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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Feb 08
2.0	Add Source and Destination Aliases. General clean up.	Feb 09

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1. OVERVIEW

The basic function of the 7700S2IP-RCL is to provide an interface between a QMC-2 and a RCL-based router system. In essence, the 7700S2IP-RCL makes the RCL router system (maximum supported size is 1024 sources by 1024 destinations) appear as a Quartz router (maximum size 240 sources by 16 destinations) to the QMC-2. The 7700S2IP-RCL can communicate with up to two controllers (a primary and a secondary). Each controller may have either 1 or 2 system controller cards installed. Thus, the 7700S2IP-RCL can communicate simultaneously with up to 4 system controller cards.

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 alphanumeric display.

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 green LED is illuminated.

2.3. CARD EDGE LEDS

LED 22 is illuminated when Ethernet activity is detected.

All other card edge LEDs are for factory use only.

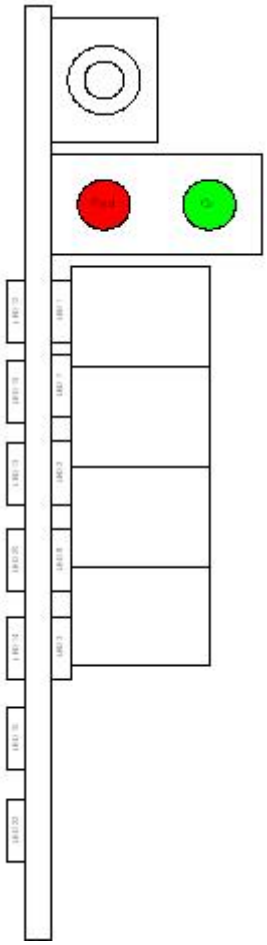

Figure 2-1: Card Edge

3. CONFIGURATION

3.1. EXAMPLE CONFIGURATION

The setup of Figure 3-1 will be used to demonstrate how to configure the 7700S2IP-RCL.

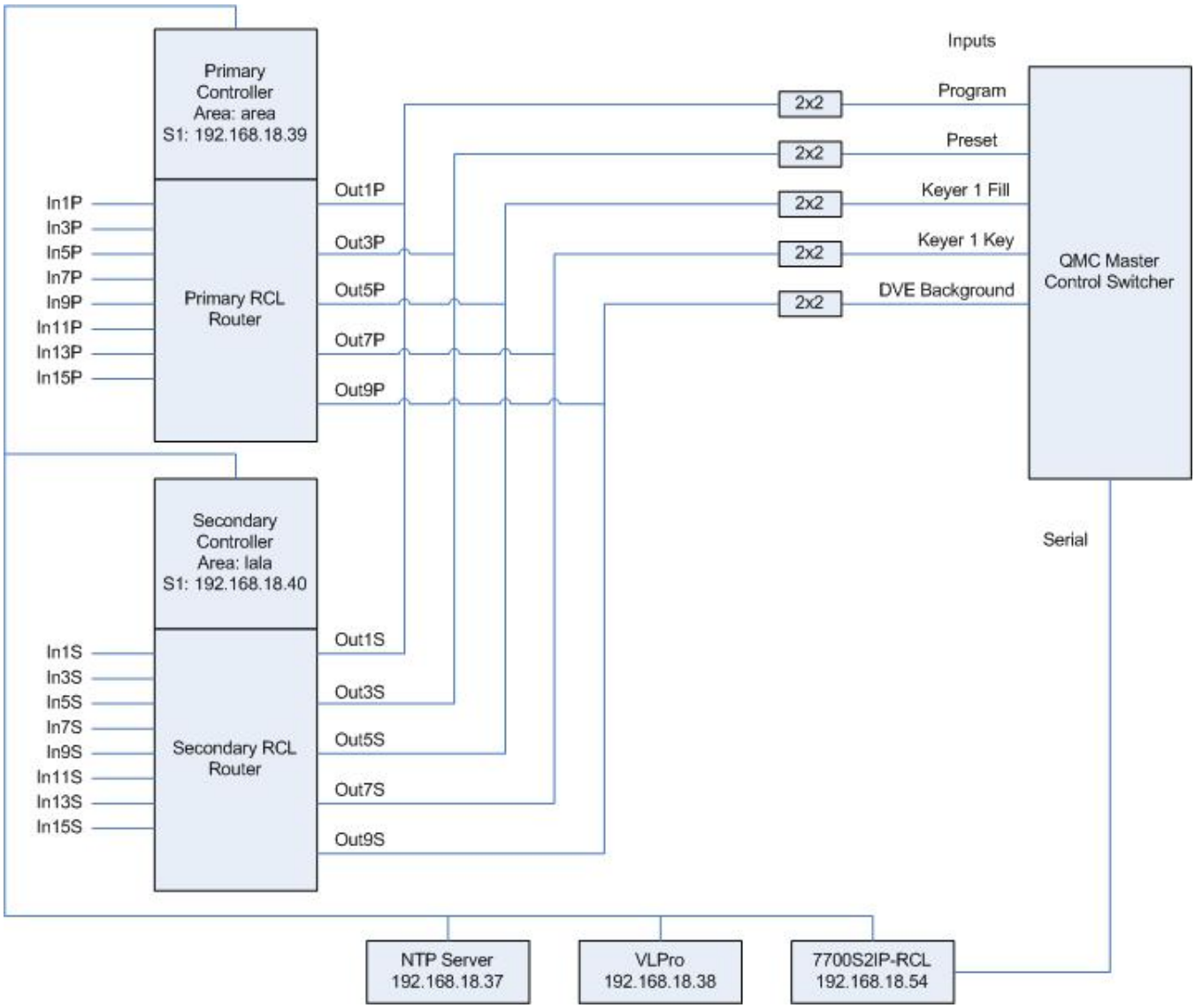

Figure 3-1: Example Setup

Figure 3-1 contains the following elements:

- A primary RCL router controller with a system controller installed in slot 1. The system controller has IP address 192.168.18.39. It controls the primary RCL router. The primary RCL router has destination names *Out1P*, *Out3P*, *Out5P*, *Out7P*, and *Out9P* and source names *In1P*, *In3P*, *In5P*, *In7P*, *In9P*, *In11P*, *In13P*, *In15P* within area name *area*.

- A secondary RCL router controller with a system controller installed in slot 1. The system controller has IP address 192.168.18.40. It controls the secondary RCL router. The secondary RCL router has destination names *Out1S*, *Out3S*, *Out5S*, *Out7S*, and *Out9S* and source names *In1S*, *In3S*, *In5S*, *In7S*, *In9S*, *In11S*, *In13S*, *In15S* within area name *lala*.
- RCL router destinations *Out1*, *Out3*, *Out5*, *Out7*, and *Out9* are connected to QMC master control switcher inputs *Program*, *Preset*, *Keyer 1 Fill*, *Keyer 1 Key*, *DVE Background* respectively.
- An NTP server with IP address 192.168.18.37. The time provided by the NTP server is used by the 7700S2IP-RCL when adding entries to its event log.
- VistaLINK PRO with IP address 192.168.18.38. VLPro will be used to configure the 7700S2IP-RCL. VLPro will receive SNMP traps from the 7700S2IP-RCL.
- 7700S2IP-RCL with IP address 192.168.18.54.

The 7700S2IP-RCL communicates:

- with VLPro using SNMP
- with the RCL system controllers via the RCL protocol over a TCP link
- with the QMC master control switcher using the Quartz Remote Control Protocol over a serial link

Conceptually, this is equivalent to:

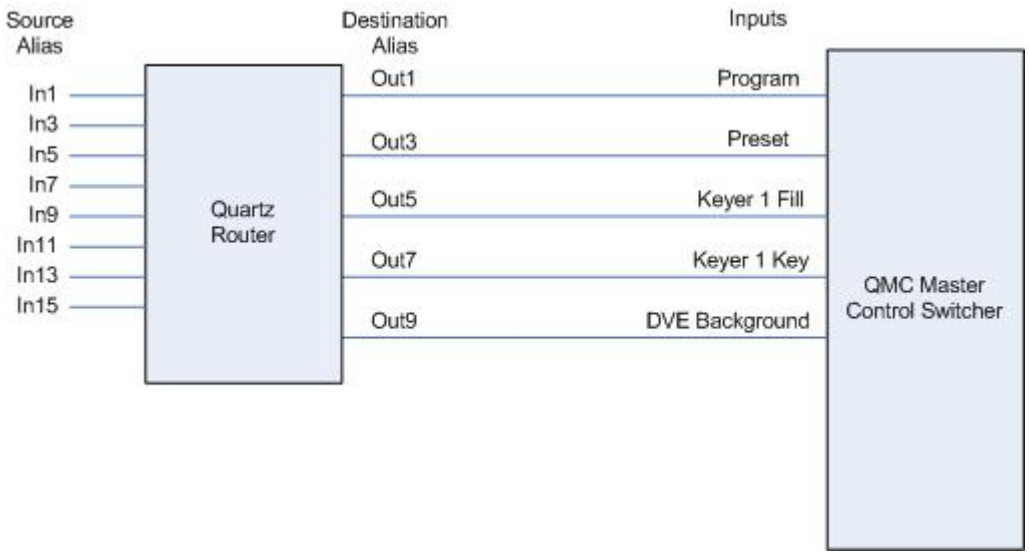

Figure 3-2: Example Setup

3.2. STEP 1: CONNECT 7700S2IP-RCL TO THE QMC MASTER CONTROL SWITCHER

1. Ensure there is no power applied to the 7700S2IP-RCL.
2. If using RS-422, connect the pins of the 7700S2IP-RCL to those of a serial port of the QMC master control switcher according to Figure 3-3 and Table 3-1.
3. If using RS-232, connect the pins of the 7700S2IP-RCL to those of a serial port of the QMC master control switcher according to Figure 3-4 and Table 3-2.
4. Apply power to the 7700S2IP-RCL.

