ALL		
Dst 18	A	UT-058	UR-058		ALL		

Scrolling back up to sources, it's time to examine the fields in depth.

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL		fuchsia
Src 2	A	UR-002	UT-002		ALL		lime
Src 3	A	UR-003	UT-003		ALL		blue
Src 4	A	UR-004	UT-004		ALL		red
Src 5	A	UR-005	UT-005		ALL		purple

The first source station is named "Src 1". It has ports that are attached to the router named "A". The ports are named *L1:*, *L2:*, and *L3:* for convenience (since they match the first video, data return, and second video fiber names on Thinklogical fiber extenders), but the names are not important. Only the router name that precedes them and their order matter.

The port names require some explanation:

Thinklogical's VX160 and VX40 routers have boards that are labeled "Upstream" or "Downstream". The VX320 has two separate card cages in the same enclosure, "Up" and "Down". *(Please see the VX Router Manual for a view of the card cages and card designations.)*

The port names are very specific and unambiguously define a unique SFP and the Transmit "T" or Receive "R" port within that SFP. Ports in the "upstream" cards on VX160 and VX40 routers or the "up" card cage on the VX320 start with "U" and ports in the "downstream" cards (VX160, VX40) or "down" card cage (VX320) start with "D".

Cards in Thinklogical's other routers (VX80, VX320 Video, MX48, VX640, HDX80, and HDX576) do not have "upstream," "up," "downstream," or "down" designations. However, for consistency, the ports in those routers are always preceded by "U".

Our example of Src 1 on a VX80 has two ports. The first is port UR-001 and it is being used for video.

- "U" is because this port is on a VX80 (and they are all "U")
- "R" means this is receiving a signal from the TX extender (video in this case)
- 001 means this port is on the very first SFP in the card cage (bottom, left)

The second port on Src 1 is UT-001 and is for the data return channel (USB, serial, DDC, etc.)

- "U" is because this port is on a VX80 (and they are all "U").
- "T" means this is transmitting a signal to the TX extender (data in this case).
- 001 means this port is on the very first SFP in the card cage (bottom, left).

L3: is empty on these sources because we created a default set with single video and data return. If your sources have two heads, the second video will go in the *L3:* column.

The next two columns are labeled "Category". These allow the administrator to organize the sources and destinations so that they can be organized and viewed together or separated as appropriate. We will return to this topic later.

Scroll down to the lower half of the stations page to find the destinations.

Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:
Dst 1	A	UT-041	UR-041		ALL	
Dst 2	A	UT-042	UR-042		ALL	
Dst 3	A	UT-043	UR-043		ALL	
Dst 4	A	UT-044	UR-044		ALL	
Dst 5	A	UT-045	UR-045		ALL	

The default stations set up for single-headed KVM use half the SFPs as sources and half as destinations. Since there are eighty (80) SFPs, each with its own receiver and transmitter, there are eighty receiver ports and eighty transmitter ports. Every receiver port and every transmitter is completely independent. With the exception of the VX160, any receiver port can be connected to any transmitter port.

In Dst 3, the first port is UT-043 and it is being used for video.

- “U” is because this port is on a VX 80 (all “U”).
- “T” means this is transmitting a signal from the router to the extender (video in this case).
- 043 means this port is on SFP number 43.

Similarly, the second port is the same as the first, with the exception of the “R” replacing the “T,” since this port will receive the data return from the receiver extender.

Therefore, when told via a browser page to connect Src 1 to Dst 3, the router will

- Connect UR-001 to UT-043 (for the video).
- Connect UR-043 to UT-001 (for the data return).

At this point the two stations are considered connected.



NOTE: If the source and destination each have two heads, then the router will connect all the R ports from the source to all the T ports on the destination, and all the R ports on the destination to all the T ports on the source. Blank entries will be skipped. If a two-headed source is connected to a single-head destination, the first head of the source will be connected and the second will not. If a single-head source is connected to a double-head destination, the second head of the destination will be disconnected.

Adding New Ports

If your sources and destinations have more than two heads, additional port columns can be added. Right click on the existing *L3:* column header and select Append from the Column pop-up.

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		Column		fuchsia
Src 2	A	UR-002	UT-002		Append		lime
Src 3	A	UR-003	UT-003		Delete		blue
Src 4	A	UR-004	UT-004				red
Src 5	A	UR-005	UT-005		ALL		purple
Src 6	A	UR-006	UT-006		ALL		orange
Src 7	A	UR-007	UT-007		ALL		yellow
Src 8	A	UR-008	UT-008		ALL		green
Src 9	A	UR-009	UT-009		ALL		navy
Src 10	A	UR-010	UT-010		ALL		aqua
Src 11	A	UR-011	UT-011		ALL		fuchsia
Src 12	A	UR-012	UT-012		ALL		lime

A new *L3:* column appears. Left click on the new *L3:* header and select *L4:*

Source Name:	Router Name:	L1:	L2:	L3:	L3:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001			Station Labels		fuchsia
Src 2	A	UR-002	UT-002			Router Name:		lime
Src 3	A	UR-003	UT-003			L1:		blue
Src 4	A	UR-004	UT-004			L2:		red
Src 5	A	UR-005	UT-005			L3:		purple
Src 6	A	UR-006	UT-006			L4:		orange
Src 7	A	UR-007	UT-007			L5:		yellow
Src 8	A	UR-008	UT-008			Category:		green
Src 9	A	UR-009	UT-009			Color:		navy
Src 10	A	UR-010	UT-010			Viewable:		aqua
Src 11	A	UR-011	UT-011			Takeable:		fuchsia
Src 12	A	UR-012	UT-012					lime

The column will be renamed.

Import
Export
SAVE
Cancel

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL						

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL						

Source Name:	Router Name:	L1:	L2:	L3:	L4:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001			ALL		fuchsia
Src 2	A	UR-002	UT-002			ALL		lime
Src 3	A	UR-003	UT-003			ALL		blue

However, we don't need extra signals right now, so click the Cancel button (not **SAVE**).

At this point, we have a router and some stations defined, so X4 can make connections between sources and destinations. To see how this is done, proceed to the [CONNECT Page](#) in this manual.

Import/Export Station Configurations

Internally, all configurations for stations and routers are maintained in Comma Separated Value format, or **CSV** files. For complex installations, it is often easier to modify these stations and router configuration files using a spreadsheet program.

To save a local copy of the stations.csv file, select **ADMIN Stations** and click the “Export” button. A copy of the file will be downloaded through the browser’s normal file download function.



NOTE: In file names for stations, the name must start with “stations” and end with “.csv”. The part of the file name between “stations” and “.csv” is ignored, so the administrator can use the middle of the file name for any identifying information.

For example, the first time Windows downloads the “stations.csv” file into the download directory, it will be saved as “stations.csv”. Future downloads may be named “stations (2).csv”, etc. The administrator may decide to rename their saved “stations.csv” as “stations-phase-1.csv”, and X4 will still upload it and save it as “stations.csv” internally.

This allows the administrator to maintain multiple stations and routers files with their own names.

To upload the stations.csv file, select **ADMIN Stations** and click the “Import” button. The web browser will pop up a file browser window and let you select the file to be uploaded. Select it and the file browser will close. Now click the “UPLOAD” button and the file will be transmitted to the server.

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CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros **Stations** Routers Snapshots Tie Lines Log Help

Administration *Select from the tabbed choices above*

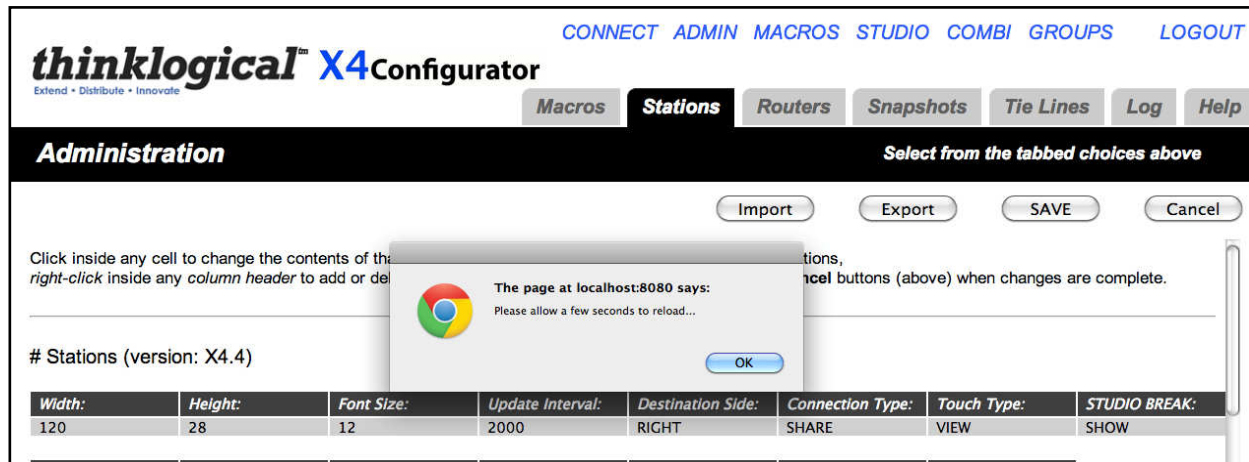
Choose File stationsAB.csv

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any *column header* to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	SHOW

After the upload starts, the web browser will pop up an alert “Please allow a few seconds to reload...”. Click the OK button and the page will reload.



Configuring via Spreadsheet

Configuring many stations using X4's **ADMIN: Stations** page can be slow. An alternative is to export the stations file (as described in **Import/Export Station Configurations**) and then make changes using a spreadsheet program like Excel or Open Office.



NOTE: It is important to save the file as CSV after editing and always keep an unedited backup.

#	Stations (version: X4.4)	Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIC BREAK:
1		120	28	12	2000	RIGHT	SHARE	VIEW	SHOW
2	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:		
3	ALL	1-5	1 3 5 7						
4	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:		
5	ALL	1-5	1 3 5 7						
6	Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:
7	Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7	user
8	Src 2	A	UR-002	UT-002		ALL	1-5	1 3 5 7	user
9	Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7	user
10	Src 4	A	UR-004	UT-004		ALL	1-5	1 3 5 7	user
11	Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7	user
12	Src 6	A	UR-006	UT-006		ALL			
13	Src 7	A	UR-007	UT-007		ALL			
14	Src 8	A	UR-008	UT-008		ALL			
15	Src 9	A	UR-009	UT-009		ALL			
16	Src 10	A	UR-010	UT-010		ALL			
17	Src B1	B	UR-021	UT-021		ALL			
18	Src B2	B	UR-022	UT-022		ALL			
19									
20	Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:
21	Dst 1	A	UT-041	UR-041		ALL	1-5	1 3 5 7	
22	Dst 2	A	UT-042	UR-042		ALL	1-5	1 3 5 7	
23	Dst 3	A	UT-043	UR-043		ALL	1-5	1 3 5 7	
24	Dst 4	A	UT-044	UR-044		ALL	1-5	1 3 5 7	
25	Dst 5	A	UT-045	UR-045		ALL	1-5	1 3 5 7	
26	Dst 6	A	UT-046	UR-046		ALL			
27	Dst 7	A	UT-047	UR-047		ALL			
28	Dst 8	A	UT-048	UR-048		ALL			
29	Dst 9	A	UT-049	UR-049		ALL			
30	Dst 10	A	UT-050	UR-050		ALL			
31	Dst B1	B	UT-041	UR-041		ALL			
32	Dst B2	B	UT-042	UR-042		ALL			

As shown, we have removed all the sources after “Src 10” and added three new ones that refer to router “B.” Don’t forget to insert a heading in the Category column so these new sources will be found.

The process is the same for destinations named “B1” and “B2.”

Save this file with a new name and upload it using the instructions in **Import/Export Station Configurations**. Once the **ADMIN: Stations** page reloads there will be a shorter page with some new sources and destinations on router B as well as the previous ones from router A.

CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

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Macros

Stations

Routers

Snapshots

Tie Lines

Log

Help

Administration

Select from the tabbed choices above

Import

Export

SAVE

Cancel

Click inside any cell to change the contents of that cell, right-click inside any cell to see additional row options, right-click inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	SHOW

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL	1-5	1 3 5 7				

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL	1-5	1 3 5 7				

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7	user	fuchsia
Src 2	A	UR-002	UT-002		ALL	1-5		user	lime
Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7	user	blue
Src 4	A	UR-004	UT-004		ALL	1-5		user	red
Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7		purple
Src 6	A	UR-006	UT-006		ALL				orange
Src 7	A	UR-007	UT-007		ALL		1 3 5 7		yellow
Src 8	A	UR-008	UT-008		ALL				green
Src 9	A	UR-009	UT-009		ALL				navy
Src 10	A	UR-010	UT-010		ALL				aqua
Src B1	B	UR-021	UT-021		ALL				red
Src B2	B	UR-022	UT-022		ALL				blue

Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:
Dst 1	A	UT-041	UR-041		ALL	1-5	1 3 5 7	
Dst 2	A	UT-042	UR-042		ALL	1-5		
Dst 3	A	UT-043	UR-043		ALL	1-5	1 3 5 7	
Dst 4	A	UT-044	UR-044		ALL	1-5		
Dst 5	A	UT-045	UR-045		ALL	1-5	1 3 5 7	user
Dst 6	A	UT-046	UR-046		ALL			user
Dst 7	A	UT-047	UR-047		ALL		1 3 5 7	user
Dst 8	A	UT-048	UR-048		ALL			
Dst 9	A	UT-049	UR-049		ALL			
Dst 10	A	UT-050	UR-050		ALL			
Dst B1	B	UT-041	UR-041		ALL			
Dst B2	B	UT-042	UR-042		ALL			

ADMIN: Tie Lines

“Tie lines” are fiber interconnects between routers that allow sources on one router to be seen at destinations on another.

Thinklogical’s implementation of tie lines can automatically allocate, utilize, and deallocate tie lines as necessary, even creating multi-hop connections utilizing intermediate routers when no direct paths are available.

Tie lines are created on the [ADMIN: Routers](#) page. First, we’ll need more than one router. Right click on the existing router description to activate the Row pop-up, and then select Append from the list to add a new row.

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CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros Stations **Routers** Snapshots Tie Lines Log Help

Administration Select from the tabbed choices above

Import Export SAVE Cancel

Click inside any cell to change the contents of that cell, right-click inside any cell to see additional row options, right-click inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Routers (version: X4.4)

Router Name:	Type:	IP Address:	Socket:	Enabled:	Default Stations:	Sync Format:	House Sync:	Sync Status:
A	Row	192.168.7.100	17567	yes	CREATE		card not installed	

ADD Tie Line Table

Enter the information for the second router as described in [ADMIN: Routers](#).

**Note: The IP addresses shown in this manual are not the defaults used in most installations. Please insert your own addresses where appropriate.*

Import Export **SAVE** Cancel

Click inside any cell to change the contents of that cell, right-click inside any cell to see additional row options, right-click inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Routers (version: X4.4)

Router Name:	Type:	IP Address:	Socket:	Enabled:	Default Stations:	Sync Format:	House Sync:	Sync Status:
A	VX 80	192.168.7.100	17567	yes	CREATE		card not installed	
B	VX 80	192.168.7.108	17567	yes	CREATE		card not installed	

ADD Tie Line Table

Click **SAVE** when done.

