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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Dec 08
1.1	Removed references to GPI, GPO, LTC specifications	Apr 09
1.2	Removed block diagram	Nov 09

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1. OVERVIEW

The 7700PTX Universal Protocol Translator module provides an interface between third-party and Evertz equipment. The 7700PTX communicates with third-party equipment either via one of four serial ports or via a built in Ethernet port. These ports can provide bi-directional protocol support.

Function:
The function of the 7700PTX generally falls into one of four categories:

1. **Third-Party Router Control:** In this mode the 7700PTX affords *Vista*LINK® the ability to control and monitor third-party routers. The 7700PTX can convey UMD information to Evertz monitoring equipment.

2. **Third-Party UMD Interface:** In this mode the 7700PTX translates third-party UMD protocol data into a format suitable for Evertz monitoring equipment.

3. **Third-Party Switcher Interface:** In this mode the 7700PTX extracts tally information from third-party switchers and translates and conveys that tally information to Evertz monitoring equipment.

4. **Third-Party Device Control:** In this mode the 7700PTX allows *Vista*LINK® to control third-party devices such as satellite controllers.

Features:
- 4 serial ports RS232/422 selectable
- Selectable +5V or +12V supply for driving GPI over longer cable runs
- Module conveniently fits into 7700FR-C 3RU frame
- Frame status trigger
- *Vista*LINK® - capable for remote monitoring and control via SNMP (using *Vista*LINK®PRO)

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.

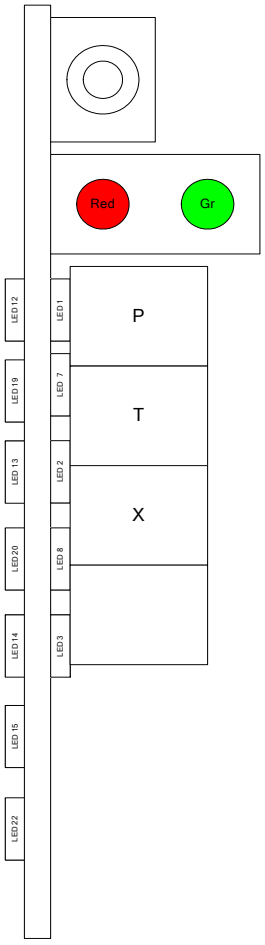

Figure 2-1: PTX Card Edge

3. TECHNICAL SPECIFICATIONS

3.1. DATA INPUT SERIAL PORT

Number of Ports:	4 RS-232 or 3 RS-422
Connector:	Phoenix Terminal Block pins
Baud Rate:	Up to 1Mbaud

3.2. ELECTRICAL

Voltage:	+12V DC
Power:	< 6W
Safety:	ETL Listed, complies with EU safety directives
EMI/RFI:	Complies with FCC Part 15, Class A EU EMC Directive

3.3. PHYSICAL

Number of slots:	2

4. CONFIGURATION

4.1. EXAMPLE CONFIGURATION: TALLIES & SOURCE NAMES

The setup illustrated in Figure 4-1 will be used to demonstrate how to configure the 7700PTX-ACOS.

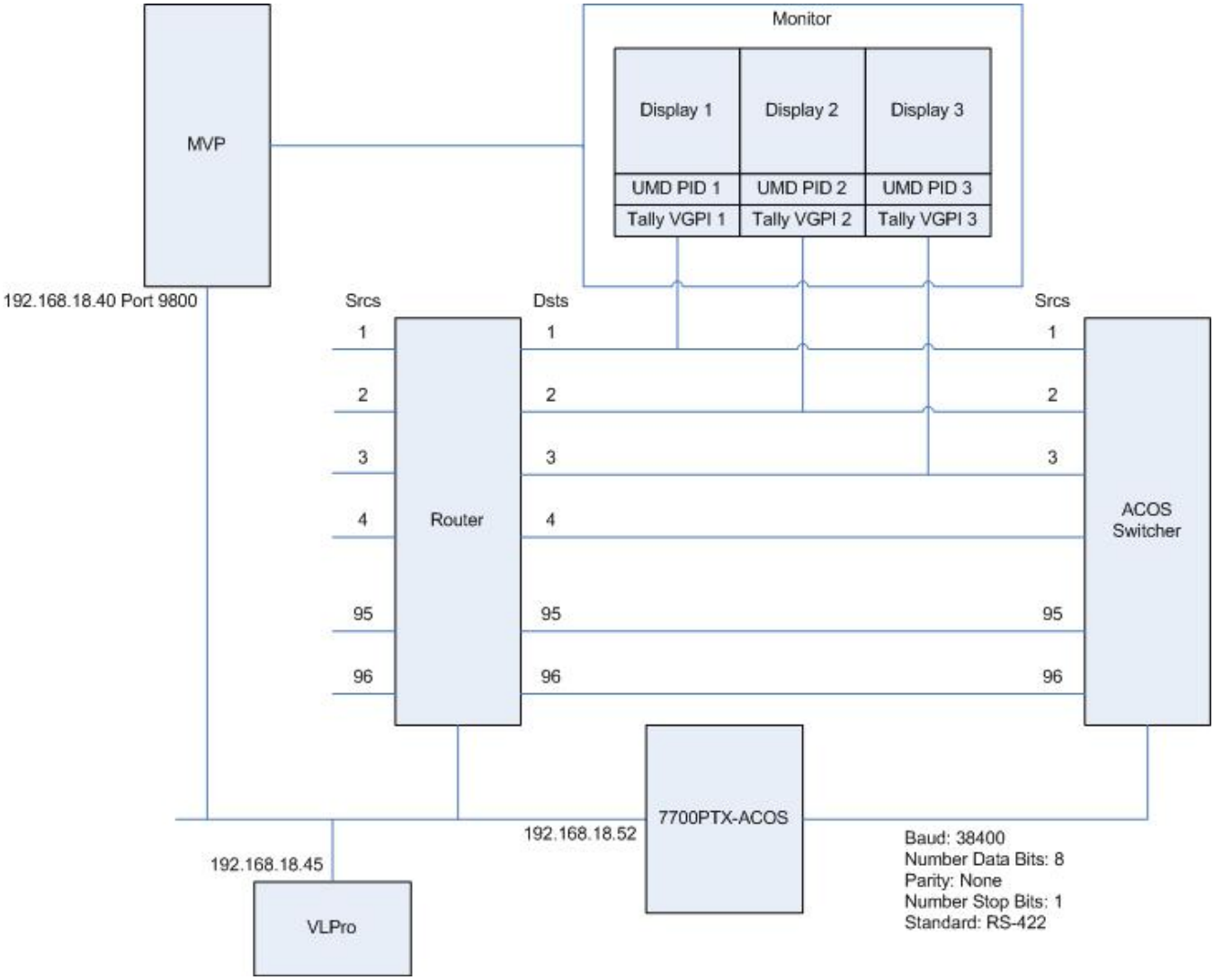

Figure 4-1: Example Setup

Figure 4-1 contains the following elements:

- A router with destinations 1 – 96 connected to external sources 1 – 96 of the ACOS switcher.
- A MVP with a single output card. The output card has IP address 192.168.18.40. It is configured to receive UMD/VGPI data using Image Video over a network link using TCP port 9800. A monitor is connected to the output card.
- External source 1 of the switcher is monitored by Display 1. Display 1 has a UMD with protocol ID (PID) set to 1. This UMD displays the name of switcher source 1. Display 1 has a tally box with VGPI set to 1. The tally box will indicate when switcher source 1 is on air.
- External source 2 of the switcher is monitored by Display 2. Display 2 has a UMD with a PID of 2. This UMD displays the name of switcher source 2. Display 2 has a tally box with VGPI set to 2. The tally box will indicate when switcher source 2 is on air.
- External source 3 of the switcher is monitored by Display 3. Display 3 has a UMD with a PID of 3. This UMD displays the name of switcher source 3. Display 3 has a tally box with VGPI set to 3. The tally box will indicate when switcher source 3 is on air.
- A 7700PTX-ACOS has IP address 192.168.18.52. It conveys UMD and tally information via TCP to the MVP's output card. It uses the ACOS protocol, over a serial link to retrieve tally and source name information from the switcher.
- A computer, having IP address 192.168.18.45, with VLPro installed. Apart from its network settings, VLPro is used to configure the parameters of the 7700PTX-ACOS.

