Technical Note

NV8500 v3.6.0 Release Notes

Overview

ECO 19229 releases NV8500 router applications and firmware that update control cards and IOXM[1] cards. The version assigned to this release is 3.6.0 and its build number is 2939.

This release addresses the following points:

Major Changes

1 Coherent switching

Coherent switching allows a certain number of video channels to switch simultaneously. It support 4K video signalling.

At present, NV9000 router control systems do not support coherent switching, although the NV8500 itself can respond to “coherent takes.”

2 Redundant crosspoint switchover logging.

3 Asynchronous Ethernet messaging

Control systems using NVEP can be notified of NV8500 router status changes rather than having to poll for changes. (Up to four NV9000 control systems can receive notification.)

4 “M3” output cards.

M3 output cards use M3 output backplane modules which connect to other cards using Grass Valley’s M3 cable. The M3 cable is available in 6 lengths up to 20 m.

Bugs Fixed

- [NV8500-1402] EM0687 AES card reported the wrong backplane module when working with the new EM0904 backplane module.
- [NV8500-1432] MRC System Status page incorrectly reported IOXM Status: “unhealthy module.”
- [NV8500-1433] In v3.5.0, when switching to the standby controller (in MRC) neither the Module Status or Module Types page would report the crosspoint cards.
- [NV8500-1444] Restore redundant crosspoint setting after a control card reset with a single EM0833 in frame.
- NV8500-1284, -1409, and -1423 were also resolved.

Known Issues

Many of these issues will be resolved in the next general release.

- [NV8500-1430] In an NV8576-Plus expansion frame, the EM0903 card is reported incorrectly in the ‘Module Types’ page of MRC.
- [NV8500-1365] Input Monitors are not working properly on NV8144.

1. IOXM is shorthand for Input, Output, Xpt, Monitor and essentially means any NV8500 card that can be read by a control card, in other words any card but a control card. However, the term IOXM does not (yet) apply to standard NV8500 cards.

- [NV8500-1346] NV8144 input monitors not switching as directed by MRC.

  This duplicates NV8500-1365 above.
- [NV8500-1344] Diagnostic tally fails on audio levels with garbage data in extended status.
- [NV8500-1314] Embedded Dolby E occasionally leaves router delayed by 8–15 lines.

  The problem has been found in:

  3Gig SDI EMB 16 COAX OUT
  3Gig SDI DEM/EMB 16 COAX OUT

  and has ***not*** been found in:

  3Gig SDI HYBRID 16 COAX OUT
  3Gig COAX 16 SDI / 2 TDM OUT
  Standard output cards of course
- [NV8500-1275] Serial protocols do not work in v3.3.0.

  Serial protocols were removed in v3.5.0.
- [NV8500-1235] The STD RED XPT EM0676-00 reports a comm error (88) when there is no comm error.
- [NV8500-1221] Audio break-in tally is incorrect if the [partition's] controller input start is not 1.
- [NV8500-1208] There are video glitches when a take is done between the Main and Expansion frames.
- [NV8500-1037] There are switching problems in a NV8576 expanded router when using an HRC288 [hybrid redundant crosspoint].

MRC Changes

There were no changes in MRC for version 3.6.0.

Requirements

The upgrade has certain requirements.

- A PC running MRC (version 3.5.0 or later).
- One or two EM0833 control cards for each router frame you intend to upgrade. (These cards are probably already in use at the site.)
- A boot ROM (IC), with SV1038-05A code, only for EM0833-20 control cards.
- All the firmware files available (on a memory stick or other suitable medium).

  NV8500_HYB_FW_3.6.0.2939.RF This is SV1052-47 (A1) of EM0833 firmware.

Firmware Notes

The following notes list the changes and bug fixes.

SV0938-1200

File Names: SV0938-1200.bit, .mcs

Supported Assemblies

- EM0687-01

  Versions prior to the one above support this code but will not report version information in MRC.

