

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.35.00(hex)

02/28/07

Special Release Notes:

- This build is intended for 1020/1020A/1030/1030T only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes from 01.03.34.00

Note: This version is a 1030 IR release only.

New Features Added:

Running runtime firmware directly from FLASH.

Task(s) Description:

Task cos1#23492: c1030fw: Add flash code region and data shared memory region for flash files. Changes included moving firmware from NVSRAM to FLASH, adding a new extended image that allows firmware to run from flash, and not accessing NVSRAM until after the MPI message of IOC Facts has been received by the firmware. This eliminates the issue with the host accessing flash at the same time firmware is accessing NVSRAM. If a host based firmware download utility is used, the firmware download utility will need to download the entire firmware image in one message, or use a 64K block size to download new firmware. This is due to the second flash sector now being used for runtime firmware.

Issue Identified By:

Customer

Associated Service Request Numbers:

This release is related to the following service request numbers:

2-160472001

2-151406271

2-152216831

2-157804001

2-161359526

Special Note Concerning Firmware Installation:

Since this issue resulted in the system sometimes not being able to boot, one of the following may need to be performed to flash the new firmware:

- Install the adapter that requires new firmware in a different system.
- Use a different adapter to boot in the current system.
- Press Ctrl-N before the BIOS boots to prevent the SCSI BIOS from loading, and then boot from a floppy drive or other boot device. This may not work in all cases.

System and Setup Description:

The customer was running a 1030 IR firmware. If a PCI Reset occurred just prior to loading the SCSI Boot ROM image in system memory, simultaneous access to the XMEM interface for FLASH and NVSRAM could corrupt NVSRAM or the BIOS image, and this would prevent the system from booting. This issue will not occur for systems using firmware download boot.

Affected FW:

All 1030 IR firmware builds

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C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.34.00(hex)

09/12/06

Special Release Notes:

- This build is intended for 1020/1020A/1030/1030T only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes from 01.03.34.00

New Features Added:

Device recognition for 1030T A3 silicon.

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.33.00(hex)

09/12/06

Special Release Notes:

- This build is intended for 1020/1020A/1030/1030T only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes from 01.03.30.00

New Features Added:

None

Task(s) Description:

Task cos1#17471: c1030fw: Change 1030T.bat to have correct IOC_PRODUCT_ID

Issue Identified By:

LSI

System and Setup Description:

An incorrect IOC_PRODUCT_ID was being used in 1030T builds. This has no known issues.

Affected FW:

All 1030T firmware builds

Task(s) Description:

Task cos1#17625: c1030fw: Do not enable QAS on CtxInit or in ctxHwSetSyncRegisters

Issue Identified By:

Customer

System and Setup Description:

The customer was running a 1030T in target mode with QAS disabled. It was noticed that QAS was not being properly disabled by the 1030T firmware.

Affected FW:

All 1030T firmware builds

Task(s) Description:

Task cos1#17977: c1030fw: Check for DMA interrupt in ctx check condition. This solves a tape issue with incorrect data dma'd to sense buffer.

Issue Identified By:

Customer

System and Setup Description:

A special test program was being run with read/write compares to tape devices. On very rare occasions, the firmware DMA's incorrect sense data from a check condition due to an out of order interrupt in the context manager. The out of order interrupt was caused by a very small data transfer size, such that two interrupts would occur within a few microseconds. This is now specifically checked in the context manager to properly handle the interrupts in the order in which they occurred.

Affected FW:

All 1030/1030T firmware builds

Task(s) Description:

Task cos1#18252: c1030fw: IDP SGL chaining issue for all builds

Issue Identified By:

Customer

System and Setup Description:

Inline Data Padding issue for tape devices. On large IO's, the last entry in a chained scatter gather list was not handled correctly.

Affected FW:

All 1030/1030T firmware builds

Task(s) Description:

Task cos1#17469: c1030fw: Fix Doorbell issue that caused hang condition every 400 reboots

Issue Identified By:

Customer

System and Setup Description:

Customer system running a reboot loop would occasionally see a blue screen in Windows approximately every 400 reboots. This was determined to be a timing related issue with the doorbell between the host driver and firmware.

Affected FW:

All 1030/1030T firmware builds

Task(s) Description:

1) Tasks cos1#18325, 18447: Correct CFI glitch issue with 1030 IE FW by changing last byte written to zero for all writes to NVSRAM.

Issue Identified By:

Customer

System and Setup Description:

Any system using 1020/1030 IE firmware with a CFI compliant flash attached and which is under I/O load. A higher I/O load appears to increase the failure rate.

Behavior of the problem:

LSI has confirmed that the 53C1020 and 53C1030 SCSI Controller devices have an unexpected glitch on the Flash ROM chip enable signal (FLSHCE/) that can cause an erroneous write to a CFI compliant Flash device if running IE firmware. The pulse width of the FLSHCE/ glitch is approximately 10ns and can occur during a write cycle to the NVSRAM (only IE firmware writes to NVSRAM). The unique boundary case of a 0x98h data byte (with any address) along with a CFI compliant Flash device can cause the Flash device to enter CFI mode. When the Flash device is in CFI mode, only 0x00h, 0xFFh, 0x00h, etc. data is returned during a read cycle to the flash signature area.

During POST, the LSI SCSI controller will read the firmware signature data from Flash but it will be incorrect and the 53C1020/53C1030 will not be initialized correctly. As a result, the 53C1020/53C1030 will not run and the LED heartbeat will not flash. This error will cause an adapter malfunction error and the operating system will not boot, causing the system to hang.

It should be noted that this error condition is not catastrophic and does not cause any type of data corruption. If a system does hang after a soft reboot, a hard reset will fix the problem because the flash device will exit CFI mode and return to normal read mode. At this point the LSI 53C1020/53C1030 will be able to download flash signature data correctly and the system will reboot properly.

Behavior after change:

The flash will no longer enter CFI mode since the firmware will always write a byte with a value of zero after all normal writes to NVSRAM. The glitch only occurs on this last byte written and it now only has a value of zero so the flash will not enter CFI mode.

Affected FW:

All 1030/1020 IE firmware builds

Version 01.03.30.00(hex)

11/10/05

Special Release Notes:

- This build is intended for 1030/1020/1030T/1020A only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes from 01.03.29.00

New Features Added:

- 1.) IR Error Logging to Flash: This logs IR errors to Flash.
- 2.) IR Reassign Block on failed write verify. Changes to the resync code were done to reassign bad sectors that failed write verify IO's for disks that do not have bad block reassignment in their firmware.

Task(s) Description:

- 2) Task cos1#14565: IR FW: Move code to shared mem from NVSRAM
Note: above task does not change 1030T IR, only 1030 IR.
This was done to enable the firmware to build due to increased size.
- 3) Task cos1#15283: fix vector for 1030 build
Note: This task enabled building 1030T Binaries greater than 64K bytes in size.
This change was done to a build tool. No changes to the firmware binaries were made.
- 4) Task cos1#16906: c1030FW IR – Correct Metadata Tag written to incorrect sector for Generic release.
 - a. This corrects an issue that could result in a lost volume if increasing the size of all disks in the volume before rebooting.
 - b. User could remove secondary disk, insert a larger disk for the secondary. Let the volume resync and become optimal. Remove the primary disk and insert a larger disk to replace it. After rebooting the IR volume was lost due to a Metadata Tag being written at the incorrect sector for the larger disk. The metadata is written to the correct location. The firmware would find the correct metadata tag if the user rebooted between swapping new larger disks.
- 5) Task cos1#16908: c1030FW IR – Change metadata read retry count from 30 to 10.
Task cos1#14317: IR FW: Move FlashErase.C to IOPLRAM to correct NVSRAM corruption
Task cos1#14440: IR FW: Correct NVSRAM corruption issue with IR Error Logging to Flash. This also changed Metadata Read Retry Count from 10 to 30
Task cos1#14567: IR FW: Task related to 14440 NVSRAM corruption – add prototype for toggle routine.
All these tasks for number 4, corrected an issue with IR Error logging to Flash.
- 6) Task cos1#14634: IR FW: Increase IOC Heartbeat from 2 to 4 seconds
- 7) Task cos1#13090: IR: Implement Reassign Block on failed write verify during Resync.
- 8) Task cos1#13769: IR: Allow HotSpare Import when volume settings do not have AutoConfigure HotSwap enabled.
- 9) Task cos1#13978: 1030T – Disable QAS if not enabling QAS when we fill in a bucket.

10) Task cos1#14012, 14051, 14052: 1030 IR – Correct DataScrub Infinite Resync Issues

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C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.29.00(hex)

04/11/05

Special Release Notes:

- This build is intended for 1030/1030T/1020A only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes from 01.03.28.00

Task(s) Description:

- 1) Task cos1#10474: iop: No Context Reads
- 2) Task cos1#12699, 13093, 13741: 1030 FW: Non-Mod4 target mode read errata. Fix simple SGL elements
- 3) Task cos1#12757: 1030 IR FW: 1.03.28 Write Long – seed value with 0xCC instead of zero.
- 4) Task cos1#13089, 13113: ctx: 1) Remove fix for unexpected Command Phase. 2) Add QAS Fairness setting
- 5) Task cos1#13693: IR: Allow a drive that is offline due to Raid Action to go missing
- 6) Task cos1#13696: IR: If AutoConfigure HotSwap is not enabled, don't allow a failed volume to be brought online

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.28.00(hex)

01/28/05

Special Release Notes:

- This build is intended for 1030/1030T/1020A only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes from 01.03.27.00

Task(s) Description:

(Task 10474)

lop: No Context Reads.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

Task(s) Description:

(Task 10667)

1030T: Fix determination of single channel

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All 1030T firmware builds

Task(s) Description:

(Task 11052)

CTX: IDP Fix Special Ops field of negotiation message not being initialized to 0 in target mode .

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IT firmware builds using target mode.

Task(s) Description:

(Tasks 11141, 11199, 11537)

IME – Metadata Roaming Bug Fix – roaming of same ID on coldswap.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds

Task(s) Description:

(Task 11553)

IR: Bug fix when IR resync journal is full and we go to fault state.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds

Task(s) Description:

(Task 11579)

IR: IM DataScrub in 7 days with 8 second interval.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds

Task(s) Description:

(Task 11787)

ctx: free the dma buffer if we get reselection timeout

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

Task(s) Description:

(Task 11847)

IR: Error Logging Bug – incorrect PhysDiskNum for ErrorLog due to invalid ScsiIO.MsgContext field.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds

Task(s) Description:

(Task 11851)

IR: Implement disable of AutoConfigure HotSwap bit in VolumeSettings field.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds

Task(s) Description:

(Task 12006)

Fix Single Channel Determination for all chips and MAD pin settings.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

Task(s) Description:

(Task 12097)

IR: Disable Auto HotSwap – Volume Optimal Cold Swap condition.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds

Task(s) Description:

(Task 12116)

ctx: Target Initiated SDTR Fix

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

Task(s) Description:

(Task 12240)

.1030T Fixes of Task Management IO handling which caused failure to reply.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All 1030T firmware builds

Task(s) Description:

(Task 12358)

.Diag: Only allow on IOC 0.

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All firmware builds which support Diagnostics.

Task(s) Description:

(Task 12415)

.Sequencer Code 1.183 for 1030T

Issue Identified By:

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All 1030T firmware builds

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.27.00(hex)

08/04/04

Special Release Notes:

- This build is intended for 1030/1030T/1020A only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes from 01.03.26.00

Task(s) Description:

(Task 10144)

The problem occurs only when volume sync is occurring and the secondary drive is replaced by another drive while the system is powered off. When system is powered back on, sync restarts at the same place that it left off with the old secondary drive that was removed. This results in a partially corrupted volume. So, if a volume was 50% complete with sync when the drive swap occurs, the first 50% of the volume will be corrupt. The corruption will not be seen until the volume becomes optimal.

This problem occurs because the firmware's sync code is unaware of the drive swap and does not properly clear out the sync journal information.

The fix for the problem is to examine the sync journal at init time to see if any of the sync journals are for the failed drive. If a journal is for a failed drive, the journal is invalidated.

