Field Engineering Bulletin
071828309 January 19, 2007

Trinix Broadlinx 2.4.1 Upgrade

Contents

Applicability

CAUTION Installation of this upgrade will interrupt video signals passing through the system. The length of this interruption will vary depending on system size and specific procedures used. Users of this equipment should consult with Grass Valley Technical Support personnel before proceeding.

The primary purpose of this release is to correct several software problems. For more information, see page 3.

Note Users with versions prior to 2.1.1 should *not* use the upgrade procedure described in this bulletin. They should load the Broadlinx 2.4.1 compact flash module but use the *procedure* in Field Engineering Bulletin 071828301, “Broadlinx 2.1.1 Upgrade.”

The hardware and software required for this upgrade can be obtained through Grass Valley Technical Support.

CAUTION Grass Valley strongly recommends that users keep all software current. New boards are *not* guaranteed to be compatible with old versions of software. A system failure may occur if a new board is received as a replacement part and loaded with old software.

Interoperability Requirements

- Encore system with software version 1.7.0 or newer, or
- Any Jupiter system.

Related Documents

Trinix Planning and Installation Manual, part no. 0718276xx.

Engineering Change Order 170P.

Materials Supplied

Qty	Description	Part number
1	TRX-BL-UPG Upgrade Kit	040651300
	2 ea. 64 MB Compact Flash Memory, Broadlinx 2.4.1 (1 per NR-33000)	163827912
	1 ea. Field Engineering Bulletin	071828309

Release Notes

Release 2.4.1

Enhancements - none

Problems corrected

1. CR 60101 - when switching PAL video on a Trinix 128 x 128 router, the switch occurred on line 6, then on line 319, then line 6, then line 319, and so on. The FPGA code has now been changed so that switches occur on line 6 only.

2. CR 69404 - Cooling fan alarm problem reported by customer. Matrix Fan ID and matrix Fan Name varbinds had an incorrect OID in the matrix frame fan trap; this should have contained index-sub OID. This has been fixed.

3. CR 71150 - Output-expanded systems. There was a problem in version 4 FPGA code for the VI-33100 and HI-33200 boards. The base board entered the input boost mode if the rear panel "OP Expand" switch was turned On and switch 3 of DIP S543 was turned On. However, the mezzanine board did not go into the boost mode. This has been fixed in version 5 of the FPGA code (which is included with this release).

4. CR 72948 - Encore / Apex system. Audio went to silence or to the wrong input after 5 seconds.

   When a Take on the audio level was executed, after about five seconds the audio went to silence in some cases and to the wrong audio in other cases. When refresh was turned off the symptom went away. This problem has been corrected.

5. CR 73170 - Broadlinx Controller went into infinite loop on startup. This has been fixed.

6. CR 71461 - Multi-chassis 512 x 512 systems. With reclocking ON, a disturbance in active video sometimes occurred when switching from one 512 x 512 chassis to another when they were connected through video combiners. Loss of signal occurred both at the WFM and the video monitor. This has been fixed. NOTE: this remains a problem for systems that include 256 x 256 or 128 x 128 chassis.

Known Issues

1. CR 69643 - The Broadlinx web page does not display exact version information when the version number includes letters and numbers in the same group. For example, version “2.4.0a4,” (i.e., version 2.4.0, Alpha version 4) is reported on the web page simply as “2.4.0.”

2. CR 71461 - Multi-chassis systems that include 256 x 256 or 128 x 128 chassis. With reclocking ON, a disturbance in active video sometimes occurs when switching from one chassis to another when they are connected through video combiners. Loss of signal occurs both at the WFM and the video monitor. NOTE: this problem has been fixed for multi-chassis 512 x 512 systems.

Release 2.4

Enhancements

1. Protected path operation is now supported. For configuration information, see page 11.

Problems corrected

1. CR 55684 - with 256 x 256 systems, when controlled by Encore or SMS7000, switching between an input in the range 1-128 to a input in the range 129-256 occasionally caused the output to break up. This has been corrected.

2. CR 64421 - Excessive "TimeStamp count reset" messages were being received from Encore. This has been corrected.

3. CR 64744 - For each input board, signals fed to inputs 8 - 15 were displayed as being present on inputs 16 - 23. This has been corrected.

4. CR 65147 - Apex output monitoring now works properly with Encore and Trinix 128.

   Apex output monitoring did not work properly with Encore and Trinix 128 running Broadlinx 2.3 or earlier.

   Previously Apex (prior to 2.0) did NOT support output monitors at all - currently with version 2.0 and later, monitor outputs are only supported for the output in the same frame.

5. CR 65802 - For VI / HI-33120 boards, the CPLD software version is now shown on the Broadlinx web page used to monitor the board.

6. CR 66404 - Broadlinx boards were missing VRef interrupts. This was related to CR 64421.

7. CR 66568 - After adding a Trinix matrix to NetCentral, the IP address of the NetCentral PC is stored properly. After Trinix reboots this value was reversed in order of octets; because of this the trap was not sent after rebooting the Trinix Matrix.

8. CR 67206 - During a redundancy update between the primary and secondary NR control cards the IP address and target name were getting corrupted.

9. CR 67557 (Encore applications) - the Broadlinx controller sends "No-Xpt" status for initial status polls. It appears that the crosspoint bus has not received confirmation on all crosspoints for the first few seconds after the Broadlinx controller starts up. Therefore when connected to an Encore system it initially returns "No-Xpt" when polled for status until the refresh cycle establishes the cross-point confirmation. This has been corrected.

10. CR 68307 - When performing a GetNext on gvgTtCfgTable, no value is returned from Trinix SNMP. This has been corrected.

11. CR 69255 - The message "unknown message token 16" is printed on the Broadlinx console when a Trinix is controlled by Encore and a Concerto or Acappella router is also on the same network. This message is printed any time the status changes on the Concerto or Acappella as a result of a broadcast CPL ISSUE message. This message is now suppressed.

12. CR 69294 - The mirror Broadlinx card reports that the SNMP is enabled without activating the SNMP Agent. This has been corrected.

13. CR 69308 - When NetConfig discovers the Broadlinx card it now returns the software version.

14. CR 69404 - Trap var bind OID mismatch in Trinix Fan Error Trap Type. AS matrix Fan Id and matrix Fan Name varbinds have a bad OID in matrix frame fan Trap; this should contain index-sub OID.

Release 2.3

Enhancements

1. Broadlinx support for TRX-VI-33100 and TRX-HI-33100 input boards.

Problems corrected

1. CR 60072 - A customer using an SMS7000 to control a 256 x 256 Trinix (DV-33256) reported that sending configuration data to the MCPU caused the SMS to drop control of the router, and that communications could be reestablished by resetting the MCPU. This problem has been corrected.

2. CR 63790 - NR-33000 FPGA timing problem was causing interruptions in output monitoring signal. This has been fixed.

3. CR 63490 - Encore version 1.7.0 now supports Output expansion frames above 512 outputs.

4. CR 63532 - Setting the time on the Broadlinx web page now sets the system time as well.

Known Issues

1. Web tools such as NetConfig cannot be used to install Release 2.3. The new software can only be installed using a compact flash module.

2. Trinix Planning and Installation manuals with part numbers 071-8276-04 and below have incorrect descriptions as follows:

   a. When setting the output monitor address in output-expanded systems, the correct procedure is to set the output monitor address rotary switch on *all* chassis to the highest output number for the *system*.

   b. The specifications for the HI-33110 Input Board indicate an automatic equalization range of 300 meters. This should read “100 meters.”

   c. The description of output reclocker dipswitch settings implies that these adjustments were not available for HO-33120 SD / HD Output Boards. In fact, the adjustments are available.

Release 2.2.2

Enhancements

None.

Problems corrected

1. This release provides FPGA code that matches the FPGA code now shipping on SR-33500 boards. (SR-33500 boards are used only on 512 x 512 routers).

2. Switches may be statused even though no switch took place, where a) the problem is solved by activating the secondary NR-33000 Broadlinx board, and b) the following error message is displayed on the console port:

```
0xalbcda44 (tFieldTake):xptTake (xtpLib.C line 533):
errno=0x1f60003
```

   This problem has been fixed. (CR 54470)

3. A continual debug message may appear on the Console port as follows:

```
“SetOutputMonitor(),
 Monitor 0,
 Output 301 ...”
```

   This problem has been fixed. (CR 54937)

Release 2.2.1

Enhancements

1. Output boost control is now provided for individual HO-33120/33121 high-definition universal output boards.
2. Broadlinx can now be updated via NetConfig.

Problems corrected

1. Sync selection is now sent to HD-33120.
2. "NO XPT" status indication when interfacing Encore to Trinix. The problem appears when switching an input from 129-256 to an output from 1-128; in this case the Encore router status indicates "NO XPT" everywhere except the LRP (Local Router Panel), which shows the correct status. (CR 50177)
3. Incorrect router status was displayed on panels, LRP, and router controller status screen (Trinix/Apex issue). (CR 46803)
4. Breakaways were randomly displayed on control panels sometime after an all-level-task was executed.
5. False Breakaway was indicated.
6. Corrected NR-33000 statistical error reporting (manufacturing/test issue).
7. Software modified to support write protect on/off for new flash part (manufacturing issue)

Release 2.2.0

Enhancements

1. Support is now provided for crosspoint bus connection and control of the Apex digital audio router.
2. Support is now provided for SNMP.
3. Support is now provided for Encore control system version 1.6.5.1.

Logged problems corrected

1. CR 47337 - inappropriate switchover from primary NR-33000 board to secondary board has been corrected.
2. CR 46092 - discovery of NR-33000 on LAN using NetConfig application is more reliable.

Release 2.1.1

Logged problems corrected (all Trinix routers)

1. For all types of Output Cards, corrected the problem where the last Take's action (within a group of Takes) was delayed an additional VIT period. This caused the output enable transition to occur one VIT after the switch in the DM-33512 Matrix Boards (for the last Take).

Logged problems corrected (DV-33512 routers)

1. In the DM-33512 Matrix board, fixed intermittent problem of detecting the presence of input cards within the frame. This was sporadically causing Takes to not be confirmed.
2. The RP-33500 would report a low 3.3 V supply when no cards were present (for example, frame number 2 in an input-expanded system).

Logged problems corrected (All Trinix routers with Encore control)

1. On rare occasions, when the NR-33000 card was activated, the NR's XPT bus controller would not become active. This has been corrected.

Logged problems corrected (HO-33120 boards only)

1. The monitor switch on the RP-33500 set the monitor output to 1536 when in the 1024 position, and 1024 when in the 1536 position.

