QLOGIC

Release Notes

FC HBA STOR Miniport Driver for Windows

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1. Version

These release notes describe the changes, fixes, known issues, and release details that apply to FC HBA STOR miniport driver, version 9.1.7.16.

This driver package includes firmware versions 3.03.25 (2Gb HBAs), 4.03.01 (4Gb HBAs) and 4.03.01 (8Gb HBAs), as well as API version 1.28.0.57 (QLSDM).

NOTE: Windows Server 2003 SP2 or later and KB932755/KB939315 (or later), or Windows Server 2003 SP1 and the KB932755/KB939315 (or later) update to the Microsoft Storport driver, are required. The Microsoft Storport update should be applied before installing or upgrading to this version of the miniport driver. For boot installation, Windows Server 2003 SP2 should be used and then followed by the KB update.

2. Changes

The following changes have been made to the FC HBA STOR miniport driver between versions 9.1.7.15 and 9.1.7.16.

Hardware Support

- Added support for 8Gb HBAs.

OS Support

- Added support for the Windows Server 2008 operating system.

Software/Driver

None

Industry Standards Compliance

N/A

3. Bug Fixes

The following fixes have been made to the FC HBA STOR miniport driver between versions 9.1.7.15 and 9.1.7.16.

- Applied a fix to handle logout in the loop environment.

4. Known Issues

None

5. History

9.1.7.15 QL - 10/30/07

- Added support for the following devices (supported platforms):
  - PCI\VEN_1077&DEV_2432&SUBSYS_01081077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_015C1077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_015D1077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_015E1077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_015F1077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_0160107 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_01611077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_01621077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_01631077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_01641077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_3261103C (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_3262103C (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_3263103C (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2532&SUBSYS_3264103C (x86, IA64, x64)

  NOTE: Microsoft requires x86 and x64 support for all HBAs.

- Firmware versions: 3.03.25 (2Gb), 4.02.00 (4Gb).
- API version: 1.28.0.50 (QLSDM).
- Unique assignment of management server N-port handle values to be for each virtual port.
- NPIV (N_Port ID Vitalization).
- Target link speed (iiDMA).
- PcieLinkCap/Stat to HbaDeviceChipProperty.
- Flash layout regions for 4Gb and returned flash layout table from flash if it is valid.
- Three Alternate Boot Devices and OOFR (out-of-order frame receive)
- Removed QL2XHAI2: IHVs are required to use HBA API provided by Microsoft.
- Preserved BIOS defaults when updating multi-boot image whose BIOS locations can be anywhere in the image.
- Fixed checksum calculation in QLSDM when two-bios image is flashed.
- Fixed ER50975: Initiator discovery problem caused a large burst of RSCN activity when the NetApp does its failover. A failed GPNID command occurring during ports discovery must not cause the termination of the discovery process.
- Handled the case where the GNNFT command was failing due to incorrectly calculated the maximum data response length.
- Setting the alternate WWN and enabling it in the NVRAM did not propagate through to the HBA. Reading the NVRAM and reinitializing the HBA will handle this case.

9.1.4.16 QL 3.03.21 4.00.26 - 02/02/07

- Adhered to Subsystem Id document v2.2m+.
- Firmware versions: 3.03.21 (2Gb), 4.00.26 (4Gb).
- API versions: 1.28.0.37 (QLSDM), 2.0.0.14 (QL2XHAI2).
- Fixed ER50975: Initiator discovery problem caused a large burst of RSCN activity when the NetApp does its failover. A failed GPNID command occurring during ports discovery must not cause the termination of the discovery process.