Next, create the Tie Line Table. This is done by clicking the “ADD Tie Line Table” button on the bottom left. When clicked, it will insert a headers and a single, blank row for the first tie line (and replaces the Add Tie Line Table button with a REMOVE Tie Line Table button).

Routers (version: X4.4)

Router Name:	Type:	IP Address:	Socket:	Enabled:	Default Stations:	Sync Format:	House Sync:	Sync Status:
A	VX 80	192.168.7.100	17567	yes	CREATE		card not installed	
B	VX 80	192.168.7.108	17567	yes	CREATE		card not installed	

Tie Line Name:	Start Router:	Start Port:	End Router:	End Port:	Duplex:	Automatic:
					yes	yes

REMOVE Tie Line Table

Add the values for the first tie line. The start port is where the signal will exit the start router and will be a Transmit. The end port is where the signal enters the end router and will be a Receive port. Duplex means there is a second fiber for the return channel, so since duplex is true in this case, it would be on router A at port UR-071 and router B at UT-061.

The easiest way to add new tie lines is to:

1. Right click on the first one and select Copy.
2. Right click on the first one again, select Append.
3. Right click on the new, blank line and select Paste.

The choice of each tie line name is up to the administrator. It is used to uniquely identify the tie line to the program and for diagnostics as we will see later. Make sure that the Duplex and Automatic columns are set to “yes”.

Import Export **SAVE** Cancel

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Routers (version: X4.4)

Router Name:	Type:	IP Address:	Socket:	Enabled:	Default Stations:	Sync Format:	House Sync:	Sync Status:
A	VX 80	192.168.7.100	17567	yes	CREATE		card not installed	
B	VX 80	192.168.7.108	17567	yes	CREATE		card not installed	

Tie Line Name:	Start Router:	Start Port:	End Router:	End Port:	Duplex:	Automatic:
AB-1	A	UT-071	B	UR-061	yes	yes
AB-2	A	UT-072	B	UR-062	yes	yes
AB-3	A	UT-073	B	UR-063	yes	yes
BA-1	B	UT-064	A	UR-074	yes	yes

REMOVE Tie Line Table

In this case, we have created three duplex paths from A to B and one from B to A. Click **SAVE** when done.

Next, we need to create stations on both routers. If you are using one of the default files created automatically by X4, it probably has many more stations than are needed. Use the ADMIN Stations Export function to save a copy of stations.csv, and edit it using a spreadsheet program like Excel or Open Office.

(The chapters on **Import/Export Station Configuration** and **Configuring via Spreadsheet**, show how to create additional source and destination stations on the second router. The rest of this chapter uses the stations created from those chapters.)

Using and Monitoring Tie Lines

In the chapters and , we modified our stations file. It now looks like this, with sources and destinations from both routers A and B.

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Macros Stations Routers Snapshots Tie Lines Log Help

Administration Select from the tabbed choices above

Import Export SAVE Cancel

Click inside any cell to change the contents of that cell, right-click inside any cell to see additional row options, right-click inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	SHOW

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL	1-5	1 3 5 7				

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL	1-5	1 3 5 7				

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7	user	fuchsia
Src 2	A	UR-002	UT-002		ALL	1-5		user	lime
Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7	user	blue
Src 4	A	UR-004	UT-004		ALL	1-5		user	red
Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7		purple
Src 6	A	UR-006	UT-006		ALL				orange
Src 7	A	UR-007	UT-007		ALL		1 3 5 7		yellow
Src 8	A	UR-008	UT-008		ALL				green
Src 9	A	UR-009	UT-009		ALL				navy
Src 10	A	UR-010	UT-010		ALL				aqua
Src B1	B	UR-021	UT-021		ALL				red
Src B2	B	UR-022	UT-022		ALL				blue

Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:
Dst 1	A	UR-041	UR-041		ALL	1-5	1 3 5 7	
Dst 2	A	UT-042	UR-042		ALL	1-5		
Dst 3	A	UT-043	UR-043		ALL	1-5	1 3 5 7	
Dst 4	A	UT-044	UR-044		ALL	1-5		
Dst 5	A	UR-045	UR-045		ALL	1-5	1 3 5 7	user
Dst 6	A	UT-046	UR-046		ALL			user
Dst 7	A	UT-047	UR-047		ALL		1 3 5 7	user
Dst 8	A	UT-048	UR-048		ALL			
Dst 9	A	UT-049	UR-049		ALL			
Dst 10	A	UT-050	UR-050		ALL			
Dst B1	B	UT-041	UR-041		ALL			
Dst B2	B	UT-042	UR-042		ALL			

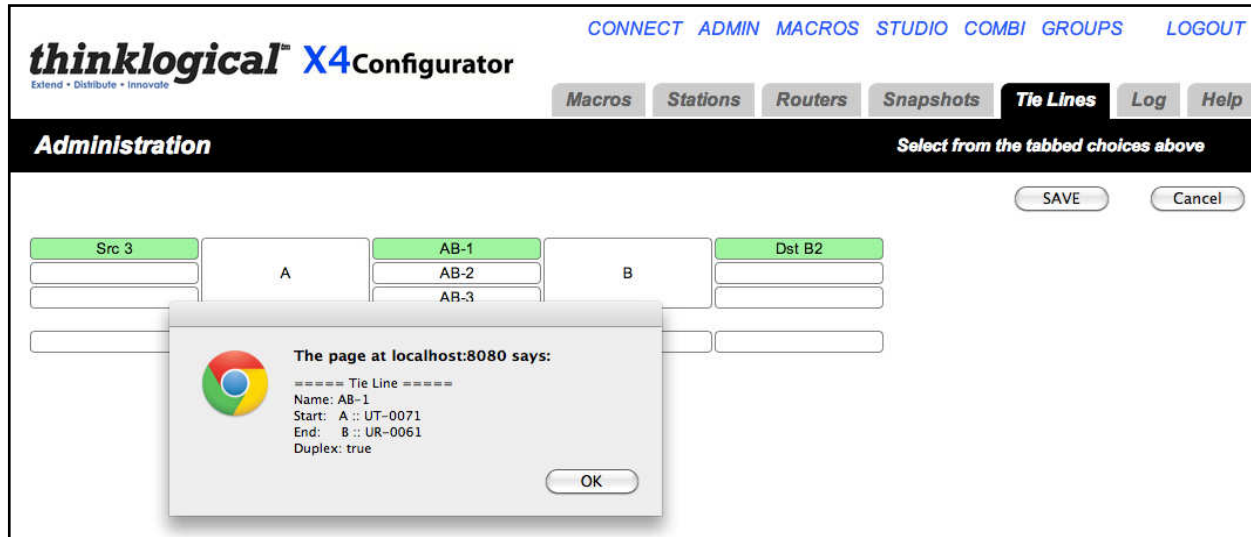
Select **CONNECT** from the links across the top. There will be two new sources and two new destinations.

Select one of the older sources from router A and then a destination on router B. For this example we'll use Src 3 and destination Dst B2.

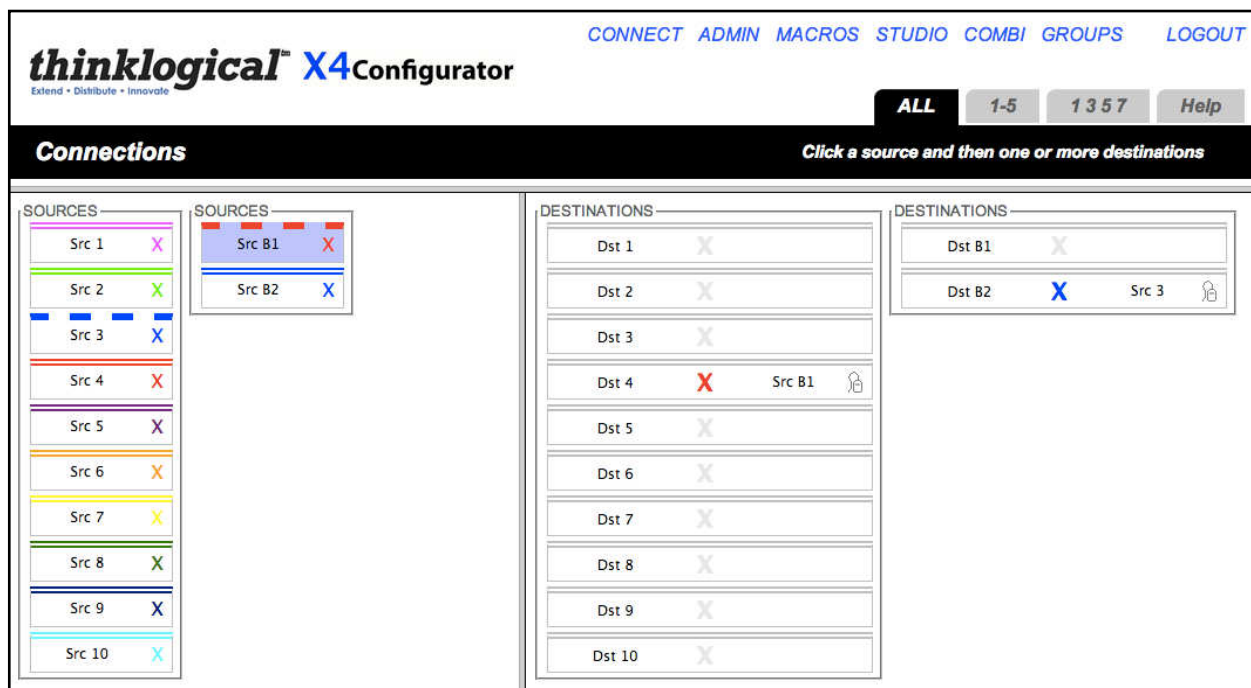
Note that there is no obvious indication that the connection required tie lines. But if you select the [ADMIN](#) link and the **Tie Lines** tab, you will see the tie line in action.

This page shows that the source, “Src 3”, is entering router “A” and output through the tie line named AB-1 to enter router “B” and finally being sent to destination “Dst B2”.

Clicking directly on the tie line icon for AB-1 will pop up some brief information about that tie line.



As you can see from this graphical representation and from the earlier tie line table on the [ADMIN: Routers](#) page, we have three tie lines leading from A to B and only one from B to A. To see what happens when the tie lines become “oversubscribed,” go back to the [CONNECT](#) page and connect a source on B to a destination on A.

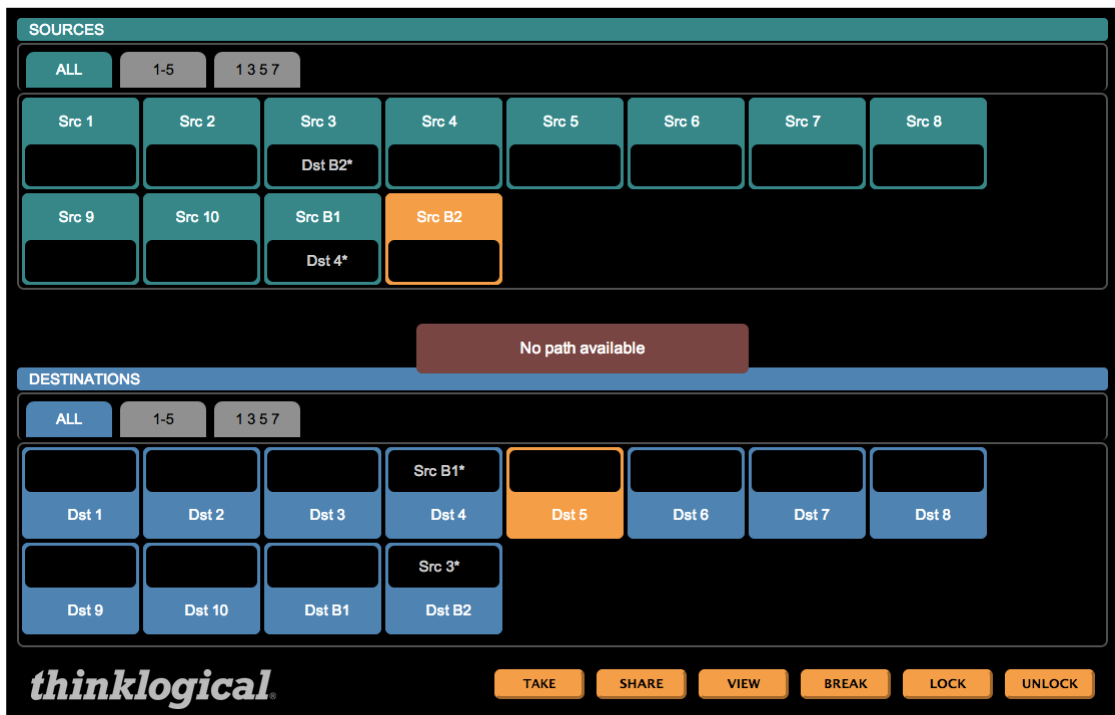


Return to [ADMIN: Tie Lines](#).

Note that only the tie line from B to A is in use. Now return to the [CONNECT](#) page (for which you probably have kept a browser tab open) and connect another B source to another A destination.

The red message “No path available” will appear for a few seconds and then disappear whenever there are not enough tie lines to complete the desired connection.

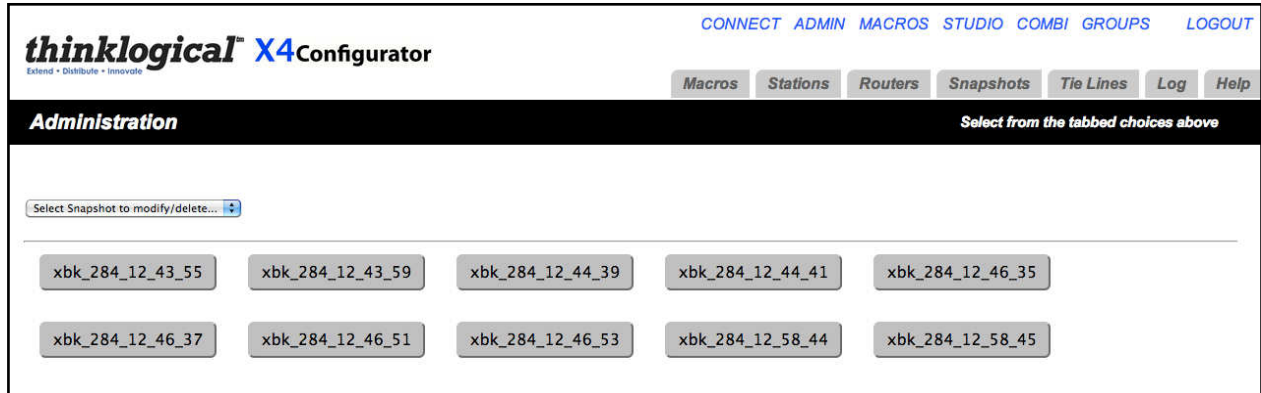
Here is how the same condition looks on the *STUDIO* and *COMBI* screens.