Release 2.1

Enhancements (all Trinix routers)

1. Encore release 1.6.1 is supported, including NR-33000 redundancy.
2. The left hand Device pane in the NetConfig application now reports the target name of the router instead of the matrix size.
3. The Firmware Update status display has been improved.
4. The router can now be restarted after updates without cycling power or re-seating cards.
5. The new Trinix HO-33120 HD/SD Output Board with multi-rate reclocker is now supported.

Enhancements (DV-33512 routers)

1. The router no longer requires repowering when changing the frame number.

2. The system now reports the CPLD code versions running on the DM-33512 cards.

Logged problems corrected (all Trinix routers)

1. Fixed SMS 7000 board add messages for “SR types” and “Input types” – Extra messages were getting displayed when an SR-TYPE board was discovered.

2. The system update process would occasionally halt when 99% complete. This has been corrected.

3. The upgrade process has been modified so that the system makes up to two attempts to update a board.

4. The Ethernet Monitor task has been removed from externally switched router configurations. (Broadlinx with Jupiter).

5. SMS 7000 commanded NR-33000 switchover (active NR-33000 to inactive NR-33000) is disabled during a firmware upgrade.

6. The web firmware management page and device information page both show the revision levels in decimal.

7. SMS / Encore - The In Use LED now reports the correct status when the activate button is pressed.

8. Settings for the Reclock / Bypass switches on the HO-33110 are now consistent with those for the HO-33120.

Logged problems corrected (DV-33512 routers)

1. Invalid FPGA Overtemp alarms on the DM-33512 Matrix boards have been fixed.

2. Spurious +2.5 volt power supply alarms have been fixed.

3. The web page graphics for the DV-33512 have been corrected to show the “B” and “C” power supplies in the correct position.

4. Resolved an issue where upon power-up, some DM-33512 Matrix boards would not recognize frame properly causing the card to not function correctly.

5. Corrected a problem wherein input card presence detection would fail intermittently causing “no confirm” messages during Takes.

Known Issues

1. The Trinix web pages contain two representations of the Trinix frame, a tree view on the left and a graphical view on the right. The design of the web pages is such that a browser Refresh (via the menu Refresh, toolbar icon, or F5 key) returns the user to the Trinix home page. To facilitate refresh of only certain views a “Refresh” button has been added to many of the web pages. In some cases this results in the two views being out of sync. The most recently refreshed view should always be correct. The views can be re-synchronized with a browser Refresh (menu, toolbar, or F5). The user will then need to navigate back to the desired web page.

Protected Paths

Overview

The protected path function is designed to monitor router outputs that are feeding critical downstream equipment and, in the event of signal loss, automatically select the output that is carrying the same signal and trigger the system alarm.

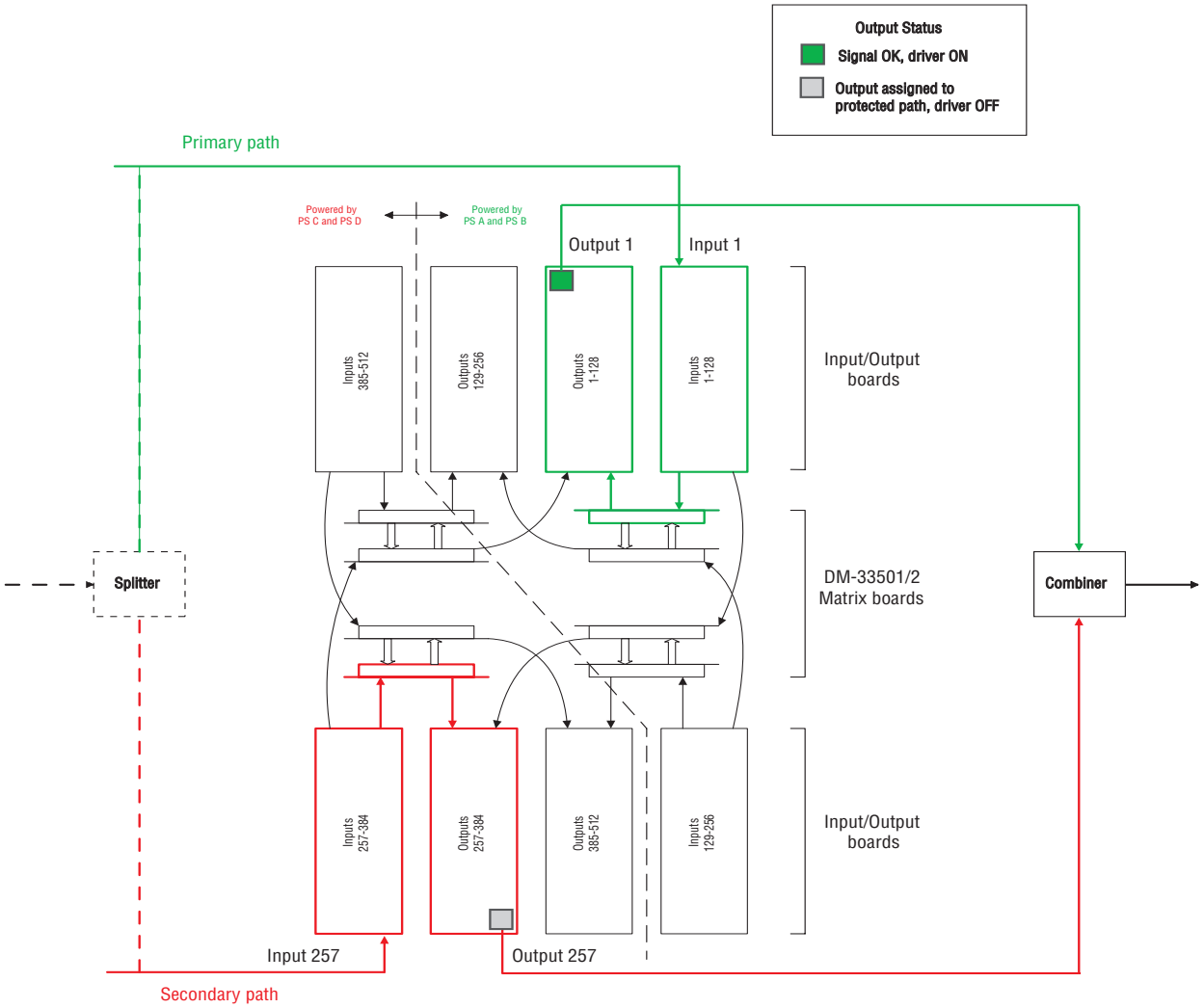
This function assumes the following:

- HO-33120 HD / SD Output Board(s) are providing the output signal(s) to be monitored. These boards allow individual outputs to be enabled or disabled using software controls.
- Protection is provided for *paths*, i.e., input / output *pairs*. The installer must identify critical outputs and an associated critical input for each. For redundancy, two paths must be defined: a “primary” path and a failover “secondary” path.
- Protected pairs should be hard wired to back-panel connectors that will provide the most independent possible paths through the router. For example, the two paths should use different input boards and different output boards. Depending on router size, the two paths may also be able to use different matrix boards and different power sources.
- For full redundancy, two copies of each protected *input* must be wired to the router. For example, the master control switcher output could be sent through a passive splitter upstream of the router. One copy is used for the primary path, and the other for the secondary path. If an upstream splitter is used, steps must be taken to boost the gain for the appropriate block of inputs (as described in the Trinix manual).
- The primary output and the secondary output must be wired to a passive combiner, the output of which is connected to the downstream equipment. The protected path software will automatically boost individual outputs as needed for proper gain level through the splitter. Outputs not configured for protected path operation should be set for gain levels as described in the manual. (The protected path software will override the manual settings as needed.)
- The control system (e.g. Encore or Jupiter) must be operated so that the secondary path is always ready to provide a copy of the protected signal. For example, the operator would switch the Master Control output to the transmitter on the primary path; the control system would then switch the secondary path automatically. For more information, see *Jupiter Configuration* on page 30 or *Encore Configuration* on page 26.

Figure 1 shows an example of a DV-33512 router with a pair of protected paths.(Depending on system requirements, the upstream splitter may or may not be needed.) The signal detector monitors the primary path and if

necessary will disable the primary path output driver and enable the secondary path output driver. Notice that the two paths use independent sets of hardware.

Figure 1. Example of protected paths for DV-33512 router



The following discussion describes the protected path planning process.

Implementation Process

Planning

Note The following discussion is based on a “1-based” numbering scheme. If you are using a “zero-based” numbering system, subtract “1” from all instances of input/output numbers.

DV-33512

The recommended protected path ranges for DV-33512 routers are as follows:

Table 1.

Primary path		Secondary path	
Output	Input	Output	Input
1-128	1-128	257-384	257-384

For example, to protect an output in the range 1-128, choose a corresponding input in the range 1-128; this will be the primary path. For the secondary (failover) path, choose an output in the range 257-384 and a corresponding input in the range 257-384.

Alternatively, the high-range of connectors can be used for the primary path and the low range for the secondary path, as shown in Table 2:

Table 2.

Primary path		Secondary path	
Output	Input	Output	Input
257-384	257-384	1-128	1-128

Using either of these schemes will provide the most independent possible paths through a DV-33512, i.e., the primary path will use one set of input, matrix, and output boards connected to one power source while the secondary path will use a different set of boards connected to a different power source.

Note that for a DV-33512 router the maximum number of protected paths is 256.

A more detailed example is shown in Table 3. This table shows a sequential wiring scheme for a system yet to be installed or a system where cables will be re-arranged in a symmetrical pattern in order to simplify protected path configuration.

Table 3. DV-33512 protected paths (example of sequential numbering)

Primary path				Secondary path			
Out		In		Out		In	
Name	No.	Name	No.	Name	No.	Name	No.
AirPP	1	MCPP	1	AirSP	257	MCSP	257
Sat1PP	2	StuAPP	2	Sat1SP	258	StuASP	258
Sat2PP	3	StuBPP	3	Sat2SP	259	StuBSP	259
	.		.		.		.
	.		.		.		.
	.		.		.		.
NetPP	256	MainPP	256	NetSP	512	MainSP	512

The numbers shown here correspond to the connector numbers used during router configuration (but not, in most cases, to the actual silkscreen number on the rear panel itself since the silkscreen numbers only run from "1" to "32.")

In Jupiter-controlled systems, the "Name" in these tables corresponds to the "logical input / output name" and the entries in the number column correspond to the "physical" input / output number.

