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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Jun 08
2.0	Support for firmware 1.03 Build 1 (and above).	Oct 08
3.0	Support for firmware 1.04 Build 55 (and above).	Mar 09

1. OVERVIEW

The 7700R-SC-BRC facilitates the following bidirectional router control scenarios:

Evertz Control
Evertz controls a third party router/controller. The 7700R-SC-BRC receives a request from an EQX server, translates it into a third-party router protocol request and, in turn, passes it along to the third-party router either directly or a via a system controller.

Third-Party Control
A third-party controls an Evertz router. The 7700R-SC-BRC receives a request from a third-party control device, translates it into a Quartz Remote Control protocol request and, in turn, passes it along to the Evertz router either directly or via an EQX server.

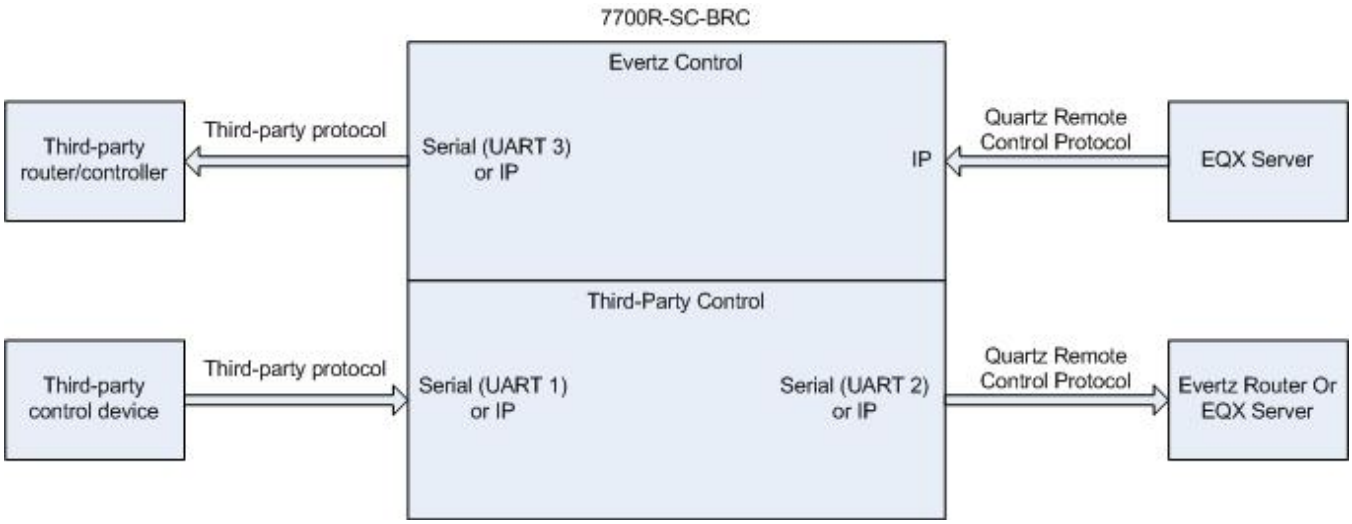

Figure 1-1: Functional Overview

2. CARD EDGE CONTROLS

2.1. DETERMINING CURRENT IP ADDRESS SETTINGS

To read the current IP address during normal operation, press the front switch DOWN. The IP address can be read on the four-character LCD.

2.2. RESTORING FACTORY DEFAULTS

To restore all settings to factory defaults, apply power to the card while holding the toggle switch UP until the LCD begins to scroll *7700R-SC-BRC*.

2.3. DEBUG/MONITOR PORT

Some parameters of the 7700R-SC-BRC must be configured via its debug/monitor port. A special Evertz adapter cable allows this port to connect to the COM port of a personal computer. The following steps describe this procedure.

1. Locate the small, keyed, four–pin end of the upgrade cable provided by Evertz.
2. Connect it to the four-pin interface located beside the LCD.
3. Connect the other end of the upgrade cable to a straight-through serial cable. Connect the serial cable to the serial or COM port of the computer.
4. Initiate HyperTerminal on your computer by selecting:
   "*Start\Programs\Accessories\Communications\HyperTerminal.*"
5. Enter a name for your connection, for example: Evertz.
6. Press the <Enter> key. A new "Connect To" window will appear.

Figure 2-1: 'Connect To' Window

7. In the "*Connect using"* region, select COM1 from the drop down menu. If COM1 is in use, select an alternate COM port.
8. Press the <Enter> key or select OK. This opens the "COM Properties" window.

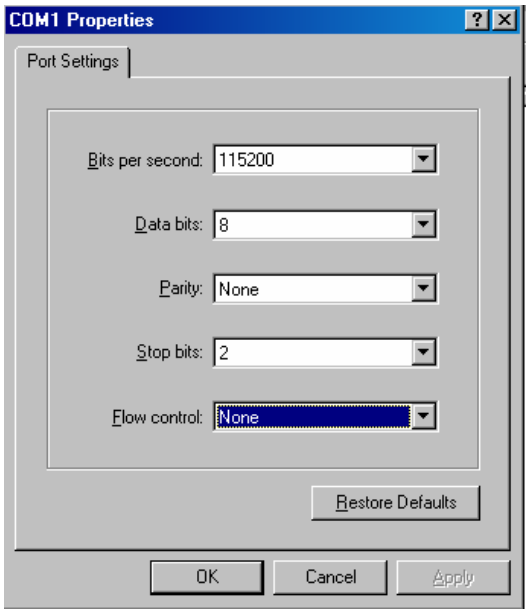

Figure 2-2: COM1 Properties

9. Enter the information for the *COM1 Properties* settings as listed in the screen above.
10. Press the <Enter> key or select OK. The "COM Properties" window closes, leaving the HyperTerminal window open.
11. Apply power if the 7700R-SC-BRC does not have power. The boot sequence and Main Menu are displayed in the HyperTerminal window.
12. If the 7700R-SC-BRC has power, press the <Enter> key to view the 7700R-SC-BRC's menu system (Figure 2-3).

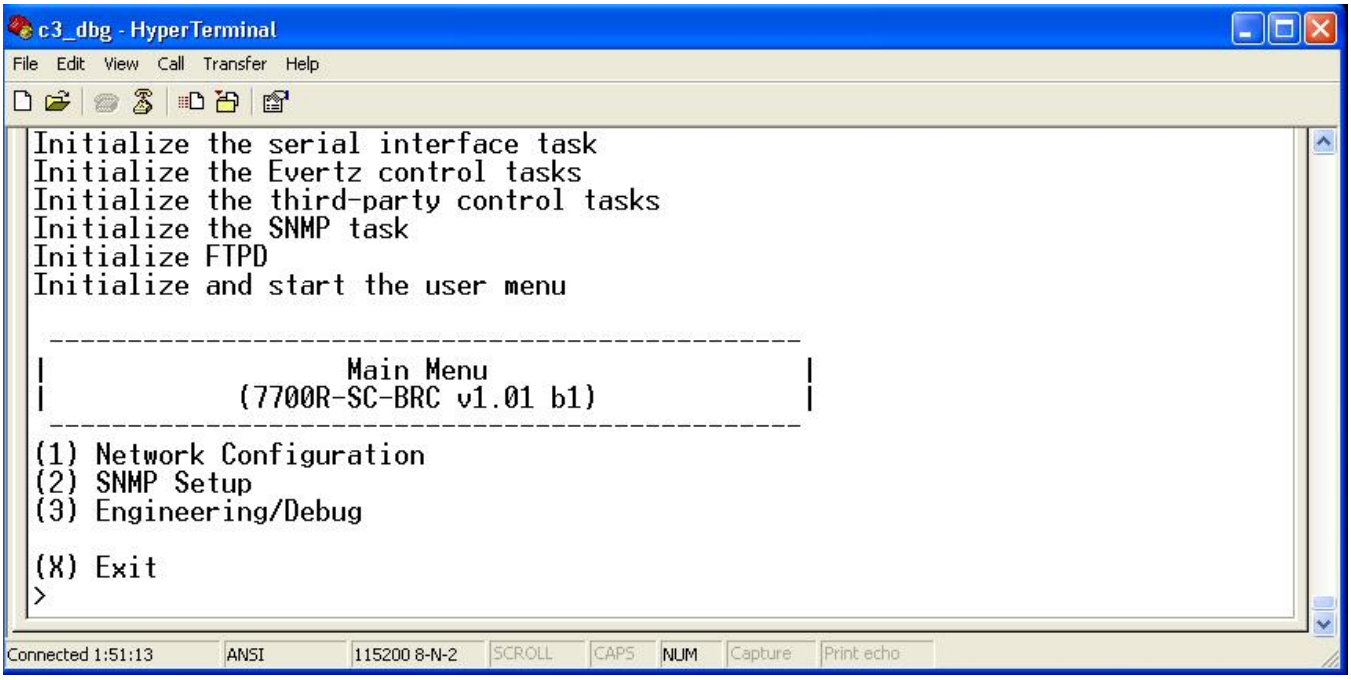

Figure 2-3: 7700R-SC-BRC Main Menu

3. DB25 PINOUT

The serial interfaces of the 7700R-SC-BRC are accessible via the DB-25 connector. Figure 3-1 shows the numbering scheme of the pins:

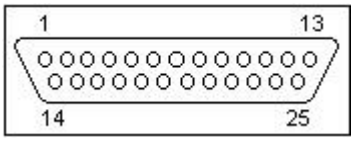

Figure 3-1: DB25 Pin Numbers

Serial Interface/UART	Connects To	Pin	RS-422 Function	RS-232 Function
1	Third-party control device	1	TX-	TX
		2	TX+	
		14	RX-	RX
		15	RX+	
2	Evertz router	3	TX-	TX
		4	TX+	
		16	RX-	RX
		17	RX+	
3	Third-party router/controller	5	TX-	TX
		6	TX+	
		18	RX-	RX
		19	RX+	
		9	Ground	Ground
		10		
		22		

Table 3-1: DB25 Pin Functions

3.1. 3500 CONTROLLER PINOUTS

3.1.1. RS-232

Pin	Function
2	Rx
3	Tx
5	Gnd

Table 3-2: 3500 RS-232 Wiring

The 3500 typically uses RS-232 flow control signals. The 7700R-SC-BRC does not. Figure 3-2 shows how to accommodate the flow control signals.

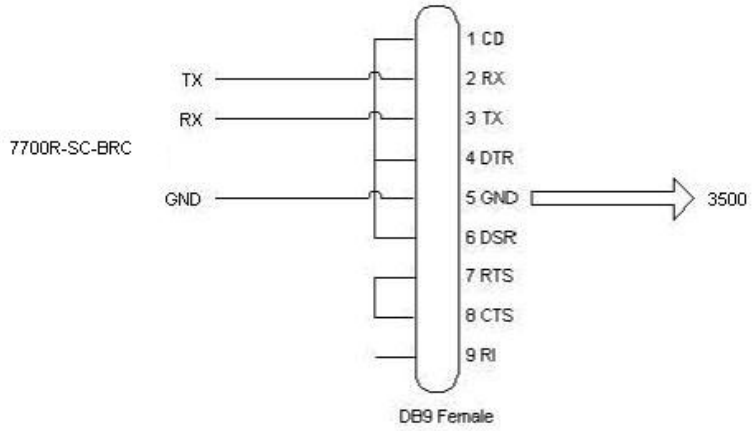

Figure 3-2: Accommodating RS-232 Flow Control Signals

3.1.2. RS-422

Pin	Function
7	Rx-
2	Rx+
3	Tx-
8	Tx+
1, 4, 5, 6, or 9	Gnd

Table 3-3: 3500 RS-422 Wiring

3.2. SH612 PINOUT

The RS-422 pinout of the SH612's DB9 connector is given in Table 3-4.

Pin	Function
8	Rx-
3	Rx+
2	Tx-
7	Tx+
1	Gnd

Table 3-4: SH612 RS-422 Pinout

The SH612 typically uses serial settings 38400, 8, Odd, 1.

3.3. REMOTE 2 (CART++) DEVICE PINOUT

The RS-422 pinout of a typical Remote 2 (Cart++) device is given in Table 3-5.

Pin	Function
2	TX-
3	RX+
4	GND
7	TX+
8	RX-

Table 3-5: Remote 2 (Cart++) Device Pinout

Remote 2 (Cart++) devices often use serial settings 38400, 8, Even, 1.

4. MENU SYSTEM CONFIGURATION

The parameters mentioned in this section can only be configured by using the menu system of the 7700R-SC-BRC. Section 2.3 details how to access the menu system.

4.1. NETWORK PARAMETERS

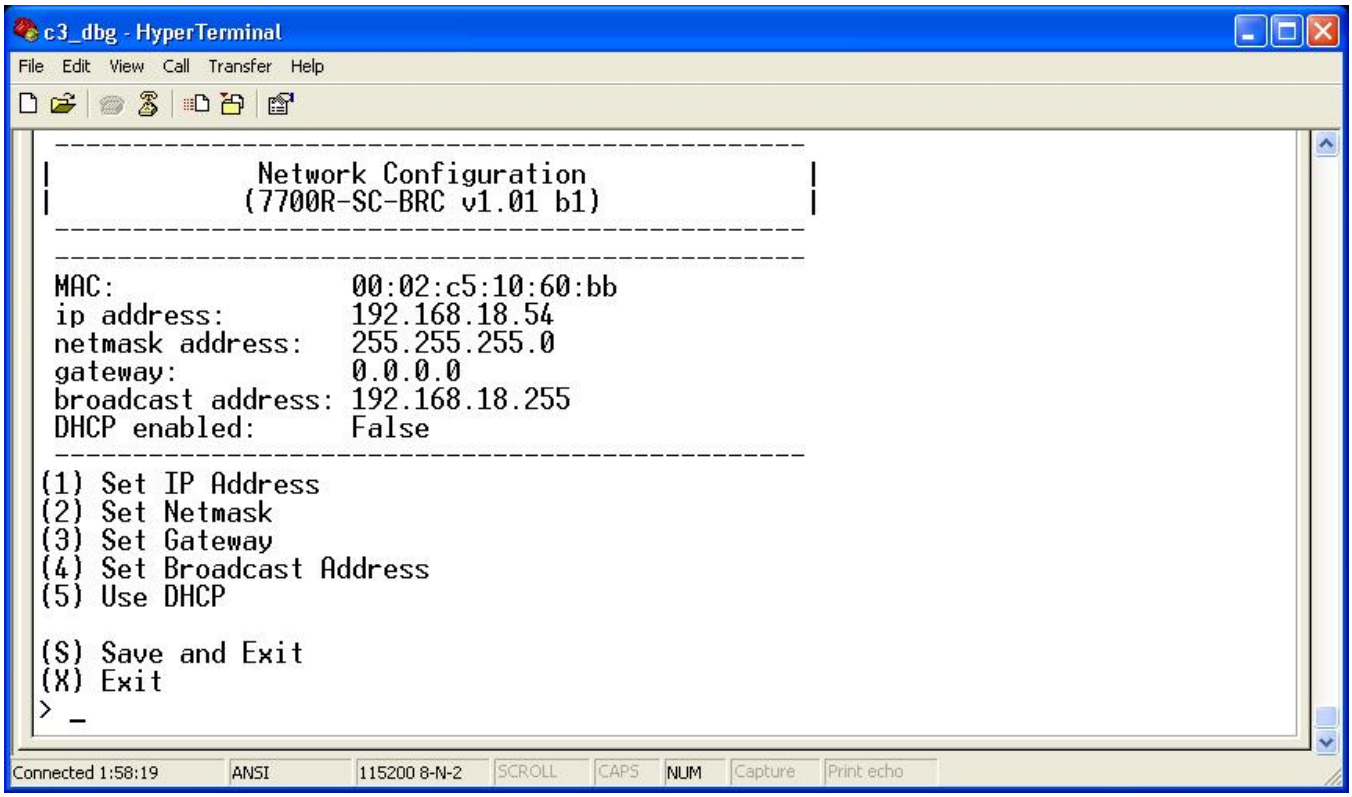

Figure 4-1: 7700R-SC-BRC Network Configuration Menu

1. From the *Main Menu* select *Network Configuration*.
2. If the 7700R-SC-BRC is to automatically obtain its network settings from a DHCP server, use the *Use DHCP* menu entry to set *DHCP enabled* to *True*. Go to step 7.
3. For static network settings use the *Use DHCP* menu entry to set *DHCP enabled* to *False*.
4. Select *Set IP Address* then enter the IP address of the 7700R-SC-BRC.
5. Select *Set Netmask* then enter the subnet mask of the 7700R-SC-BRC.
6. Optionally, select *Set Gateway* then enter the IP address of a gateway associated with the subnet.
7. Select *Save* and *Exit* before exiting the *Network Configuration* to save the settings, otherwise select *Exit*.
8. Reboot the 7700R-SC-BRC.
9. Ensure the VLPro machine can ping the 7700R-SC-BRC.

The 7700R-SC-BRC must be rebooted for any network setting changes to take effect.

4.2. SNMP SETTINGS

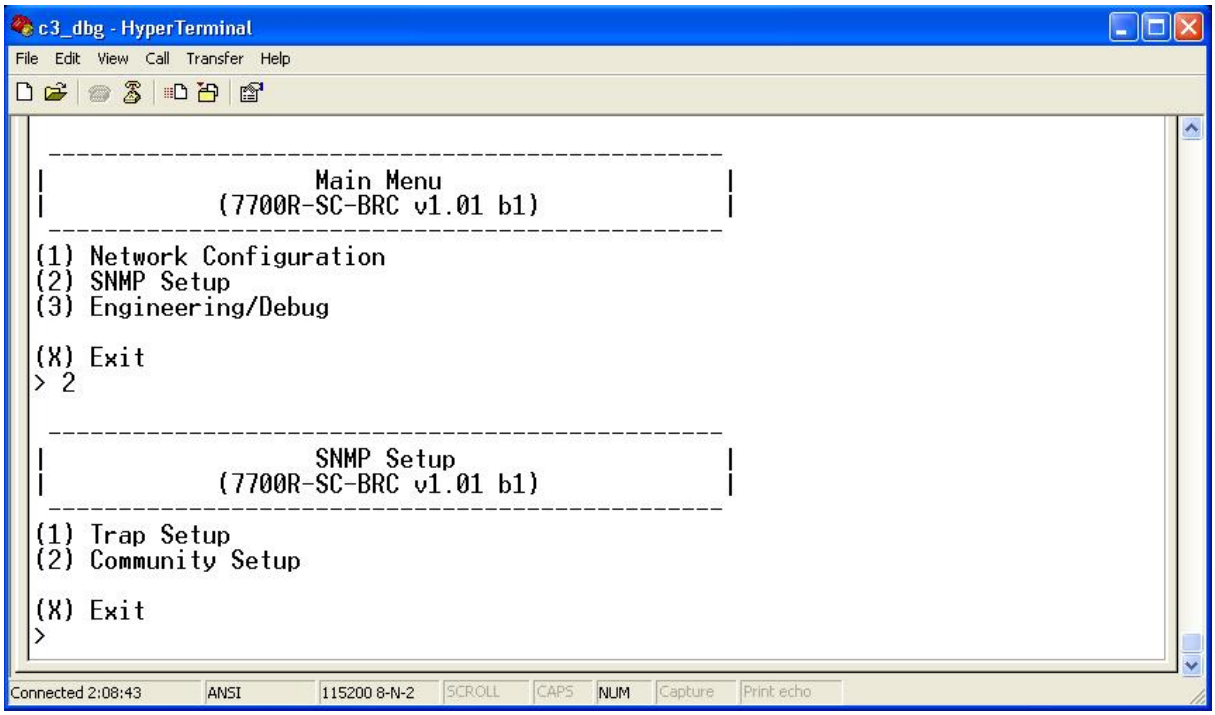

Figure 4-2: 7700R-SC-BRC SNMP Setup Menu

1. From the *Main Menu* select *SNMP Setup*.
2. Use *Trap Setup* to add the IP address of any trap destination(s).
3. If changes to the default community strings are required, use *Community Setup* to change the *read-only* and *read-write* community strings.
4. Select *Save & Exit* to save any changes. Select *Exit* to discard changes.
5. Changes to the community strings require a reboot of the 7700R-SC-BRC. Changes to the trap destinations do not require a reboot of the 7700R-SC-BRC.

Changes to trap destinations do not require a reboot of the 7700R-SC-BRC. Changes to the community strings do require a reboot of the 7700R-SC-BRC.

5. VISTALINK® PRO (VLPRO) CONFIGURATION

This section details how to use VLPro to configure the remaining parameters of the 7700R-SC-BRC.

5.1. VLPRO CONFIGURATION VIEW

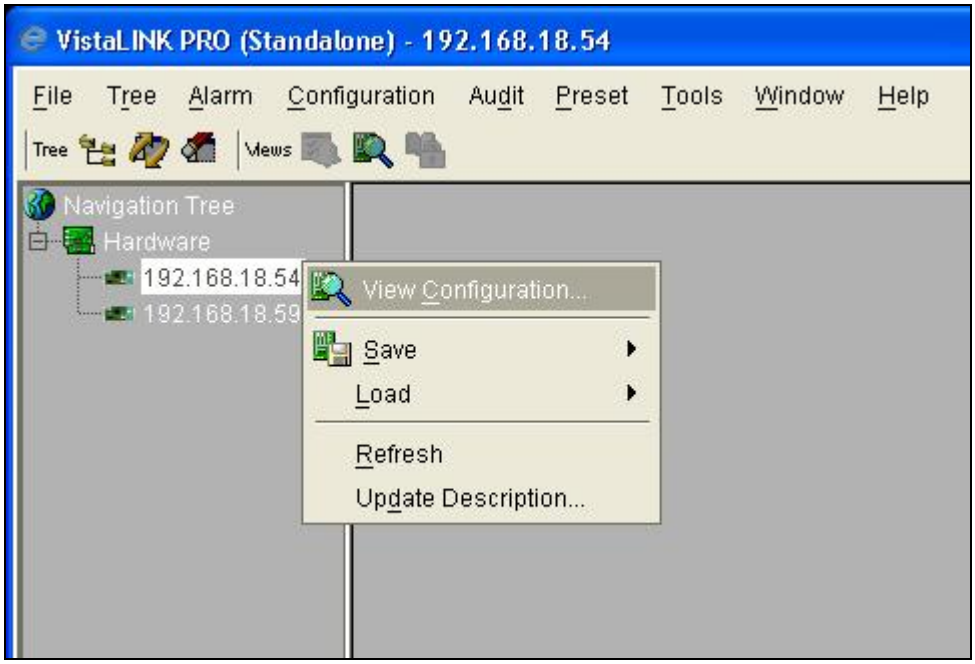

Figure 5-1: VLPro Hardware Navigation Tree

Suppose the IP address of the 7700R-SC-BRC is 192.168.18.54. To open the VLPro configuration view associated with the 7700R-SC-BRC:

1. Launch VLPro. The IP address of the 7700R-SC-BRC, 192.168.18.54, should appear in the hardware navigation tree.
2. Right click on the IP address.
3. Click *View Configuration*.
4. The configuration view should appear.

5.2. GENERAL TAB

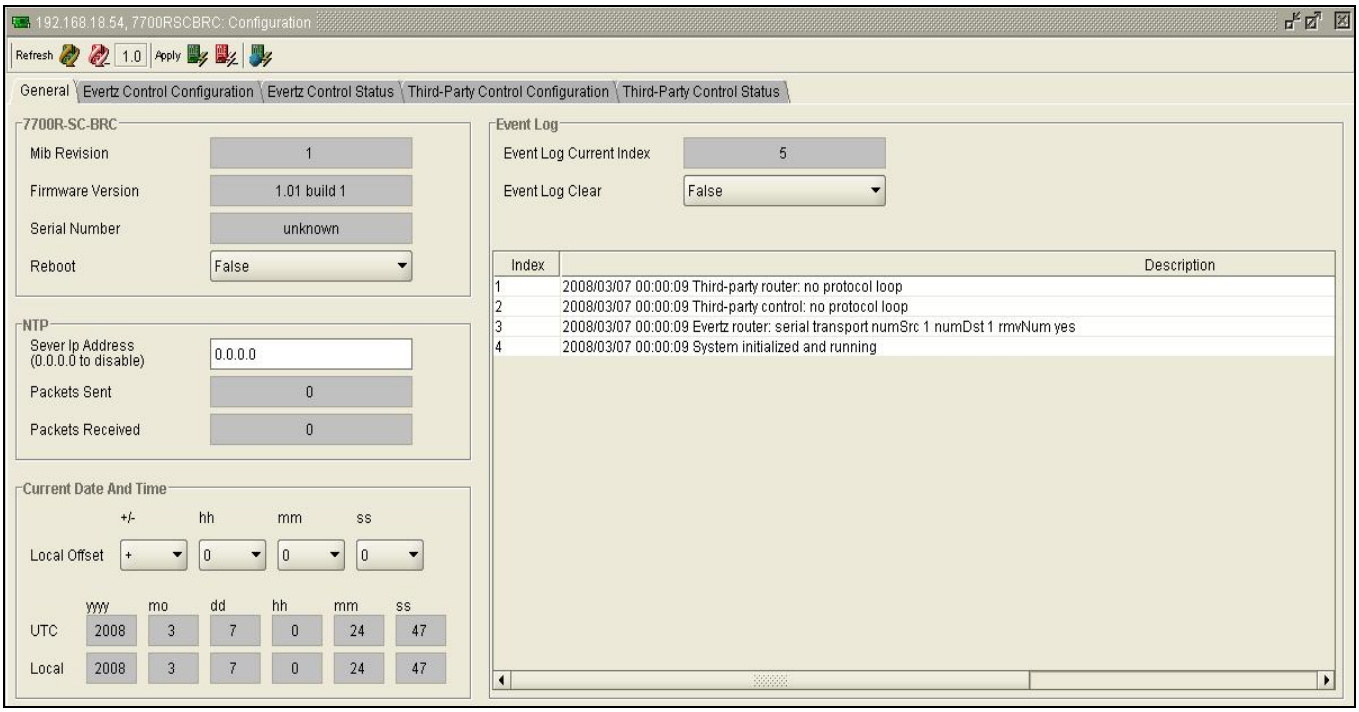

Figure 5-2: General Tab

Item	Notes
MIB Revision	Displays the MIB revision being used by the 7700R-SC-BRC.
Firmware Version	Displays the firmware version being used by the 7700R-SC-BRC.
Serial Number	Reports the serial number of the 7700R-SC-BRC.
Reboot	Allows the 7700R-SC-BRC to be rebooted. To do so, set the box to *True*.
NTP: Server IP Address	Optional. Allows the IP address of an NTP server to be configured. The 7700R-SC-BRC can use the time fetched from the server to timestamps the entries it puts into its event log.
NTP: Packets Sent	Reports the number of NTP request packets sent by the 7700R-SC-BRC to the NTP server.
NTP: Packets Received	Reports the number of NTP packets received by the 7700R-SC-BRC.
Current Date And Time	The 7700R-SC-BRC reports the time in two ways: Universal Co-ordinated Time (UTC) and Local Time. The local time is derived from UTC via the *Local Offset* parameters. To set these parameters, use the boxes to select the offset appropriate for your time zone.
Event Log	The 7700R-SC-BRC can communicate error and status information via its event log. The *Event Log Current Index* reports the position at which the next log entry would be placed. The event log can be cleared by setting *Event Log Clear* to *True*.