ADMIN: Snapshots

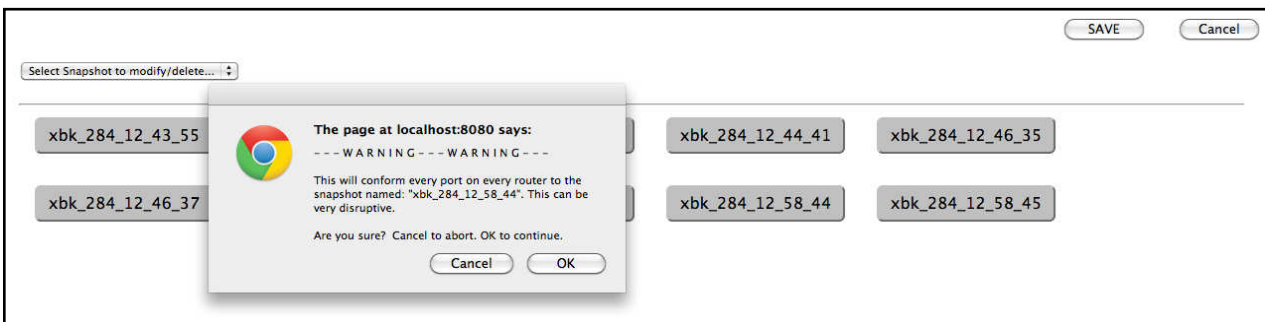
A “Snapshot” is a complete record of all the active connections on all the routers at the time it was recorded. It is a simple way to return all the connections to a previous state.

Snapshots are created and recalled from the [ADMIN](#) page **Snapshots** tab.



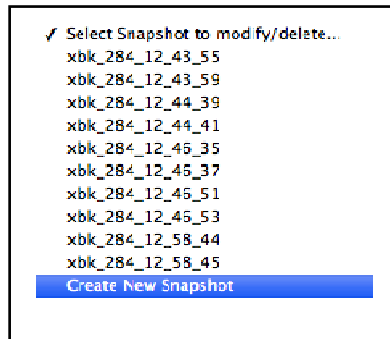
The buttons that begin with xbk_ are created automatically during an operation and are the results of the last ten actions (connects or disconnects). The names always begin with “xbk_” followed by the day of the year, hour, minute and second. To go back to a previous time, click the button for that time.

A confirmation dialog will appear with one last chance to cancel.

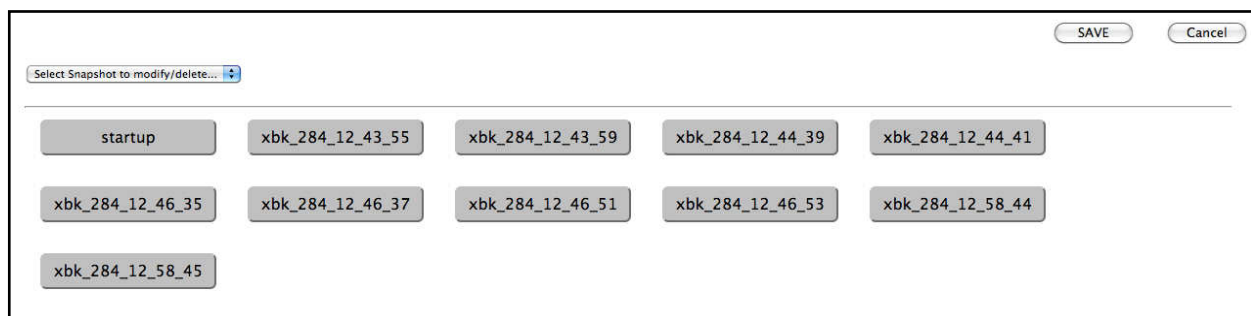
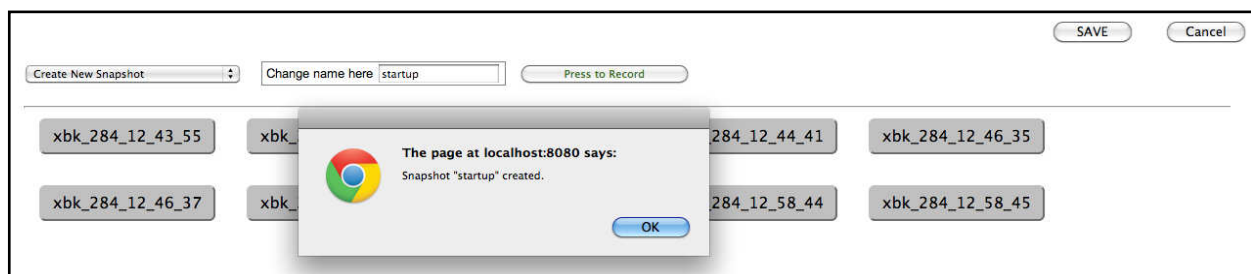


Click OK and the action is performed.

To create a new snapshot with your own title, either select the most recent automatic snapshot from the drop-down list and give it your own name or pull down to the last option and select “Create New Snapshot”.



To give it a new name, click the “Press to Record” button and the new snapshot is created.



NOTE: There is one last important point to remember about snapshots:

When a snapshot is executed, each router will first disconnect every port and then proceed to reconnect only the ports that were connected when the snapshot was recorded. This means that every screen will first go dark and then be reconnected the way the snapshot recorded it.

ADMIN: Log

A log file is kept of all user and system maintenance activities. To see it, go to the [ADMIN](#) page and the **Log** tab.

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CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros Stations Routers Snapshots Tie Lines **Log** Help

Administration Select from the tabbed choices above

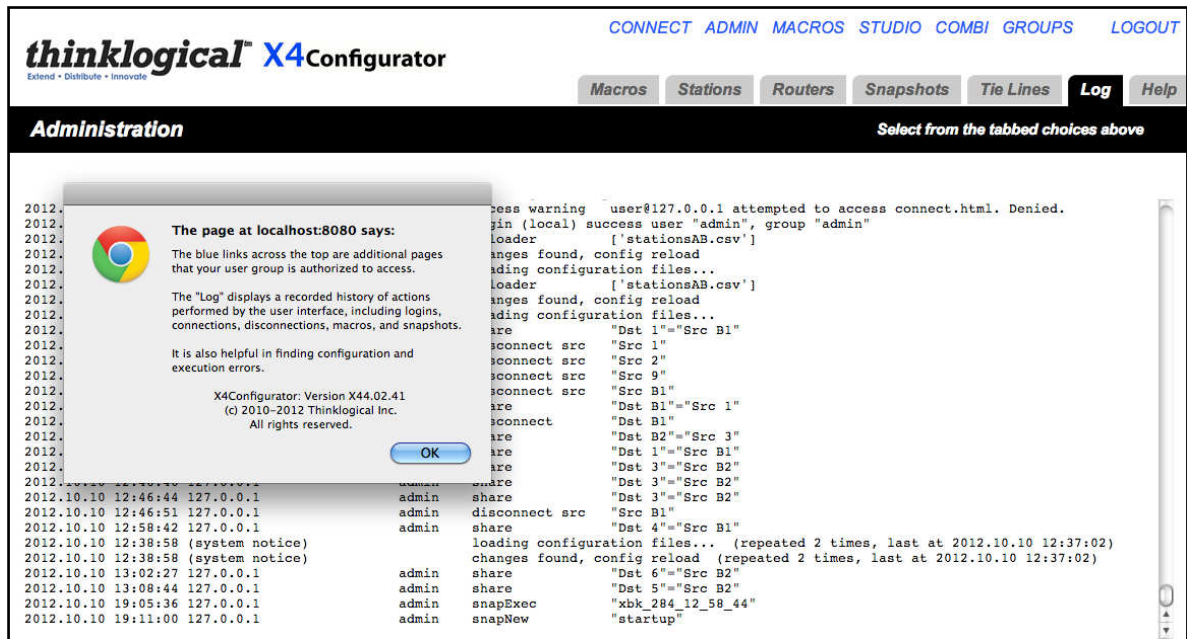
```

2012.10.10 11:24:04 (system notice)
2012.10.10 11:24:11 127.0.0.1 user access warning user@127.0.0.1 attempted to access connect.html. Denied.
2012.10.10 12:37:01 127.0.0.1 admin login (local) success user "admin", group "admin"
2012.10.10 12:37:02 (system notice) admin uploader ['stationsAB.csv']
2012.10.10 12:37:02 (system notice) changes found, config reload
2012.10.10 12:38:58 127.0.0.1 admin loading configuration files...
2012.10.10 12:38:58 (system notice) admin uploader ['stationsAB.csv']
2012.10.10 12:38:58 (system notice) changes found, config reload
2012.10.10 12:40:17 127.0.0.1 admin loading configuration files...
2012.10.10 12:43:46 127.0.0.1 admin share "Dst 1"="Src B1"
2012.10.10 12:43:46 127.0.0.1 admin disconnect src "Src 1"
2012.10.10 12:43:48 127.0.0.1 admin disconnect src "Src 2"
2012.10.10 12:43:49 127.0.0.1 admin disconnect src "Src 9"
2012.10.10 12:43:54 127.0.0.1 admin disconnect src "Src B1"
2012.10.10 12:43:56 127.0.0.1 admin share "Dst B1"="Src 1"
2012.10.10 12:44:37 127.0.0.1 admin disconnect "Dst B1"
2012.10.10 12:46:36 127.0.0.1 admin share "Dst B2"="Src 3"
2012.10.10 12:46:40 127.0.0.1 admin share "Dst 1"="Src B1"
2012.10.10 12:46:44 127.0.0.1 admin share "Dst 3"="Src B2"
2012.10.10 12:46:51 127.0.0.1 admin share "Dst 3"="Src B2"
2012.10.10 12:58:42 127.0.0.1 admin share "Dst 3"="Src B2"
2012.10.10 12:58:42 127.0.0.1 admin disconnect src "Src B1"
2012.10.10 12:58:42 127.0.0.1 admin share "Dst 4"="Src B1"
2012.10.10 12:38:58 (system notice) loading configuration files... (repeated 2 times, last at 2012.10.10 12:37:02)
2012.10.10 12:38:58 (system notice) changes found, config reload (repeated 2 times, last at 2012.10.10 12:37:02)
2012.10.10 13:02:27 127.0.0.1 admin share "Dst 6"="Src B2"
2012.10.10 13:08:44 127.0.0.1 admin share "Dst 5"="Src B2"
2012.10.10 19:05:36 127.0.0.1 admin snapExec "xbk_284_12_58_44"
2012.10.10 19:11:00 127.0.0.1 admin snapNew "startup"

```


ADMIN: Help

The final tab is context sensitive “Help.” A short help pop-up is available for every tab on the [ADMIN](#) page and also on the [CONNECT](#) page.

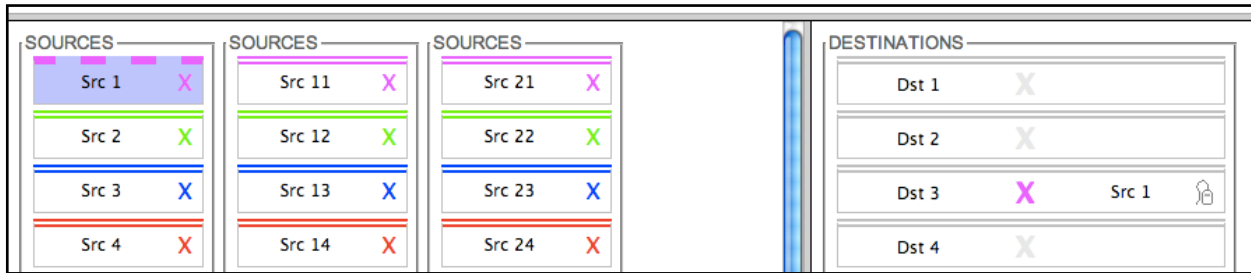


CONNECT Page

Click the [CONNECT](#) link at the top of the page.

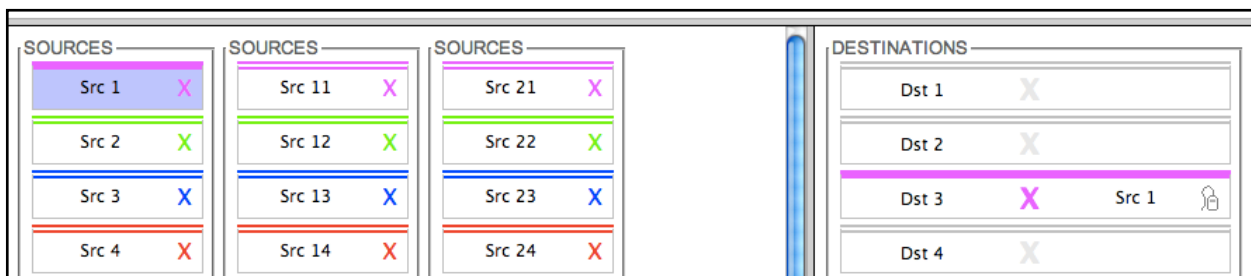
Sources are on the left, destinations on the right. Click Src 1 and it will highlight in light blue.

Now that Src 1 is selected, click Dst 3.



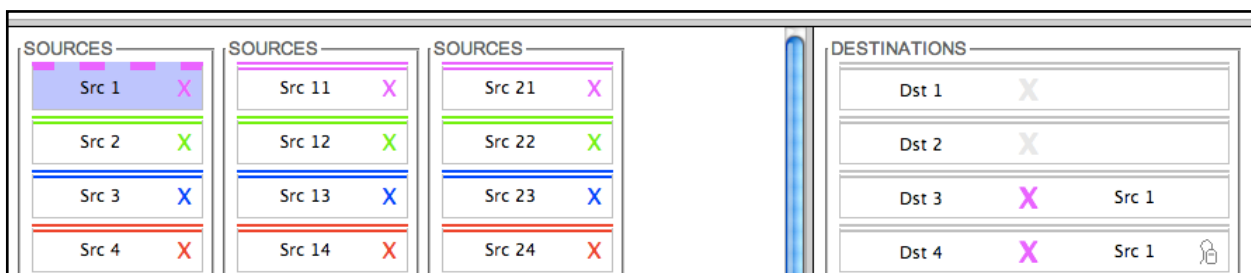
Now Dst 3 shows that Src 1 is driving it. The disconnect X in the center takes on the color of the source's top border and the name "Src 1" appears on the right side of the destination. The small mouse icon indicates that the data return from Dst 3 is driving Src 1.

On the left side, the rectangle for Src 1 gets a dashed, upper border to show that it is in use.



By mousing over Src 1 or Dst 3, the dashed border on the source will turn solid and all destinations being driven by it will have their top, gray borders become thicker and turn the color of the source that's driving them.

By default, when additional destinations are connected to a previously connected source, they will all **SHARE** the video from the source, but only the last one connected will have control of the mouse (as shown by the icon). **SHARE** will be explained below.



Here we have clicked Dst 4, which will now show the same, Src 1 video as Dst 3. But as the mouse icon shows, only the last destination clicked, Dst 4, is driving the data return back to the source.