The next example applies to existing systems where re-arrangement of cables in a sequential pattern is not practical or desirable:

Table 4. DV-33512 protected paths (example of non-sequential numbering)

Primary path				Secondary path			
Out		In		Out		In	
Name	No.	Name	No.	Name	No.	Name	No.
AirPP	21	MCPP	12	AirSP	390	MCSP	265
Sat1PP	253	StuAPP	254	Sat1SP	413	StuASP	348
Sat2PP	109	StuBPP	98	Sat2SP	289	StuBSP	409
	.		.		.		.
	.		.		.		.
	.		.		.		.
NetPP	4	MainPP	256	NetSP	440	MainSP	454

Notice that in all cases the primary path I / O numbers are always in the 1-256 range while the secondary path I / O numbers are always in the 257-512 range.

DV-33256

Recommended protected path ranges for DV-33256 routers are as follows:

Table 5.

Primary path		Secondary path	
Out	In	Out	In
1-128	1-128	129-256	129-256

For example, to protect an output in the range 1-128, choose a corresponding input in the range 1-128; this will be the primary path. For the secondary (failover) path, choose an output in the range 129-256 and a corresponding input in the range 129-256.

This will provide the most independent possible paths through a DV-33256, i.e., the primary path will use one set of input, matrix, and output boards while the secondary path will use a different set of boards.

CAUTION With a DV-33256, it isn't possible to arrange completely independent paths, i.e., paths that use different power supplies. Protected path configuration for DV-33256 routers provides redundancy for matrix boards and input and output boards only.

Note that for a DV-33256 router the maximum number of protected paths is 128.

A more detailed example is shown in Table 6. This table shows a sequential wiring scheme for a system yet to be installed or a system where cables will be re-arranged in a symmetrical pattern in order to simplify protected path operation.

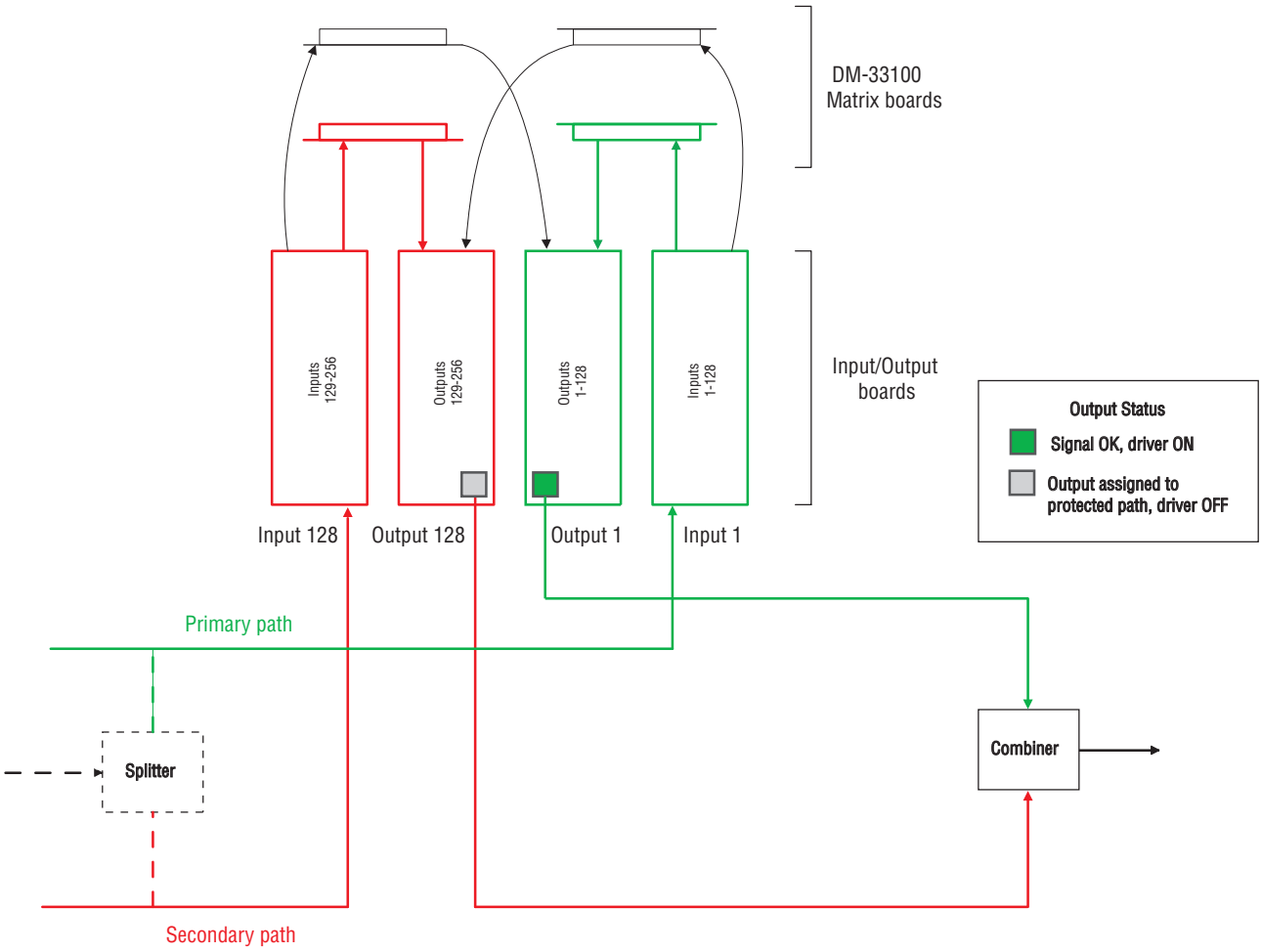
Table 6. DV-33256 protected paths (example of sequential numbering)

Primary path				Secondary path			
Out		In		Out		In	
Name	No.	Name	No.	Name	No.	Name	No.
AirPP	1	MCPP	1	AirSP	129	MCSP	129
Sat1PP	2	StuAPP	2	Sat1SP	130	StuASP	130
Sat2PP	3	StuBPP	3	Sat2SP	131	StuBSP	131
	.		.		.		.
	.		.		.		.
	.		.		.		.
NetPP	128	MainPP	128	NetSP	256	MainSP	256

The numbers shown here correspond to the connector numbers used during router configuration (but not, in most cases, to the actual silkscreen number on the rear panel itself since the silkscreen numbers only run from "1" to "32.")

In Jupiter-controlled systems, the “Name” corresponds to the “logical input/output name” and the number corresponds to the “physical” input/output number.

Figure 2. Example of protected paths for DV-33256 router



The next example applies to existing systems where re-arrangement of cables in a sequential pattern is not practical or desirable:

Table 7. DV-33256 protected paths (example of non-sequential numbering)

Primary path				Secondary path			
Out		In		Out		In	
Name	No.	Name	No.	Name	No.	Name	No.
AirPP	21	MCPP	12	AirSP	190	MCSP	165
Sat1PP	53	StuAPP	54	Sat1SP	133	StuASP	248
Sat2PP	109	StuBPP	98	Sat2SP	189	StuBSP	129
	.		.		.		.
	.		.		.		.
	.		.		.		.
NetPP	4	MainPP	56	NetSP	144	MainSP	145

Notice that in all cases the primary path I/O numbers are always in the 1-128 range while the secondary path I/O numbers are always in the 129-256 range.

DV-33128

Recommended protected path ranges for DV-33128 routers are as follows:

Table 8.

Primary path		Secondary path	
Out	In	Out	In
1-32	1-32	33-128	33-128
33-64	33-64	1-32, 65-128	1-32, 65-128
65-96	65-96	1-64, 97-128	1-64, 97-128
97-128	97-128	1-96	1-96

For example, to protect an output in the range 1-32, choose a corresponding input in the range 1-32; this will be the primary path. For the secondary (failover) path, choose an output in the range 33-128 and a corresponding input in the range 33-128.

This will provide the most independent possible paths through a DV-33128, i.e., the primary path will use one pair of input and output boards while the secondary path will use a different pair of boards.

CAUTION With a DV-33128, it isn't possible to arrange completely independent paths, i.e., paths that use different matrix boards and power supplies. Protected path configuration for DV-33128 routers provides redundancy for input and output boards only.

Note that for a DV-33128 router the maximum number of protected paths is 64.

A more detailed example is shown in Table 9. This table shows a sequential wiring scheme for a system yet to be installed or a system where cables will be re-arranged in a symmetrical pattern in order to simplify protected path operation.

Table 9. DV-33128 protected paths (example of sequential numbering)

Primary path				Secondary path			
Out		In		Out		In	
Name	No.	Name	No.	Name	No.	Name	No.
AirPP	1	MCPP	1	AirSP	33	MCSP	33
Sat1PP	2	StuAPP	2	Sat1SP	34	StuASP	34
Sat2PP	3	StuBPP	3	Sat2SP	35	StuBSP	35
	.		.		.		.
	.		.		.		.
	.		.		.		.
NetPP	64	MainPP	64	NetSP	128	MainSP	128

The numbers shown here correspond to the connector numbers used during router configuration (but not, in most cases, to the actual silkscreen number on the rear panel itself since the silkscreen numbers only run from "1" to "32.")

In Jupiter-controlled systems, the "Name" corresponds to the "logical input/output name" and the number corresponds to the "physical" input/output number.

The next example applies to existing systems where re-arrangement of cables in a sequential pattern is not practical or desirable:

Table 10. DV-33128 protected paths (example of non-sequential numbering)

Primary path				Secondary path			
Out		In		Out		In	
Name	No.	Name	No.	Name	No.	Name	No.
AirPP	21	MCPP	12	AirSP	33	MCSP	33
Sat1PP	53	StuAPP	54	Sat1SP	1	StuASP	1
Sat2PP	109	StuBPP	95	Sat2SP	96	StuBSP	64

Notice that I/O numbers conform to the ranges shown in Table 8.

Worksheet for Protected Path Implementation

Based on the preceding examples, specific primary and secondary paths should be identified and noted. The following worksheet is provided for this purpose.

Table 11. Protected paths worksheet

Primary path				Secondary path			
Output		Input		Output		Input	
Name	No.	Name	No.	Name	No.	Name	No.

System Wiring

Once the desired protected paths have been identified (using the above worksheet, for example), the appropriate input and output connections should be made to the router.

As discussed previously (page 12), protected path operation requires installation of downstream combiners. Upstream splitters may or may not be needed.

System Configuration

Broadlinx Web Page

The signal monitoring and failover process is controlled and monitored by the Broadlinx software that is executing on the NR-33000 Sync/NIC/OPM board.