Issue Identified By:

LSI.

System and Setup Description:

Any Generic PC with IE firmware build. Remove secondary drive of a re-synchronizing volume when system is powered down.

Behavior of the problem:

The volume is partially corrupted, and is only identified when it reaches the optimal state.

Behavior after change:

If it is detected that any of the sync journals are for the failed drive the journal is invalidated and re-synchronization restarted.

Affected FW:

IME only.

Task(s) Description:

(Task# 10079)

Failure of Target Initiated Negotiation (TIN)

A failure of TIN was encountered in a multi-initiator configuration. In this setup, both initiators were running I/Os to a common target. Periodically, one of the Initiators would reboot itself. On the subsequent reboot, this Initiator would scan the bus and negotiate with the targets. (This is NOT limited to multi-initiator configurations)

The target would still be negotiated to Packetized, but, the rebooting Initiator would now be set to Async/Narrow.

The Packetized target would Reject the Identify message byte sent from the Initiator, and would then perform TIN.

The 1030 F/W, upon receiving a WDTR message from the target, erroneously believed that the 1030 had previously sent a WDTR (it had not), and then proceeded to send an SDTR message.

However, when this scenario occurred, the H/W Start Bucket Queue was not properly reset to process this messaging protocol, resulting in multiple I/Os being sent to the same target, and/or, to other unintended targets. This resulted in Bus Resets and data corruption.

In a configuration where the Initiator has been reset, and is Async/Narrow, is connected

Issue Identified By:

Customer.

System and Setup Description:

This problem can occur anytime that there is a mismatch between the negotiated settings of the Initiator and Target. Specifically, when the Initiator is NOT Packetized, and the Target is Packetized.

Behavior of the problem:

A signature of this problem would be similar to:

Arbitration

Selection / ATN

Message Out: IDENTIFY

Message In: REJECT

Message In: WDTR

Message Out: SDTR ← Should have been WDTR out

Behavior after change:

An expected TIN Message byte exchange similar to:

Arbitration

Selection / ATN

Message Out: IDENTIFY

Message In: REJECT

Message In: WDTR

Message Out: WDTR

Message In: SDTR

Message Out: SDTR

Bus Free

Some targets might only do the WDTR exchange prior to Bus Free.

There may be other variations on this, but the key item to look for is “reasonable-ness”

Affected FW:

All firmware builds

Task(s) Description:

(Task 10060)

With Inline data padding workaround enabled. If IDP is not negotiated for all non-mod 4 transfer requests in Packetized mode were rejected. In some systems this resulted in the host drivers settling on a negotiated speed of U160.

Issue Identified By:

LSI.

System and Setup Description:

Any Generic PC with IT firmware build.

Behavior of the problem:

Rejection of commands (e.g. Inquiry) with non-mod 4 lengths in packetized mode resulted in final speed negotiations of U160.

Behavior after change:

Commands with non-mod 4 transfer lengths are not rejected in packetized mode.

Affected FW:

IT only.

Task(s) Description:

(Task 9859)

Reporting incorrect SCSI mode sense data with respect to the virtual write caching flag. When the mode sense data for a virtual disk was returned to the host, the write caching setting of the volume was not checked.

Issue Identified By:

LSI.

System and Setup Description:

Any Generic PC with an IR volume.

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds

Task(s) Description:

(Task 9782)

Failed to check for flash memory prior to erasing it during volume creation. This causes volume creation to fail for any configuration without a flash part. Other errors may arise as a result of this bug since accessing flash that isn't present can have unexpected affects.

Issue Identified By:

LSI.

System and Setup Description:

Any Generic PC with an IR volume, on a 1030X part with no flash.

Behavior of the problem:

Volume creation fails.

Behavior after change:

Operates as normal.

Affected FW:

All IR firmware builds

Task(s) Description:

Added an option to allow the host to configure resync priority. When the priority bit in the volume settings field is set, resync favors host IOs with an 8:1 ratio. When clear, resync and host IO time is shared evenly (1:1 ratio). (Task #8331)

Issue Identified By:

New feature.

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds

Task(s) Description:

Added error logging to flash. All errors are now additionally logged to flash in a circular buffer. (Task #8838)

Issue Identified By:

New Feature.

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW:

All IR firmware builds.

Task(s) Description:

Added the ability for host to communicate to an ISTWI slave on the 103X ISTWI bus, via a new Toolbox message (Task #9015)

Issue Identified By:

New Feature.

System and Setup Description:

Behavior of the problem:

Behavior after change:

Affected FW: IT FW only

Task(s) Description: Check in of sequencer code v. 1.175 (task #9016)

Issue Identified By:

LSI.

System and Setup Description:

1030 IT firmware, non-target mode, problem observed in 10-60 minutes.

Behavior of the problem:

Context manager was getting an ArbSel interrupt that was only expected to occur when in target mode. This resulted in the context manager constantly trying to service the interrupt, but never clearing it due to not being in target mode. The IOP would reset the Context Manager after a 1 second heartbeat timeout, and a Ctx Reset Event being sent to the host without a reset occurring on the SCSI bus.

Behavior after change:

The sequencer was changed to not generate this interrupt unless it was in target mode (essentially a jump over a few lines of code).

Affected FW: ALL 1030 FW Only.

Task(s) Description: Task 9286. Continuing development for enhanced error logging. Made a fix identified during developer test. This task is for a new feature not a bug/issue fix.

Issue Identified by:

System and Setup Description:

Behavior of the problem:

Behavior after the change:

Affected FW:

All IR builds.

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Task(s) Description:

(Task 9284)

Continued development on enhanced error logging. Need to clear out the error log when a volume is created. This task is for a new feature not a bug/issue fix.

Issue Identified by:

System and Setup Description:

Behavior of the problem:

Behavior after the change:

Affected FW:

All IR builds.

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Task(s) Description:

Workaround, enabling non-mod4 transfers in packetized mode. (Task #9501)

Issue Identified By:

LSI

System and Setup Description:

Generic PC utilizing U320 packetized transfers, whereby the data length is non-mod4.

Issue is prevalent in U320 tape drives.

Behavior of the problem:

Non-mod4 data transfers were attempted to a U320 tape drive. This hits a chip bug that causes the SCSI bus to hang.

Behavior after change:

With additional workarounds in the host driver, and tape drive FW, all non-mod4 transfers are rounded to DWORD boundaries, and pad data is discarded on completion of the transfer.

Affected FW: I/T

Task(s) Description:

Limited support for the SCSI Restore Data Pointers Message.

(Task #9502)

Issue Identified By:

Customer.

System and Setup Description:

Generic PC with a SCSI Tape Drive attached.

Behavior of the problem:

A Tape Drive detected some sort of error while receiving data. The device requested the Initiator to "Restore Data Pointers" in order to restart the data transfer. The 1030 F/W did not support the Restore Data Pointers message, and responded with a No Operation message

Behavior after change:

Code has been added to the 1030 F/W to provide limited support the Restore Data Pointers message. The code change simply restores the start point of the SCL, and clears any information about data transfer counts, flags, etc...

Affected FW: All 1030.

Task(s) Description:

Change in handling of Unexpected Command Phase. (Task #9503)

Issue Identified By:

Customer.

System and Setup Description:

Generic PC with u320 devices.

Behavior of the problem:

In this particular setup (but not limited this), the configuration consisted of two Initiators connected the same Target.

One of the Initiators (I1) was sending I/Os to the Target, and the other Initiator (I2) would send periodic Task Management commands to the Target.

This would eventually result in a condition where I2 had reset the Target, causing it to be set to Async/Narrow, while I1 was still set to u320 speed.

When I1 sent its next I/O, the Target would go to Command Phase. This was unexpected by I1. However, it would be the Target's expected behavior since it is now Async/Narrow, and I1 did NOT select with Attention (because I1 is set to u320). The 1030 F/W did not follow the SCSI Specification in handling the unexpected Command Phase. The 1030 did not send an ABORT TASK message.

Note: A very similar condition could be expected in a single Initiator system where the Target is power-cycled, but the Initiator has no knowledge of this, and is still set to u320.

Behavior after change:

The 1030 F/W has been changed to follow the SCSI Specification. Specifically, when an unexpected Command Phase is detected, the Initiator should change its settings to Async/Narrow, and then Send an ABORT TASK message.

The Initiator (I1 in this case) would then renegotiate to its previous settings (u320) and then send the I/O again.

Affected FW:

All FW.

Task(s) Description:

Fix DMA routine when chains are enabled (Task #9651)

Issue Identified By:

LSI.

System and Setup Description:

Any System where FW is configured such that local chains are enabled, and subsequently issuing a FWUpload MPI message.

Behavior of the problem:

The DMA function attempts to get the chain from system memory. It mistakenly uses the now local chain pointer, as a system address. It consequently DMA's invalid data, eventually triggering an exception.

Behavior after change:

Location of the chain is identified and the relevant operations taken.

Affected FW: All FW

Task(s) Description:

On SCSI reset write the DmaControl register in sequencer block to 0. (Task #9680)

Issue Identified By:

LSI.

System and Setup Description:

Any System performing SCSI IO's with intermittent external SCSI resets, for a considerable period of time.

Behavior of the problem:

Occasionally on a reset the "Start DMA Inbound Context Request" bit of the DMA Control Register is not reset during the SCSI reset. This subsequently causes the sequencer to be stuck in a tight loop waiting for the corresponding "DMA Inbound Context Granted" bit to be set, which never happens.

Behavior after change:

In the SCSI core re-initialization code, this bit written to Zero. The problem therefore goes away.

Affected FW: All FW

Task(s) Description:

Disable QAS for additional vendors. (Task #9684)

Issue Identified By:

Customer Request.

System and Setup Description:

Any system where 1030 has said customer's SSVID programmed.

Behavior of the problem:

N/A

Behavior after change:

QAS will never be negotiated for, if this SSVID is present.

Affected FW: All FW

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C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.26.00(hex)

05/18/04

Special Release Notes:

- This build is intended for 1030T/1020A only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes From Version 01.03.25.00:

Task(s) Description: repost command buffer even if sense data is not sent
Task#9182

Issue Identified by: LSI

System and Setup Description: Generic PC running target mode.

Behavior of the problem: IOC would not repost command buffer if the sense data was not sent.

Behavior after the change: IOC will still post command buffers if the repost command buffer flag is set, even if the sense data is not sent.

Affected FW: All target mode
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C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.25.00(hex)

03/24/04

Special Release Notes:

- This build is intended for 1030T/1020A only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes From Version 01.03.24.53:

Task(s) Description: All target: don't return context reply if the sense data did not get sent. (task 8757)

Issue Identified by: functionality addition

System and Setup Description: generic PC running target mode

Behavior of the problem: Target driver needed a way to tell if the sense data in the TargetStatusSend actually goes out on the bus. If not, it needs to keep the sense data around until the contingent allegiance is cleared.

Behavior after the change: If the sense data did not go out on the bus, IOC will return MPI_IOCSTATUS_TARGET_STS_DATA_NOT_SENT.

Affected FW: All target mode
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Task(s) Description: autochaining #define breaks IR code. (task 8834)

Issue Identified by: Customer

System and Setup Description: Netware on customer platform.

Behavior of the problem:

The problem was a block of code that was incorrectly compiled out. During a Netware install process, it used all available message frames. This caused the firmware scheduler to get placed in a state waiting for resources. While in this state, firmware should be unblocking the IR background task thread for execution. The line of code that performs the unblock while in this state was incorrectly compiled out. This prevented the IR thread from receiving notification that its IO had completed resulting in target resets bus resets and host IO timeouts.

Behavior after the change:

The above behavior no longer occurs.

Affected FW:

Task(s) Description: Swap SSID/SSVID in config space and SEEPROM. (task 9009)

Issue Identified by:

System and Setup Description:

Behavior of the problem:

1020A/1030T have SSID and SSVID swapped in PCI Config Space.

Behavior after the change:

Swap SSID and SSVID in SEEPROM/.DAT file results in PCI Config Space being correct. Firmware now reads SSID and SSVID from the 1020A/1030T assuming the SSID and SSVID have been swapped in SEEPROM.

