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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	May 08
2.0	Added Linux and EQX install directions Added information on operating the EQX Server	Jun 08
2.1	Updated specifications	Nov 08
2.2	Updated Server Specifications	Mar 09

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1. OVERVIEW

The EQX Server has been designed from the ground up to provide enterprise level, highly available routing infrastructure, which not only facilitates managing a large campus, region or world wide routing infrastructure but also simplifies the control of an operator or engineer with only local scope in mind while interfacing with the routing controller.

The EQX server itself is a real-time service that can be run in a variety of operating system environments, but most favorably in the Debian build of the Linux OS. The EQX Server is provided with MySQL, a very robust database built upon the foundation of SQL. This means that should additional features be required or should end users have a need for special interfacing not typically found in a routing control system, applications can quickly be developed by SQL savvy engineers or typically skilled IT personnel. The EQX Server also includes an industry standard robust web server for hosting the Web Configuration tool.

Actual deployment of the physical hardware and installation of the Linux OS is left to the customer or their IT department/supplier, but Evertz personnel are available to assist in hardware recommendations or troubleshooting with the Linux OS. Linux is a very powerful OS, however it is typically very simple to bring online.

For more information go to: http://www.linuxhelp.net/ or http://groups.google.com/group/linux.debian.user/.

The actual process of installing the core EQX server is simple. The files provided will be in type DEB or EFP, a package installer (a technique with various names such as RPM etc used by all Linux OS variations), on USB key or CD/DVD ROM. Simply insert the disk, follow the simple accompanying instructions and in a few minutes the EQX sever will be running and ready to begin interfacing with the Router and the Web Config Tool. Details for deploying your own Debian build of Linux on an enterprise class device can be found on the Debian's website at http://www.debian.org/. Additional documentation on MySQL can be found at http://www.mysql.com/.

1.1. EQX Server Specifications

- Quad-Core Intel® Xeon® processor X3220 (2.4GHz, 8MB L2 cache, 95 Watts, 1066MHz FSB) or similar performance
- Minimum 2GB Unbuffered Advanced ECC PC2-6400 DDR 2x1GB Memory or similar
- Integrated Serial ATA host controller
- RAID array controller
- RAID 5 drive set (Requires 3 matching drives with beneficial performance from 4 matching drives)
- Each drive for the RAID array should be at least 100GB (or greater) SATA 7,200 rpm (or faster) Hard Drive
- Dual Port Gigabit NIC Adapter
- Serial port
- An X86 (intel) platform certified to run Debian Linux (ETCH version). HP Servers (specifically the DL360 series) are recommended for their redundant PSUs, RAID capability and Debian Linux certification.

2. INSTALLING DEBIAN ETCH OS

Prior to installation of the linux OS, the following information should be prepared:

- Server class hardware which meets the EQX server specifications, ready to power up, connected to monitor and keyboard with a NULL modem serial cable between Primary and secondary (if secondary is in use).
- IP information (Address, Netmask, Gateway etc) for each machine plus one for the virtual system.
- A "name" for each machine (EQXPRI/ EQXSEC or something similar).

Tip: Although each EQX server PC requires at least one IP in order to facilitate ease of use and reliability for router panel and 3rd party connection to the system, a "virtual" or system IP masks the individual hardware IP addresses. No matter which server is active it still holds the "virtual" IP.

Getting Started:

1. Power on the machine and insert the debian etch CD.
2. The debian installation will begin automatically, when prompted press *enter* to continue booting.
3. When prompted for a language, select appropriately "English" as standard, and then continue.
4. Select the appropriate Country, and then continue.
5. From the keymap, select *American English* as standard, and then continue.
6. When prompted to choose a primary network interface, choose *eth0* and then continue.
7. Choose to configure the network and then continue.
    a. Enter settings as prompted for address, netmask, gateway, and nameserver.
    b. Enter EQXPRI or something similar for the host name of the primary EQX server. (EQXSEC for redundant, etc)
8. When prompted to configure partitions choose "*guided setup*", select the disk and the option to put "*all files in one partition*".
9. When prompted choose to *"finish partition"* and "*write all changes to disk"*. At this point the machine will format the drives, which can take 5 to 30 minutes depending on configuration, etc.
10. When prompted select your timezone.
11. When prompted to setup users use the following settings:
    a. The password for the "root" user (equivalent to admin in linux systems) should be set to "*evertz"*.
    b. The user account username should be set to "*evertz"* and the password for user account should be set to "*evertz"*.
    c. Once this step is complete, please wait until prompted.
12. When prompted to configure a network mirror for the packet manager select "*no"* and wait for the "*could not connect*" message and then continue.
13. When prompted to participate in the package survey, select "NO".
13. When prompted for software selection, choose only "*standard system*" (ensure "*desktop environment*" is not selected).
14. When prompted to choose the installation of the GRUB bootloader, select "*yes*" and then continue.
15. When prompted select continue, remove the CD and the machine will reboot.
16. Repeat this process for the redundant server, if present.

3. INSTALLING THE EQX SERVER

1. Copy the two EQX server files onto a USB stick. (There will be a large base file and a small update file).
2. Insert the USB stick into the linux server (Note the location where it is automatically installed. It will install to *sda(x)*, which will probably be *sda1*)
3. To mount the USB drive: Type *mkdir /mnt/usb* and then press <*enter*>. Doing this creates a directory in the */mnt* directory called *usb.* Then type *mount /dev/sdax /mnt/usb* (where the *x* value entered will be the same as the previous step)
4. Copy the two eqx server files onto the machines: *cp /mnt/usb/eqx_ …..efp ~/* and press <*enter*>. Repeat this step for the other file.
5. Run the larger file: *sh eqx_server_0.4.10.efp* and then press <*enter*>. This process may take several minutes.
6. When prompted to configure the *heartbeat* press *ok* to continue.
7. Select option 2 "create a heartbeat cluster" and press <*enter*>.
8. Select *A* to add a new node. Add the hostname of the OTHER COMPUTER (if you are building EQXPRI then you only need to add EQXSEC, if you are building EQXSEC you only need to add EQXPRI…) set during linux install EXACTLY the same way (same case, punctuation, etc).
9. Choose *F* to finish managing nodes.
10. When prompted to choose a primary node enter the hostname of the PRIMARY EQX SERVER exactly as during linux install (same case, punctuation etc) on both machines.
11. When prompted to enter the IP for managing the heartbeat, enter the "virtual" SYSTEM IP address, which is set the same on both machines.
12. When prompted, review the settings and then choose "yes" to save them.
13. When prompted choose *OK* to end the heartbeat configuration.
14. When prompted, the following is a list of Database information:
    a. MYSQL
    b. Localhost
    c. 3306
    d. Pantheos
    e. User for DB is root
    f. No password
    g. Choose "yes" if correct
    h. The administration password for the web config is *admin.*
15. Now run the second file: *sh eqx-se…….efp* and then press <*enter*>. When prompted choose *OK* to finish.
16. Once the installation of the update file is complete on the primary server shut it down by using "shutdown –h now" and pressing <*enter*>.
17. At this point return to the beginning of this section and follow the same procedure for the secondary server.
18. Once this step is reached for the secondary server and it is shutdown, then power on the primary server first and then the secondary server.

4. OPERATING THE EQX SERVER

4.1. Requirements for using the Web Config tool

1. Ensure the EQX Server is installed and operational, and the IP Address is set correctly.
2. Ensure the computer is attached to the same network as the EQX Server.
    a. Since the EQX Web Config Tool (WCT) uses standard HTML, XHTML, CSS, etc any web browser on any platform that complies with these formats can be used.
        i. Currently the most adopted browser that is completely compliant is Mozilla Foundations Firefox. We recommend that you use this browser, if available to you, for the best performance of the WCT. For a free download of the current Mozilla Firefox browser and more information navigate to the following website: http://www.mozilla.com/en-US/firefox/
3. It is not required, but it is an asset to have a solid general understanding of routing systems. Knowing how your system is wired in terms of inputs, outputs, tielines to terminal equipment and other routers and names for resources makes moving through the process of configuring your router control system far easier.

4.2. Getting Started: Setting Up Your Router System

1. Launch the firefox web browser and enter the IP address chosen as the system IP address (which was entered into the heartbeat configuration page) into the address bar. The page should load with a message stating “IT WORKS!!!”. This message notifies the user that one of the EQX servers is primary and that the system IP address is now in use. Now enter the IP address again followed by “/eqx” (for example: 192.168.1.4/eqx) and press enter; you should see the login page for EQX server web configuration tool.

Figure 4-1: Welcome Screen

2. Click the **Login** link button in the top left hand corner, as shown in Figure 4-2:

Figure 4-2: Login Screen

3. The default administrator username and password (as set during EQX server install) is:
   USERNAME: admin
   PASSWORD: admin
4. Enter the username and password into the boxes and then click **Login**.
5. You are now logged in. Click on the **SERVER** tab and then select the **Servers** menu. A Server screen, as shown in Figure 4-3, enables the user to enter the information for the servers.
6. Enter the IP address and default port for each server (naming them appropriately as Primary and Secondary). Once the information is entered, select the **ADD** button to add the server to the Server List.
7. Once complete, press the **SEND TO SERVERS** button. Each server should no longer require an upload (as shown in the status line for each server) and ONLY ONE should be shown as active (likely the primary unit).

Figure 4-3: EQX Server Uploaded

8. The server screen is also used to apply changes to the system when a change is made using the WCT. Therefore, work can be performed offline at your leisure and then pushed to the server all at once. There is no downtime associated with uploading a configuration. There is also no downtime for the server to apply the new changes.

    a. Should a change be required, **YES** will be displayed under the **Upload Required** field.
    b. Should a major change be required, the changes will be listed in the **Change Sets** section. This area lists the major changes like deleting a router, changing the I/O size, making changes to device names or servers etc. Anytime a change to the system is made the change will be listed in the Change Set section. You can read through the change set and optionally choose to remove an item from the Change Set list by placing a check mark in the box beside the item and choosing delete (Figure 4-3). To apply the change sets to the server, select the **Send to Servers button** in the Server List section.

Figure 4-4: Change Sets

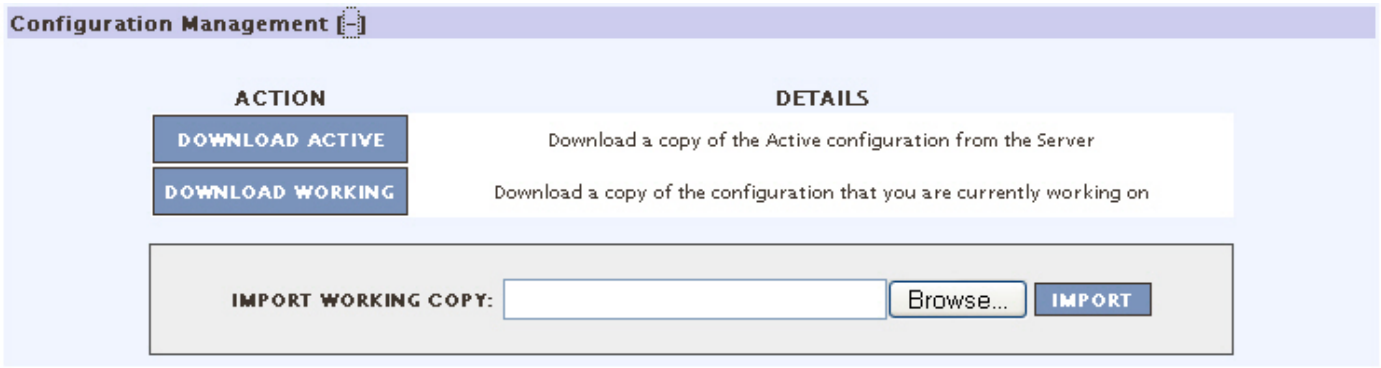

Figure 4-5: Configuration Management

9. The Configuration Management section enables the user to download the configuration. Select the **DOWNLOAD ACTIVE** button to download a copy of the active configuration from the server. Select the **DOWNLOAD WORKING** button to download a copy of the configuration that the user is currently working on. To import another configuration, select the **Browse…** button beside the IMPORT WORKING COPY field and navigate to your desired configuration. Open the desired file and then click the **IMPORT** button to import a working copy of the configuration (Figure 4-5)

4.2.1. Defining Your Routing Devices

1. On the **SERVER** tab, click the **Devices** menu.
2. The screen shown in Figure 4-6 will enable the user to define which router is to be controlled. Use the Device Type drop down menu to define the type of router. Once the device type is selected, device fields will appear which enable the user to enter the EQX parameters.