The system wiring discussed above must be described using the Broadlinx "Paths" table. This table is part of the "Signals" group of tables. Figure 3 shows an example system where ten protected paths have been identified.

The "Primary" column is generated by the system and will automatically show the maximum number of outputs that can be protected. This example applies to a DV-33512 router, so the maximum number of protected paths is 256. However, the outputs from 129 to 160 are shown as "Output N/A" because they are not being provided by an HO-33120 output board. Signal presence is indicated by a **green output number**; loss of signal is indicated by a **red output number**.

The "Secondary" column is used to enter the corresponding secondary output number for each protected pair.

If the Trinix is set for Encore control (rear panel switch set to "INT XPT CNTL" = closed), these columns will automatically be shown as 1-based. If the Trinix is set for Jupiter control ("INT XPT CNTL" = open), these columns will automatically be shown as zero-based.

The "Status" column shows a **green status flag** when the primary path is enabled. A **yellow status flag** indicates that an error has been detected in the primary path and the secondary path has been selected.

A **red status flag** indicates that an error has been detected in both the primary output signal and the secondary output signal.

A **gray status flag** indicates that the output has already been assigned as part of a protected path.

A **black status flag** means that the output is not available because an HO-33120 board is not present in that slot.

The "**-1**" indicator means that the output is available for protected path operation but has not been assigned a secondary path.

The "Toggle" column can be used to change from primary to secondary or secondary to primary. In this case the "Toggle" box is checked and the "Enter" button selected.

All protected paths can be changed together by checking either the "Primary" or "Secondary" check box and selecting "Enter."

Figure 3. Broadlinx web page for protected path configuration (example)

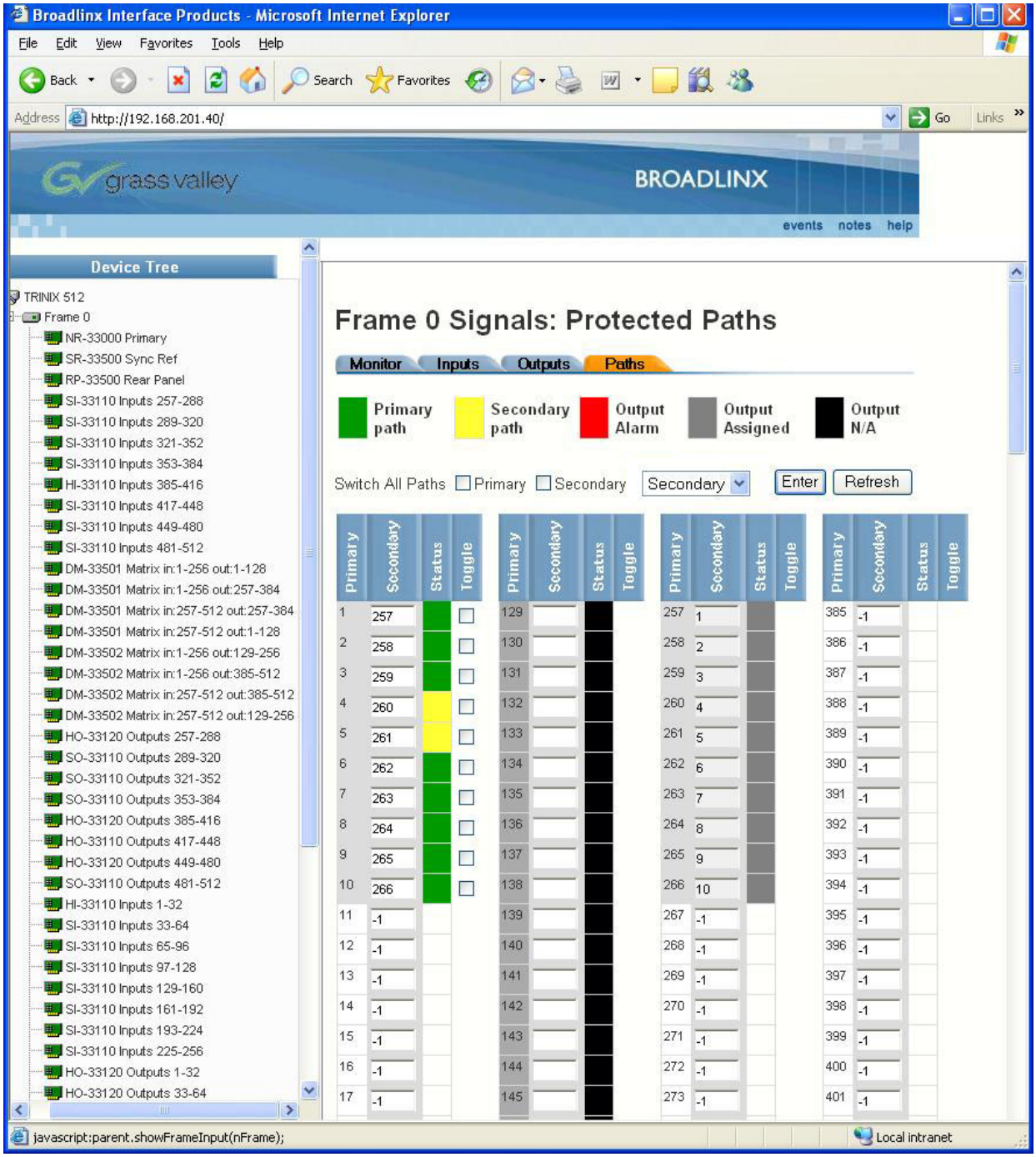
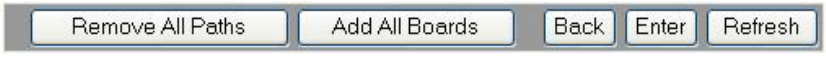


Figure 4. Command buttons on bottom of protected paths menu



Alarm Options Pull-down Menu

System Alarm Overview The Trinix system alarm is designed to monitor various router functions, including operation of fans, chassis power supplies, on-board power supplies, and primary vs. secondary Broadlinx board operation. The system alarm is connected to the LED on the front door of the router and the rear panel “Alarm” BNC connector. The system alarm has two modes: a “secondary” alarm mode, which illuminates the amber LED on the front door of the router; and a “primary” alarm mode, which illuminates the red LED on the door. A jumper on the Broadlinx board is normally set so that both alarm modes will also enable the rear-panel “Alarm” BNC connector. Additional information concerning the Trinix system alarm can be found in the Trinix manual.

Protected path alarms As described above, the protected path web page will indicate failure / changeover conditions using various colors and flags. The system alarm can also be triggered according to the selection made using the alarm pull-down box. Selections are as follows:

- No Alarms - protected path failure / changeover events will not trigger the system alarm. (Failure / changeover will still be indicated on the web page).
- Primary - failure / changeover on any primary path will trigger the system alarm.
- Secondary - failure / changeover on any secondary and primary path will trigger the system alarm.
- Any Alarm - failure / changeover on any protected path will trigger the system alarm. This is the default (and recommended) setting.

In the example shown in Figure 3, the two yellow flags indicate failures in two primary paths. Primary path output 4 has failed and the system is now using secondary path output 260 instead; and, primary path output 5 has failed and the system is now using secondary path output 261 instead. Because the alarm pull-down box is set to “secondary,” the system alarm will **not** be triggered in this example. However if one or more secondary paths were to fail, then an **amber** LED would seen on the front door; if the jumper described above is in the default position, an alarm condition would also be present on the rear panel Alarm BNC connector.

Auto-fill Editing Tool

When entering output numbers, a range of outputs can be assigned with a single command. The range can be indicated with a “Start,Stop” entry or a “Start+n” entry.

For example, at the Primary “12” row, in the “Secondary” field, entering “258,260” would result in the following assignments:

Table 12.

Primary	Secondary
12	258
13	259
14	260

Entering “258+2” would have the same result.

The auto-fill tool will not overwrite existing assignments.

Command Buttons

These buttons are located on the bottom of the protected paths menu.

Remove All Paths

This un-assigns all primary and secondary path links.

CAUTION Pressing the “Remove All Paths” button clears the table immediately. There is no “Undo” for this command.

Add All Boards

The “Add All Boards” button will automatically assign the first half of the router’s inputs as primary outputs and the second half as secondary outputs. In other words, the entire router would be configured for protected path operation.

For example, using Add All Boards on a DV-33512 router would assign output 1 as the primary path output with output 257 as the associated secondary path output; output 2 as the primary path output with output 258 as the associated secondary path output, etc.

Back

Returns to the Signals page.

Enter

Applies output number(s) just entered.

Refresh

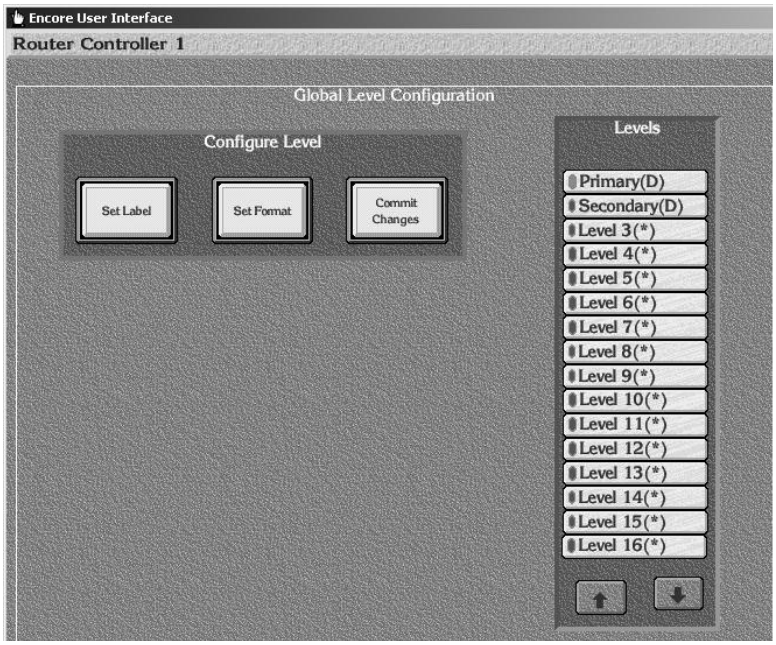
Checks router status and refreshes display.