Table 5-1: General Tab Parameters

5.3. EVERTZ CONTROL CONFIGURATION TAB

5.3.1. General Frame

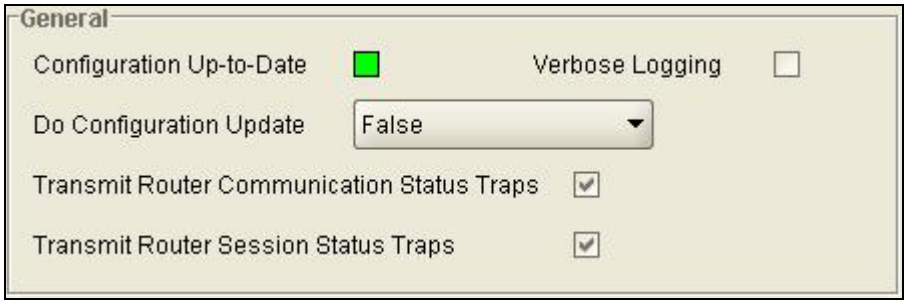

Figure 5-3: General Frame

Item	Notes
Configuration Up-To-Date	Green: The Evertz control configuration parameters are up-to-date and are being used to communicate with the third-party router. Red: The configuration parameters need to be updated via *Do Configuration Update* before the 7700R-SC-BRC can start using them.
Verbose Logging	When checked, the 7700R-SC-BRC will log events which may help with troubleshooting protocol-related issues. For normal operation, this box should be unchecked.
Do Configuration Update	When set to *True*, instructs the 7700R-SC-BRC to reset communications with the third-party router and to make use of any parameter changes.
Transmit Router Communication Status Traps	When checked, the 7700R-SC-BRC will transmit an SNMP trap when there is a change in the communication status between it and the third-party router.
Transmit Router Session Status Traps	When checked, the 7700R-SC-BRC will transmit an SNMP trap when there is a change in the session status between it and the third-party router. The EQX server may connect to and issues requests to the 7700R-SC-BRC once the router session has become active.

Table 5-2: General Frame Parameters

When the *Configuration Up-To-Date* status box is red, *Do Configuration Update* must be set to true for the 7700R-SC-BRC to begin using any parameter changes.

5.3.2. Third-Party Router Sources Frame

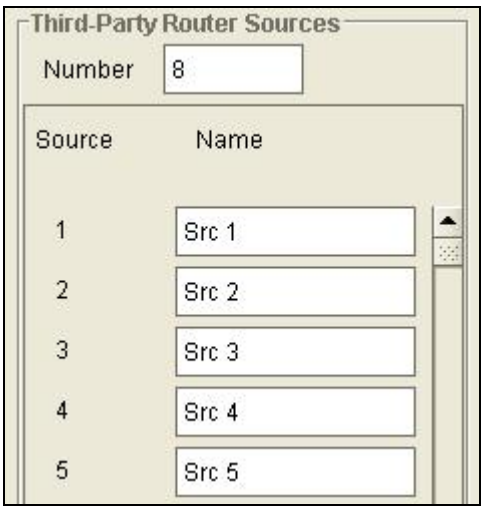

Figure 5-4: Third-Party Router Sources Frame

5.3.2.1. Number of Router Sources

These third-party protocols do not afford the 7700R-SC-BRC the ability to automatically determine the number of third-party router sources:

- CPU Link No. 1
- VMSI 3000 ASCII
- Remote 2/Cart++
- EScontrol

As such, the number of router sources must be manually entered into this field. This field is ignored for third-party router protocols which do allow the 7700R-SC-BRC to automatically determine the number of router sources.

5.3.2.2. Source Names

These third-party protocols do not afford the 7700R-SC-BRC the ability to automatically determine the names of router sources:

- CPU Link No. 1
- VMSI 3000 ASCII
- NVEP
- Remote 2/Cart++
- EScontrol

Optionally, these names can be entered into these fields. These fields are ignored for third-party router protocols which do allow the 7700R-SC-BRC to automatically determine the source names.

5.3.3. Third-Party Router Destinations Frame

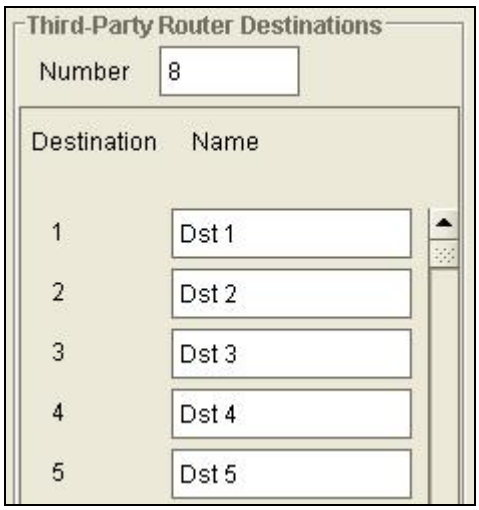

Figure 5-5: Third-Party Router Destinations Frame

5.3.3.1. Number of Router Destinations

These third-party protocols do not afford the 7700R-SC-BRC the ability to automatically determine the number of third-party router destinations:

- CPU Link No. 1
- VMSI 3000 ASCII
- Remote 2/Cart++
- EScontrol

As such, the number of router destinations must be manually entered into this field. This field is ignored for third-party router protocols which do allow the 7700R-SC-BRC to automatically determine the number of router destinations.

5.3.3.2. Destination Names

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- CPU Link No. 1
- VMSI 3000 ASCII
- NVEP
- Remote 2/Cart++
- EScontrol

Optionally, these names can be entered into these fields. These fields are ignored for third-party router protocols which do allow the 7700R-SC-BRC to automatically determine the destination names.

5.3.4. Third-Party Router Transport Frame

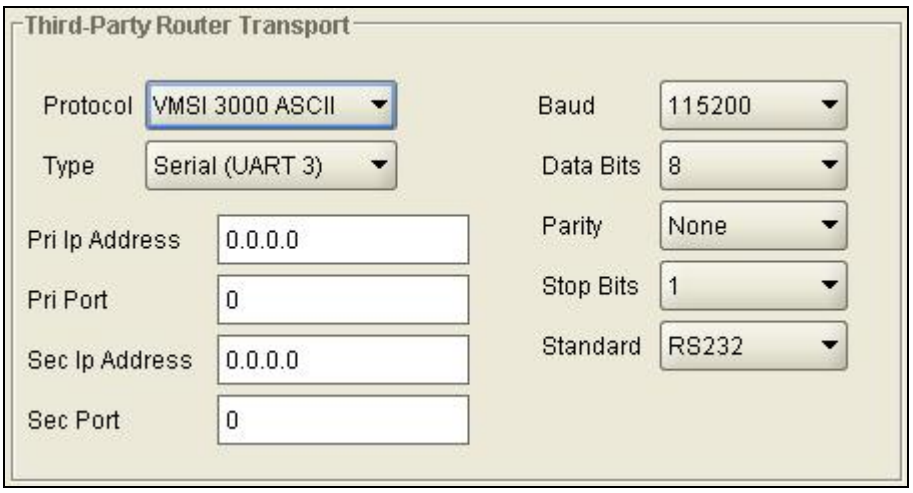


Figure 5-6: Third-Party Router Transport Frame

Item	Notes
Protocol	Specifies the protocol of the third-party router. The protocol *None* should be used when no third-party router is connected to the 7700R-SC-BRC.
Type	Specifies the type of transport that carries the third-party protocol.
Pri Ip Address	When the transport type is set to *TCP*, this field specifies the primary IP address of the third-party router. The third-party router will listen for incoming TCP connection requests from the 7700R-SC-BRC.
Pri Port	When the transport type is set to *TCP*, this field specifies on which primary port the third-party router will listen for incoming TCP connection requests from the 7700R-SC-BRC. For NVEP-based routers, this value is typically 5194. For NV9000 controllers, this value is typically 9193.
Sec Ip Address	When the transport type is set to *TCP*, this field specifies the secondary IP address of the third-party router. The third-party router will listen for incoming TCP connection requests from the 7700R-SC-BRC.
Sec Port	When the transport type is set to *TCP*, this field specifies on which secondary port the third-party router will listen for incoming TCP connection requests from the 7700R-SC-BRC. For NVEP-based routers, this value is typically 5194.
Baud	When the transport type is set to *Serial (UART 3)*, this field specifies the baud rate between the 7700R-SC-BRC and the third-party router.
Data Bits	When the transport type is set to Serial *(UART 3)*, this field specifies the number of data bits between the 7700R-SC-BRC and the third-party router.
Parity	When the transport type is set to *Serial (UART 3)*, this field specifies the parity between the 7700R-SC-BRC and the third-party router.
Stop Bits	When the transport type is set to Serial *(UART 3)*, this field specifies the number of stop bits between the 7700R-SC-BRC and the third-party router.
Standard	When the transport type is set to Serial *(UART 3)*, this field specifies the serial standard between the 7700R-SC-BRC and the third-party router.

Table 5-3: Third-Party Router Transport Frame Parameters

5.3.5. CPU Link No. 1 Configuration Frame

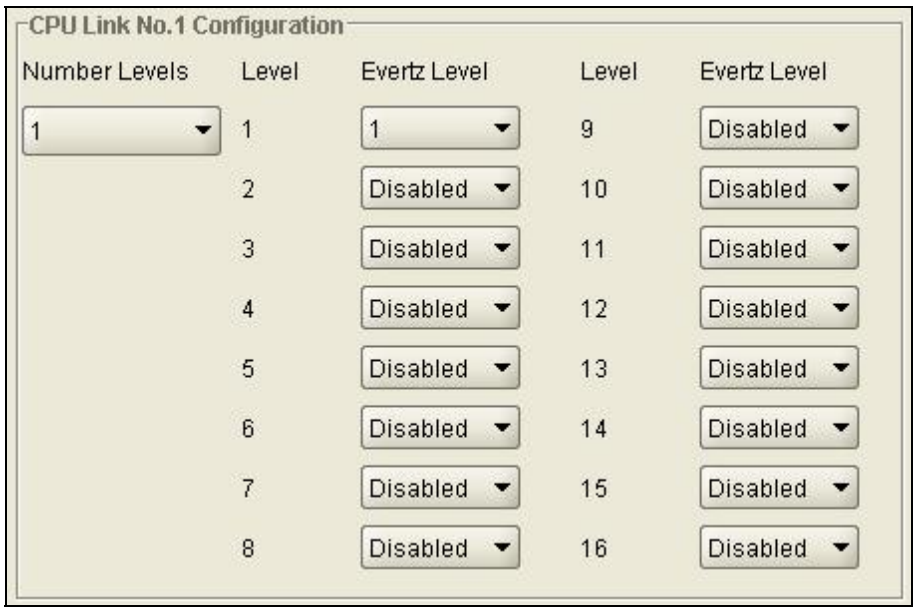


Figure 5-7: CPU Link No. 1 Configuration Frame

Item	Notes
Number Levels	Specifies the number of CPU Link Protocol No. 1 levels configured on the third-party router or controller – not just the number of levels Evertz is to control. The 7700R-SC-BRC is unable to automatically determine this value. This value *must* match that configured on the third-party router or controller. When using a 3500 controller, the configuration editor software, via the *Configuration/System Configuration/Configuration Info* toolbar, can be used to retrieve the number of levels configured on the 3500.
Evertz Level	Specifies the association between an Evertz level and a CPU Link No. 1 level. Figure 5-7 shows Evertz level 1 associated with CPU Link No. 1 level 1.

Table 5-4: CPU Link No. 1 Configuration Frame Parameters

5.3.6. VMSI 3000 Configuration Frame

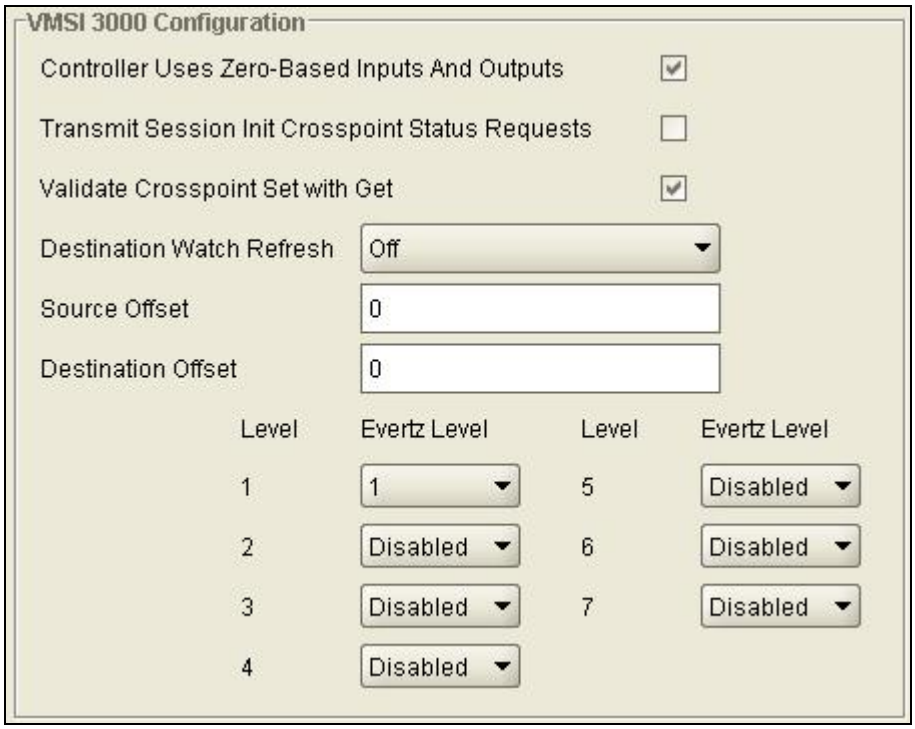


Figure 5-8: VMSI 3000 Configuration Frame

Item	Notes
Controller Uses Zero-Based Inputs and Outputs	When checked, specifies that the VMSI 3000-based controller/router, from a protocol perspective, uses 0-based inputs and outputs. That is, the first input is 0 and the first output is 0. When not checked specifies 1-based inputs and outputs. That is, the first input is 1 and the first output is 1.
Transmit Session Init Crosspoint Status Requests	When checked, specifies that the 7700R-SC-BRC should explicitly solicit crosspoint statuses during its session initialization process. This is not required for normal operation.
Validate Crosspoint Set with Get	When checked specifies that the 7700R-SC-BRC will verify a crosspoint set with a get should no set response be obtained by the 7700R-SC-BRC.
Destination Watch Refresh	During the session initialization process the 7700R-SC-BRC requests the router/controller watch all its destinations. This instructs the router/controller to provide unsolicited destination status update messages to the 7700R-SC-BRC. Thus, when there is a change to a crosspoint, the router/controller will provide the 7700R-SC-BRC with an update. Should the router/controller expire this watch request, setting this parameter can instruct the 7700R-SC-BRC to refresh the watch on a periodic basis. Enabling the destination watch refresh has significance only if a non-Evertz panel (or some other non-Evertz control equipment) will change a crosspoint on the router/controller.
Source Offset	This field specifies the amount to add to the EQX server source number to obtain the VMSI 3000 source number. For normal operation this field should be set to 0.
Destination Offset	This field specifies the amount to add to the EQX server destination number to obtain the VMSI 3000 destination number. For normal operation this field should be set to 0.
Evertz Level	Specifies the association between an Evertz level and a VMSI 3000 level. Figure 5-8 shows Evertz level 1 associated with VMSI 3000 level 1.

Table 5-5: VMSI 3000 Configuration Frame Parameters

5.3.7. NVEP Configuration Frame

Figure 5-9: NVEP Configuration Frame

Item	Notes
Monitor Crosspoints	Specifies the rate at which the 7700R-SC-BRC will poll the NVEP-based router for crosspoint changes. Crosspoint monitoring has significance when the EQX server needs to be notified of router crosspoint changes invoked by equipment *other* than the EQX server (for instance, NVEP panels).

Table 5-6: NVEP Configuration Parameters

5.3.8. Remote 2 (Cart++) Configuration Frame

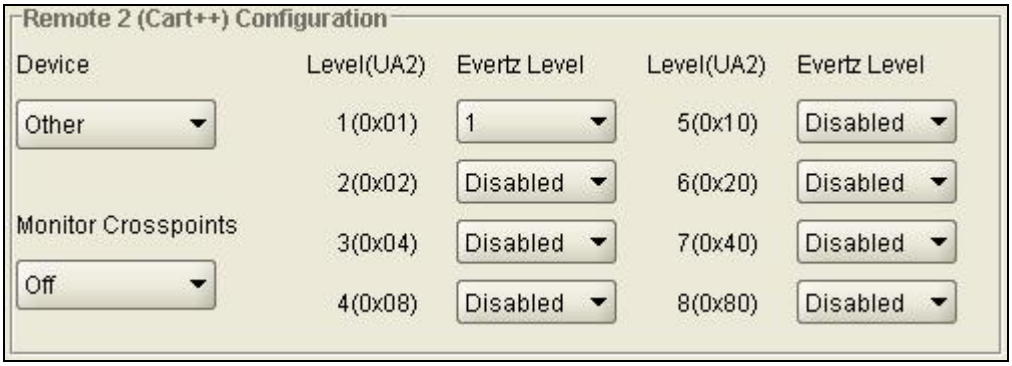


Figure 5-10: Remote 2 (Cart++) Configuration Frame

Item	Notes
Device	Specifies the device to which the 7700R-SC-BRC is connected.
Monitor Crosspoints	Specifies the rate at which the 7700R-SC-BRC will poll the remote 2 (cart++)-based router for crosspoint changes. Crosspoint monitoring has significance when the EQX server needs to be notified of router crosspoint changes invoked by equipment *other* than the EQX server (for instance, panels).
Evertz Level	Specifies the association between an Evertz level and a remote 2 level. Figure 5-10 shows Evertz level 1 associated with remote 2 level 1.

Table 5-7: Remote 2 (Cart++) Configuration Parameters

5.3.9. EScontrol Configuration Frame

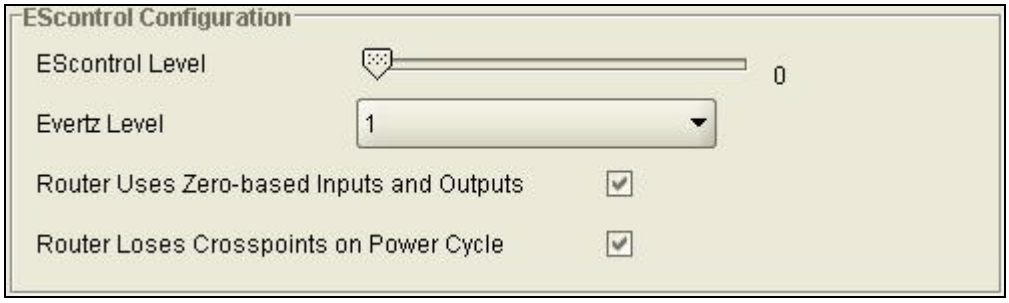


Figure 5-11: EScontrol Configuration Frame

Item	Notes
EScontrol level	Specifies the level over which the EScontrol-based router exchanges crosspoint information.
Evertz Level	Specifies the Evertz level associated with the EScontrol level.
Router Uses Zero-Based Inputs and Outputs	When checked, specifies that the EScontrol-based router, from a protocol perspective, uses 0-based inputs and outputs. That is, the first input is 0 and the first output is 0. When not checked, specifies 1-based inputs and outputs. That is, the first input is 1 and the first output is 1. SH612s typically use zero-based inputs and outputs.
Router Loses Crosspoints on Power Cycle	When checked, specifies that the EScontrol-based router will lose its crosspoint information when power is cycled on the router. For this scenario, the 7700R-SC-BRC will attempt to restore the crosspoints when the router is powered on. When not checked, specifies that the EScontrol-based router maintains its crosspoint information on a cycle of its power. SH612s typically lose their crosspoints on a power cycle.

Table 5-8: EScontrol Configuration Parameters

5.4. EVERTZ CONTROL STATUS TAB

5.4.1. General Frame

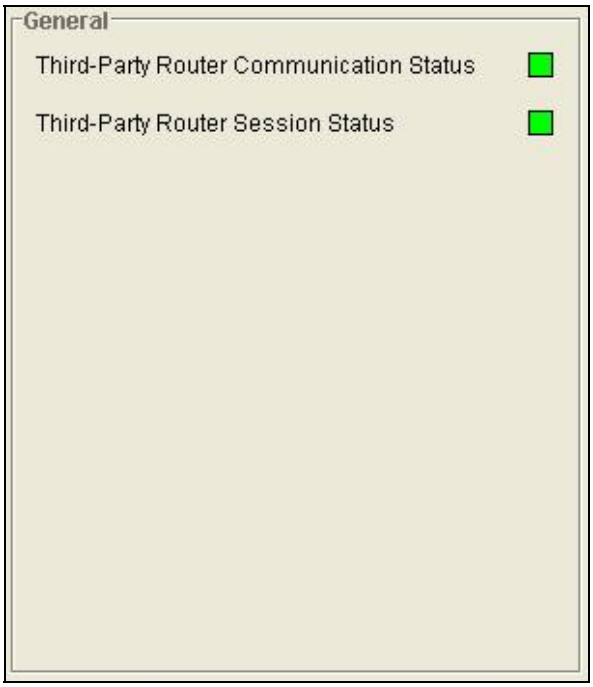


Figure 5-12: General Frame

Item	Notes
Third-Party Router Communication Status	Green: The 7700R-SC-BRC is able to communicate with the third-party router. Red: The 7700R-SC-BRC is not able to communicate with the third-party router.
Third-Party Router Session Status	Green: The 7700R-SC-BRC has established a session with the third-party router. The EQX server can connect to and issue requests to the 7700R-SC-BRC. Red: The 7700R-SC-BRC has not established a session with the third-party router. EQX server connections will not be permitted by the 7700R-SC-BRC.

Table 5-9: General Frame Parameters

5.4.2. Third-Party Router Sources Frame

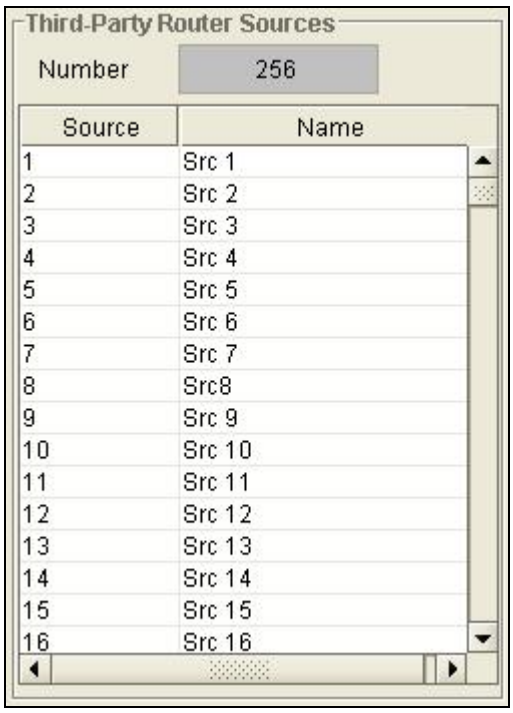


Figure 5-13: Third-Party Router Sources Frame

Item	Notes
Number	Reports the number of manually entered or automatically obtained third-party router sources.
Name	Reports the names of the manually entered or automatically obtained third-party router sources.

Table 5-10: Third-Party Router Sources Frame Parameters

5.4.3. Third-Party Router Destinations Frame

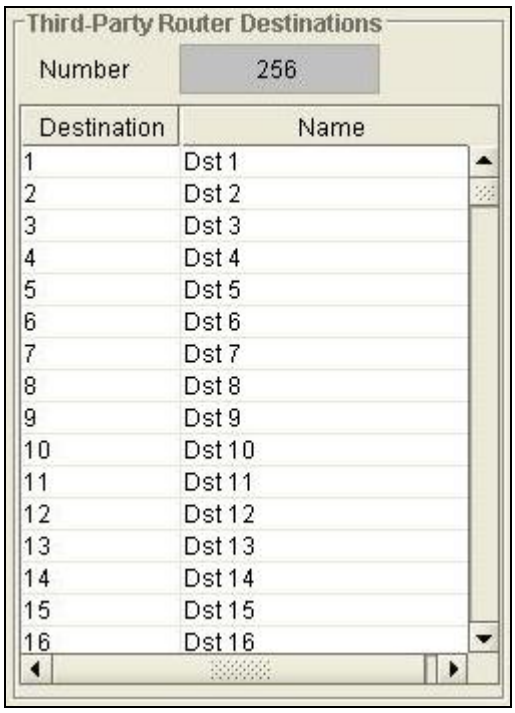
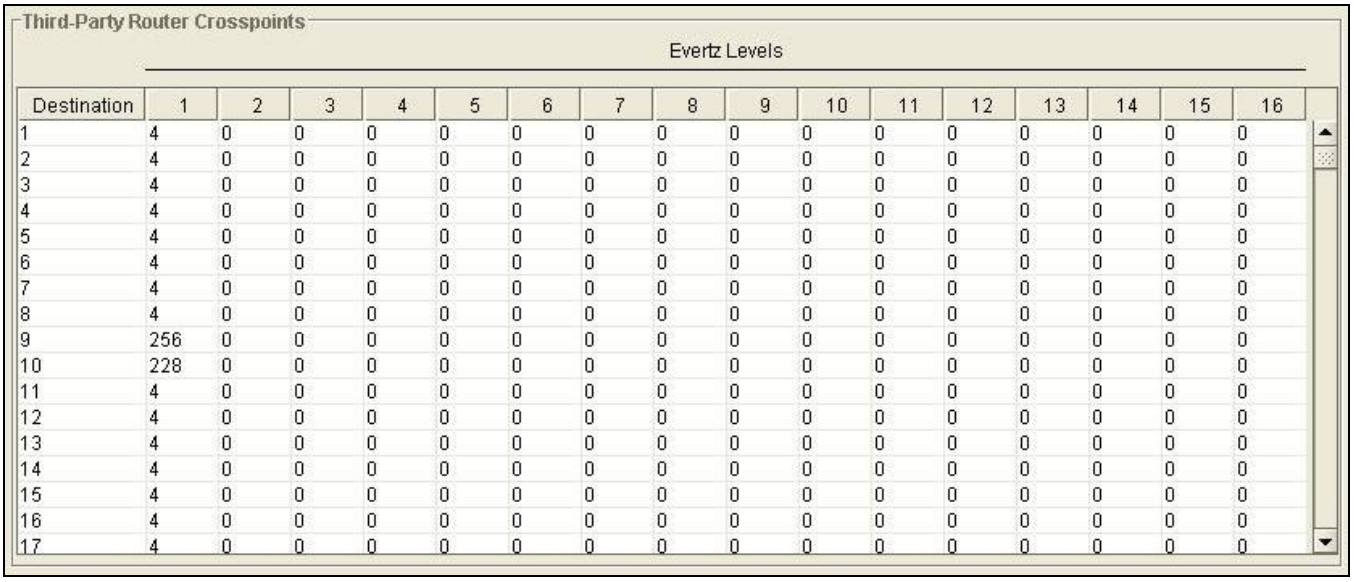


Figure 5-14: Third-Party Router Destination Frame

Item	Notes
Number	Reports the number of manually entered or automatically obtained third-party router destinations.
Name	Reports the names of the manually entered or automatically obtained third-party router destinations.

Table 5-11: Third-Party Router Destination Frame Parameters

5.4.4. Third-Party Router Crosspoints Frame



Destination	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	256	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 5-15: Third-Party Router Crosspoints Frame

This frame reports the third-party router crosspoint map in terms of an Evertz crosspoint map. The source and destination numbers are presented 1-based regardless of the third-party router protocol used. For example, Figure 5-15 shows:

- Source 4 is routed to destination 1 on Evertz level 1.
- Source 256 is routed to destination 9 on Evertz level 1.