Clicking a destination's colored X will disconnect that destination and clicking the X at the right side of the *source* will disconnect **all** the destinations connected to that source.

As stated above, when new destinations are connected to an already connected source, they will all SHARE the video and only one will have the data return. But SHARE is only one of three connection modes:

- **SHARE**: multiple video connections, last connection has data return
- **TAKE**: each newly connected destination removes the video from all previous destinations and the new destination also has the data return
- **VIEW**: each newly connected destination can view the video but will not take the data return.

To change the connection mode, return to **ADMIN: Stations**.

thinklogical X4Configurator

CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros **Stations** Routers Snapshots Tie Lines Log Help

Administration Select from the tabbed choices above

Import Export SAVE Cancel

Click inside any cell to change the contents of that cell, right-click inside any cell to see additional row options, right-click inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL						

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL						

Click SHARE under *Connection Type*: in the first table.

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL						

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL						

Mouse over and select TAKE.

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL						

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL						

If you next click the **SAVE** button, the **CONNECT** page will be in TAKE mode until you change it again. For now, leave it in SHARE mode.

While on the **ADMIN: Stations** page, examine the second and third tables that start with “Source Category” and “Destination Category.” By default these rows will only have one entry: ALL.

Station Categories

Return to the [CONNECT](#) page.

There are two tabs on this page: **ALL** and **Help**. If you want to break up the stations into smaller collections, go back to the [page](#).

Here is added a new entry to both the source and destination categories, “**1-5**”. Click **SAVE** and return to the [CONNECT](#) page.

Click on the new tab **1-5** next to **ALL**.

The tab is selected, but there are no sources or destinations.

Go back to the [ADMIN: Stations](#) page:

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE
Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	
ALL	1-5						
Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	
ALL	1-5						
Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	fuchsia
Src 2	A	UR-002	UT-002		ALL	1-5	lime
Src 3	A	UR-003	UT-003		ALL	1-5	blue
Src 4	A	UR-004	UT-004		ALL	1-5	red
Src 5	A	UR-005	UT-005		ALL	1-5	purple
Src 6	A	UR-006	UT-006		ALL		orange

Add “1-5” to the second Category column for the first five sources. Then scroll down to the destinations.

Src 40	A	UR-040	UT-040		ALL		aqua
Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	
Dst 1	A	UT-041	UR-041		ALL	1-5	
Dst 2	A	UT-042	UR-042		ALL	1-5	
Dst 3	A	UT-043	UR-043		ALL	1-5	
Dst 4	A	UT-044	UR-044		ALL	1-5	
Dst 5	A	UT-045	UR-045		ALL	1-5	
Dst 6	A	UT-046	UR-046		ALL		
Dst 7	A	UT-047	UR-047		ALL		
Dst 8	A	UT-048	UR-048		ALL		

Add “1-5” to the second Category column for the first five destinations. Then be sure to click the **SAVE** button.

Go back to the **CONNECT** page and click the **1-5** tab.

Now clicking the **1-5** tab shows the sources and destinations included in that category. Stations can belong to multiple categories. To add a new category, return to **ADMIN Stations**.

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE
Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	
ALL	1-5						
Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	
ALL	1-5						
Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	fuchsia
Src 2	A	UR-002	UT-002		ALL	1-5	lime
Src 3	A	UR-003	UT-003		ALL	1-5	blue
Src 4	A	UR-004	UT-004		ALL	1-5	red
Src 5	A	UR-005	UT-005		ALL	1-5	purple
Src 6	A	UR-006	UT-006		ALL		orange

There are currently only two Category columns. To add a new one, right click on the top of the last Category (where it says *Category*:).

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE
Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	
ALL	1-5						
Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	
ALL	1-5						
Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	
Src 2	A	UR-002	UT-002		ALL	1-5	
Src 3	A	UR-003	UT-003		ALL	1-5	
Src 4	A	UR-004	UT-004		ALL	1-5	red
Src 5	A	UR-005	UT-005		ALL	1-5	purple
Src 6	A	UR-006	UT-006		ALL		orange

A pop-up window will appear. Select Append.

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:	
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE	
Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:		
ALL	1-5	1 3 5 7						
Destination Catego	Destination Catego	Destination Catego	Destination Catego	Destination Catego	Destination Catego	Destination Catego		
ALL	1-5	1 3 5 7						
Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7	fuchsia
Src 2	A	UR-002	UT-002		ALL	1-5		lime
Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7	blue
Src 4	A	UR-004	UT-004		ALL	1-5		red
Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7	purple
Src 6	A	UR-006	UT-006		ALL			orange
Src 7	A	UR-007	UT-007		ALL		1 3 5 7	yellow
Src 8	A	UR-008	UT-008		ALL			green
Src 9	A	UR-009	UT-009		ALL			navy

There now are three Category columns. Add “1 3 5 7” to some source rows. Next, add it to the Source Category and Destination Category tables (above). Then scroll down to the destinations

Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:
Dst 1	A	UT-041	UR-041		ALL	1-5	
Dst 2	A	UT-042	UR-042		ALL	1-5	
Dst 3	A	UT-043	UR-043		ALL	1-5	
Dst 4	A	UT-044	UR-044		ALL	1-5	
Dst 5	A	UT-045	UR-045		ALL	1-5	
Dst 6	A	UT-046	UR-046		ALL		
Dst 7	A	UT-047	UR-047		ALL		
Dst 8	A	UT-048	UR-048		ALL		
Dst 9	A	UT-049	UR-049		ALL		

Right click the last Category header, select Append and add the new Category. Now add the new category to some sources as shown below.

Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:
Dst 1	A	UT-041	UR-041		ALL	1-5	1 3 5 7
Dst 2	A	UT-042	UR-042		ALL	1-5	
Dst 3	A	UT-043	UR-043		ALL	1-5	1 3 5 7
Dst 4	A	UT-044	UR-044		ALL	1-5	
Dst 5	A	UT-045	UR-045		ALL	1-5	1 3 5 7
Dst 6	A	UT-046	UR-046		ALL		
Dst 7	A	UT-047	UR-047		ALL		1 3 5 7
Dst 8	A	UT-048	UR-048		ALL		
Dst 9	A	UT-049	UR-049		ALL		

Go back to the **CONNECT** page to see the results.

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CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

ALL 1-5 **1 3 5 7** Help

Connections

Click a source and then one or more destinations

SOURCES

Src 1 X

Src 3 X

Src 5 X

Src 7 X

DESTINATIONS

Dst 1 X

Dst 3 X Src 1

Dst 5 X

Dst 7 X

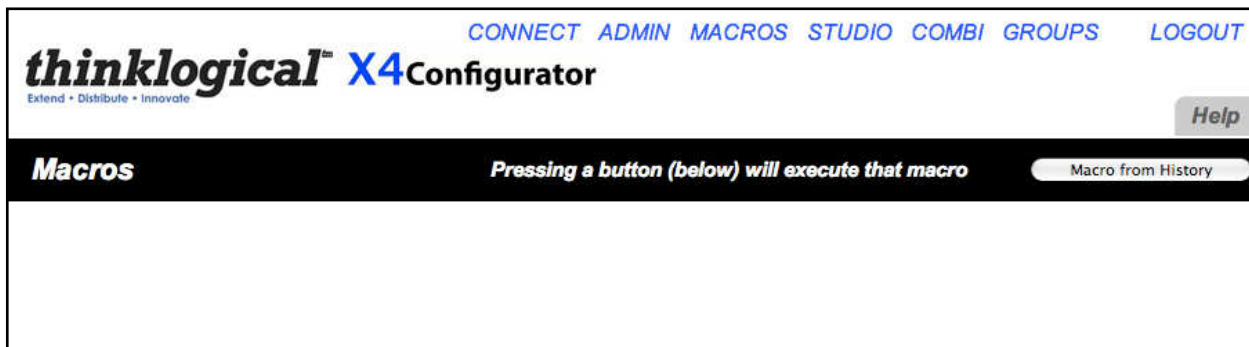
MACROS Page

A macro is a sequence of operations that the user can create, save, and recall to repeat steps that will be executed frequently. They can be restricted to specific user groups or made available to all groups.

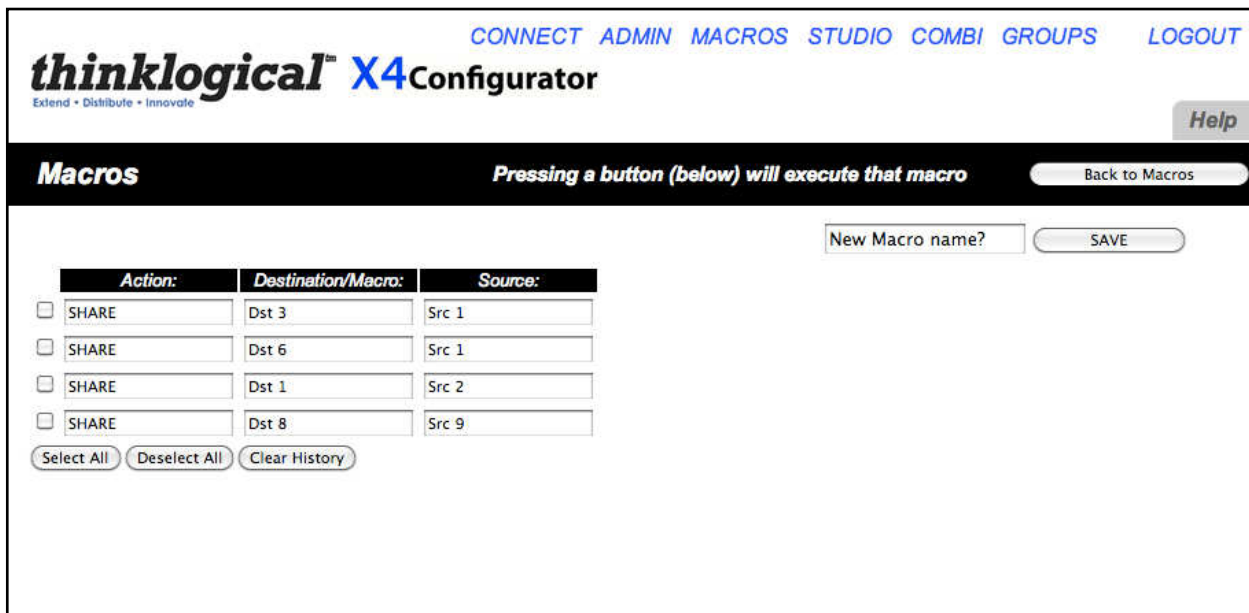
The easiest way to create a macro is to perform the desired steps and then let the **MACROS** page tell you what you've done and how to save it.

Use the **CONNECT**, **STUDIO**, or **COMBI** pages to make and/or break some connections and then select the **MACROS** link from the top of the page.

Initially, this page is blank since no macros have been created yet.



Click the “Macro from History” button on the right side of the black bar.



The page now shows the most recent connect and disconnect operations that have been performed at this location by this user. Check the rows that should be part of a macro (in this case by using the “Select All” button) and enter a new name for the macro in the “New Macro Name?” field.

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Help

Macros Pressing a button (below) will execute that macro Back to Macros

mac 1 SAVE

	Action:	Destination/Macro:	Source:
<input checked="" type="checkbox"/>	SHARE	Dst 3	Src 1
<input checked="" type="checkbox"/>	SHARE	Dst 6	Src 1
<input checked="" type="checkbox"/>	SHARE	Dst 1	Src 2
<input checked="" type="checkbox"/>	SHARE	Dst 8	Src 9

Select All Deselect All Clear History

Next click the “SAVE” button and wait for the update. After a few seconds, the new macro will appear in its own box on the [MACROS](#) page.

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Help

Macros Pressing a button (below) will execute that macro Macro from History

mac 1

Clicking this button will execute the macro immediately.

Macros can also include other macros. Click the “mac 1” button, go to the [CONNECT](#) page and add one more connection.

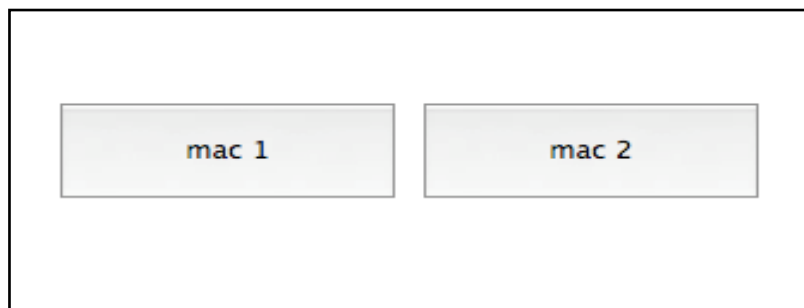
Now return to the **MACROS** page and click “Macro from History”.

The screenshot shows the MACROS page interface. At the top right, there is a text input field labeled "New Macro name?" and a "SAVE" button. Below this is a table with three columns: "Action:", "Destination/Macro:", and "Source:". The table contains six rows of data, each with a checkbox in the "Action:" column. The rows are:

Action:	Destination/Macro:	Source:
<input type="checkbox"/> SHARE	Dst 3	Src 1
<input type="checkbox"/> SHARE	Dst 6	Src 1
<input type="checkbox"/> SHARE	Dst 1	Src 2
<input type="checkbox"/> SHARE	Dst 8	Src 9
<input type="checkbox"/> MACRO	mac 1	
<input type="checkbox"/> SHARE	Dst 11	Src 4

Below the table are three buttons: "Select All", "Deselect All", and "Clear History".

Select the last two steps. Give this new macro a name and click SAVE.



“mac 2” will first execute “mac 1” and then perform any additional steps.

Macros are also available on the **STUDIO** page where they are called “Sequences”.

The screenshot shows the STUDIO page interface. It features several panels:

- Destination Categories (page 1 of 1)**: Includes buttons for "All", "1-5", and "1 3 5 7".
- Destination Entries (page 1 of 2)**: A grid of buttons labeled "Src 2", "Dst 1", "Dst 4", "Dst 7", "Src 1", "Dst 2", "Dst 5", "Dst 8", "Src 1", "Dst 3", "Dst 6", "Dst 9", "Src 9".
- Source Categories (page 1 of 1)**: Includes buttons for "All", "1-5", and "1 3 5 7".
- Source Entries (page 1 of 1)**: A grid of buttons labeled "Src 1", "Src 2", "Src 3", "Src 4", "Src 5", "Src 6", "Src 7", "Src 8", "Src 9", "Src 10", "Src B1", "Src B2".
- Sequences**: A section with buttons for "mac 1" and "mac 2".
- Actions**: A row of buttons including "DESTINATION: Dst 4", "TAKE", "LOCK", "UNLOCK", "BREAK", "(VIEW)", "SHARE", and "LOG IN".

The "thinklogical" logo is visible in the bottom right corner of the interface.

To execute a macro or “sequence” on the **STUDIO** page, select it and it will highlight. Then click the TAKE button to execute it.

The **STUDIO** page has another feature involving sequences: right click on one and it will display the actions that will be performed.



Left click on the sequence's description to close it.

Creating/Editing/Deleting Macros

Go to the [ADMIN](#) page and select **Macros** from among the tabs. Select “mac 1” from the “First Select Macro” drop down on the left side of the page.