9.1.4.15 QL 3.03.21 4.00.26 - 11/17/06

- Firmware versions: 3.03.21 (2Gb), 4.00.26 (4Gb).
- API versions: 1.28.0.37 (QLSDM), 2.0.0.14 (QL2XHAI2).
- Adhered to Subsystem Id document v2.2m+.
  NOTE: Microsoft requires both x86 and x64 support all HBAs.
- Added support for the following devices (supported platforms):
  - PCI\VEN_1077&DEV_2322&SUBSYS_01151077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2322&SUBSYS_01161077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2422&SUBSYS_1336103C (x86, IA64, x64)
  - PCI\VEN_1077&DEV_2432&SUBSYS_015B1077 (x86, IA64, x64)
  - PCI\VEN_1077&DEV_5432&SUBSYS_01551077 (x86, x64)
  - PCI\VEN_1077&DEV_5432&SUBSYS_01561077 (x86, x64)
  - PCI\VEN_1077&DEV_2422&SUBSYS_014A1077 (IA64)
  - PCI\VEN_1077&DEV_2432&SUBSYS_014B1077 (IA64)
- Removed support for the following devices:
  - PCI\VEN_1077&DEV_6312&SUBSYS_01301077 (x86, x64)
  - PCI\VEN_1077&DEV_2422&SUBSYS_01471077 (IA64)
  - PCI\VEN_1077&DEV_2432&SUBSYS_01451077 (IA64)
- Conformed QLSDM and the driver to the revised API for "Get/Set Target Link Speed".
- Increased loop back test buffer size to 2048 bytes in QLSDM.
- Closed ER49768: Loopback test always failed when the NVRAM frame size is set to 512 or 1024 (Windows). Pass in transfer size instead of hard coded value in QLSDM.
- Handled the case where the device becomes not ready in the StartIO routine.
- Closed ER48374: SANsurfer 5.0.0 Build 4 - Driver 9.1.3.10b2 - Windows IA64 SP1 - HP. The HBA model numbers do not show up on Information Tab.
- Closed ER48117 (AR 48907, SR70415 [REF:609618455]): Long Erase (0x019) issues with DLT S4 and QLE2462. Error occurs (most likely a bus reset) when running a long erase that takes longer than 110 minutes on the Quantum DLT-S4 (firmware:0808) drive, which exceeds the built in 4Gb firmware timeout limit.

9.1.3.16 QL 3.03.21 4.00.23 - 10/05/06

- This version replaces the invalid release 9.1.3.15.
- Firmware versions: 3.03.21 (2Gb), 4.00.23 (4Gb).
- API versions: 1.28.0.35 (QLSDM), 2.0.0.14 (QL2XHAI2).
- Removed I/O Reduction support for the 4G HBA.

9.1.3.15 QL 3.03.21 4.00.23 - 09/19/06

- Firmware versions: 3.03.21 (2Gb), 4.00.23 (4Gb).
- API versions: 1.28.0.35 (QLSDM), 2.0.0.14 (QL2XHAI2).
- Added OEM specific support for assigning a Virtual World Wide Port Name via registry key.
- Added "Get/Set" target link speed support.
- Changed the INF to enable the I/O Reduction for the 4Gb HBA for the IA64 platform based on Microsoft document.
- Added multiple BIOS support in QLSDM.
- Fixed initialize debug file name variable during DLL load (QL2XHAI2).
- Closed EMC OPT23605: x64 Server hangs during boot at the 'Applying Computer Settings.'
- Cleaned up code related to get Object text for OS Device Name (QL2XHAI2).
- Closed ER47338: Attached target devices not visible to OS after server reboot (QLE220).
- Closed ER47436: Driver not Login into Target Devices (QLE220).
- Closed ER47530: Topology diagram is not displaying properly when LIP issued on QLA2462 port.

9.1.2.19 QL 3.03.19 4.00.23 - 06/30/06

- Firmware versions: 3.03.19 (2Gb), 4.00.23 (4Gb).
- Closed ER46891: Bus Resets Under Heavy I/O Load.
- API Versions: 1.28.0.33 (QLSDM), 2.0.0.12 (QL2XHAI2).
- Closed ER47166: SANsurfer FC HBA Manager B83 showed only one port see the storage even though no zoning.
- Closed OPT 235681: port failure after disconnecting and reconnecting ISL port used by Mirrorview.
- Closed ER47235: SANsurfer FC HBA Manager does not display the topology view correctly when the HBAs are set to loop only until the system is rebooted.