Key Features, Additions, or Changes for this Release

Added support for EM0904 (M3) rear.

SV1052-47 Rev A

NV8500 hybrid firmware

This is NV8500_HYB_FW_3.6.0.2939.RF — EM0833 Firmware — April 29, 2014; Version: 3.6.0.2939.

Length	Date	Time	DevType	NamePart#	Version
53633	04/29/14	8:14am	BOOT	BIN/BOOT	SV0000-00A EM0833Boot Apr 28 2014 16:54:44
832317	04/29/14	8:14am	APP0	BIN/APP0	SV0000-00A EM0833App Apr 28 2014 16:54:24
2969683	03/19/14	1:17pm	PLD0	PLD/PLD0	SV1033-15A EM0833PLD 8500 Frames, REL 12/19/13
3072085	03/19/14	1:17pm	PLD1	PLD/PLD1	SV1072-15A EM0833PLD 8500 Frames, REL 12/19/13
0	03/07/14	1:41pm	CPLD	SV105500A	SV1055-00A
0	03/07/14	1:41pm	CPLD1	SV105501	SV1055-01A
164015	04/29/14	8:14am	MTRX0	BIN/MTRX0	SV0000-00A EM0833Mtrx8144 Apr 28 201416:54:58
162719	04/29/14	8:14am	MTRX1	BIN/MTRX1	SV0000-00A EM0833Mtrx8280 Apr 28 201416:55:04
163383	04/29/14	8:14am	MTRX3	BIN/MTRX3	SV0000-00A EM0833Mtrx8576 Apr 28 201416:55:10
163449	04/29/14	8:14am	MTRX4	BIN/MTRX4	SV0000-00A EM0833Mtrx8576Plus Apr 28 201416:55:16
161631	04/29/14	8:14am	MTRX5	BIN/MTRX5	SV0000-00A EM0833Mtrx8140 Apr 28 201416:54:52
2330470	04/29/14	8:14am	OS	BIN/OS	SV0000-00A EM0833OS Apr 28 2014 16:55:23
4006296	03/07/14	1:41pm	IOXM0	SV0984-1301	EM0814, SV0984-13, Build: 1 NV8500 3Gig SDI DEM 8 COAX IN
5103005	03/07/14	1:40pm	IOXM1	SV0985-0600	EM0817, SV0985-06, Build: 0 NV8500 288X288 3Gig XPT HYBRID
7799500	03/07/14	1:40pm	IOXM2	MRC_SV1036-2000	EM0815, SV1036-20, Build: 0 NV8500 3Gig SDI EMB 16 COAX OUT
7769204	03/07/14	1:40pm	IOXM3	MRC_SV1056-1800	EM0815, SV1056-18, Build: 0 NV8500 3Gig COAX 16 SDI / 2 TDM OUT
4006296	03/07/14	1:41pm	IOXM4	SV1015-1301	EM0814, SV1015-13, Build: 1 NV8500 3Gig COAX 8 SDI / 1 TDM IN
4529126	03/07/14	1:40pm	IOXM5	SV1004-0700	EM0819, SV1004-07, Build: 0 NV8500 144X144 3Gig XPT HYBRID
232020	03/07/14	1:40pm	IOXM6	SV0825-1400	EM0785, SV0825-14, Build: 0 NV8500 3Gig SDI 18 COAX OUT