Encore Configuration

When the router is controlled by Encore, protected path operation requires configuration as follows:

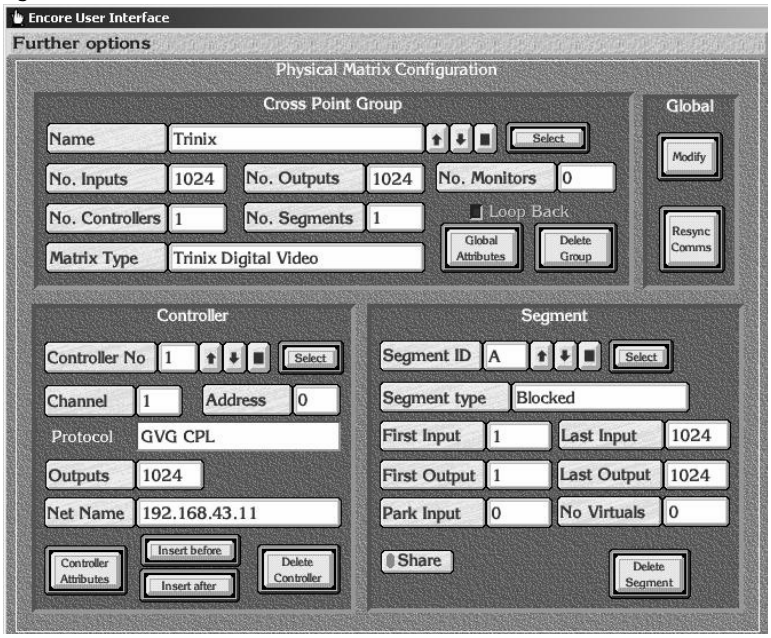
1. Create two levels (one for each of the primary and secondary paths):

Figure 5.



2. Create a Physical matrix for Trinix with a single, blocked segment:

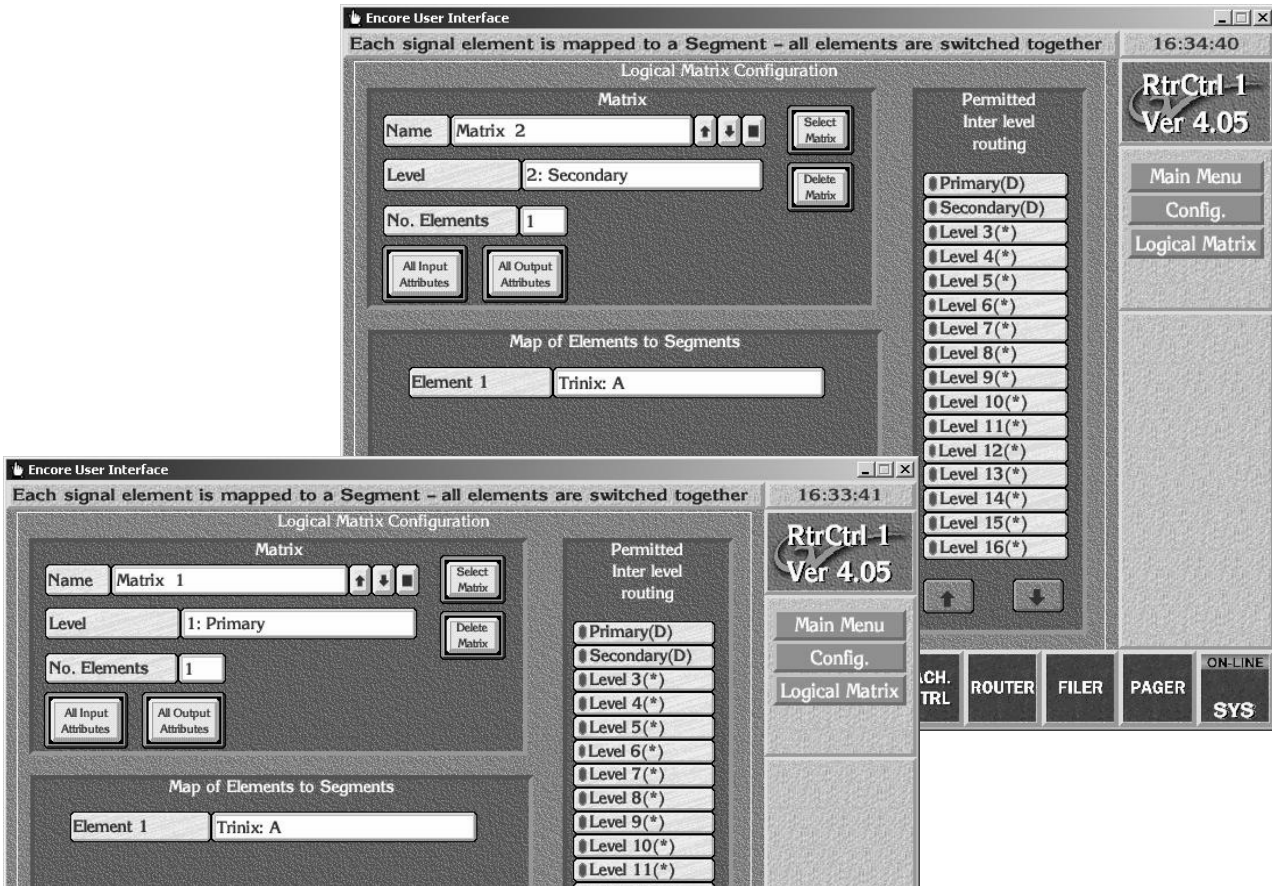
Figure 6.



3. Enable the Share option in the Segment configuration (this allows the segment to be shared across multiple logical matrices).

4. Create two logical matrices (one for each of the primary and secondary paths):

Figure 7.

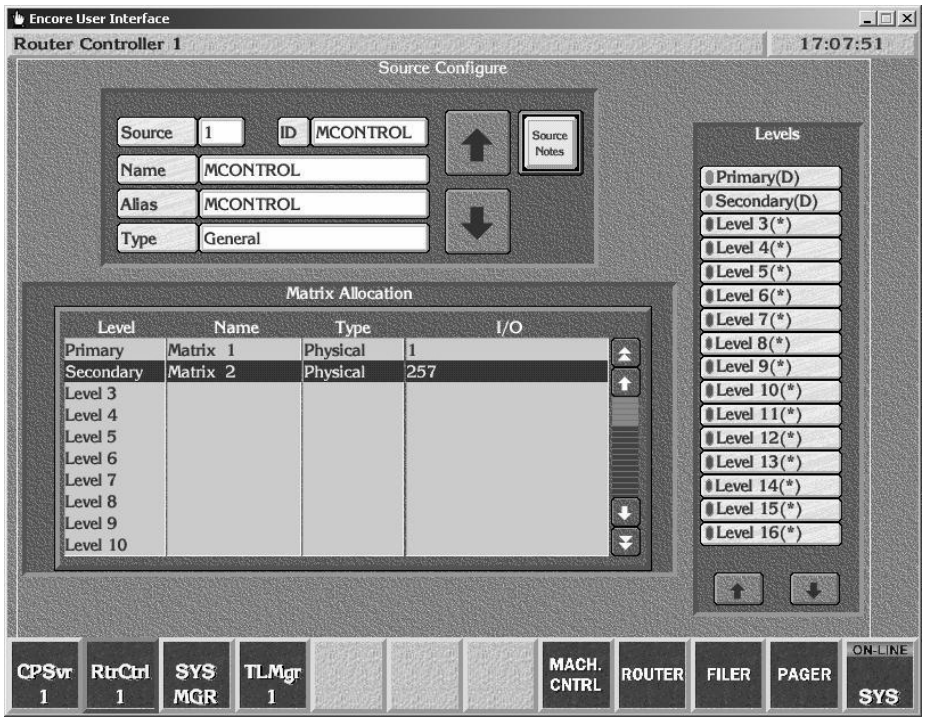


5. Assign one logical matrix to the primary level, assign primary logical matrix “Element 1” to be the Segment created in Step 2 above.

6. Assign the other logical matrix to the secondary level, assign secondary logical matrix “Element 1” to be the Segment created in Step 2.

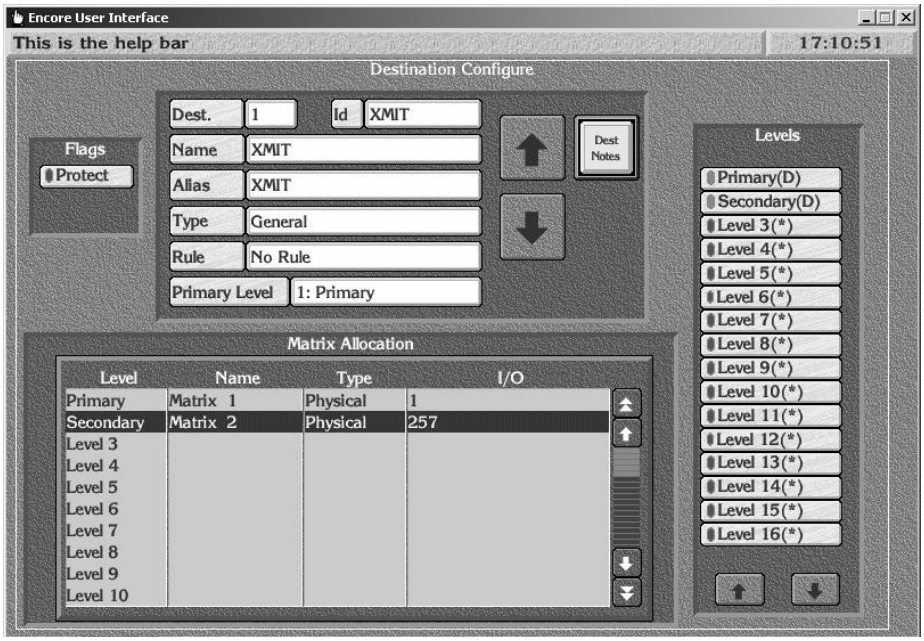
7. Using the Source Configure screen, select the desired source and enter the logical matrix names connector numbers for the primary and secondary levels on the selected source:

Figure 8.



8. Using the Destination Configure screen, select the desired destination and enter the logical matrix names and connector numbers for the primary and secondary levels on the selected destination:

Figure 9.



Note With Encore systems, there is no “follow” level locking function, i.e., it remains possible to inadvertently perform a breakaway switch.

Jupiter Configuration

As described earlier, the control system (e.g. Encore or Jupiter) must be operated so that the secondary path is always ready to provide a copy of the protected signal.

To simplify operation, a Jupiter control system should be configured so that the secondary path will be switched automatically, i.e., “follow” the primary path switch. This can be arranged using “logical level mapping,” where the primary paths are assigned to one logical level and the secondary paths to another logical level, but both logical levels are assigned to the same physical level. Special Switch Input and Switcher Output tables are then created for each of these levels.