5.5. THIRD-PARTY CONTROL CONFIGURATION TAB

5.5.1. General Frame

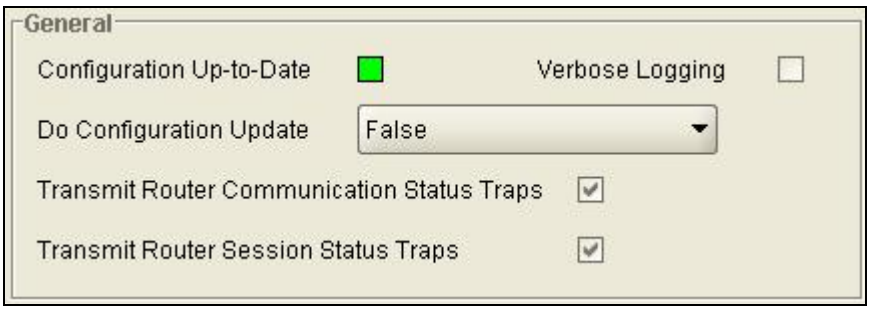


Figure 5-16: General Frame

Item	Notes
Configuration Up-To-Date	Green: The third-party control configuration parameters are up-to-date and are being used to communicate with the Evertz router. Red: The configuration parameters need to be updated via *Do Configuration Update* before the 7700R-SC-BRC can start using them.
Verbose Logging	When checked, the 7700R-SC-BRC will log events which may help with troubleshooting protocol-related issues. For normal operation, this box should be unchecked.
Do Configuration Update	When set to *True*, instructs the 7700R-SC-BRC to reset communications with the Evertz router or EQX server and to make use of any parameter changes.
Transmit Router Communication Status Traps	When checked, the 7700R-SC-BRC will transmit an SNMP trap when there is a change in the communication status between it and the Evertz router or EQX server.
Transmit Router Session Status Traps	When checked, the 7700R-SC-BRC will transmit an SNMP trap when there is a change in the session status between it and the Evertz router or EQX server. The third-party control device may connect to and issues requests to the 7700R-SC-BRC once the router session has become active.

Table 5-12: General Frame Parameters

When the *Configuration Up-To-Date* status box is red, *Do Configuration Update* must be set to true for the 7700R-SC-BRC to begin using any parameter changes.

5.5.2. Evertz Router Transport Frame

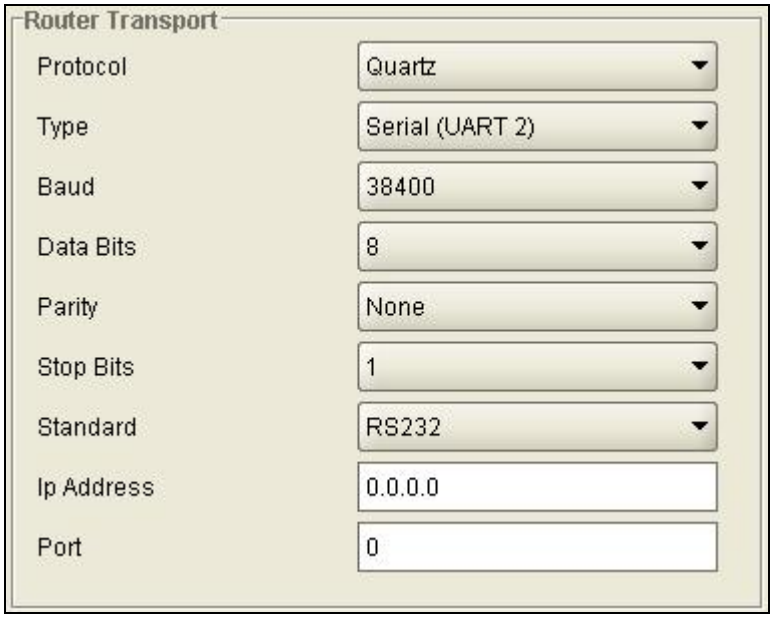


Figure 5-17: Evertz Router Transport Frame

Item	Notes
Protocol	Specifies the protocol to be used between the 7700R-SC-BRC and the router or EQX server. When communicating with a router this value is set to *Quartz*. When communicating with the EQX server this value is set to *Symphony*.
Type	Specifies the type of communication transport between the 7700R-SC-BRC and the Evertz router or EQX server. The Evertz router typically supports either serial or TCP communication types. The EQX server supports only TCP.
Baud	When the transport type is set to *Serial (UART 2)*, this field specifies the baud rate between the 7700R-SC-BRC and the Evertz router.
Data Bits	When the transport type is set to Serial *(UART 2)*, this field specifies the number of data bits between the 7700R-SC-BRC and the Evertz router.
Parity	When the transport type is set to *Serial (UART 2)*, this field specifies the parity between the 7700R-SC-BRC and the Evertz router.
Stop Bits	When the transport type is set to Serial *(UART 2)*, this field specifies the number of stop bits between the 7700R-SC-BRC and the Evertz router.
Standard	When the transport type is set to Serial *(UART 2)*, this field specifies the serial standard between the 7700R-SC-BRC and the Evertz router.
Ip Address	When the transport type is set to *TCP*, this field specifies the IP address of the Evertz router or EQX server.
Port	When the transport type is set to *TCP*, this field specifies on which port the Evertz router or EQX server will listen for incoming TCP connection requests from the 7700R-SC-BRC. When using the *Symphony* protocol the EQX server listens on port *9750*.

Table 5-13: Evertz Router Transport Frame Parameters

5.5.3. Evertz Router Configuration Frame

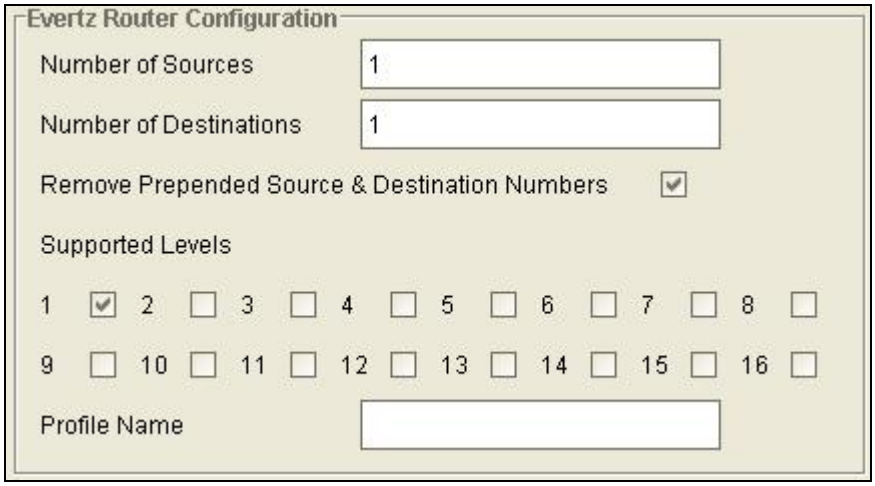


Figure 5-18: Evertz Router Configuration Frame

Item	Notes
Number of Sources	Specifies the number of sources configured on the Evertz router. This field has no significance when communicating with the EQX server.
Number of Destinations	Specifies the number of destinations configured on the Evertz router. This field has no significance when communicating with the EQX server.
Remove Prepended Source & Destination Numbers	Some Evertz equipment, for instance the SC-1000, can prepend a number (for instance '001,') to a source or destination's name. If this box is checked then the 7700R-SC-BRC will remove this number. This field has no significance when communicating with the EQX server.
Supported Levels	Boxes that are checked represent the level(s) supported by the router. This field has no significance when communicating with the EQX server.
Profile Name	When communicating with the EQX server this field represents the profile to be used by the 7700R-SC-BRC. This field has no significance when communicating with a router using the Quartz protocol.

Table 5-14: Evertz Router Configuration Frame Parameters

5.5.4. Control Transport Frame

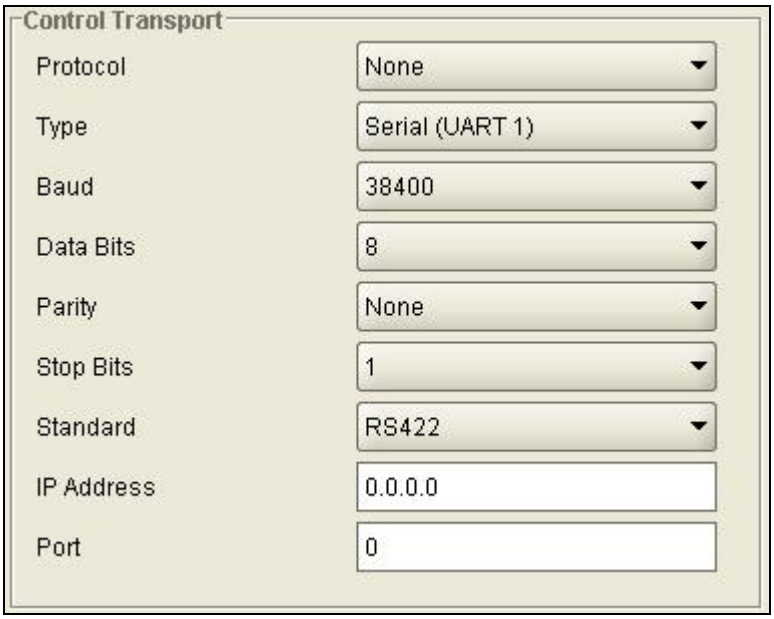


Figure 5-19: Control Transport Frame

Item	Notes
Protocol	Specifies the protocol of the third-party control device. The protocol *None* should be used when no third-party control device is connected to the 7700R-SC-BRC.
Type	Specifies the type of transport that carries the third-party control device protocol.
Baud	When the transport type is set to *Serial (UART 1)*, this field specifies the baud rate between the 7700R-SC-BRC and the third-party control device.
Data Bits	When the transport type is set to Serial *(UART 1)*, this field specifies the number of data bits between the 7700R-SC-BRC and the third-party control device.
Parity	When the transport type is set to *Serial (UART 1)*, this field specifies the parity between the 7700R-SC-BRC and the third-party control device.
Stop Bits	When the transport type is set to Serial *(UART 1)*, this field specifies the number of stop bits between the 7700R-SC-BRC and the third-party control device.
Standard	When the transport type is set to Serial *(UART 1)*, this field specifies the serial standard between the 7700R-SC-BRC and the third-party control device.
IP Address	The field specifies the IP address of the third-party control device when the 7700R-SC-BRC is required to connect to the third-party control device. When the 7700R-SC-BRC is required to listen for incoming connection requests then this field can be set to *0.0.0.0*.
Port	When the transport type is set to *TCP*, this field specifies: • On which port the 7700R-SC-BRC will listen for incoming TCP connection requests from the third-party control device. • The port the 7700R-SC-BRC will use for outgoing TCP connection requests to the third-party control device. ROT16 devices typically use port 8004.

Table 5-15: Control Transport Frame Parameters

5.5.5. CPU Link No. 1 Configuration Frame

Figure 5-20: CPU Link No. 1 Configuration Frame

Item	Notes
Number Levels	Specifies the number of CPU Link Protocol No. 1 supported by the 7700R-SC-BRC. This value, typically set to 1, should match the number of levels on the Evertz router or EQX server the third-party control device is to control.
Evertz Level	Specifies the association between an Evertz level and a CPU Link No. 1 level. Figure 5-20 shows Evertz level 1 associated with CPU Link No. 1 level 1.

Table 5-16: CPU Link No. 1 Configuration Frame Parameters

5.5.6. EScontrol Configuration Frame

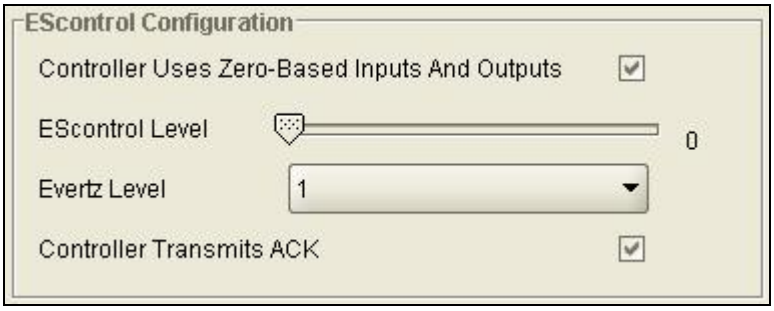


Figure 5-21: EScontrol Configuration Frame

Item	Notes
Controller Uses Zero-Based Inputs and Outputs	When checked, specifies that the EScontrol-based controller/router, from a protocol perspective, uses 0-based inputs and outputs. That is, the first input is 0 and the first output is 0. When not checked, specifies 1-based inputs and outputs. That is, the first input is 1 and the first output is 1.
EScontrol Level	Specifies the level used by the EScontrol-based controller/router.
Evertz Level	Specifies the Evertz level associated with the EScontrol level.
Controller Transmits ACK	For normal operation this field should be checked.

Table 5-17: EScontrol Configuration Frame Parameters

5.5.7. ROT16 Configuration Frame

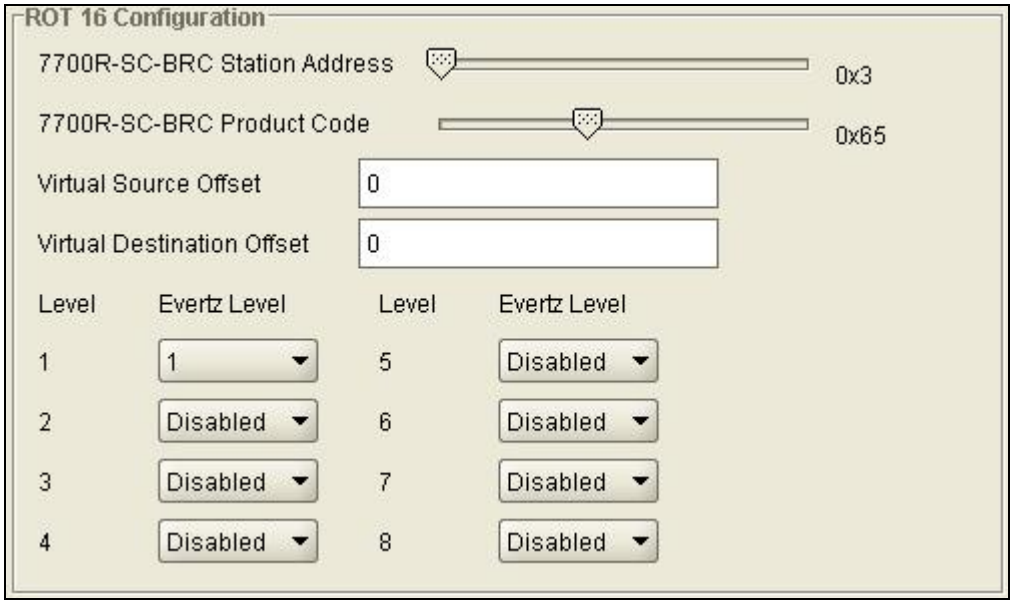


Figure 5-22: ROT16 Configuration Frame

Item	Notes
7700R-SC-BRC Station Address	The switcher/controller will be configured to be aware of the Evertz router/EQX server over which it will have control. As such, the switcher/controller will assign a SBUS hexadecimal station address to the Evertz router/EQX server. This field must match that address.
7700R-SC-BRC Product Code	Specifies the hexadecimal product code assigned by the switcher/controller to the Evertz router/EQX server.
Virtual Source Offset	The switcher has a router space which can accommodate a router with up to 1024 sources. Suppose sources 1 – 16 are to be associated with the Evertz router/EQX server. Switcher source 1 corresponds to Evertz router source 1. Thus, the virtual source offset would be set to 0. Suppose sources 21 – 36 are to be associated with the Evertz router/EQX server. Switcher source 21 corresponds to Evertz router source 1. Thus, the virtual source offset would be set to 20.
Virtual Destination Offset	The switcher has a router space which can accommodate a router with up to 1024 destinations. Suppose destinations 1 – 16 are to be associated with the Evertz router/EQX server. Switcher destination 1 corresponds to Evertz router destination 1. Thus, the virtual destination offset would be set to 0. Suppose destinations 21 – 36 are to be associated with the Evertz router/EQX server. Switcher destination 21 corresponds to Evertz router destination 1. Thus, the virtual destination offset would be set to 20.
Evertz Level	Specifies the association between an Evertz level and a ROT16 level. Figure 5-22 shows Evertz level 1 associated with ROT16 level 1.

Table 5-18: ROT16 Configuration Frame Parameters

5.5.8. RCL Configuration Frame

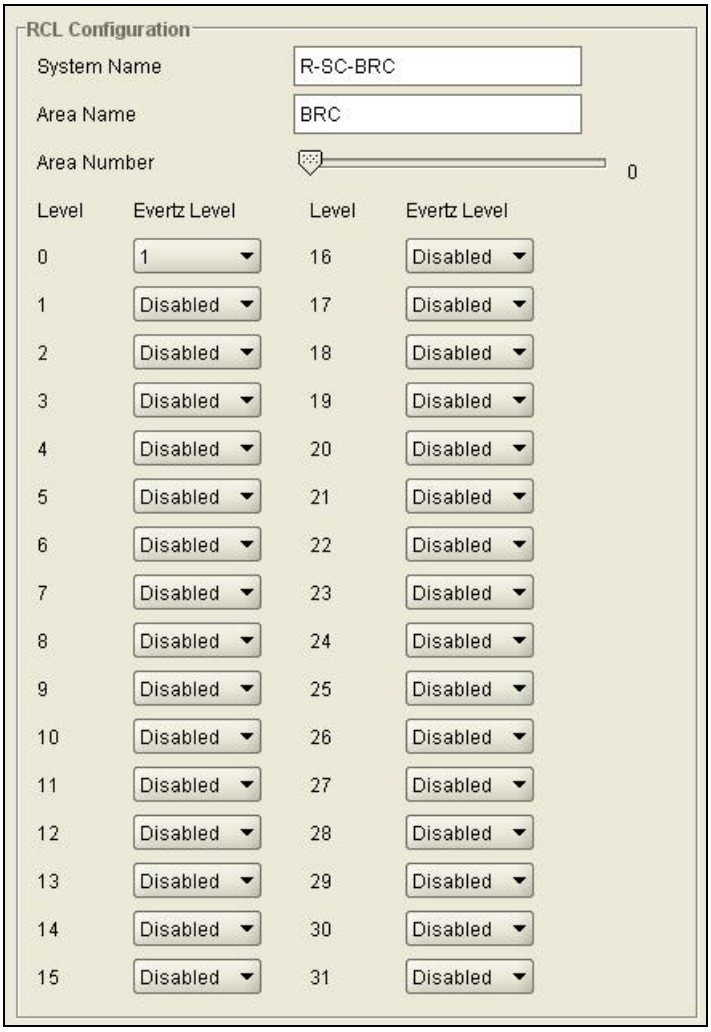


Figure 5-23: RCL Configuration Frame

Item	Notes
System Name	Assign a name to this RCL control system.
Area Name	Assign Area Name. Areas create hierarchies within the control system and make it easier to group sources and destinations in a large system. Once an area is defined the sources and destinations in the area can be identified using fully qualified names. A source or destination name is said to be fully qualified if it is prefixed by “area name:”
Area Number	Assign Area NumberName. 0 - 63. Areas create hierarchies within the control system and make it easier to group sources and destinations in a large system. Once an area is defined, the sources and destinations in the area can be identified using fully qualified indices. Source or destination indices need to be prefixed with “area index:” to make them fully qualified.
Evertz Level	Specifies the association between an Evertz level and a RCL level. Figure 5-23 shows Evertz level 1 associated with RCL level 0.

Table 5-19: RCL Configuration Frame Parameters

5.6. THIRD-PARTY CONTROL STATUS TAB

5.6.1. General Frame

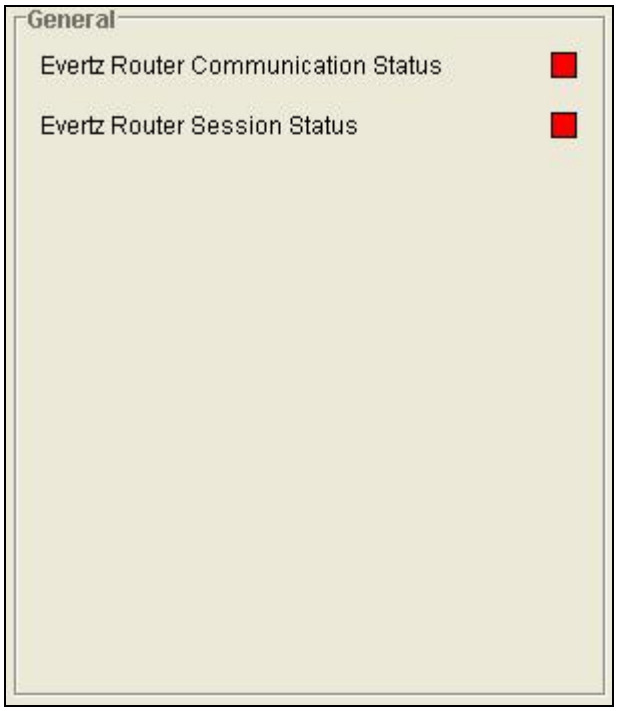


Figure 5-24: General Frame

Item	Notes
Evertz Router Communication Status	Green: The 7700R-SC-BRC is able to communicate with the Evertz router or EQX server. Red: The 7700R-SC-BRC is not able to communicate with the Evertz router or EQX server.
Evertz Router Session Status	Green: The 7700R-SC-BRC has established a session with the Evertz router or EQX server. The third-party control device can issue requests to the 7700R-SC-BRC. Red: The 7700R-SC-BRC has not established a session with the Evertz router or EQX server. The 7700R-SC-BRC will ignore requests sent by the third-party control device.

Table 5-20: General Frame Parameters

5.6.2. Evertz Router Sources Frame

Figure 5-25: Evertz Router Sources

Item	Notes
Number	Reports the number of Evertz router or EQX server sources.
Name	Reports the names of the automatically obtained Evertz router or EQX server sources.

Table 5-21: Evertz Router Frame Parameters

5.6.3. Evertz Router Destinations Frame

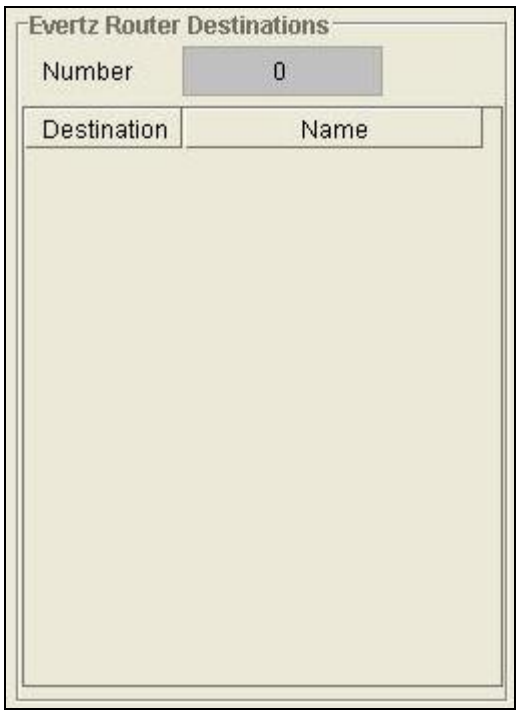


Figure 5-26: Evertz Router Destinations Frame

Item	Notes
Number	Reports the number of Evertz router or EQX server destinations.
Name	Reports the names of the automatically obtained Evertz router or EQX server destinations.

Table 5-22: Evertz Router Destinations Frame Parameters

5.6.4. Evertz Router Crosspoints Frame

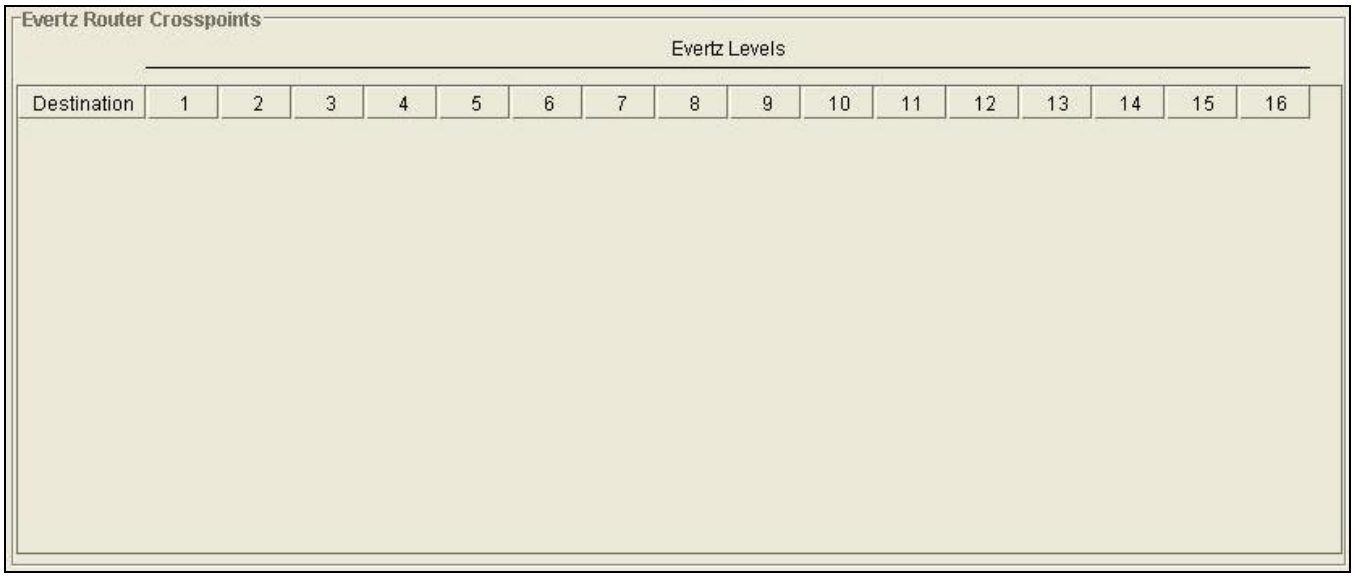


Figure 5-27: Evertz Router Crosspoints Frame

This frame reports the Evertz router or EQX server crosspoint map. The source and destination numbers are presented 1-based.

6. EQX SERVER SOURCES AND DESTINATIONS

Currently, there is no way for the 7700R-SC-BRC to automatically obtain the sources and destinations from the EQX server. As such, they need to be set manually on the 7700R-SC-BRC. This is done by creating 2 files to be put on the 7700R-SC-BRC's compact flash:

symp_src.csv – Contains the sources to be used.
symp_dst.csv – Contains the destinations to be used.

A subset of sources and destinations can be used. For instance, suppose we had a switcher which is controlling an EQX router via the EQX server. The switcher may think it is communicating with a 324 x 12 router. Thus, the switcher would deal with sources 1 – 324 and with destinations 1 – 12. For this case, symp_src.csv would contain the names of the 324 sources to be controlled by the switcher. Similarly, symp_dst.csv would contain 12 destination names.

This section provides an example of how to create and store the *csv* files.

6.1. EQX SERVER

6.1.1. Devices

Suppose the 7700R-SC-BRC is interested in the sources and destinations associated with a Xenon 128 x 128 router.