235176	03/07/14	1:41pm	IOXM7	SV0824-1401_EM0783	EM0783, SV0824-14, Build: 1 NV8500 3Gig SDI 9 COAX IN
235840	03/07/14	1:40pm	IOXM8	SV0854-1301	EM0662, SV0854-13, Build: 1 NV8500 288x288 3Gig XPT STD
235860	03/07/14	1:40pm	IOXM9	SV0975-1100	EM0678, SV0975-11, Build: 0 NV8500 144x144 3Gig RED XPT STD
210600	03/07/14	1:40pm	IOXM10	SV0917-2200_EM0799	EM0799, SV0917-22, Build: 0 NV8500 144X144 3Gig XPT STD
210600	03/07/14	1:40pm	IOXM11	SV0917-2200_EM0894	EM0894, SV0917-22, Build: 0 NV8500 144X144 3Gig XPT STD
210600	03/07/14	1:40pm	IOXM12	SV0917-2200_EM0895	EM0895, SV0917-22, Build: 0 NV8140 144x144 3Gig RED XPT STD
229372	03/07/14	1:40pm	IOXM13	SV0935-1100	EM0676, SV0935-11, Build: 0 NV8500 288x288 3Gig RED XPT STD
236232	03/07/14	1:41pm	IOXM14	SV0960-1400_EM0783	EM0783, SV0960-14, Build: 0 NV8144 3Gig SDI 9 COAX IN
235840	03/07/14	1:40pm	IOXM15	SV1108-1101	EM0785, SV1108-11, Build: 1 NV8500 HD SDI 18 COAX OUT
231608	03/07/14	1:41pm	IOXM16	SV1110-1400_EM0783	EM0783, SV1110-14, Build: 0 NV8500 HD SDI 9 COAX IN
235840	03/07/14	1:40pm	IOXM17	SV1109-1000	EM0785, SV1109-10, Build: 0 NV8144 HD SDI 18 COAX OUT
207212	03/07/14	1:40pm	IOXM18	SV1111-1000	EM0783, SV1111-10, Build: 0 NV8144 HD SDI 9 COAX IN
235840	03/07/14	1:41pm	IOXM19	SV0961-1000	EM0785, SV0961-10, Build: 0 NV8144 3Gig SDI 18 COAX OUT
235840	03/07/14	1:41pm	IOXM20	SV0826-1200	EM0787, SV0826-12, Build: 0 NV8500 3Gig SDI 9 COAX OUT+EXP
235840	03/07/14	1:41pm	IOXM21	SV1112-1000	EM0787, SV1112-10, Build: 0 NV8500 HD SDI 9 COAX OUT+EXP
235840	03/07/14	1:41pm	IOXM22	SV0977-1200	EM0697, SV0977-12, Build: 0 NV8500 3Gig SDI 18 FIBER OUT
235840	03/07/14	1:40pm	IOXM23	SV1113-1000	EM0692, SV1113-10, Build: 0 NV8500 3Gig SDI EXP FILLER OUT
341600	03/07/14	1:40pm	IOXM24	SV0939-1100	EM0688, SV0939-11, Build: 0 NV8500 AES ASYNC 18 OUT
235840	03/07/14	1:41pm	IOXM25	SV0978-1000	EM0695, SV0978-10, Build: 0 NV8500 3Gig SDI 9 FIBER OUT+EXP
235840	03/07/14	1:41pm	IOXM26	SV0976-1000	EM0693, SV0976-10, Build: 0 NV8500 3Gig SDI 9 FIBER IN
341600	04/15/14	12:58pm	IOXM27	SV0938-1200	EM0687, SV0938-12, Build: 0 NV8500 AES ASYNC 9 IN
235840	03/07/14	1:40pm	IOXM28	SV0872-1101	EM0663, SV0872-11, Build: 1 NV8500 3Gig SDI 2 Monitor
3968228	03/07/14	1:41pm	IOXM29	SV1088-0015	EM0869, SV1088-00, Build: 15 NV8500 3Gig XR SDI DEM 8 COAX IN
3240140	03/07/14	1:40pm	IOXM30	SV1089-0001	EM0869, SV1089-00, Build: 1 NV8500 3Gig XR COAX 8 SDI / 1 TDM IN
6880152	03/07/14	1:40pm	IOXM31	SV1082-0800	EM0816, SV1082-08, Build: 0 NV8500 3Gig SDI EMB 8 COAX OUT+EXP
6738412	03/07/14	1:41pm	IOXM32	SV1083-0800	EM0816, SV1083-08, Build: 0 NV8500 3Gig COAX 8 SDI / 1 TDM OUT+EXP
3120264	03/07/14	1:40pm	IOXM33	SV1095-0700	EM0816, SV1095-07, Build: 0 NV8500 3Gig HYBRID OUT+EXP FILLER
5347977	04/24/14	1:43pm	IOXM34	MRC_SV1092-0300	EM0818, SV1092-03, Build: 0 NV8500 288X288 3Gig RED XPT HYBRID