Affected FW:

Task(s) Description: disable prealigning. (task 9023)

Issue Identified by: Customer

System and Setup Description: System communicating with a U160 capable SCSI target. SCSI data writes to the SCSI device and the SCSI device requesting CRC's on non-mod8 boundaries within the SCSI IO.

Behavior of the problem: Given certain combinations of PCI(X) addressed data and non-mod8 crc interval in U160 SCSI mode, incorrect CRC data may be generated by the LSI SCSI controller. This behavior was caused by

an issue in the hardware when a stall was generated on the PCI bus by allowable disconnect boundary (ADB) aligning functionality of the controller.

Behavior after the change: Disabling the aligning functionality allows the LSI controller to continue transferring data on PCI and no longer causes the stall. Correct CRC's are generated for these SCSI writes.

Affected FW: '1030, '1035, '1020A, '1030T

.....

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.24.53(hex)

03/03/04

Special Release Notes:

- This build is intended for 1030T/1020A only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes From Version 01.03.24.51:

Task(s) Description: Check in of sequencer code (task 8832)

Issue Identified by: LSI

System and Setup Description: Generic PC running 1030T/1020A product.

Behavior of the problem: When parsing the Message In bytes, an incorrect interpretation of the message occurred due to the Sequencer Code indiscriminately clearing a H/W register (Async Initiator Message Byte Count Register). This caused the F/W to incorrectly process the Message In bytes, resulting in indeterminate behavior, i.e. hangs, Bus Resets.

Behavior after the change: When the F/W is interrupted to process Message In bytes, the affected H/W register now provides the correct byte count. The F/W then processes the Message correctly.

Affected FW: All 1030T/1020A based products.
.....

Task(s) Description: Modification of migration code, which eliminates the dependency on configuration page header information stored in the seeprom. See (task 8624)

Issue Identified by: LSI

System and Setup Description: Generic PC running 1030X product.

Behavior of the problem: Corrupted page header information in seeprom may cause a FW related hang condition.

Behavior after the change: Migration code being independent of configuration page headers stored in seeprom will always use correct data when migrating. Hang condition goes away.

Affected FW: All 1030/1035 based products.
.....

Task(s) Description: restrict inadvertent clearing of reselect bit to 1035.
See (task 8811)

Issue Identified by: Customer.

System and Setup Description: UX system running 1030X product.

Behavior of the problem: Selection timeouts.

Behavior after the change: No selection timeouts.

Affected FW: All 1030/1035 based products.
.....

Task(s) Description: Undo feature implementation of task 8438. See (task 8650)

Issue Identified by: LSI.

System and Setup Description: Generic system running 1030X product.

Behavior of the problem: N/A.

Behavior after the change: N/A.

Affected FW: All 1030/1035 based products.
.....

Task(s) Description: Display negotiated parameter correctly in target only mode (task 8721)

Issue Identified by: Customer.

System and Setup Description: Generic system running 1030X product.

Behavior of the problem: After adding the dynamic initiator ID feature, the negotiated parameters weren't displayed correctly.

Behavior after the change: For single initiator in target only mode, negotiated parameter will be displayed correctly.

Affected FW: 1030T target mode.
.....

Task(s) Description: Fix target reset issue (task 8722)

Issue Identified by: Customer.

System and Setup Description: Generic system running 1030X product.

Behavior of the problem: When 1030T is configured to respond as multiple targets. If a Target Reset is issued, I/Os from all target IDs would be aborted.

Behavior after the change: Target Reset will only abort I/Os for the corresponding target ID.

Affected FW: 1030T target mode.
.....

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.24.51(hex)

02/05/04

Special Release Notes:

- This build is intended for 1030t/1020A only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes From Version 01.03.24.00:

Task(s) Description: Rejected Queue Tags Sent to a SAF-TE device.

Certain host Software was allowing Queue Tagged requests to be sent to a SAF-TE device that did not support Queue Tags. The device would reject the Queue Tag. For the F/W to handle the reject, H/W registers need to be modified. In this particular case, the "Bucket Start Queue" needs to be unloaded and then re-loaded to continue execution. If there were more than one I/O on the Start Queue when the reject occurred, then the unload/re-load process was not done correctly. (task 8194)

Issue Identified by: LSI

System and Setup Description: Generic PC running 1030X product.

Behavior of the problem: This problem manifest itself in either of two forms:

- 1) A hang condition
- 2) The apparent double execution of an I/O, or, an I/O sent to the wrong device.

Behavior after the change F/W now properly handles the Queue Tag reject, and there is no submission of I/Os to the wrong device.

Affected FW: All 1030/1035 based products.
.....

Task(s) Description: RSA RAID code was using a field (SCSI IO Bus) in the MPT message for its own use. The 1030/1035 F/W also uses this field. The 1030/1035 F/W needed to initialize this field prior to using it. In

non-RSA RAID implementations, this field was not used by host software.
(task 8206, 8207)

Issue Identified by: LSI

System and Setup Description 1035 RAID systems.

Behavior of the problem: I/O timeout do to the I/O not being completed correctly..

Behavior after the change RSA code works correctly.

Affected FW: 1035.
.....

Task(s) Description: The RSA 1035 code uses a larger Message Frame than the 1030 code. When a certain error occurred, the Reply Message code was over-writing data in the original Request Message that was subsequently used. This caused the Reply Message to get filled in incorrectly. The correction for this problem was to create a local copy of the data that is needed later in the function. (task 8219)

Issue Identified by: LSI

System and Setup Description: RSA RAID code / 1035..

Behavior of the problem: Hang condition, I/O timeout..

Behavior after the change Reply Message correctly populated, no hang condition.

Affected FW: 1035
.....

Task(s) Description: Add 1035 F/W binaries to Continuous (task 8221)

Issue Identified by: LSI

System and Setup Description: N/A

Behavior of the problem: N/A

Behavior after the change N/A

Affected FW: 1035
.....

Task(s) Description: Removed residual debug code that was inadvertently left in the F/W while working on task 8207. It was simply some code used to allow setting a debugger breakpoint. No adverse affect on any code.

Issue Identified by: LSI

System and Setup Description: 1030/1035

Behavior of the problem: N/A

Behavior after the change N/A

Affected FW: All F/W
.....

Task(s) Description: Download attached seeprom image upon failure of the checksum calculation of the image currently loaded in serial eeprom. (task 8438)

Issue Identified by: LSI

System and Setup Description: Generic PC running 1030X product.

Behavior of the problem: Seeprom corruption may cause firmware to hang.

Behavior after the change hang condition goes away.

Affected FW: All f/w.

.....

Task(s) Description: Lower sync rate of 10 or 5 to async if requested.
(task 8255)

Issue Identified by: LSI

System and Setup Description: Generic PC running 1030T product.

Behavior of the problem: There are h/w problems with sync 5 and sync 10, which may cause bus hang.

Behavior after the change If host ever requested sync 10 or sync 5, IOC will negotiate to async.

Affected FW: All 1030T f/w.

.....

Task(s) Description: Fault code during overflowing I/Os (task 8336)

Issue Identified by: Customer

System and Setup Description: Generic PC running 1030T product with overflowing I/Os.

Behavior of the problem: This problem occurs when there are more I/Os than available command buffers. F/w was not managing command buffer

count correct and giving h/w a bad address. It results in fault code of 0x8112.

Behavior after the change: No more fault code during overflowing condition.

Affected FW: All 1030T f/w

.....

Task(s) Description: Data out error handling (task 8343)

Issue Identified by: Customer

System and Setup Description: Generic PC running 1030T product while injecting data out error.

Behavior of the problem: while handling data out parity or crc error, f/w frees the same bucket twice and causes bus hang.

Behavior after the change: No more bus hang after data out error condition.

Affected FW: All 1030T f/w

.....

Task(s) Description: Allow driver to decide what to do on the last command buffer (task 8490)

Issue Identified by: feature addition

System and Setup Description: Generic PC running 1030T product with overflowing I/Os.

Behavior of the problem: Added the capability to let driver decide what to do when the last command buffer is being used in non-pkt. Before, drive only has this capability during packetized operation.

Behavior after the change: Driver is in charge of what to do on the last command buffer for both packetized and non-packetized.

Affected FW: All 1030T f/w
.....

Task(s) Description: Allow six bit worth of LUN to be passed for non-packetized I/Os (task 8589)

Issue Identified by: Customer

System and Setup Description: Generic PC running 1030T product with non-packetized I/Os.

Behavior of the problem: The f/w was only passing 5 bits of LUN number from identify message for non-packetized I/Os. This was the old way. Now we pass 6 bits as SPI indicates.

Behavior after the change: Initiator can identify 64 individual LUNs on the same target ID..

Affected FW: All 1030T f/w
.....

Task(s) Description: Dynamic initiator ID allocation (task 8595)

Issue Identified by: feature addition

System and Setup Description: Generic PC running 1030T product with 2 or more initiator.

Behavior of the problem: In target only mode, driver has to preset two initiator IDs before doing any I/Os.

Behavior after the change: If the IDConfig field of port page 1 is not set, IOC will pick up any I/Os from the first two initiators. If there's only one bit set in the IDConfig field, IOC will respond to that preset ID plus it will pick up the next different initiator ID. IOC will not respond to the third initiator on the bus.

Affected FW: All 1030T f/w

Task(s) Description: Don't modify Citori Debug register in PCI-X mode (task #8625)

Issue Identified by: LSI

System and Setup Description: Generic PC running 1030T product.

Behavior of the problem: If 1030T booted in PCI-X FW attempts to disable certain PCI features would cause the part to hang.

Behavior after the change: Hang condition goes away.

Affected FW: All 1030T f/w

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.24.00

02/05/04

Special Release Notes:

- This build is intended for 1030 only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes From Version 01.03.23.00:

Task(s) Description: The entire seeprom image checksum is calculated, and upon failure an attached nvdata image, if present, is downloaded. Task #8578.

Issue Identified by: LSI

System and Setup Description: Generic PC running 103X product in any mode and has a corrupted image in SEEPROM

Behavior of the problem: In very rare instances such as, nvdata migration, the nature of the corruption may cause firmware to hang.

Behavior after the change: A valid image will always be present in the SEEPROM, therefore hang condition goes away.

Affected FW: All versions

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.23.00

01/16/04

Special Release Notes:

- This build is intended for 1030 only.

**Refer the specific entries for fixes that apply to other
103x controllers.**

Major Changes From Version 01.03.22.00:

Task(s) Description: QAS disallowed upon the detection of SSVID (0x1028) or a SSVID (0x8086), SSID (0x3402) combination. (Tasks 8279, and 8269.

Issue Identified by: N/A

System and Setup Description: Generic PC running 103X product in any mode.

Behavior of the problem: N/A

Behavior after the change: QAS will never be negotiated for.

Affected FW: All versions

Task(s) Description: Corrected a problem that was causing, variously, I/Os to be sent twice, or, to cause an I/O to be sent to the wrong Target. (A.K.A. the Tagged request to a SAF-TE device) (Task 8194)

Issue Identified by: Customer, verified by LSI

System and Setup Description: Generic PC running 103X product in any mode.

Behavior of the problem: This particular problem occurred when, in a heavily loaded system, a Tagged I/O was sent to a SAF-TE device. While the 1030 F/W was handling the Message Reject from the SAF-TE device (they do not support tagged requests), during the process of “unloading and reloading the 1030 Start Bucket Queue, the 1030 H/W would erroneously start the wrong I/O.

Behavior after the change: Now, the F/W, when handling the Message Reject, will completely unload the Start Bucket Queue, make the proper modification to the Rejected I/O's bucket, then reload the Start Bucket Queue. This causes the H/W to properly sequence the I/Os.

Affected FW: All versions

Task(s) Description: Simply removed some debug code that was inadvertently left in the code while working on Task 8194 above. (Task 8272).

Issue Identified by: LSI

System and Setup Description: N/A

Behavior of the problem: N/A

Behavior after the change: N/A

Affected FW: All versions

Major Changes From Version 01.03.15.00:

Task(s) Description: Multiple drive insertion work-around. (Tasks 8148, 8165 and 8166). Needed to optimize some code to get this change to fit (task 8166).