9.1.2.18 QL 3.03.19 4.00.22 - 06/16/06

- Firmware versions: 3.03.19 (2Gb), 4.00.22 (4Gb).
- API Versions: 1.28.0.33 (QLSDM), 2.0.0.12 (QL2XHAI2).
- Added VPD update support for 2432 4-port adapter in 1.28.0.33 (QLSDM).
- Recognized Asynchronous Event 8048h as a valid AEN.
- Modified timer task to handle the case when HBA is in a stopped state.
- 24xx only: Added support for NVRAM Nodename option bit.
- 4Gb only: Added support for reading data from FP (Small Form Factor Pluggable) optical transceivers via QLSDM.
- Adhered to Subsystem Id document v2.2g.
- Added support for the following devices (supported platforms):
  - ○ - PCI\VEN_1077&DEV_2422&SUBSYS_014D1077 (x86, IA64, x64)
  - ○ - PCI\VEN_1077&DEV_2432&SUBSYS_014C1077 (x86, IA64, x64)
  - ○ - PCI\VEN_1077&DEV_2432&SUBSYS_01521077 (x86, IA64, x64)
  - ○ - PCI\VEN_1077&DEV_2432&SUBSYS_01531077 (x86, IA64, x64)
  - ○ - PCI\VEN_1077&DEV_2432&SUBSYS_01541077 (x86, IA64, x64)
  - ○ - PCI\VEN_1077&DEV_5432&SUBSYS_014E1077 (x86, x64)
- Adhered to firmware dump procedure per 2400 Series Firmware Interface Specification version C.
- Closed ER47113: RX2600 fails to boot Windows after 1MB bin flash - SANsurfer 2.0.30b84_windows.
- Fixed: LUNs disappeared after DS4000 controller firmware download in direct attach.
- Closed ER46586: "Bind By Port ID + Present Targets that are persistently bound only" is not working (in loop environment).
- Changed to perform the full firmware dump when firmware error occurs.
- Closed ER46141: JBOD disks turn offline in SANsurfer FC HBA Manager and SANsurfer FC HBA CLI when settings are Present targets that are persistently bound + Bind by Port id (in loop environment).
- Corrected firmware region size in option ROM layout, i.e. firmware size in flash.
- Closed ER45035: GPN_ID has wrong payload length after unplug/re-plug.
- When using the QLSDM to retrieve the transceiver data, you may get SDMGT_CANNOT_GET_SFP_DATA error on system platforms using certain models of Supermicro Motherboard such as P3TDL3 and P3TDLE. The QLSDM retrieves the transceiver data using underlying 4Gb firmware (v4.00.21) that reports an error code of 4005 for this operation.
- Verified support for Atmel flash chip AT26DF081A.

9.1.2.16 QL 3.03.19 4.00.18 - 03/16/06

- Firmware versions: 3.03.19 (2Gb), 4.00.18 (4Gb).
- Adhered to Subsystem Id document v2.2f.
- Added support for the following devices (supported platforms):
  - ○ PCI\VEN_1077&DEV_6312&SUBSYS_01191077 (x86, x64)
  - ○ PCI\VEN_1077&DEV_6312&SUBSYS_011C1077 (x86, x64)
  - ○ PCI\VEN_1077&DEV_6312&SUBSYS_01301077 (x86, x64)
  - ○ PCI\VEN_1077&DEV_6322&SUBSYS_012F1077 (x86, x64)
- Set additional firmware option bit 10 for 2Gb HBA so the firmware waits for the task management command, (such as reset LUN to complete.)
- Closed OPT226506: HBA does not re-login to target after target sends LOGO to HBA.
- Closed ER44735: The link status behave differently between QLE-2460 and QLA2342.
- Closed ER45228: Incorrect HwVersion string is reported by QLogic IHV HBA_GetAdapterAttributes call.
- Closed ER45230: Event Id 11 entries logged by ql2300 at offset x10 and offset x34 do not match the Error Codes published on the web. Since the Miniport uses the Microsoft's Storport.sys driver to actually log the error event, and it has been confirmed that the storport.sys driver logs the event incorrectly. A bug has been reported to Microsoft on this: SRX041110604850 (STORport - Incorrect event data is logged when storport's storportlogerror). Meanwhile, the Miniport driver is changed to log the event code at offset x10 by default. This workaround is controlled by the registry parameter "mevtwrkaround". Please see readme file for detail on this parameter.
- Closed ER45232: Use memory map mechanism in the driver.