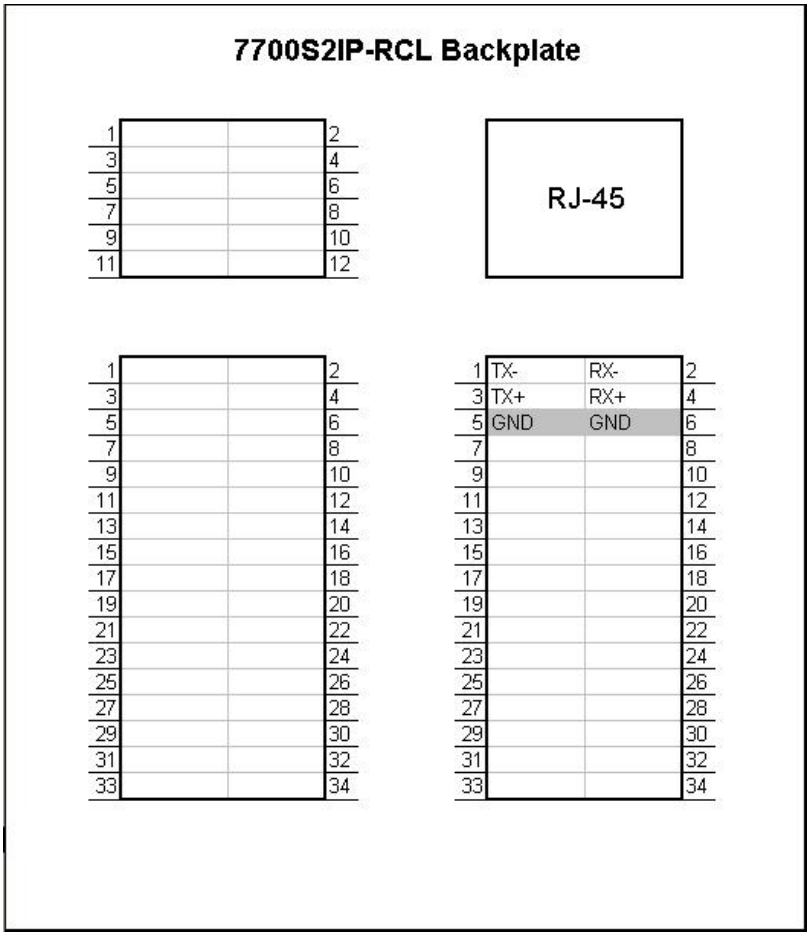

Figure 3-3: RS-422 Pins

7700S2IP-RCL Pin Name	QMC Master Control Switcher Pin Name
TX-	RX-
TX+	RX+
GND	RX GND
RX-	TX-
RX+	TX+
GND	TX GND

Table 3-1: RS-422 Wiring

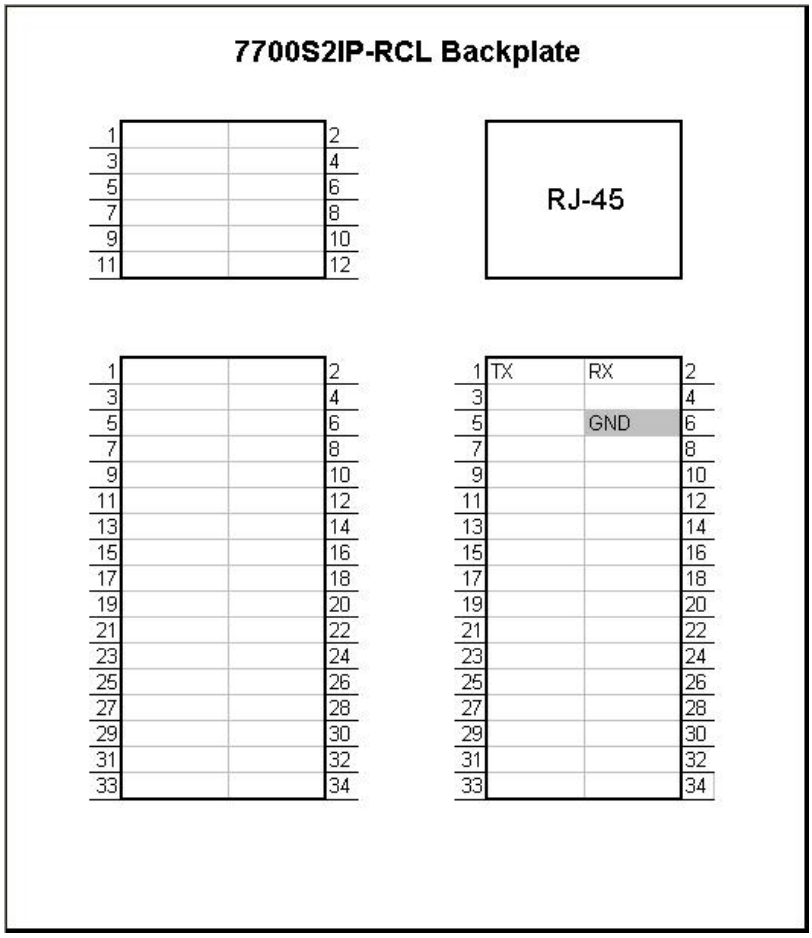

Figure 3-4: RS-232 Pins

7700S2IP-RCL Pin Name	QMC Master Control Switcher Pin Name
TX	RX
RX	TX
GND	GND

Table 3-2: RS-232 Wiring

3.3. STEP 2: CONNECT A PC TO THE DEBUG/MONITOR PORT

The network and SNMP parameters of the 7700S2IP-RCL must be configured via its debug/monitor port, the header of which is labelled J1. 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 (J1) near the front of the 7700S2IP-RCL, directly above the card unlock latch.

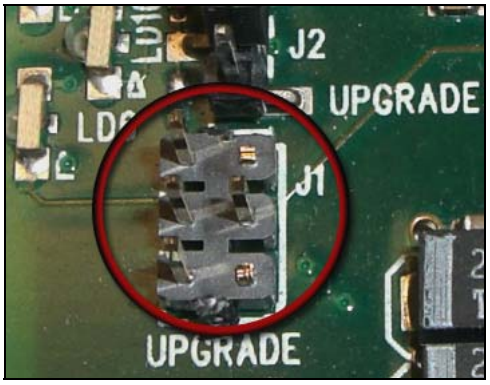

Figure 3-5: Upgrade Jumper

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: 7700S2IP-RCL.
6. Press the <Enter> key. A new "Connect To" window will appear.

Figure 3-6: '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.

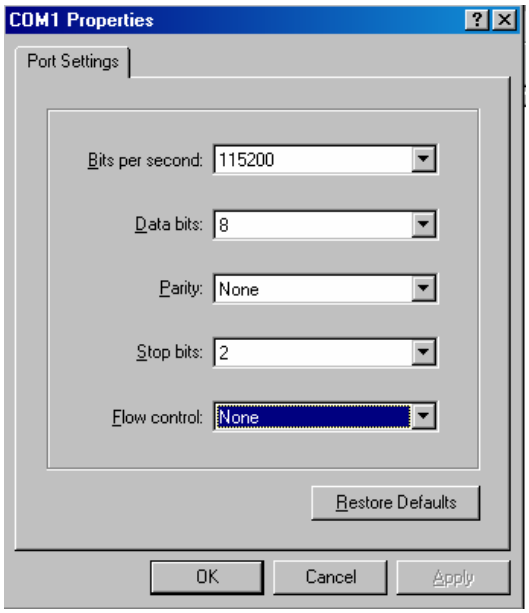

Figure 3-7: COM1 Properties

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 7700S2IP-RCL does not have power. The boot sequence and Main Menu are displayed in the HyperTerminal window.
12. If the 7700S2IP-RCL has power, press the <Enter> key to view the 7700S2IP-RCL's menu system.
13. Various 7700S2IP-RCL parameters are configurable via the 7700S2IP-RCL's menu system, the root of which is called *Main Menu*.

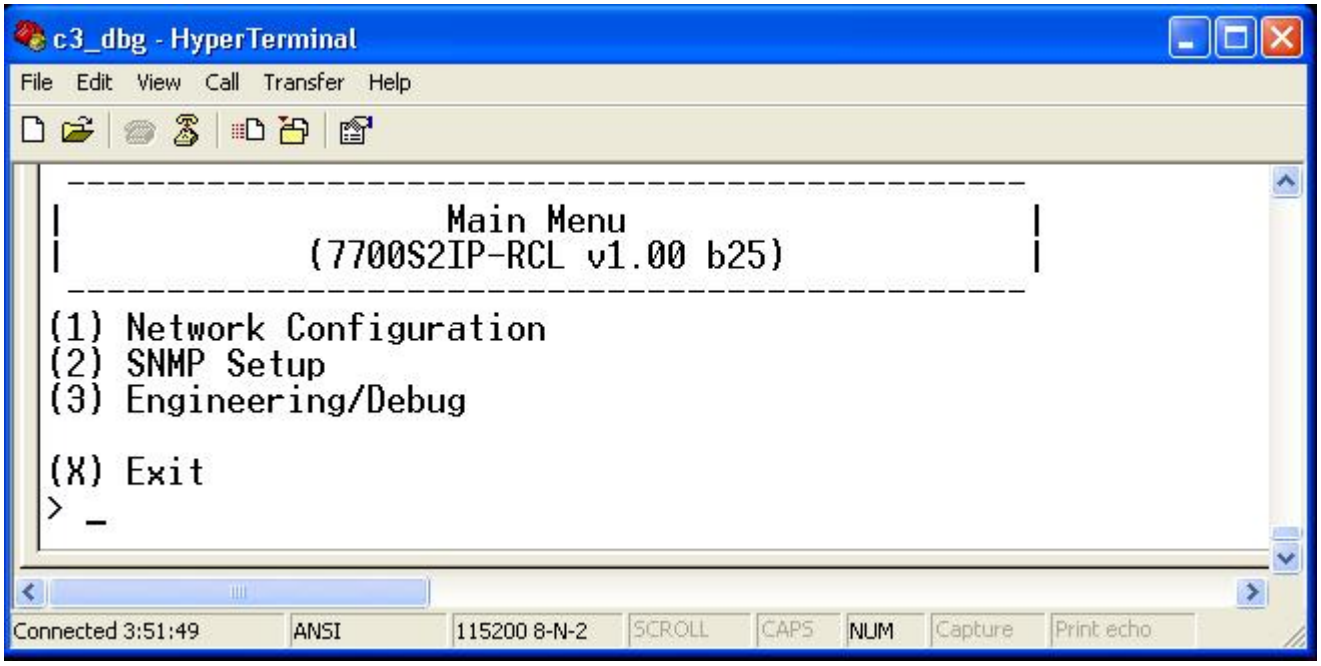

Figure 3-8: HyperTerminal Main Menu

3.4. STEP 3: CONFIGURE NETWORK PARAMETERS

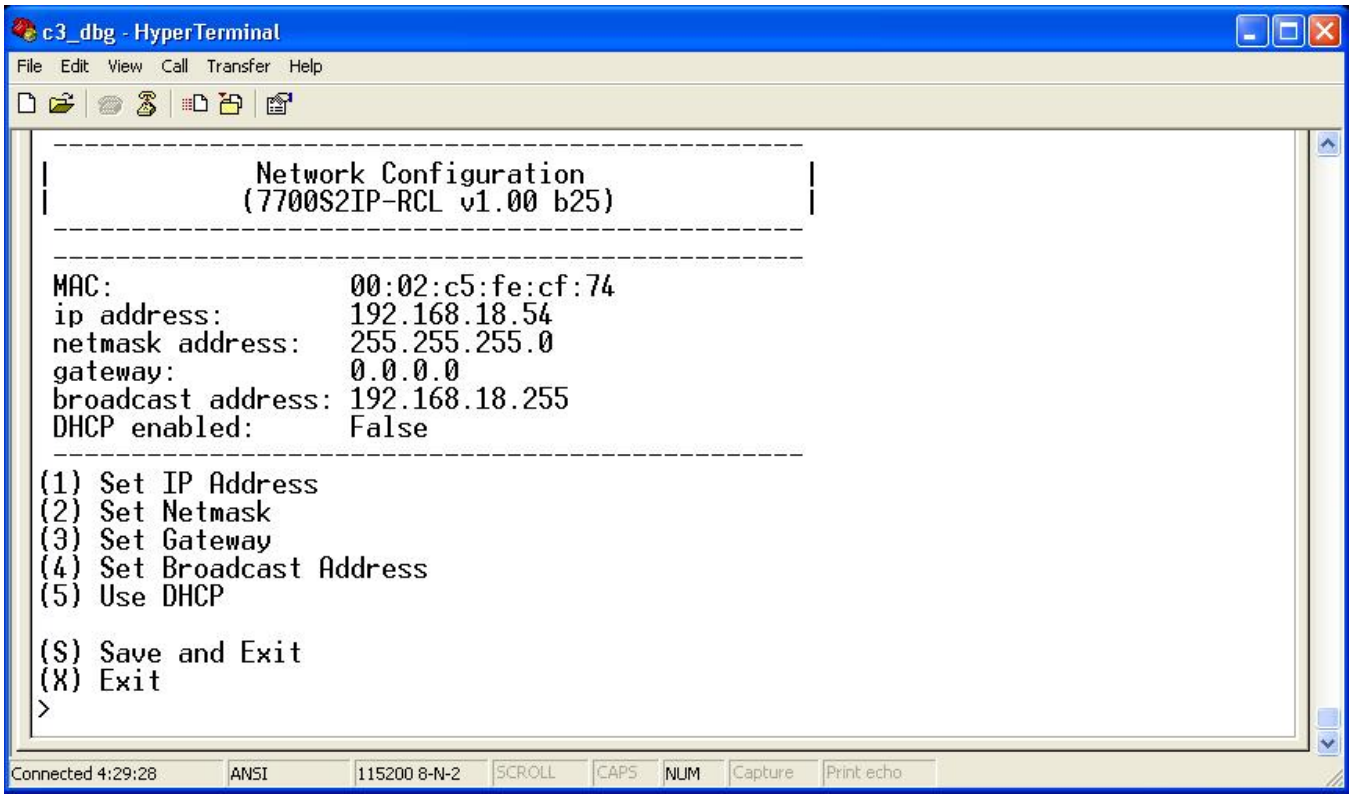

Figure 3-9: 7700S2IP-RCL Network Configuration Menu

The network parameters of the 7700S2IP-RCL can only be configured by using its menu system.