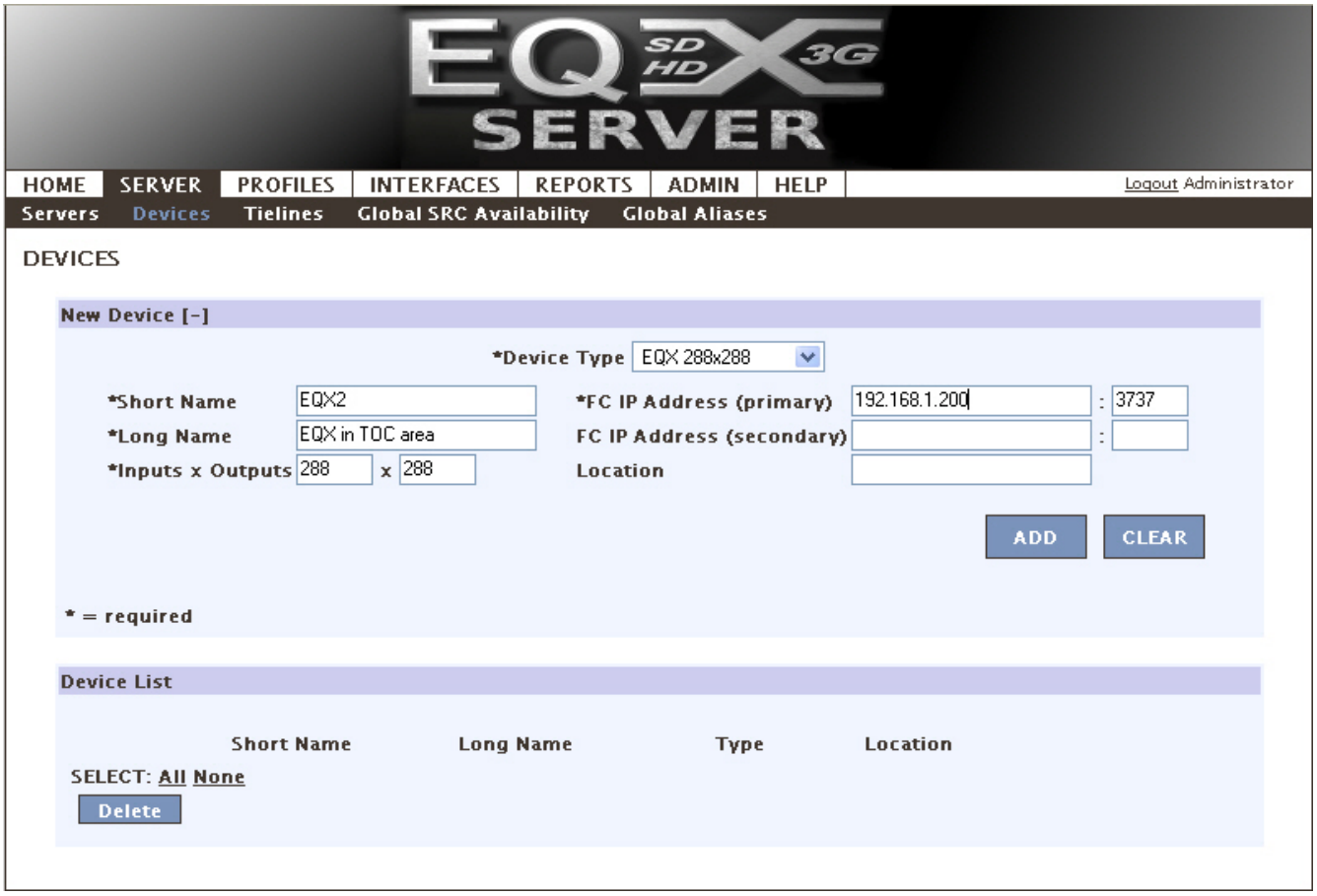

Figure 4-6: Server: Devices Tab

3. Define the routers by entering information in the **Required** and **Optional** information fields. These details can be edited at any time by returning to this page.
    a. **Short Name:** The name used to build default names for source destinations and tielines.
    b. **Long Name:** The name used to refer to the router in the WCT.
    c. **Device Type:** The router type to be controlled.
    d. **Inputs/Outputs:** The size of I/O available on the router to be controlled.
    e. **FC IP address (primary)/Port:** The network information of the primary FC is required for the router to be controlled.
    f. **FC IP address (secondary)/Port:** The network information of the secondary FC is optional.
    g. **Location:** Information pertaining to the physical location (Los Angeles or ER-227) can be optionally entered here.
4. Once complete, click the **Add** button. You will need to return to the server page to upload these changes. You may upload these changes now or move onto further configuration.

Tip: Remember your changes will not be lost, even if the web browser is closed. They will be stored in the web host portion of the EQX server, but will not be applied to the system until you return to the Servers menu on the SERVER tab.

Once complete be sure to return to the server Change Sets to upload any changes.

4.2.2. Establishing Tielines

There are 2 types of tielines in the EQX server:

1) A normal tieline that can be utilized by any device downstream depending on availability.
2) A reserved tieline, which is reserved for a SINGLE downstream destination and is NEVER available to any other destination.

STEPS:

1. On the **SERVER** tab click on **Tielines**. This screen enables the user to choose the upstream (or head) and downstream (or tail) of each tieline as well as if you choose to reserve it for a given destination. Tielines can have multiple hops by clicking **CONTINUE TIELINE** (if they are NOT reserved, this has the same effect as just adding the tielines in one at a time, otherwise all tielines are reserved for the specified destination).

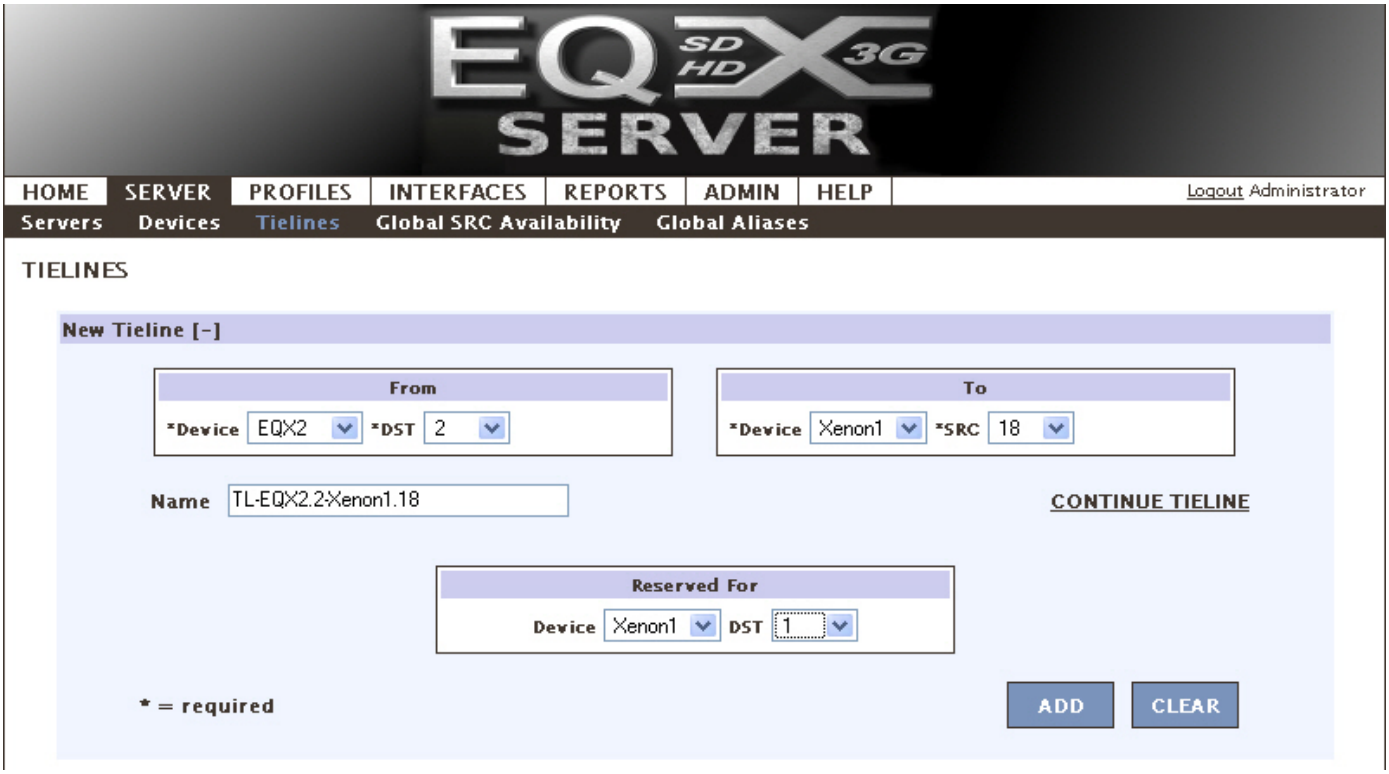

Figure 4-7: Server - Tielines Tab

2. After choosing the **From** and **To** for each tieline, click the **ADD** button to complete and save it. It will be added to the **Change Set**.

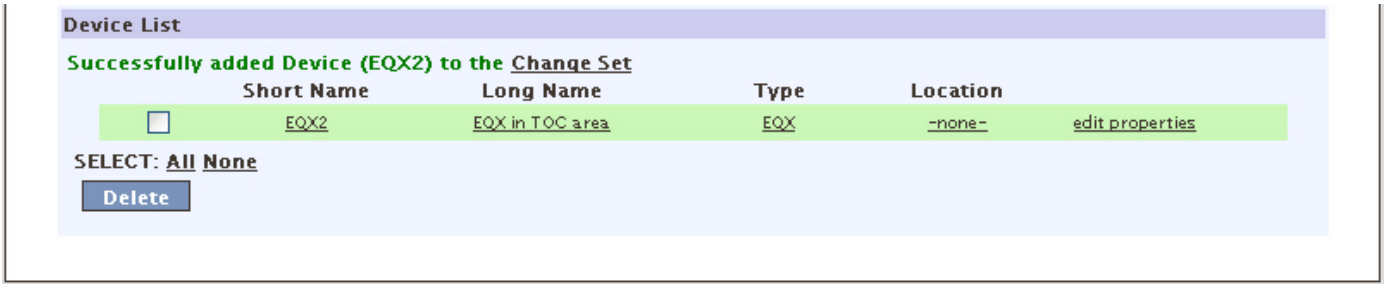

Figure 4-8: Device List

Tip: Tieline names are used throughout the system to identify paths between a source and destination that you are working with. You do NOT have to manually specify a tieline, therefore for time efficiency an appropriate name is built from the "From" router's short name and port, and the "To" router's short name and port. You are welcome to overwrite with any name you wish but be sure to include some details that make the path clear from the name.

Once complete be sure to return to the server change sets to upload any changes.

4.2.3. Global SRC Availability

In a routing system it is beneficial to "permanently" limit the scope of some destinations. This enables the user to control from a high level which destinations have access to which sources. Imagine a facility where 2 channels are broadcast: (1) a music channel for teens and (2) a religious affiliate. The best way to avoid content from one spilling over to the other is to limit the destination of the one to only it's appropriate designated sources. This makes it IMPOSSIBLE without returning to this page for panels or automation systems to route the incorrect source. Once this setting is applied, the system filters the sources as if they do not exist if they are not available to a destination.

1. First select the router that contains the destination(s) that you want to work with from the Devices list. The list will populate in the Destinations field.
2. Once populated, click on one or more DSTs and select **GET SRCs**. Again the list of sources (both available and unavailable) will populate.
    a. If you have selected multiple DSTs, any SRCs common to ALL DSTs will be in grey. ANY source that is not 100% common will be in white.

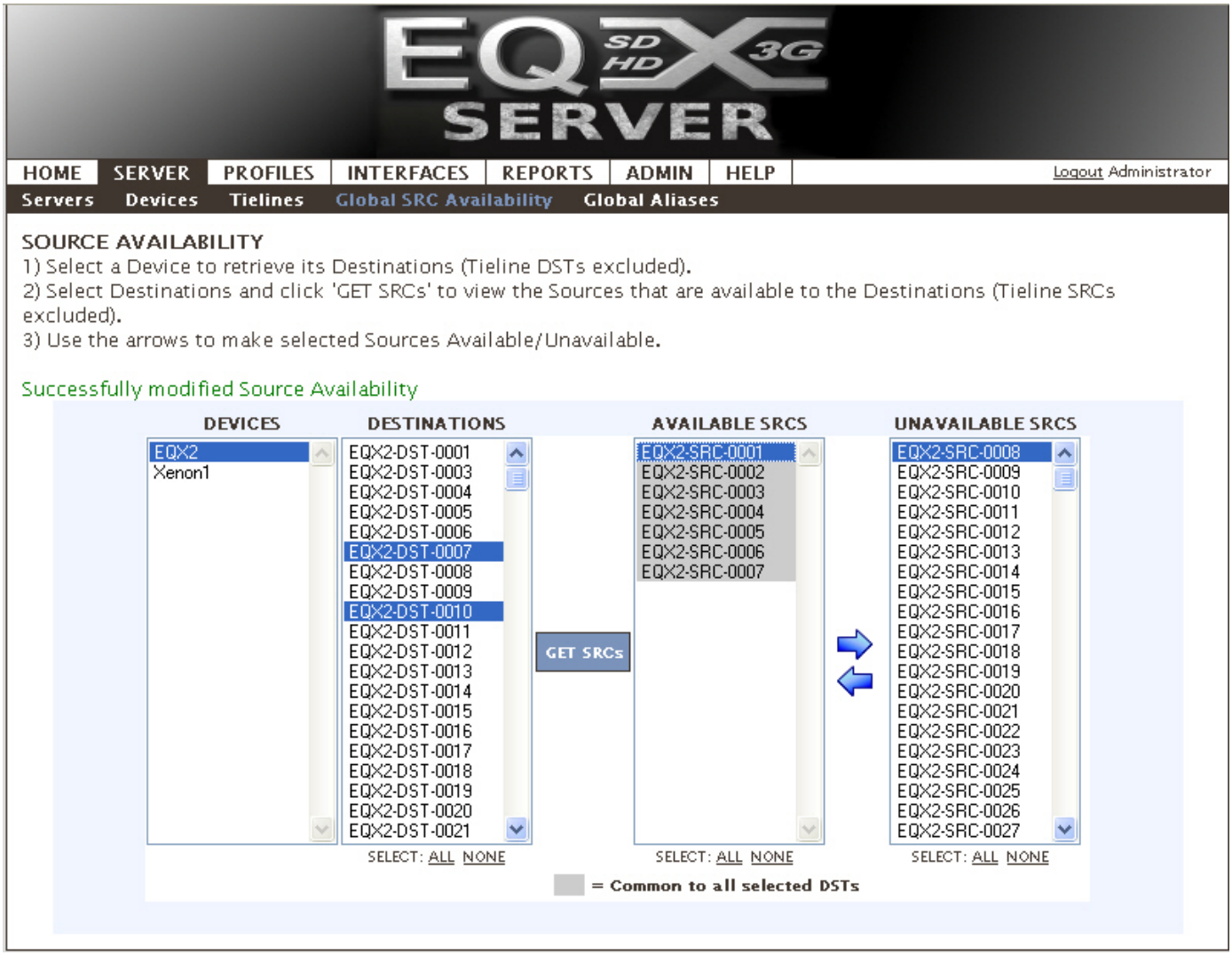

Figure 4-9: Server: Global SRC Availability

3. Move sources *to* or *from* the **SRC** lists as appropriate using → or ← arrows.
4. If you are working with multiple DSTs and would like to make all SRCs in the AVAILABLE column common to all selected, simply click the ← button. You will see all SRCs become grey.
5. You can also **GET SRCs** for one destination and then select others to apply them to.