Group:	Group:	Group:	Group:	Group:	Group:	Group:	Group:
undefined							

Action:	Destination:	Source:
SHARE	Dst 3	Src 1
SHARE	Dst 6	Src 1
SHARE	Dst 1	Src 2
SHARE	Dst 8	Src 9

From this page the macro can be renamed, modified, or deleted.

To add a step, right click on the row either above or below the desired point in the sequence. In this example we have chosen to insert a step before the last step.

# Groups that can see this macro							
Group:	Group:	Group:	Group:	Group:	Group:	Group:	Group:
undefined							
Action:	Destination:	Source:					
SHARE	Dst 3	Src 1					
SHARE	Dst 6	Src 1					
SHARE	Dst 1	Src 2					
SHARE	Dst 8	Src 9					

# Groups that can see this macro							
Group:	Group:	Group:	Group:	Group:	Group:	Group:	Group:
undefined							
Action:	Destination:	Source:					
SHARE	Dst 3	Src 1					
SHARE	Dst 6	Src 1					
SHARE	Dst 1	Src 2					
SHARE		Src 9					

✖ Row
Insert
Append
Delete
Copy
Paste

Left click on the empty field below Action and you will be given a choice of Actions.

# Groups that can see this macro							
Group:	Group:	Group:	Group:	Group:	Group:	Group:	Group:
undefined							
Action:	Destination:	Source:					
SHARE	Dst 3	Src 1					
SHARE	Dst 6	Src 1					
SHARE	Dst 1	Src 2					
SHARE		Src 9					

✖ Action
TAKE
SHARE
VIEW
DISCONNECT
MACRO

Select VIEW and then click on the empty field below Destination to call up the pop-up of destinations.

# Groups that can see this macro							
Group:	Group:	Group:	Group:	Group:	Group:	Group:	Group:
undefined							

Action:	Destination:	Source:
SHARE	Dst 3	Src 1
SHARE	Dst 6	Src 1
SHARE	Dst 1	Src 2
VIEW		
SHARE	Dst 8	

Destination

Dst 1	Dst 2	Dst 3
Dst 4	Dst 5	Dst 6
Dst 7	Dst 8	Dst 9
Dst 10	Dst 11	Dst 12
Dst 13	Dst 14	Dst 15
Dst 16	Dst 17	Dst 18
Dst 19	Dst 20	Dst 21
Dst 22	Dst 23	Dst 24

And finally, do the same for the source.

# Groups that can see this macro							
Group:	Group:	Group:	Group:	Group:	Group:	Group:	Group:
undefined							

Action:	Destination:	Source:
SHARE	Dst 3	Src 1
SHARE	Dst 6	Src 1
SHARE	Dst 1	Src 2
VIEW	Dst 2	
SHARE	Dst 8	Src 9

Source

Src 1	Src 2	Src 3
Src 4	Src 5	Src 6
Src 7	Src 8	Src 9
Src 10	Src 11	Src 12
Src 13	Src 14	Src 15
Src 16	Src 17	Src 18
Src 19	Src 20	Src 21
Src 22	Src 23	Src 24

If the name is to be changed, it will be done in the field to the right of “New Name? (or leave unchanged)”

Administration

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see *right-click* inside any *column header* to add or delete columns (if appropriate), and press

mac 1

New Name? (or leave unchanged)

mac 1

Finally, there is a row of Group headings that decide which users can see and execute this macro. The admin group can see all of them, but if other groups need to see them, they must all be listed. For this example we've changed "undefined" to "user" so user can see it.

# Groups that can see this macro							
Group:	Group:	Group:	Group:	Group:	Group:	Group:	Group:
user							
Action:	Destination:	Source:					
SHARE	Dst 3	Src 1					
SHARE	Dst 6	Src 1					
SHARE	Dst 1	Src 2					
VIEW	Dst 2	Src 1					
SHARE	Dst 8	Src 9					

Click **SAVE** when all changes are complete.

STUDIO Page

Destination Categories (page 1 of 1)

ALL 1-5 1 3 5 7

Source Categories (page 1 of 1)

ALL 1-5 1 3 5 7

Destination Entries (page 1 of 4)

Dst 1 Dst 2 Dst 3 Dst 4 Dst 5 Dst 6 Dst 7 Dst 8 Dst 9 Dst 10 Dst 11 Dst 12

Source Entries (page 1 of 2)

Src 1 Src 2 Src 3 Src 4 Src 5 Src 6 Src 7 Src 8 Src 9 Src 10 Src 11 Src 12 Src 13 Src 14 Src 15 Src 16 Src 17 Src 18 Src 19 Src 20 Src 21

Dst Pages Src Pages

Sequences

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Actions

DESTINATION: TAKE LOCK UNLOCK (VIEW) SHARE LOG IN

On the **STUDIO** page, the sources and destinations are reversed from the default **CONNECT** page. Here, sources are on the right and destinations on the left. Notice that the categories already created appear at the top of the page, but that the destination category and source category can be selected independently, as shown below.

Destination Categories (page 1 of 1)

ALL 1-5 1 3 5 7

Source Categories (page 1 of 1)

ALL 1-5 1 3 5 7

Destination Entries (page 1 of 1)

Dst 1 Dst 3 Dst 5 Dst 7

Source Entries (page 1 of 1)

Src 1 Src 2 Src 3 Src 4 Src 5

Dst Pages Src Pages

Sequences

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Actions

DESTINATION: TAKE LOCK UNLOCK (VIEW) SHARE LOG IN

To perform operations on this page, click the ALL button for both Source and Destination categories (top left and right) to show all the stations. To make a connection, select a destination and a source (in either order) and then select from the connection types along the bottom (TAKE, (VIEW), SHARE).

The screenshot displays the thinklogical X4 Configurator interface. It is divided into several sections:

- Destination Categories (page 1 of 1):** Contains buttons for 'All', '1-5', and '1 3 5 7'.
- Source Categories (page 1 of 1):** Contains buttons for 'All', '1-5', and '1 3 5 7'.
- Destination Entries (page 1 of 4):** A grid of 12 buttons labeled Dst 1 through Dst 12. Dst 6 is highlighted in blue.
- Source Entries (page 1 of 2):** A grid of 21 buttons labeled Src 1 through Src 21. Src 4 is highlighted in blue.
- Navigation:** Between the entry grids are 'Dst Pages' and 'Src Pages' sections with navigation buttons like '<|<', '<', '>', and '>|'.
- Sequences:** A section at the bottom of the main area, currently empty.
- Actions:** A bar at the very bottom with a 'DESTINATION:' label showing 'Dst 6', and buttons for 'TAKE' (blue), 'LOCK' (red), 'UNLOCK' (blue), '(VIEW)' (green), 'SHARE' (green), and 'LOG IN' (blue).

The thinklogical logo is visible in the bottom right corner of the main interface area.

Here is selected Dst 6 and Src 4. Notice that Dst 6 appears in a window at the bottom left before we've performed any action to make sure we're affecting the correct destination.

Click the TAKE button (blue, bottom, next to the DESTINATION window) and the connection is made.

The screenshot shows the thinklogical interface with the following state:

- Destination Categories (page 1 of 1):** Buttons for ALL, 1-5, and 1 3 5 7.
- Destination Entries (page 1 of 4):** A 4x3 grid of buttons labeled Dst 1 through Dst 12. Dst 6 is highlighted in blue.
- Source Categories (page 1 of 1):** Buttons for ALL, 1-5, and 1 3 5 7.
- Source Entries (page 1 of 2):** A 6x3 grid of buttons labeled Src 1 through Src 21. Src 4 is highlighted in blue.
- Actions:** Buttons for DESTINATION: Dst 6, TAKE (blue), LOCK, UNLOCK, (VIEW), SHARE, and LOG IN.

As mentioned earlier, the TAKE type connection performs differently than the SHARE and (VIEW). Leave Src 4 selected, select destination Dst 5 and click TAKE.

Now Dst 5 has Src 4 and the space above Dst 6 is blank, which signifies no connection.

The screenshot shows the thinklogical interface after the TAKE action:

- Destination Categories (page 1 of 1):** Buttons for ALL, 1-5, and 1 3 5 7.
- Destination Entries (page 1 of 4):** A 4x3 grid of buttons labeled Dst 1 through Dst 12. Dst 5 is highlighted in blue.
- Source Categories (page 1 of 1):** Buttons for ALL, 1-5, and 1 3 5 7.
- Source Entries (page 1 of 2):** A 6x3 grid of buttons labeled Src 1 through Src 21. Src 4 is highlighted in blue.
- Actions:** Buttons for DESTINATION: Dst 5, TAKE (blue), LOCK, UNLOCK, (VIEW), SHARE, and LOG IN.

By default, there is no way to disconnect stations on the **STUDIO** page.

If necessary or desirable, there is a way to add one. Using the browser's back key, go to the **ADMIN Stations** page. In the first table on the page, click the field below the **STUDIO BREAK:** header.

thinklogical X4Configurator

CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros **Stations** Routers Snapshots Tie Lines Log Help

Administration Select from the tabbed choices above

Import Export SAVE Cancel

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any *column header* to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	HIDE

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL	1-5	1 3 5 7				

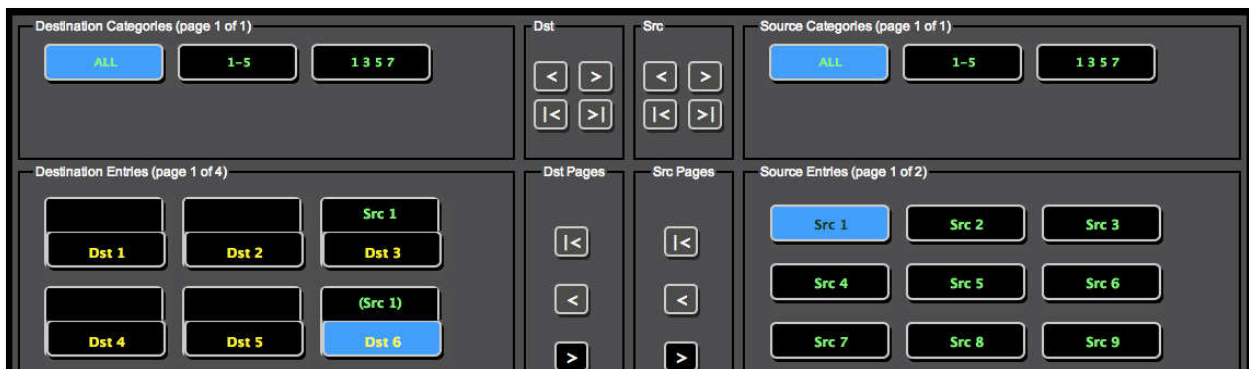
Destination Catego:	Destination Catego:	Destination Catego:	Destination Catego:	Destination Catego:	Destination Catego:	Destination Catego:
ALL	1-5	1 3 5 7				

BREAK
SHOW
HIDE

Select SHOW, click the **SAVE** button and select the **STUDIO** link. There will be a new, red “BREAK” button at the bottom. Select Dst 5, click BREAK and the destination will be disconnected.

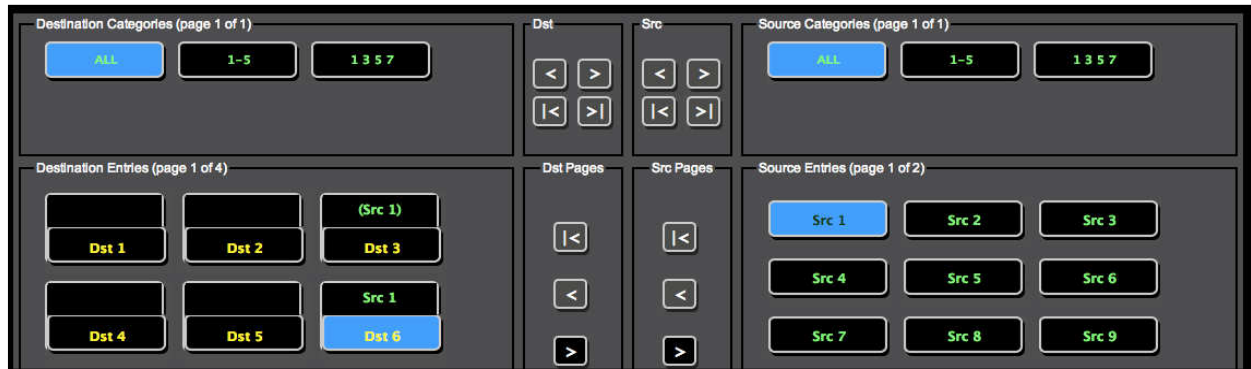


The STUDIO page supports TAKE, SHARE, and (VIEW) connections. *The use of parentheses around VIEW is deliberate - parentheses around the source name in the destination box show that the source is being viewed but does not have the return channel and cannot control the keyboard/mouse.* If an operator wanted to see the video from a source without disturbing someone already using it, they would have to select the source and their own destination and then click (VIEW). It would then appear as below:



The operator has selected Src 1 and Dst 6 and clicked the (VIEW) button. Now the video from Src 1 is at both Dst 3 and Dst 6, but only Dst 3 has control of the keyboard/mouse.

SHARE allows cooperative viewing. If the operator at Dst 6 clicked the SHARE button, both Dst 3 and Dst 6 would still have the video, but the keyboard/mouse control would move to Dst 6 and Dst 3 would show Src 1 in parentheses (as below).

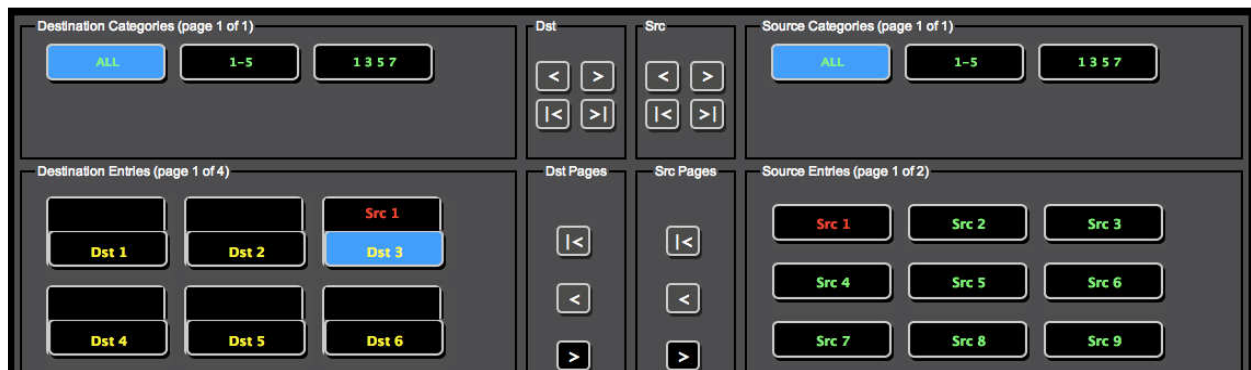


At this point, Dst 1 could take back control by selecting Dst 1 and clicking SHARE.