1. From the *Main Menu* select *Network Configuration*.
2. Select *Set IP Address* then enter the IP address, 192.168.18.54, of the 770S2IP-RCL.
3. Select *Set Netmask* then enter the subnet mask, 255.255.255.0, of the 7700S2IP-RCL.
4. Select *Set Gateway* to set the gateway IP address if the 7700S2IP-RCL resides on an IP network which differs from that of the controller(s), NTP server, or VLPro. The *gateway* can be left as 0.0.0.0 if the 7700S2IP-RCL and the controller(s), NTP server and VLPro reside on the same IP network.
5. For a manually entered network configuration, ensure *DHCP enabled* is set to *False*. A setting of *True* means the 7700S2IP-RCL will, upon boot, try to fetch network settings from a DHCP server. The *Use DHCP* entry permits changes to this parameter.
6. Once the network settings are configured, select *Save* and *Exit* before exiting the *Network Configuration* to save the settings, otherwise select *Exit*.
7. Reboot the 7700S2IP-RCL. This can be done by selecting *Engineering/Debug* from the *Main Menu*, then *Reboot*, then *y*.
8. Ensure the VLPro machine can ping the 7700S2IP-RCL.

The 7700S2IP-RCL must be rebooted for any network setting changes to take effect.

3.5. STEP 4: CONFIGURE SNMP TRAP DESTINATIONS

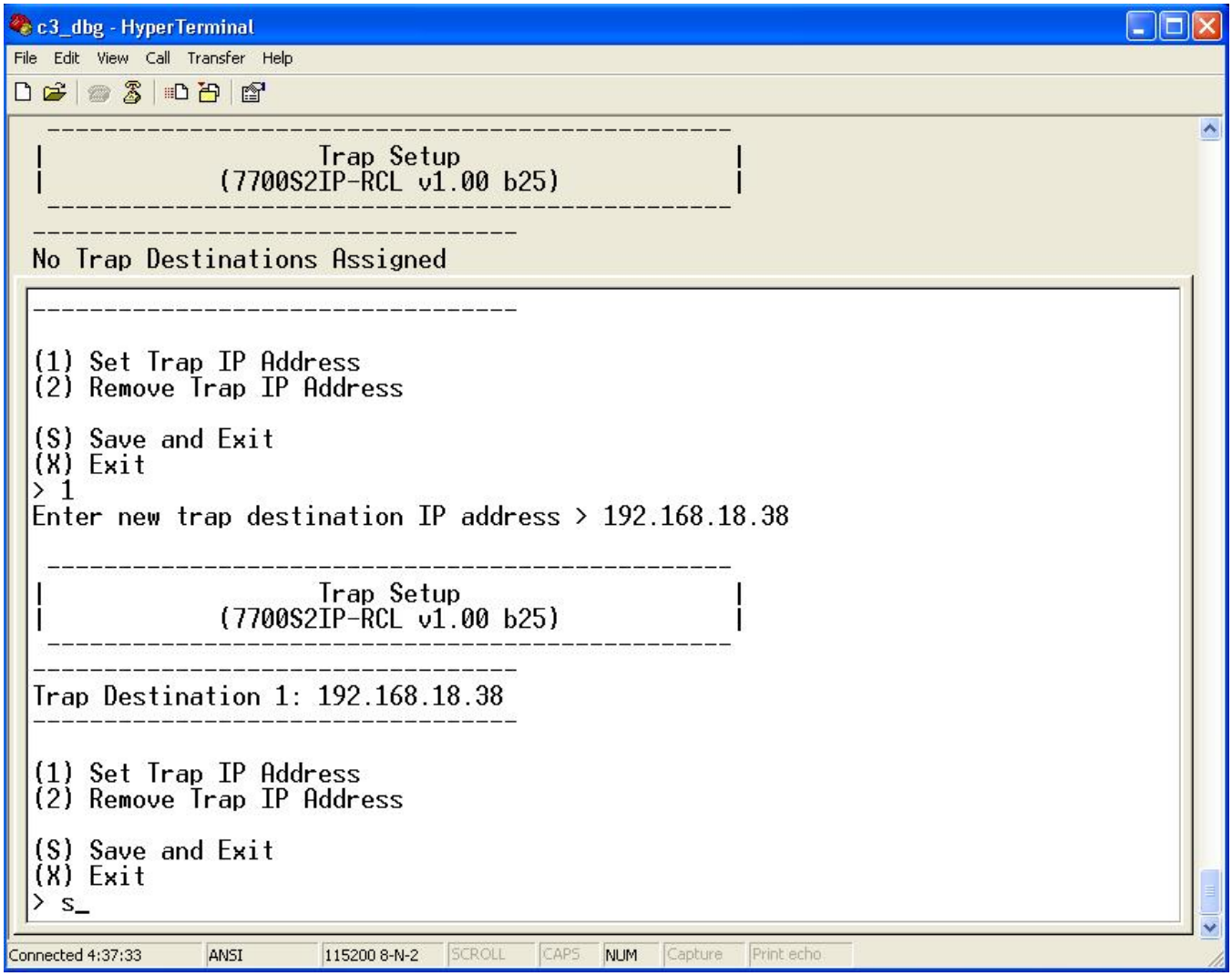

Figure 3-10: 7700S2IP-RCL Trap Destinations

The SNMP parameters, including the SNMP trap destinations, of the 7700S2IP-RCL can only be configured by using its menu system.

1. From the *Main Menu* select *SNMP Setup*.
2. Select *Trap Setup*.
3. Select *Set Trap IP Address*.
4. Enter the IP address of the host to receive SNMP traps. For our example this is 192.168.18.38.
5. Select *Save* and *Exit* to save the settings, otherwise select *Exit*.
6. The menu system of the 7700S2IP-RCL is no longer required. As such, the adapter cable can be removed from the debug/monitor port.

3.6. STEP 5: OPEN 7700S2IP-RCL VLPRO CONFIGURATION VIEW

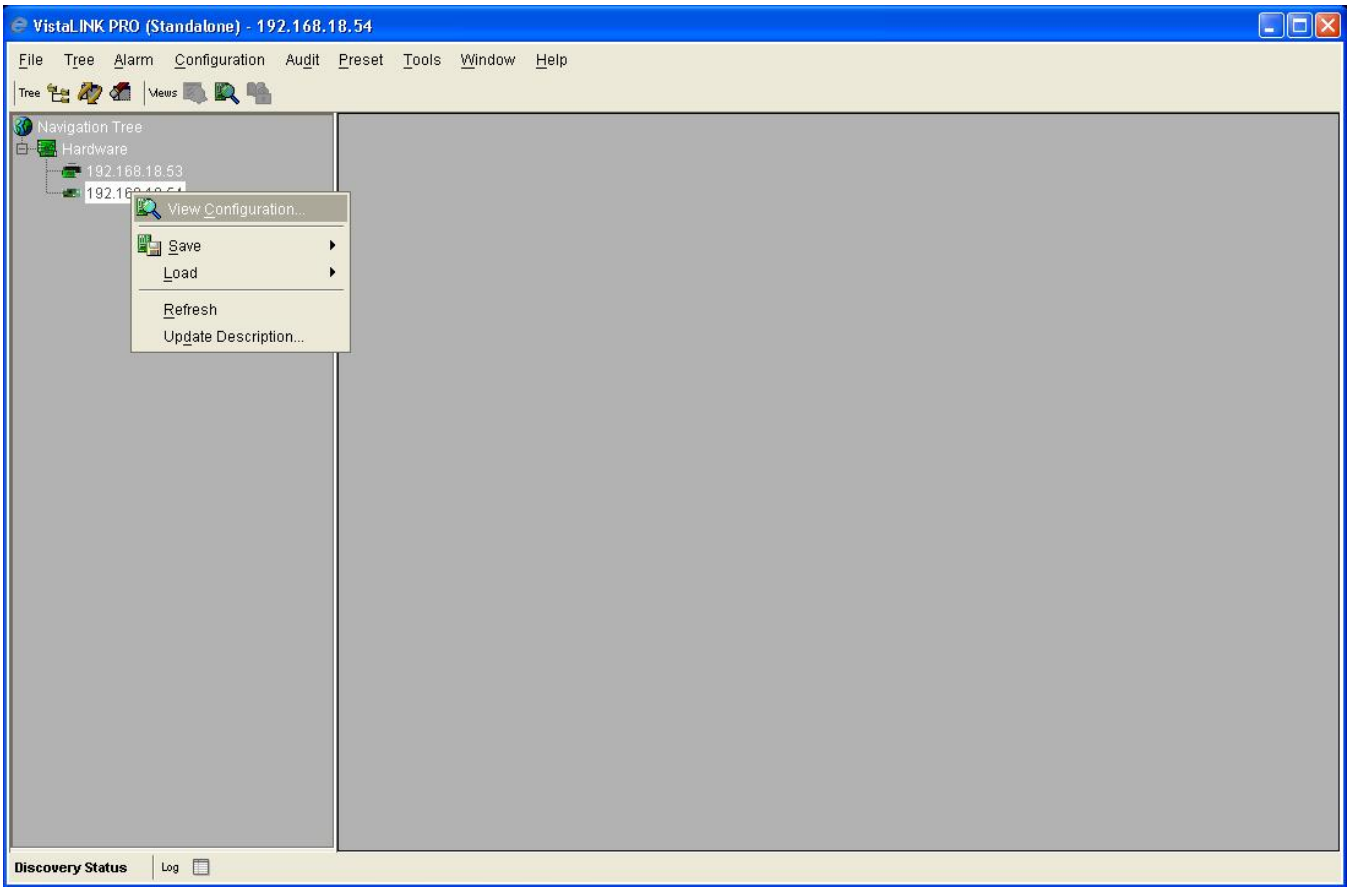

Figure 3-11: VLPro Hardware Navigation Tree

1. Launch VLPro. The IP address of the 7700S2IP-RCL, 192.168.18.54, should appear in the hardware navigation tree.
2. Right click on the IP address.
3. Click *View Configuration*.