Issue Identified by: LSI

System and Setup Description: Generic PC running 103X product in any mode.

Behavior of the problem: If two or more volume members are replaced simultaneously, the firmware will issue multiple "DV NEEDED" events to the host. Windows cannot handle overlapping DV requests and does not restart internal RAID IOs. This halts Windows.

Behavior after the change: Firmware waits 15s between each "DV NEEDED" event sent to the host to try and avoid this problem.

Affected FW: ALL versions.

.....
Task(s) Description: Fix reporting of MAX reply queue depth. (Task #8051)

Issue Identified by: LSI

System and Setup Description: Generic PC running 103X product in any mode.

Behavior of the problem: May cause system lockup if host posts more reply frames than we actually have room for.

Behavior after the change: Host drivers should not post replies beyond maximum limit therefore system lockup is avoided.

Affected FW: ALL versions.

.....
Task(s) Description: Fix inadvertent clearing of arbsel request. (task #8118)

Issue Identified by: LSI Test

System and Setup Description: For quick reproduction any generic PC running IME FW with a degraded volume.

Behavior of the problem: Numerous mid_not_founds and consequently SCSI resets. Occurred because clearing of the arbsel request would cause a reselecting target to timeout the reselection. This reselection timeout is consequently interpreted an unexpected bus free block and FW seeks to clean up corresponding IO. A subsequent retry by the target then causes the mid_not_found error condition.

Behavior after the change: No more arbitrary mid_not_founds and SCSI resets.

Affected FW: ALL versions.

.....
Task(s) Description: Fix a problem where command buffer is being lost when reset occurs on a boundary condition. (task 8017)

Issue identified by: LSI

System and setup description: Generic PC running 1030T target mode.

Behavior of the problem: This case occurs on boundary conditions where number of outstanding I/O is one less than posted cmdbuffer and at the same time bus reset is being inserted randomly. It was losing cmdbuffers and eventually stop responding to selection.

Behavior after the change: Target IOC won't stop responding to selection in this boundary case.

Affected f/w: 1030T target mode

.....
Task(s) Description: Fixed a problem where IOC loses command buffer when reset occurs while driver is handling TARGET_BUSY condition. (task 8018)

Issue identified by: LSI

System and setup description: Generic PC running 1030T target mode.

Behavior of the problem: Target IOC was losing cmdbuffer when bus reset while an high priority TSS was issued. This high priority TSS could contain the reposting of the critical command buffers needed for error handling.

Behavior after the change: Target IOC now will handle high priority TSS even if there was a bus reset.

Affected f/w: 1030T target mode

.....
Task(s) Description: Fixed a problem where target stop responding after TARGET_BUSY. (task 8050)

Issue identified by: LSI

System and setup description: Generic PC running 1030T target mode.

Behavior of the problem: In the boundry case where the reserved cmdbuffer is used to handle target busy, a flag is not set and causes f/w to get confused. This could result in fault code of dma error or target could just stop responding.

Behavior after the change: Target IOC behaves correctly after TARGET_BUSY.

Affected f/w: 1030T target mode

.....
Task(s) Description: Fixed a problem where target trains twice on multi-cmd. (task 8093)

Issue identified by: Customer

System and setup description: Generic PC running 1030T target mode.

Behavior of the problem: When multi-cmd occurs, target mistakenly trains twice and causes cmd CRC error.

Behavior after the change: Target IOC trains correctly.

Affected f/w: 1030T target mode

.....
Task(s) Description: Fixed a problem where request sense goes out as a tagged I/O. (task 8109)

Issue identified by: LSI

System and setup description: Generic PC running RSA 1035 raid mode.

Behavior of the problem: This problem occurs when there are 4 or more check conditions in a row. One request sense would go out as tagged I/O causes drives to return busy.

Behavior after the change: All request sense commands are non-tagged.

Affected f/w: 1035 RSA ctxmgr only build

Task(s) Description: Disable target mode after Message Unit Reset is issued. (task 8123)

Issue identified by: N/A

System and setup description: Generic PC running 1030T target mode.

Behavior of the problem: This is a feature addition.

Behavior after the change: Target Mode will be disabled after a message unit reset then a bus reset.

Affected f/w: 1030T target mode

Task(s) Description: Fixed a problem where sense data doesn't get dma'd. (task 8109)

Issue identified by: LSI

System and setup description: Generic PC running RSA 1035 raid mode.

Behavior of the problem: This problem occurs when the skip count field was not zeroed, which causes the h/w to skip the sense data.

Behavior after the change: Sense data gets sent to host correctly.

Affected f/w: 1035 RSA ctxmgr only build

Major Changes From Version 01.03.14.00:

None. This build is practically the same as 01.03.14.00 but released for 1030.

Major Changes From Version 01.03.13.00:

Task(s) Description: Reset the nexus if TargetReset is received. (task 8000)

Issue identified by: LSI test

System and setup description: Generic PC running 1030T target mode in pkt.

Behavior of the problem: In pkt after receiving TargetReset, the nexus was still in pkt and rejected the identify message on the next I/O.

Behavior after the change: Target handles the identify msg correctly after receiving TargetReset.

Affected f/w: 1030T target mode

.....
Task(s) Description: Flash, Nvsram, GenPortMem registers are different than in 1030 and weren't being set appropriately. (task #7995)

Issue identified by: LSI

System and setup description: N/A

Behavior of the problem: Didn't cause a problem as registers reverted to their default values.

Behavior after the change: Access to Flash and NVSRAM are now quicker, allowing RAID code in NVSRAM to be executed faster.

Affected f/w: all 103x f/w except IR

.....
Task(s) Description: fix nvsram corruption on writes. (task7988)

Issue identified by: LSI test

System and setup description: N/A

Behavior of the problem: memory corruption on dword-writes.

Behavior after the change: always to byte-writes to nvram.

Affected f/w: 1035 IR

.....
Task(s) Description: delay 250ms if external bus reset is detected. (task 7990)

Issue identified by: customer

System and setup description: Generic PC running 103X product in initiator mode.

Behavior of the problem: If IOC will immediately send out I/Os after external bus resets, but some drives may not be ready yet.

Behavior after the change: IOC waits 250ms before sends out next I/O after external bus resets.

Affected f/w: All f/w

.....
Task(s) Description: check if target mode before handling selection interrupt. (task 7999)

Issue identified by: LSI

System and setup description: Generic PC running IT f/w but only using initiator mode.

Behavior of the problem: A #define was in the wrong place and causes the bus to hang, because IOC never handles the interrupt in initiator mode.

Behavior after the change:

Affected f/w: 1035

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.13.00

9/15/03

Special Release Notes:

- This build is intended for 1030T non-IR only.

Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes From Version 01.03.12.00:

Task(s) Description: Sequencer code has split between 1030 and 1035.
This task check in the sequencer code for 1035. (task 7938)

Issue identified by: LSI during internal chip validation

System and setup description: N/A

Behavior of the problem: N/A

Behavior after the change: N/A

Affected f/w: 1035 all build

.....
Task(s) Description: Turning off multi-cmd capability in initiator mode.
(task 7939)

Issue identified by: Customer test

System and setup description: Generic PC based system with '103X
running in initiator mode.

Behavior of the problem: An hardware issue prevents the multi-cmd from
occurring and locks up the bus.

Behavior after the change: Initiator does not generate multi-cmd any
more.

Affected f/w: All chips all builds.

.....
Task(s) Description: Fixed a problem in 1035 CTX only image where a
field was over-written before being copied. (task 7955)

Issue identified by: customer test

System and setup description: Need to be running with customer f/w.

Behavior of the problem: a field was getting over-written before being copied. Result was usually data underrun.

Behavior after the change: CurrentByteCount has the right value.

Affected f/w: 1035 all builds.

.....
Task(s) Description: Increase the size of cmdbuffer counters. (task 7963)

Issue identified by: LSI

System and setup description: Generic PC based system with '1030T running target mode.

Behavior of the problem: Need to increase the size of all counters that are related to command buffers so they don't overflow. This bug causes bus hang on TargetReset.

Behavior after the change: Resolve the hang on task management issue.

Affected f/w: 1030T target mode.

.....
Task(s) Description: Target mode wasn't honoring parameters requested by driver. (task 7966)

Issue identified by: LSI

System and setup description: Generic PC based system with '1030T running target mode.

Behavior of the problem: f/w was not honoring settings requested by target driver and causes us to negotiate bad parameters.

Behavior after the change: f/w negotiates legal parameters.

Affected f/w: 1030T target mode

.....

Task(s) Description: Return proper status when IOC runs out of command buffers. (task 7969 and 7970)

Issue identified by: LSI

System and setup description: Generic PC based system with '1030T running target mode.

Behavior of the problem: F/w always returned BUSY when command buffers run out, which causes initiators to reset the bus.

Behavior after the change: F/w returns TASK_SET_FULL when command buffers run out on a tagged I/O and returns BUSY on non-tagged I/O.

Affected f/w: 1030T target mode

.....

Task(s) Description: In a Multi-Initiator u320 Configuration, when one Initiator issues a Target Reset, the other Initiator does not have knowledge of the Target Reset, and the fact that the Target is now set to Asynchronous/Narrow. (task 7946)

Issue identified by: Customer test.

System and setup description: Multi-Initiators connected to a common Target Device.

Behavior of the problem: In the stated configuration, Initiator 'A' issues a Target Reset, causing the Target to revert to Asynchronous/Narrow. Later, Initiator 'B' issues a command to the Target. Since Initiator 'B' is still negotiated to u320, the command will be sent without ATN asserted (hence, no Message Out phase; I/O is viewed as untagged). The Target,

upon Selection, will change phase to Command. Initiator 'B' does not expect this, and a "hang" condition occurs.

Behavior after the change: The corrective action for this problem is to transfer the I/O's internal context to the F/W's "untagged table" for processing. The I/O is now allowed to execute normally.

Affected f/w: 103x all builds

.....
Task(s) Description: A #define that affected when physical drives are failed was improperly placed for the IM specific build. (task 7922)

Issue identified by: customer

System and setup description:

Behavior of the problem: A physical drive is not properly failed. The observable behavior was a resync process that would never complete.

Behavior after the change: Resync terminates and drive would be failed properly.

Affected f/w: all IM specific builds

.....
Task(s) Description: Modified the way read errors are handled on a source drive during a resync operation. (task 7923)

Issue identified by: customer

System and setup description:

Behavior of the problem: This was a feature addition requested by a customer. Write long commands that failed to complete with good status resulted in the physical drive being failed.

Behavior after the change: If a write long fails, a subsequent read command is issued with the expectation that the read will fail as well. If the read succeeds, the drive is failed, if the read fails, resync continues.

Affected f/w: all 1E/IM builds

Task(s) Description: BIOS team requested that firmware use the drive spinup delay set by the BIOS. (task 7937)

Issue identified by: LSI or an OEM

System and setup description:

Behavior of the problem: Feature addition. Firmware was supposed to insert a one second delay between drive spinups. Found a bug that caused no delay to be inserted.

Behavior after the change: Firmware will wait the number of seconds requested by the BIOS in between each drive spinup.

Affected f/w: all IR builds

Task(s) Description: Fixed thread wake code. There was an inverted inequality that incorrectly checked if a thread's sleep time had expired. (task 7942)

Issue identified by: LSI

System and setup description:

Behavior of the problem: Thread wake code immediately woke threads without waiting the appropriate delay.

Behavior after the change: Thread now sleep the correct amount of time.

Affected f/w: all IR builds

C1030/C1020 (B0, B1, B2, C0)

C1030T (A0)

C1035 (B0)

Version 01.03.12.00

8/27/03

Special Release Notes:

- This build is intended for 1030T non-IR only.
- Refer the specific entries for fixes that apply to other 103x controllers.

Major Changes From Version 01.03.11.00:

Task(s) Description: This task fixes the f/w to look up the correct nexus for the initiator we are talking to. (task 7724)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target only mode, target driver is Limpopo. 2 initiators in the system.

Behavior of the problem: F/w was looking up the wrong nexus for the initiator we are talking to when we are in target only mode. Bus hang or bus reset could occur due to this problem.