TIP: Sources from all routers that a given destination MAY have access to will appear in the list. (Meaning if tielines exist connecting the selected DST to an upstream router all SRCs on both the local and upstream router will appear in the SRCs lists)

Once complete be sure to return to the server change sets to upload any changes.

4.2.4. Global Aliases

Another advanced feature of the EQX server is the ability to support a wide range of long multi character aliases for each SRC and DST. In fact the EQX server supports an unlimited number of aliases per SRC or DST.

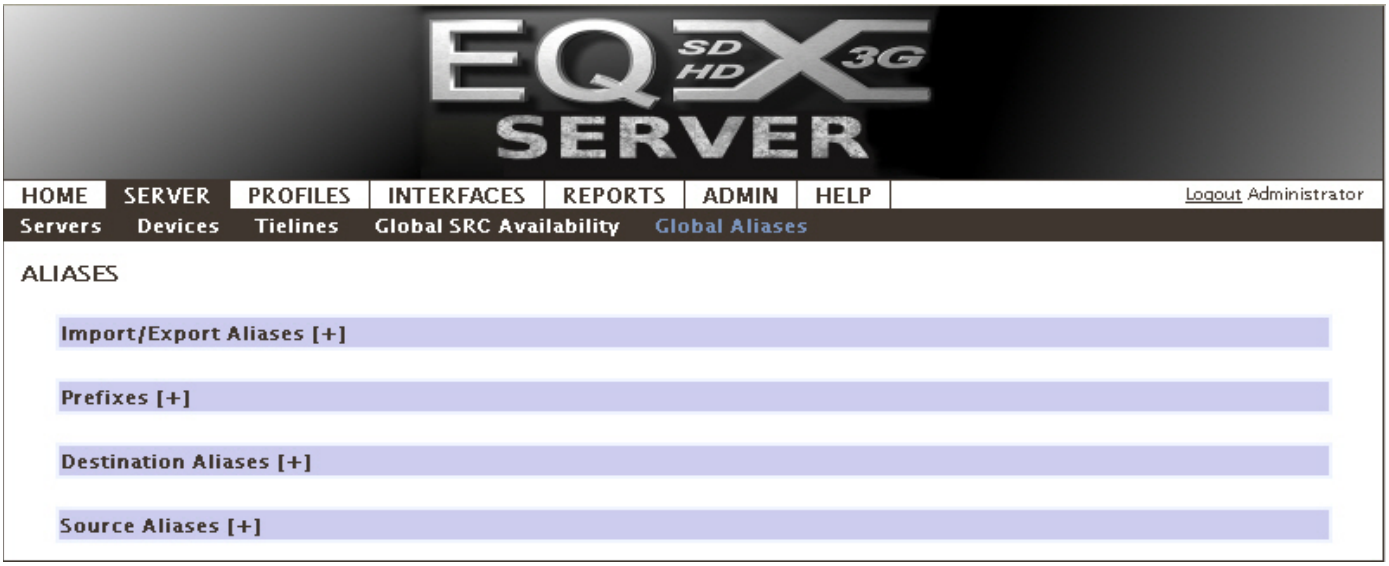

Figure 4-10: Global Aliases

The user can import or export existing aliases. Expand this section by clicking on the **+** symbol.
The Import/Export Aliases screen shown in Figure 4-11 will appear. Select the **Browse** button and then navigate to the desired file. Once the appropriate file is selected, click the **Open** button. When the filename appears in the File field, select the **IMPORT** button to import the file. To export an alias, select the **Export Aliases** button.

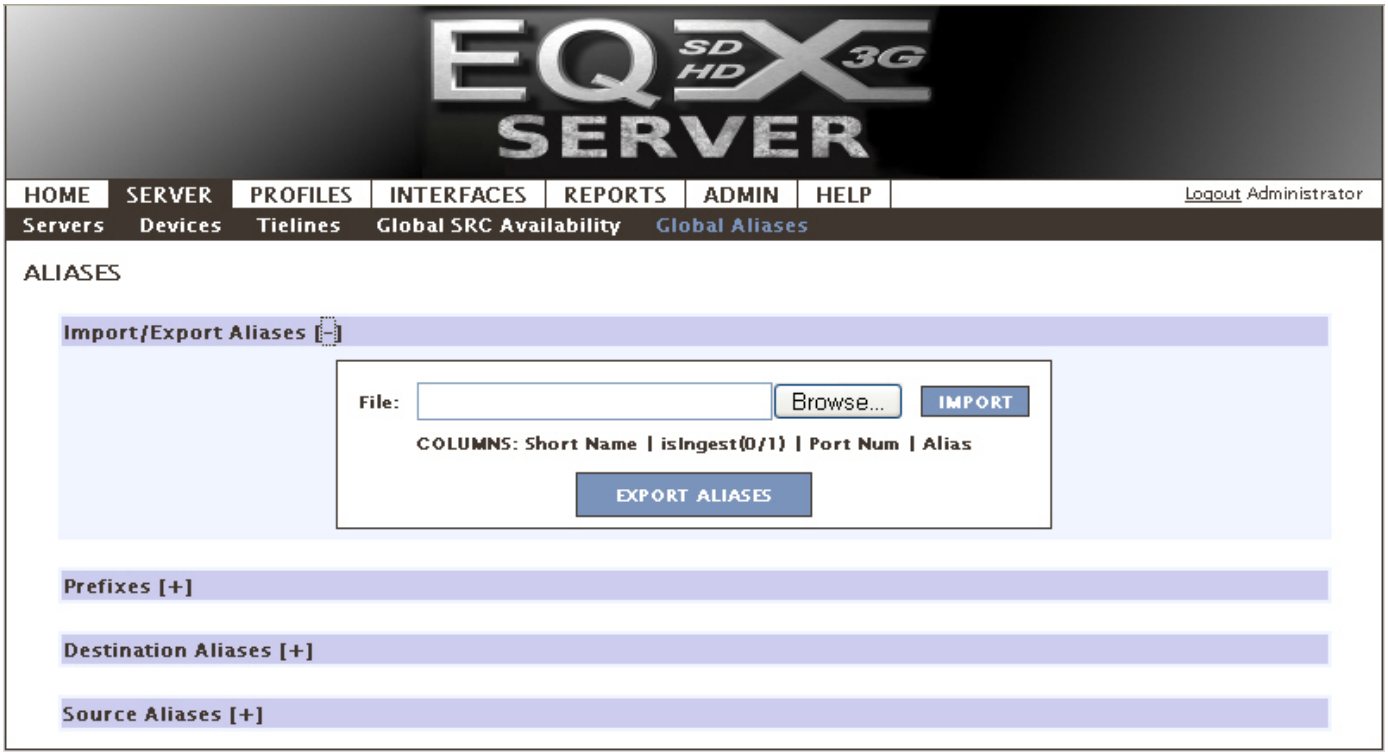

Figure 4-11: Import/Export Aliases

1. To create a prefix, also referred to as categories (IE VTR, ENC, REM, MCR, etc), type in the name (you are NOT limited to 3 letters, use symbols, long names, numbers) and then click the **ADD** button. The prefix will be displayed in the *Existing Prefix* field on the right. To remove an existing prefix, select the prefix from the *Existing Prefix* list and select the **DELETE** button.

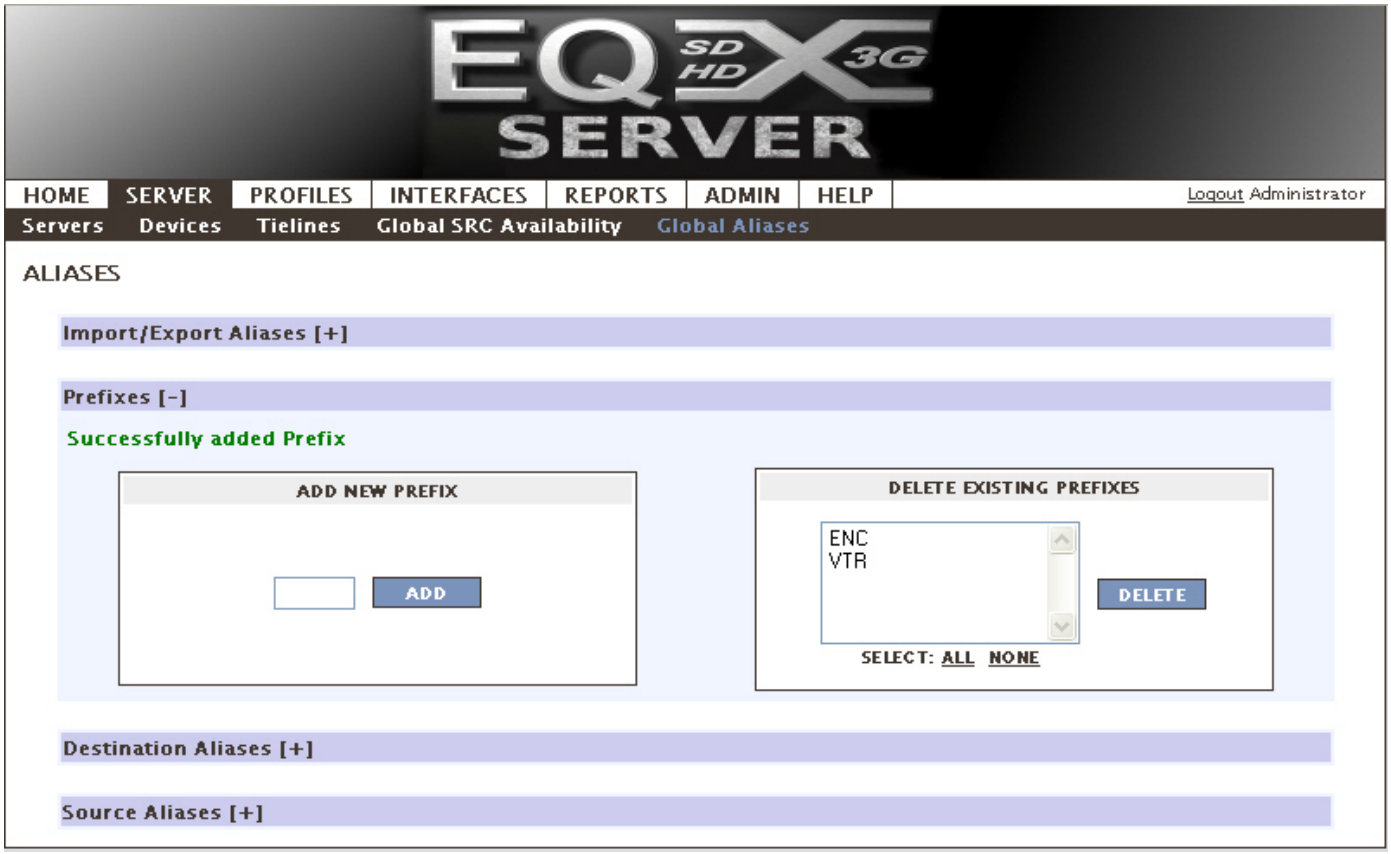

Figure 4-12: Prefix

2. Now we must configure the **Destination Aliases**. Expand the section by clicking on the **+** button.
    a. Aliases can be built using a prefix, separator section and suffix.
        i. The Prefix will put a "category" button on the panel under this heading, eg. VTR.
        ii. The Separator can be a ***- , <space>, ****** or any number of characters eg. ***–Cleveland*Inbound Rem!!-***
        iii. The Suffix is an automatically incrementing number. Starting at 1 will proceed as 2, 3, 4. Starting at 0001 will proceed as 0002, 0003, 0004, etc
        iv. Placing a check mark beside the desired Port enables the user to assign the Alias a Global Alias name.
    b. Once complete click the **Save** button. Checking the **Apply to all Profile Aliases** option will overwrite the name as it appears in EVERY panel profile that has been defined. (Profiles will be covered later)