9.1.2.15 QL 3.03.19 4.00.17 - 02/13/06

- Firmware versions: 3.03.19 (2Gb), 4.00.17 (4Gb).
- Adhered to Subsystem Id document v2.2e
- Added support for the following devices (supported platforms):
    - PCI\VEN_1077&DEV_5432&SUBSYS_013E1077 (x86, IA64, x64)
    - PCI\VEN_1077&DEV_5432&SUBSYS_013F1077 (x86, IA64, x64)
    - PCI\VEN_1077&DEV_2422&SUBSYS_014A1077 (x86, IA64, x64)
    - PCI\VEN_1077&DEV_2432&SUBSYS_014B1077 (x86, IA64, x64)
- Added support to use combined 2Gb IPX firmware.
- Added support for SST25VF080B flash part.
- Added option for not to dump code section for 24xx firmware dump.
- Closed ER44270: Serial number for the 4Gb HBA should be obtained from the VPD.
- Closed ER38787: Windows 2000/qla2340/veritas tape backup long cable pull failed error message ERROR_DEVICE_NOT_CONNECTED.

9.1.1.15 QL 3.03.18 4.00.12 - 10/12/05

- Firmware versions: 3.03.18 (2Gb), 4.00.12 (4Gb).
- Closed PTR 90818: QLogic 4Gb driver returns selection timeout immediately after cable pull in an OEM special dual loop configuration.
- Closed PTR 90652: QLogic Driver returns a selection timeout when rebooting a controller in an OEM special dual loop configuration.

9.1.0.18 QL 3.03.18 4.00.12 - 10/11/05

- Firmware versions: 3.03.18 (2Gb), 4.00.12 (4Gb).
- Adhered to Subsystem Id document v2.2d.
- Added support for the following devices (supported platforms):
    - PCI\VEN_1077&DEV_2422&SUBSYS_12D7103C (x86, IA64, x64)
    - PCI\VEN_1077&DEV_2312&SUBSYS_01491077 (x86, IA64, x64)

9.1.0.17 QL 3.03.18 4.00.12 - 09/21/05

- Firmware versions: 3.03.18 (2Gb), 4.00.12 (4Gb).

9.1.0.16 QL 3.03.16 4.00.12 - 08/29/05

- Firmware versions: 3.03.16 (2Gb), 4.00.12 (4Gb).
- Embedded 24xx firmware in the driver.
- Closed ER43175: New driver could not detect any device to install as BOOT from SAN on one specific setup.

9.1.0.15 QL 3.03.16 - 08/10/05

- Firmware versions: 3.03.16 (2Gb), (Use onboard 4Gb firmware.)
- Added 24xx support.
- Closed ER42601: Need to change bit used to control LED mode.

9.0.2.17 QL 3.03.13 - 04/07/05

- Firmware versions: 3.03.16 (2Gb).

6. Additional Information

None

7. Firmware (Embedded in Driver)

This section provides release details for the firmware embedded in the driver.

7.1 2Gb HBAs

The following table shows the changes and bug fixes made to the 2Gb Risc firmware between versions 3.03.18 and 3.03.25.