424099	04/24/14	1:43pm	IOXM35	SV1094-0400	EM0818, SV1094-04, Build: 0 NV8500 288X288 3Gig RED XPT HYBRID
4527051	03/07/14	1:40pm	IOXM36	SV1114-0301	EM0820, SV1114-03, Build: 1 NV8500 144X144 3Gig RED XPT HYBRID
227820	03/07/14	1:41pm	IOXM37	SV1115-0302	EM0820, SV1115-03, Build: 2 NV8500 144X144 3Gig RED XPT HYBRID
235840	03/07/14	1:40pm	IOXM38	SV1138-0101	EM0887, SV1138-01, Build: 1 NV8140 3Gig SDI 18 COAX IN
4566094	03/07/14	1:41pm	IOXM39	SV1164-0200_EM0899	EM0899, SV1164-02, Build: 0 NV8500 144X144 3Gig XPT HYBRID
4566094	03/07/14	1:41pm	IOXM40	SV1164-0200_EM0900	EM0900, SV1164-02, Build: 0 NV8140 144X144 3Gig RED XPT HYBRID
3996376	03/07/14	1:41pm	IOXM41	SV1162-0102	EM0898, SV1162-01, Build: 2 NV8140 3Gig SDI DEM 18 COAX IN
3996376	03/07/14	1:40pm	IOXM42	SV1163-0102	EM0898, SV1163-01, Build: 2 NV8140 3Gig COAX 16 SDI / 2 TDM IN
235840	03/07/14	1:41pm	IOXM43	SV1159-0100	EM0887, SV1159-01, Build: 0 NV8140 HD SDI 18 COAX IN
235840	03/07/14	1:40pm	IOXM44	SV1169-0100	EM0892, SV1169-01, Build: 0 NV8140 3Gig SDI 18 FIBER IN
235840	03/07/14	1:40pm	IOXM45	SV1149-0200	EM0896, SV1149-02, Build: 0 NV8500 288x288 3Gig XPT STD
13756032	03/07/14	1:41pm	IOXM46	MRC_SV1126-1902	EM0878, SV1126-19, Build: 2 NV8500 3Gig SDI DEM/EMB 16 COAX OUT
235176	03/07/14	1:41pm	IOXM47	SV0824-1401_EM0902	EM0902, SV0824-14, Build: 1 NV8500 3Gig SDI 9 COAX IN
236232	03/07/14	1:41pm	IOXM48	SV0960-1400_EM0902	EM0902, SV0960-14, Build: 0 NV8144 3Gig SDI 9 COAX IN
231608	03/07/14	1:41pm	IOXM49	SV1110-1400_EM0902	EM0902, SV1110-14, Build: 0 NV8500 HD SDI 9 COAX IN
4006296	03/07/14	1:41pm	IOXM50	SV1172-0401	EM0903, SV1172-04, Build: 1 NV8500 3Gig SDI DEM 8 COAX IN
4006296	03/07/14	1:41pm	IOXM51	SV1173-0401	EM0903, SV1173-04, Build: 1 NV8500 3Gig COAX 8 SDI / 1 TDM IN
6878208	03/07/14	1:40pm	IOXM52	SV1174-0800	EM0816, SV1174-08, Build: 0 NV8500 3Gig SDI DEM/EMB 8 COAX OUT+EXP
10960900	04/04/14	2:43pm	IOXM53	SV1123-0401	EM0886, SV1123-04, Build: 1 NV8500 3Gig SDI FRAMESYNC 8 COAX IN
391240	03/07/14	1:41pm	IOXM54	SV1189-0100	EM0919, SV1189-01, Build: 0 NV8500 288x288 3Gig RED XPT STD
424079	03/07/14	1:40pm	IOXM55	SV1190-0100	EM0919, SV1190-01, Build: 0 NV8500 288x288 3Gig RED XPT STD
4250631	03/07/14	1:41pm	IOXM56	SV1187-0101	EM0920, SV1187-01, Build: 1 NV8500 144X144 3Gig RED XPT STD
227916	03/07/14	1:40pm	IOXM57	SV1188-0101	EM0920, SV1188-01, Build: 1 NV8500 144X144 3Gig RED XPT STD
232324	03/07/14	1:40pm	IOXM58	SV1203-0000	EM0785, SV1203-00, Build: 0 NV8500 3Gig SDI 16 M3 / 2 COAX OUT
0	03/07/14	1:41pm	ROM	SV103804	SV1038-04A EM0833ROM Oct1 2010 09:37:32
0	03/07/14	1:41pm	ROM1	SV1038-05	SV1038-05A EM0833ROMJun 10 2011 11:40:33
72088	03/07/14	1:41pm	APP	MADI_APP	SV1073-06AVersion 6.1.0.58
8382	03/07/14	1:41pm	BOOT	MADI_BOOT	SV0770-01A0 Version 1.2.0.0
1484404	03/07/14	1:41pm	PLD	MADI_FROM_AA	SV1066-04A0; NV8900-AA->MADI

```
1484404   03/07/14  1:41pm    PLD     MADI_FROM_AES      SV1066-02A0; NV8900-AES(Coax)-
                                                        >MADI, NV8900-AES(Bal)->MADI
1484404   03/07/14  1:41pm    PLD     MADI_TO_AA         SV1067-05A0; NV8900-MADI->AA
1484404   03/07/14  1:41pm    PLD     MADI_TO_AES        SV1067-02A0; NV8900-MADI-
                                                        >AES(Coax), NV8900-MADI->AES(Bal)
   4841   04/29/14  8:16am    DB/RF.VER
```