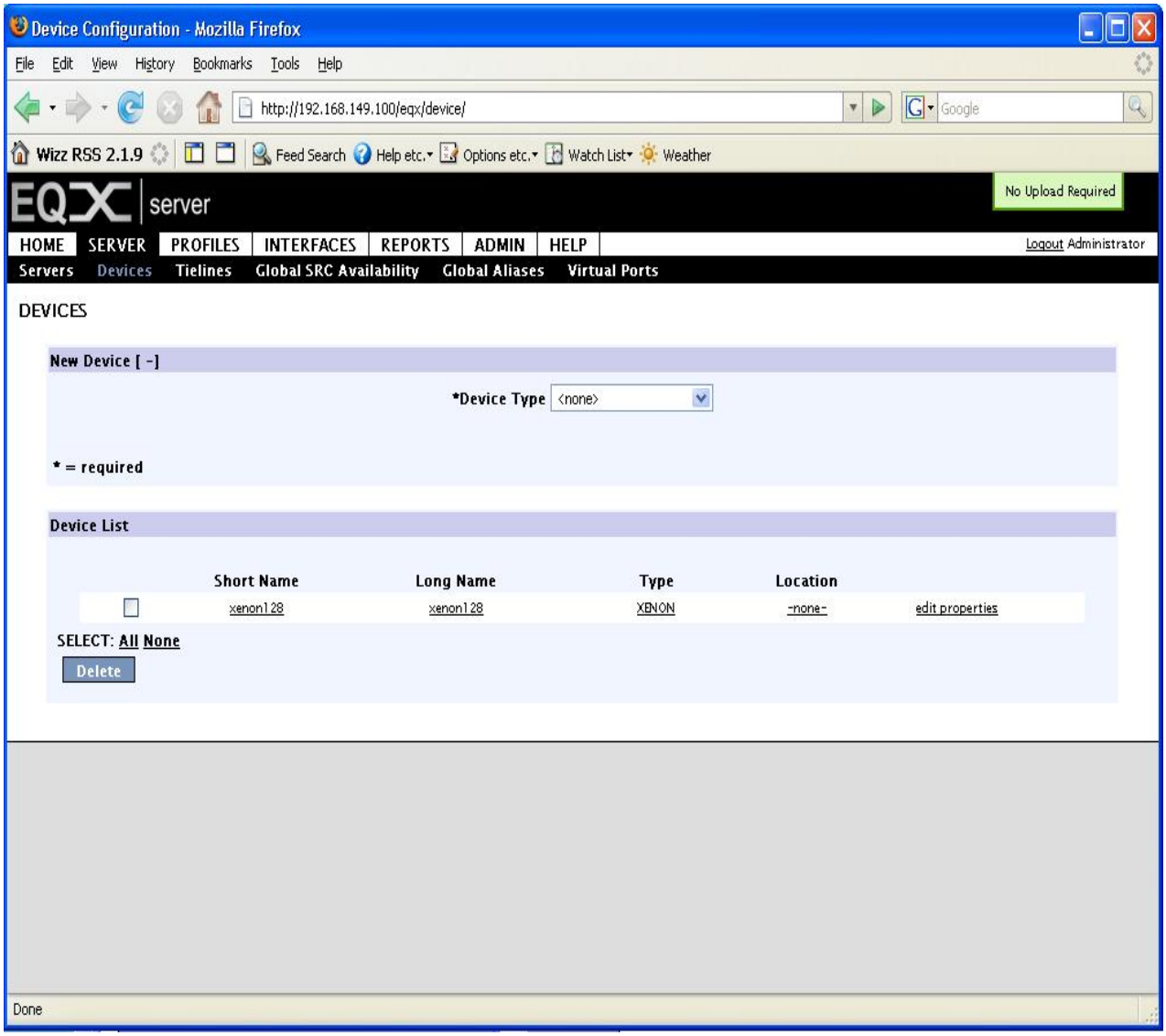


Figure 6-1: EQX Server Router Device

6.1.2. Global Source Availability

The sources associated with the router need to be made available for control.

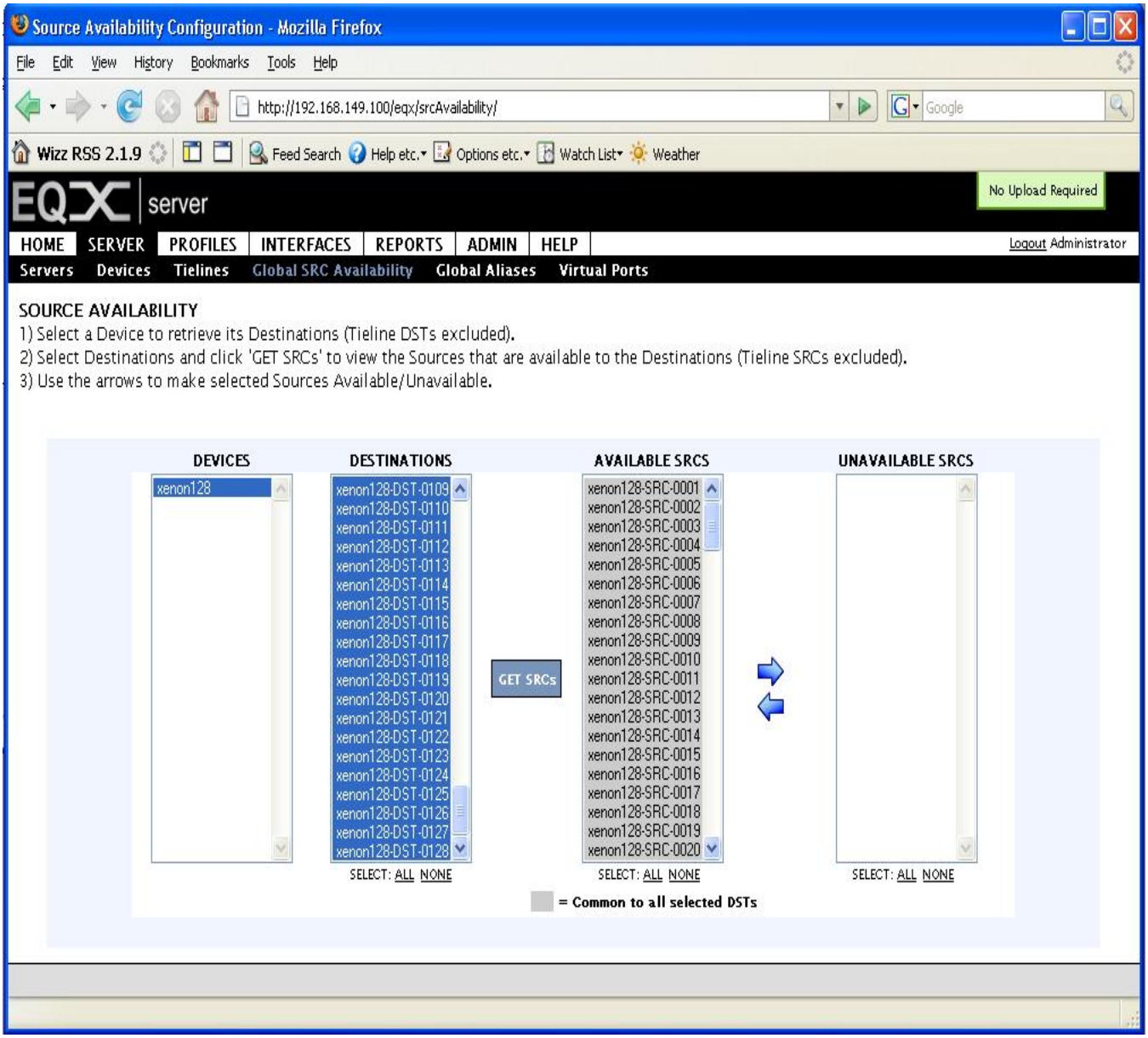


Figure 6-2: Global Source Availability

6.1.3. Profiles

A profile is created named “dave1”. The profile contains the xenon128 device. All destinations and sources of this device are available.

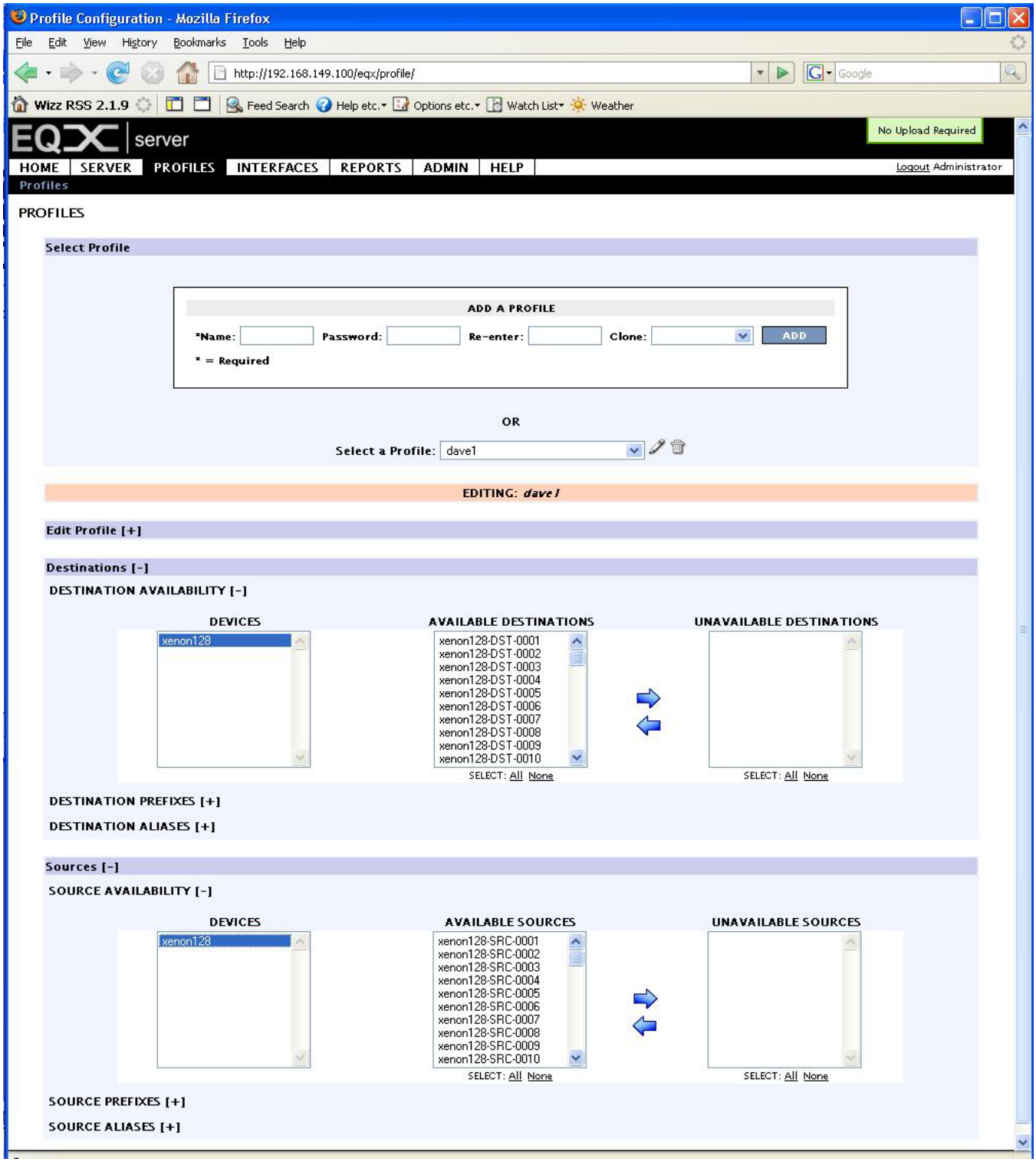


Figure 6-3: Making Sources and Destinations Available Within the Profile

6.1.4. Enabling Symphony Protocol

The Symphony profile needs to be enabled for the profile.

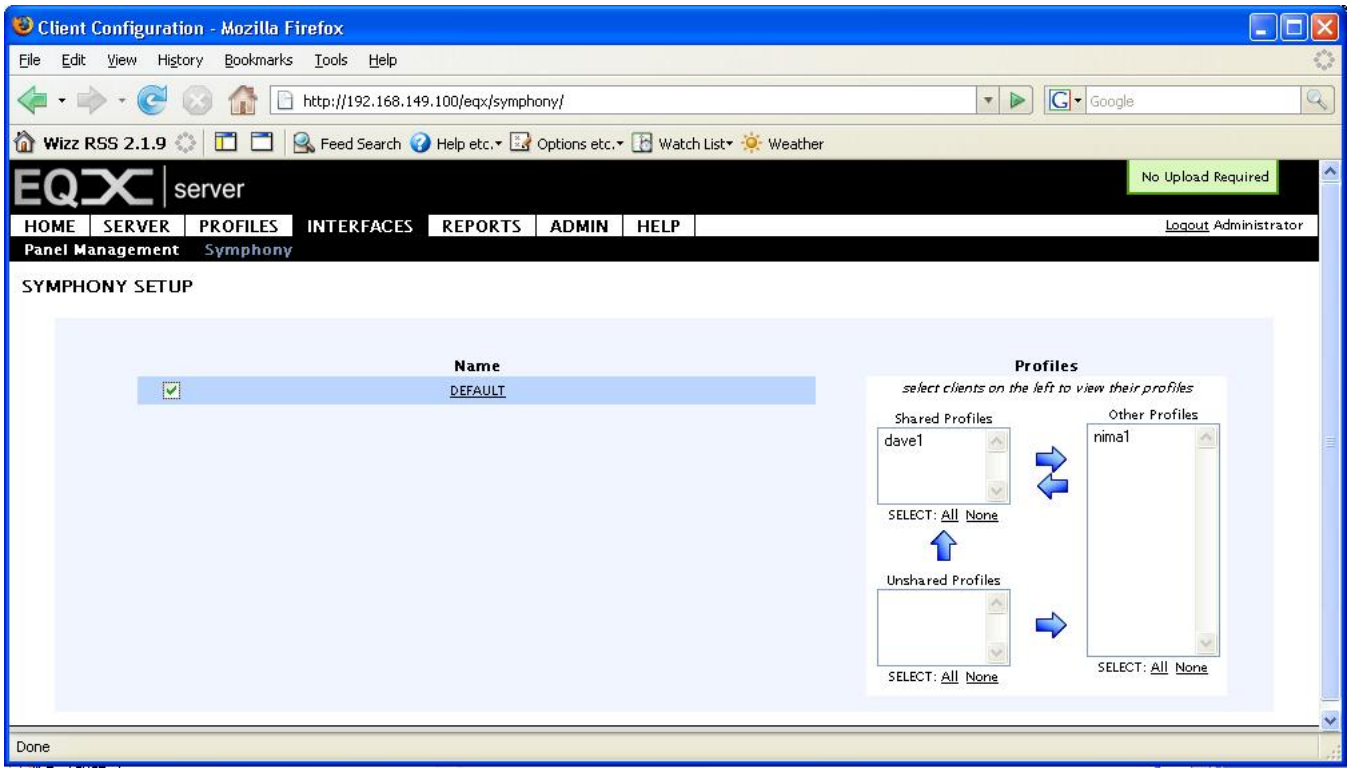


Figure 6-4: Enabling the Symphony Protocol for a Profile

6.1.5. Exporting Source and Destination Aliases

Click *Server*. And then select *Global Aliases*.

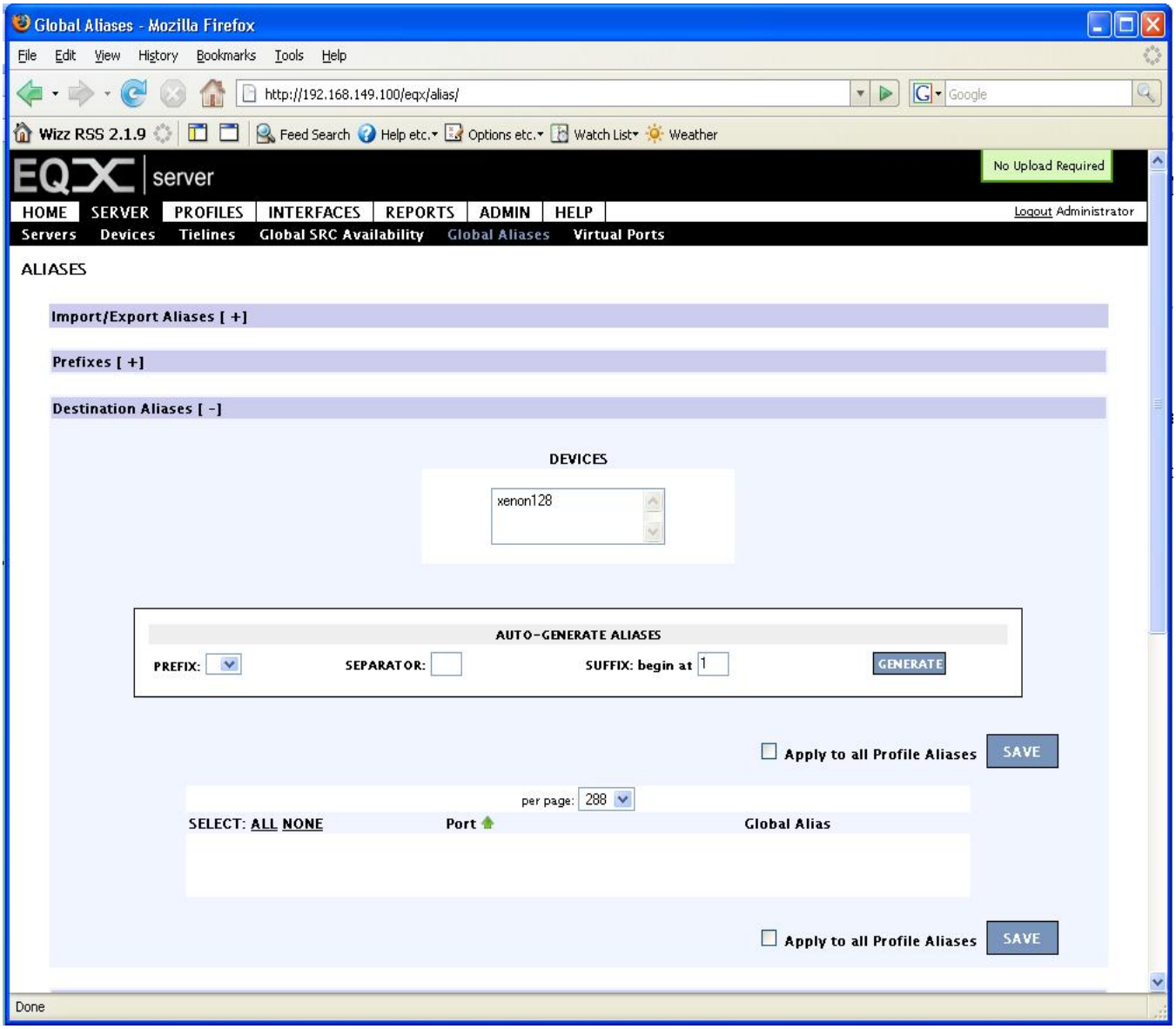


Figure 6-5: Global Aliases

In the *Destination Aliases* section click the device namely *xenon128*. The destination aliases will appear.

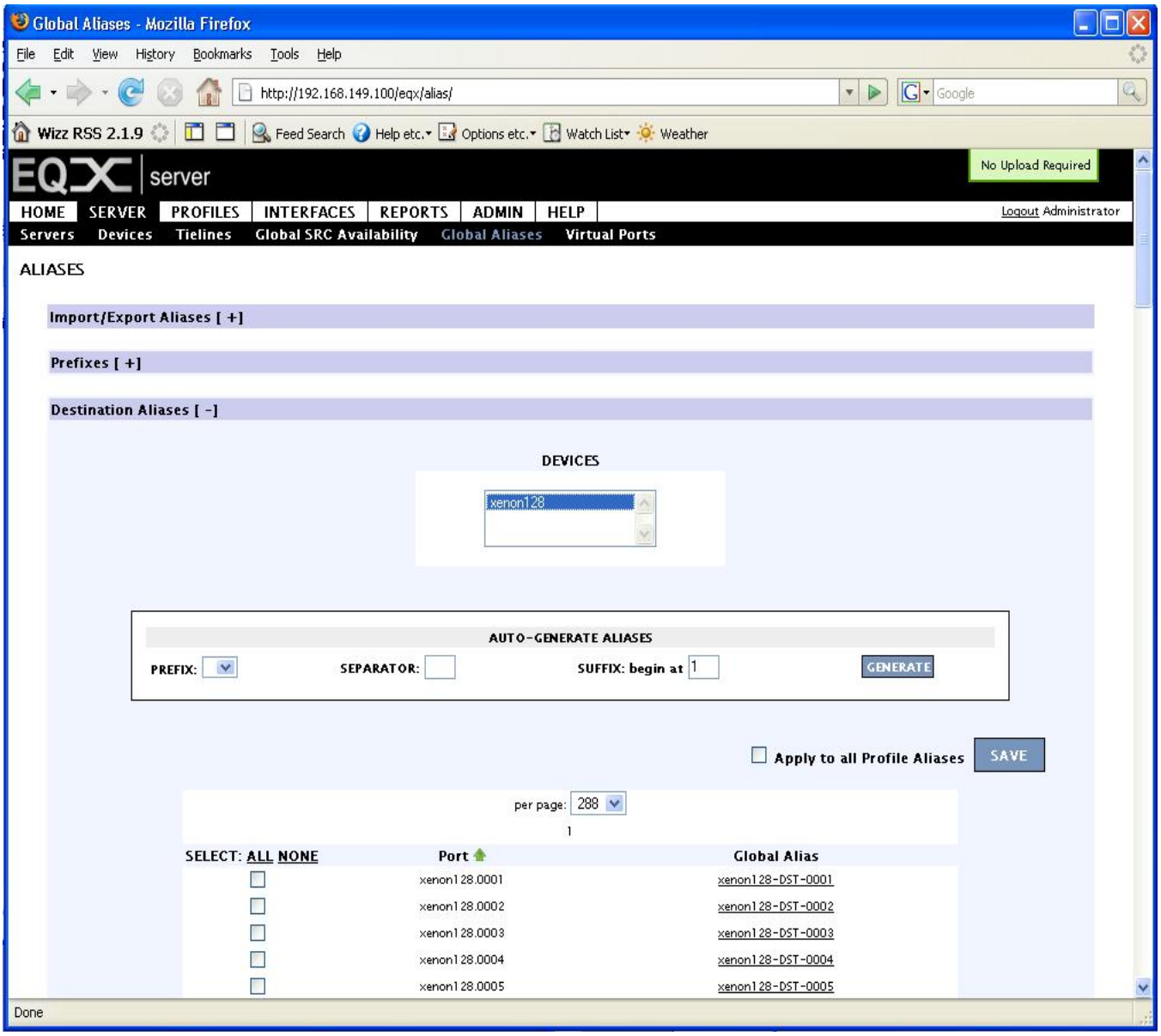


Figure 6-6: Destination Aliases

Scroll down to the *Source Aliases* section and click the device namely *xenon128*. The source aliases will appear.

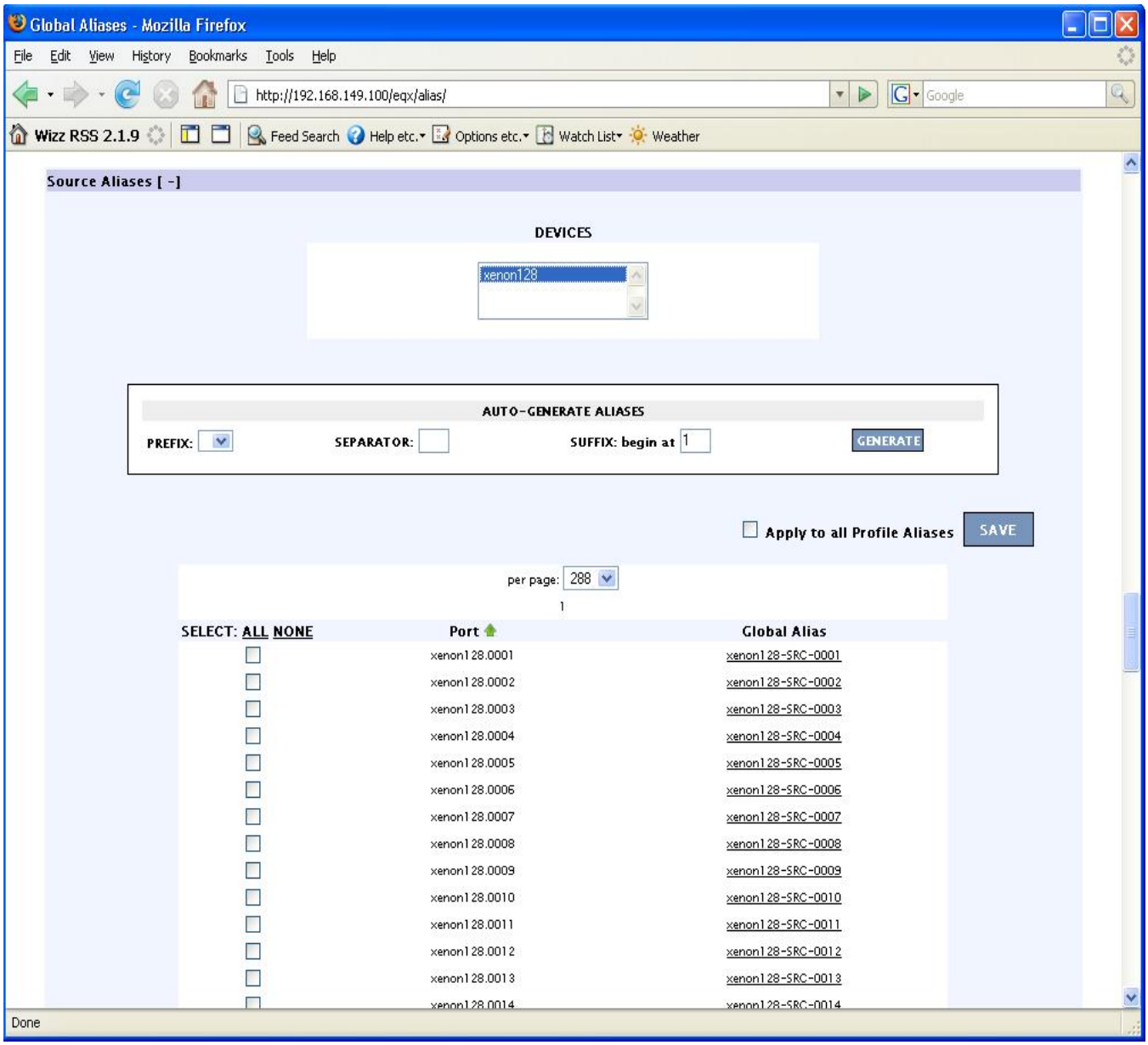


Figure 6-7: Source Aliases

Scroll back to the top. Click on *Import/Export Aliases*.