3.7. STEP 6: CONFIGURE NTP SERVER IP ADDRESS (OPTIONAL)

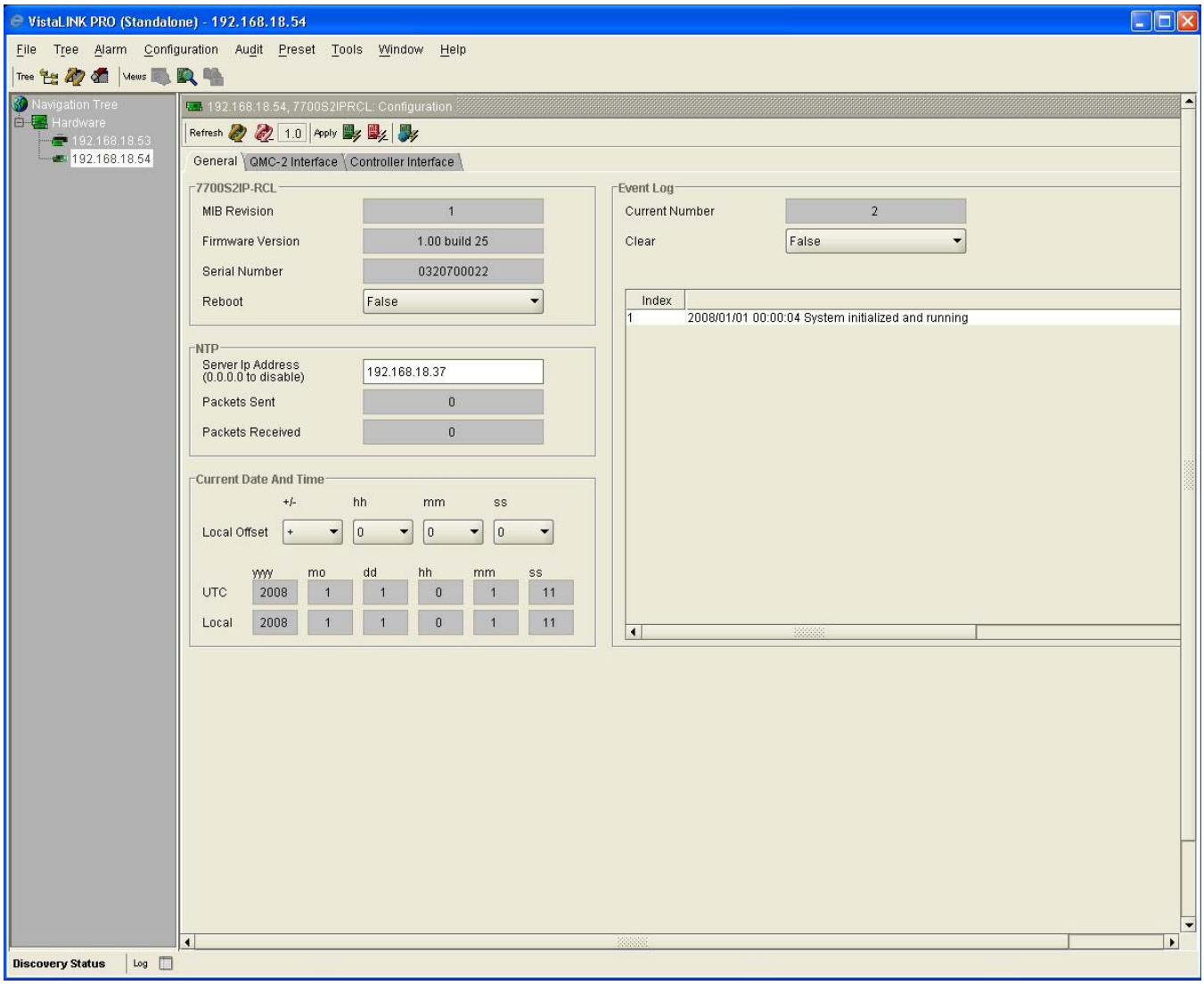

Figure 3-12: Specifying NTP Server

The 7700S2IP-RCL maintains an event log. It is located on the *General* tab as shown in Figure 3-12. Each entry in the event log has a timestamp. If the 7700S2IP-RCL is not communicating with an NTP server, it will use the system up time in relation to January 1, 2008 for its event log timestamps. If the 7700S2IP-RCL is communicating with an NTP server, it will retrieve the UTC time from the server, calculate the local time using the *Local Offset* settings, and use the local time for its event log timestamps. To set the IP address of the NTP server:

1. From the VLPro configuration view, click the *General* tab.
2. Enter the IP address of the NTP server. For our example, this corresponds to 192.168.18.37.
3. Click the icon to the right of *Apply*.
4. Click the icon to the right of *Refresh*.

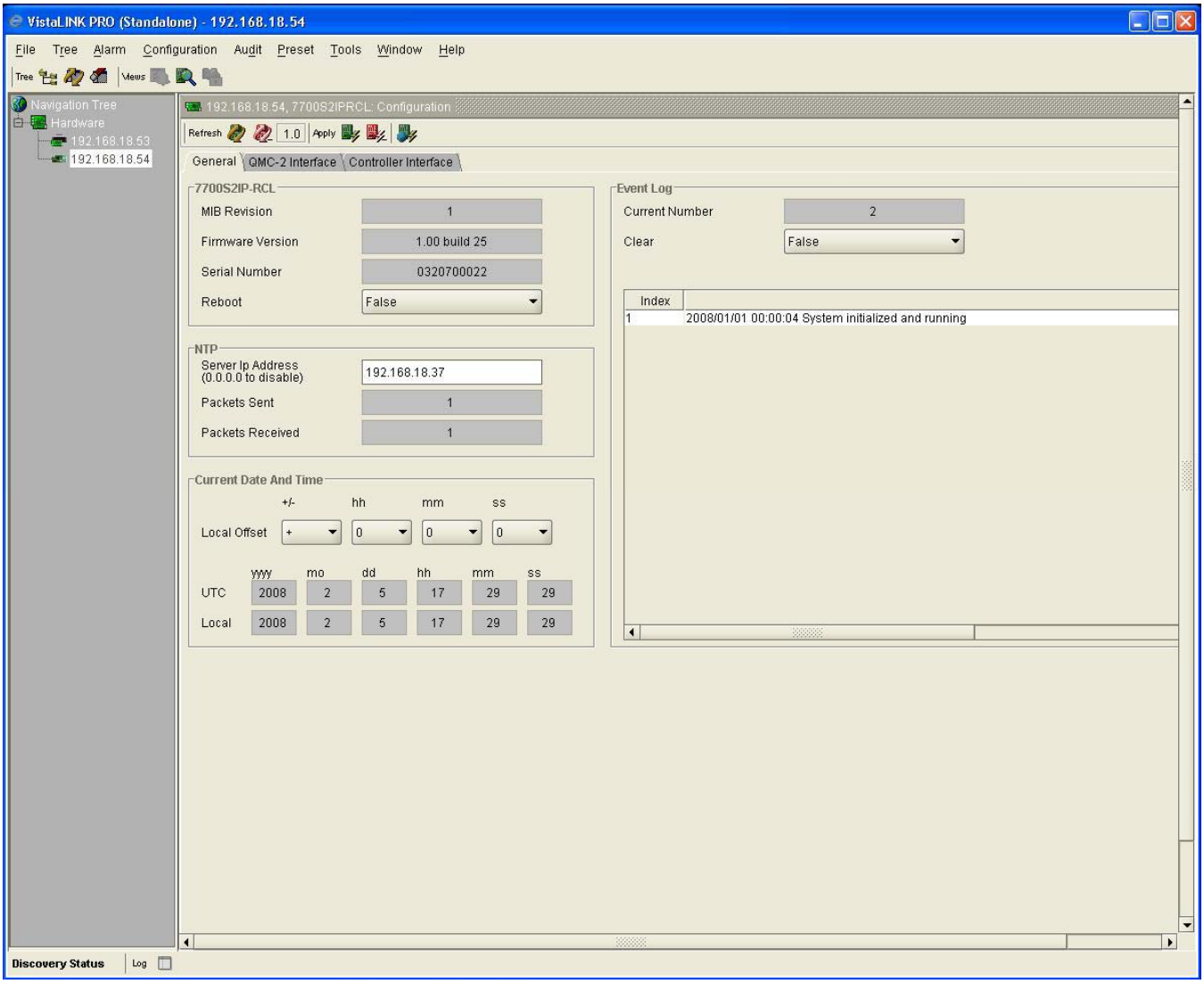

Figure 3-13: Checking NTP Server Communication

5. Notice how the number associated with *Packets Received* has become non-zero. This indicates the 7700S2IP-RCL is communicating with the NTP server.
6. The NTP server returns UTC time. To obtain the local time, set a local offset using the +/-, *hh*, *mm*, and *ss* local offset parameters. Be sure to follow by clicking the icon to the right of *Apply*.