4.2. STEP 1: PREPARE MVP OUTPUT CARD TO RECEIVE UMD AND/OR VGPI (TALLY) DATA

1. Connect a console application, such as HyperTerminal, to the output card using a procedure similar to the one described in section 4.4.
2. From the output card's *Main Menu*, select *Under Monitor Display Setup*.
3. Select *Set protocol*.
4. Select *Image Video*.
5. Select *Network* as the input type.
6. Enter *9800* for the TCP port.
7. Select *S* to *Save and Exit*.
8. Reboot the output card.
9. During the subsequent boot process you should see the message *Ready to accept ImageVideo Protocol* on the console. This message indicates the output card is listening on TCP port 9800 for UMD data.

4.3. STEP 2: CONNECT 7700PTX-ACOS TO THE SWITCHER

1. Ensure there is no power applied to the 7700PTX-ACOS.

2. Connect *one* of the serial ports of the 7700PTX-ACOS to the switcher. For a RS-422 connection refer to Figure 4-2 and Table 4-1. For a RS-232 connection refer to Figure 4-3 and Table 4-2.

3. Apply power to the 7700PTX-ACOS.

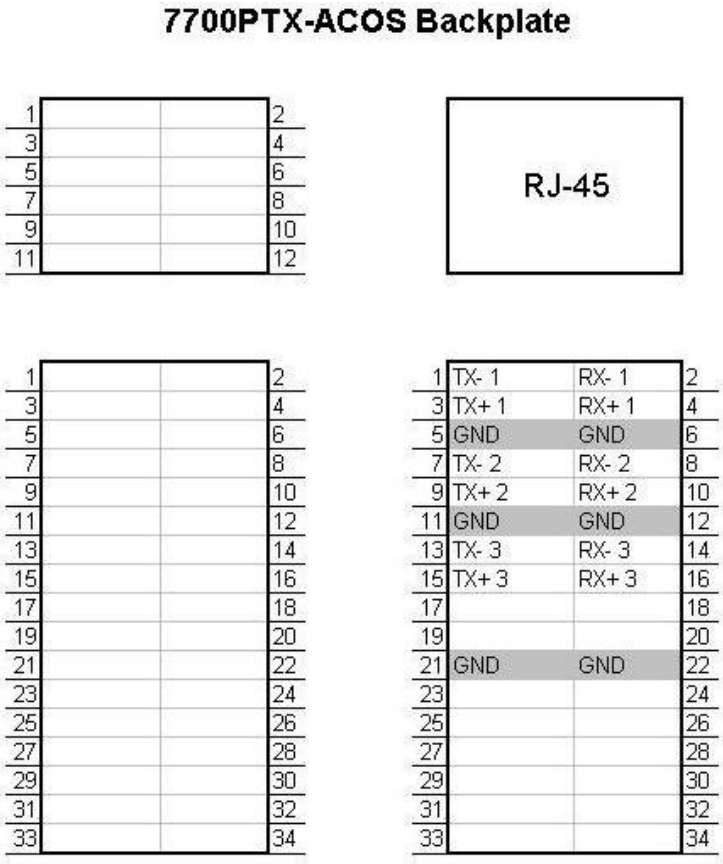

Figure 4-2: RS-422 Pins

7700PTX-ACOS			Switcher
Port	**Pin Number**	**Pin Name**	**Pin Name**
1	1	TX- 1	RX-
	3	TX+ 1	RX+
	2	RX- 1	TX-
	4	RX+ 1	TX+
	5	GND	GND
2	7	TX- 2	RX-
	9	TX+ 2	RX+
	8	RX- 2	TX-
	10	RX+ 2	TX+
	11	GND	GND
3	13	TX- 3	RX-
	15	TX+ 3	RX+
	14	RX- 3	TX-
	16	RX+ 3	TX+
	21	GND	GND

Table 4-1: RS-422 Wiring

The fourth serial port of 7700PTX-ACOS is not RS-422 capable.

7700PTX-ACOS Backplate

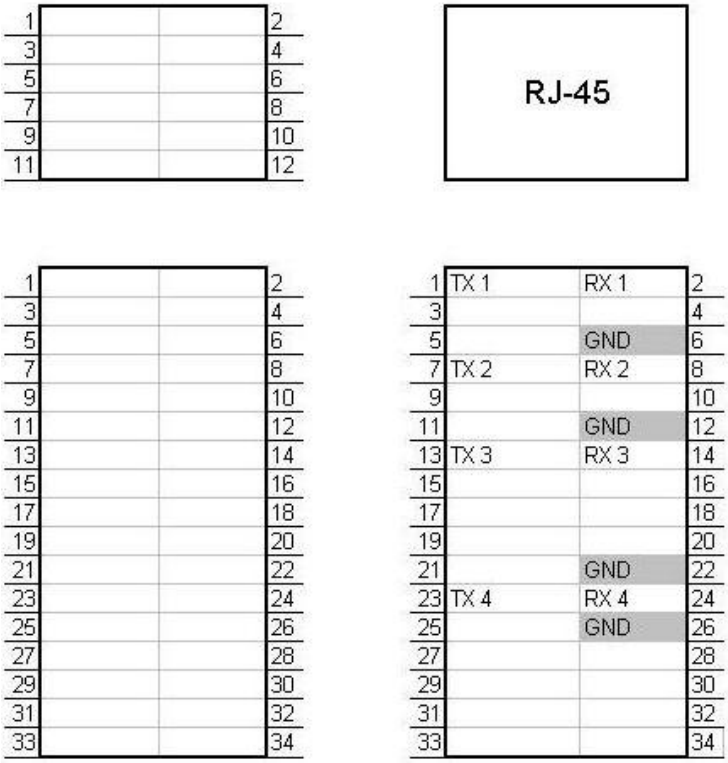

Figure 4-3: RS-232 Pins

7700PTX-ACOS			Switcher
Port	**Pin Number**	**Pin Name**	**Pin Name**
1	1	TX 1	RX
	2	RX 1	TX
	6	GND	GND
2	7	TX 2	RX
	8	RX 2	TX
	12	GND	GND
3	13	TX 3	RX
	14	RX 3	TX
	22	GND	GND
4	23	TX 4	RX
	24	RX 4	TX
	26	GND	GND

Table 4-2: RS-232 Wiring

4.4. STEP 3: CONNECT A PC TO THE DEBUG/MONITOR PORT

The network parameters of the 7700PTX-ACOS must be configured via its debug/monitor port, the header of which is labeled 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 7700PTX, directly above the card unlock latch.

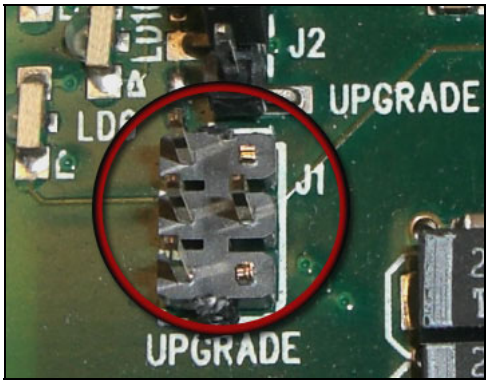

Figure 4-4: Upgrade Jumper

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: PTX.