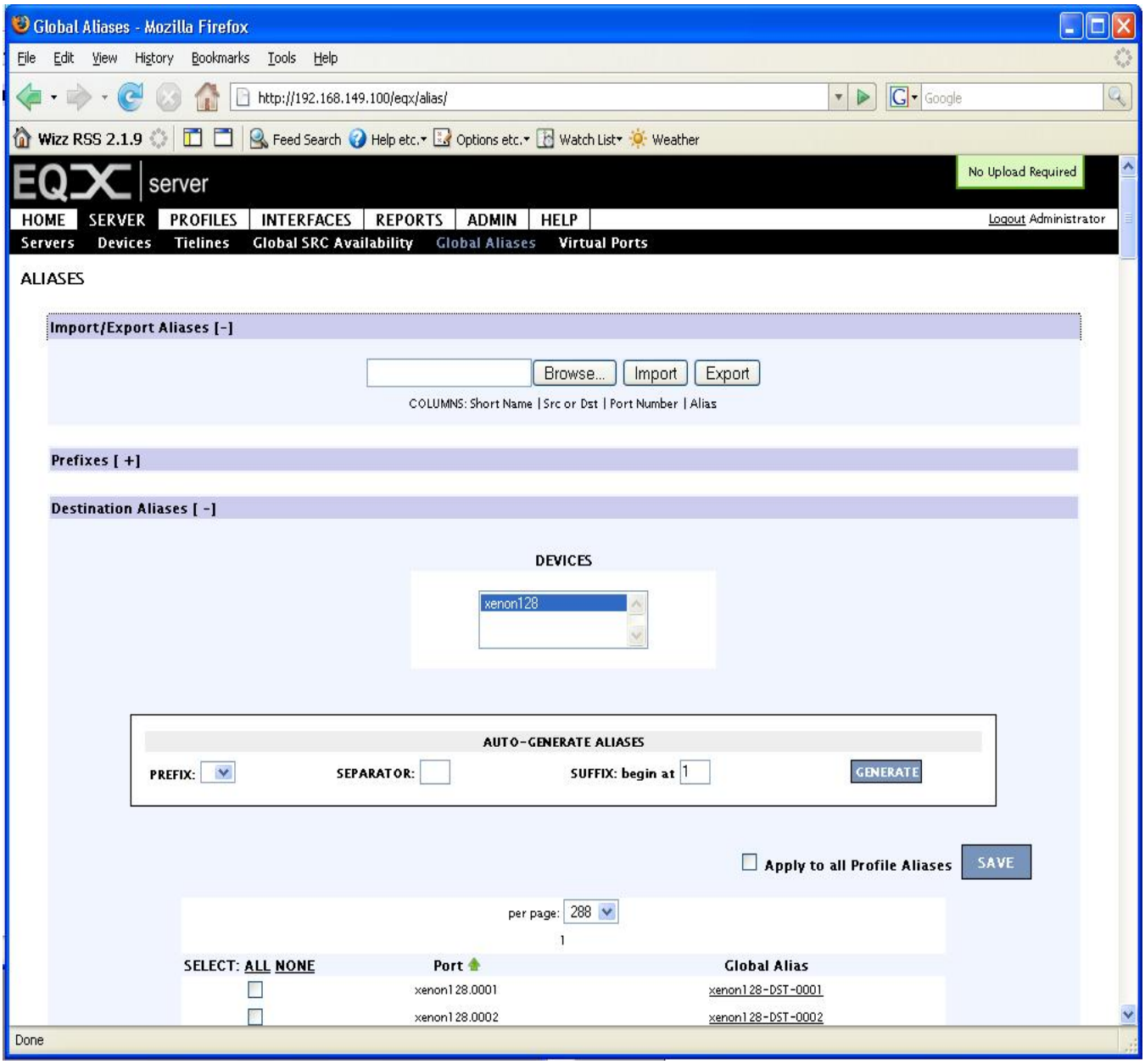


Figure 6-8: Import/Export Aliases

Click *Export*. Click *Save to Disk*. The aliases will be placed in a file called *global_alias.csv*.

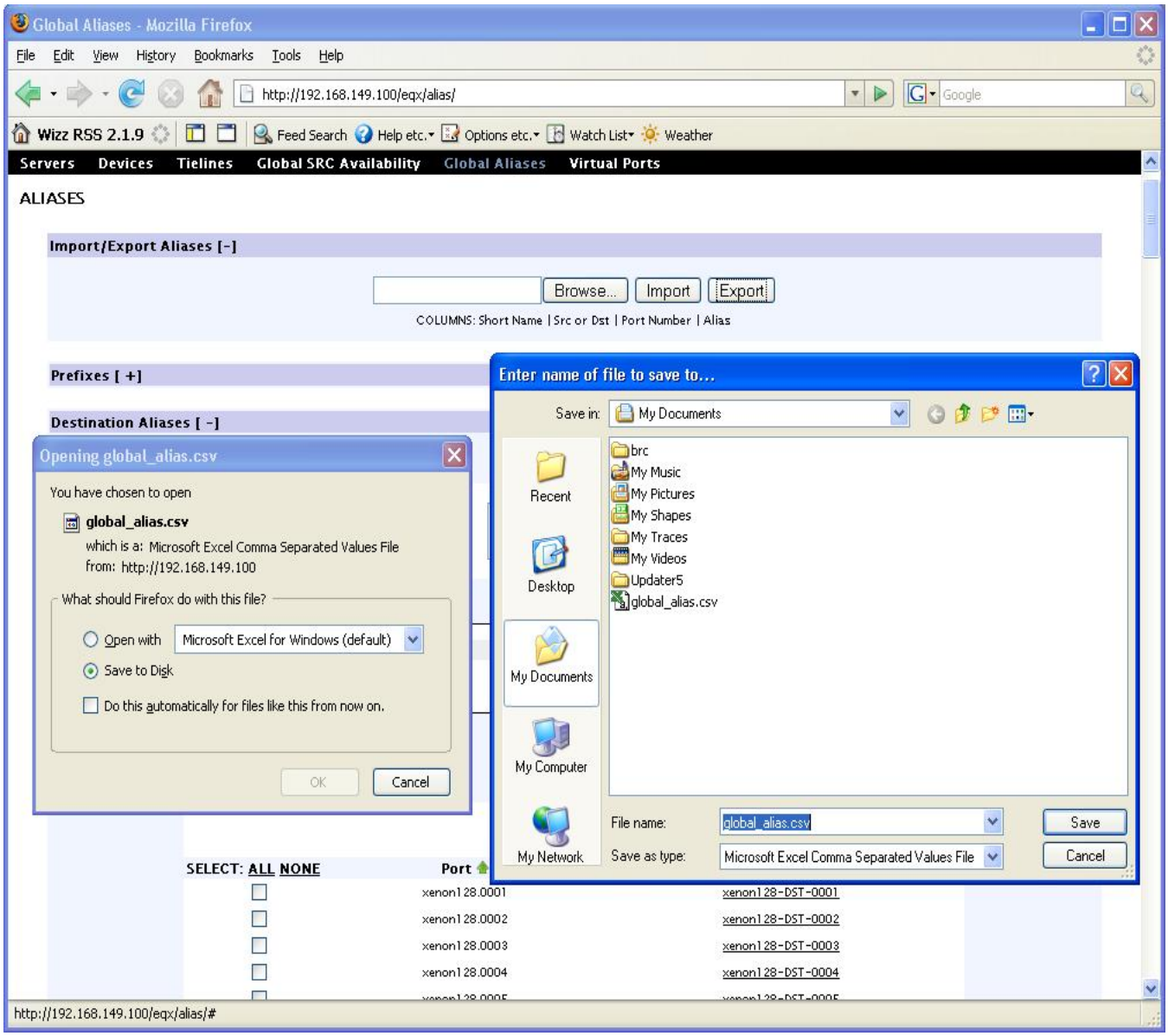
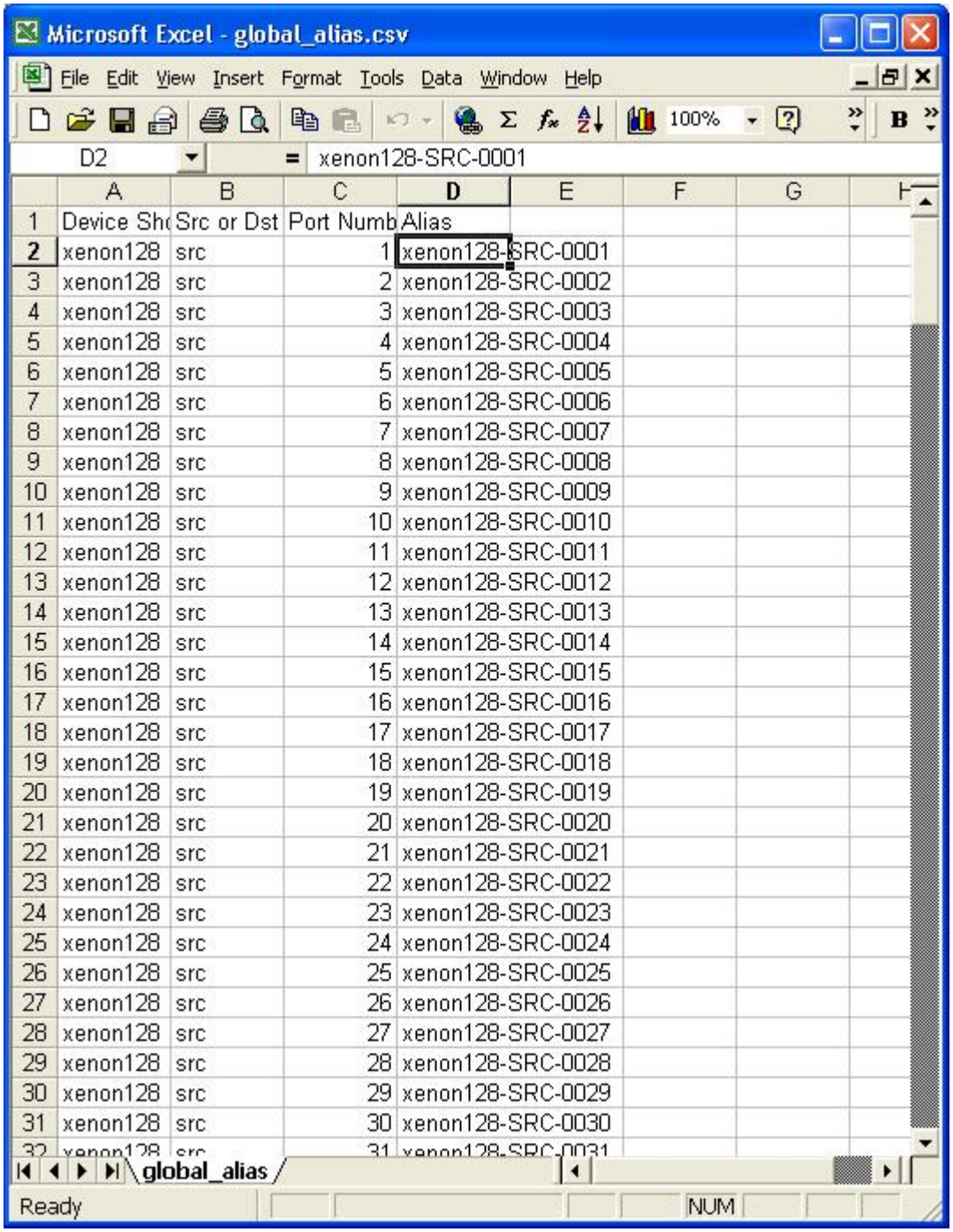


Figure 6-9: Exporting Aliases

6.2. CREATING SYMPHONY SOURCE NAME FILE

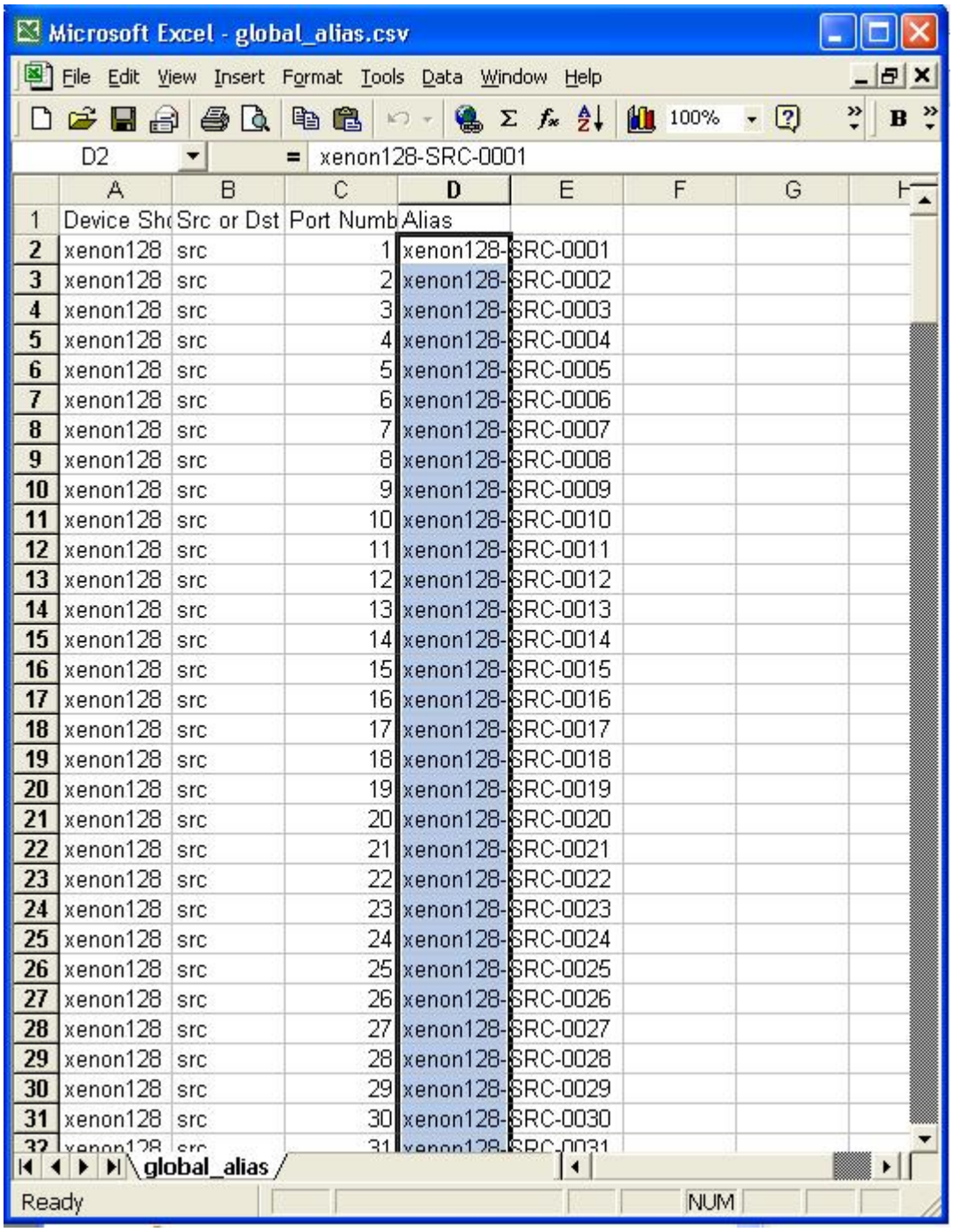
Open *global_alias.csv* (previously created).



	A	B	C	D
1	Device Sh	Src or Dst	Port Numb	Alias
2	xenon128	src	1	xenon128-SRC-0001
3	xenon128	src	2	xenon128-SRC-0002
4	xenon128	src	3	xenon128-SRC-0003
5	xenon128	src	4	xenon128-SRC-0004
6	xenon128	src	5	xenon128-SRC-0005
7	xenon128	src	6	xenon128-SRC-0006
8	xenon128	src	7	xenon128-SRC-0007
9	xenon128	src	8	xenon128-SRC-0008
10	xenon128	src	9	xenon128-SRC-0009
11	xenon128	src	10	xenon128-SRC-0010
12	xenon128	src	11	xenon128-SRC-0011
13	xenon128	src	12	xenon128-SRC-0012
14	xenon128	src	13	xenon128-SRC-0013
15	xenon128	src	14	xenon128-SRC-0014
16	xenon128	src	15	xenon128-SRC-0015
17	xenon128	src	16	xenon128-SRC-0016
18	xenon128	src	17	xenon128-SRC-0017
19	xenon128	src	18	xenon128-SRC-0018
20	xenon128	src	19	xenon128-SRC-0019
21	xenon128	src	20	xenon128-SRC-0020
22	xenon128	src	21	xenon128-SRC-0021
23	xenon128	src	22	xenon128-SRC-0022
24	xenon128	src	23	xenon128-SRC-0023
25	xenon128	src	24	xenon128-SRC-0024
26	xenon128	src	25	xenon128-SRC-0025
27	xenon128	src	26	xenon128-SRC-0026
28	xenon128	src	27	xenon128-SRC-0027
29	xenon128	src	28	xenon128-SRC-0028
30	xenon128	src	29	xenon128-SRC-0029
31	xenon128	src	30	xenon128-SRC-0030
32	xenon128	src	31	xenon128-SRC-0031

Figure 6-10: Opening global_alias.csv

Highlight the applicable source aliases then hit *CTRL+C*.



	A	B	C	D	E
1	Device Sh	Src or Dst	Port Numb	Alias	
2	xenon128	src	1	xenon128-	SRC-0001
3	xenon128	src	2	xenon128-	SRC-0002
4	xenon128	src	3	xenon128-	SRC-0003
5	xenon128	src	4	xenon128-	SRC-0004
6	xenon128	src	5	xenon128-	SRC-0005
7	xenon128	src	6	xenon128-	SRC-0006
8	xenon128	src	7	xenon128-	SRC-0007
9	xenon128	src	8	xenon128-	SRC-0008
10	xenon128	src	9	xenon128-	SRC-0009
11	xenon128	src	10	xenon128-	SRC-0010
12	xenon128	src	11	xenon128-	SRC-0011
13	xenon128	src	12	xenon128-	SRC-0012
14	xenon128	src	13	xenon128-	SRC-0013
15	xenon128	src	14	xenon128-	SRC-0014
16	xenon128	src	15	xenon128-	SRC-0015
17	xenon128	src	16	xenon128-	SRC-0016
18	xenon128	src	17	xenon128-	SRC-0017
19	xenon128	src	18	xenon128-	SRC-0018
20	xenon128	src	19	xenon128-	SRC-0019
21	xenon128	src	20	xenon128-	SRC-0020
22	xenon128	src	21	xenon128-	SRC-0021
23	xenon128	src	22	xenon128-	SRC-0022
24	xenon128	src	23	xenon128-	SRC-0023
25	xenon128	src	24	xenon128-	SRC-0024
26	xenon128	src	25	xenon128-	SRC-0025
27	xenon128	src	26	xenon128-	SRC-0026
28	xenon128	src	27	xenon128-	SRC-0027
29	xenon128	src	28	xenon128-	SRC-0028
30	xenon128	src	29	xenon128-	SRC-0029
31	xenon128	src	30	xenon128-	SRC-0030
32	xenon128	src	31	xenon128-	SRC-0031

Figure 6-11: Selecting & Copying Sources

Create a new file and paste the source aliases to the first column.

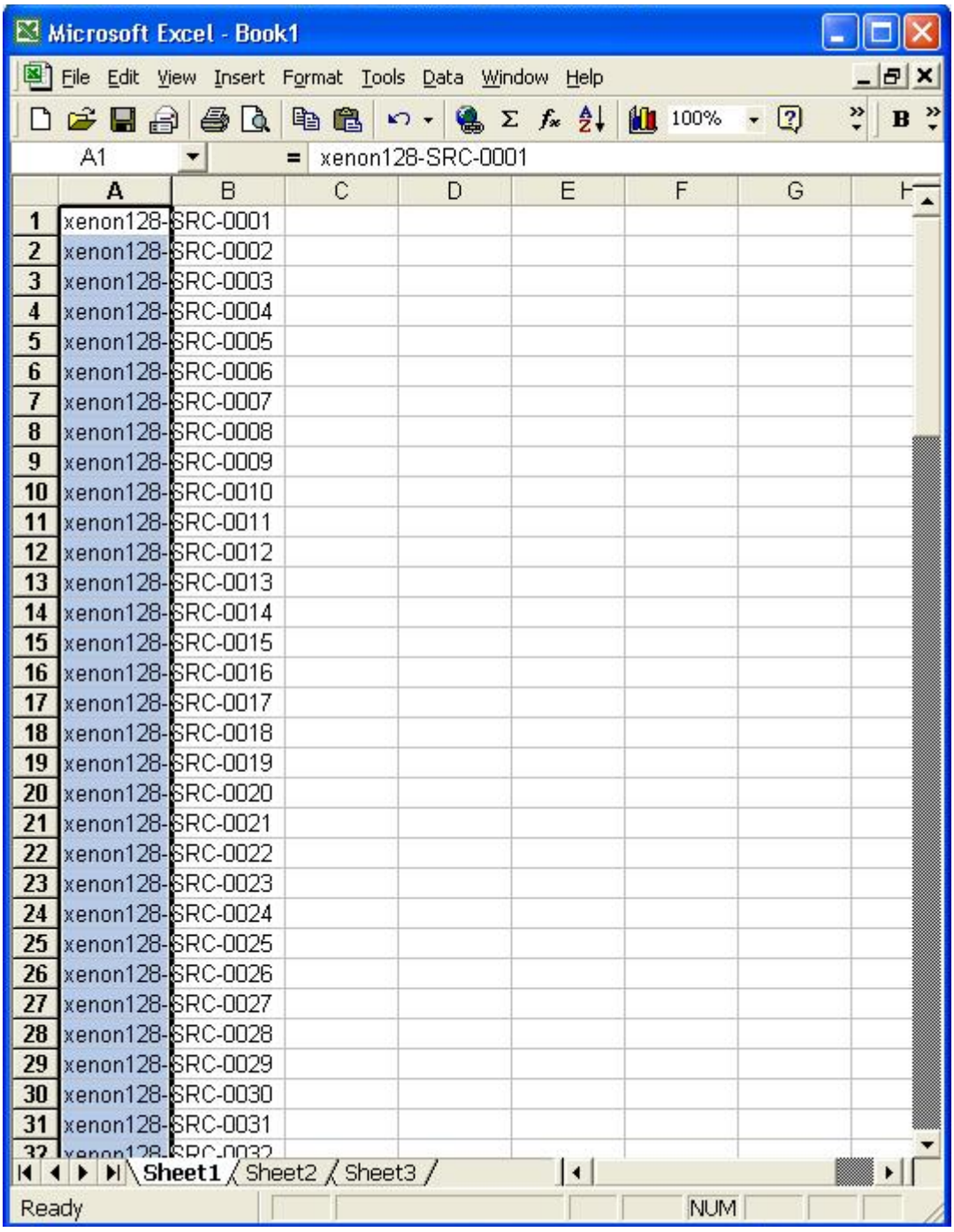


Figure 6-12: Pasting Selected Sources

Save the file as *symp_src.csv*.

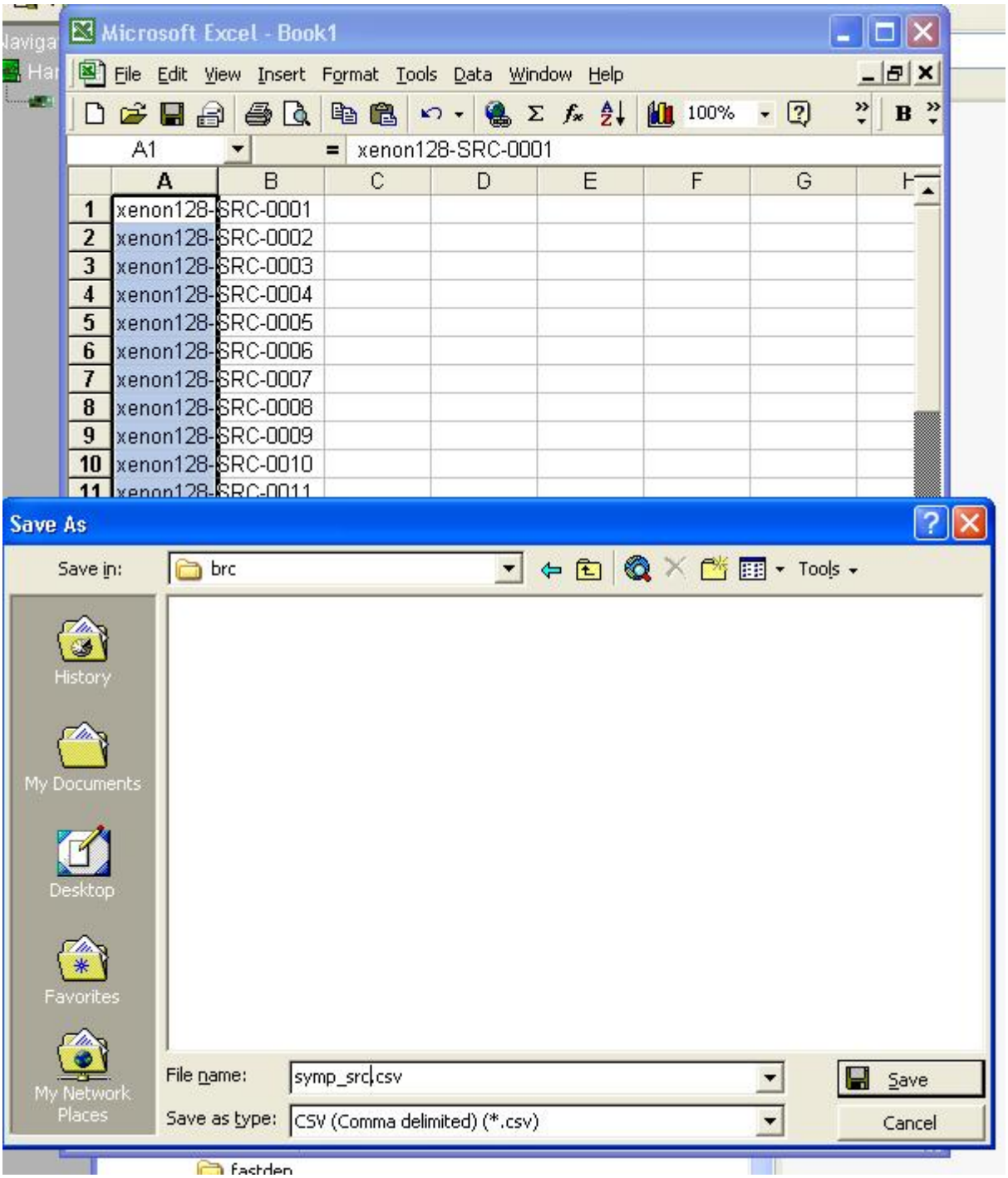


Figure 6-13: Creating symp_src.csv

6.3. CREATING SYMPHONY DESTINATION NAME FILE

Repeat the procedure of 6.2 but use the destination aliases and save them as file *symp_dst.csv*.

6.4. FTP SYMPHONY NAME FILES TO 7700R-SC-BRC

Figure 6-4 shows how to transfer *symp_src.csv* and *symp_dst.csv* to the 7700R-SC-BRC's compact flash using FTP. For this example, the IP address of the 7700R-SC-BRC is 192.168.18.56.