3.8. STEP 7: CONFIGURE CONTROLLER INTERFACE PARAMETERS

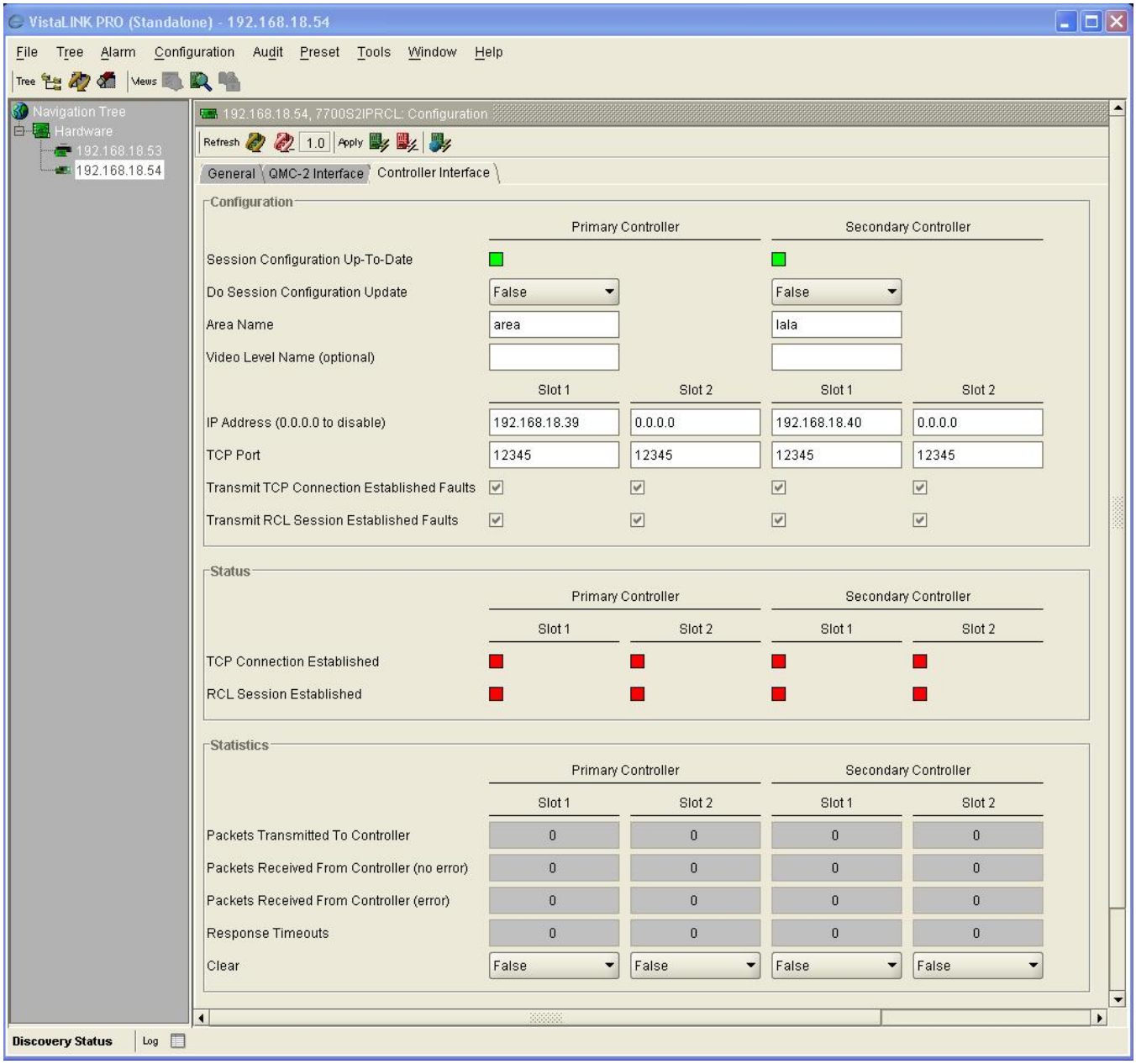

Figure 3-14: Controller Interface Parameters

1. From the VLPro configuration view, click the *Controller Interface* tab.
2. Enter the area name of the primary controller. As per our example, the area name of the primary controller is *area*. **The area name is case sensitive.**
3. Enter the area name of the secondary controller. As per our example, the area name of the secondary controller is *lala*. **The area name is case sensitive.**
4. Optionally, enter the name of the video level used by the primary controller. **The level name is case sensitive.** If no level is specified then the 7700S2IP-RCL will indicate all levels when issuing the crosspoint switch request.

5. Optionally, enter the name of the video level used by the secondary controller. **The level name is case sensitive.** If no level is specified then the 7700S2IP-RCL will indicate all levels when issuing the crosspoint switch request.
6. Enter the IP address of the primary system controller in slot 1. As per our example, this is 192.168.18.39.
7. Enter the IP address of the secondary system controller in slot 1. As per our example, this is 192.168.18.40.
8. By default, the system controllers listen on TCP port 12345 for incoming connection requests. If this value has been modified, then the appropriate TCP port needs to be specified for the system controllers.
9. Click the icon to the right of *Apply*.
10. Click the icon to the right of *Refresh*.

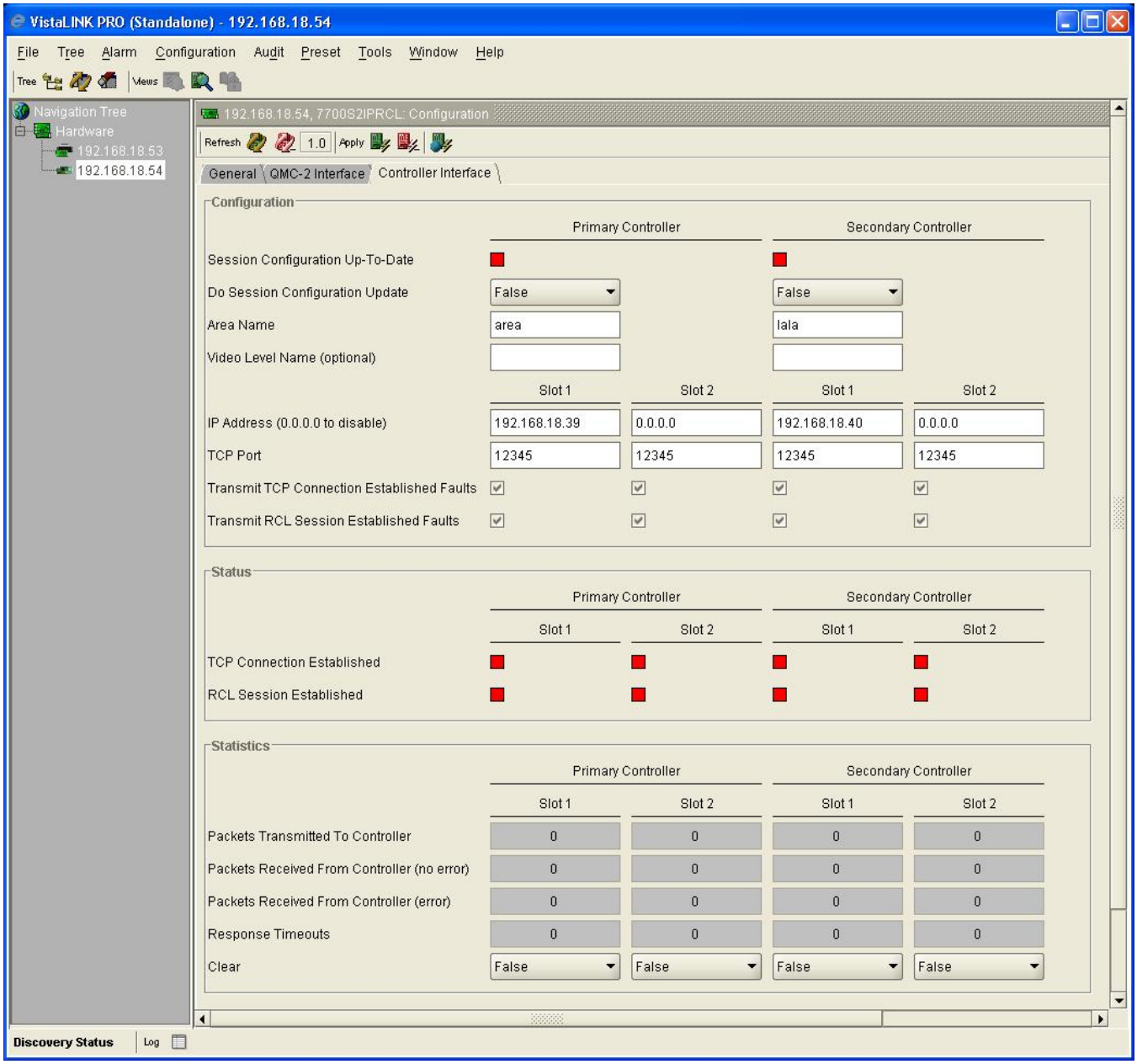

Figure 3-15: Session Configuration Update Indication

11. Notice that the color of the status box associated with *Session Configuration Up-To-Date* is red. This indicates that, although the 7700S2IP-RCL has received the area name and IP address changes, it has not yet begun to use these parameters in communications with the system controllers. To rectify this, set *Do Session Configuration Update* combo boxes to *True*.

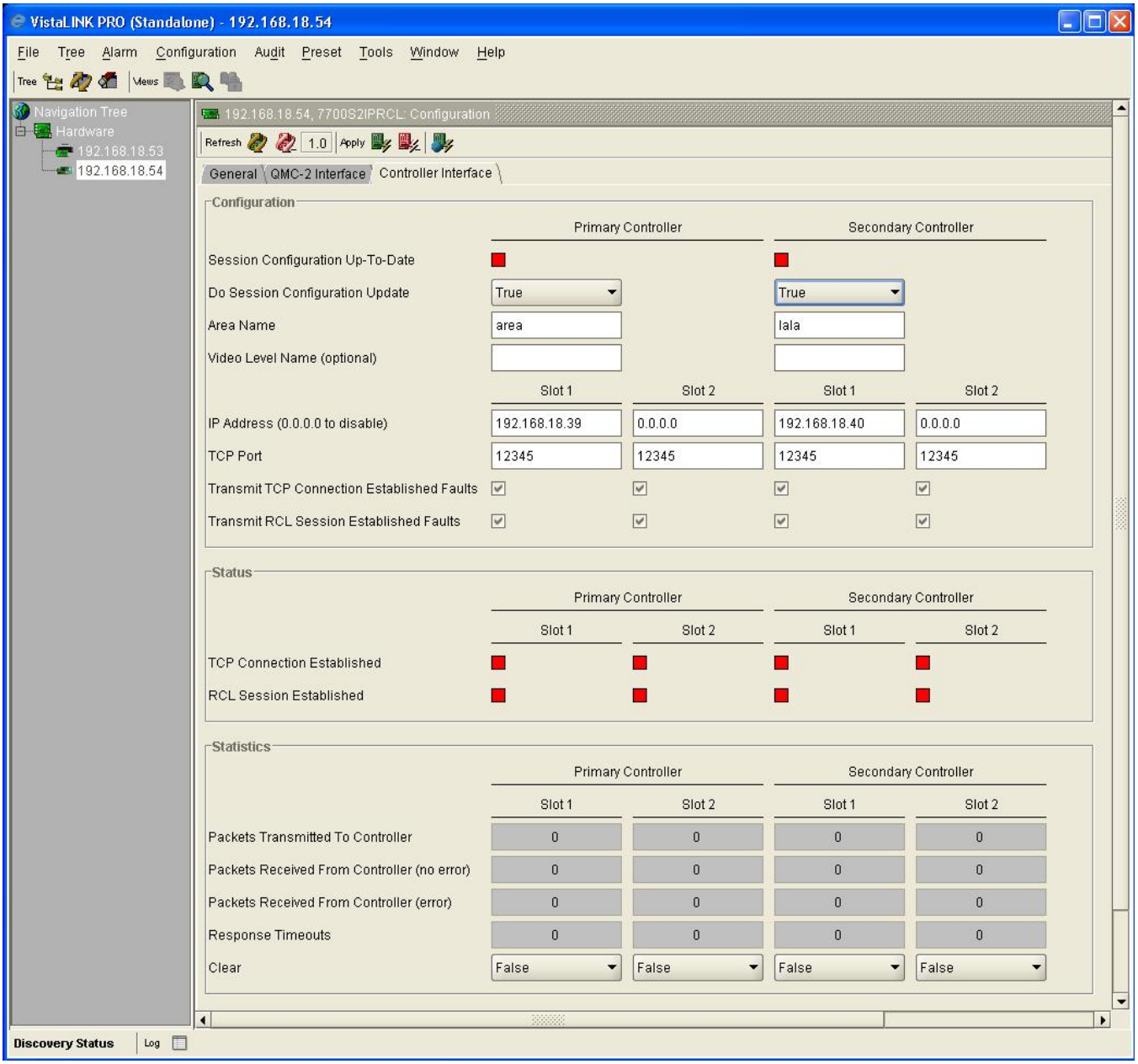

Figure 3-16: Conducting a Session Configuration Update

12. Click the icon to the right of *Apply*. After approximately 5 seconds, the 7700S2IP-RCL will attempt to open a TCP connection with the system controllers. If successful, it will attempt to establish RCL sessions.
13. Click the icon to the right of *Refresh*.