For example, the station engineer may want to set aside a 32 x 32 block of a DV-33512 router for secondary path operation. This block would consist of a dedicated input board with inputs 257-288, and a dedicated HO-33120 output board with outputs 257-288.

Switcher Description Table

In the Jupiter Switcher Description table, a 480 x 480 block would be assigned to the “Primary” logical level, and assigned to physical level “1.” See Figure 10.

Figure 10.

Switcher Description

	Switcher	Level	VI	RV	MC	Board	#IN	#OUT	PLvl	Follow Level	Driver	3LI	3LO	Option	Audio	DM 400 Off Time
1	MAINROUT	PRIMARY	☑	☐	☐	CM1	512	512	1		Binary				None	
2	MAINROUT	SECONDAR	☐	☐	☐	CM1	512	512	1	PRIMARY	Binary					
3			☐	☐	☐											

The remaining 32 x 32 block would be defined as the “Secondary” logical level and also assigned to physical level “1.”

The “Follow” field for the Secondary level would list the name of the primary logical level. This will prohibit breakaway switching.

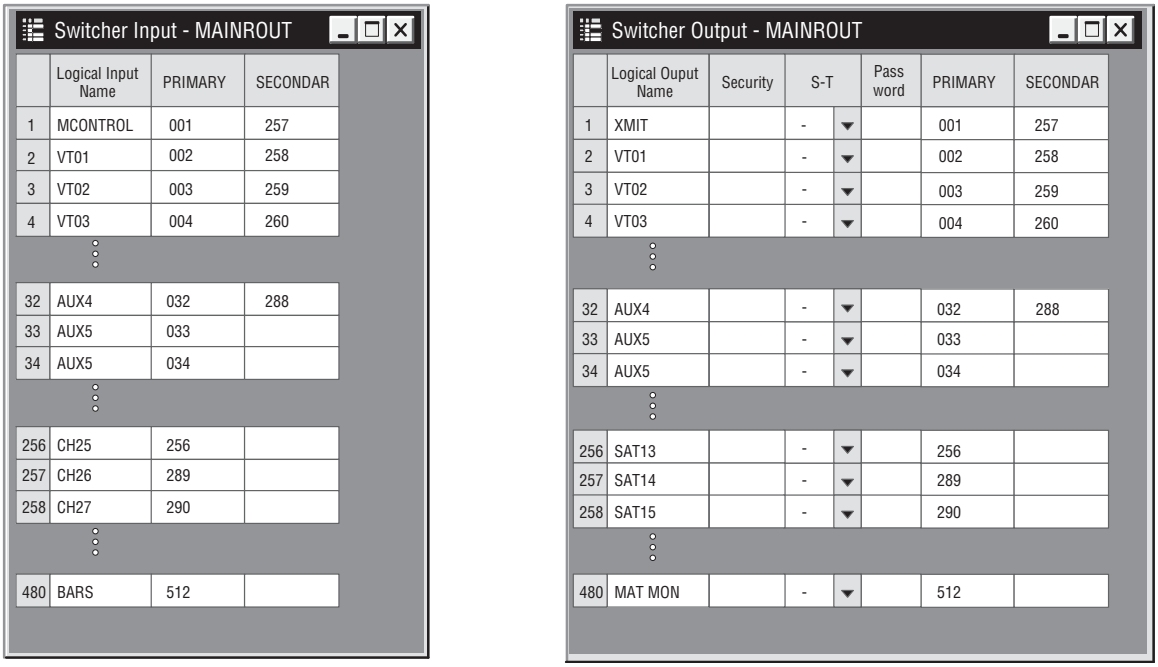
Note The “#IN / #OUT” shown in the Switcher Description table is the overall system size, i.e., in this example the entry would be 512 x 512 for both logical levels.

Switcher Input Tables

With two logical levels defined on the Switcher Description table, the Switcher Input and Switcher Output tables will automatically show a column for each level.

In order to perform two-level switching, Switcher Input tables and Switcher Output tables are used to describe the primary and secondary paths.

Figure 11.



Switcher Input - MAINROUT

	Logical Input Name	PRIMARY	SECONDAR
1	MCONTROL	001	257
2	VT01	002	258
3	VT02	003	259
4	VT03	004	260
32	AUX4	032	288
33	AUX5	033	
34	AUX5	034	
256	CH25	256	
257	CH26	289	
258	CH27	290	
480	BARS	512	

Switcher Output - MAINROUT

	Logical Ouput Name	Security	S-T	Pass word	PRIMARY	SECONDAR
1	XMIT		-		001	257
2	VT01		-		002	258
3	VT02		-		003	259
4	VT03		-		004	260
32	AUX4		-		032	288
33	AUX5		-		033	
34	AUX5		-		034	
256	SAT13		-		256	
257	SAT14		-		289	
258	SAT15		-		290	
480	MAT MON		-		512	

In this example, the Switcher Input table for the Primary level would list 480 inputs: 001 through 256 and 289 through 512. The Secondary level would list 32 inputs: 257 through 288.

The same logic would apply to Switcher Output tables.

In this configuration, selecting “XMIT” as an output and “MCONTROL” as an input will cause two switches to be made.

Finally, CP Input and CP Output Set tables would be used to tie Category / Number selections to the logical names of the desired inputs and outputs on both levels.

For more information about logical level mapping, refer to the Jupiter Installation and Operating manual.

Operation Notes

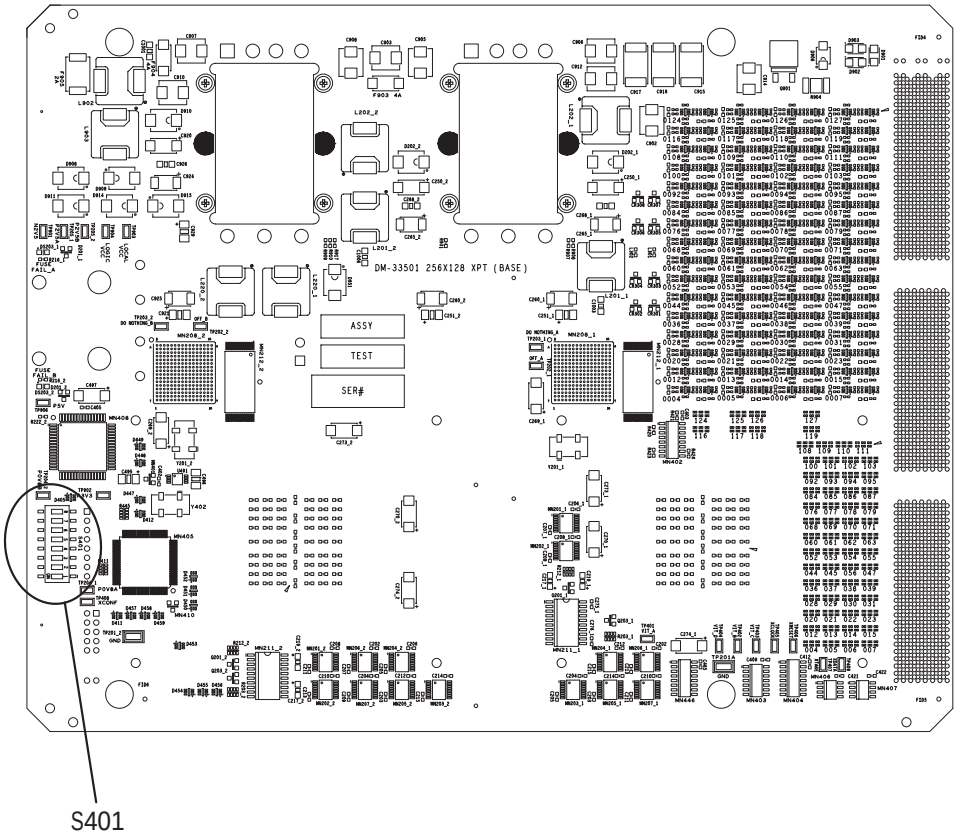
Jupiter Systems

CAUTION For Jupiter-controlled routers, replacing an HO-33120 output board that is part of a protected path scheme will cause a momentary loss of video on the **active** output. In other words, **video will be lost on the board not being replaced.**This interruption will continue for several seconds. Maintenance personnel should therefore plan on such replacement only when the protected output is not being used on air.

Input Equalization Settings (DV-33512 Models Only)

Recent versions of the DM-33512 Digital Matrix boards used in DV-33512 routers have additional input equalization for improved HD performance; these boards are identified with “Preemphasis Added” stickers on the J421 headers used to connect the two halves of the board. If these stickers are present, and you are upgrading to Broadlinx 2.4, DIP switches S401-7 and S401-8 (on both boards) should be set to “On;” if the stickers are not present, these switches should be set to “Off.” The remaining six switches on S401 are always set to “Off.” See Figure 12.

Figure 12. DM-33501 Digital Matrix board. DM--33502 is similar



Firmware Update

Note Web tools such as NetConfig cannot be used to install Release 2.4. The new software can only be installed using a compact flash module.

Note Certain steps of the following procedure will momentarily interrupt switcher operations. These steps are preceded by Caution statements.

Note Protected paths are not monitored during firmware updates. If the primary path fails during a firmware update, no fail-over switch will occur.

Note Certain DV-33512 systems will require DIP switch changes to operate properly with Release 2.4 software. For more information, see page 33.

This process is used to update firmware on any or all of the boards within a Trinix frame using a serial console port or Ethernet / Telnet connection.

The update is detailed in the following sections of this document:

A. Preliminary procedure.

B. Update Re-loader and Loader firmware on all boards within the frame.

C. Activate New Software and Restart Boards.

A. Preliminary Procedure

Note The steps in this Preliminary Procedure will not affect on-air operations.

1. Connect to the Trinix NR-33000 (Broadlinx) board via a console session on a PC. This can be done using a serial connection or an Ethernet / Telnet connection.

a. Serial connection method:

The serial method has the advantage of not requiring a reconnect after an NR-33000 reset.

On the back of the Trinix frame, there are two "Console" connections: one for the Primary NR slot (Console "A") and one for the Secondary NR slot ("Console B"). An RS-232 cable is used to connect to these ports as required during the following procedure.

COM 1 of the PC should be connected to Console A of the router.

If there are two NRs, a second cable should be used to connect COM 2 with Console B. (It is possible to use only one serial cable, but this requires moving the Trinix end of the cable back and forth between the Console A and Console B connectors during the upgrade.)