6. Press the <Enter> key. A new "Connect To" window will appear as shown in Figure 4-5.

Figure 4-5: 'Connect To' Window

7. From the "*Connect using"* drop down menu, select *COM1* from the drop down list. If *COM1* is in use, select an alternate COM port.

8. Press the <Enter> key or select OK. This opens the "COM Properties" window as shown in Figure 4-6.

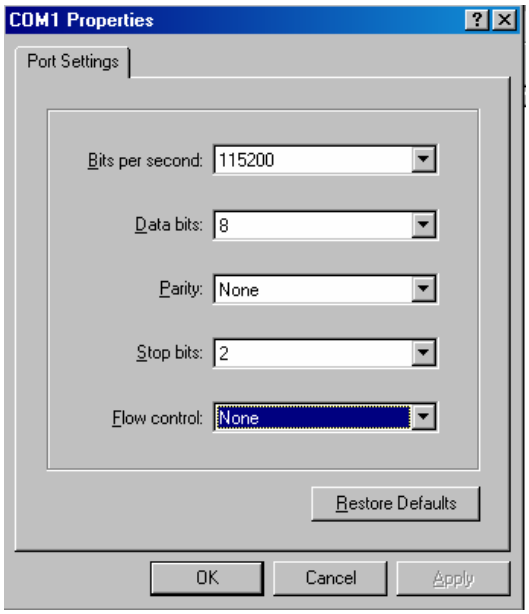

Figure 4-6: COM1 Properties

9. Enter the information for the *COM1 Properties* settings as listed in Figure 4-6.

10. Press the <*Enter*> key or select the *OK* button. The "COM Properties" window closes, leaving the HyperTerminal window open.

11. Apply power if the 7700PTX-ACOS does not have power. The boot sequence and Main Menu are displayed in the HyperTerminal window.

12. If the 7700PTX-ACOS has power, press the <*Enter*> key to view the 7700PTX-ACOS's menu system.

13. Various 7700PTX-ACOS parameters are configurable via the 7700PTX-ACOS's menu system, the root of which is called *Main Menu*. This is shown in Figure 4-7.

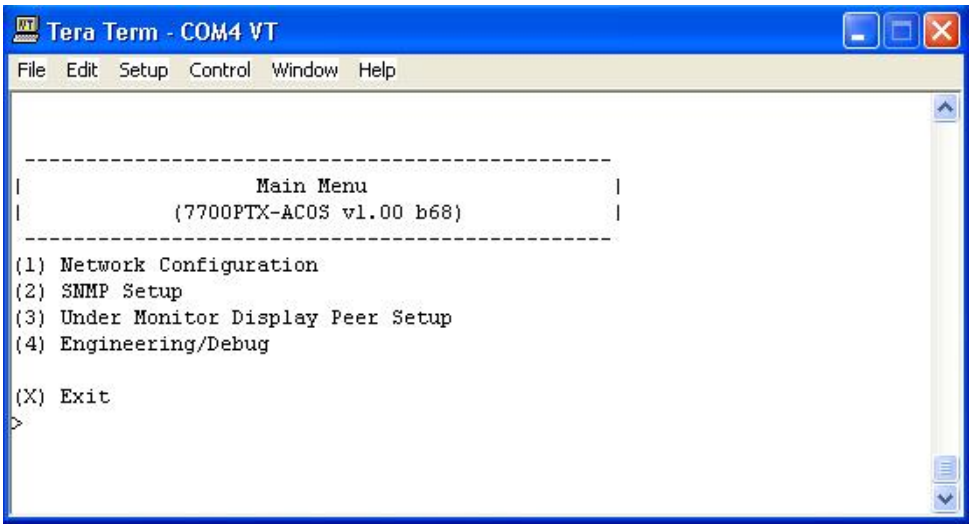

Figure 4-7: 7700PTX-ACOS Main Menu

4.5. STEP 4: CONFIGURE NETWORK PARAMETERS

The network parameters of the 7700PTX-ACOS can only be configured using its menu system.

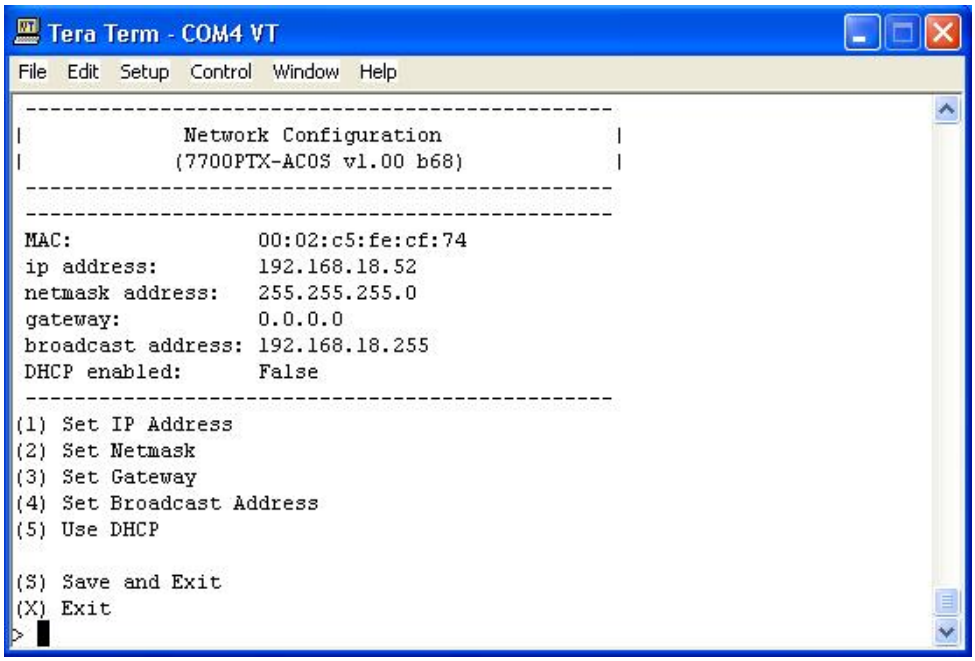

Figure 4-8: 7700PTX-ACOS Network Configuration Menu

1. From the *Main Menu* select *Network Configuration*.

2. Select item (1) *Set IP Address* and then enter the IP address (i.e. 192.168.18.52) of the 7700PTX-ACOS.

3. Select item (2) *Set Netmask* and then enter the subnet mask (i.e. 255.255.255.0) of the 7700PTX-ACOS.

4. For example, the MVP output card and Xenon router reside on the same IP network as the 7700PTX-ACOS. Thus, the *gateway* can be left as 0.0.0.0. If the 7700PTX-ACOS were on a different IP network then the IP address of the gateway would need to be entered by selecting item (3) *Set Gateway* and entering the appropriate IP address.

5. For a manually entered network configuration, ensure *DHCP enabled* is set to *False*. A setting of *True* indicates that the 7700PTX-ACOS will, upon boot, try to fetch network settings from a DHCP server. Item (5) *Use DHCP* permits changes to this parameter.

6. Once the network settings are configured, select (S) *Save* and *Exit* before exiting the *Network Configuration* to save the settings, otherwise select *Exit*.

7. Reboot the 7700PTX-ACOS.

8. Ensure the VLPro machine can ping the 7700PTX-ACOS. If it can, the menu system of the 7700PTX-ACOS is no longer required and the adapter cable can be removed from the debug/monitor port.

The 7700PTX-ACOS must be rebooted for any network setting changes to take effect.