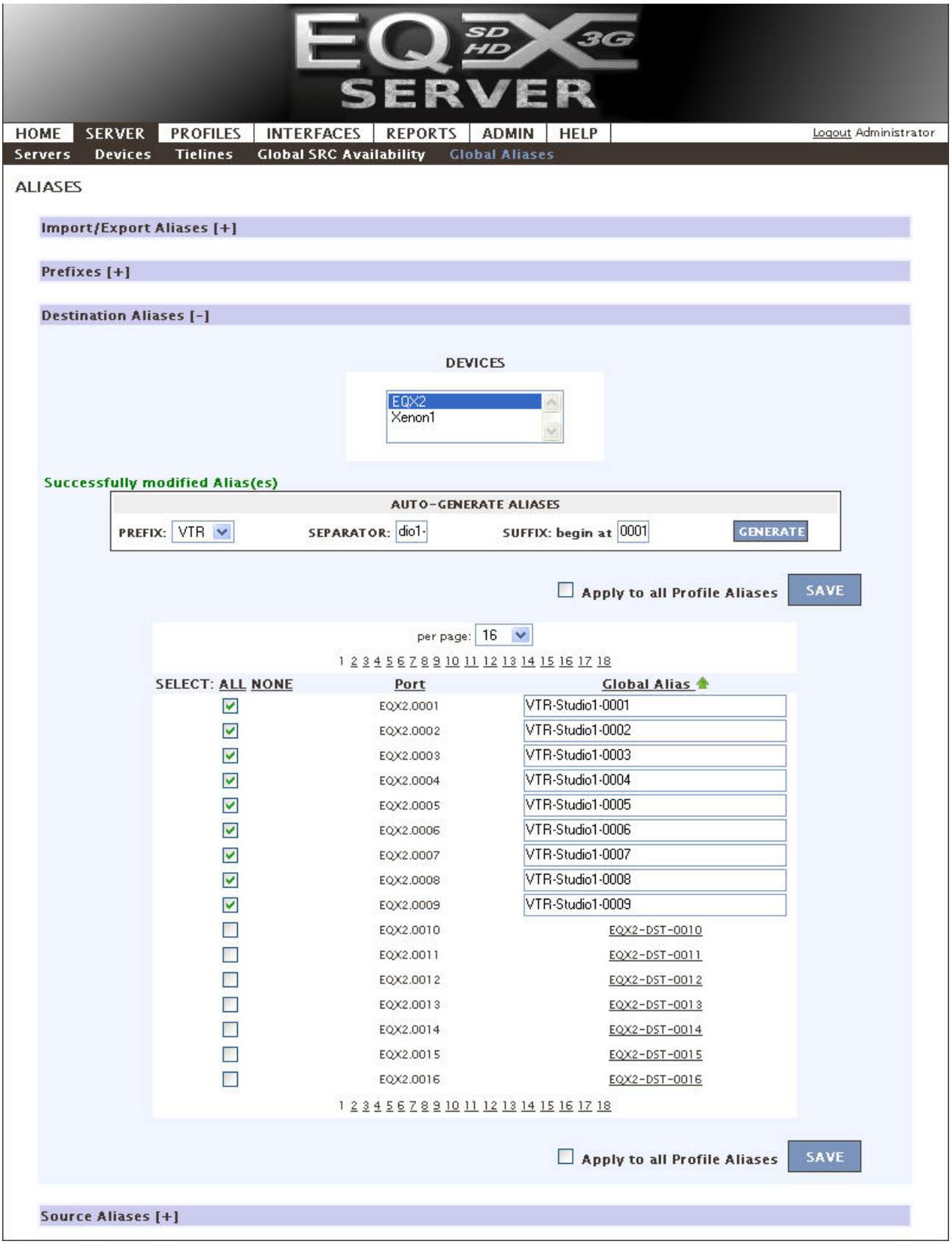

Figure 4-13: Aliases

3. Lastly, the user must set the Source Aliases. This section can be configured the same way as the Destination Aliases.

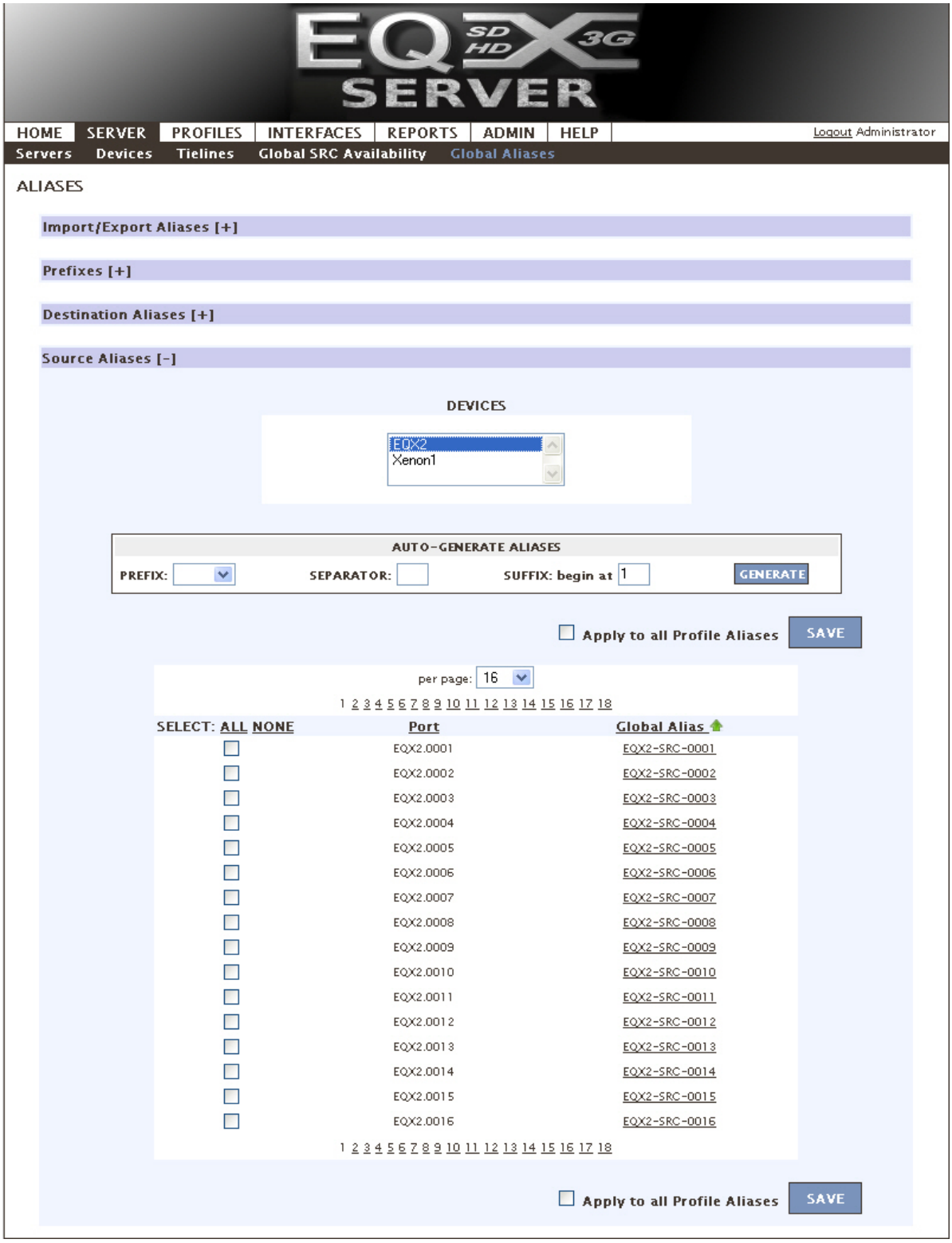

Figure 4-14: Source Aliases

TIP: You can multi-select aliases to work with by clicking the first check box of the source/destination you want and then holding down the shift key and clicking the last source/destination you want. To manually edit it, you can also click the name of a source or destination.

Once complete be sure to return to the server change sets to upload any changes.

4.3. Working with the EQX Sever

4.3.1. Panel Profiles

The EQX Server based router control system has many advanced features. One of the most powerful is the ability to generate Profiles for panels. These profiles are essentially a collection of sources and destinations along with a new set of aliases for those sources and destinations. You do NOT have to explicitly add tielines to a profile, nor do you have to design a panel layout for intelligent panels. The intelligent panels themselves find the best way to layout the various sources, destinations, prefixes, etc, that the user has decided to use. In the case of traditional panels a simple but powerful GUI is provided to determine the explicit actions the panel can make, from defining menus to adding sources and destinations. Creating profiles is very similar to setting up the Router system itself. The steps are: create a profile, add destinations, sources and prefixes, and then alias anything as you see fit.

1. On the **PROFILES** tab, select the **Profiles** menu. Enter a name and a numeric password (not required). You may also clone (copy) an existing profile as a starting point. Once ready click the **Add** button and the profile editor will open.

Figure 4-15: Profiles

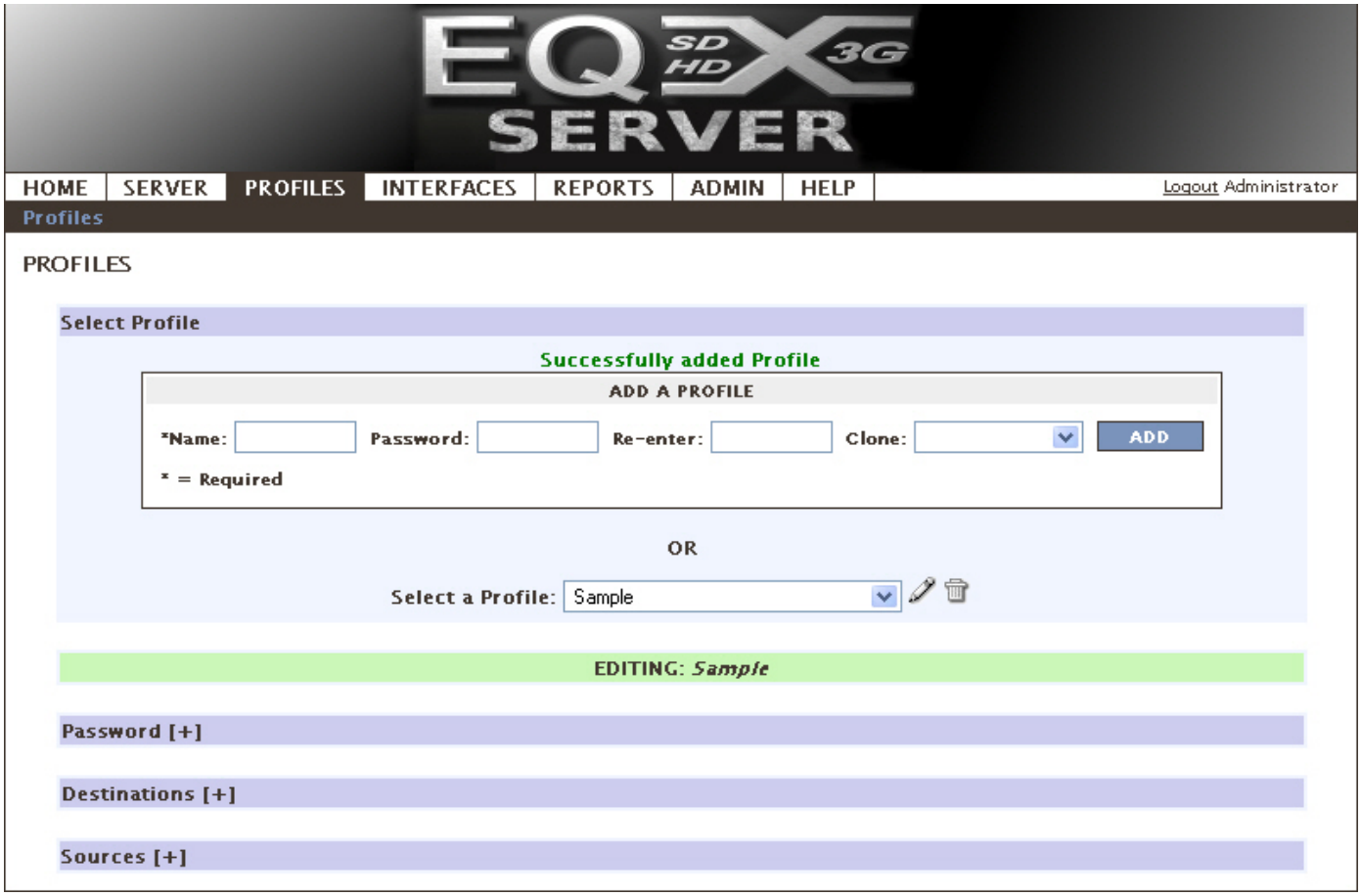

Figure 4-16: Profiles Tab

a. If you wish to edit a pre-existing profile, select the profile from the **Select a Profile** drop down menu and then click the **PEN** icon to edit it.

b. You may also overwrite the password for a profile by using the password field. It is not required to know the original password in order to overwrite it.

Figure 4-17: Modify Password

2. Select the **+** button to expand the destinations section. The destination section enables the user to set the Destination Availability, Destination Prefixes, Destination Aliases, and Virtual Destinations.

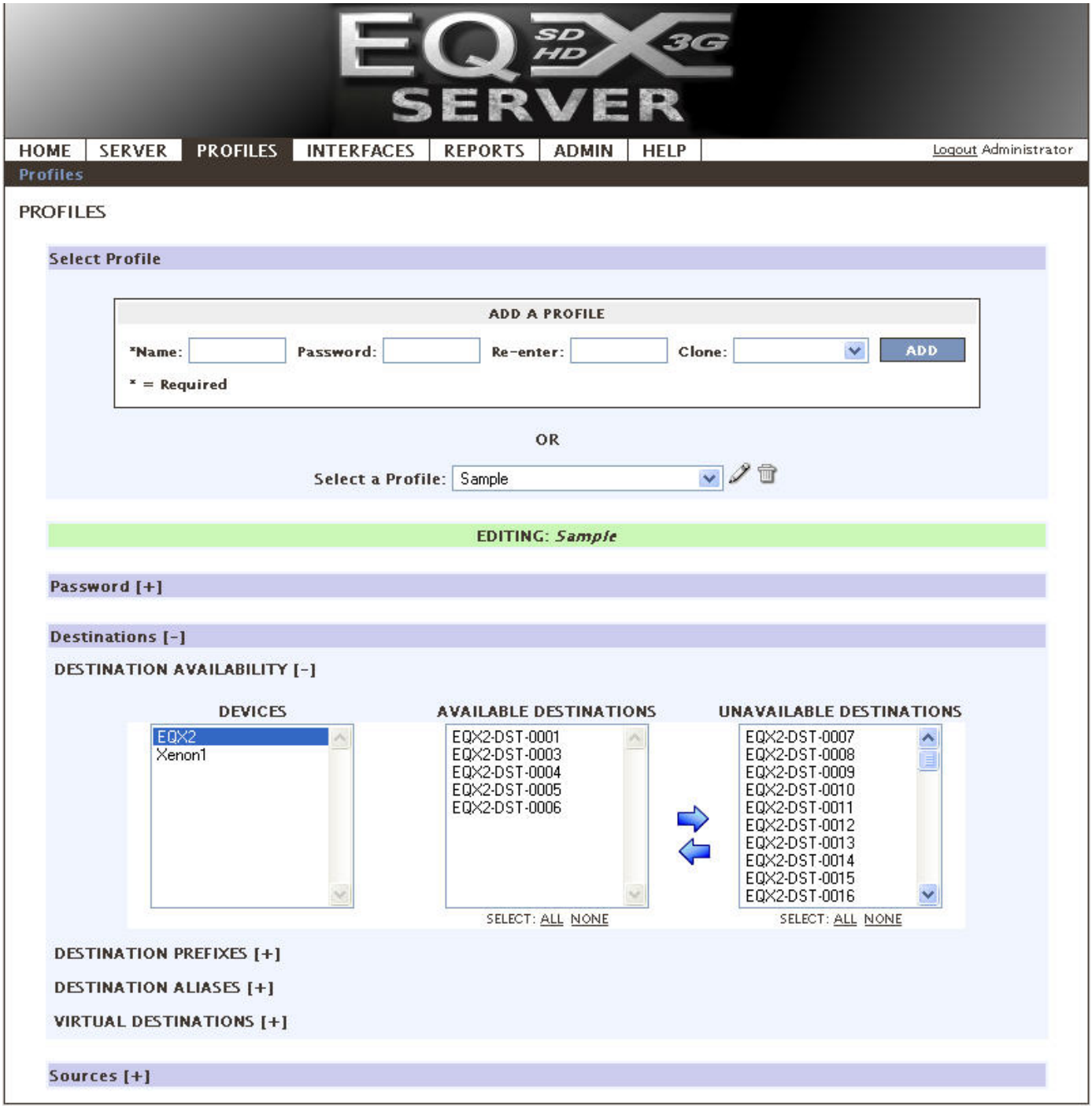

Figure 4-18: Destinations

a) Add destinations to the profile following the same procedure outlined in the Global SRC alias section. Select a device from the Devices field and a list of *Available Destinations* and *Unavailable Destinations* particular to this profile will appear. Move the destinations between lists as appropriate using the arrow keys.