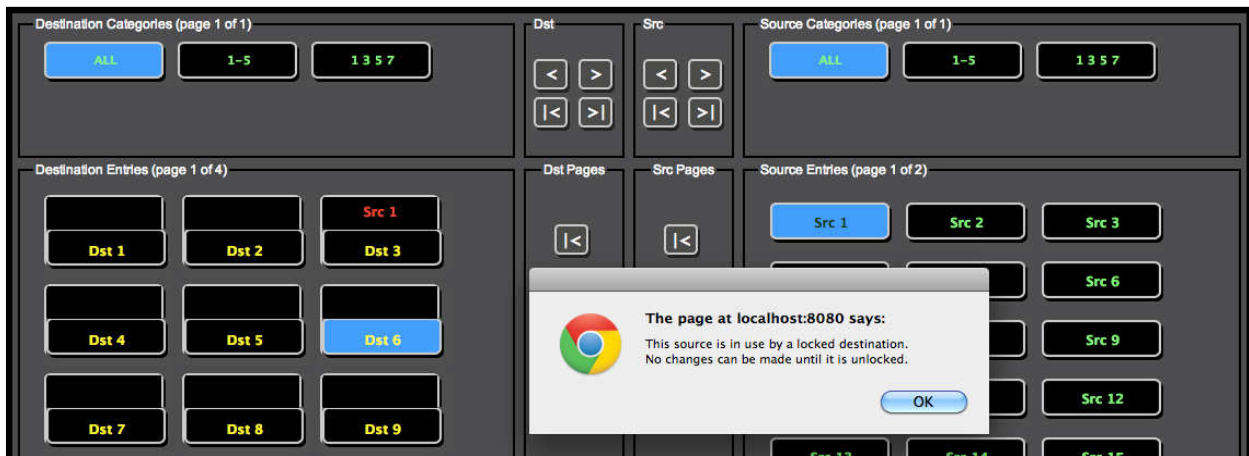
TAKE removes the video from any destinations that are currently viewing it and also takes control of the keyboard/mouse.

The **LOCK** and **UNLOCK** buttons allow the user to restrict a source and destination. If a connected destination is selected and the LOCK button clicked on, both that destination and the source that is feeding it become locked and unavailable for other connections. They turn **red** to show this status and will not allow any connection changes to the destination or the source until the destination is unlocked.

In this capture, Dst 3 has been selected and the LOCK button clicked. Both are now **red**.



If an operator attempts to connect Src 1 with another destination, Dst 6 in the example below, the program will display a notice that no new connections or disconnections involving this source and this destination will be allowed until the destination is unlocked from the source.



Selecting Dst 3 and clicking the blue **UNLOCK** button will release it.



NOTE: The **STUDIO** page does not have any clear way to move to other screens. This is intentional - *this page is designed for users and operators who will seldom need any other page.* The only way to get to other pages are either the browser's back button or by changing the browser's URL to another page.

COMBI Page

Select **COMBI** from the links across the top. (You may need to use the browser's back button if you were last on the **STUDIO** page.)

The screenshot displays the COMBI configuration interface, which is divided into two main sections: SOURCES and DESTINATIONS. Both sections feature a grid of 24 slots (3 rows by 8 columns) and a set of navigation controls on the right.

SOURCES Section:

- Buttons: ALL, 1-5, 1 3 5 7
- Grid:
 - Row 1: Src 1 (highlighted), Src 2, Src 3, Src 4, Src 5, Src 6, Src 7, Src 8
 - Row 2: Dst 3*, (empty), (empty), (empty), (empty), (empty), (empty), (empty)
 - Row 3: Src 9, Src 10, Src 11, Src 12, Src 13, Src 14, Src 15, Src 16
 - Row 4: Src 17, Src 18, Src 19, Src 20, Src 21, Src 22, Src 23, Src 24
- Navigation: <, >, <|, >|, 1 of 2

DESTINATIONS Section:

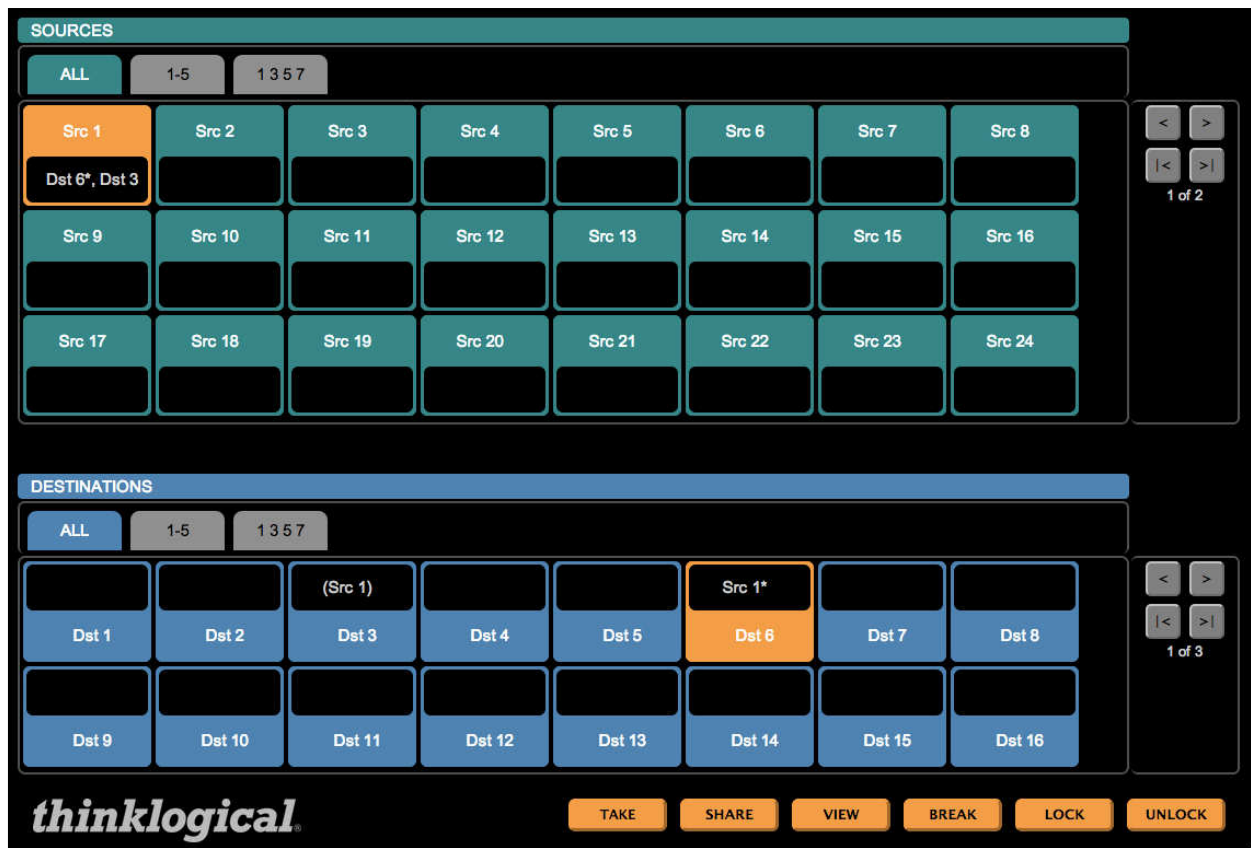
- Buttons: ALL, 1-5, 1 3 5 7
- Grid:
 - Row 1: (empty), (empty), Src 1*, (empty), (empty), (empty), (empty), (empty)
 - Row 2: Dst 1 (highlighted), Dst 2, Dst 3, Dst 4, Dst 5, Dst 6, Dst 7, Dst 8
 - Row 3: (empty), (empty), (empty), (empty), (empty), (empty), (empty), (empty)
 - Row 4: Dst 9, Dst 10, Dst 11, Dst 12, Dst 13, Dst 14, Dst 15, Dst 16
- Navigation: <, >, <|, >|, 1 of 3

Footer:

- thinklogical logo
- Buttons: TAKE, SHARE, VIEW, BREAK, LOCK, UNLOCK

This page combines features from the **CONNECT** and **STUDIO** pages and is designed to work on both full size displays and touch-screens.

As in the **STUDIO** page, the user can select a source or a destination first. Once a source and a destination have been selected, the user can connect using the buttons across the bottom right.



One difference from the **STUDIO** page is that on this page **the source icons also show which destinations they are driving**. In this example, Src 1 (top left) shows Dst 6* and Dst 3 in its window. The asterisk after Dst 6 means that it has the return channel and has control of the keyboard/mouse. In the destinations section at the bottom half of the page, both destinations show Src 1 as their source. But Dst 3 appears in parentheses, indicating it is video only, and Dst 6 has the asterisk, indicating that Dst 6 has control.

The tabs below the SOURCES and DESTINATIONS banners (ALL, 1-5, 1 3 5 7) are the same as the categories in the **STUDIO** page and the LOCK and UNLOCK functions also work the same way as in the **STUDIO** page.

The screenshot displays the thinklogical interface with two main sections: SOURCES and DESTINATIONS.

SOURCES Section:

- Header: SOURCES
- Tabs: ALL, 1-5, 1 3 5 7
- Grid:
 - Row 1: Src 1, Src 2, Src 3, Src 4, Src 5
 - Row 2: Dst 6*, Dst 3, (empty), (empty), (empty)

DESTINATIONS Section:

- Header: DESTINATIONS
- Tabs: ALL, 1-5, 1 3 5 7
- Grid:
 - Row 1: (empty), (Src 1), (empty), (empty)
 - Row 2: Dst 1, Dst 3, Dst 5, Dst 7

Footer:

- thinklogical logo
- Buttons: TAKE, SHARE, VIEW, BREAK, LOCK, UNLOCK

There is also a **COMBI-M** Page. It includes a Macros button at the bottom, right corner that links to the **MACROS** page. In all other ways, however, it is the same as the **COMBI** page and is used mostly for demonstration purposes.

Multiple Browser Tabs

When switching back and forth between X4 pages, it is often convenient to make use of the browser's ability to maintain multiple open tabs. This way an administrator can keep the **ADMIN** page on one tab, the **CONNECT** page on another tab, and so on.

At the top of the image below, the browser shows tabs for **COMBI**, **ADMIN**, **STUDIO** and **CONNECT**, all available at the same time for easy access to whichever page is needed.

The screenshot shows a web browser with four tabs: **COMBI**, **ADMIN: Stations**, **STUDIO**, and **CONNECT: ALL**. The address bar shows `localhost:8080/admin`. The application header includes the **thinklogical X4Configurator** logo and navigation links: **CONNECT**, **ADMIN**, **MACROS**, **STUDIO**, **COMBI**, **GROUPS**, and **LOGOUT**. Below the header is a tabbed interface with **Macros**, **Stations** (selected), **Routers**, **Snapshots**, **Tie Lines**, **Log**, and **Help**. The **Administration** section is active, displaying a table of stations. Above the table are buttons for **Import**, **Export**, **SAVE**, and **Cancel**. A message states: "Click inside any cell to change the contents of that cell, right-click inside any cell to see additional row options, right click inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete."

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	SHOW

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL	1-5	1 3 5 7				

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL	1-5	1 3 5 7				

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7	fuchsia
Src 2	A	UR-002	UT-002		ALL	1-5		lime
Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7	blue
Src 4	A	UR-004	UT-004		ALL	1-5		red
Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7	purple
Src 6	A	UR-006	UT-006		ALL			orange
Src 7	A	UR-007	UT-007		ALL		1 3 5 7	yellow
Src 8	A	UR-008	UT-008		ALL			green
Src 9	A	UR-009	UT-009		ALL			navy
Src 10	A	UR-010	UT-010		ALL			aqua
Src 11	A	UR-011	UT-011		ALL			fuchsia
Src 12	A	UR-012	UT-012		ALL			lime
Src 13	A	UR-013	UT-013		ALL			blue

GROUPS Page



NOTE: Sometimes it is important to restrict access to assets and control pages. Thinklogical's X4 supports this requirement through the use of user groups, or just groups.

Use the browser's back button (or one of the tabs you've opened for easy access to different pages) to get back to a page with links across the top and select the **GROUPS** link.

CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

thinklogical X4Configurator

Help

Groups/Users Administration

Import Export SAVE Cancel

Click inside any cell to change the contents of that cell, *right-click* inside any cell to see additional row options, *right-click* inside any *column header* to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Logins Required:	Default Group:	Restore on Restart:
yes	admin	no

Group definitions

Group Name:	Startpage:	Page:	Page:	Page:	Page:	Page:	Page:	Page:
admin	connect	admin	macros	studio	combi	groups		
user	studio	combi	macros	touchscreen				
touch	combi-m	macros						

User definitions

Username:	Group:	Local Password:
admin	admin	admin
user	user	user

Groups assigned by IP address (touchpanels)

IP Address:	Group:	Comment:
192.168.13.112	touch	

This page defines users, groups and the access granted to them. There are four tables on this page which will be indexed by the leftmost header for each table.

Logins Required -- If this value is set to *yes*, then every user must enter a username and password in order to access X4. If this value is set to *no*, then users need not log in and they will all be assigned to a group named in the next field, the *Default Group*.

Restore on Restart -- If this is set to *yes*, then when X4 is started it will automatically set the router(s) to the last set of connections present when X4 was last running. (See **ADMIN: Snapshots** for more information.)

The next table is labeled *Group Definitions* and each row starts with a *Group Name*. This table determines which pages are available to each group. The *Startpage* will be presented when the user logs in. The remaining fields are all labeled *Page* and they are the links found at the top of the page that will be available to the group. As shown above, the admin group will have links to the **Connect**, **Admin**, **Macros**, **Studio**, **Combi**, and **Groups** pages.

To add, change or delete page permissions to a group, click on any of the existing page fields or a blank one.

Logins Required:	Default Group:	Restore on Restart:
yes	admin	no

Group definitions

Group Name:	Startpage:	Page:	Page:	Page:	Page:	Page:	Page:	Page:
admin	connect	admin	macros	studio	combi	groups		
user	studio	combi	macros	touchscreen				
touch	combi-m	macros						

User definitions

Username:	Group:	Local Password:
admin	admin	admin
user	user	user

Groups assigned by IP address (touchpanels)

IP Address:	Group:	Comment:
192.168.7.112	touch	

Pages

- connect
- macros
- admin
- studio
- combi
- combi-m
- groups
- touchscreen
- (blank)

The “Pages” pop-up provides a list of page choices or blank if the page is to be removed from this group.

The next table is for *User Definitions* and starts with the username. This is the name the user/operator will use when logging in. The next field is *Group* and shows to which user group the user/operator will be assigned after logging. The final field is the *Local Password* for that user. This field will let you change passwords for any account, including admin.