4.6. STEP 5: OPEN 7700PTX-ACOS VLPRO CONFIGURATION VIEW

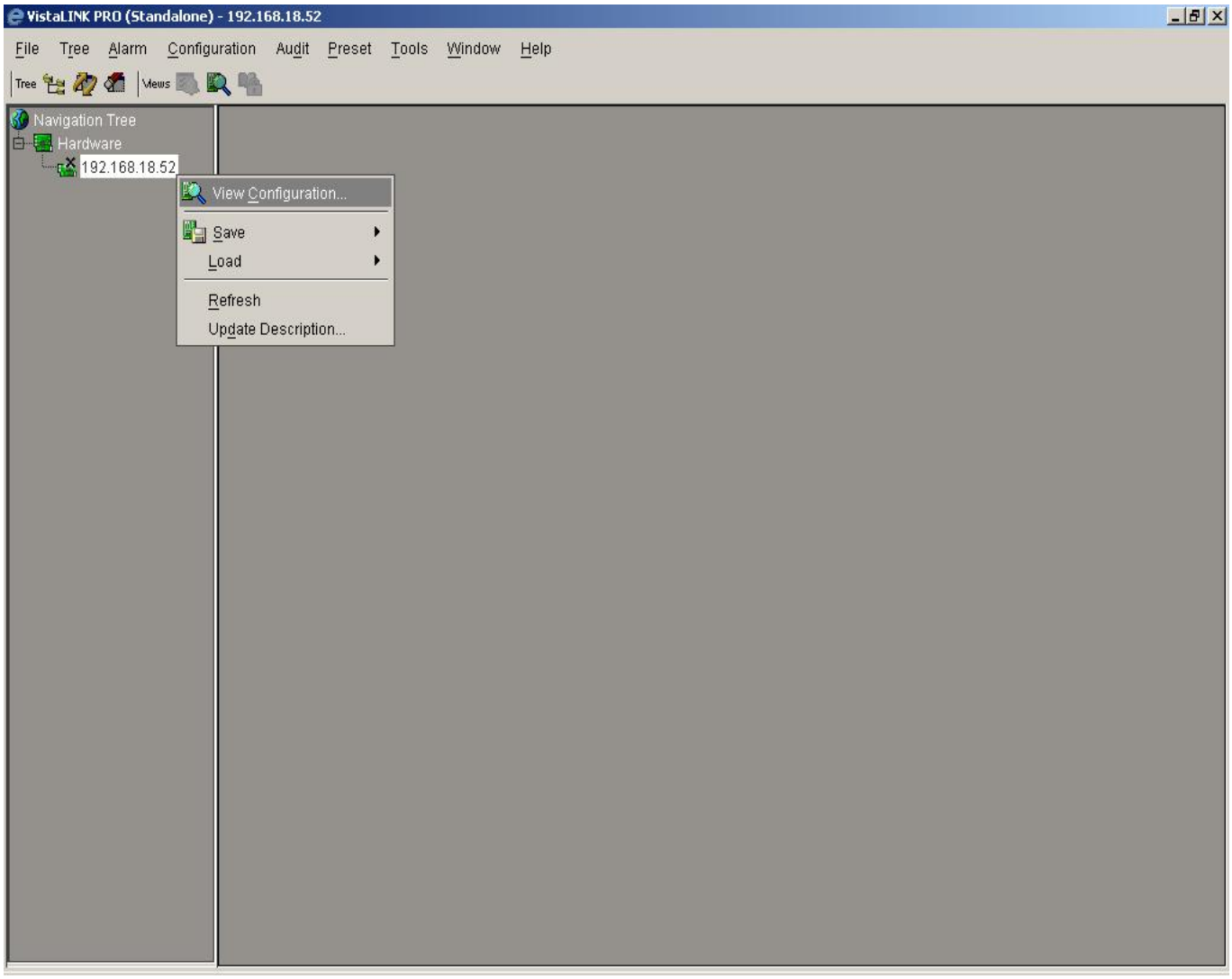

Figure 4-9: VLPro Hardware Navigation Tree

1. To configure the card, launch VistaLINK® Pro. The IP address of the 7700PTX-ACOS (i.e. 192.168.18.52) should appear in the hardware navigation tree.

2. Right click on the IP address and then select the *View Configuration* item from the pop up menu.

4.7. STEP 6: CONFIGURE SWITCHER INTERFACE PARAMETERS

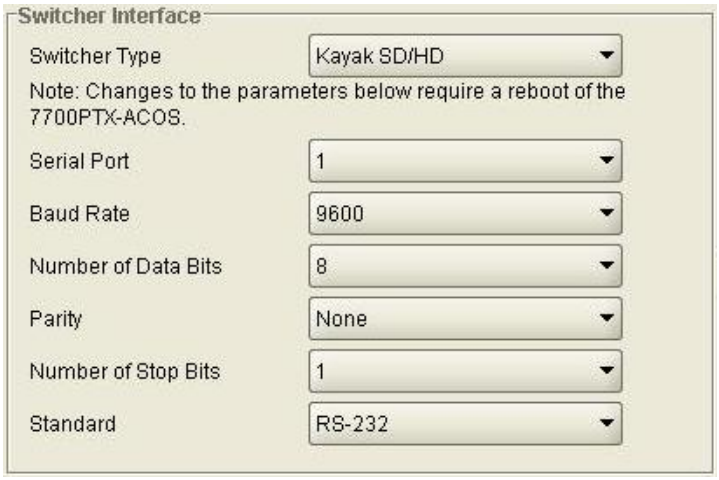

Figure 4-10: Switcher Interface Parameters

1. From the VLPro configuration view, click the *General* tab.
2. Set *Switcher Type* to match the type of switcher to which the 7700PTX-ACOS is connected.
3. Select the *Serial Port* to match the one selected in step 2.
4. Select the *Baud Rate* to match that of the switcher. Typically, this value is 38400.
5. Select the *Number of Data Bits* to match that of the switcher. Typically, this value is 8.
6. Select the *Parity* to match that of the switcher. Typically, no parity is used.
7. Select the *Number of Stop Bits* to match that of the switcher. Typically, this value is 1.
8. Select the *Standard* to match that of the switcher. Typically, this value is RS-422.
9. Click the *Apply* button.
10. A reboot of the 7700PTX-ACOS is required in order for changes to the switcher interface parameters to take effect. However, this step will be delayed until all parameters of the 7700PTX-ACOS are configured.

4.8. STEP 7: CONFIGURE UMD/VGPI (TALLY) PEERS

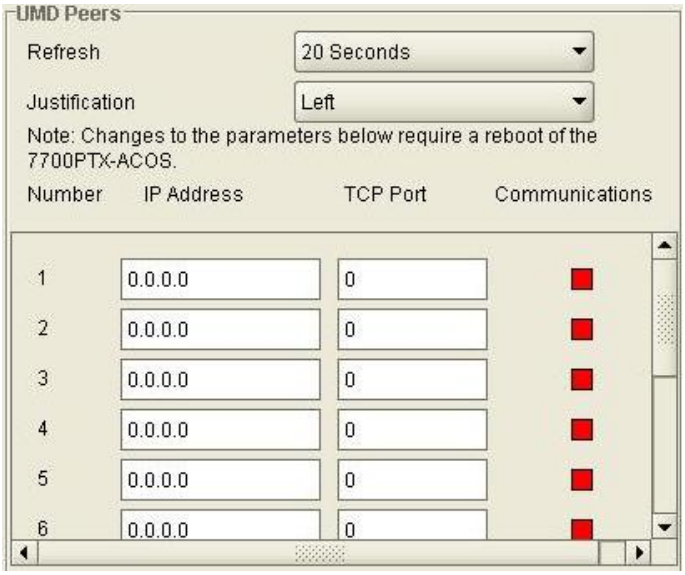

Figure 4-11: UMD Peer Parameters

1. From the VLPro configuration view, click the *General* tab.

2. Using the *Refresh* drop down menu, select how often the UMD peers will be refreshed in the absence of changes to tally/source name information. The default for this parameter is *20 Seconds*.