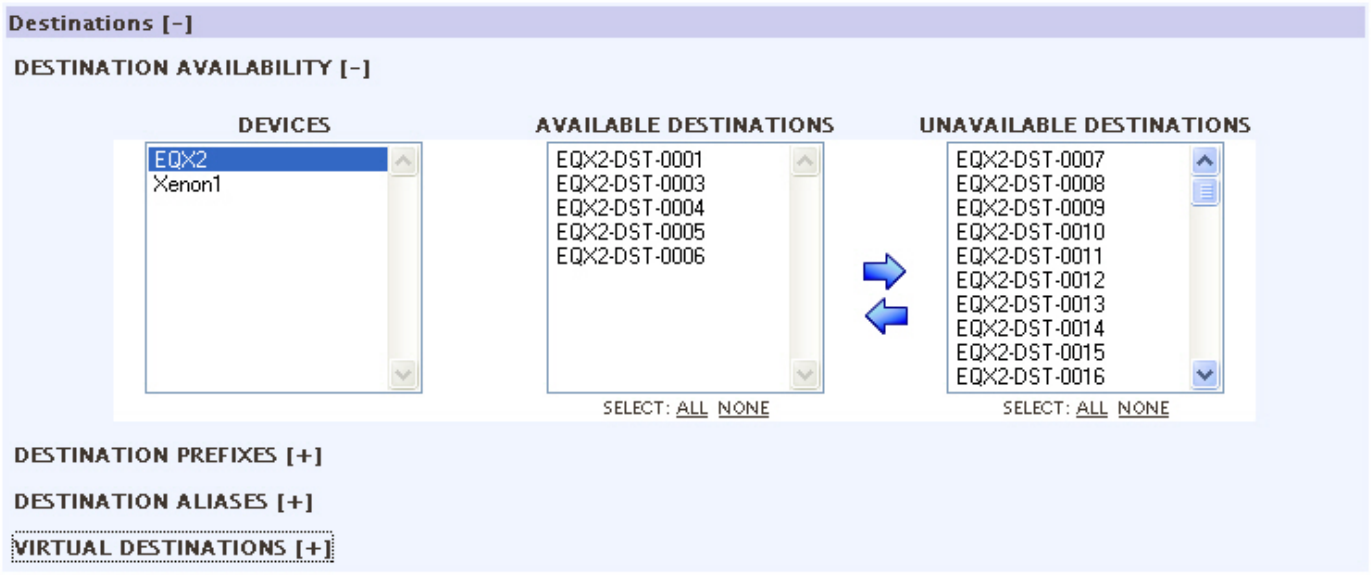

Figure 4-19: Destinations

b) Add prefixes to the profile by either entering new ones, which will be local to this profile only or by selecting from the global prefixes and clicking the **Add** button, as shown in Figure 4-20. Again remember that prefixes are used to simplify generating aliases in the WCT, as well as to create the actual category buttons used for routing sources or searching for destinations while using the intelligent routing panels.

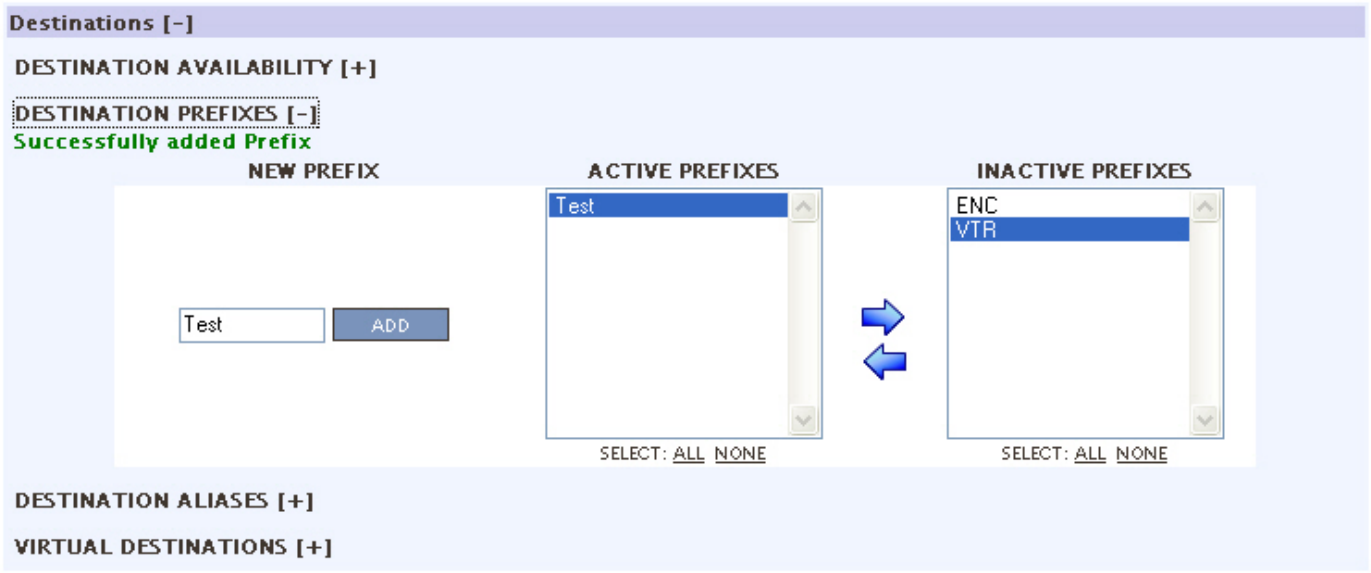

Figure 4-20: Prefixes

c) Configuring the *Destination Aliases* enables the user to set a Profile Alias name. If the original global alias is appropriate you may leave as is, otherwise this page can be configured the same as the global alias page. Use a combination of prefixes, separator characters, and numeric suffixes to build up the new destination aliases. Once complete be sure to click the **SAVE ALIASES** button.

Figure 4-21: Destination Aliases

d) The Virtual Destinations section enables the user to add virtual destinations. To create a virtual destination click the **ADD** button and an empty field and check box will appear under the **NO VIRTUAL SOURCES AVAILABLE** text. Enter a Virtual Destination name into the field. The user can delete the Virtual Destination by placing a check mark in the box beside the virtual destination and pressing the **DELETE** button. To store the virtual destinations click the **SAVE** button. To import a virtual destination, select the **Browse** button and then navigate to the desired file. Select the **Open** button in the dialog box and then click the **IMPORT** button once the file is listed in the file field. To export the virtual destinations, press the **Export Virtual DSTs** button.

Tip: Virtual destinations are a way to build up destinations with multiple level assignments. In this way a destination that naturally spans frames and levels can be routed to with sources sorting into the correct levels automatically.

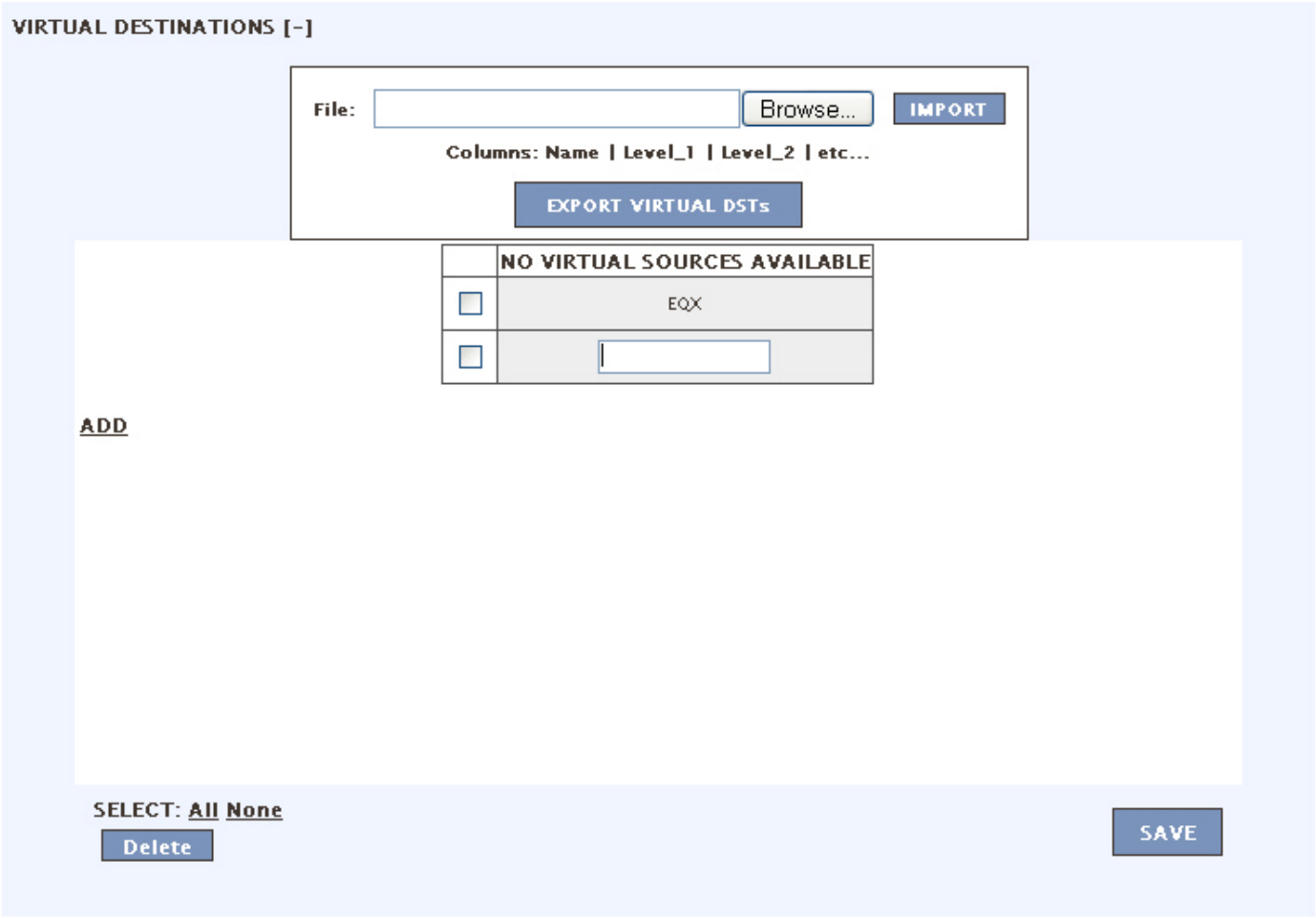

Figure 4-22: Virtual Destinations

3. The last step is to repeat the adding and alias process for Sources. Remember, when adding SRCs you will only be able to add those that have been allowed on the **Global SRC Availability** page for the destinations you have added to the profile currently being edited.