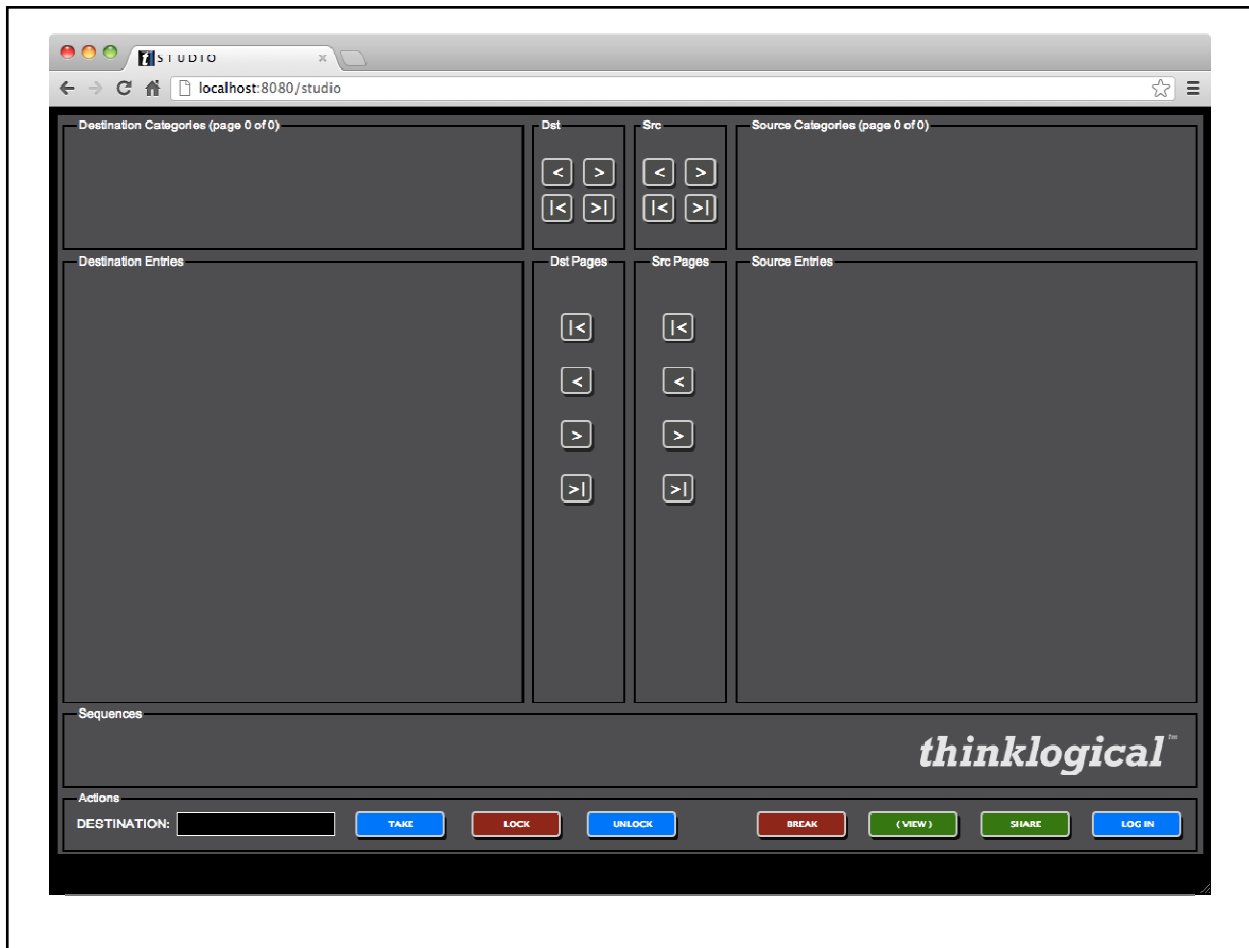
The last table is labeled *#Groups assigned by IP address (Touchpanels)*. This table is used most often for touchpanels where typing in a username and password may be difficult. Any communications coming from these addresses will be treated as though received from a logged-in user of the group name shown.

For example, if a touchpanel is connected to the network at IP address 192.168.13.112, that device is automatically assigned to the group “touch,” which will only be able to see the startpage, combi-m and macro page.

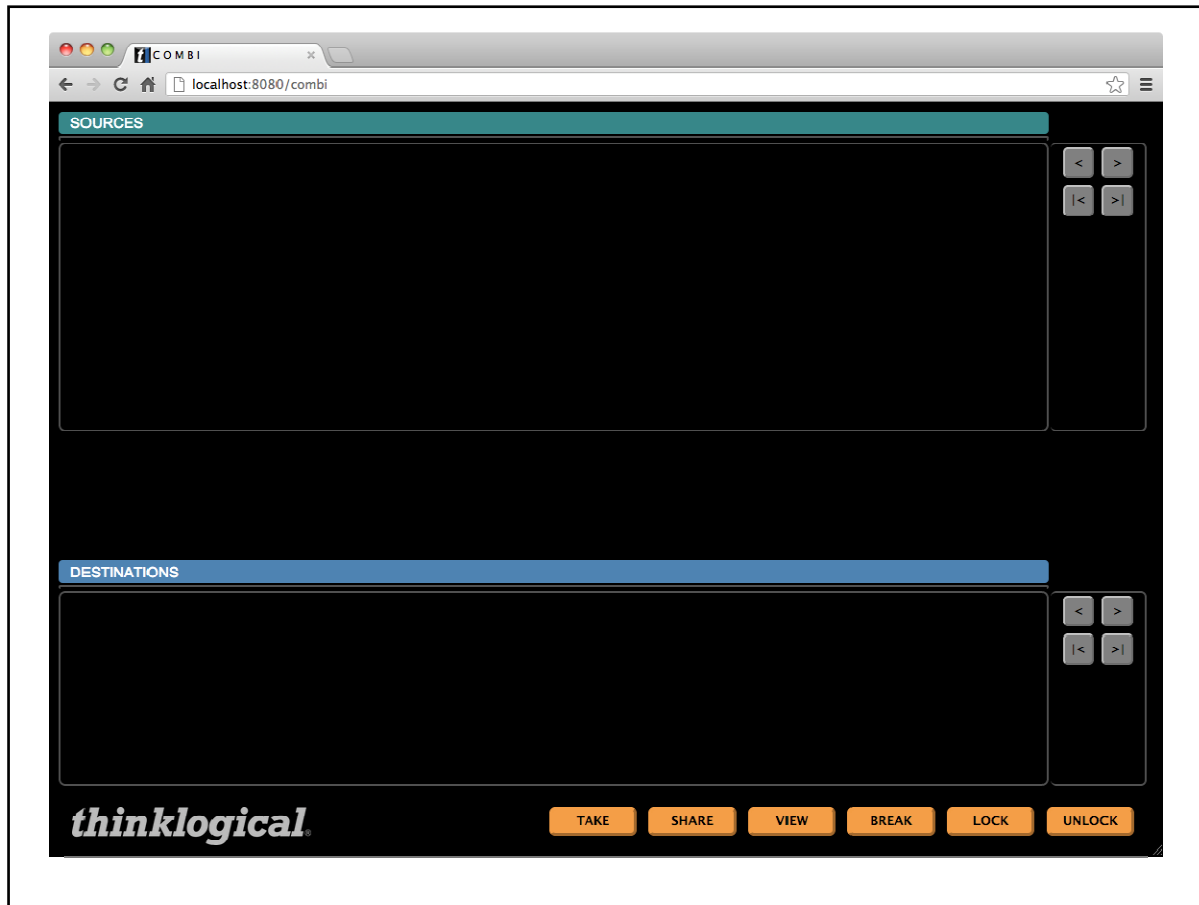
So far, we have only demonstrated restricted access to page links, but it is possible to restrict access to macros and source and destination assets as well. For instance, we have declared a user named *user* with password *user* and group name *user*. As this page shows, this user will only have access to the **Studio**, **Combi**, **Macros**, and touchpanel pages.

Click the **LOGOUT** link (top right) and log in as *user* with password *user*.

Since our startpage is Studio, we are immediately taken to the **STUDIO** page, but there are no sources or destinations shown. (We'll fix that in a minute.)

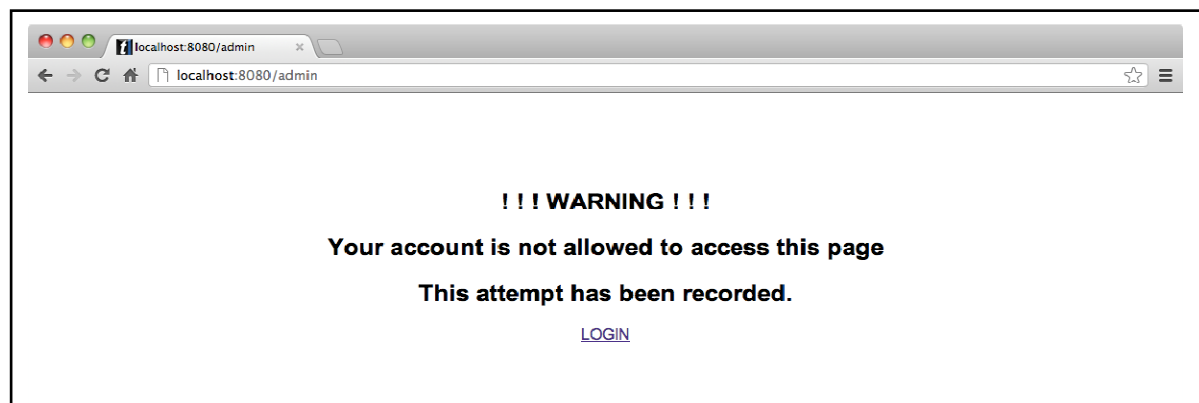


Unfortunately, since we've assigned *user* to start out in the **STUDIO** page, there are no page links at the top, but there's an easy solution. In the URL at the top of the page, change *studio* to another page that this user is allowed, like *combi*.



Again, the page has loaded, but there are no assets visible (soon to be corrected).

For a test, enter a page that this user is not allowed, such as admin.



This demonstrates that the user will be restricted to only the pages they are allowed.

Use the LOGIN link at the bottom of this warning to again login as *admin*, password: *admin* (unless you've changed the password). Select the **ADMIN** link at the top and then select the **Stations** tab.

thinklogical X4Configurator

CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros **Stations** Routers Snapshots Tie Lines Log Help

Administration Select from the tabbed choices above

Import Export **SAVE** Cancel

Click inside any cell to change the contents of that cell, right-click inside any cell to see additional row options, right-click inside any column header to add or delete columns (if appropriate), and press the **SAVE** or **Cancel** buttons (above) when changes are complete.

Stations (version: X4.4)

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	SHOW

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL	1-5	1 3 5 7				

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL	1-5	1 3 5 7				

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Color:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7	fuchsia	
Src 2	A	UR-002	UT-002		ALL	1-5		lime	
Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7	blue	
Src 4	A	UR-004	UT-004		ALL	1-5		red	
Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7	purple	
Src 6	A	UR-006	UT-006		ALL			orange	
Src 7	A	UR-007	UT-007		ALL		1 3 5 7	yellow	
Src 8	A	UR-008	UT-008		ALL			green	
Src 9	A	UR-009	UT-009		ALL			navy	

As done before, right click on the rightmost *Category:* header and select Append. A new *Category:* column will appear. Now left click on the *Category:* header at the top of this new column and a pop-up list of stations labels will appear.

Width:	Height:	Font Size:	Update Interval:	Destination Side:	Connection Type:	Touch Type:	STUDIO BREAK:
120	28	12	2000	RIGHT	SHARE	VIEW	SHOW

Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:	Source Category:
ALL	1-5	1 3 5 7				

Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:	Destination Category:
ALL	1-5	1 3 5 7				

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Category:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7		
Src 2	A	UR-002	UT-002		ALL	1-5			
Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7		
Src 4	A	UR-004	UT-004		ALL	1-5			
Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7		
Src 6	A	UR-006	UT-006		ALL				
Src 7	A	UR-007	UT-007		ALL		1 3 5 7		
Src 8	A	UR-008	UT-008		ALL				
Src 9	A	UR-009	UT-009		ALL				
Src 10	A	UR-010	UT-010		ALL				
Src 11	A	UR-011	UT-011		ALL				
Src 12	A	UR-012	UT-012		ALL				
Src 13	A	UR-013	UT-013		ALL				
Src 14	A	UR-014	UT-014		ALL				
Src 15	A	UR-015	UT-015		ALL				
Src 16	A	UR-016	UT-016		ALL				

Station Labels

Router Name:

L1:

L2:

L3:

L4:

L5:

Category:

Color:

Viewable:

Takeable:

Click the bottom choice, "Takeable:". The new column header, which used to read *Category:*, will now be *Takeable:*.

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7		fuchsia
Src 2	A	UR-002	UT-002		ALL	1-5			lime
Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7		blue
Src 4	A	UR-004	UT-004		ALL	1-5			red
Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7		purple
Src 6	A	UR-006	UT-006		ALL				orange
Src 7	A	UR-007	UT-007		ALL		1 3 5 7		yellow
Src 8	A	UR-008	UT-008		ALL				green
Src 9	A	UR-009	UT-009		ALL				navy
Src 10	A	UR-010	UT-010		ALL				aqua

Now add the group name “user” to a few of the source rows as shown below:

Source Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:	Color:
Src 1	A	UR-001	UT-001		ALL	1-5	1 3 5 7	user	fuchsia
Src 2	A	UR-002	UT-002		ALL	1-5		user	lime
Src 3	A	UR-003	UT-003		ALL	1-5	1 3 5 7	user	blue
Src 4	A	UR-004	UT-004		ALL	1-5		user	red
Src 5	A	UR-005	UT-005		ALL	1-5	1 3 5 7		purple
Src 6	A	UR-006	UT-006		ALL				orange
Src 7	A	UR-007	UT-007		ALL		1 3 5 7		yellow
Src 8	A	UR-008	UT-008		ALL				green
Src 9	A	UR-009	UT-009		ALL				navy
Src 10	A	UR-010	UT-010		ALL				aqua

Scroll down to the bottom and do the same thing for some destinations: Right click the right-most *Category:* header, select Append. Left click on the new *Category:* header, select *Takeable:* and enter “user” into some destination rows.