3. Configure how the UMD text will be justified by selecting an appropriate entry from the *Justification* box. The default for this parameter is *Left*.

4. Enter the IP address of the UMD peer to receive UMD data. For our example, this will correspond to the IP address of the MVP's output card, 192.168.18.40.

5. Enter the TCP port over which the UMD data will be exchanged. For our example, the port in this example will be 9800.

6. Click the *Apply* button.

7. A reboot of the 7700PTX-ACOS is required in order for changes to the UMD Peer parameters to take effect.

4.9. STEP 9: REBOOT THE 7700PTX-ACOS

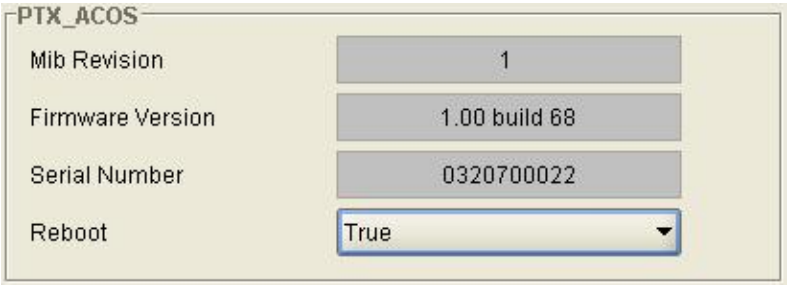

Figure 4-12: Rebooting the 7700PTX-ACOS

1. From the VLPro configuration view, click the *General* tab.

2. Set the *Reboot* box to *True* and then click the *Apply* button.

3. Wait 15 seconds to allow the 7700PTX-ACOS to establish communications with the switcher and UMD peer(s).

4.10. STEP 10: CHECK SWITCHER COMMUNICATION

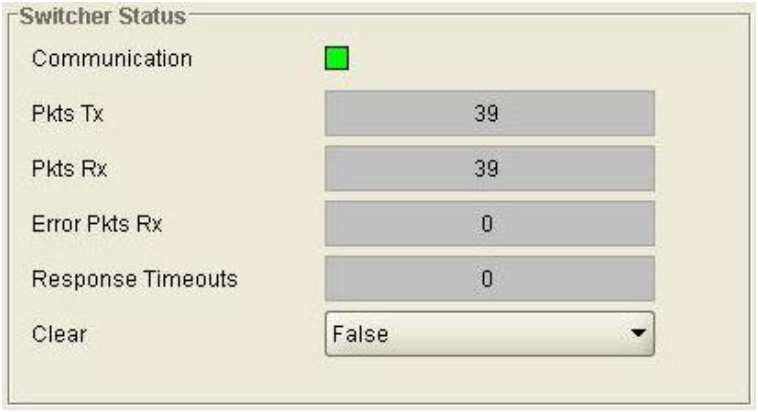

Figure 4-13: Switcher Communication

1. From the VLPro configuration view, click the *General* tab.

2. Check the *Communication* status box. Green indicates the ability of the 7700PTX-ACOS to communicate with the switcher. Red indicates the inability of the 7700PTX-ACOS to communicate with the switcher. Refer to Table 4-3 for descriptions of the switcher status parameters.

Switcher Status Parameter	Description
Communication	Green indicates the ability of the 7700PTX-ACOS to communicate with the switcher. Red indicates the inability of the 7700PTX-ACOS to communicate with the switcher. This may mean the wiring or serial settings are incorrect.
Pkts Tx	This reports the number of packets sent by the 7700PTX-ACOS to the switcher.
Pkts Rx	This reports the number of packets sent by the switcher to the 7700PTX-ACOS.
Error Pkts Rx	This reports the number of packets with some type of error received by the 7700PTX-ACOS.
Response Timeouts	This reports the number of times the 7700PTX-ACOS timed out waiting for a response packet from the switcher.
Clear	The combo box can be used to reset the status statistics. To do so, set the box to *True* and click the *Apply* button. Then click the refresh button.

Table 4-3: Switcher Status Parameters

4.11. STEP 11: CHECK UMD/VGPI (TALLY) PEER COMMUNICATION

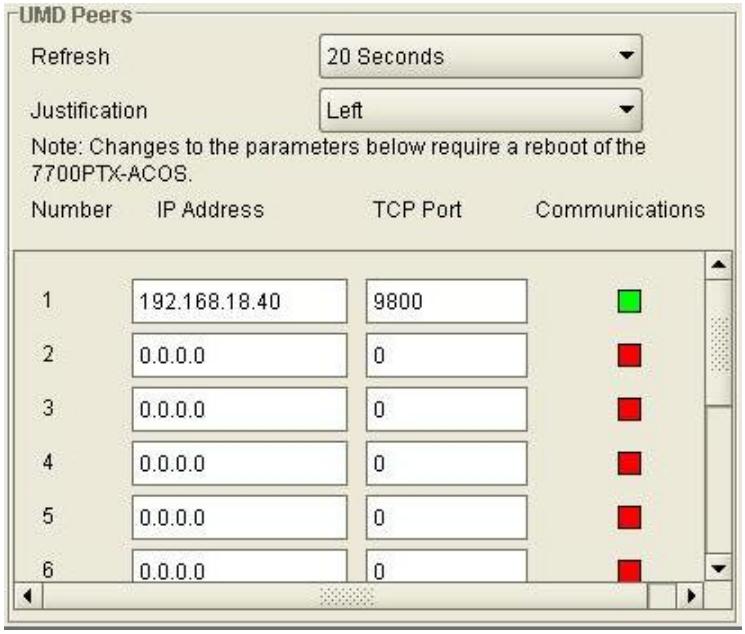

Figure 4-14: UMD Peer Communication

1. From the VLPro configuration view, click the *General* tab.

2. Check the *Communications* status box. Green indicates the ability of the 7700PTX-ACOS to communicate with that UMD peer. Red indicates the inability of the 7700PTX-ACOS to communicate with that UMD peer.

4.12. STEP 12: CHECK EVENT LOG

The event log, located on the *General* tab, can be quite useful when troubleshooting. It provides a textual description of events, errored or otherwise, that occurs within the 7700PTX-ACOS.