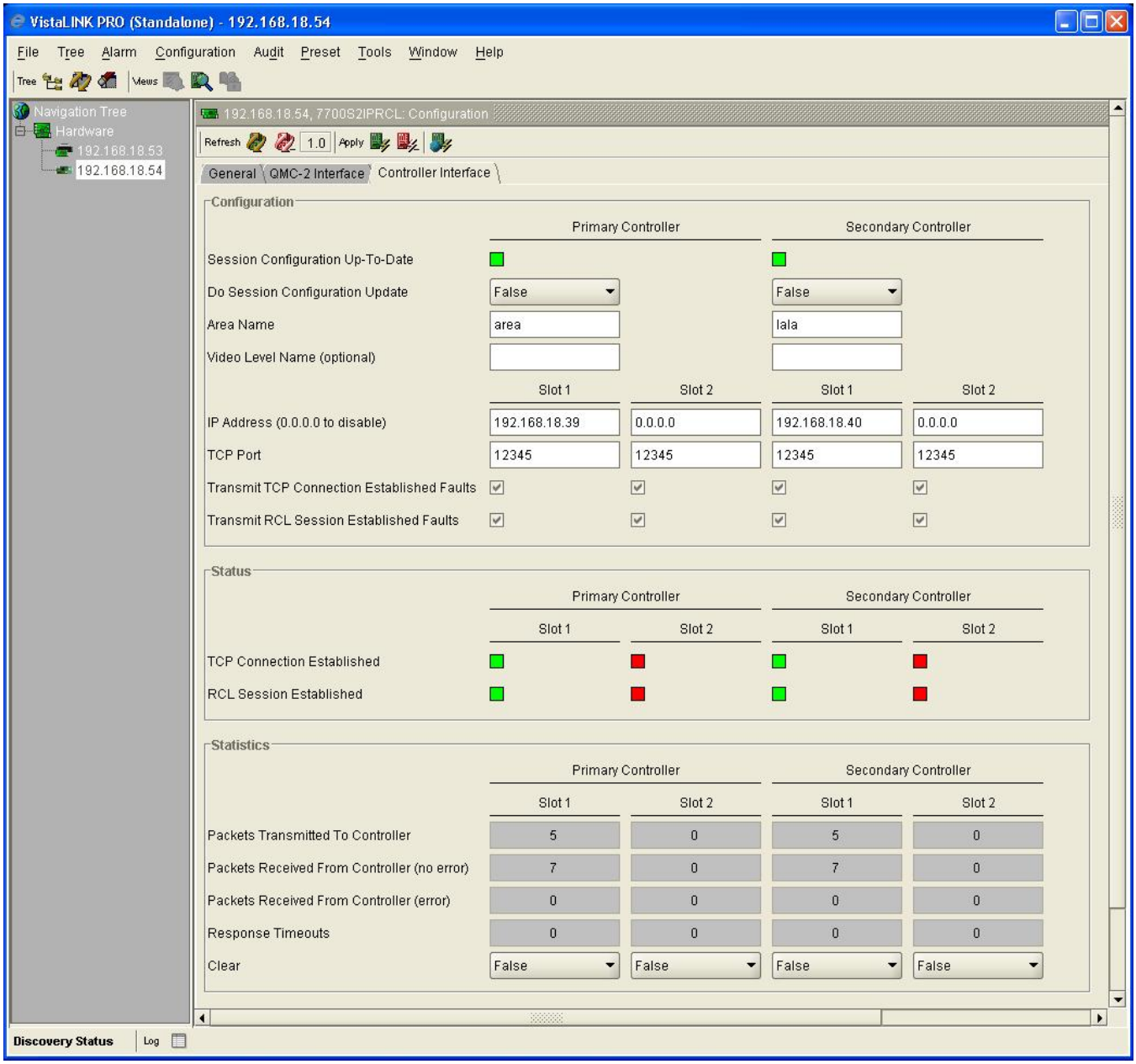

Figure 3-17: Checking System Controller Communication

14. Notice that the *Session Configuration Up-To-Date* status box has changed from red to green indicating that the 7700S2IP-RCL is using the specified controller interface parameters in communications with the system controllers.
15. Notice further that the *TCP Connection Established* status and *RCL Session Established* status boxes have also changed from red to green indicating the 7700S2IP-RCL has established both a TCP connection and RCL session with the primary and secondary slot 1 system controllers.

3.9. STEP 8: ASSOCIATE CONTROLLER DESTINATIONS WITH QMC-2 INPUTS

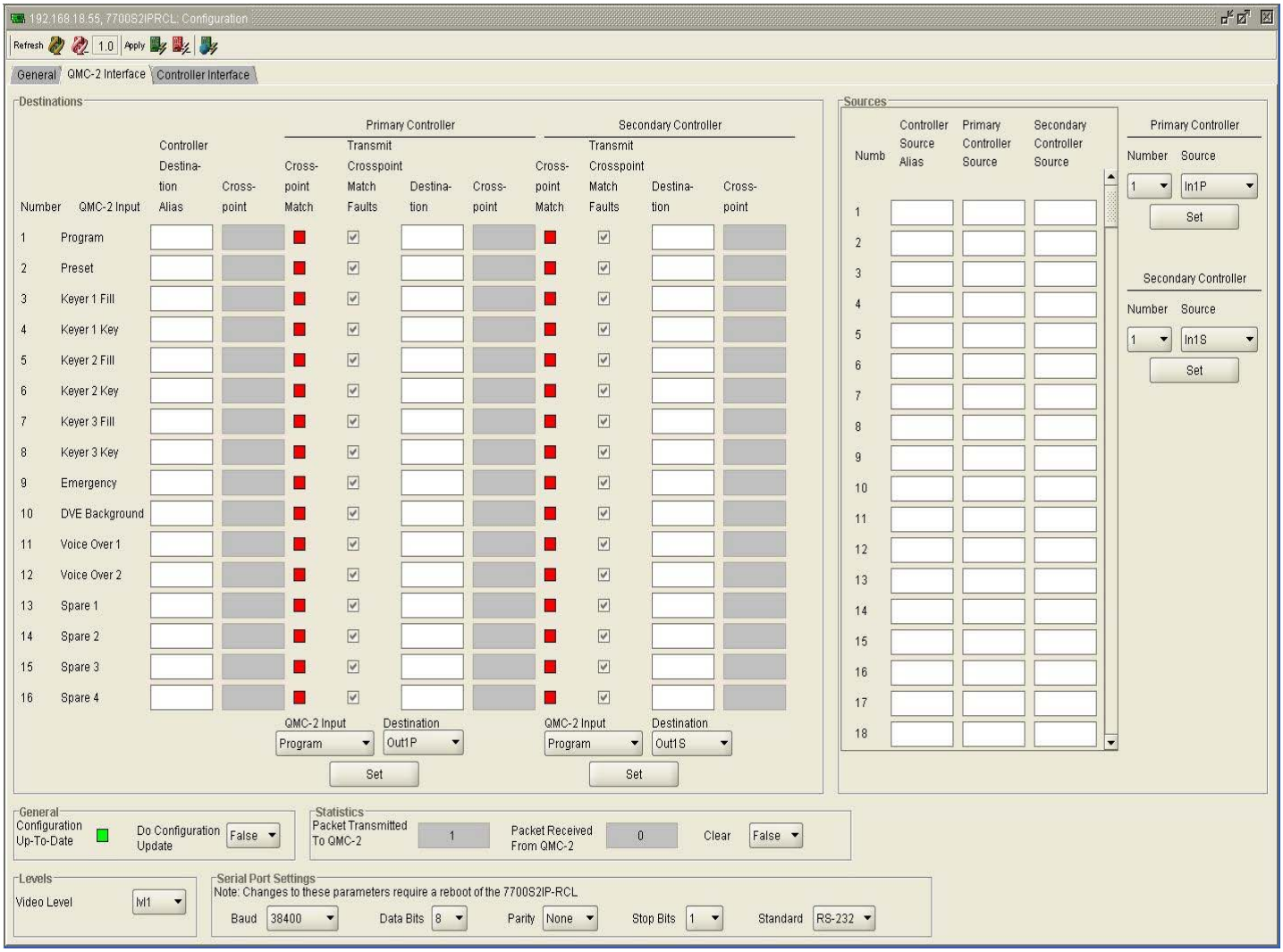

Figure 3-18: QMC-2 Interface Parameters

1. From the VLPro configuration view, click the *QMC-2 Interface* tab.
2. Use the *QMC-2 Input* and *Destination* combo boxes to associate a controller destination with a QMC-2 input. For instance, our example requires destination *Out3P* and *Out3S* to be connected to the *Preset* input for the primary and secondary controller respectively. Clicking the primary's *Destination* combo box allows us to select *Out3P*. Clicking the *QMC-2 Input* combo box allows us to select *Preset*. This is shown in Figure 3-19.