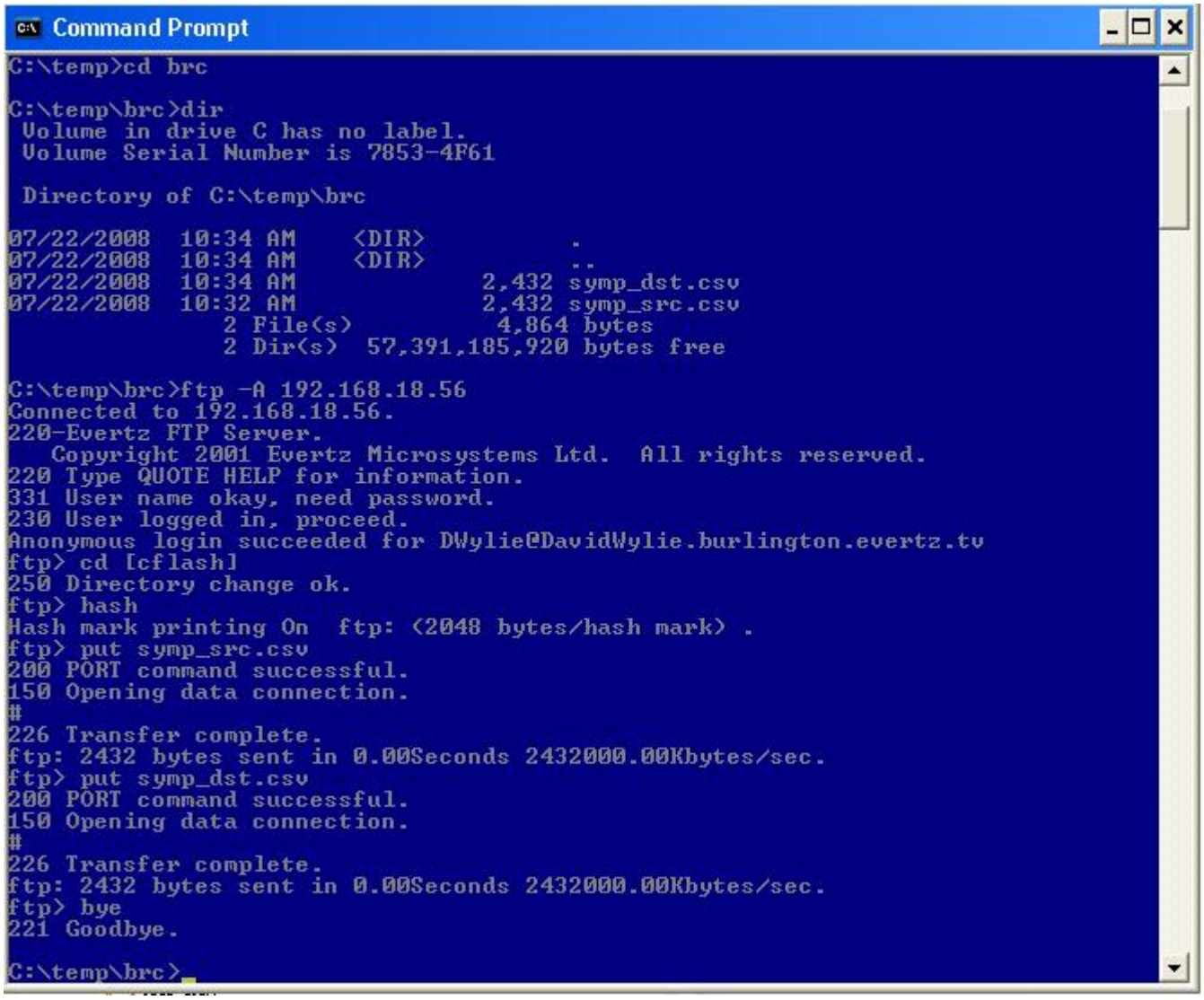


Figure 6-14: FTP CSV File Transfer

6.5. ACTIVATING SYMPHONY NAME FILES

Changes made to symp_src.csv and symp_dst.csv won't take effect until the *Do Configuration Update* parameter of section 5.5.1 is set to *True* and the VLPro *Apply* button is clicked.

7. EVERTZ CONTROL EXAMPLES

7.1. CPU LINK NO. 1 SINGLE ROUTER

Suppose we have the following:

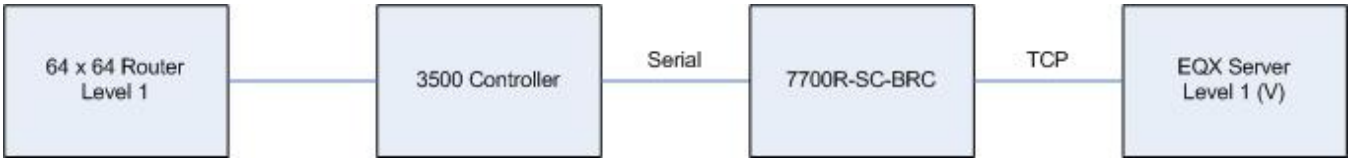


Figure 7-1: CPU Link No. 1 Single Router Example

Where:

- the EQX server is to control the 64 x 64 router
- the 64 x 64 router, on CPU Link level 1, is communicating with the 3500 controller
- the 7700R-SC-BRC is communicating with the 3500 over a RS-232 serial link
- the 7700R-SC-BRC is communicating with the EQX server over a TCP link
- the EQX server uses Evertz level 1 (V) for the 64 x 64 router

Typically, the 3500 uses the following serial settings:

- baud = 9600
- number data bits = 8
- parity = none
- number stop bits = 2

The configuration of the 7700R-SC-BRC would be as follows:

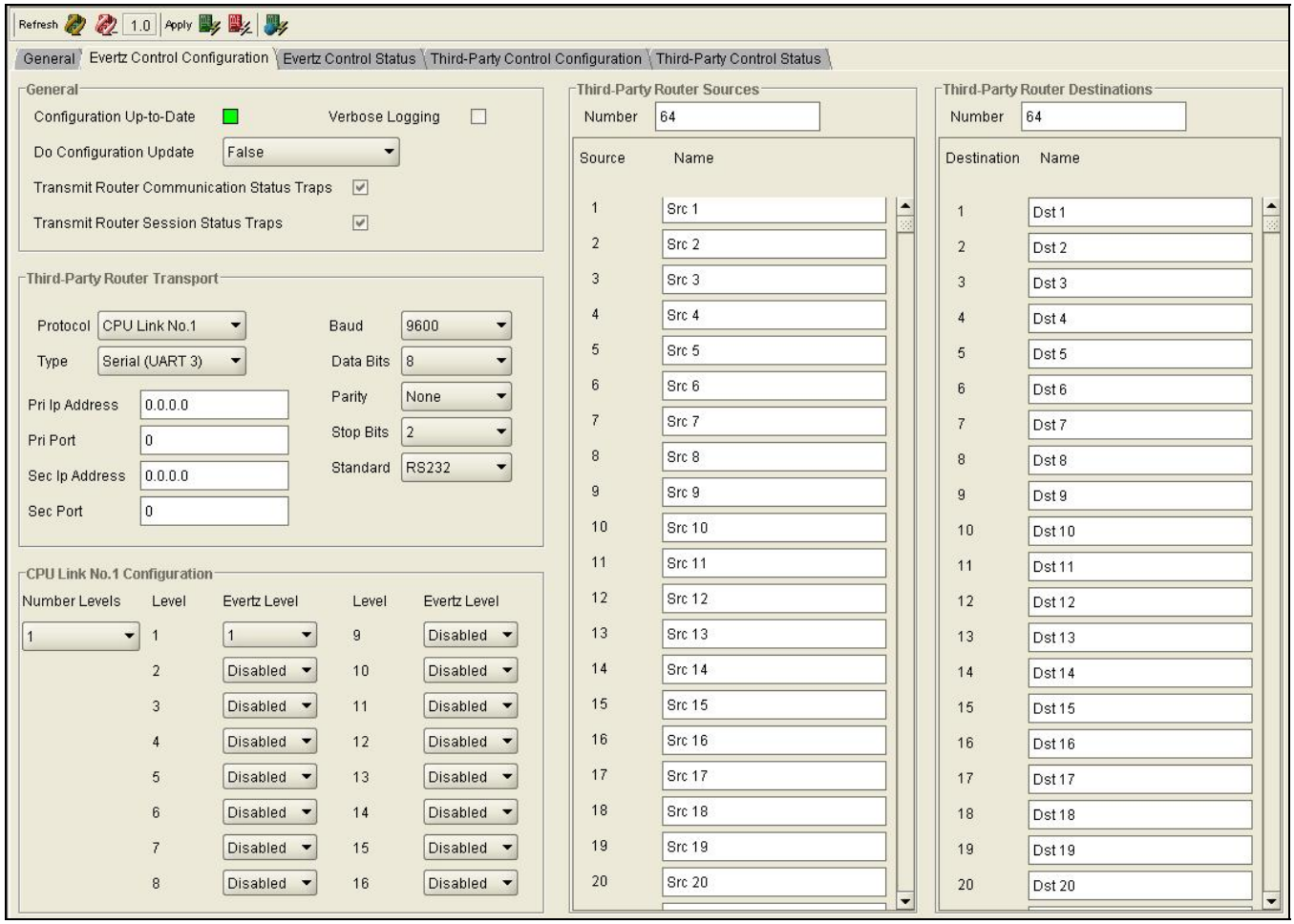


Figure 7-2: Evertz Control CPU Link No. 1 Single Router Configuration

7.2. CPU LINK NO. 1 TWO ROUTERS

Suppose we have the following:

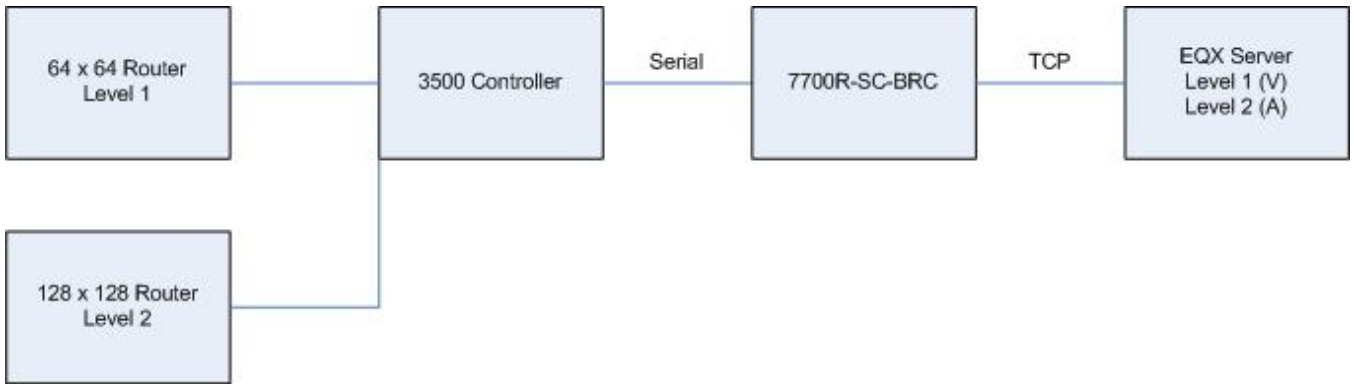


Figure 7-3: CPU Link No. 1 Two Routers Example

Where:

- the EQX server is to control the 64 x 64 router
- the EQX server is to control the 128 x 128 router
- the 64 x 64 router, on CPU Link level 1, is communicating with the 3500 controller
- the 128 x 128 router, on CPU Link level 2, is communicating with the 3500 controller
- the 7700R-SC-BRC is communicating with the 3500 over a RS-232 serial link
- the 7700R-SC-BRC is communicating with the EQX server over a TCP link
- the EQX server uses Evertz level 1 (V) for the 64 x 64 router
- the EQX server uses Evertz level 2 (A) for the 128 x 128 router

Typically, the 3500 uses the following serial settings:

- baud = 9600
- number data bits = 8
- parity = none
- number stop bits = 2

The configuration of the 7700R-SC-BRC would be as follows:

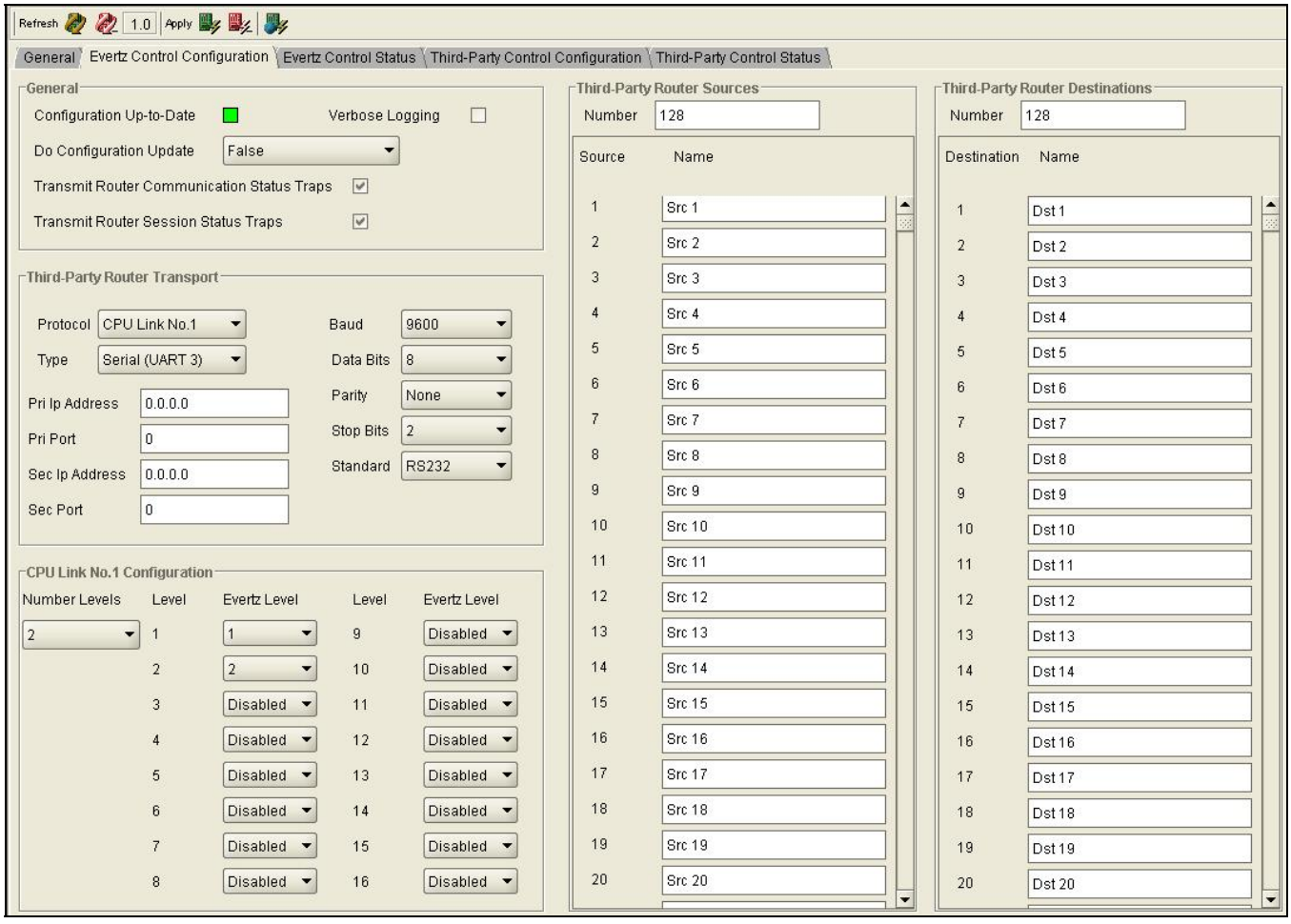


Figure 7-4: Evertz Control CPU Link No. 1 Two Routers Configuration

7.3. VMSI 3000 ASCII SINGLE ROUTER

Suppose we have the following:

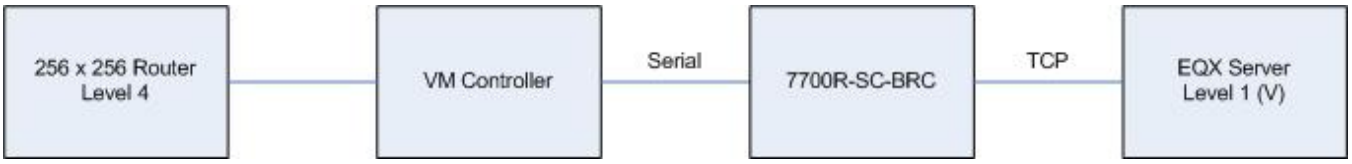


Figure 7-5: Evertz Control VMSI 3000 ASCII Single Router Example

Where:

- the EQX server is to control the 256 x 256 router
- the 256 x 256 router, on VMSI 3000 ASCII level 4, is communicating with a VM controller
- the 7700R-SC-BRC is communicating with the VM controller over a RS-232 serial link
- the 7700R-SC-BRC is communicating with the EQX server over a TCP link
- the EQX server uses Evertz level 1 (V) for the 256 x 256 router

The configuration of the 7700R-SC-BRC would be as follows:

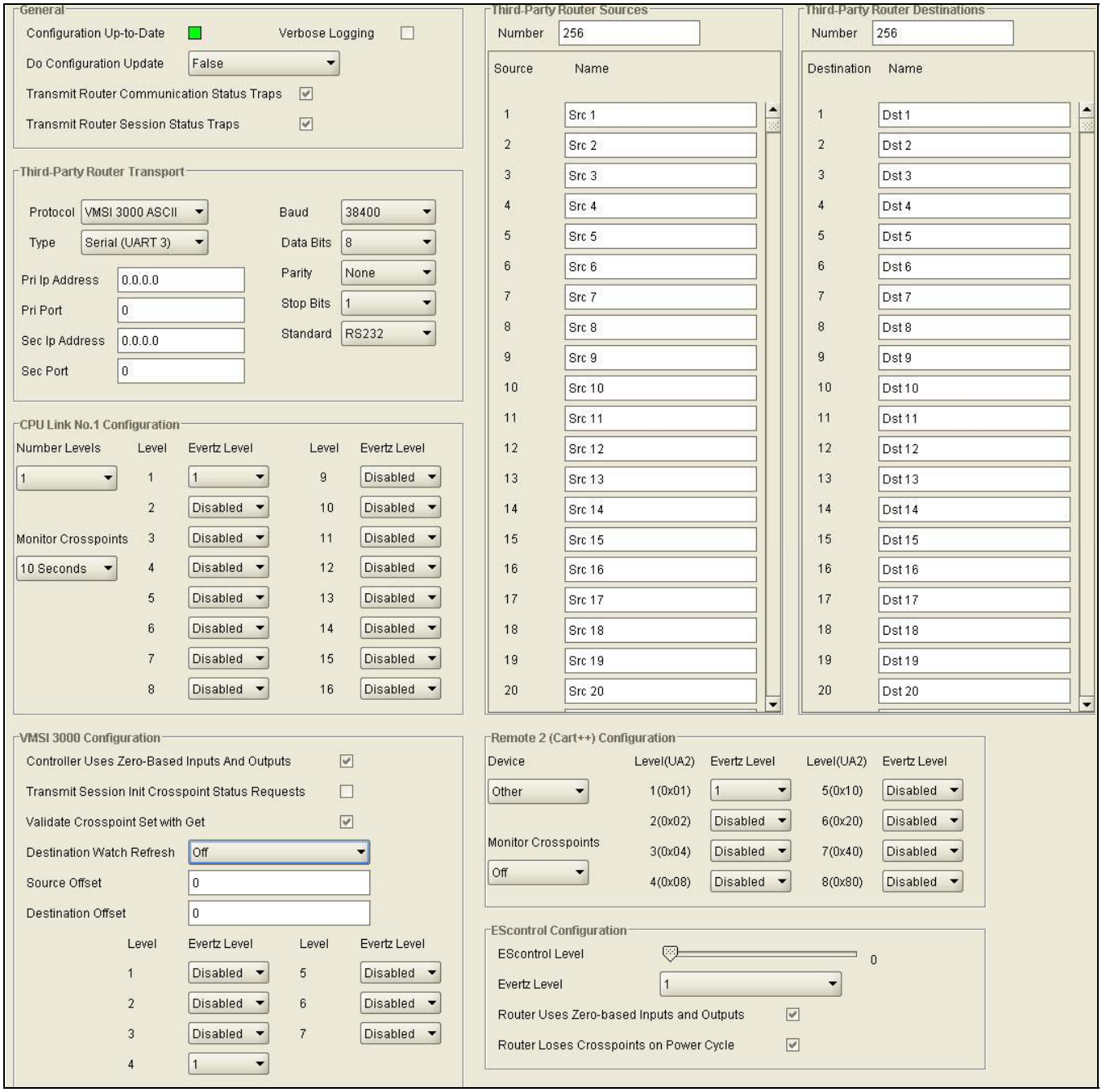


Figure 7-6: Evertz Control VMSI 3000 ASCII Single Router Configuration

7.4. VMSI 3000 ASCII TWO ROUTERS

Suppose we have the following:

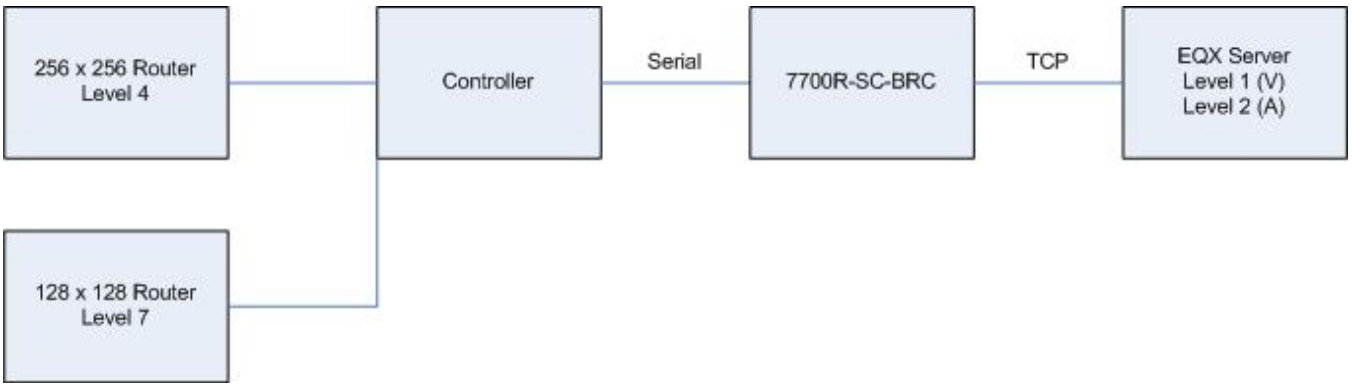


Figure 7-7: Evertz Control VMSI 3000 ASCII Two Routers Example

Where:

- the EQX server is to control the 256 x 256 router
- the EQX server is to control the 128 x 128 router
- the 256 x 256 router, on VMSI 3000 ASCII level 4, is communicating with a VM controller
- the 128 x 128 router, on VMSI 3000 ASCII level 7, is communicating with a VM controller
- the 7700R-SC-BRC is communicating with the VM controller over a RS-422 serial link
- the 7700R-SC-BRC is communicating with the EQX server over a TCP link
- the EQX server uses Evertz level 1 (V) for the 256 x 256 router
- the EQX server uses Evertz level 2 (A) for the 128 x 128 router

The configuration of the 7700R-SC-BRC would be as follows:

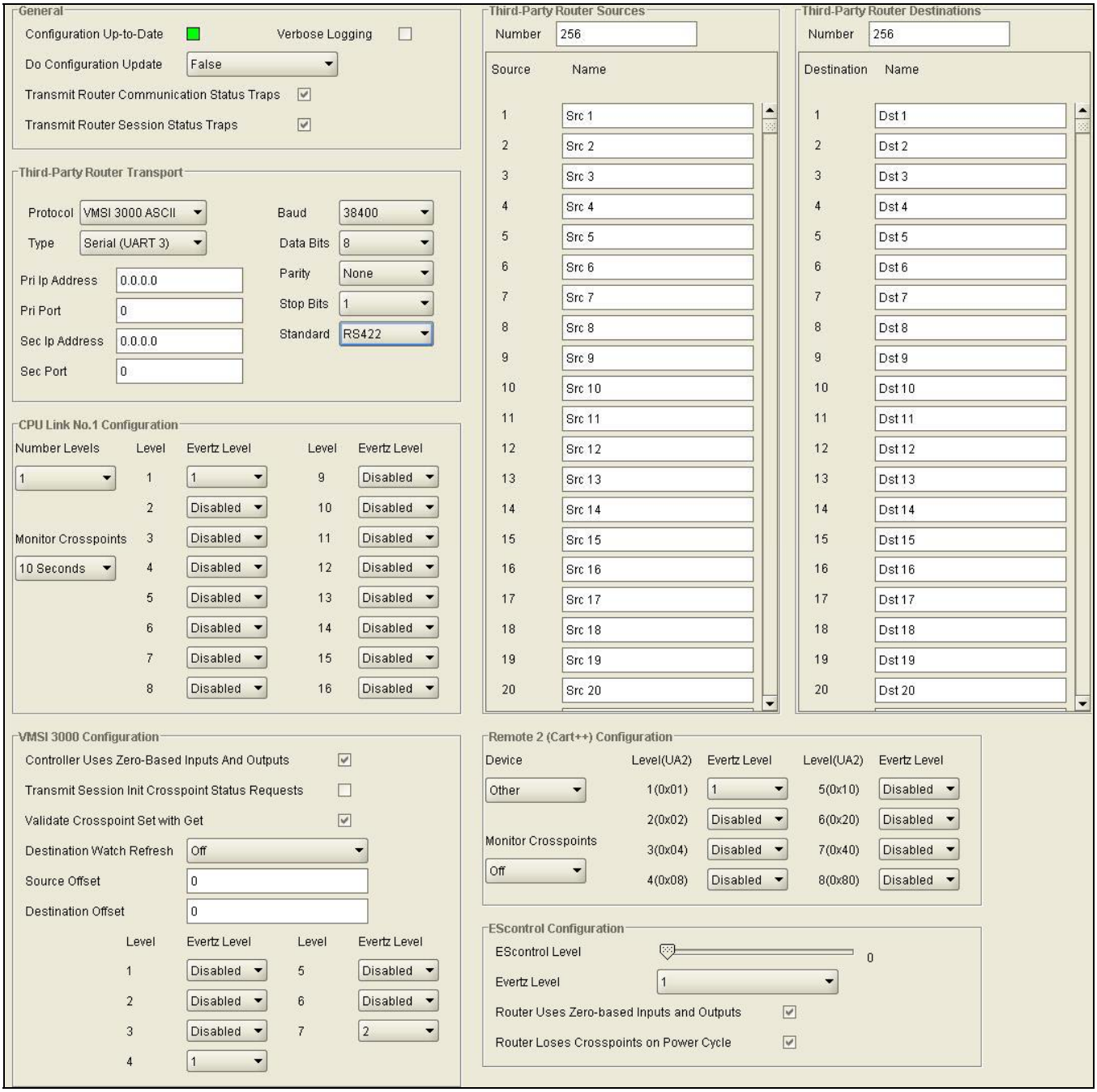


Figure 7-8: Evertz Control VMSI 3000 ASCII Two Routers Configuration

7.5. NVEP ROUTER

Suppose we have the following:

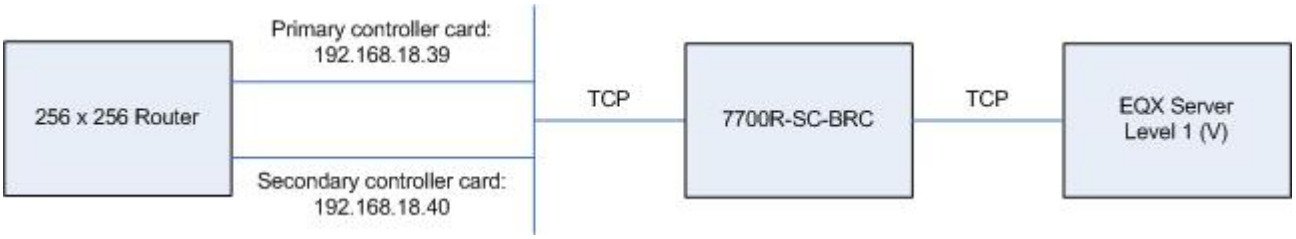


Figure 7-9: Evertz Control NVEP Router Example

Where:

- the EQX server is to control the 256 x 256 router
- the 256 x 256 router has a primary controller card installed with IP address 192.168.18.39
- the 256 x 256 router has a secondary controller card installed with IP address 192.168.18.40
- the 7700R-SC-BRC is communicating with the router over a TCP link
- the 7700R-SC-BRC is communicating with the EQX server over a TCP link
- the EQX server uses Evertz level 1 (V) for the 256 x 256 router
- only the EQX server controls the router

The configuration of the 7700R-SC-BRC would be as follows:

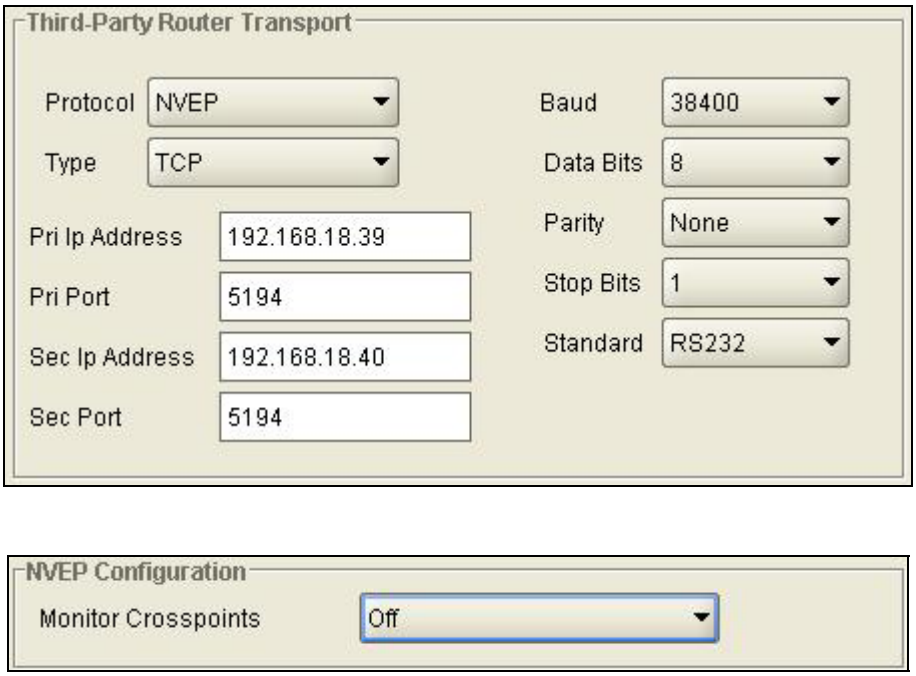


Figure 7-10: Evertz Control NVEP Router Configuration

We can set *Monitor Crosspoints* to *Off* since only the EQX server will be making crosspoint changes on the router. If a panel, connected directly to the router, was allowed to make crosspoint changes then *Monitor Crosspoints* should be enabled.