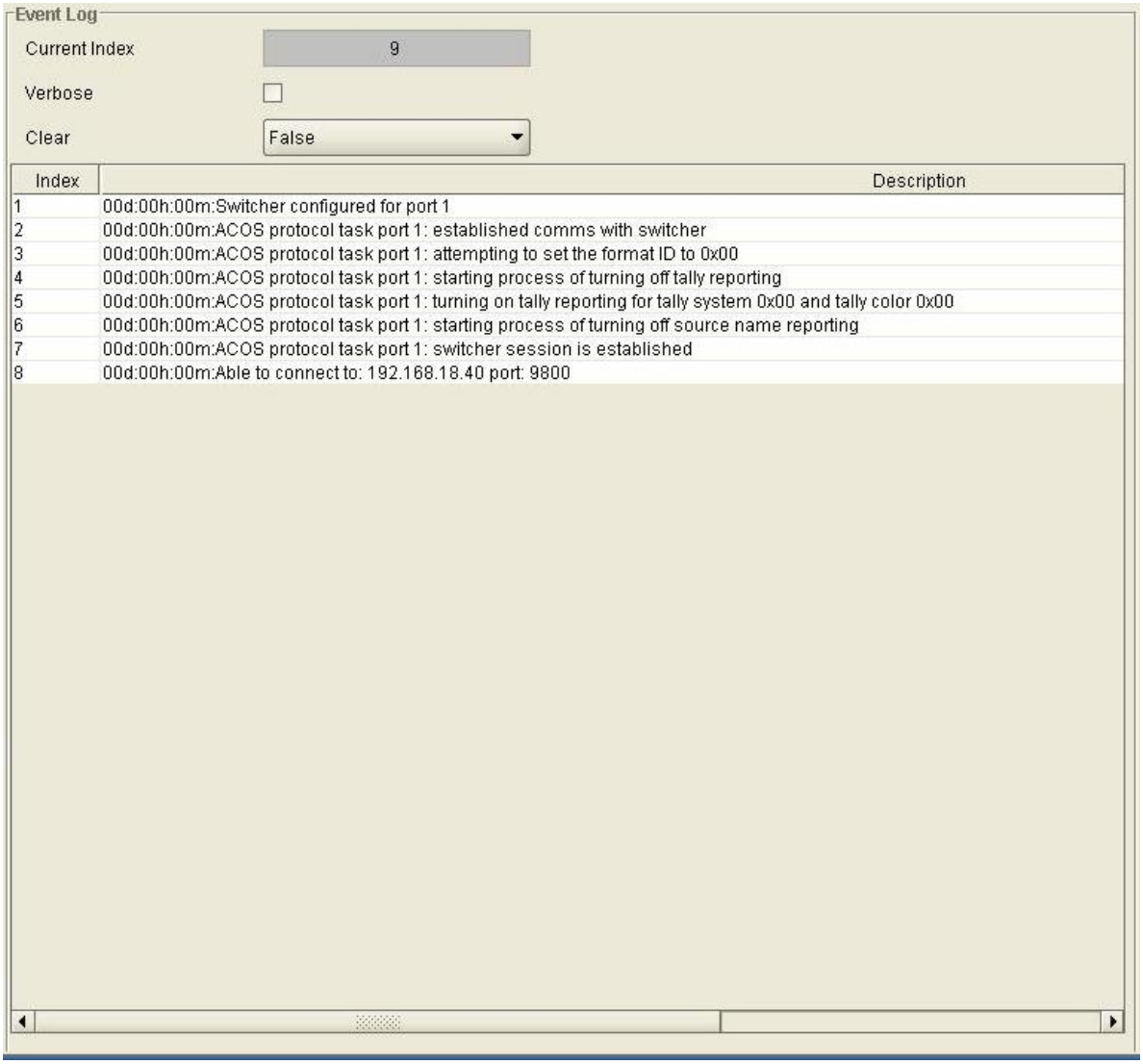

Figure 4-15: Event Log

Event Log Parameter	Description
Current Index	The location within the log at which the next entry will be placed.
Verbose	When checked, logs additional information. This setting is not retained on a power cycle of the 7700PTX-ACOS.
Clear	The combo box can be used to reset the event log. To do so, set the box to *True* and click the *Apply* button. Then click the *Refresh* button.

Table 4-4: Event Log Parameters

4.13. STEP 13: CONFIGURING TALLIES

4.13.1. Protocol Parameters

These parameters are available via the *Tallies* tab of the VLPro configuration view. The parameter defaults should work for most installations. Changes to any parameter will require a click of VLPro's *Apply* button.

Figure 4-16: Tally Protocol Parameters

Tally Protocol Parameter	Description
Protocol ID	This parameter is used for the VGPI stream sent by the 7700PTX-ACOS to the UMD Peer(s). It's value should be selected such that it does not conflict with the PID of a UMD. The default for this parameter is *500*.
Tally System	The ID of the switcher tally system for which information is required. The default for this parameter is *Overall*.
Tally Color	Required tally color. At the time of writing, the ACOS-based switchers implement support only for red. The default for this parameter is *Red (On Air)*.

Table 4-5: Tally Protocol Parameters

4.13.2. Setting the VGPIs

The example in section 4.1 requires us to monitor the on-air tally status of the switcher external sources 1, 2 and 3. As such, we need to associate VGPIs with these tallies.

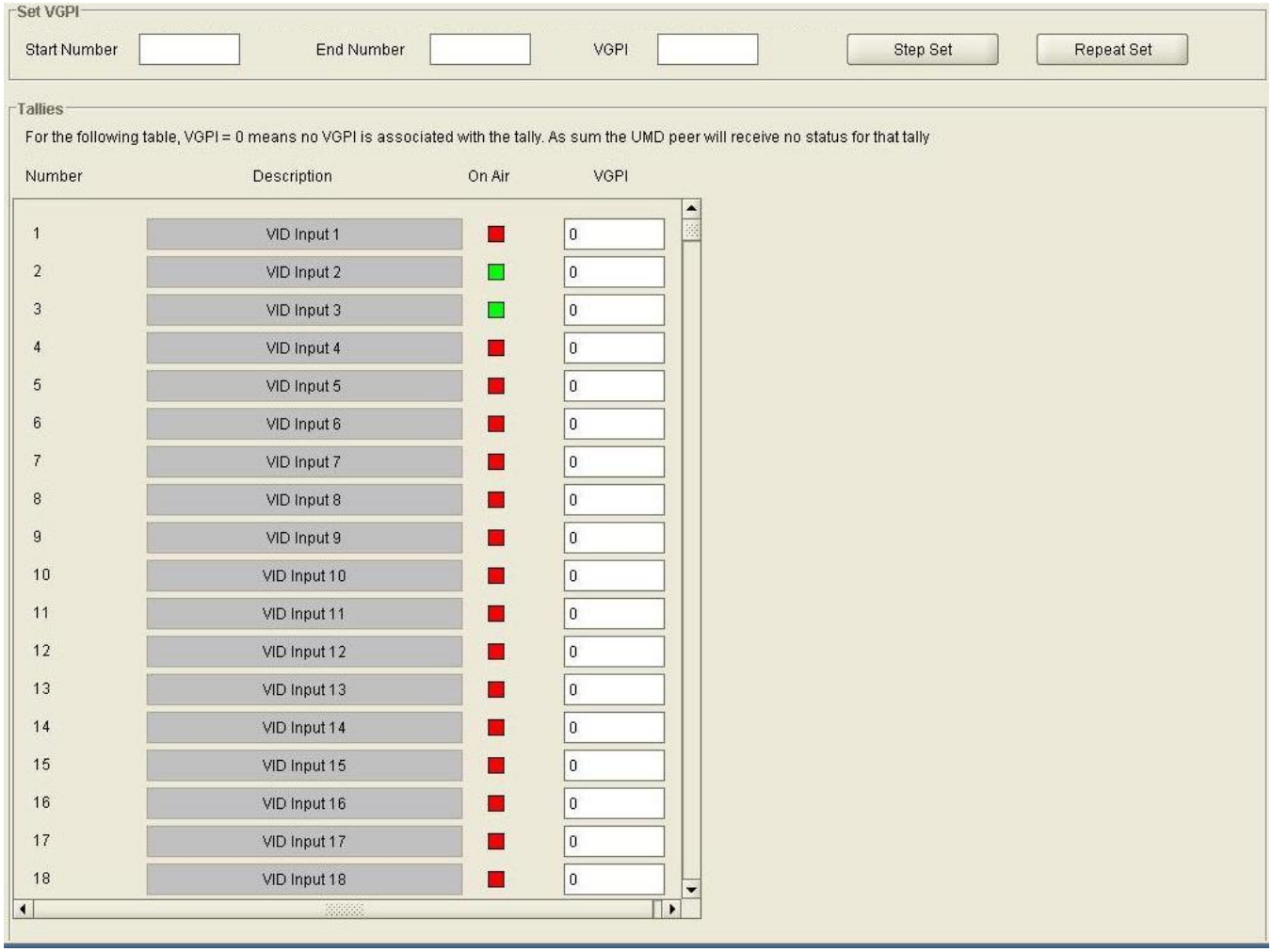

Figure 4-17: Tally VGPIs

1. From the VLPro configuration view, click the *Tallies* tab.
2. In the *Set VGPI* frame, set the *Start Number* to 1.
3. In the *Set VGPI* frame, set the *End Number* to 3.
4. In the *Set VGPI* frame, set the VGPI to 1.
5. In the *Set VGPI* frame, click the *Step Set* button and then click the *Apply* button.