Behavior after the change: F/w looks up the right nexus.

Affected f/w: 1030T target mode f/w.
.....

Task(s) Description: Disable comma mode for 1030T and 1035 f/w. (task 7750)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T or 1035.

Behavior of the problem: F/w would not come back on after going into certain power saving state. This is a workaround for a h/w erratum.

Behavior after the change: F/w will not go into any power saving state.

Affected f/w: All 1030T and 1035 f/w.
.....

Task(s) Description: Correctly support non-RTI I/Os. (task 7764)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running paced.

Behavior of the problem: F/w would train multiple times for a certain direction per connection.

Behavior after the change: F/w only train once for one direction per connection.

Affected f/w: 1030T target mode f/w.
.....

Task(s) Description: Turn on the target mode multi-cmd capability. (task 7767, 7775 and 7902)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running paced.

Behavior of the problem: N/A

Behavior after the change: Target mode f/w will accept multiple command packets in one connection.

Affected f/w: 1030T target mode f/w.
.....

Task(s) Description: put in a workaround for h/w to ensure inbound I/O completes in a certain order. For certain target mode inbound transfer,

scsi core has to complete first before datapath does. (task 7769 and 7820)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with PCI-X 133 and '1030T running in target only mode in paced.

Behavior of the problem: For certain target mode inbound data transfer, if datapath completes before scsi core does, bus will hang in data phase.

Behavior after the change: Bus won't hang anymore.

Affected f/w: All target mode f/w.

.....

Task(s) Description: This problem happens only on I/T switching mode, and target is disconnecting on every few blocks. The problem occurs on initiator outbound and target disconnects. So scsi core stops but dpe is still fetching data. But on next I/O we come up as target outbound, and dpe continues from previous initiator I/O. Result is wrong data being fetched and dpe hangs. F/w now set and clear a flag on outbound ctx interrupt and dma interrupt, so sequencer knows when to start the next target I/O. (task 7781)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in I/T switching mode, target driver is sending disconnect messages every couple blocks.

Behavior of the problem: This issue causes hang during data phase and errors reported from dpe.

Behavior after the change: I/T switching mode won't hang.

Affected f/w: 1030T target mode f/w.
.....

Task(s) Description: Before target f/w was checking to see if the current connection ID is capable of doing QAS from currentNexus ram. It was ok because target mode was only one target ID. Now it is responding as multiple target IDs and need to look up the capabilities from real nexus. (task 7789)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode running paced with QAS.

Behavior of the problem: Could send out QAS message even if the particular target ID is not capable of QAS.

Behavior after the change: Will send out QAS according to its capability.

Affected f/w: 1030T target mode f/w.
.....

Task(s) Description: Change the f/w to handle target_busy priority reason correctly. (task 7791)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode and paced and the number of outstanding I/O is greater than posted command buffers.

Behavior of the problem: F/w would hang on selection when the cmdbufs run out.

Behavior after the change: F/w would properly send busy status when cmdbufs run out.

Affected f/w: 1030T target f/w.
.....

Task(s) Description: This task implements dynamic calculation of ST DT delay and force self-cal on every bus reset. This is a feature addition. (task 7793)

Issue identified by: LSI during internal chip validation

System and setup description: N/A

Behavior of the problem: N/A

Behavior after the change: N/A

Affected f/w: All 1030, 1030T and 1035 f/w.
.....

Task(s) Description: update the native ST DT delay value. (task 7796)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '103X running paced to large number of drives.

Behavior of the problem: Initiator Detected Error occurs on heavy load.

Behavior after the change: IDE doesn't happen as often on heavy load.

Affected f/w: All 1030 f/w.

.....

Task(s) Description: Fixed the f/w so it is handling non-zero-length status packet correctly. (task 7802)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode and paced. The number outstanding I/O is greater than posted command buffers.

Behavior of the problem: F/w would hang after receiving non-zero-length status packet.

Behavior after the change: received non-zero-length status packet correctly.

Affected f/w: 1030T target f/w.

.....

Task(s) Description: F/w was waiting for the whole cmd completes transfer before filling in some critical data, but by that time there could be another command on the bus already. And fields like selected-as-ID could already changed for next cmd. F/w now fills in critical data as soon as we get selected. (task 7817)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode and paced.

Behavior of the problem: F/w sometimes assigns the incorrect ID to an I/O causes the driver to send the I/O to the wrong ram disk.

Behavior after the change: F/w now fills in critical data as soon as we are selected.

Affected f/w: 1030T
.....

Task(s) Description: Made a change to f/w to check if there's cmdbuf available first before handling selection. (task 7839)

Issue identified by: LSI during internal chip validation.

System and setup description: Generic PC based system with '1030T running in target mode and the number of outstanding I/O is greater than posted command buffer.

Behavior of the problem: F/w would hang during selection phase if trying to handle a selection interrupt without cmdbuf available.

Behavior after the change: F/w always has cmdbuf when handling selection.

Affected f/w: All target f/w.
.....

Task(s) Description: This problem occurs when IOC gets off the bus fast. IOC then gets selected as another target while DPE hasn't completed previous transaction yet. So the target context structure gets over-written when DPE completes and initiator detecteds MID NOT FOUND. This fix requires seq code 1.36. (task 7857)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode and paced.

Behavior of the problem: Bus reset with loginfo of MID_NOT_FOUND.

Behavior after the change: f/w handles this case correctly.

Affected f/w: 1030T target f/w

.....

Task(s) Description: Change the default setting of the citori debug register as requested by h/w designer. (task 7869)

Issue identified by: LSI during internal chip validation

System and setup description: N/A

Behavior of the problem: N/A

Behavior after the change: N/A

Affected f/w: All 1030T f/w.

.....

Task(s) Description: Add revision ID so f/w recognize 1020A. (task 7875)

Issue identified by: LSI during internal chip validation

System and setup description: N/A

Behavior of the problem: N/A

Behavior after the change: N/A

Affected f/w: All 1030T f/w.

.....

Task(s) Description: In sequencer, the current nexus won't get updated until we are (re)selected, which is too late for seq to determine whether to participate in QAS or not. So f/w sets bit 2 in the control flag of the bucket to let sequencer know this info. This change requires seq code 1.38. (task 7876)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode and mixed bus.

Behavior of the problem: Sequencer would tell arbsel to participate in QAS if the currentNexus is QAS capable (regardless of that particular ID is actually QAS capable).

Behavior after the change: H/w would respond (or not respond) to QAS accordingly.

Affected f/w: 1030T target f/w.

.....

Task(s) Description: check in new version of nvdata utility and dat files. This task is not directly related to f/w. (task 7898)

Issue identified by: LSI during internal chip validation

System and setup description: N/A

Behavior of the problem: N/A

Behavior after the change: N/A

Affected f/w: All 1030, 1030T and 1035 f/w.

.....

Task(s) Description: Need to use the reserved cmdbuf for non-pkt when we run out of cmdbufs. Reason being that we use cmdbuf to store the ID we were selected as. so if negotiation happens on the connection, we would store it to the right location of nexus ram. (task 7900)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode, non-paced and the number of outstanding I/O is greater than posted command buffers.

Behavior of the problem: F/w would store the nexus to the wrong spot if negotiaion happens and we don't have a regular command buffer. So on next reselection, sequencer loads up the wrong nexus and hang the bus

Behavior after the change: F/w stores the nexus to the correct spot.

Affected f/w: 1030T target f/w.

.....

Task(s) Description: Prevent any data of 0x55 during message in phase except for QAS. This is workaround for h/w because whenever it sees 0x55 during message in phase, it treats it as QAS. (task 7916)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030X running large number of outstanding I/Os (85 or more) or negotiate sync offset of 85.

Behavior of the problem: H/w would treat 0x55 during message in phase as QAS, including tag of 0x55 or negotiation offset of 0x55. And it would hang in the middle of an I/O.

Behavior after the change: F/w won't issue tag of 0x55 any more. If the request sync offset is 0x55, it will respond with 0x54.

Affected f/w: All 1030, 1030T and 1035 f/w.
.....

Task(s) Description: check in sequencer code 1.39. Works around two hardware issues. One related the switching of sclk speeds when going from 10 MT/s to 320 MT/s. The terminal count would be changed in such a way that the clock would get hung up for a period of time. The sequencer now staggers the clock divider change to prevent this. The second issue was related to the clearing of the initiator id from an Arbsel register. This clearing was suppose to happen automatically, but was not. The sequencer now clears this id so that follow on I/Os from other initiators do not get confused. (task 7918)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode and mixed bus.

Behavior of the problem: Bus hang when changing from fast-10 to fast-160 (U320). Bus hang due to sequencer looks up the wrong nexus.

Behavior after the change: h/w looks up the right nexus, sync rate changes fine.

Affected f/w: All 1030T f/w.
.....

Task(s) Description: Move cmdbuffers to sharemem, so we can have 256 per channel. This is a feature addition. (task 7919)

Issue identified by: N/A

System and setup description: N/A

Behavior of the problem: Before f/w only has 52 cmdbufs per channel due to LRAM restriction.

Behavior after the change: f/w is capable of 256 cmdbufs per channel.

Affected f/w: 1030T target f/w.
.....

Task(s) Description: There's a small timing window on I/O completion path that if reset occurs in this window, we could lose a cmdbuf. Eventually, we lose all cmdbuf and return busy. (task7925 and 7928)

Issue identified by: LSI during internal chip validation

System and setup description: Generic PC based system with '1030T running in target mode with resetmon.

Behavior of the problem: f/w loses cmdbuf slowly and eventually runs out and return busy status.

Behavior after the change: close the timing window.

Affected f/w: 1030T
.....

Task(s) Description: (7924) This task fixes problems associated with Task Management operations in a Multi-Initiator environment

Issue identified by:

System and setup description:

Behavior of the problems:

(1) When one Initiator issues a Target Reset, the other Initiator does not have knowledge that the Target is no longer running at the previously negotiated speeds (the Target will be Async/Narrow). This results in a “hang” or possibly a Bus Reset due to the mismatched speeds.

Specifically, when certain commands, Inquiry, Request Sense, & Report LUNs, are sent to the Target, the target will not generate a Unit Attention. To handle these commands, the Initiator, when IU is not enabled, will cause negotiation to occur when starting these commands. Other Commands will result in a Unit Attention and the subsequent automatic Request Sense will cause a negotiation.

(2) Associated with this fix was a correction to the 1030 F/W where an ST/DT mismatch was detected but not handled. When this occurs, the F/W will reset the bus and report a LogInfo code of CTX_LOGININFO_CODE_RESET_INVALID_PHASE_CHANGE (0x000B0000).

(3) Fixed a problem that was discovered with a Vendor's test program. Specifically, the test would eventually cause a concurrent Task Management and Bus Negotiation. This was causing hang condition. The fix was to serialize these operations.

Behavior after the change:

(1) (2) When IU is not enabled, the F/W will cause a negotiation on Inquiry, Request Sense, and Report LUNs commands.

(3) Concurrent Task Management and Bus Negotiations are executed and completed separately.

Affected f/w: 1030x ALL

MPT SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.11.00

6/30/03

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Beginning with this version, these Release Notes will contain information for Initiator Only, Initiator-Target, and Integrated RAID

Major Changes From Version 01.03.10.00:

- Implemented Sequencer Code version 1.172. This applies to ALL builds. (Task 7717)

Sequencer Code release 1.172 resolved two issues, one related to the 1030's participation in QAS and the other related to a SCSI hang condition after a Bus Device Reset is issued.

With regard to the QAS issue, the 1030 was not actively participating in QAS due to a previous work-around placed in the Sequencer Code that was no longer necessary. This work-around was removed and the 1030 now actively participates in QAS.

With regard to the SCSI hang condition, the 1030 hardware would fail to notify the firmware of an incoming Packetized Status Packet and as a result the lost Status Packet would result in a hang condition. This condition occurs after a SCSI Bus Free from a command such as a Bus Device Reset takes place and then is followed by an immediate reselection by a target which sends a Status Packet. The 1030 will ACK this Status Packet in, but then fail to notify the firmware that the Status Packet was received. The packet will be lost and a hang condition will result.