7.6. REMOTE 2 (CART++) DIRECT MODE

Direct mode refers to connecting to the router directly. Suppose we have the following:

Figure 7-11: Evertz Control Remote 2 (Cart++) Direct Mode Example

Where:

- the EQX server is to control the HDS-X3400 16 x 16 router
- the 16 x 16 router has unit address 0x02
- the 7700R-SC-BRC is communicating with the router over a RS-422 serial link
- the 7700R-SC-BRC is communicating with the EQX server over a TCP link
- the EQX server uses Evertz level 1 (V) for the 16 x 16 router

Typically, remote 2 (cart++) routers use the following serial settings:

- baud = 38400
- number data bits = 8
- parity = even
- number stop bits = 1

The configuration of the 7700R-SC-BRC would be as follows:

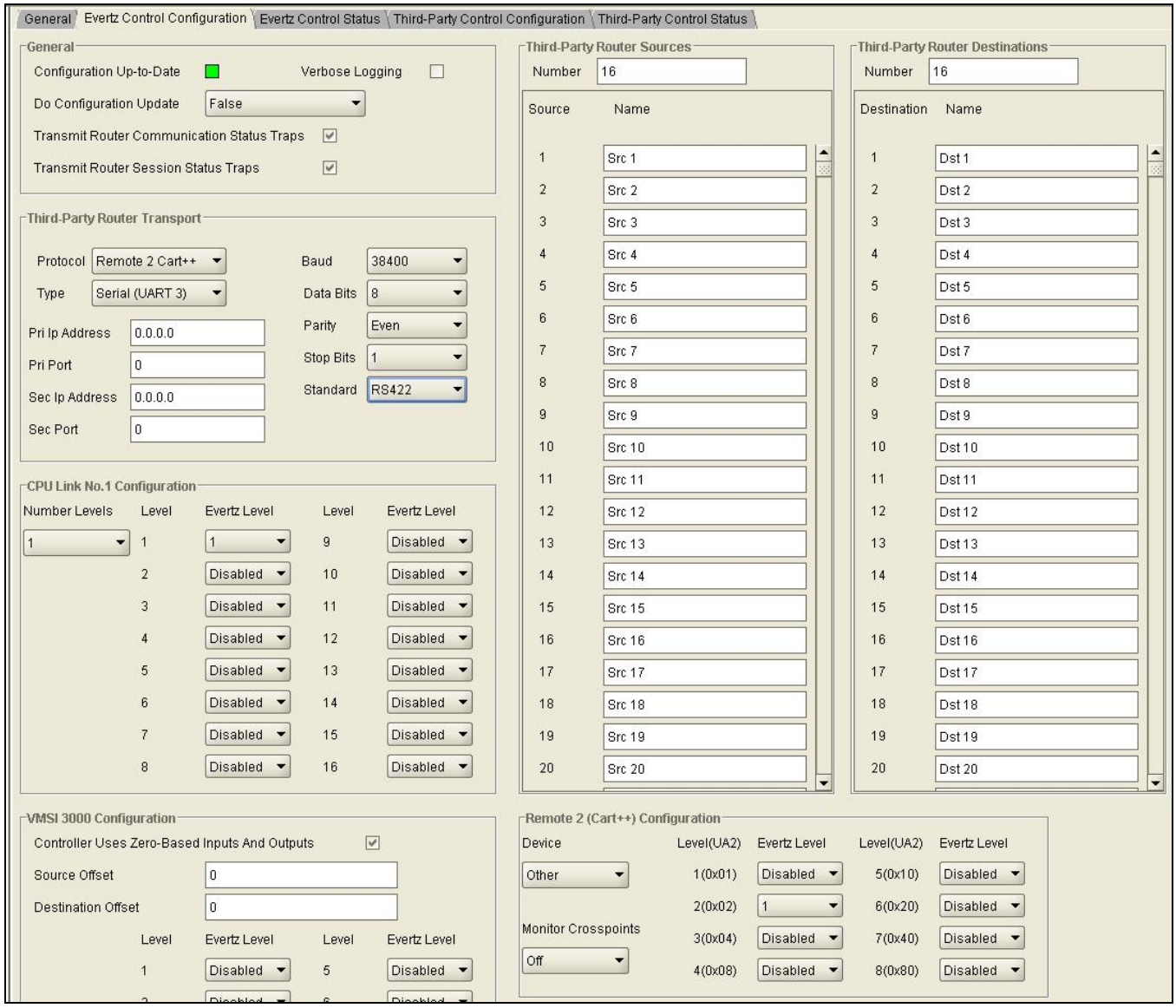


Figure 7-12: Evertz Control Remote 2 (Cart++) Direct Mode Configuration

7.7. REMOTE 2 (CART++) S-BUS CONVERSION MODE

This mode refers to the control of a router via a controller. Suppose we have the following:

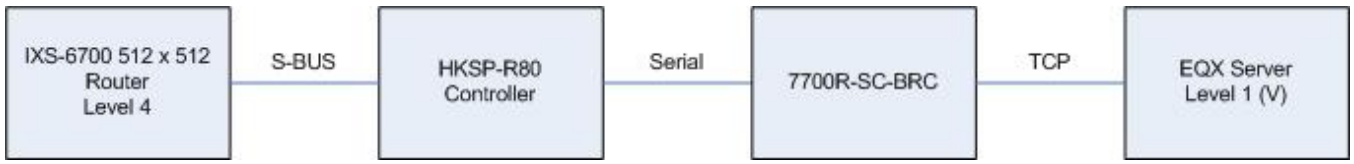


Figure 7-13: Evertz Control Remote 2 (Cart++) S-BUS Conversion Mode Example

Where:

- the EQX server is to control the IXS-6700 512 x 512 router
- the 512 x 512 is on Remote 2 (Cart++) level 4
- the 7700R-SC-BRC is communicating with the router over a RS-422 serial link
- the 7700R-SC-BRC is communicating with the EQX server over a TCP link
- the EQX server uses Evertz level 1 (V) for the 512 x 512 router

The configuration of the 7700R-SC-BRC would be as follows:

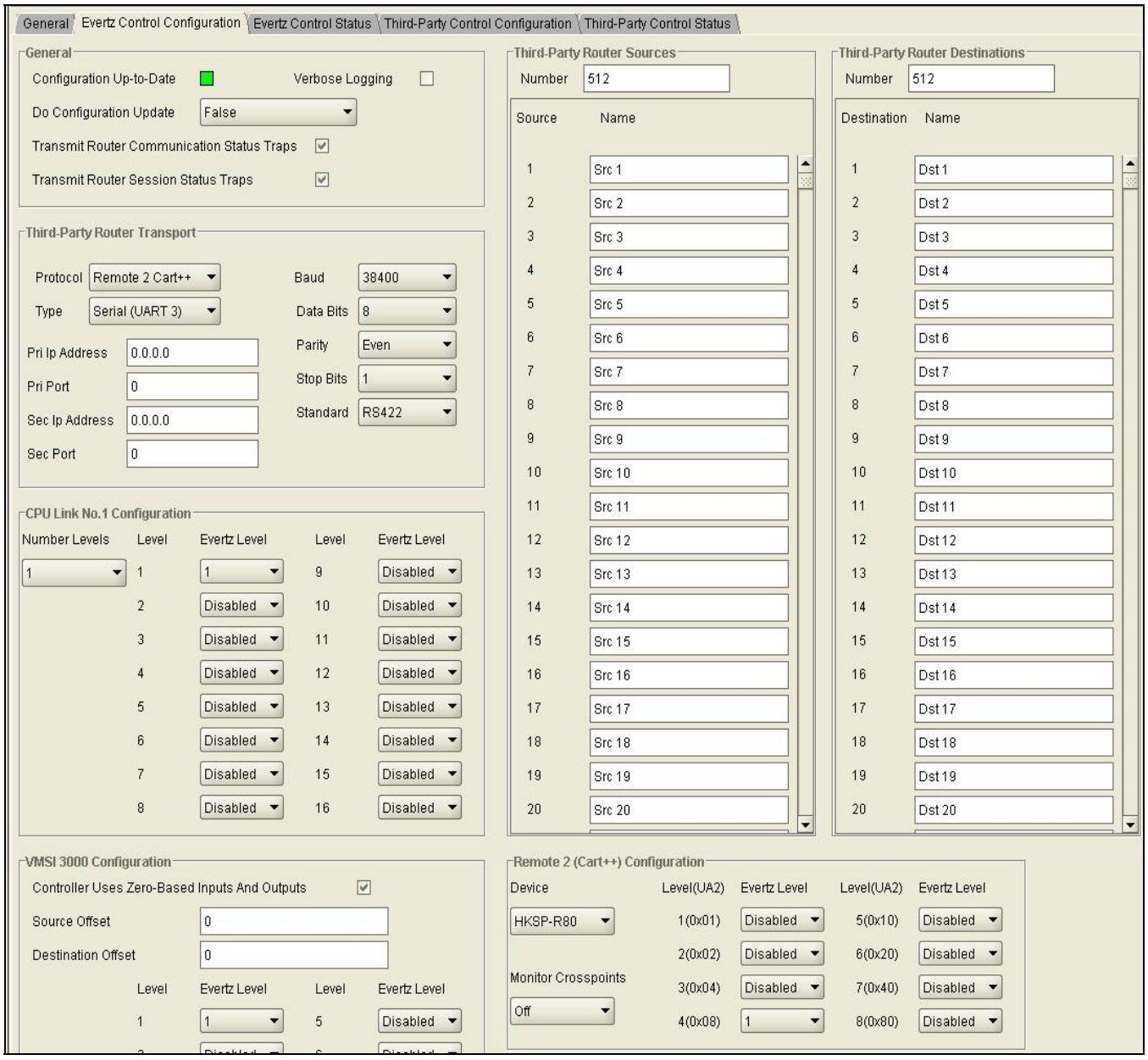


Figure 7-14: Evertz Control Remote 2 (Cart++) S-BUS Conversion Mode Configuration

7.8. ESCONTROL ROUTER

Suppose we have the following:

Figure 7-15: Evertz Control NVEP Router Example

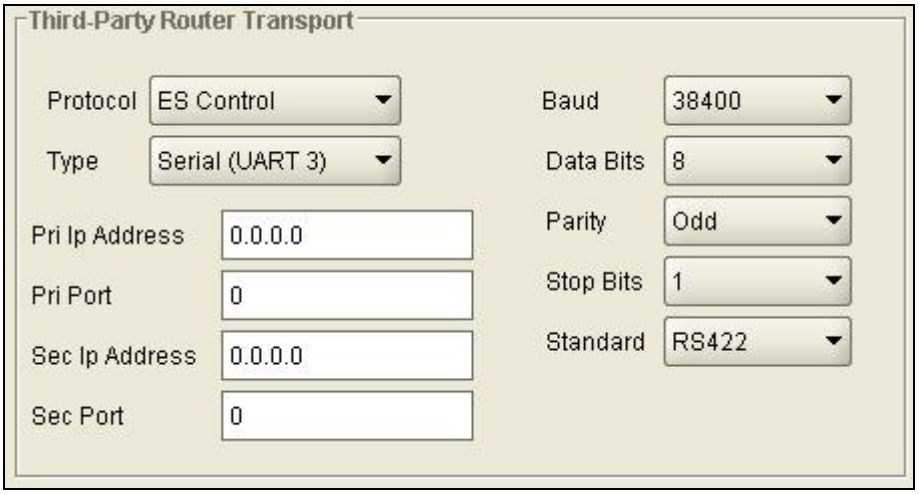
Where:

- the EQX server is to control a 768 x 768 EScontrol-based router
- the router uses level 0, 0-based sources and destinations, and does not maintain its crosspoint map on a power cycle
- the 7700R-SC-BRC is communicating with the router over a RS-422 serial link
- the 7700R-SC-BRC is communicating with the EQX server over a TCP link
- the EQX server uses Evertz level 1 (V) for the 768 x 768 router

Suppose the router uses the following serial settings:

- baud = 38400
- number data bits = 8
- parity = odd
- number stop bits = 1

The configuration of the 7700R-SC-BRC would be as follows:



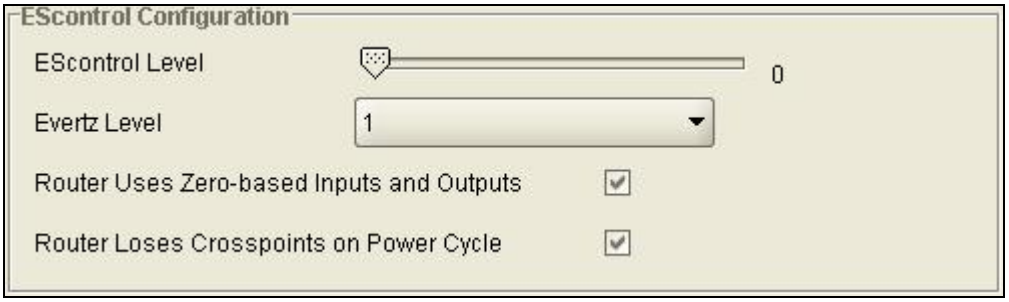


Figure 7-16: Evertz Control EScontrol Configuration

8. THIRD-PARTY CONTROL EXAMPLES

8.1. CPU LINK NO. 1 TO ROUTER

Suppose we have the following:

Figure 8-1: Third-Party CPU Link No. 1 Control Of Xenon Router Example

Where:

- the 3500 controller is to control a 128 x 128 Xenon router
- the 3500 is configured to use CPU Link No. 1 level 1 for the router
- the router is configured to use Evertz level 1 (V)
- the 3500 communicates with the 7700R-SC-BRC using the CPU Link No. 1 protocol over a RS-232 serial link
- the 7700R-SC-BRC communicates with the Xenon router using the Quartz protocol over a RS-232 serial link

The configuration of the 7700R-SC-BRC would be as follows:

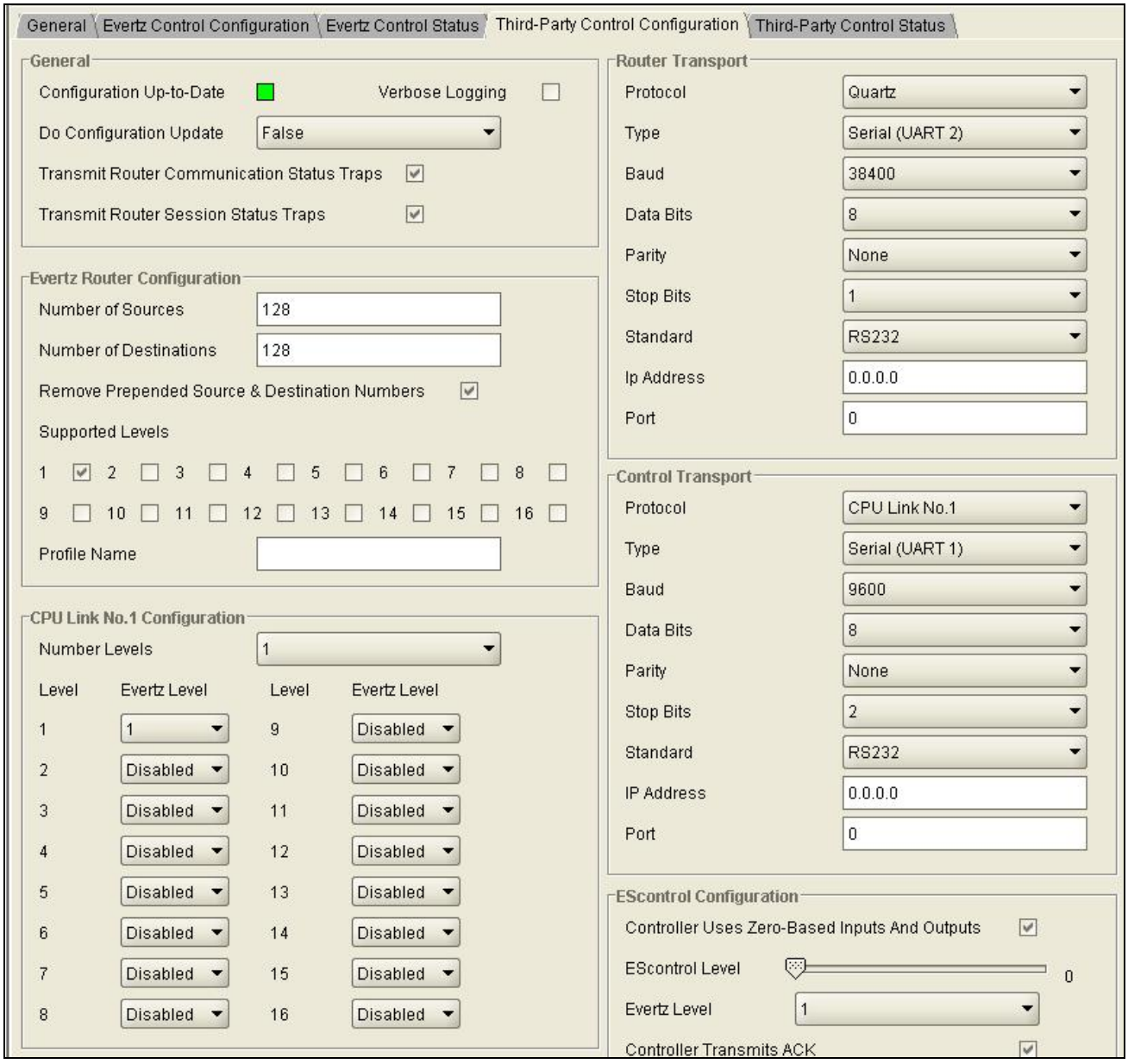


Figure 8-2: Third-Party CPU Link No. 1 Control of Xenon Router Configuration

8.2. CPU LINK NO. 1 TO ROUTER

Suppose we have the following:

Figure 8-3: Third-Party CPU Link No. 1 Control of Xenon Router Example

Where:

- the 3500 controller is to control a 128 x 128 Xenon router
- the 3500 is configured to use CPU Link No. 1 level 1 for the router
- the router is configured to use Evertz level 2 (A)
- the 3500 communicates with the 7700R-SC-BRC using the CPU Link No. 1 protocol over a RS-232 serial link
- the 7700R-SC-BRC communicates with the Xenon router using the Quartz protocol over a RS-232 serial link

The configuration of the 7700R-SC-BRC would be as follows:

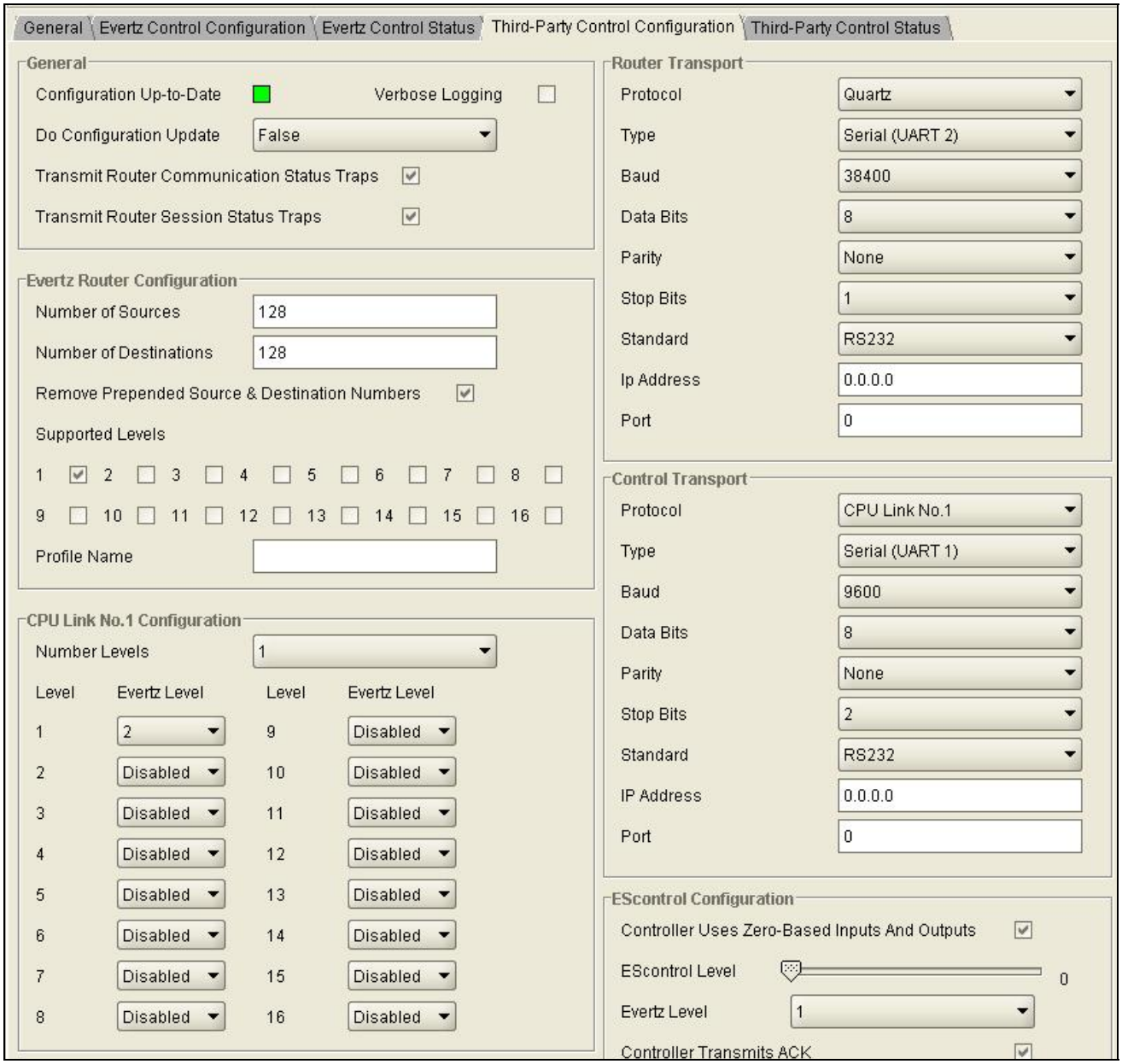


Figure 8-4: Third-Party CPU Link No. 1 Control of Xenon Router Configuration

8.3. ROT16 TO EQX SERVER: FULL ROUTER

Suppose we have the following:

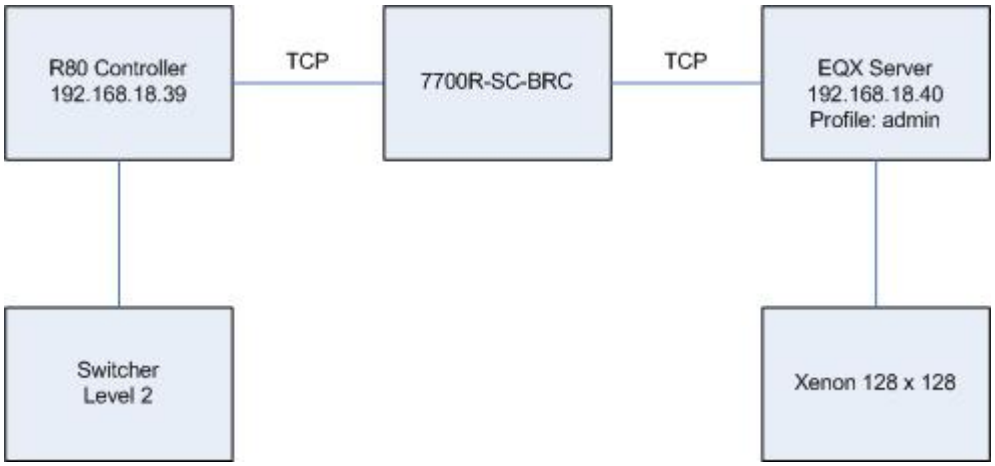


Figure 8-5: Third-Party ROT16 Control Of Xenon Router Example

Where:

- the switcher has control over the full range of sources and destinations of a 128 x 128 Xenon router
- the router occupies sources 1 – 128 within the source router space of the switcher (Figure 8-6)
- the router occupies the destinations 1 – 128 within the destination router space of the switcher (Figure 8-6)
- the switcher assigns ROT16 level 2 to the router
- the router is under the control of the EQX server
- the switcher and the 7700R-SC-RC interface with the R80 control module
- the R80 has IP address 192.168.18.39
- the EQX server has IP address 192.168.18.40
- the 7700R-SC-BRC uses the Symphony protocol to communicate with the EQX server
- symp_src.csv, on the compact flash of the 7700R-SC-BRC, will contain the alias names of all 128 sources
- symp_dst.csv, on the compact flash of the 7700R-SC-BRC, will contain the alias names of all 128 destinations
- the ROT16/S-BUS station address assigned to the 7700R-SC-BRC is 0x06
- the product code assigned to the 7700R-SC-BRC is 0x48