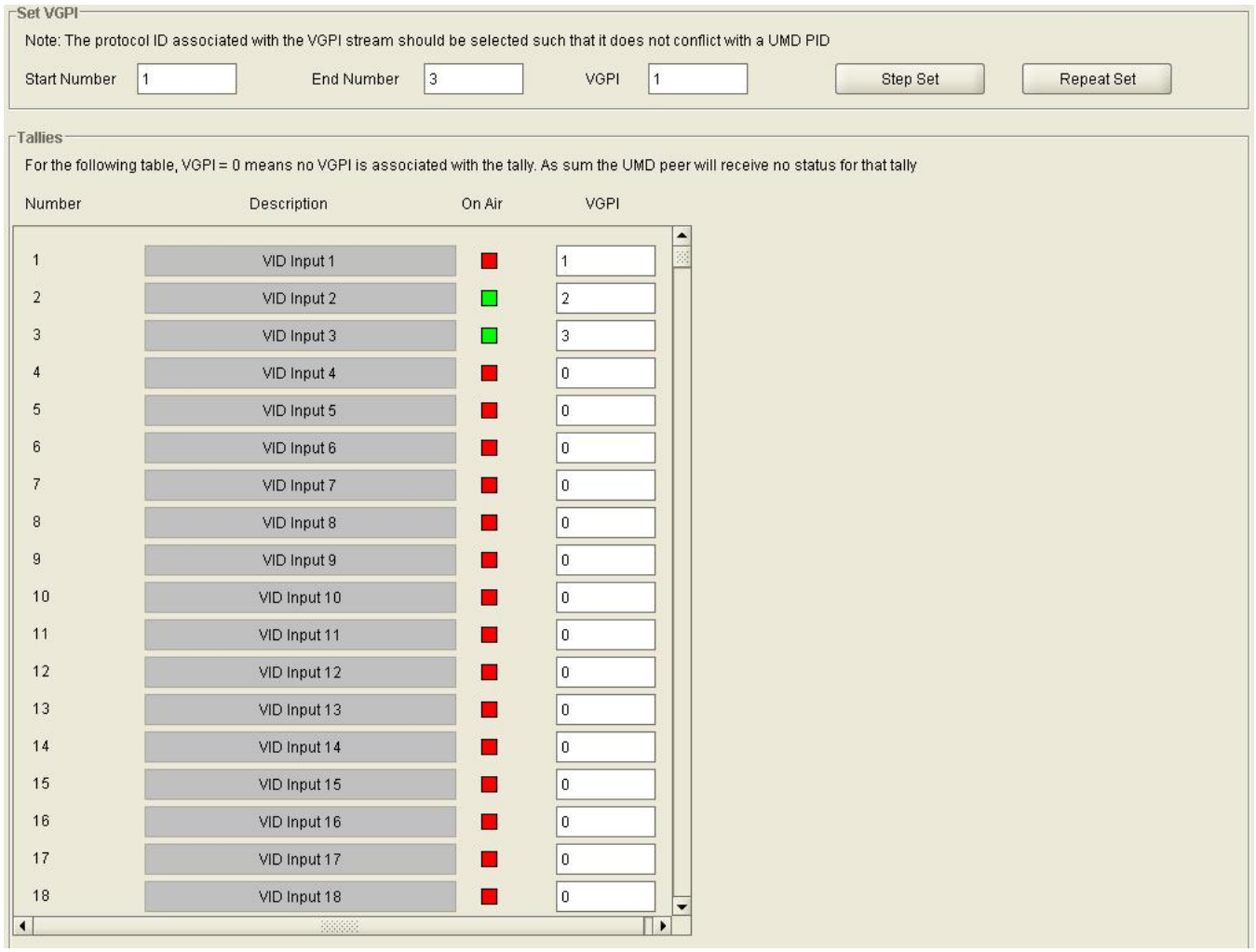

Figure 4-18: Configuring VPGIs

4.14. CONFIGURING SOURCE NAMES

4.14.1. Protocol Parameters

These parameters are available via the *Source Names* tab of the VLPro configuration view. If changes were made, the user must click the *Apply* button for changes to take effect.

Figure 4-19: Source Names Protocol Parameters

Tally Protocol Parameter	Description
Fetch Source Names	When checked the 7700PTX-ACOS will fetch and monitor the names of the switcher's sources.
Source Name Type	The type of source names to fetch/monitor. *Long Names* are 8 characters in length. *Short Names* are 4 characters in length.

Table 4-6: Source Name Protocol Parameters

4.14.2. Setting the UMD PIDs

The switcher has a total of 241 internal and external sources. The function and name of each is given in the table in the *Names* frame located on the *Source Names* tab of the VLPro configuration view.

The example in section 4.1 requires us to monitor the names of the switcher external sources 1, 2 and 3. As per Figure 4-20, these correspond to switcher source numbers 2, 3 and 4. As such, we need to associate UMD protocol IDs (PIDs) with the sources.