Figure 4-23: Profile Sources

4. Configure the Source Availability for the Profile using the same procedure outlined for the Destination Availability.

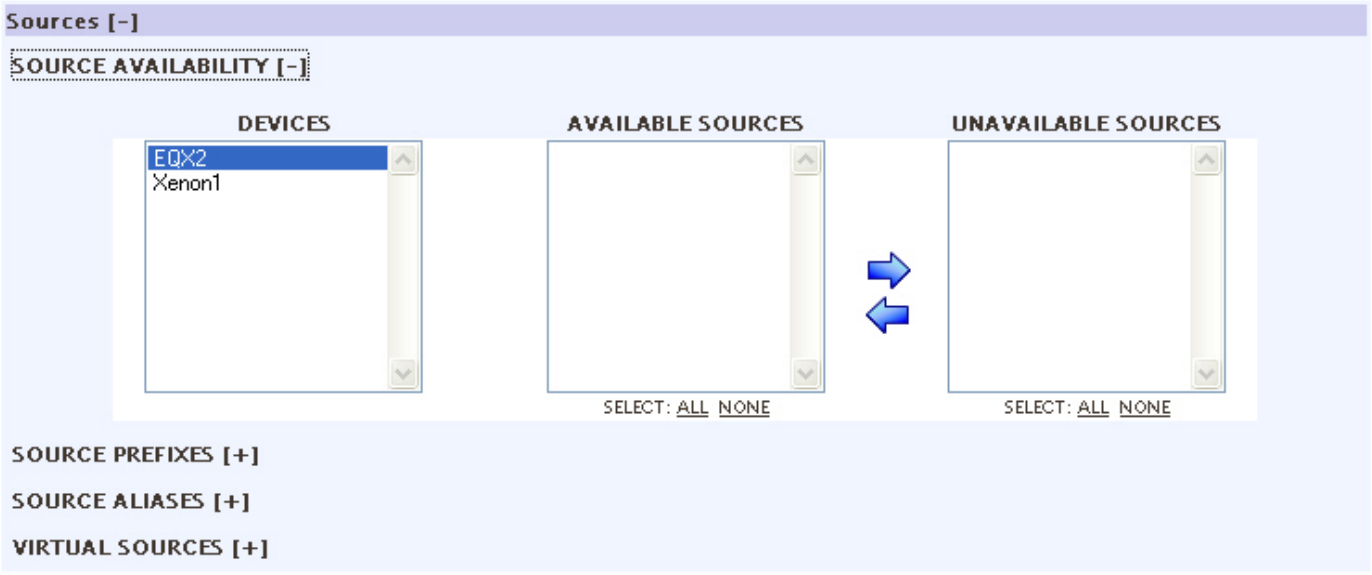

Figure 4-24: Profile - Source Availability

5. Configure the Source Prefixes for the profile using the same procedure outlined for the destination prefixes.

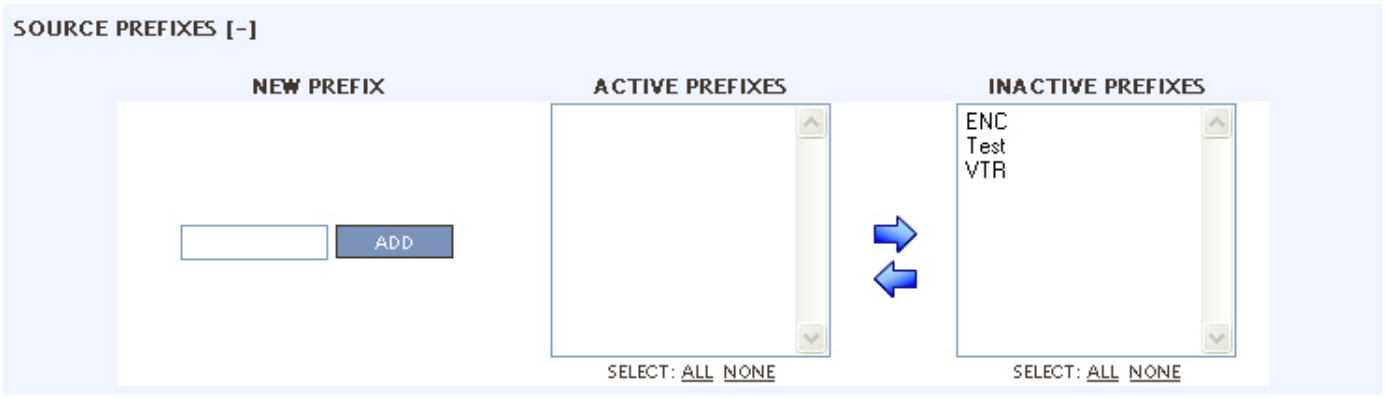

Figure 4-25: Profile - Source Prefixes

6. Configure the Source Aliases for the profile using the same procedure outlined for the Destination Aliases.

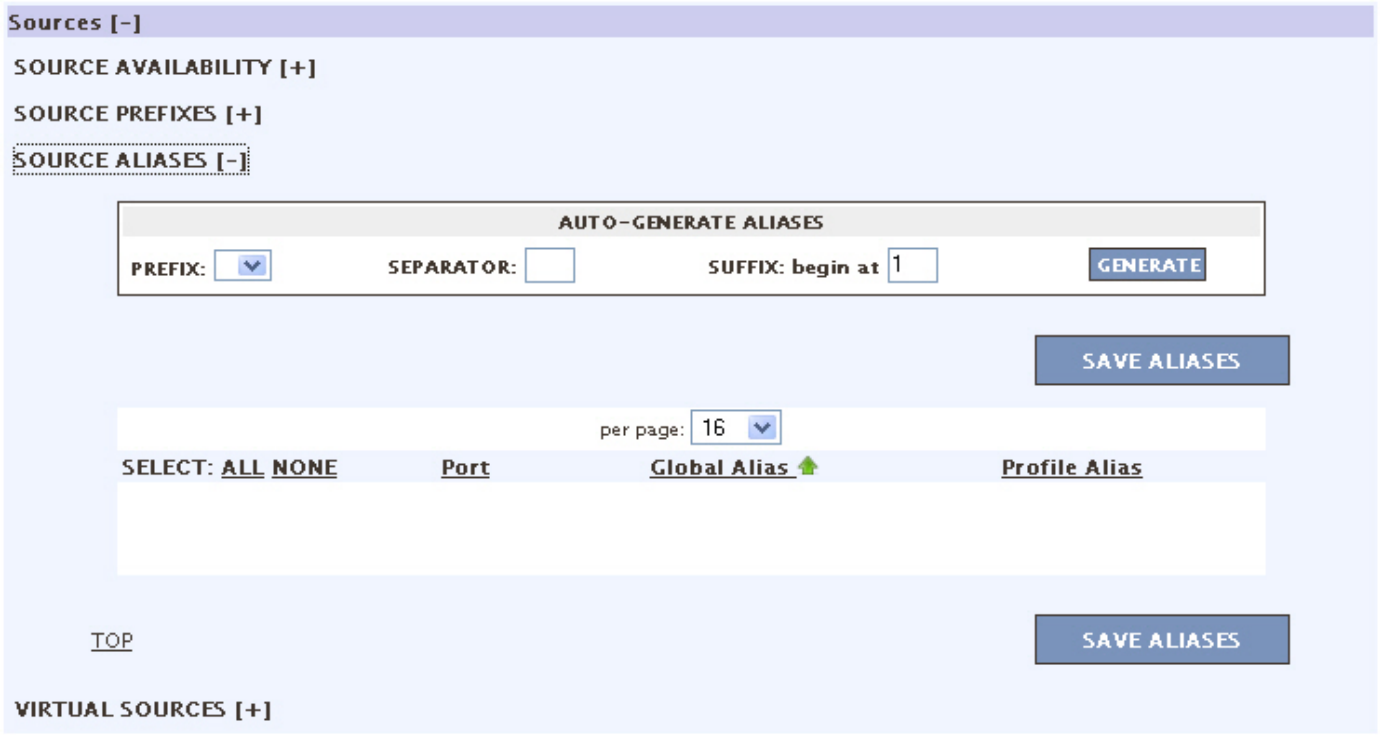

Figure 4-26: Profile - Source Aliases

7. Configure the Virtual Sources for the profile. To add a virtual source, select the **ADD** button and then enter a name for the virtual source in the field that appears. The user can also apply a name to the channel by selecting the **–** sign under the desired channel and then entering a name once the text field appears. To delete a source, place a check mark in the box beside the source and press the **DELETE** button. To save the virtual source, select the **SAVE** button.

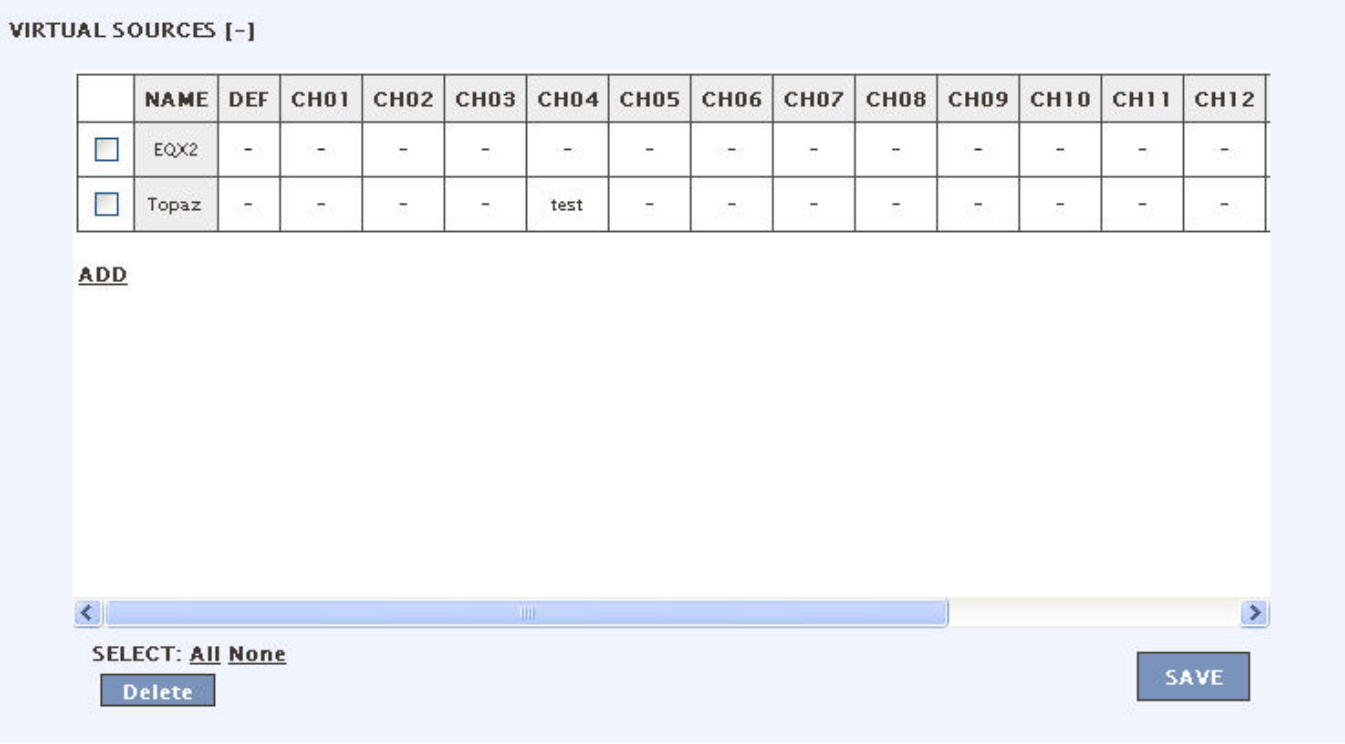

Figure 4-27: Profile - Virtual Sources

Tip: Virtual sources are a way to create sources that span levels and frames. This facilitates level routing with virtual sources lining up routing to matching levels on virtual destinations. Breakaways are also performed within virtual sources and destinations on the panel by allowing you to choose new source assignments on the fly to route into particular levels of a virtual destination.

Once complete be sure to return to the server change sets to upload any changes.

4.3.2. Configuring the Interfaces

The **INTERFACE** tab enables the user to set the layout of the interface.

1. The **Panel Layouts** section enables the user to create a new layout. The user is required to fill in a Name, Model, and Profile for each new layout created. Once the appropriate fields are entered, select the **ADD** button. Selecting the **ADD** button adds the new layout to the layout list.

Tip: Panel layouts are a definition of a TYPE of panel, not a specific panel, that allow the user to set panel functions for a group of panels (defined later) very quickly. A profile is specified now during panel layout creation so that the layout has a framework of available sources, destinations and aliases (and as a result of these choices, any automated tielines, path-finding src availability limits etc) to work within.

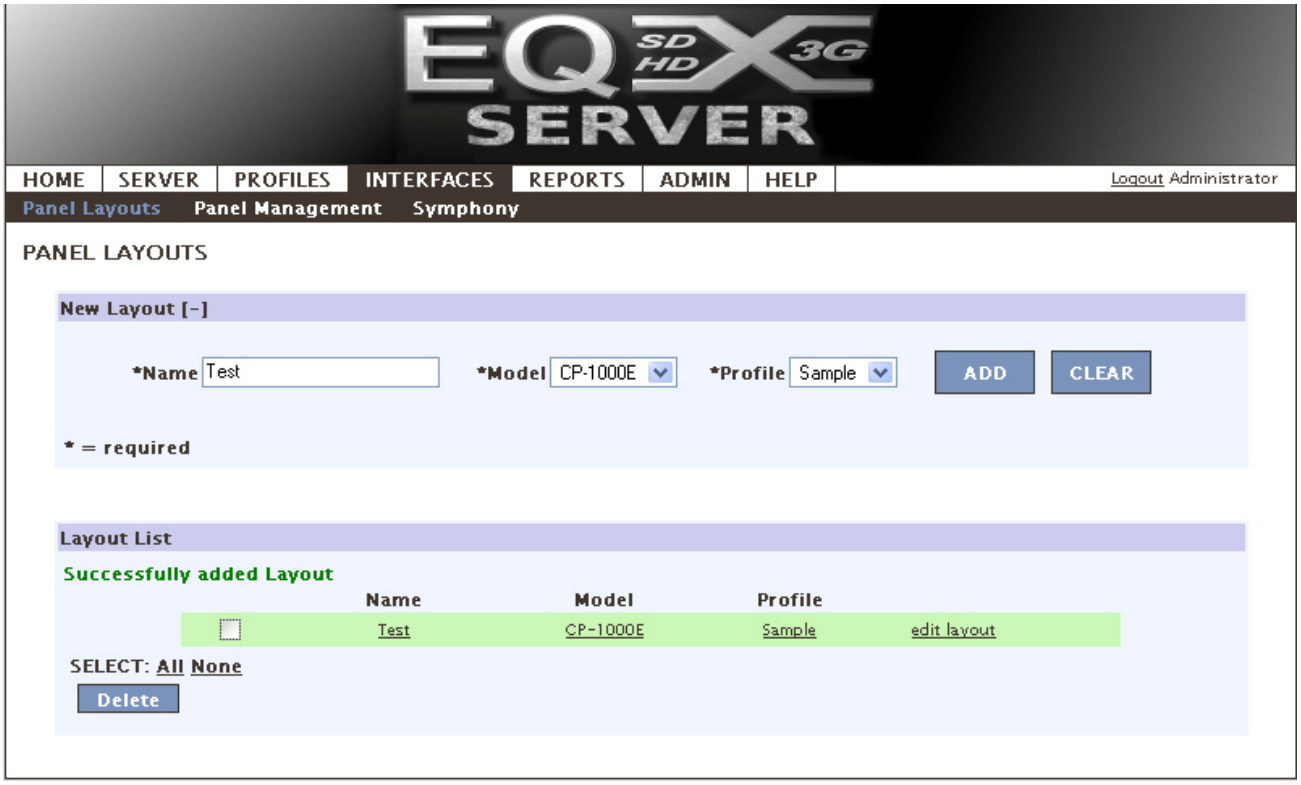

Figure 4-28: Panel Layout with Layout List

2. To edit an existing layout, select the **edit layout** button of the interface layout that you wish to edit. The *Evertz Router Control Panel Configuration* tool will appear, as shown in Figure 4-29, which enables the user to configure the Control Panel.