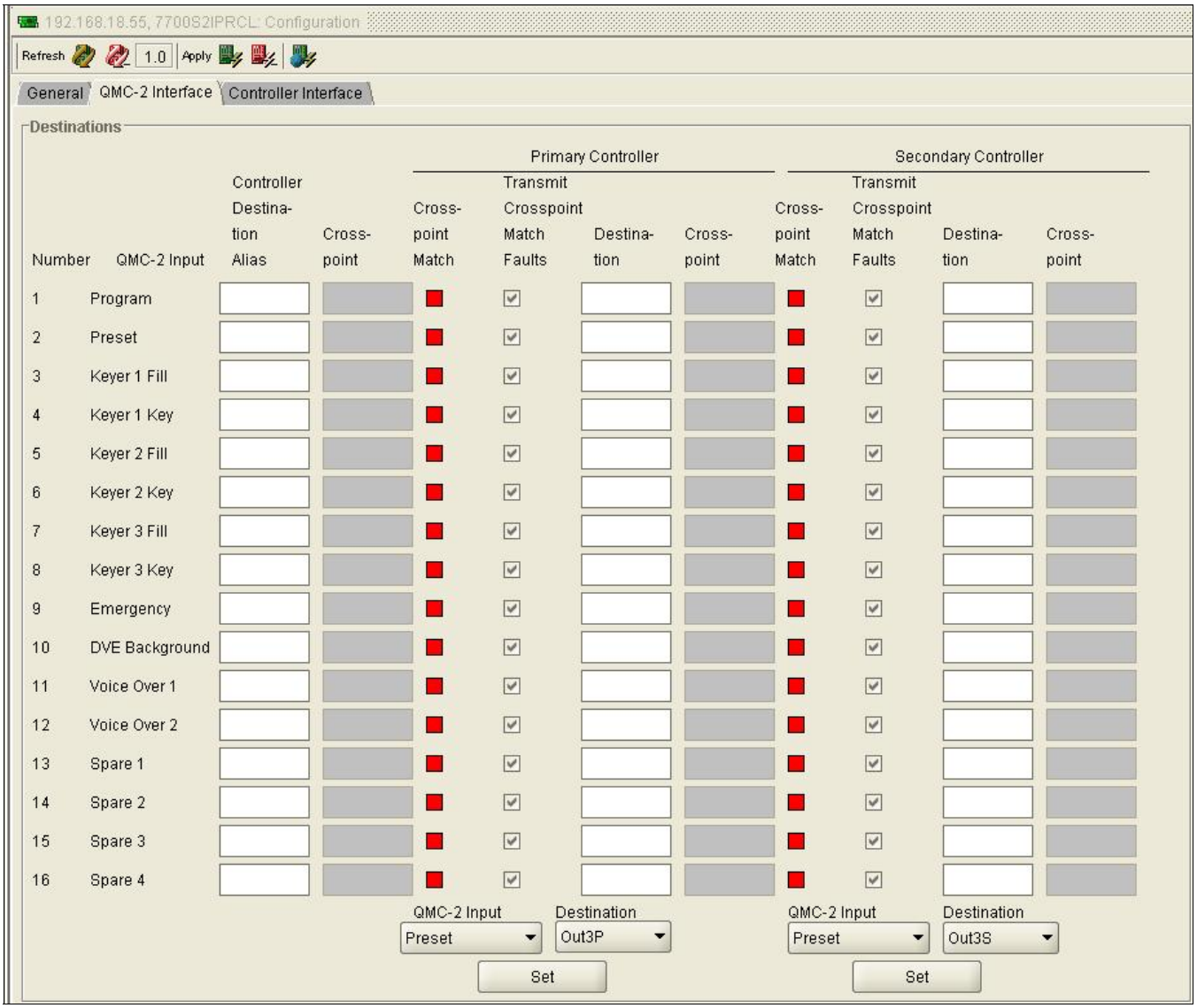

Figure 3-19: Router Destination to QMC-2 Input

3. Click the *Set* button. Notice how the router destination name moves to the appropriate text box.

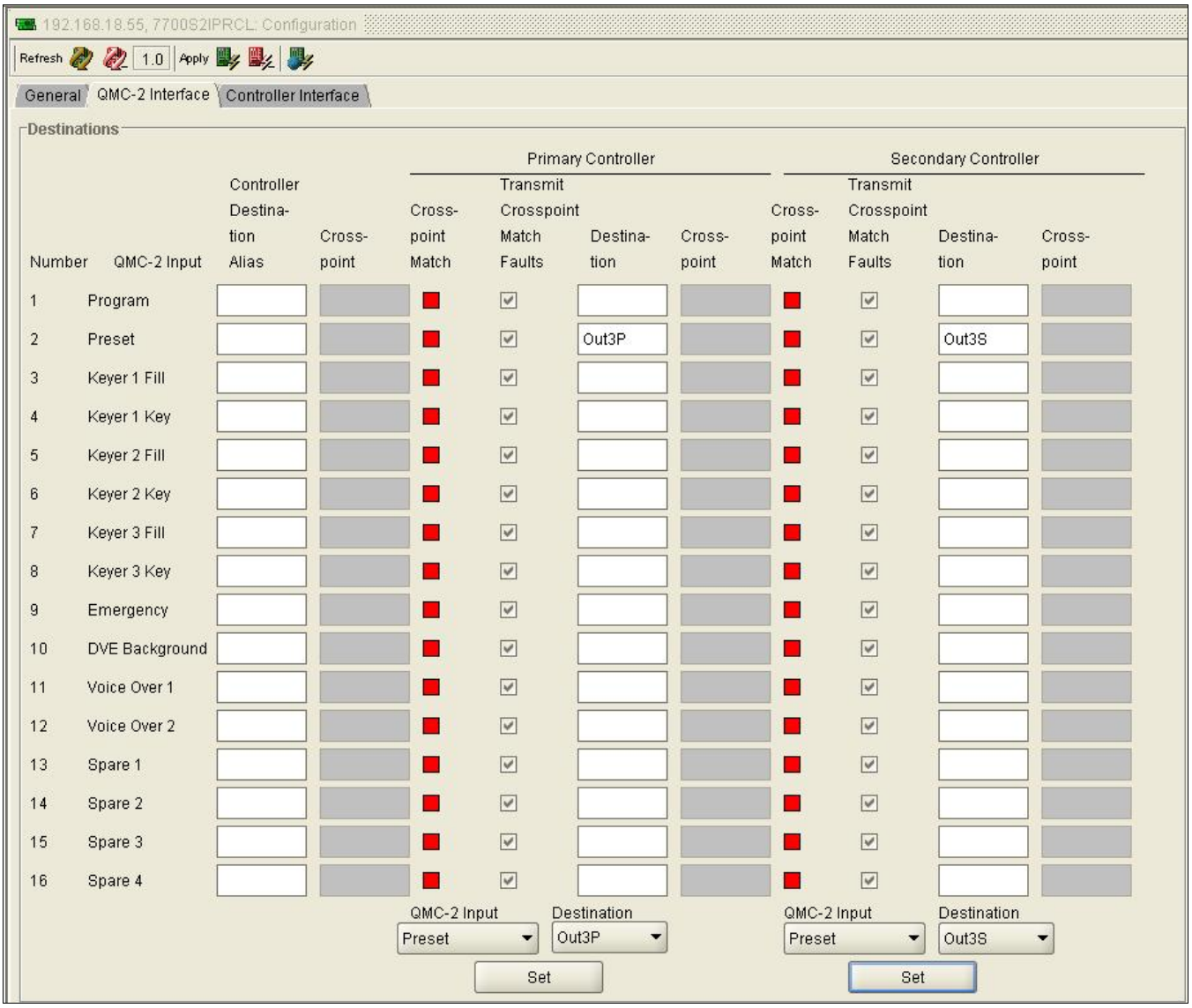

Figure 3-20: Using Destination Combo Box

4. Specify a controller destination alias as shown by Figure 3-21.

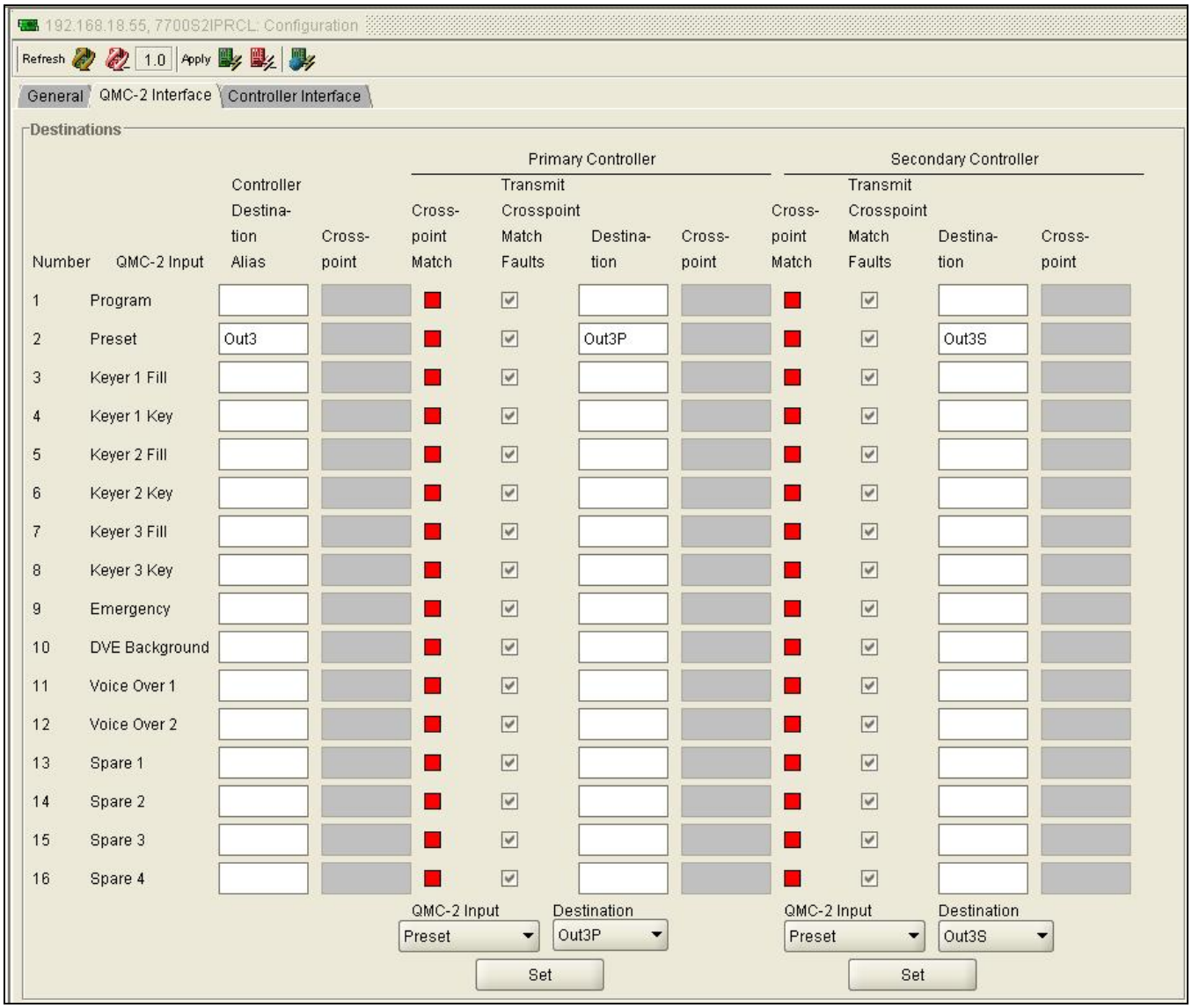

Figure 3-21: Specifying a Destination Alias

5. Repeat the process for the remaining QMC-2 inputs as per Figure 3-22.

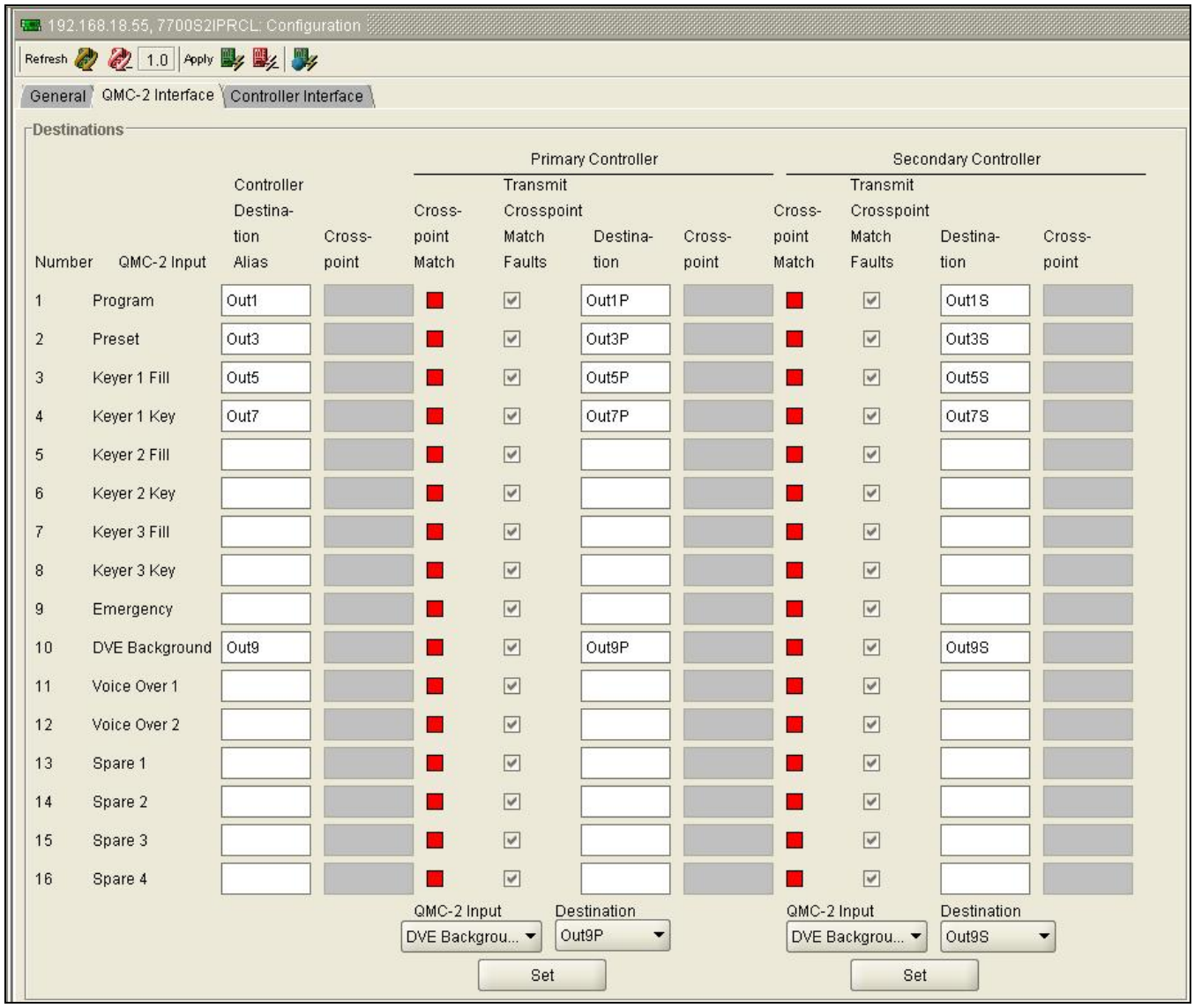

Figure 3-22: All QMC-2 Inputs Specified

6. Click the icon to the right of *Apply*.

3.10. STEP 9: SELECT CONTROLLER SOURCES

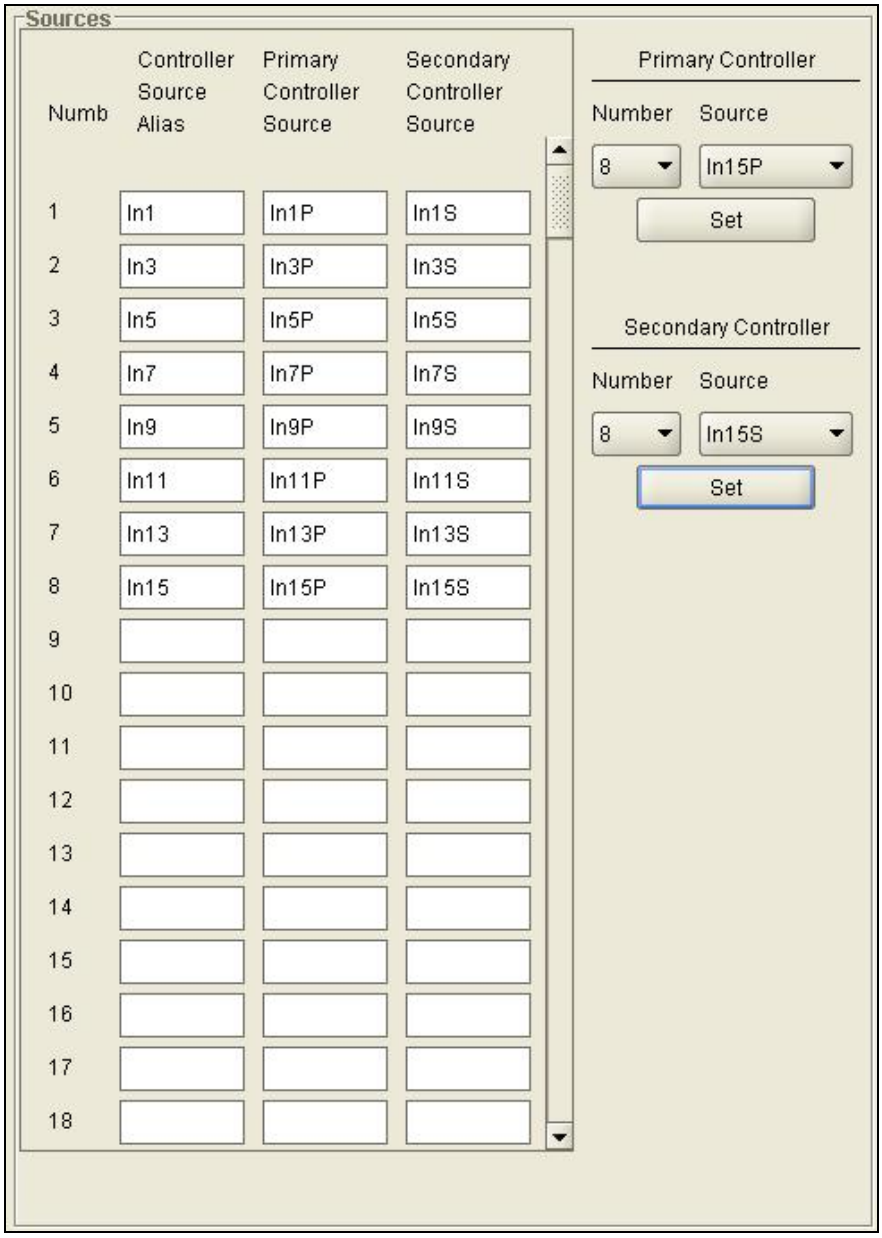

Figure 3-23: Selecting Controller Inputs

1. From the VLPro configuration view, click the *QMC-2 Interface* tab.
2. Use the *Source* and *Number* combo boxes, along with the *Set* button, to specify the controller sources to be used by the QMC-2.
3. Specify the control source aliases.
4. Click the icon to the right of *Apply*.

Make the controller sources contiguous.

3.11. STEP 10: PERFORM A QMC-2 SESSION CONFIGURATION UPDATE

Figure 3-23 shows a red *Configuration Up-To-Date* status box. This means that the 7700S2IP-RCL has yet to begin using the modified QMC-2 parameters. To rectify this:

1. Set the *Do Configuration Update* combo box to *True*.
2. Click the icon to the right of *Apply*.
3. Click the icon to the right of *Refresh*.
4. Notice that the *Configuration Up-To-Date* status box is now green (as shown in Figure 3-24).

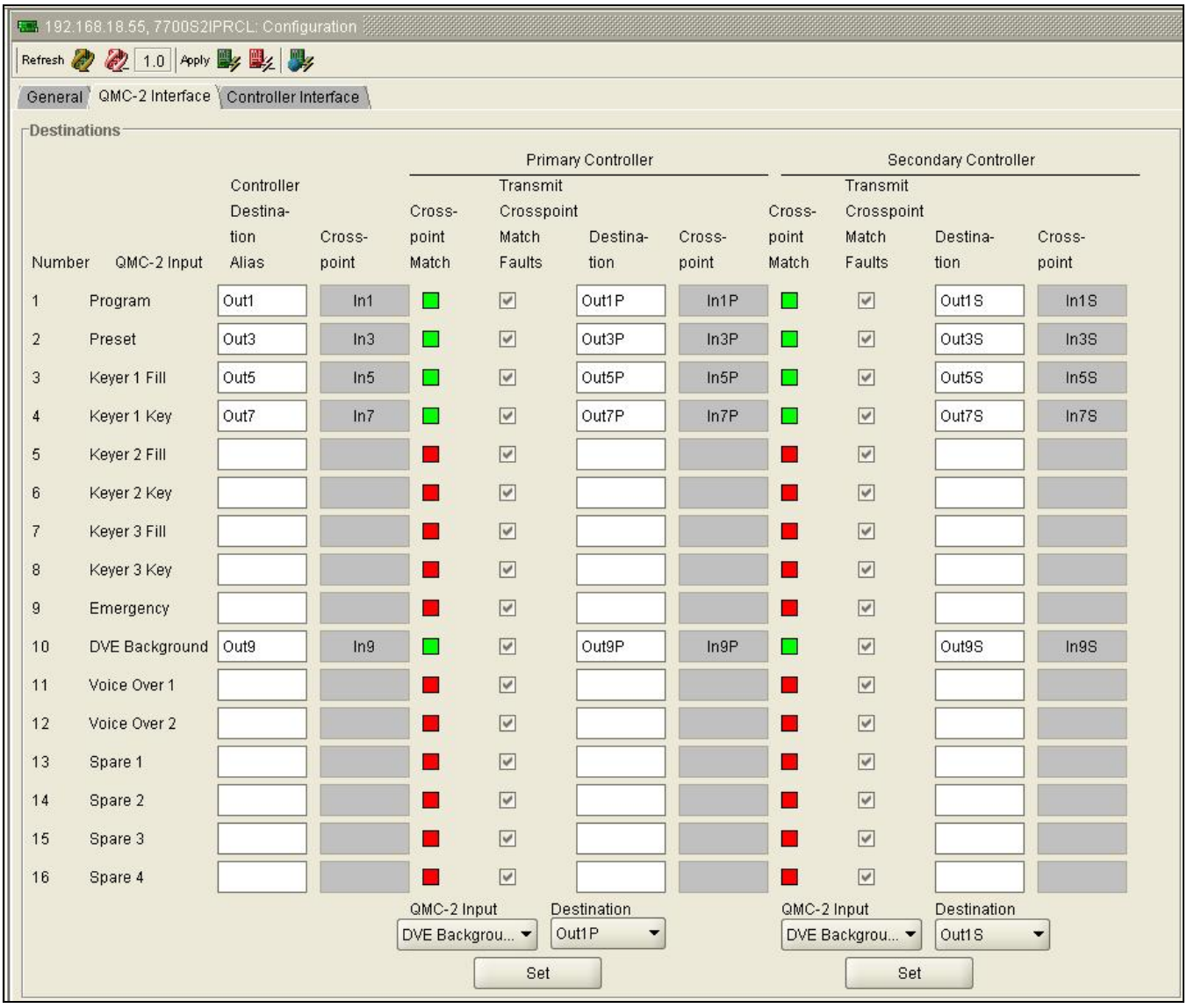

Figure 3-24: Checking QMC-2 Configuration Up-To-Date Status

4. FIRMWARE UPGRADE

There are two ways to upgrade 7700S2IP-RCL firmware:

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.

4.1. FTP

1. Open a command prompt window (in Windows: *Start/Programs/Accessories/Command Prompt*)
2. Enter the location of the firmware file. For example, type *cd c:\temp*.
3. Enter the command *ftp* followed by the 7700S2IP-RCL IP address.
   For example, type *ftp –A 192.168.18.22*.
4. Enter the FTP command *put* followed by the firmware file name. For example, *put 7700S2IP-RCL.bin*.
5. When the transfer is complete enter the FTP command: *bye*.
6. Step 5 begins the process of saving the firmware to the non-volatile flash of the 7700S2IP-RCL. The save process is displayed as a percentage on the 7700S2IP-RCL LCD. Once the process is complete, the 7700S2IP-RCL LCD again displays the product name and firmware version.
7. Power off the 7700S2IP-RCL.
8. Power on the 7700S2IP-RCL.

4.2. SERIAL

1. Power off the 7700S2IP-RCL.
2. Connect an adapter cable to a PC running a console or terminal application, such as Windows *HyperTerminal*, to the 7700S2IP-RCL debug/monitor port.
3. Configure the port settings of the terminal program as follows:

Baud	**115200**
Parity	**no**
Data bits	**8**
Stop bits	**2**
Flow Control	**None**

4. Set the 7700S2IP-RCL run/upgrade jumper to the upgrade position.
5. Power on the 7700S2IP-RCL.
6. After a few moments, the prompt *PPCBOOT>* will appear. Enter the command *upload.*
7. 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, *7700S2IP-RCL.bin.*
8. Once the upload is complete the message *upload okay* is displayed.
9. Power off the 7700S2IP-RCL.
10. Set the 7700S2IP-RCL run/upgrade jumper to the run position.
11. Remove the serial adapter cable.
12. Power on the 7700S2IP-RCL.

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