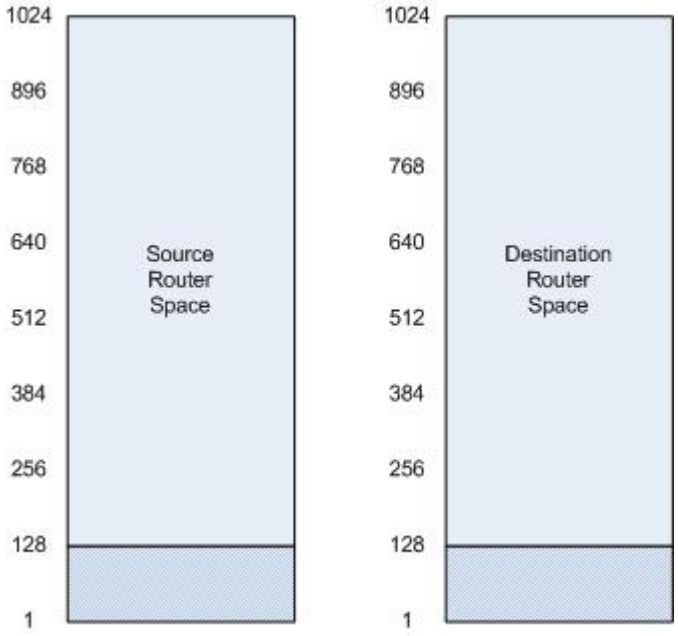
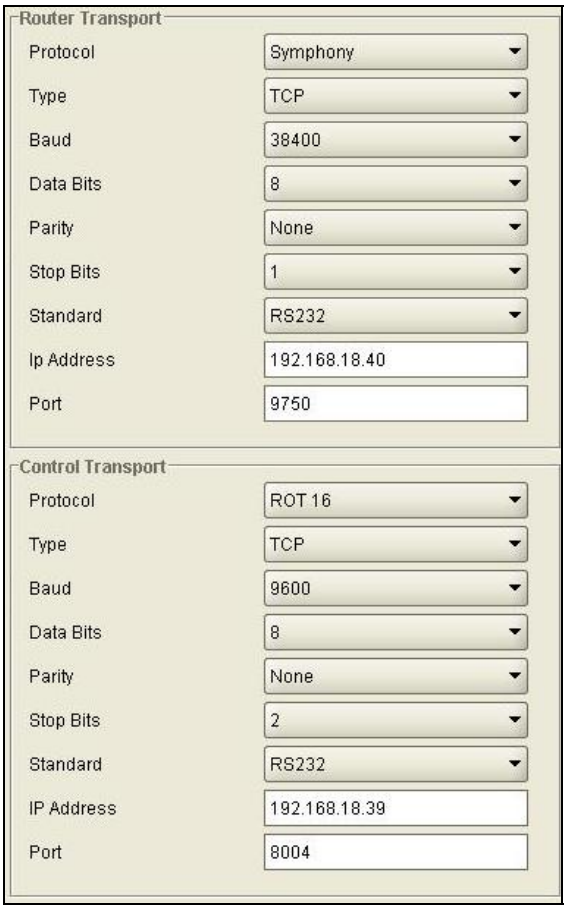


Figure 8-6: Switcher Router Space

The configuration of the 7700R-SC-BRC would be as follows:



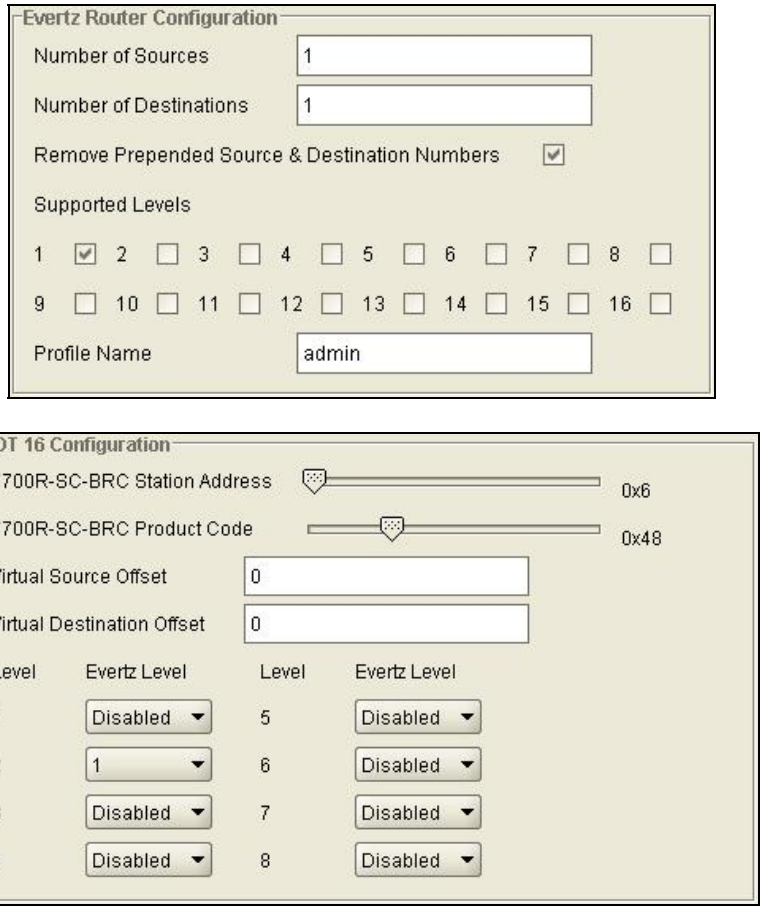


Figure 8-7: Third-Party ROT16 Control Of EQX Server Configuration

8.4. ROT16 TO EQX SERVER: PARTIAL ROUTER

Suppose we have the following:

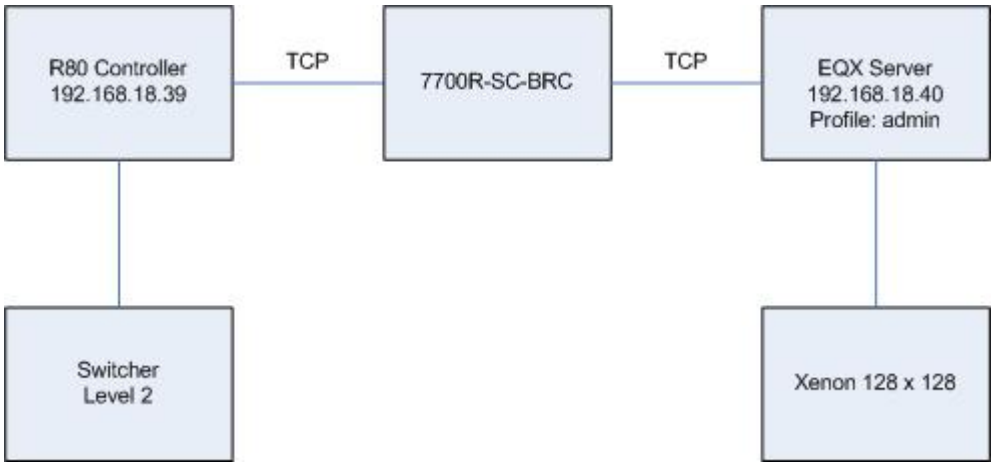


Figure 8-8: Third-Party ROT16 Control Of Xenon Router Example

Where:

- the switcher has control over the full range of sources of a 128 x 128 Xenon router
- the switcher has control over destinations 1, 3, 5, 7, and 9 of a 128 x 128 Xenon router
- thus, the switcher thinks it is controlling a 128 x 5 router
- the router occupies the sources 1 – 128 within the source router space of the switcher (Figure 8-9)
- the router occupies the destinations 129 – 133 within the destination router space of the switcher (Figure 8-9)
- the switcher assigns ROT16 level 1 to the router
- the router is under the control of the EQX server
- the switcher and the 7700R-SC-RC interface with the R80 control module
- the R80 has IP address 192.168.18.39
- the EQX server has IP address 192.168.18.40
- the 7700R-SC-BRC uses the Symphony protocol to communicate with the EQX server
- symp_src.csv, on the compact flash of the 7700R-SC-BRC, will contain the alias names of all 128 sources
- symp_dst.csv, on the compact flash of the 7700R-SC-BRC, will contain the 5 alias names of the destinations the switcher is to control (Figure 8-10)
- the ROT16/S-BUS station address assigned to the 7700R-SC-BRC is 0x06 the product code assigned to the 7700R-SC-BRC is 0x48

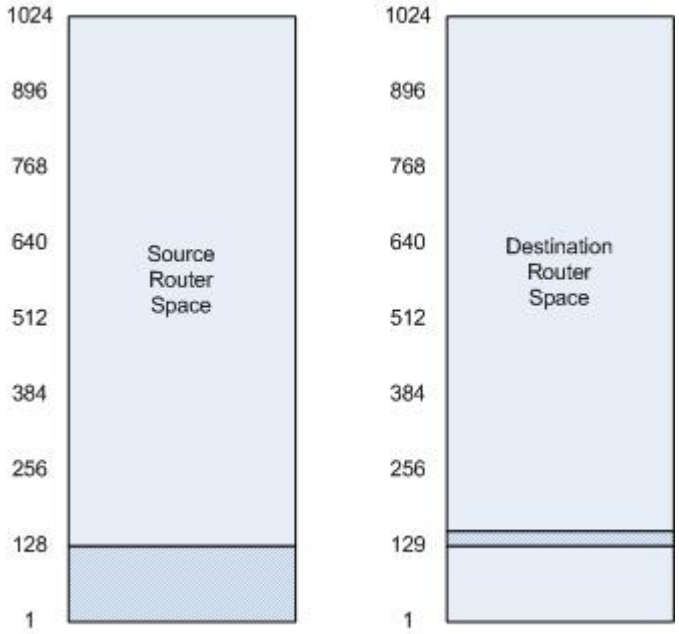
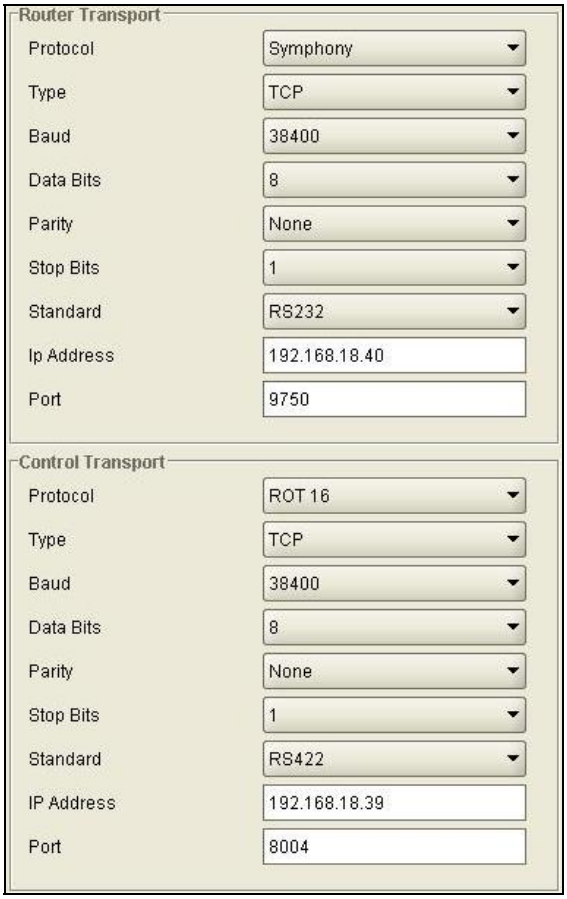


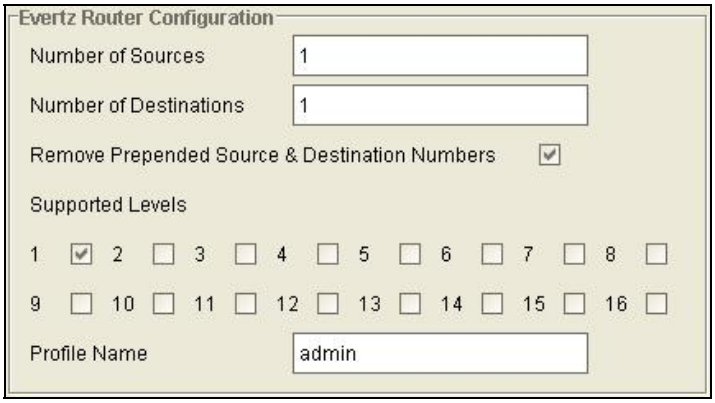
Figure 8-9: Switcher Router Space

	A	B
1	xenon128-DST-0001	
2	xenon128-DST-0003	
3	xenon128-DST-0005	
4	xenon128-DST-0007	
5	xenon128-DST-0009	

Figure 8-10: symp_dst.csv For Partial Router Control

The configuration of the 7700R-SC-BRC would be as follows:





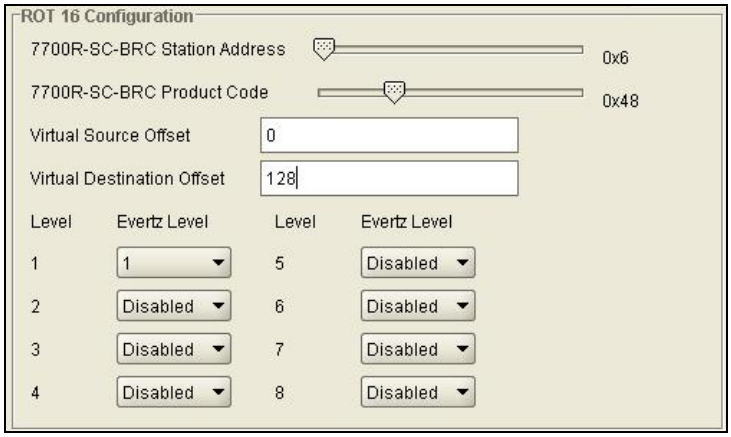


Figure 8-11: Third-Party ROT16 Control Of EQX Server Configuration

9. FIRMWARE UPGRADE

There are two ways to upgrade the firmware of the 7700R-SC-BRC:

1. Using FTP to perform the upgrade via TCP/IP. (*recommended procedure*)
2. Using a terminal application such as *HyperTerminal* to perform the upgrade via a serial connection.

9.1. FTP

Suppose the 7700R-SC-BRC has IP address 192.168.18.54 and that firmware file fw.bin is located in c:\temp. Open a command prompt window (in Windows: *Start/Programs/Accessories/Command Prompt*) and enter the following commands:

1. ftp –A 192.168.18.54
2. cd [boot]
3. hash
4. put c:\temp\fw.bin
5. quote site reboot
6. bye

9.2. SERIAL

1. Power off the 7700R-SC-BRC.
2. Connect to the debug/upgrade port according to instructions of section 2.3.
3. Power on the 7700R-SC-BRC.
4. Hit *CTRL+X* to interrupt the boot cycle. The prompt *PPCBOOT>* will appear.
5. Enter the command *upload.*
6. Start the firmware upload on the terminal application (for instance, in *HyperTerminal* select *Transfer/Send File…*), use Xmodem as the transfer protocol, and select the firmware file. For example, *c:\temp\fw.bin.*
7. Once the upload is complete the message *upload okay* is displayed.
8. At the prompt *PPCBOOT>* enter *boot*.
9. Remove the serial adapter cable.

10. TROUBLESHOOTING

The best tool available to diagnose problems is the event log which can be viewed using VLPro. Refer to section 5.2. If event log does not prove sufficient, the menu system of the 7700R-SC-BRC provides statistics not available to VLPro which may be useful in diagnosing communication issues. Section 2.3 details how to access the menu system.

10.1. SERIAL COMMUNICATION

These statistics relate to the serial interfaces. To access these statistics:

1. From the 7700R-SC-BRC's *Main Menu* select *Engineering/Debug*.
2. Select *Serial interfaces*.
3. Select *Show statistics*.
4. Scroll up to the heading UART x where x represents the serial port number in which you have interest. For example, UART 1 corresponds to serial port 1.

```
--------------------------------------------------

UART 1

Num bytes rx: 0x00000000
Num bytes tx: 0x00000000
 Num rx disc: 0x00000000

--------------------------------------------------

UART 2

Num bytes rx: 0x00000000
Num bytes tx: 0x0000000a
 Num rx disc: 0x00000000

--------------------------------------------------

UART 3

Num bytes rx: 0x00000000
Num bytes tx: 0x00000000
 Num rx disc: 0x00000000

--------------------------------------------------

UART 4

Num bytes rx: 0x00000000
Num bytes tx: 0x00000000
 Num rx disc: 0x00000000

--------------------------------------------------
```

Figure 10-1: UART Statistics

Item	Notes
Num bytes rx	Reports, in hexadecimal, the number of bytes received by the 7700R-SC-BRC over the serial interface.
Num bytes tx	Reports, in hexadecimal, the number of bytes transmitted by the 7700R-SC-BRC over the serial interface.
Num rx disc	Reports, in hexadecimal, the number of bytes received and discarded by the 7700R-SC-BRC. This could happen if the connected device sends unsolicited data and the 7700R-SC-BRC is in the process of changing its configuration.

Table 10-1: UART Statistics

10.2. THIRD-PARTY ROUTER COMMUNICATION

These statistics pertain to communication with the third-party router. To access these statistics:

1. From the 7700R-SC-BRC's *Main Menu* select *Engineering/Debug*.
2. Select *Third-party router*.
3. Select *Show statistics*.

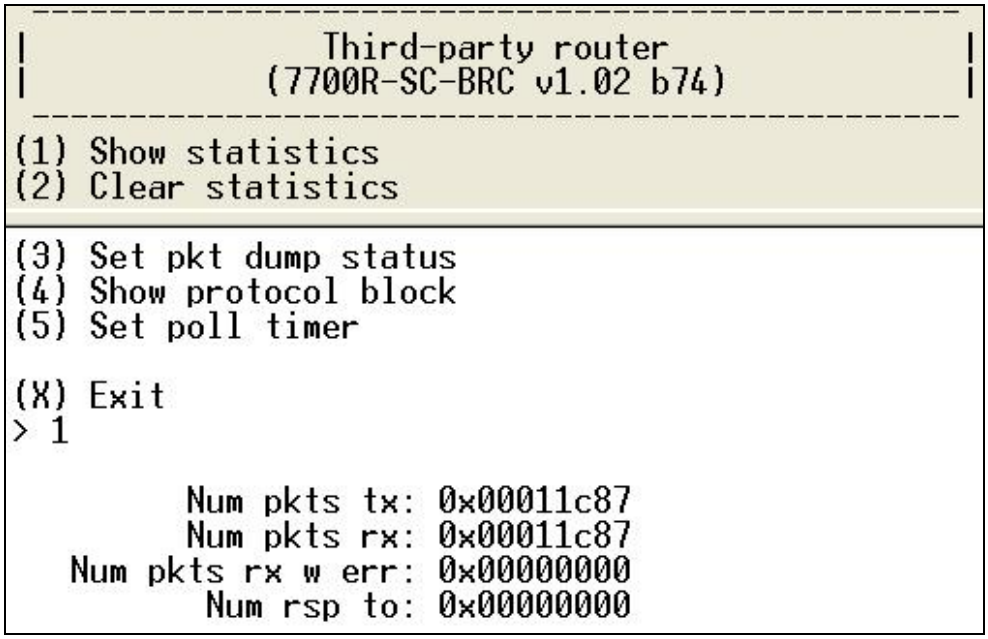


Figure 10-2: Third-Party Router Statistics

Item	Notes
Num pkts tx	Reports, in hexadecimal, the number of third-party router protocol packets transmitted by the 7700R-SC-BRC to the third-party router.
Num pkts rx	Reports, in hexadecimal, the number of error-free third-party router protocol packets received by the 7700R-SC-BRC.
Num pkts rx w err	Reports, in hexadecimal, the number of errored (for instance bad checksum) third-party router protocol packets received by the 7700R-SC-BRC.
Num rsp to	Reports, in hexadecimal, the number of instances the 7700R-SC-BRC timed-out waiting for a response from the third-party router.

Table 10-2: Third-Party Router Statistics

10.3. EQX SERVER (EVERTZ CONTROL) COMMUNICATION

For the purposes of Evertz control, the status of the EQX server can be checked using the menu system. To access this information:

1. From the 7700R-SC-BRC's *Main Menu* select *Engineering/Debug*.
2. Select *EQX server*.
3. Select *Show info*.
4. Refer to the protocol handler x sections, where x = 1, 2, 3 or 4.

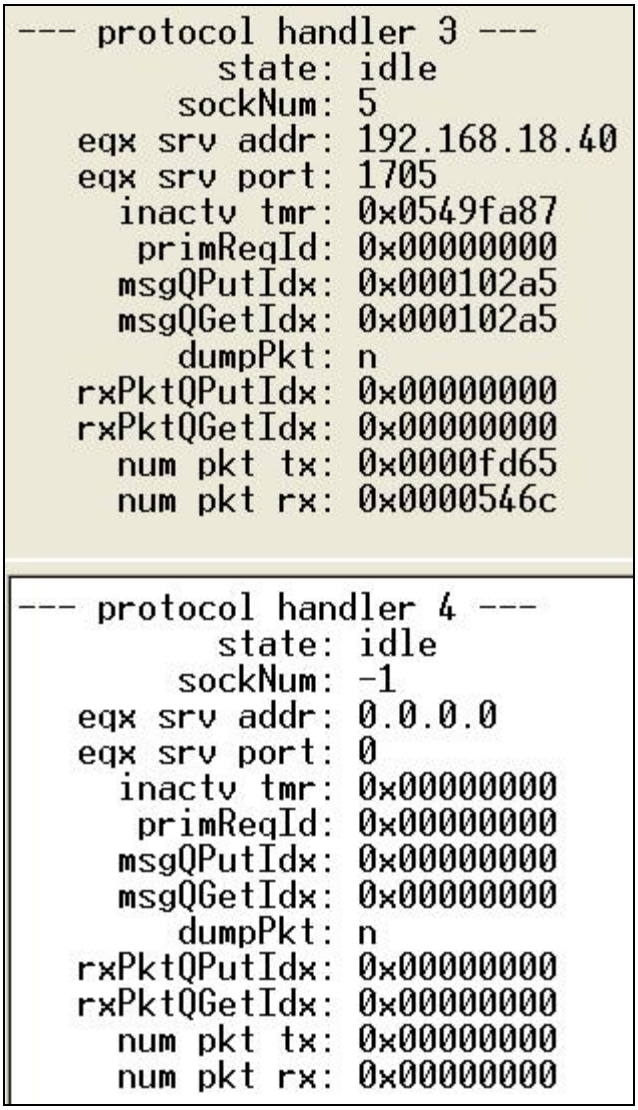


Figure 10-3: EQX Server Status

As an example, Figure 10-3 shows that protocol handler 3 of the 7700R-SC-BRC is communicating with an EQX server with IP address 192.168.18.40, port 1705. Protocol handler 4 is free.

10.4. EVERTZ ROUTER OR EQX SERVER (THIRD-PARTY CONTROL) COMMUNICATION

These statistics pertain to communication with the Evertz router or EQX server. To access these statistics:

1. From the 7700R-SC-BRC's *Main Menu* select *Engineering/Debug*.
2. Select *Evertz router*.
3. Select *Show statistics*.

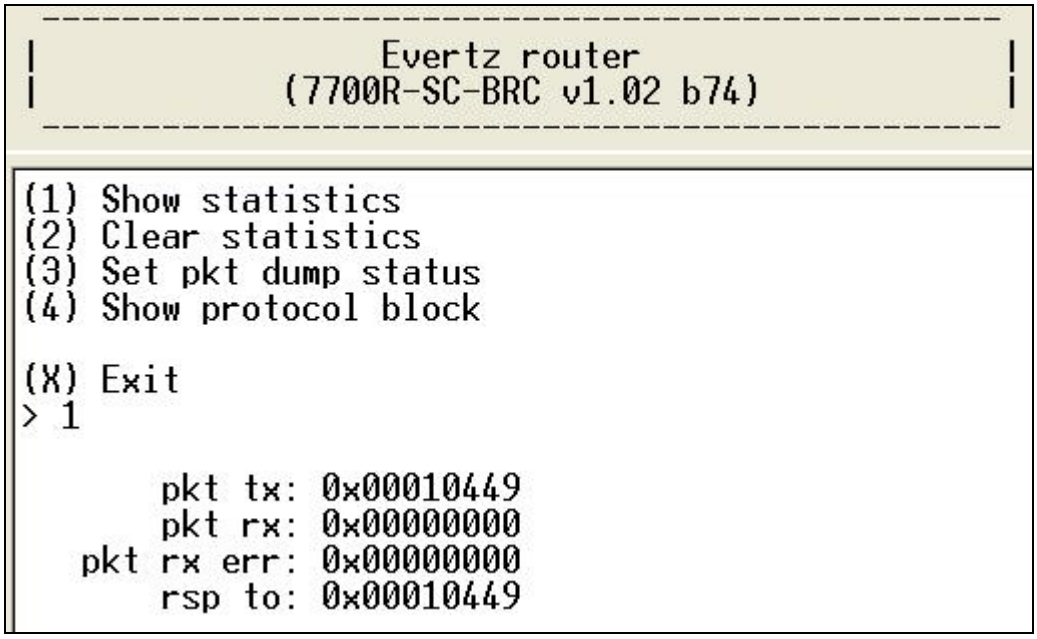


Figure 10-4: Evertz Router Statistics

Item	Notes
Num pkts tx	Reports, in hexadecimal, the number of protocol packets transmitted by the 7700R-SC-BRC to the third-party Evertz router or EQX server.
Num pkts rx	Reports, in hexadecimal, the number of error-free protocol packets received by the 7700R-SC-BRC.
Num pkts rx w err	Reports, in hexadecimal, the number of errored (for instance bad data) protocol packets received by the 7700R-SC-BRC.
Num rsp to	Reports, in hexadecimal, the number of instances the 7700R-SC-BRC timed-out waiting for a response from the Evertz router or EQX server.

Table 10-3: Evertz Router Statistics

10.5. THIRD-PARTY CONTROL DEVICE COMMUNICATION

These statistics pertain to communication with the third-party control device. To access these statistics:

4. From the 7700R-SC-BRC's *Main Menu* select *Engineering/Debug*.
5. Select *Third-party control*.
6. Select *Show statistics*.

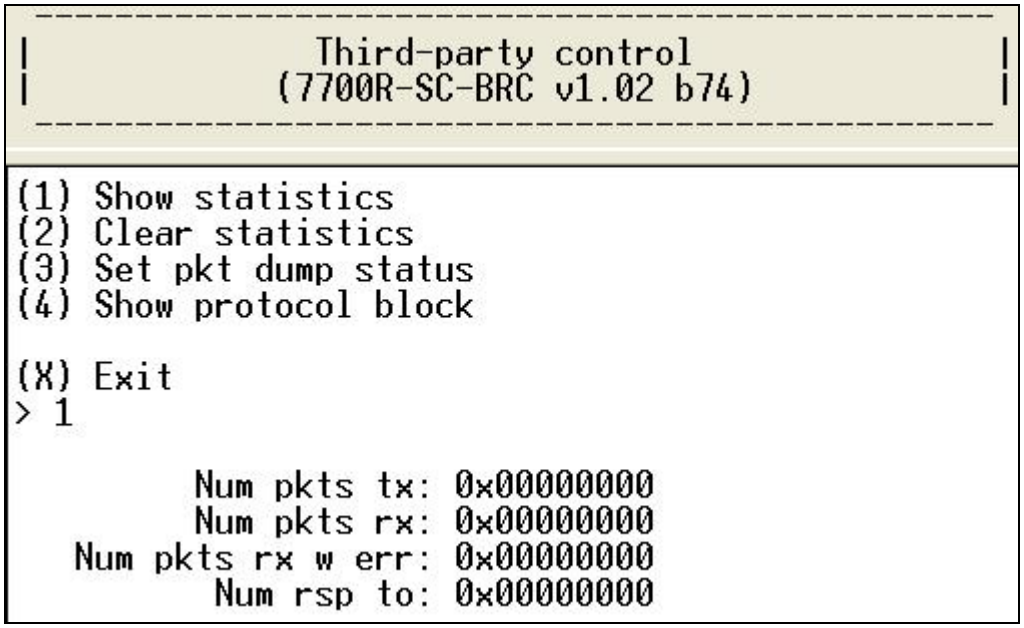


Figure 10-5: Third-Party Control Statistics

Item	Notes
Num pkts tx	Reports, in hexadecimal, the number of third-party control protocol packets transmitted by the 7700R-SC-BRC to the third-party control device.
Num pkts rx	Reports, in hexadecimal, the number of error-free third-party control protocol packets received by the 7700R-SC-BRC.
Num pkts rx w err	Reports, in hexadecimal, the number of errored (for instance bad checksum) third-party control protocol packets received by the 7700R-SC-BRC.
Num rsp to	Reports, in hexadecimal, the number of instances the 7700R-SC-BRC timed-out waiting for a response from the third-party control device.

Table 10-4: Third-Party Control Statistics