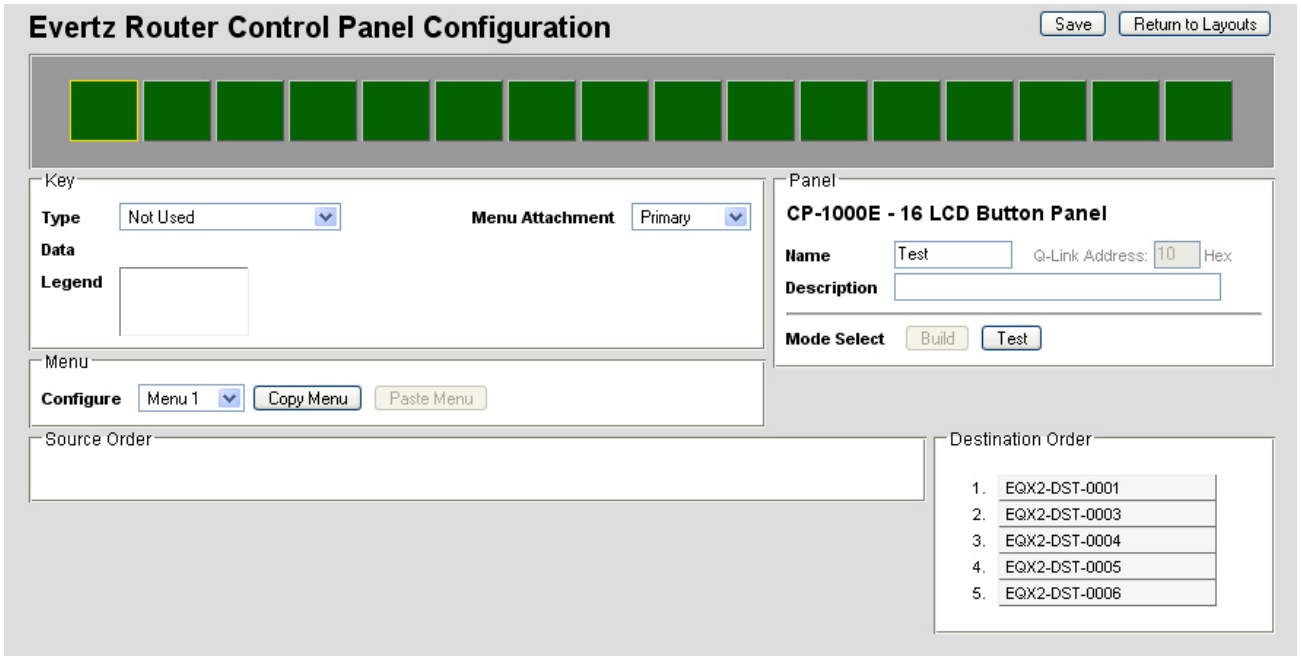

Figure 4-29: Evertz Router Control Panel Configuration Tool

4.3.2.1 Types of Buttons

The following is a list of buttons that are used to configure the Control Panel.

BUTTON	Description
Panel lock	Locks all functionality of the local panel.
Locks	Allows access to the locks functionality.
System Salvo	This key type allows one of the system salvos (defined by the salvo combo box) to be fired.
Enable	Inhibits any source key from being taken to a destination unless this button is held down.
Take	This key takes the current source pre-selection to the current destination on all the currently enabled levels. The button will display the currently routed source on the lowest enabled level, unless a legend is given to this key.
Source	Takes this source to a currently selected destination.
Src Shift Up	Scrolls up and through the Source List
Src Shift down	Scrolls down and though the Source List.
Source Preset	This key changes the source that is routed to the pre-select. This key does not change any destination on the system but is used when a take or level take key is pressed. It will then take this pre-selection to the current destination.
Prev Preset Source	This key decrements the source that is routed to the pre-select. This key does not change any destination on the system but is used when a take or level take key is pressed. It will then take this pre-selection to the current destination.
Next Preset Source	This key increments the source that is routed to the pre-select. This key does not change any destination on the system but is used when a take or level take key is pressed. It will then take this pre-selection to the current destination.
Destination	Changes the currently selected destination.
Dst Shift Up	Scrolls up and through the Destination List.
Dst Shift Down	Scrolls down and through the Destination List.
Previous Destination	Changes the current destination to the previous one defined in the name table.
Next Destination	Changes the current destination to the next one defined in the name table.
Record Snapshot of matrix	Saves a snapshot of the current routing system route status.
Play Snapshot of matrix	Recalls (re-takes) previously recorded snapshot of the current routing system route status.
Primary menu	Allows access to a primary menu.
Secondary menu	Allows access to a secondary menu.
Last menu	Displays and navigates to the previously displayed menu.
Level	Toggles the level *on/off* to affect possible breakaways on subsequent takes. Displays the level name.

Table 4-1: Button Description

4.3.2.2 Source and Destination Order

The source order and destination order sections are used to determine the order that the items scroll through in conjunction with the *src/dst* scroll *up/down* buttons. To change the order of the item in the list, double click the item in the list and drag it to a new location in the list (up or down). See Figure 4-29.

4.3.2.3 Build vs. Test Mode

Build Mode: Build mode enables the use to build the panel layout.

Test Mode: Test mode enables the user to test the panel using the web interface. The user can navigate through the system but the user cannot actually run the control panel in this mode.

3. The **Panel Management** section enables the user to define and configure Control Panels.

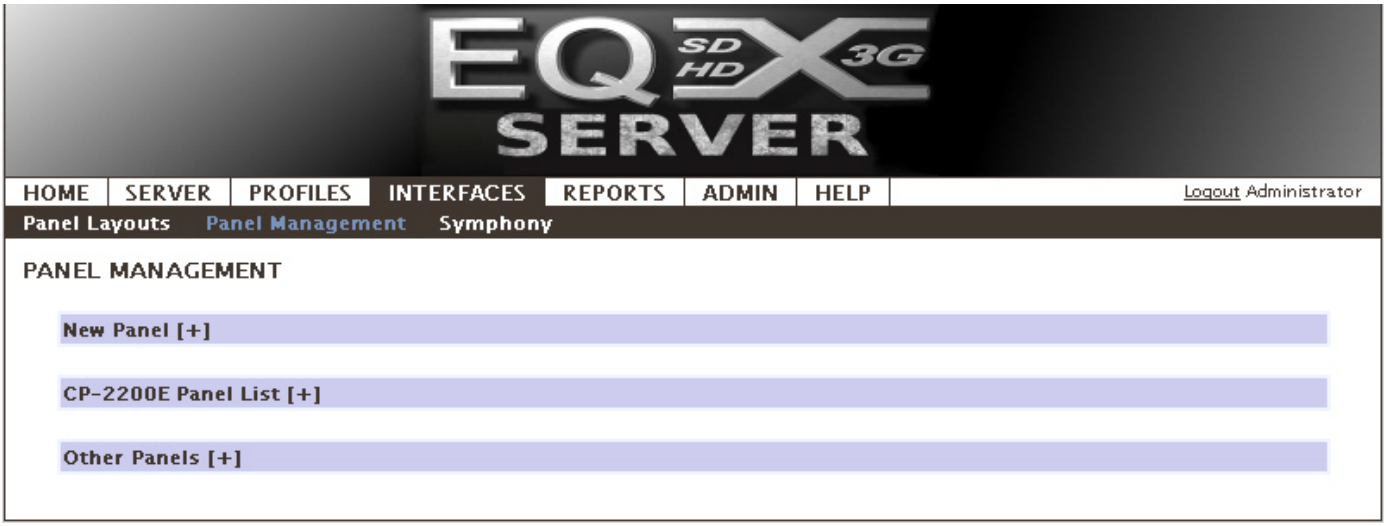

Figure 4-30: Panel Management

4. The ***New Panel*** section enables the user to enter the parameters of the Control Panel into the applicable fields. The user is required to enter a Name, IP Address, and Model. The User has the option to select a Layout for panels that require them. Once the appropriate fields are filled out, select the **ADD** button to add the Control Panel to the appropriate Panel List.

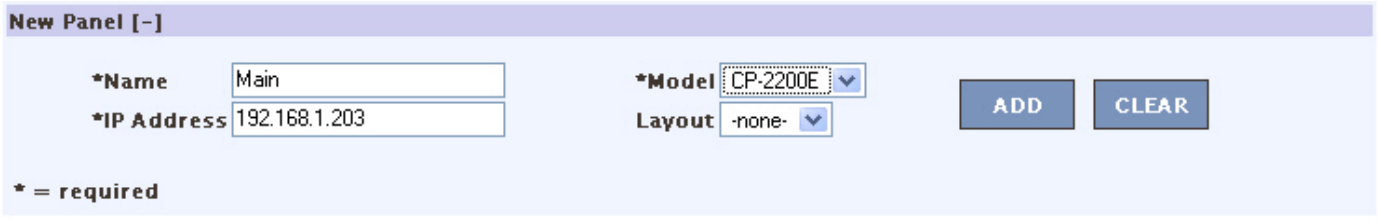

Figure 4-31: New Panel

5. The ***CP-2200E Panel List*** section enables the user to select and apply profiles directly to CP-2200E and other intelligent panels.

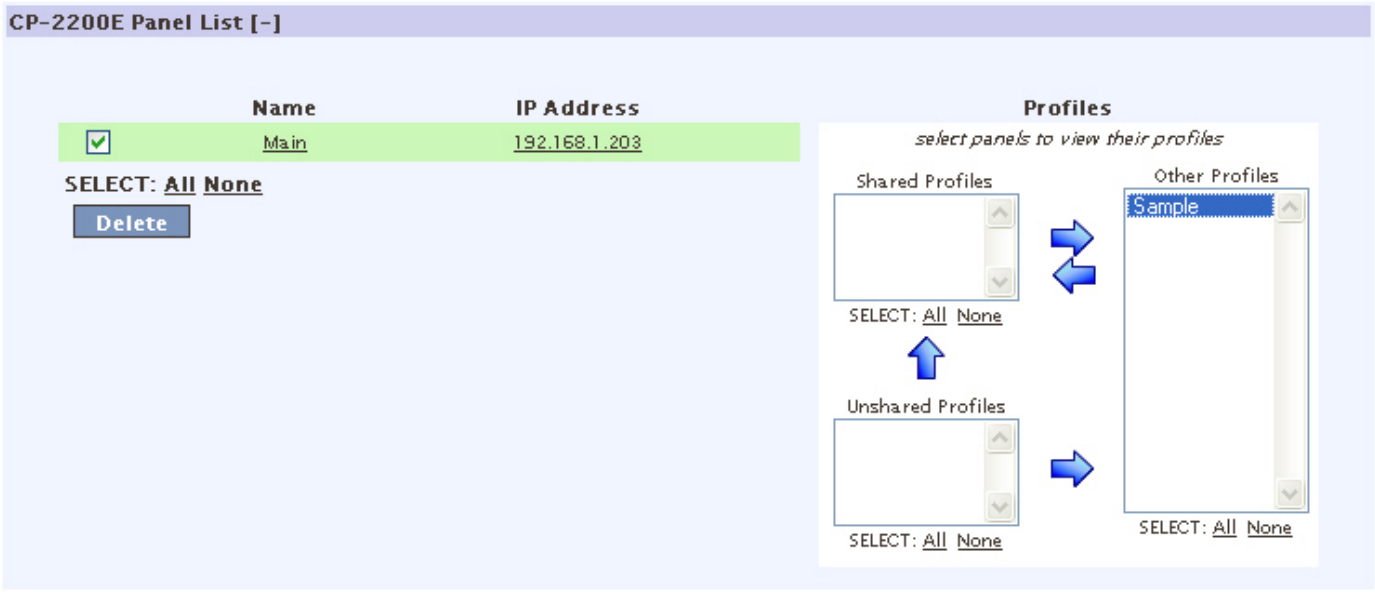

Figure 4-32: CP-2200E Panel List

6. The ***Other Panels*** section displays the additional panels that the user has added. The user can remove panels by placing a check mark in the box beside the desired item and selecting the **DELETE** button.
7. To assign a profile or profiles to a panel or group of panels, choose the panels you wish to work with by checking the box next to each one and moving profiles, using the arrows on top, from *other profiles* to *shared profiles.*
    a. If multiple panels are chosen and some profiles appear in *shared* versus *unshared* profiles, this means that not all profiles are common to all selected panels. Move the panels up from the bottom to the top to make them common on all panels, or from left to right to remove them from all panels.

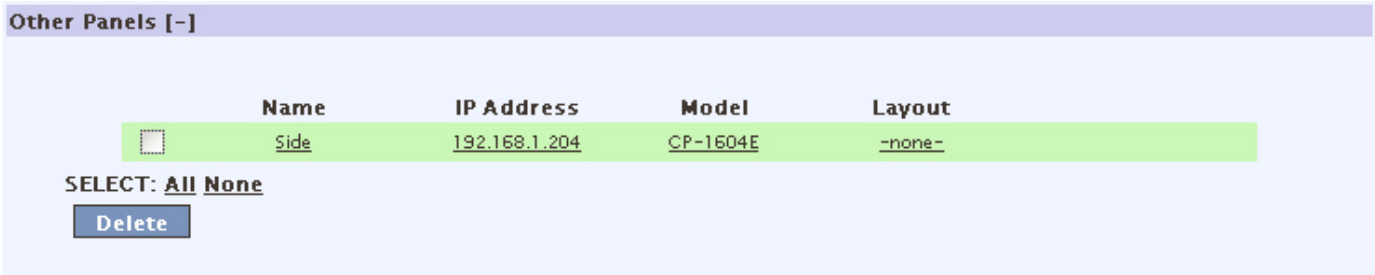

Figure 4-33: Other Panels

8. The **Symphony** section enables the user to setup the symphony 3rd party protocol access. The user can select a previously created profile from the drop down Profile list. Once the profile is selected from the Profile drop down list, the profile will be applied to Symphony and the message "*Successfully changed the Profile*" will be displayed.