- Implemented changes to correctly handle Task Management messages. The F/W was incorrectly processing the resultant behavior on the SCSI Bus when Task Management commands were issued. Also, the F/W now allows for the proper Reset to Selection time. This was causing certain disk drives to respond with Selection Time Out when accessed immediately following a Target Reset. This fix applies to ALL builds. (Tasks 7640, 7663)
- Illegal PPR issued when constructing an Automatic Request Sense command. The problem occurred when a device has negotiated a non-Packetized speed, but the F/W has "Requested Setting" of

Packetized. When a Check Condition occurs in this situation, the F/W will renegotiate with the device prior to sending the Request Sense CDB. The device would then hang due to a change in negotiated settings while a Contingent Allegiance condition existed. This fix applies to ALL builds. (Task 7699)

- Corrected a bug that was allowing a SCSI I/O to complete with good status even though there was a data under run. In this particular problem, the PPR message was Rejected by the device. The F/W set a flag indicating this had occurred, but the I/O completion code was ignoring the data under run when this flag was set. This fix applies to ALL builds. (Task 7718)
- Fixed a F/W Download boot problem on Windows systems. When upgrading the Device Driver, the F/W image was lost when power was removed from the controller and the driver had not saved a copy of the F/W. Affects ALL builds. (Task 7572)
- Fix Data phase hangs on F/W Download Boot systems. This occurred because of 1030 errata where delayed reads causes problems. Affects ALL builds for 1030-B0, B1, B2 boards (Task 7586)
- Fixed a bug in the MemMove function of Toolbox command. When performing system to system transfers, data was not being transferred from the SRW Data register to system memory. This fix applies to ALL builds. (Task 7692)
- Enable Auto-chaining if allowed, when host sets the Discard F/W Image bit in IOCInit message. Affects all builds except for IE. (Task 7704)
- From this build forward, the default page version is updated to 'C' for all builds. The F/W with version C pages will check to see if the nvdata version is current, if not, it will update the seeprom image

to version C. This is just a version change, not a bug fix. User won't see different behaviors. Affects ALL builds (Task 7654)

- Fixed a bug that may occur during Data Out transfer. DMA and fetch state machines might not be idle even if dma_xfer_active bit is off. This causes consecutive DMA context requests to start transferring immediately without valid data. The symptoms include hang in the middle of outbound data phase or no data transfer at all. ALL builds are affected. (Task 7696)
- F/W was using the Q-tag improperly before qualifying it, which causes MID_NOT_FOUND bus reset. This fix only applies to IR related builds. (Task 7698)
- Update MPI headers to the latest release. No behavioral change. ALL builds are affected. (Task 7349 and 7712)

- **Major Changes From Version 01.03.09.00:**

- Implemented a MPI change that allows the host to create a volume with a virtual target ID that will not change (currently, drive roaming can cause the virtual ID to change). By default, this behavior is disabled and firmware should continue to behave as it has in previous builds. More information on this change can be found in the Metadata Behavioral document and in a future version of the MPI specification. (Task 7575)
- Firmware was changed to ensure initial metadata is written to disk prior to replying to a host create volume request. This change resolved an issue where the host would reset the system (and the 1030) before metadata was properly written to disk. This bug resulted in the volume incorrectly being brought to an OPTIMAL state instead of a REDUCED/RESYNCING state. (Task 7543)
- Fixed a problem with firmware that sometimes caused physical drives to remain inaccessible to the host after a volume was deleted. After the system or 1030 was reset, this issue would not occur and the physical drives would become visible again. (Task 7545)
- Fixed firmware problem that caused the resync operation to erroneously start after the volume was deleted. This bug would only occur when a delete volume request was subsequently followed by a SCSI bus reset. Once the system was reset, this issue would not occur. (Task 7543)
- Fixed a problem with firmware that caused a DT data hang. This bug occurred only on PCI systems, in a download boot environment under heavy IO load. Cause was delayed reads not being disabled in FW Download Boot environments. (Task 7586, 7600)

- **MPT Integrated Raid SCSI Firmware
Release Notes**

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.09.00

05/12/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.08.00:

- Change in behavior to resolve potential issues with host issued task management (scsi bus reset) requests when using the IR firmware. Prior to the change, IR los to a mirror that are terminated because of a scsi bus reset were not terminated back to the host and were instead retried internally by the firmware. This was done to insure that a terminated write IO didn't result in out-of-sync mirrors. The problem is that most host drivers assume that when they issue a scsi bus reset task management request that all outstanding los will be immediately terminated and the IR system was internally retrying the IO and potentially accessing host resources that had been freed. The change in behavior is to terminate all host generated los when a scsi bus reset occurs, and the firmware instead will use the write journal to resync the disk regions covered by any outstanding write los that were terminated. (Tasks 7316, 7344, & 7386)
- Add a 1 second delay after a scsi bus reset to the IR builds to allow targets time to respond to IO requests. It is possible for the IR firmware to immediately retry and IO after a scsi bus reset, and if the target returns a selection timeout on the first access, it causes the IR firmware to fail the physical disk. It has been observed that some U320 targets need additional time after a scsi bus reset before the first IO is sent to the target. (Task 7337)
- Change the code that handles a SAF-TE processor to store the last known SAF-TE target id to slot number mapping to better handle SAF-TE processors that clear this mapping when a drive is removed. (Task 7343)
- Disable auto-chaining for the IME firmware build. This was required due to lack of available memory to support this feature. (Task 7423)
- Change in behavior to not fail a physical disk when a media error is returned for a verify IO. The new behavior for media errors will be to fail a physical disk only when the IO was a write. (Task 7444)

- Update to sequencer version 1.171 to re-enable QAS participation. (Task 7483).
- Fix the actual image size field when using the firmware upload feature. (Task 7281).
- Fix a problem with the Termination Count that is returned when the host issues a task management request. The count was cumulative between task management requests in certain circumstances. No known problem with the incorrect value. (Task 7289).
- Support was added to enable the firmware to utilize a SEEPROM image attached to the firmware image store in flash. The firmware will use the attached image if the PCI configuration register space in the active SEEPROM part is corrupt and use the stored image to overwrite the corrupted SEEPROM. This allows the firmware to recover from a corrupted SEEPROM part. (Task 7348)
- Fix a developer found coding bug that potentially could allow access to a NULL pointer. No known problems were seen as a result of this bug. (Task 7380)
- Fix a behavioral bug where the firmware, when roaming was detected, would not use a hot spare when it is added to a volume. (Task 7381)
- Change of behavior for the firmware when a write journal entry number of blocks exceeds a 16-bit value. The prior behavior was to resync the disk starting at the referenced LBA and resyncing to the end of the volume. The time required for this type of resync is excessive and could create the appearance of a system hang. Write journal entries must be fully processed before the volume can go operational at start-of-day, and after a SCSI bus reset before host IOs to the volume can resume. The new behavior is to start a full resync of the IR volume and clear all remaining write journal entries. A full resync occurs in the background, and host IOs are processed while the resync is in process, and thus avoiding the appearance of a system hang. (Task 7402)

- A firmware internal design change to resolve potential issues with how the firmware queues host IOs when the firmware is temporarily unable to process the IO. The new design avoids potential deadlocks and issues that might arise when volume or disk state changes while queuing host IOs. No known problems resulted from the prior behavior in prior releases of firmware. Changes incorporated in this version of firmware added new complications to the prior design and the new design resolve the complications. (Task 7419)
- A change to bring the firmware into compliance with the MPT specification when pass through IOs result in an address reply being returned to the host. The MPT specification says that the RAID physical device number is returned in the address reply, and prior to this correction, the target ID of the physical disk was returned. No known problems resulted from the incorrect behavior. (Task 7412 & 7454).
- A change to bring the firmware into compliance with the MPT specification when multiple volumes are found. The MPT specification added an inactive flag in RAID Volume Page 0 that was not being set in prior releases of the firmware. No known problems resulted from this incorrect behavior. (Task 7458).
- A change in firmware behavior when a verify fails when the firmware is performing its data scrub feature. The prior behavior was to retry verify for the same disk area after corrective action was performed. However, this could result in the data scrub task repeatedly verify the same area of the disk when the error is uncorrectable. The new behavior is to move on after attempting to correct the disk error. (Task 7431)
- A change in firmware behavior for the resync process. The prior behavior for the resync process is to use the write long command to corrupt the destination block when the source block is unreadable. This process occurs regardless of why the resync is being performed. The new behavior is to limit the destructive corruption process to occur only when doing a complete rebuild of a disk or full resync of a

volume. The destination block corruption is used to insure that both mirrors of a volume contain identical errors so that garbage data isn't returned without the host realizing the data is garbage. However, the destructive practice is not needed, and results in undesirable side effects when doing a resync for a write journal entry, a resync as an attempt at fixing a read error on one mirror by reading the other mirror, or a resync to fix an error detected by the data scrub process. (Task 7445)

- Changes to better support the MPT "clean tool" toolbox command. The MPT specification allows one toolbox clean message to cause all variants of the clean tool to be executed and prior to this change separate messages were needed to perform the same action. (Task 7268)
- Add code to insure the destination and source addresses are word aligned prior to using the sysdma hardware. This change was made as a preventative measure. (Task 7342)
- Correct an oversight in the support of MPI IOC Page 0. The chip configuration information was not copied into IOC Page 0 as required by the MPT specification. (Task 7418)
- Fix a bug in the context manager code when task management requests are issued. The code was incorrectly retrieving the q-tag information when cleaning up outstanding IOs, resulting in the task management request failing. (Task 7283)
- New feature to allow a host driver to request DT transfers at lower than U160 sync speeds. (Task 7284)
- New feature to allow the 1030 Vendor ID and Device ID to be set by the firmware before clearing "config not valid". Support for this feature is restricted to when a SEEPROM image is appended to the firmware image and other specified conditions are met. (Tasks 7293, 7375 & 7382)

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.08.00

04/09/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.07.00:

- Fix a bug with when an IME volume is performing a resync (defined as copying the primary mirrored stripes to the secondary mirrored stripes). The firmware when initializing at start of day doesn't properly set the volume state to reduced, and the state is instead left as optimal. This will cause the firmware to incorrectly allow reads from the secondary mirror potentially allowing the firmware to return incorrect data in the event the primary and secondary copy are not identical (Task 7390).
- Fix a bug with when an IME volume has a disk member that is being rebuilt (defined as replacing all the data on a disk; a disk in a 1E volume has both primary and secondary mirrored stripes) and the write journal is processed by the firmware at start-of-day after a system crash, or after a diagnostics reset. Any primary mirror stripe that resides on the disk being rebuilt is not processed. Prior to the fix the firmware always copied the primary stripe to the secondary stripe when processing a write journal entry. For a 1E volume, there are primary and secondary stripes on any single disk, and for a primary stripe that is resident on the disk being rebuilt, the primary stripe may not be valid, and the resync logic correctly prevented the primary stripe from overwriting the secondary stripe. For a 1E volume, the correct behavior when processing write journal entries is to give preference to the primary to secondary direction, but to change the direction from secondary to primary, when the primary stripe resides on an out-of-sync drive (Task 7391).