The following frames are supported by this RF file:

NV8576
NV8280
NV8144
NV8576 Plus
NV8140

SV1203-0000

File names: SV1203-0000.bit, SV1203-0000.mcs

Supported Assemblies

- EM0785-01

  Versions prior to the one above support this code but will not report version information in MRC

Key Features, Additions, or Changes for this Release

- New code to support M3 rear only. Will not pass video when other rears are used.
- Uses same EM0785 as other standard output cards

SV1033-15

File names: SV103315.bin

Changes from SV1033-14

1 Added commands to high-speed com containing video reference formats. Used on the APC2 frame sync cards to report reference information to iControl.

2 Added commands to input cards (particularly APC2 frame sync cards) specifically to turn on select outputs. This normally results in 4 of 5 outputs being on instead of all 5 per input. The change saves power.

3 Added registers for testing 4K coherent switching.

Errata

Although this file has been updated to support frame sync features, the frame sync card does ***not*** work properly with the EM0833-00 cards.

This file is for the EM0833-00 assemblies only.

This version of the FPGA code is ***not*** compatible with SV1040-07 and older applications because of changes in the interrupt registers and address.

SV1072-15

File names: SV107215.bin

Changes from the SV1072-14

1 Added commands to high-speed com containing video reference formats. Used on the APC2 frame sync cards to report reference information to iControl.

2 Added commands to input cards (particularly APC2 frame sync cards) specifically to turn on select outputs. This normally results in 4 of 5 outputs being on instead of all 5 per input. The change saves power.

3 Added registers for testing 4K coherent switching.

Errata

No known errors.

This file is for the EM0833-10 assemblies and newer.

This version of the FPGA code is ***not*** compatible with SV1040-07 and older applications because of changes in the interrupt registers and address.

Other Changes

There were no changes in any other component.