The COM ports should be configured as follows:

9600 baud

No Parity

8-Data Bits

1-Stop Bit

A Windows terminal program such as HyperTerminal should be used to interact with the NR-33000(s). If there are two NRs, two copies of HyperTerminal should be running: one for COM 1 / Console A / Primary, the other for COM 2 / Console B / Secondary.

b. Ethernet / Telnet connection method:

You must know the current IP address of the Broadlinx board(s) to use this method.

Open a Windows Command Prompt screen. At the prompt, enter:

```
telnet [IP address of the Broadlinx board]
```

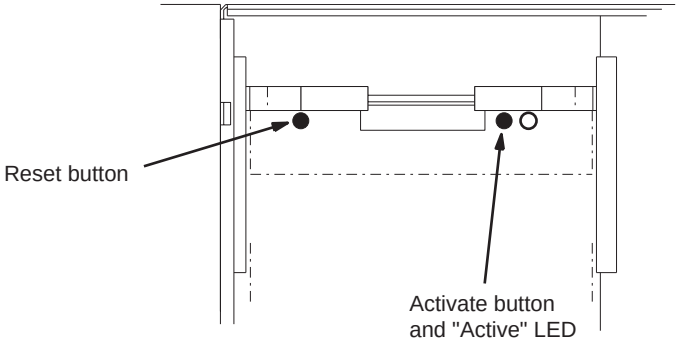
If you don't know the IP address of the board, and assuming the board has already been set up for access via a web browser, you should be able to use the browser to obtain this information. If for some reason the address isn't available from the browser, the Grass Valley NetConfig application can be used to discover the address.

For convenience, two copies of Telnet should be running: one for the Primary NR-33000 and one for the secondary.

2. If there are two NR-33000 boards present, you must be able to identify which is active. (The firmware update process MUST be performed through the **ACTIVE** NR-33000 card, because it has control of the Trinix "Com" bus.) This can be done either by checking the "Active" LED on the NR or by using the "boardShow" console command.

   a. The Active LED indicator, which is amber, is located next to the Activate push button. See Figure 13.

Figure 13. NR-33000 Broadlinx board (as positioned in DV-33512 chassis)



b. To use the boardShow console command, go to a console window and type:

```
boardShow
```

Typically the system will respond as follows:

```
Broadlinx NR33000 board:
    Frame Type: 0x1 128 X 128
    Frame No  : 0x0
    Level     : 0x01

Power Supplies : OK
    XPT Control : Internal
    XPT Drivers : Active
    COM Drivers:Active
```

["Active COM Drivers" confirms that this NR-33000 is active.]

```
     Primary card slot.
```

["Primary" indicates where this NR-33000 board is located.]

```
      Board Revision: B2 -
  CPU FPGA Revision: 02 B
Backplane detected:  00 No
    Switch S3 (RS):  12 2
Battery present and Charged 0B
value = 0 = 0x0
```

3. Install the provided compact flash memory module(s) in the NR-33000 memory slot(s) as follows:

a. If there are two NR-33000 boards, locate the inactive board. See Figure 14 and Figure 15.

Figure 14. Primary Broadlinx location (DV-33512 installation shown).

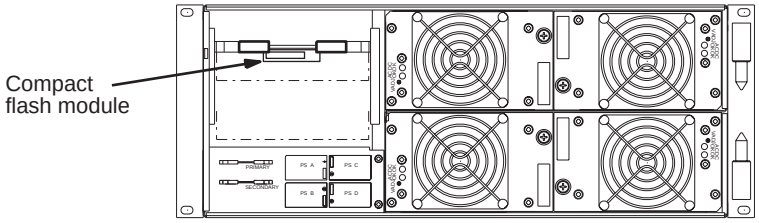
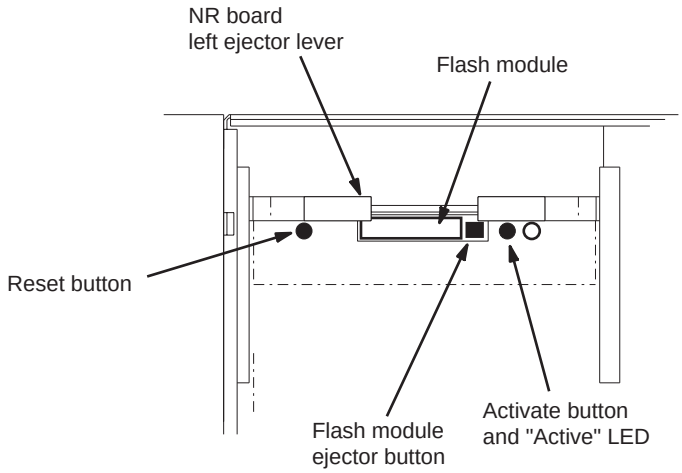


Figure 15. NR-33000 reset/activation controls.



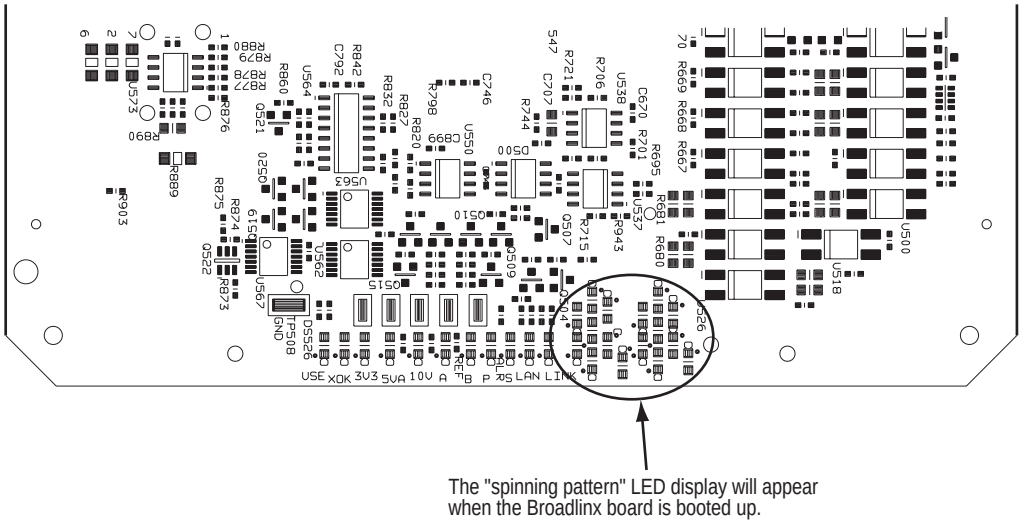
b. Remove the old flash module by pressing on the adjacent small square ejector button. You will need to move the left ejector lever slightly to allow the module to be removed.

c. If the on-board red Alarm LED comes on, wait until it goes off. Then insert the new flash module and seat it firmly.

d. Press the Reset button.

The boot process will take about 45 seconds, after which you will see a “spinning” pattern of the LEDs on the front edge of the board. See Figure 16.

Figure 16. Broadlinx board LEDs.



If the board does not reboot, pull out and re-seat the NR-33000 board. As the board is re-seated, keep the ejector levers spread apart and slide the board in until the levers make contact. The levers are then folded toward each other to seat the board.

e. If there are two NR boards, make the inactive NR-33000 active:

--Jupiter- and **Encore**-controlled systems - press the "Activate" button (see Figure 15). The "Active" LED indication will switch to this board. Note that a Secondary (amber) alarm will be asserted when the Secondary NR is active.

--SMS 7000-controlled system - use the SMS console command:

```
switchanc "name of configured anc"
```

...entering the quotation marks as shown. Or, press the "Reset" button on the **active** NR-33000 (see Figure 15). The "Active" LED indication will switch to the opposite board.

Note You may see error messages in console/telnet windows at this time because the router hardware is not yet fully updated. These messages can be ignored.

f. Return to Step 3 a above and install the memory module on the remaining NR-33000.

B. Re-loader and Loader Update

Note The following four steps, which apply to all Trinix units, will not affect on-air operations.

1. To update all the boards within the frame (except an active NR-33000 card):

   a. At the console window associated with the active NR-33000, type:

   ```
   sendLoader -1
   ```

Note If the window shows a continuous list of "Bad FPGA data" etc., messages, enter the task suspend command `ts tLogger` to halt the logger process. Then enter the sendLoader command.

   Typically the system will respond with the following console message; separate progress messages will be displayed for each board in the frame:

   ```
   Suspend Health Check
   Frame 00, Slot 08
   Send reloader to frame 0 slot 8 (class 2, type 4)
     100% done
   Send succeeded for frame 0 slot 8
   Send loader to frame 0 slot 8 (class 2, type 4)
     100% done
   Send succeeded for frame 0 slot 8
     100% done...
   ```

   ...etc. Progress will also be indicated by red LEDs illuminating on the boards as they are updated.

2. After the frame boards have been updated, update the inactive NR-33000 board:

   a. If the **inactive** NR is in the **Primary** slot, type:

   ```
   sendLoader 10,0,0
   ```

   b. If the **inactive** NR is in the **Secondary** slot, type:

   ```
   sendLoader 10,0,1
   ```

   Typically the system will respond with the following console message:

   ```
   Suspend Health Check
   Frame 00, Slot 01
   Send reloader to frame 0 slot 1 (class 2, type 10)
     100% done
   Send succeeded for frame 0 slot 1
   Send loader to frame 0 slot 1 (class 2, type 10)
     100% done
   Send succeeded for frame 0 slot 1
   100% done
   Frame 00, Slot 08 Release tributary bus
   Resume Health Check
   value = 0 = 0x0
   ```

3. Update the active NR-33000 card:

a. If the active card is in the Primary slot, type:

```
sendLoader 10,0,0
```

b. If the active card is in the Secondary slot:

```
sendLoader 10,0,1
```

Typically the system will respond with the following console message; separate progress messages will be displayed for the reloader, loader and firmware update.

```
Suspend Health Check
Frame 00, Slot 00
Send reloader to frame 0 slot 0 (class 2, type 10)
  100% done
Send succeeded for frame 0 slot 0
Send loader to frame 0 slot 0 (class 2, type 10)
  100% done
Send succeeded for frame 0 slot 0
20000123.154540: Firmware update requested for frame 0 slot 0
(class 2, type 10). (slaveDevice.cc:169)
  100% done
Frame 00, Slot 01 Release tributary bus
Resume Health Check
value = 0 = 0x0
```

4. Proceed to *Part C: Activating New Software and Restarting Boards* on page 42.

Part C: Activating New Software and Restarting Boards

This procedure will download new software to the various boards in the system and reboot boards as needed.

1. Log in to the Broadlinx web page for the NR board (if there are two NR boards, log in to the **active** board). Go to the Firmware Management menu.