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.07.00

04/04/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.06.00:

- Fix a bug with a specific case of when a write journal playback occurs. The incorrect behavior was that an outstanding write-journal entry was not properly processed when the IR volume was rebuilding. (Task 7354)
- Fix a bug in which roaming wasn't properly triggered when an IR volume (or a single disk from a volume) was introduced into a system. The rules for roaming prevent "missing disks" from being automatically imported into a volume (i.e. hot swap). Without the roaming rules, a single disk with IR Metadata introduced into a system would cause the FW to hot swap in a disk that happened to be at the target id of a missing member of the volume (as defined by the metadata on the disk that was introduced into the system). Disks with metadata on them when first seen after an upgrade of IR firmware to a version that supports Metadata will be treated as though they had just roamed into the system. (Tasks 7365, 7372)

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.06.00

03/19/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.05.00:

- Fix a problem with the retry count not being updated when retrying either a Test Unit Ready (TUR) or a Sync Cache command. Continuous retries were possible if the command always returns an error, for example, a TUR with a non-zero data length will always return a data under-run error. (Task 7273)
- Update to Sequencer code 1.170 to fix data corruption issues. (Task 7306)

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.05.00

03/06/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.04.00:

- Move an #endif to include code that was improperly excluded from one of the IR builds. This fixed a problem that prevented this IR build of the firmware from bringing a “missing” physical disk back online after the physical disk started responding. (Task 7256)
- Fix events that are sent by the firmware for an IR volume create. The LSI DOS and BIOS configuration utility don't enable MPT events. A configuration utility running under an OS that has MPT events enabled could see a problem where one or more events may be incorrectly sent through the doorbell, and the event data may be incorrect. (Task 7261)
- Fix an intermittent flash erase problem that on certain production 1030 HAB's resulted in a 10–20% failure when flashing the BIOS using the firmware's FWDownload command. (Task 7264)
- Update the sequencer code to 1.167. This fixed an issue that occasionally occurs where, if immediately after a selection timeout the '1030 is reselected by any two target devices twice in consecutive bus connections. Based on the timing of the first reselection following a selection timeout, an internal signal controlling the SCSI Busy pad enable is not turned off. On the second reselection, because the pad is still enabled, the '1030 will drive the busy signal early and confuse the target. At this point the bus becomes hung and requires a SCSI bus reset to resolve the hang. The timing window for the problem to occur is 100ns wide repeated every 819 us. This sequencer change closes the window of opportunity by clearing an internal register at the beginning of reselection and then writing it back at the end of reselection. (Task 7265)

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.04.00

02/28/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.03.00:

- Fix an issue with a missing hot spare appearing when moving from 1.00.xx IM firmware to 1.03.xx IME firmware. Task 7182.
- Change default QAS fairness delay to improve expander operation. Task 7191.
- Add timing delays to minimize potential for SEEPROM corruption on power up. Task 7192 & 7226.
- Add code to update SEEPROM if the SEEPROM critical area checksum is invalid, and there is a firmware attached SEEPROM image. Task 7193.
- Add code to create a write journal entry for each host issued write IO. Task 7198.
- Fix code that handles the tracking of the number of outstanding RAID pass-through IOs, the code was missing a set of parens. Task 7205.
- Fix a problem that may occur on non-intel platforms when channel 1 was brought operational before channel 0. If the driver is required to set the PCI bus mastering enabled bit, and channel 1 was enabled before channel 0, the 1030 was unable to DMA. Task 7205.
- Fix the write journal processing code that syncs up the mirrors prior to the operational state. If the 1030 is reset before all entries in the write journal are processed, the next boot cycle would drop the current entry and continue with the next entry. The fixed code will restart processing with the current entry. Task 7208.
- Fix a problem with firmware attached SEEPROM images. The NextImageOffset wasn't cleared. The caused a problem when a firmware upload was performed by the host driver. Task 7209.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.03.00

02/18/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.02.00:

- Fix a bug in the code that handles host commands sent to a saf-te processor that was registered by the host driver. The bug caused the internal IR physical disk outstanding IO counters to be incorrect.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.02.00

02/11/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.01.00:

- Fixes for SEEPROM communications to eliminate potential SEEPROM corruption.
- Fix a problem with when the driver sends an event acknowledge for a SCSI bus reset and immediately sends another IO, the IO after the SCSI bus reset was in certain cases incorrectly terminated by the FW.
- Fix several issues with auto-chaining enabled and resync IOs when no free message frames are available to pull in a host IO. Auto-chaining was enabled in version 1.03.00.00.
- Minor code efficiency changes to reduce the FW code size.
- Improvements to the code that detects when a bad drive is continuously returning a q-full status.
- Add code to properly increment and decrement the internal IR physical disk PendingIos count for RAID pass through IOs. This improves the firmware's queue depth detection algorithm.
- Add code to detect when the CTX processor is reset by an external scsi bus reset, while the IOP is sending a doorbell message to the CTX processor and is waiting for a response.
- Improve the code that handles when no host address reply frames are available and the firmware needs to send an address reply. The firmware adds the address reply to a linked list and waits for the host to post reply free frames.
- Add code to check the volume type when a create volume is requested to insure that the firmware supports the volume type requested. The prior code allowed the creation of a volume type that the firmware didn't support.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1, B2, C0)

Version 01.03.01.00

01/28/2003

Special Release Notes:

This build works on chip revisions B0, B1, B2 & C0.

Major Changes From Version 01.03.00.00:

- Enable auto-chaining support to all firmware builds.
- New sequencer code 1.166, required for multi-id target support.
- Add support in target mode for the 1030 to respond at multiple target lds, sequencer code 1.166 is also required.
- Add toolbox tool support for all combinations of memory moves (Note: The IME firmware doesn't support the toolbox tools).
- Re-disable coma mode, this was incorrectly enabled in version 1.03.00.00.
- Improvements to the SEEPROM support code.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.03.00.00

01/16/2003

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.10.00:

- New sequencer code 1.164.
- Add 1030 C0 part recognition.
- Add support to correctly handle a “recovered error” check condition. The recovered error is logged and the IO is completed as if no check condition had occurred.
- Add code to clear the “totalblocks” to resync value stored in NVSRAM when the volume is deleted, or when a new volume is detected.
- Increase the number of “IO segments” that the firmware can track for each host IO. Previously, only 31 segments could be tracked and re-generated when an error occurred. Under a normal typical IO load, this was sufficient, but if an error occurred on the 32nd or greater segment, the host IO was failed, since the firmware couldn’t retry it. The failing of a host write IO might also cause a physDisk to be taken off-line and rebuilt. The number of track-able IO segments was increased to a 28-bit number from a 5-bit value.
- Add code to detect when a disk drive, that is a member of an IR volume, continually returns a queue full status and does not complete any IOs. Certain disk drives are known to incorrectly handle the queue full state. The IR firmware will now attempt a SCSI bus reset to clear up a “bad” drive’s queue full state, and will fail the drive if the drive is unable to properly process any IOs.
- Fixed a bug in the IR firmware that allowed the pending IO count to increase above the actual pending IO count.
- Fixed a bug in which the firmware would ignore a message unit reset on one channel if there was a pending doorbell operation on the other channel.
- Transition much of the 1030 assembly loader to a ‘C’ code equivalent module.
- Add code to save last connected scsi id in port page 0.

- Corrected a Task Management problem where I/Os were not getting completed correctly.
- Corrected a problem where the F/W completed I/Os for ABORT_TASK and ABORT_TEST_SET before an outstanding DMA transaction had completed. When the F/W *was* interrupted for the DMA completion, the context of the I/O could not be restored since it had already (prematurely) been completed.
- Corrected a bug in the F/W that was not completely cleaning up an I/O when there was a mismatch on the negotiated speed between the 1030 and an attached device. This particular problem was manifest during a Windows installation after the O/S had unloaded then re-loaded the SCSI Miniport. At this point, the 1030 F/W believed the SCSI Bus was Asynch/Narrow, but the device was in Packetized mode.
- Change to re-enable QAS selections.
- Changes to implement auto-chaining firmware support (this feature hasn't yet been enabled).
- Change a previous firmware limitation and handle the case when the firmware is out of internal message frames when handling a scsi bus reset. The firmware will now reply to all outstanding IOs rather than dropping the IOs when the firmware was out of message frames.
- Change the required minimum sync offset from 4 to 6.
- Add firmware support for the new PCI parity error detection feature available with the 1030 C0 part.
- Fix the IO termination count when aborting IOs and the system message queue is empty.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.10.00

12/16/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.09.00:

- New sequencer code 1.160. Fixes issue seen with selection timeouts.
- Don't clear the resync or process the write journal for failed volumes.
- Correct the volume page number and page size for IOC page 2.
- Allow "simple" IOs to out-of-sync physical disks.
- Send the first inquiries for the firmware bus scan untagged.
- Fix off-by-one error when creating a mirrored volume.
- Fail a newly created physical disk page read request until after a volume is created.
- Fix the zero-initialize code to properly handle IM volumes.
- Change the physical disk handling for IO errors when the retry count is exhausted. Set the physical disk state to out-of-sync to force a rebuild unless the last retried IO error is a media or controller error.
- Check the physical device number for all pass-through IOs to insure the physical device is a member of the active volume and fail pass-through IOs to inactive volumes.
- Don't resync when a volume has members on both channels (cross channel).
- Fix a problem with IR physical disks being presented to the host instead of being hidden in certain cases (cross channel).
- When a member physical disk is seen on the wrong channel, change the inquiry data for the physical disk to say "WRONG CHANNEL" to assist the configuration utility in informing the user of a problem.
- Corrected a bug in the F/W that was not completely cleaning up an I/O when there was a mismatch on the negotiated speed between the 1030 and an attached device. This particular problem was manifest during a Windows installation after the O/S had unloaded then re-loaded the SCSI Miniport. At this point, the 1030 F/W believed the SCSI Bus was Asynch/Narrow, but the device was in Packetized mode.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.09.00

11/22/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.08.00:

- Add code to retrieve the correct Q-tag when a FW generated request sense returns with a selection timeout.
- Fix code that detects when there are not any optimal physical Disks available to resync.
- Change to use the IO message context field to store the internal physical disk number for IR generated IO segments; this fixed a problem with missing physical disks that had been assigned the 0xFE target id.
- Fixed a problem with not flagging missing disks on power up as out-of-sync. The next time the disks were seen by the FW, the disks would come up optimal instead of being rebuilt by the FW.
- Add code to prevent RAID pass through IOs to missing physical disks that had been assigned target id 0xFE.
- Change code to treat all ASC code of 29's the same regardless of the ASCQ value.
- Changed the code to not clear the write journal and resync journal when a volume fails.
- Changed the order of function calls to detect an adapter replacement sooner in the initialization process.
- Added a 1-millisecond delay before retrying IOs returned with a Q-full status. This was done to avoid saturating the SCSI bus with retries returning Q-full.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.08.00

11/15/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.07.00:

- Update sequencer code to version 1.156
- Correct problem when SAF-TE processors were present on both channels where both SAF-TE processors were updated for IR volume state changes.
- Change Resync Read IO timeout to 3 seconds.
- Fix problem with IR events that sometimes corrupted the IO frame context array.
- Fix problem with target resets when sent to IR physical disk member resulting in lost IR IO segments.
- Fix a Mid-not-found case.
- CTX Mgr change to validate the q-tag field when cleaning up IOs.
- Fix potential null pointer reference when a hot spare doesn't exist.
- Add code to detect when resync'ing an IR volume a case when there are no valid disk regions to resync.
- Cleanup debug code left in 1.02.07.00.
- Fix a problem with the FW not properly determining a failed volume state.
- Improve internal cleanup of IR structures when an IR volume is deleted. This intermittently cause problem with deleting and immediately re-creating an IR volume.
- Change to always retry queue full returns from IR physical member disk drives. Add code to actively manage the outstanding IO count for each member disk drive to minimize queue fulls.
- Change to allow the IR drive-alive task to run while waiting for IR IO segment to complete prior to a resync timeslice. This allows detection of a missing drive that has outstanding IOs when the drive goes missing.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.07.00

11/01/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.06.00:

- Corrected a Task Management problem where I/Os were not getting completed correctly.
- Corrected a problem with QTAGs when negotiating 320 with a non-320 device. If the device rejects the PPR negotiation, then a WDTR/SDTR negotiation occurs. This would then result in a MID_NOT_FOUND error due to the mishandling of the QTAG on the original I/O.
- Added support in SCSI Device Page one to *force* PPR negotiation. This is used by certain diagnostic utilities, and overrides the default operation of using PPR negotiation only when the Synchronous Period would support PPR.
- Added support for Packetized Target Mode. This has no effect on the functionality of this release.
- Fixed a hang condition that would occur when a Parity Error was detected during Reselection.
- Fix bugs in resync code when a resync entry was added by the data scrub or on a read error (write verify from the good mirror) for a 1E volume.
- Improve the handling of host IOs to the virtual drive. The FW would fail a host IO when the physical disk was also failed due to a write error. The FW should complete the host IO without error when the mirror was written successfully.
- Fix bug with the host's physical disk device numbers not being properly mapped internally.
- Fix a case when roaming occurred, and a physical disk was missing, the IOC wasn't updated for the missing disk.
- Implement feature to delete inactive hot spares.
- Fix reporting of physical disks in IOC page 3. Missing physical disk are not reported, as per the MPI spec.