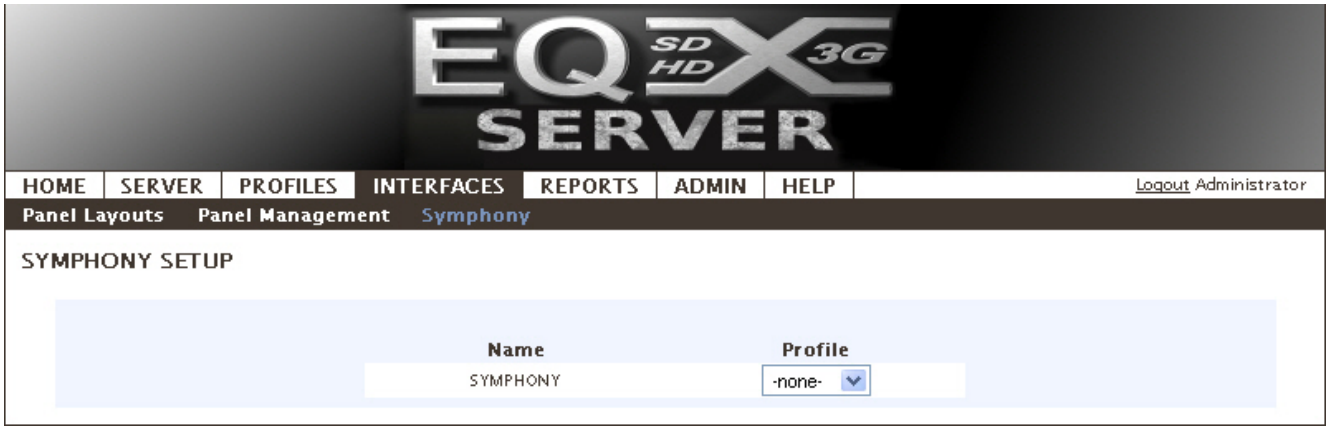

Figure 4-34: Symphony

Once complete be sure to return to the server change sets to upload any changes.

4.3.3. Reports

The reporting page of the EQX server is powerful and constantly being updated with new types of reports. Currently there is a report for tieline usage which, amongst other things; displays a tieline, what source is on it and who is currently viewing it.

1. On the **REPORTS** tab click on the **Reports** menu. Current Tieline information will be displayed.

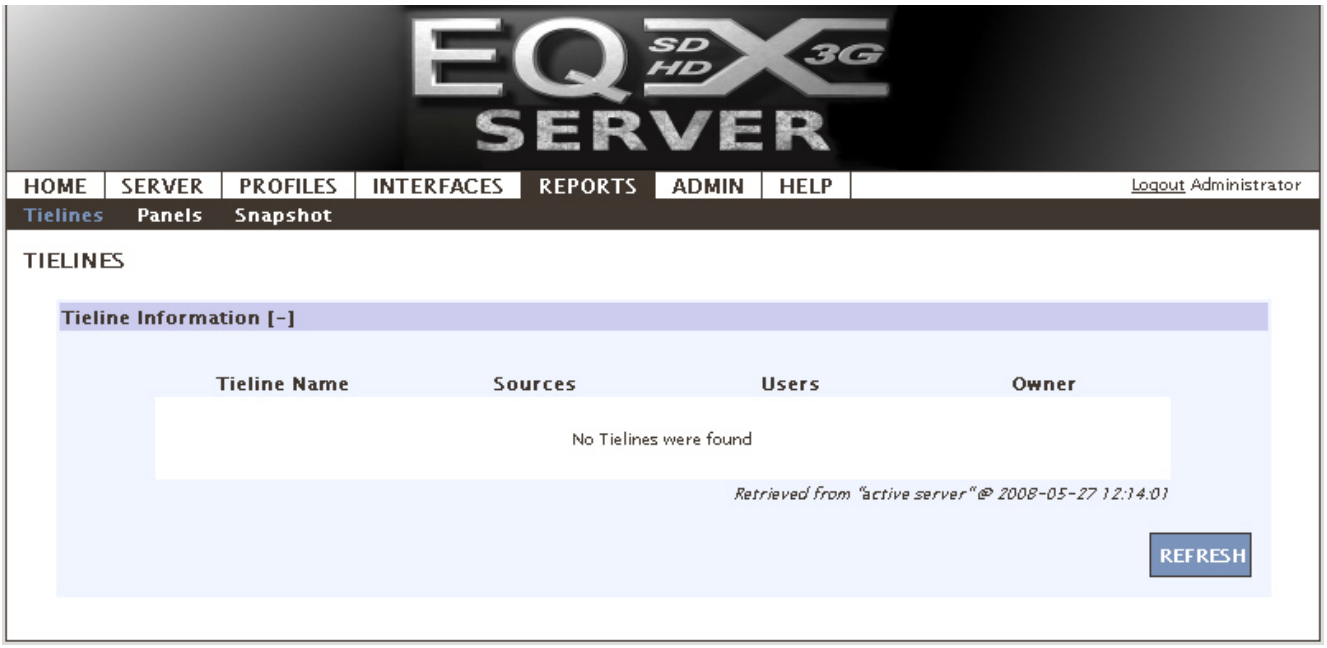

Figure 4-35: Reports Tab

4.3.4. Web Config Tool Users

A core routing system is extremely powerful. With great power comes great responsibility, and as a result managing who has access to view or change core information is key.

1. Add a user by typing in a display name, username and password.
2. Add the user to a group, currently either admin level or read only level.
3. Once complete, select the **Add** button.

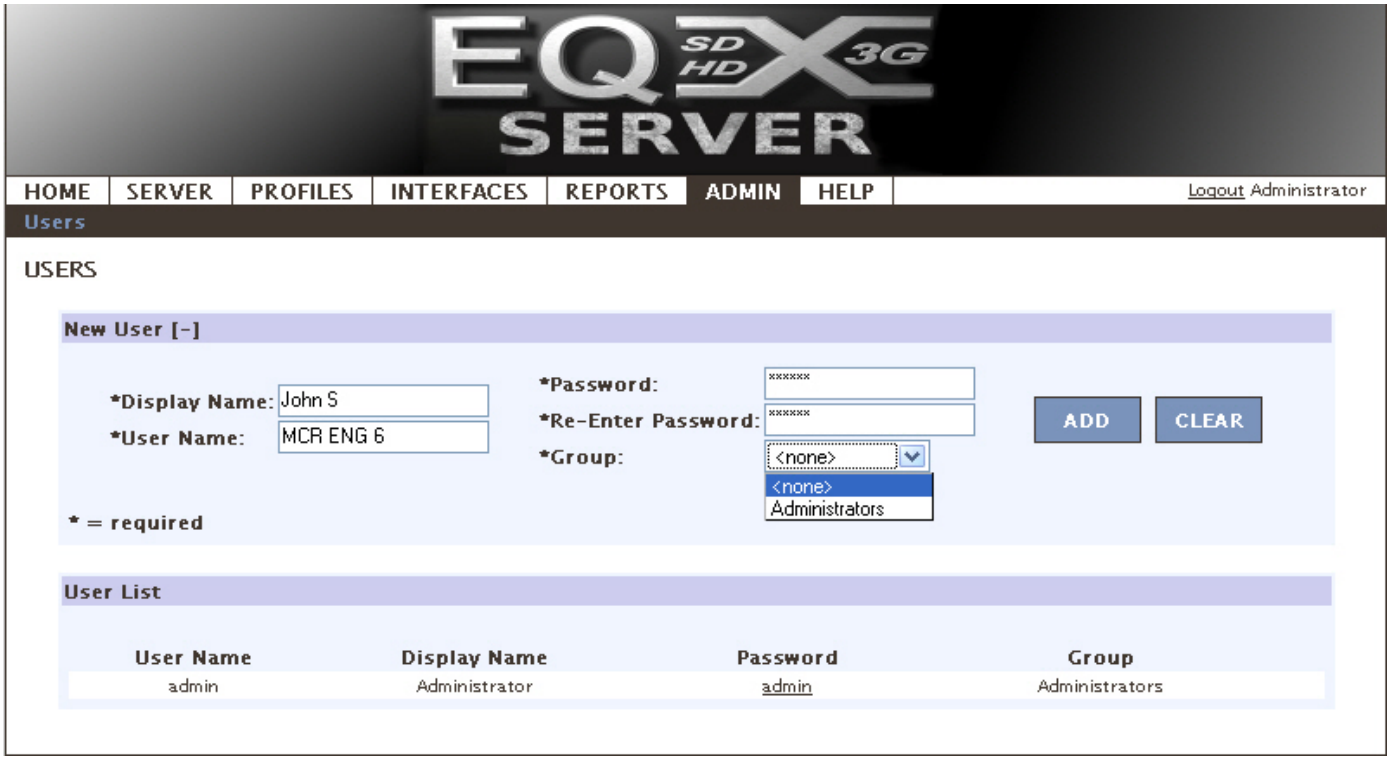

Figure 4-36: Admin

Once complete be sure to return to the server change sets to upload any changes.

5. APPENDIX: LINUX CRASH COURSE

The following is an introduction to common commands used when working with an EQX server.

5.1. Command Line Tips

- User can often use <TAB> to quickly complete a partially typed command
- Paths/directories use a forward slash '/' rather than a back slash ''
- Use *ssh* to connect to other servers
- Use *less* to view file contents
- Use *nano* to edit files
- Use *ls* to list directory contents

5.2. Useful Linux Commands

If assistance is required for a particular command, enter the command name followed by *--help* at the prompt and press enter. For example, typing *dpkg -- help* will provide more information on how to use *dpkg*.

init.d
Files under /etc/*init.d* are used to start and stop services on the host computer.

mount and umount
Mount is used to add devices to the file system. Most commonly this will be used to access a USB key. Before removing the USB key you should mount the mounted directory to your USB device.

Make a directory in the /mnt directory

```
Mkdir /mnt/usb
```

When the USB drive is inserted it will be installed to sdaX (typically sda1), use this to mount the drive:

```
mount /dev/sda1 /mnt/usb
```

Show the contents of the mounted drive:

```
ls /mnt/usb
```

Result:

```
bin Desktop dotfiles log patches src typescript worklog
```

Unmount the USB drive and remove it:

```
umount /mnt/usb
```

ifconfig
ifconfig shows network interface configurations, therefore it is useful for checking IP addresses.

dpkg
dpkg shows you the current version of a piece of software:

```
dpkg –l vim
||/ NAME             VERSION            DESCRIPTION
+++-================================================================================
Ii  nano             2.0.2-1            free pico clone with some new features
```

netstat

netstat is a tool for checking the status of the network.

You can check that the server is accepting connections by running *netstat -tl* and looking for the port numbers in the output.

```
netstat -tl
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0    0    *:1248                 *:*                     LISTEN
tcp        0    0    localhost:2208         *:*                     LISTEN
tcp        0    0    *:9750                 *:*                     LISTEN
tcp        0    0    localhost:ipp          *:*                     LISTEN
tcp        0    0    *:8765                 *:*                     LISTEN
tcp        0    0    localhost:2207         *:*                     LISTEN
tcp6       0    0    *:ssh                  *:*                     LISTEN
```

You can also check the routing configuration using *-rn*

```
netstat -rn
Kernel IP routing table
Destination     Gateway         Genmask         Flags MSS Window irtt    Iface
192.168.3.0     0.0.0.0         255.255.255.0   U      0 0          0       eth1
192.168.192.0   0.0.0.0         255.255.192.0 U      0 0          0       eth0
169.254.0.0     0.0.0.0         255.255.0.0     U      0 0          0       eth1
0.0.0.0         192.168.3.1     0.0.0.0         UG     0 0          0       eth1
```

netstat

displays a list of ports that are open on your system. This is useful to see what ports the server is actively listening on.

To see ports relevant for our uses, execute:

```
netstat -an –tcp
```

dmesg

dmesg shows the kernel log. It is useful for checking if devices were detected and added properly.

tail

tail allows you to view the end of a file, which is useful when checking logs. Adding the *-f* parameter updates the screen when a new entry is added to the file. Code similar to this example displays anytime there is an update to the dmesg service log:

```
EQXPRI:~#tail -f /var/log/dmesg
```

telnet
telnet is used to connect to various devices or software, as well as test their functionality. You will be required to specify the host and port on the command line.

Quartz Routers
Quartz Protocol can be used to verify that the quartz routers are alive and controllable by the server system.

```
EQXPRI:~#telnet 127.0.0.1 3737
Trying 127.0.0.1...
Connected to 127.0.0.1.
Escape character is '^]'.
.#01
.A
.SV1,1
.UV1,1
<CTRL>-]
telnet> quit
Connection closed.
```

Symphony
An easy way to test that symphony is working, is to connect via telnet into the symphony service and run commands. Use <*CTRL>b* and <*CTRL>c* for STX and ETX characters respectively.

```
telnet localhost 9750
Trying 127.0.0.1...
Connected to 127.0.0.1.
Escape character is '^]'.
<CTRL>b011234RT(){ dst="RTR1-1" src="RTR1-10" }<CTRL>c
OK()
```

script
Script captures all input and output on a console to a file. The default is "typescript" in the directory you typed the script from. Once you are done type 'exit' and everything is written to the file.

This would be useful for capturing error messages or states that are hard to describe. The file can then be copied off the machine and sent to a developer for debugging.

```
EQXPRI:~#script
Script started, file is typescript
EQXPRI:~#ls /

bin     dev     initrd        lost+found     opt     root      sys       var
boot    etc     initrd.img    media          proc    sbin      tmp       vmlinuz
cdrom   home    lib           mnt            pub     srv       usr
```

```
EQXPRI:~#ls
bin Desktop dotfiles lib log patches pub src typescript worklog
EQXPRI:~#ls -la typescript
-rw-r--r-- 1 marcs 1005 0 2007-11-27 15:52 typescript
EQXPRI:~#exit
EQXPRI:~#cp ~/ typescript /mnt/usb
```

scp

scp can be used to copy files between linux machines.

Copy *file.deb* from the current machine to 192.168.1.100

```
scp /mnt/usb/file.deb  192.168.1.100:/etc
```

tcpdump

tcpdump is a tool to monitor network traffic. It can be used to verify that the correct messages are being sent. It also narrows down where a problem is originating. You will only see traffic between the machine running *tcpdump* and the machines it is talking to, unless you have a hub rather than a switch.

To monitor traffic to a quartz QMC, replace the IP Address with the IP address of the QMC you wish to monitor.

```
tcpdump tcp and port 23 and host 192.168.49.233
```

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