CONNECT ADMIN MACROS STUDIO COMBI GROUPS LOGOUT

Macros

Stations

Routers

Snapshots

Tie Lines

Log

Help

Administration

Select from the tabbed choices above

Import

Export

SAVE

Cancel

Src 37	A	UR-037	UT-037		ALL				yellow
Src 38	A	UR-038	UT-038		ALL				green
Src 39	A	UR-039	UT-039		ALL				navy
Src 40	A	UR-040	UT-040		ALL				aqua

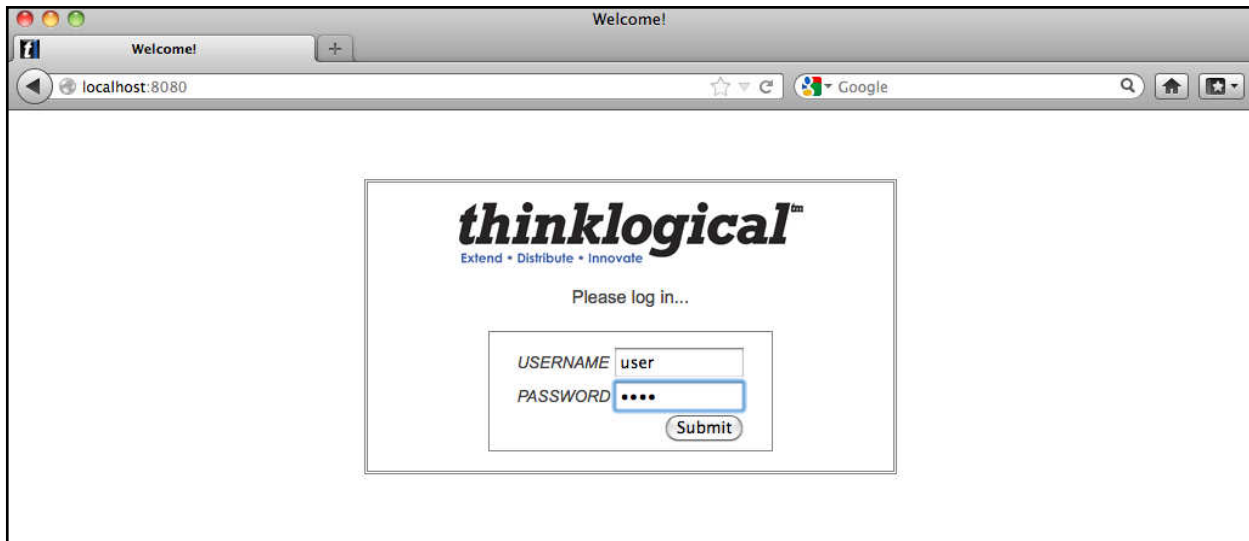
Destination Name:	Router Name:	L1:	L2:	L3:	Category:	Category:	Category:	Takeable:
Dst 1	A	UT-041	UR-041		ALL	1-5	1 3 5 7	
Dst 2	A	UT-042	UR-042		ALL	1-5		
Dst 3	A	UT-043	UR-043		ALL	1-5	1 3 5 7	
Dst 4	A	UT-044	UR-044		ALL	1-5		
Dst 5	A	UT-045	UR-045		ALL	1-5	1 3 5 7	user
Dst 6	A	UT-046	UR-046		ALL			user
Dst 7	A	UT-047	UR-047		ALL		1 3 5 7	user
Dst 8	A	UT-048	UR-048		ALL			

Now click the **SAVE** button

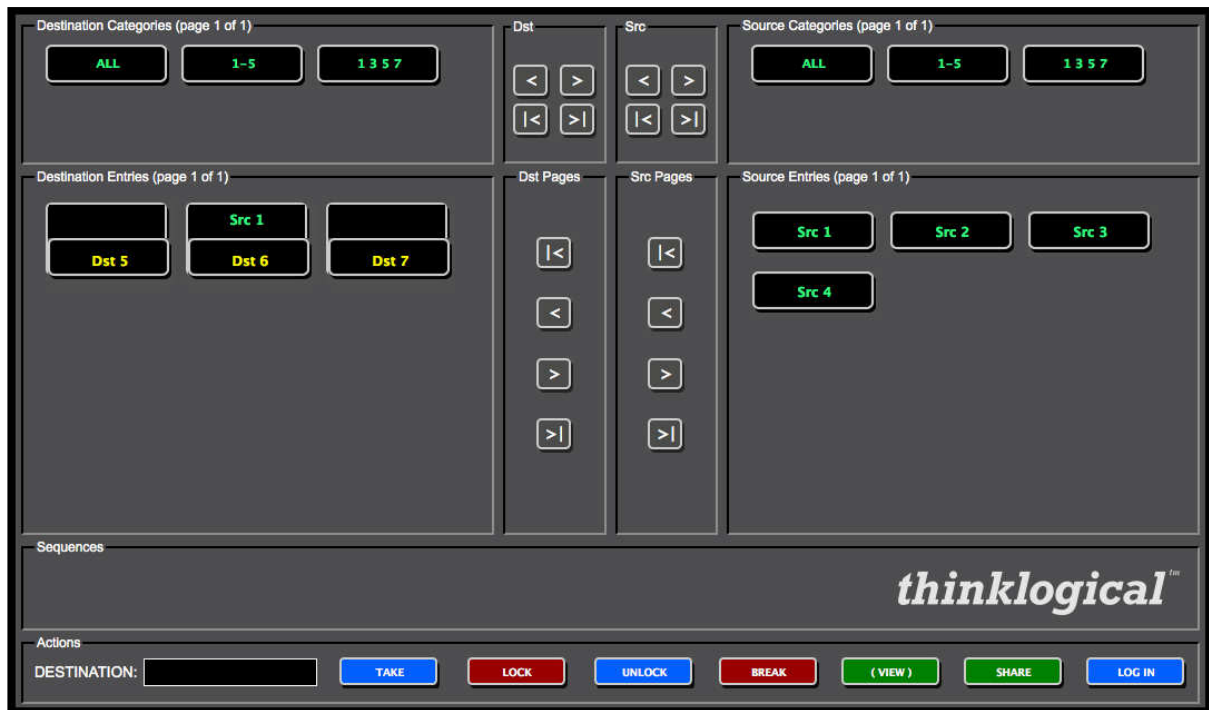


NOTE: This might be a good time to make use of a second browser. It cannot be just another window for the same browser because the browser cookie that makes you admin will carry over to the other windows. But if you’ve been using Google Chrome so far and you have Firefox or Internet Explorer available, it would be convenient to login on a different browser as “user”. If another browser is not available, you’ll just need to log in and out more often.

To see the changes you've made, you'll need to log out of *admin* and log back in as *user*, because as long as you're logged in as *admin*, you'll never see the restricted choices you're creating for *user*.

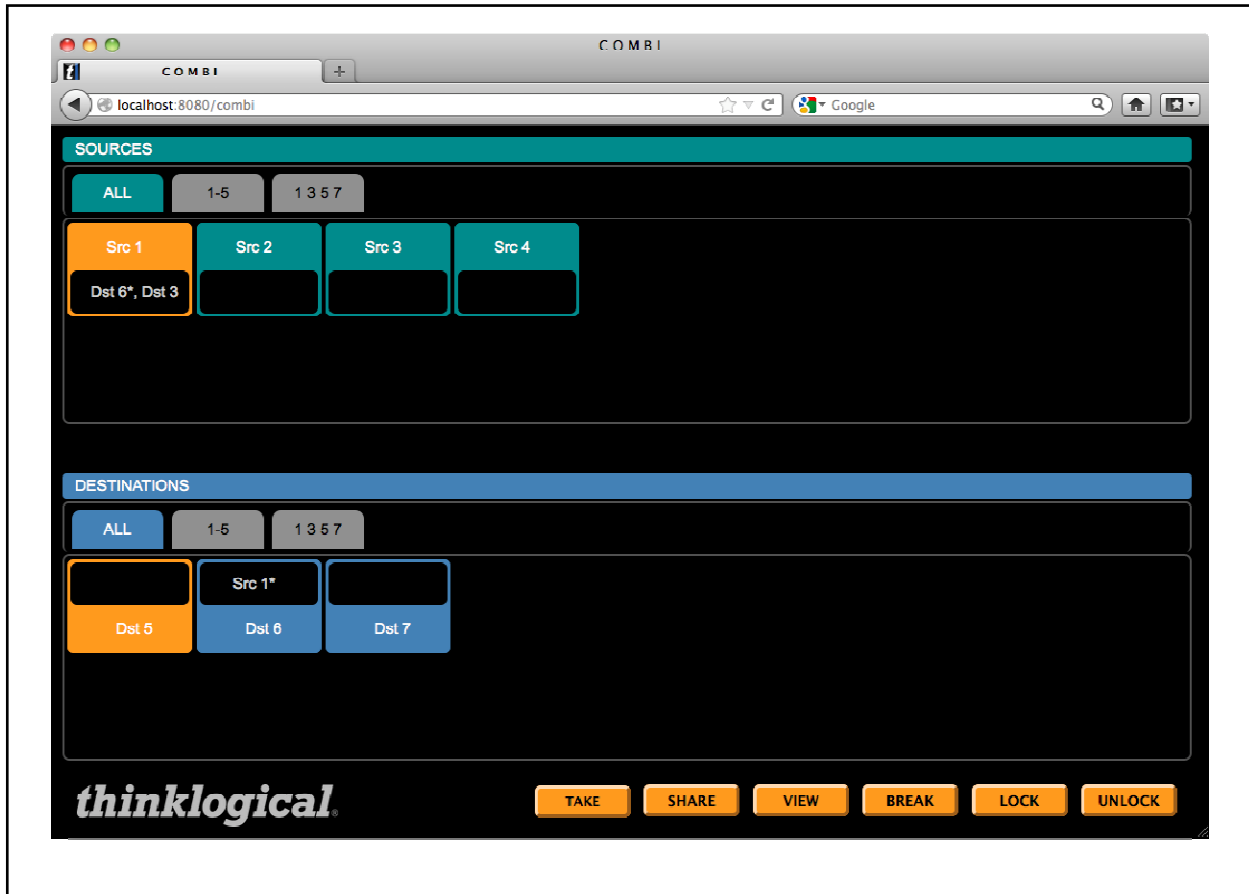


Hit submit and you will go directly to the **STUDIO** page and display the source and destination stations that you've made *Takeable*:



NOTE: *Takeable*: does not mean that only the TAKE button applies. The stations you've made *Takeable*: are also viewable and shareable. When used in the context of Group permissions, it just means that they are available to this user group.

Setting the URL to Combi will now show the same stations as found in the **STUDIO** page.



Appendixes

File Locations

On a **Windows** computer, the program files can typically be found in:

64 bit Windows 7: C:\Program Files (x86)\LSI\X44\

32 bit Windows 7 and XP C:\Program Files\LSI\X44\

The configuration files are in:

Windows 7: C:\Program Data\LSI\X44\setup\

Windows XP: C:\Documents and Settings\All Users\Application

Data\LSI\X44\setup\

On a **Linux** computer, the program and data files are found in:

/opt/lsi/vxrouter/intuicon/X44/

Other Documentation

These documents are available on our web and ftp sites and provide additional helpful information.

- Manual_Customer_Overview_VXRouters_Rev_B.pdf
- Manual_MX48_Rev_B.pdf
- VX40_160_320_320V_Manual_Rev_J.pdf
- Manual_VX640_Rev_B.pdf
- Router-ASCII-API.pdf
- Configuring-the-ASCII-Interface.pdf
- Router_SNMP_Traps.pdf
- Router_Interfaces.pdf

The letter after '_Rev_' may differ from this list. As the manuals are updated, the next letter is sequence

How to Contact Us Customer Support

Thinklogical is an engineering company and you will receive the assistance you require directly from our most knowledgeable engineers. We believe that the first line of support is the design engineer that developed each particular product. Therefore your needs will be handled promptly by our in-house engineers who are most familiar with your products.

Thank you for choosing Thinklogical® products for your application.

We appreciate your business and are dedicated to helping you successfully use our products.

thinklogical® is always here to help you.

To contact us, please use the following telephone numbers and internet-based methods:

Website

Check out our website for firmware updates, support information and general information about all of the products we offer.

Our internet website offers product information on all current systems, including technical specification sheets and installation guides (for viewing online or for download), product diagrams showing physical connections and other information you might need.

Internet: **www.thinklogical.com**



Note: Most online documents are stored as Adobe Acrobat “PDF” files. If you do not have the Adobe Acrobat reader needed to view PDF files, visit www.adobe.com for a download.

Email

Thinklogical is staffed **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. We will do our best to respond to your emails promptly. Please use one of the following email addresses for your particular needs:

info@thinklogical.com – Information on Thinklogical and our products.

sales@thinklogical.com – Sales Department - orders, questions or issues.

support@thinklogical.com – Product support, technical issues or questions, product repairs and request for Return Authorization.

Telephone

Telephone Sales: Contact our expert sales staff in Milford, CT at **1-203-647-8700** or if in the continental USA, you may use our **toll-free number 1-800-291-3211**. We are here Monday through Friday from 8:30am to 5:00pm, Eastern Time Zone. Ask for your representative's direct dial phone number when you call.

Telephone Product Support: Contact Product Support in Milford, CT at **1-203-647-8700**. The support lines are manned Monday through Friday, 8:30am to 5:00pm, Eastern Time Zone.

International Sales: Please contact our US sales staff in Milford, CT at **1-203-647-8700**. We are here Monday through Friday, 8:30am to 5:00pm, Eastern Time Zone (same as New York City). If leaving a voice message please let us know the best time to return your call so we may reach you at your convenience.

Our switchboard attendant will direct your call during regular business hours. We have an automated attendant answering our main telephone switchboard after regular business hours and holidays. You can leave a voice message for an individual at any time. Our Sales Representatives have direct numbers to speed up your next call to us.

Fax

Our company facsimile number is **1-203-783-9949**. Please indicate the nature of the fax on your cover sheet and provide return contact information.

Product Support

Thinklogical's support personnel are available **Monday through Friday from 8:30am to 5:00pm**, Eastern Time Zone. If your application requires assistance at some time outside of our normal business hours, please contact us beforehand and we will do our best to make arrangements to help you with your Thinklogical products.

Limited Warranty Information

Thinklogical, LLC ("Thinklogical") warrants this product against defects in materials and workmanship for a period of one (1) year from the date of delivery (ordinary wear and tear excluded). This limited warranty does not cover defects resulting from (i) use of the product other than as described in the applicable documentation for the product; (ii) modifications to or repairs of the product that are made by any party other than Thinklogical or a party acting on Thinklogical's behalf, or (iii) combination of the product with third party products that is not consented to by Thinklogical. Occurrences of events described in (i) – (iii) shall void the foregoing warranty. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Except for the express warranty set forth above, to the fullest extent permitted under applicable law, Thinklogical, LLC and its suppliers disclaim any and all other warranties, express and implied, including without limitation the implied warranties of merchantability, fitness for a particular purpose, title and non-infringement.

If the defective product is returned to the authorized dealer within one (1) year of the delivery date, repair or replacement of the product will be made. Repairs may be made with refurbished parts. If repair or replacement is not possible, Thinklogical may keep the defective product and refund the amount that you paid for the defective product. These are Thinklogical's sole obligations, and your exclusive remedies, for a breach of the limited warranty set forth above.

To return a defective product, contact the Thinklogical authorized dealer from whom you purchased the product. Do not return a product directly to Thinklogical without prior authorization from your dealer.

If you have received prior authorization from your dealer and are returning a product directly to Thinklogical:

1. You may contact your *Sales Representative* directly or call *Customer Support* at 1-203-647-8700 or 1-800-291-3211 (toll free).
2. Describe the defect with the product and Customer Support will issue a Return Merchandise Authorization Number (RMA#).
3. Pack the product in all of its original packing, if possible, and write the RMA number on the box.

4. Return the product to:

Thinklogical, LLC
Attn: RMA# [Insert the RMA# issued to you, by Thinklogical, here.]
100 Washington Street
Milford, CT 06460 USA

Our Address

If you have any issue with a product, have product questions or need technical assistance with your Thinklogical system, please call us at **1-800-291-3211 (USA only)** or **1-203-647-8700** and let us help. If you'd like to write us, our mailing address is:

Thinklogical® LLC
100 Washington Street
Milford, CT 06460 USA