- Fix bug with events generated by the IR subsystem. The IOC number was incorrectly stored in the bus field.
- Reset the LBA for the data-scrub task when roaming occurs, and keep the data-scrub task's current LBA stripe-aligned for 1E volumes.
- Fix a bug with deleting and recreating an IR volume, the recreate would fail.
- Change to the firmware for when multiple missing drives come active, the FW will bring 1 drive back into the volume and allow the host to perform DV before processing the next drive.
- Fixed a problem that would allow new IOs to be started at a time when it was not safe to start new IOs. This problem occurred if an IO that needed to negotiate was started, then another IO got a check condition before the negotiation IO completed. This could result in selections to the wrong SCSI ID and other undesired behavior.
- Fixed an error in the 1030 loader where, we would mistakenly clear the bit 30 of PCI Config Control 0 register. This bit tells whether we are single function or not.
- Update sequencer code to version 1.152

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.06.00

10/24/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.05.00:

- Fixed the MPI resync indicator RAID action, which in certain cases was returning incorrect values.
- Fixed hot swap feature.
- Corrected the physical disk number in IR events sent to the host.
- Fix bugs introduced in 1.02.05.00 that caused a physical disk to be failed on a single write error (including parity, crc, bus resets, etc). The correct logic will retry a write error at least once (up to a maximum of 8 times) before failing a physical disk.
- Fixed a problem in the resync code that in certain cases resulted in a firmware hang when there wasn't an IR volume detected.
- New Sequencer code to improve handling of CRC errors.
- Add code to detect a volume that is imported, activated or moved to a new adapter and to clear the adapter write log (NVSRAM) and then force a resync of the volume.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.05.00

10/18/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Known problems with this release:

- Doorbell functions may hang during a resync. This is known to affect the DOS ASPI and Netware driver.
- Physical disks that are failed due to an IO failure to the drive are marked as failed, but the firmware may not poll the drive's target id looking for a replacement drive, so the hot swap feature will not work in this case. A workaround is to have the failed drive powered off during a reboot and replace or power-up the failed drive after the system has booted.

Major Changes From Version 01.02.04.00:

- Fixed a bug in code that determines when to fail physical disks. The logic is dependent on if the failed IO was a write or read, and the code that checked for the write IO case was incorrect. Also correct code that prevented failing a physical disk that was out-of-sync.
- Fixed a hot spare fail over bug.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.04.00

10/17/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.03.00:

- Coding Optimizations to reduce memory footprint.
- General meta data optimizations and improvements.
- Change to allow retrieval of IOC pages and RAID pages for the active volume without accessing the metadata on disk, thus improving FW performance.
- Change the Resync task to yield control on a read failure to improve the performance of the FW, after yielding control, the next run of the resync task will retry the read, up to the retry limit.
- Fix a bug in the resync code in which the write long was sent to the wrong LBA.
- Fix a bug in which the virtual id wasn't being presented to the host (all phys disks hidden, with no virtual volume presented).
- Fixed bug with the wrong internal phys disk mapping when deleting a physical disk instance (delete failed).
- Improve handling of disk errors and failing of physical disks for write and verify IOs and for IOs resulting in a selection timeout.
- Fixed a bug in the handling of a Check Condition on a Request Sense CDB. This fix uses the QTag of the Original Request when completing the original I/O. Prior to the fix, the code would use the QTag of the Request Sense (always zero) when completing the Original Request. This would result in a IOC Fault condition.
- Improve the handling of errors when writing the metadata, the code will not persistently log write errors to the metadata sector. If the error is persistently logged then the metadata sector is updated, which may result in an endless loop.
- Add code to handle PCI parity error detection (note: This is for future support of the 1030 C0 part. The 1030 B0 part doesn't support the PCI parity error detected bit).

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.03.00

10/9/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.02.00:

- When roaming occurs and there are missing physical disks belonging to a virtual volume, don't allow polling for drive replacement at the last known target id.
- Don't process any write IOs to a failed virtual volume.
- Fix a parity error issue during selections or reselections.
- Fix issue with the resync indicator being double for IM volume types.
- Fix to prevent a read capacity IO to a physical drive until after the metadata from all disks has been reconciled.
- Fix issue with IM volume migration from prior versions resulting in errors when reading RAID volume page 0 (pt#994).
- Resolve problem with the size of metadata in limited cases being greater than 512 bytes. Metadata should always be less than 512 bytes. This problem manifested as a 0x8002 fault code (pt#995)
- Resolve problems with hot spare roaming and problem with the virtual volume appearing on the incorrect IOC.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.02.00

10/1/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.02.01.00:

- Added code to issue a Mode Sense command to retrieve all pages.
- Corrected a bug that was blocking non-tagged I/Os.
- Change Deskew values to improve U160 operation.
- Change to prevent coma mode on 1020 parts to resolve issues with Windows power management and firmware download boot.
- Added Sequencer Code version 1.145.
- Corrected a bug that was blocking non-tagged I/Os.
- Fix to drive polling code when Roaming detected and all the virtual volume's physical disks were found.
- Fix to the internal resync task code to resolve a bug with task switching.
- Add code to properly send out a "DV needed" event to the host when a new drive is detected.
- Fix the behavior of the MPI disable volume RAID action to expose to the host all physical disks (all volumes and hot spares).
- Update the IOC-page-3 implementation to match the MPI addendum.
- Detect and prevent overlapping RAID action requests from the host.
- Fix a bug in the resync code when resync sector count is 0.
- Changed the internal task handler thread size.
- Improve firmware startup code to insure that the volume state is updated after performing all checks before going ready. These changes were made to address a volume coming up failed when the firmware was still in the process of handling the reconciliation of disks that were missing from the last boot.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.02.01.00

9/22/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

01.02.01.00 was built from version 01.01.21.00

Major Changes From Version 01.01.21.00:

- Implement IM firmware to IME firmware volume migration code
- General Metadata fixes for developer found bugs
- Hot-spare implementation improvements
- Changes to the firmware bus scan to use device reset instead of resetting the SCSI bus before scanning the bus
- Fix to properly detect volumes on both channel (invalid configuration)
- Fix for the firmware bus scan to resolve timeouts that are due to an extended spin-up time required for certain SCSI enclosures

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.21.00

9/19/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

The 1E builds are NOT included in this release.

Major Changes From Version 01.01.20.00:

- Added Deskew values to correct a problem in non-320 transfers that was causing CRC errors.
- Corrected an error in the “Bucket” pointers that was causing a Message Out hang.
- Corrected a bug that was causing an incorrect negotiation, particularly at u160 speeds.
- Corrected a “MID_NOT_FOUND” error that was occurring after a CRC error.
- Corrected a bug that caused a hang after a CRC error at u320 speed.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.20.00

9/13/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.01.19.00:

- Added code to zero LBA 0 (the master boot record) of the virtual volume when a striped volume is deleted. This does not affect the deletion of IM volumes. The purpose of this change is to work around problems with Windows. LBA 0 of the virtual volume (MBR) also maps to the real LBA 0 of the first physical disk of the volume. After a striped volume is deleted, Windows sees a partition greater than the disk size, and assumes the disk is larger than it is.
- Implemented a fix for a certain drive vendor's U320 drive to fix the case when the wrong LUN is returned in Packetized mode. This fixes a problem where the drive fails DV and was reverted to async/narrow by the OS or OS driver.
- Added firmware code to handle "CRC with ATN" interrupts from the 1020/30 sequencer.
- Fixed the error counter used with the "device problem" code to properly reset the counter after each event.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.19.00

9/6/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.01.18.00:

- Remove the fix that was added to version 01.01.17.00 to fix an issue with resetting one IOC channel in a 64 bit addressable PCI system and having the other IOC channel attempt to read IO requests from an invalid memory region. This fix was causing a intermittent hang. This fix will be re-worked for a later version.
- Fix to check for valid meta data on a physical disk before reusing a physical disk that had been marked as missing. This fix was made to keep a deleted IR volume from being reactivated when one physical disk member was powered off when the volume was deleted. Rebooting with the missing disk powered on would cause the volume to be re-created, as all the physical disk serial numbers matched the meta data stored on the re-powered “missing” disk.
- Fix a bug with the FW incorrectly reporting “missing disk” to the configuration utility.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.18.00

9/6/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.01.17.00:

- Fix for 64 bit scatter-gather chain entries.
- Meta data fixes for multi-volume error cases.

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.17.00

8/30/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.01.16.00:

- ASPI SRB's have the option on not specifying the direction on the data transfer. Many OEM applications were developed to use this option. The Data Path Engine has the ability to detect a mis-match on the direction requested vs. the direction of the Target. This fix corrects a problem in which the original solution was implemented.
- Fixed a problem in the detection of untagged I/O requests. Specifically, the problem case interpreted non-disconnecting I/Os as untagged, causing these I/Os to be handled as untagged rather than tagged, non-disconnecting. This resulted in subsequent untagged I/Os getting completed with a Busy Status.
- Improvements in Meta Data operation.
- Implement a fix to address a issue with resetting one IOC channel in a 64 bit addressable PCI system and having the other IOC channel attempt to read IO requests from an invalid memory region since the upper 32 bit message frame address register was reset to 0.
- Fixed a "Mid Not Found" issue (PT#966).

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.16.00

8/26/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Major Changes From Version 01.01.15.00:

- Improve Resync logic
- Reschedule data scrub after an IO error.
- Add Hot Spare support
- Meta data fixes
- IOC Page 3 fix
- Task Management fixes
- Fix issue where the IR physical disk stored inquiry data wasn't being populated after a volume create

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.15.00

8/23/2002

Special Release Notes:

The B0 build works on chip revisions B0, B1 & B2.

Restrictions:

- Hot Spare is not implemented.
- IOC page 5 is not implemented.

Major Changes From Version 01.01.14.00:

- Task Management improvements
- Fix DMA transfer length for 64-bit addressing
- Don't discard image if no image to discard
- Fix IOCLinfo invalid values
- Added support for error counters
- Don't allow U160 Packetized operation
- Fix Event data for an IR volume delete
- Don't disconnect target I/O's
- Fix PPR negotiation error in wide mode
- Fixed Pkt Multi-cmd not going out on bus if interrupted
- Fix errant data-underrun reporting

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.14.00

8/21/2002

Special Release Notes:

- The B0 build works on chip revisions B0, B1 & B2.

Restrictions:

- Hot Spare is not implemented.
- IOC page 5 is not implemented.

Major Changes From Version 01.01.13.00:

- Fix IP Queue overflow
- Fail all IR IOs on SCSI Bus Reset
- Free all resources on IR IO failure
- Increase IR resync write retries to 5
- Disable Multi-cmd support

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.13.00

8/15/2002

Special Release Notes:

- The B0 build works on chip revisions B0, B1 & B2.

Restrictions:

- Hot Spare is not implemented.
- IOC page 5 is not implemented.

Major Changes From Version 01.01.12.00:

- Fix Qtag freeing
- Implement IO Unit Reset Doorbell set to RESET for both channels
- Improve SMART error checking
- Task Management fixes

MPT Integrated Raid SCSI Firmware Release Notes

C1030/C1020 (B0, B1 & B2)

Version 01.01.12.00

8/09/2002

Special Release Notes:

- The B0 build works on chip revisions B0, B1 & B2.

Restrictions:

- Hot Spare is not implemented.
- IOC page 5 is not implemented.

Major Changes From Version 01.00.11.00:

General Changes

Functionality

- New Sequencer code to support expanders
- Support for untagged requests to multiple LUN's
- Support for overriding default PPR options

IR Specific Functional Changes

- Improve Resync logic
- Add support for Data Scrub
- Improvements to IR for handling the failure of physical disk.

Defect fixes

- Fixed a problem with ignored event acknowledgements