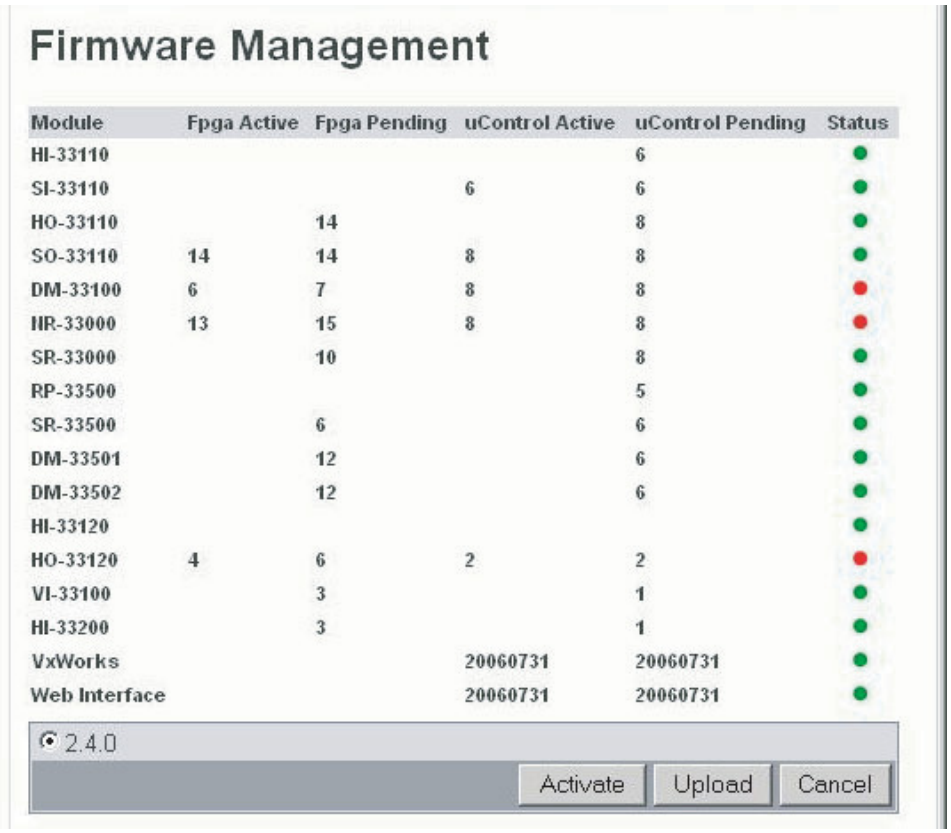
   If you have just reset the board, you may have to wait a moment for the web server software to start before you can log in.

Note If you are unfamiliar with procedures for displaying the Firmware Management menu, refer to Section 4 of the Trinix manual. If Adobe Acrobat Reader is installed on the PC, the Trinix manual can be displayed on line by clicking the “Help” command in the Broadlinx title bar.

Note The factory default login and password to reach the Firmware Management window are both “admin.”

The Broadlinx Firmware Management table displays the types of possible PC boards, the version of sub-level software that is presently associated with each type that is installed, the versions of top-level software packages present in the Broadlinx board, and the compatibility Status of these software elements. An example of this table is shown in Figure 17.

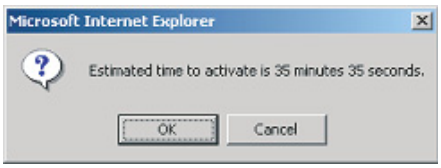
Figure 17.



Following Compact Flash Installation, some of the Status lights will most likely be red. This means that the software currently running in the module is different (older) than software just installed and that the new software should be activated as described below.

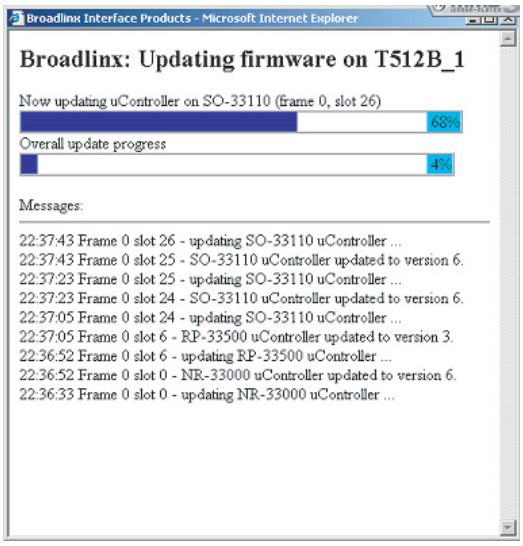
2. Select “Activate.”An “Estimated Time” display will appear:

Figure 18.



3. Select “OK.” A status window will appear:

Figure 19.



The new software will be copied from the NR-33000 to each board that requires update.* This process can take from several minutes to a half hour or more. Progress will be shown by the progress bars and by alarm LEDs on the boards themselves.

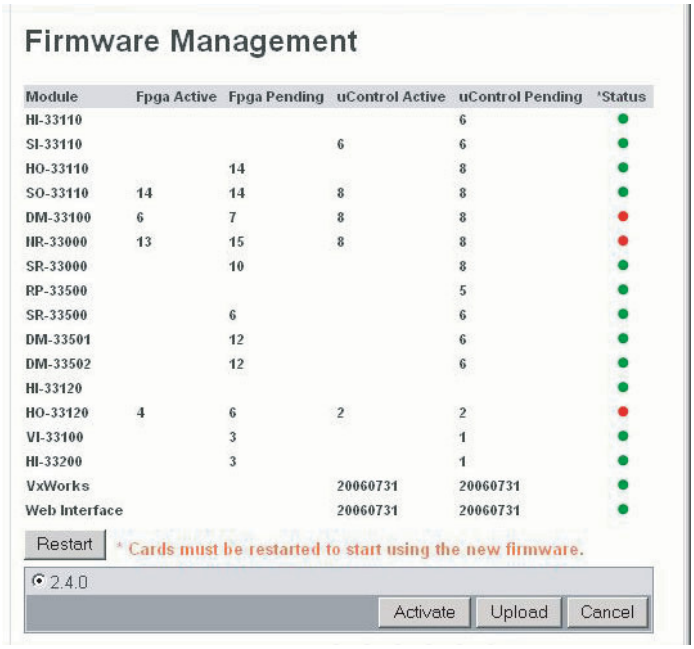
If the window is accidentally closed you can return by navigating to the home page of the Broadlinx card. The rest of the Broadlinx pages are not available while the update is in progress.

*Except for systems with two NRs; in these systems the NR performing the update will not install software on itself, as described below.

4. When the progress bars reach 100%, a “finished firmware update” message will appear and the Broadlinx web page will indicate “Post Complete.”

5. Select “Back” and navigate back to the Firmware Management menu. A “Restart” button will now appear near the bottom of the display. (The display may vary from that shown.)

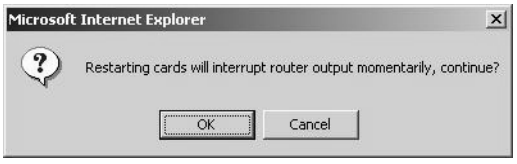
Figure 20.



6. Select Restart.

   The following popup will appear:

Figure 21.



CAUTION The following step will cause a momentary interruption to video passing through the router.

7. Select OK. The Post Complete popup will reappear.

8. If this is a **single** NR-33000 system go to Step 9. If this is a redundant NR system, go to Step 10.

9. Activating and Restarting the NR in a single NR system:

Note The Firmware Management page cannot be used to Restart an active NR.

CAUTION The following step will briefly interrupt sync to the router. If there is only one NR in the system, and a switch command is received while the NR board is unseated, the switch will not be synchronous.

CAUTION Encore-controlled systems: if for some reason there is only one NR board, switch commands cannot be executed while the NR board is unseated or rebooting.

a. Un-seat and re-seat the NR board.

b. After the NR has rebooted, go to the Firmware Management window. All Status lights should be green.

c. This completes the update procedure for a single NR system.

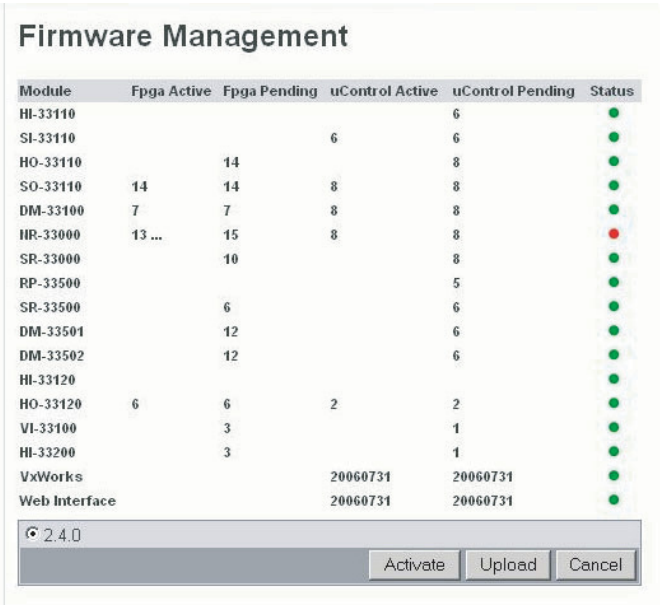
10. Updating the second NR in a **redundant** NR-33000 system:

a. Use the hardware button (shown on page 38) to switch the inactive NR-33000 to active mode.

b. Log in to the newly activated board and go to the Firmware Management window.

You may have to wait a moment for the web server software to start before you can log in.

Figure 22.



In the NR-33000 status line, the “dots” and the red light will indicate that the opposite (inactive) NR requires update.

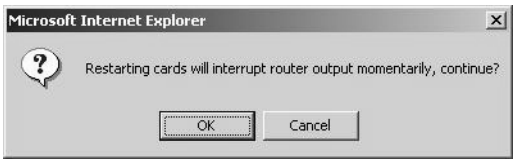
c. Select Activate. The estimated time popup will appear.

d. Select OK.

The new NR software will be copied from the active NR to the inactive NR. When the progress bars reach 100%, a “finished firmware update” message will appear and the Broadlinx web page will indicate “Post Complete.”

e. Return to the Firmware Management menu and select “Restart.” The following popup will appear:

Figure 23.



CAUTION The following step will cause a momentary interruption to video passing through the router.

f. Select OK.

g. The Post Complete window will reappear.

h. Select Back > Firmware Management. All Status lights should be Green.

i. (Optional) Switch the primary NR to active mode.

j. This completes the installation.