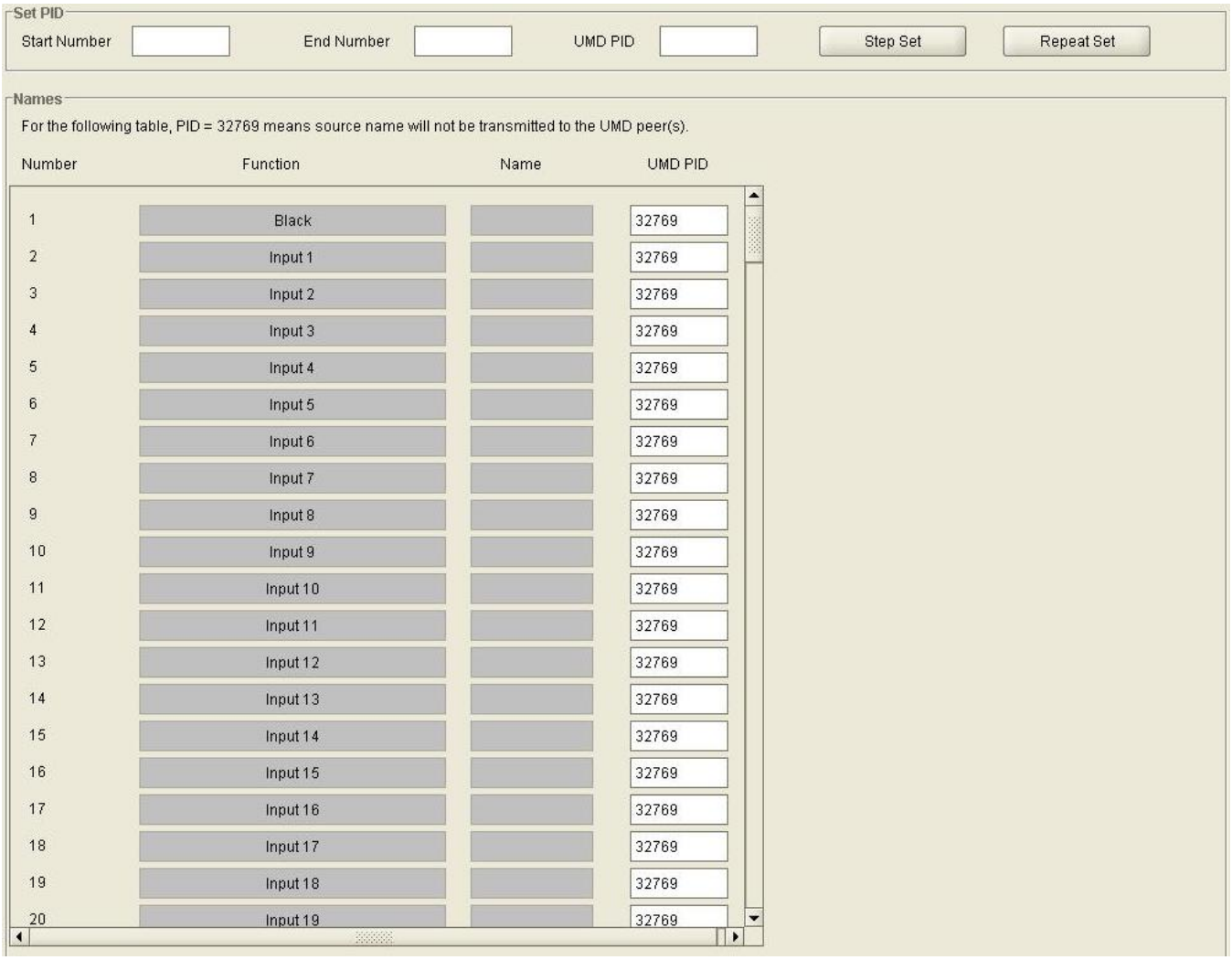

Figure 4-20: Source Name PIDs

1. From the VLPro configuration view, click the *Source Names* tab.
2. In the *Configuration* frame, check the *Fetch Source Names* box.
3. In the *Configuration* frame, set *Source Name Type* to *Long Names*.
4. In the *Set PID* frame, set *Start Number* to 2.
5. In the *Set PID* frame, set *End Number* to 4.
6. In the *Set PID* frame, set *UMD PID* to 1.
7. In the *Set PID* frame, click the *Step Set* button and then click the *Apply* button for changes to take effect.

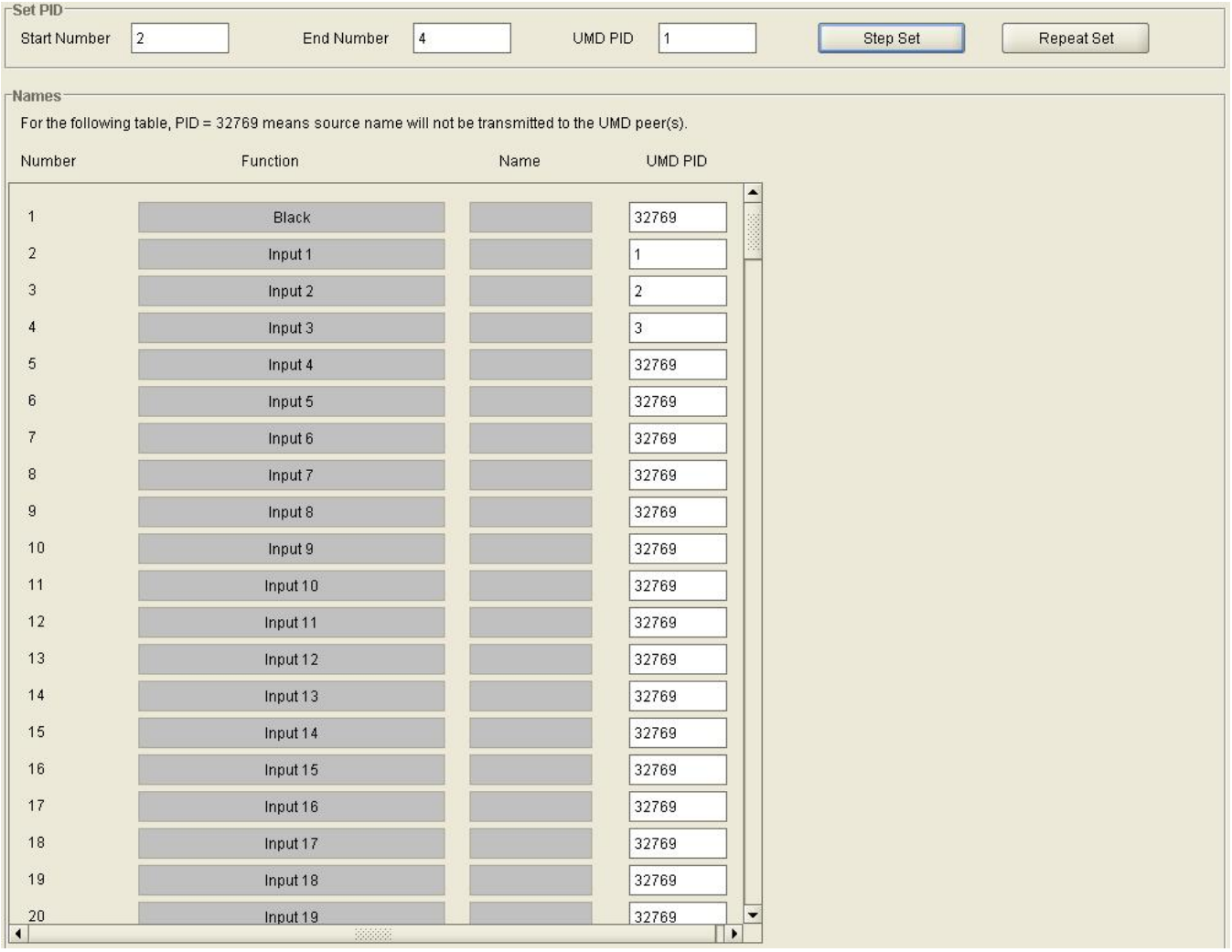

Figure 4-21: Configuring Source Name PIDs

5. FIRMWARE UPGRADE

There are two ways to upgrade PTX 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.

5.1. FTP PROCEDURE

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 PTX 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 ptx.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 PTX. The save process is displayed as a percentage on the PTX LCD. Once the process is complete, the PTX LCD again displays the product name and firmware version.

7. Power off the PTX.

8. Power on the PTX.

5.2. SERIAL PROCEDURE

1. Power off the PTX.

2. Connect an adapter cable to a PC running a console or terminal application, such as Windows *HyperTerminal*, to the PTX 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 PTX run/upgrade jumper to the upgrade position.

5. Power on the PTX.

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, *ptx.bin.*

8. Once the upload is complete the message upload okay is displayed.

9. Power off the PTX.

10. Set the PTX run/upgrade jumper to the run position.

11. Remove the serial adapter cable.

12. Power on the PTX.

6. *VISTA*LINK® REMOTE MONITORING/CONTROL

6.1. WHAT IS *VISTA*LINK®?

*Vista*LINK® is Evertz' remote monitoring and configuration platform which operates over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. *Vista*LINK® provides centralized alarm management, which monitors, reports, and logs all incoming alarm events and dispatches alerts to all the VLPro Clients connected to the server. Card configuration through *Vista*LINK® PRO can be performed on an individual or multi-card basis using simple copy and paste routines, which reduces the time to configure each module separately. Finally, *Vista*LINK® enables the user to configure devices in the network from a central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

1. An SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz *Vista*LINK®-C Configuration Utility graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK® enabled products.

2. Managed devices, (such as 7700PTX modules), each with a unique address (OID), communicate with the NMS through an SNMP Agent. The 7700PTX-ACOS communicates directly with the manager using its internal Agent.

3. A virtual database known as the Management information Base (MIB) lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

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