Changes

Change	Description
From 3.03.24 to 3.03.25	
[ER54558]	Modified firmware to clearly indicate recoverable FC Controller hardware errors. A system error (8002h) asynchronous event with Mailbox 0 register having a value of 8002h and Mailbox 1 register having a value of 0001h indicates a recoverable hardware error. The FC Controller must be reset to restart operation.
From 3.03.23 to 3.03.24	
[ER51527]	The firmware now allows more than 16 concurrent task management requests to be active (per target).
From 3.03.22 to 3.03.23	
None	
From 3.03.21 to 3.03.22	
[ER47281]	The system now clears the SCSI Status field in Status IOCB when reporting a transport error (03h).
[ER47427]	Class 2 builds only. Send PRJT instead of ACK for received Class 2 PLOGI with a D_ID error.
[ER47736]	MID only. Added support for FCP-2.
[ER47597]	The FC Controller firmware operating in target mode can now transition to READY state without waiting for authentication (ADISC/PDISC) from the initiators. This change allows certain switches to complete discovery of the FC Controller.
[ER50687]	Firmware no longer reports a fatal firmware error (8002h) if it encounters soft memory errors within the 2Gb chips.
From 3.03.20 to 3.03.21	
[ER45171]	Added SCSI Initiator Mode Support indication to the Login Fabric Port (6fh) and Login Loop Port (74h) Mailbox Command. Upon successful completion of these commands, Outgoing Mailbox Register 1 bit 2 will be set if the remote port does not support Initiator mode operation. If the bit is clear, then the remote port does support Initiator mode operation.
[ER46830]	MID only. The FC Controller Target Mode firmware now allows an implicit logout of an initiator port.
[ER45076]	The Login Loop Port Mailbox IOCB command now returns the Node Name at offset 30h-37h and the Port Name at offset 38h-3fh of the completion IOCB.
[ER46638]	Added support for Get Link Status Mailbox IOCB.
From 3.03.19 to 3.03.20	
None	
From 3.03.18 to 3.03.19	
[ER43794]	Firmware initiated login to Fabric Name Server is now retried if there is a timeout.
[ER44240]	2Gb FC Controller (2322) only. Modify auto speed negotiation to inter-operate with certain switches.

Bug Fixes

Error Report	Description
From 3.03.24 to 3.03.25	
[ER53888] [ER52860]	Customer-specific changes.
[ER53393]	2Gb FC Controller (2322) only. Corrected race condition if the firmware received an FCP_RSP frame while it was still transmitting data to the target.
[ER54320]	Fixed a condition to correctly handle IOCB timeout calculation during repeated FCP-2 error recovery attempts.
[ER53677]	MID only. Corrected an issue where a frame was sent with the incorrect S_ID.
[ER51920]	Improved resource exhaustion handling when a large number of targets are present with heavy IO load.
[ER53357]	Corrected false errors reported during loopback testing.
[ER54833]	Fixed firmware to correctly handle received RSCNs that have no Port IDs listed in the payload.
[ER51856]	Corrected firmware errors (8002h) reported when receiving multiple concurrent IP exchanges per port.
[ER54845]	MID only. Correctly set S_ID field when sending SCSI task management commands.
[ER54843]	MID only. Corrected firmware hang condition after numerous link fault injections.
[ER54847]	MID only. Corrected the retry sending FLOGI to fabric when timeout occurs; it now correctly reports topology information.
[ER54836]	Corrected an undesired frame sent with payload of zero during Link Init.
From 3.03.23 to 3.03.24	
[ER50426] [ER51522]	Customer-specific change.
[ER51053]	SB2 only. Corrected a fatal firmware error (8002h) reported when the target system was reset.
[ER48365]	Corrected a condition where IOs are not returned to the driver on time that could result when executionthrottle is met and the target is slow or does not respond.
[ER51550]	Resume LED handling after system driver relinquishes control and firmware is in Ready state.
[ER52080]	Corrected reporting of Change Notification (8015h) Asynchronous Events when MSI is enabled.
[ER52177]	2Gb FC Controller (2322) only. Corrected a condition where the link may not be restored after leaving the cable unplugged for a long period of time.
[ER51374] [ER51571]	Corrected a fatal firmware error (8002h) that could be reported during fault injection.
[ER50982]	Corrected a condition where a SCSI command timeout could occur if the FCP_RSP frame was received immediately after a MS IOCB response frame.
From 3.03.22 to 3.03.23	
[ER51127]	Customer-specific change.
From 3.03.21 to 3.03.22	
[ER48770]	SB2 only. R_RDY credits were not saved from the received PLOGI when the FC Controller is directly connected to another N Port (class 2 or 3).
[ER50309]	SB2 only. Verify that ELS Frames P_RJT, F_RJT, P_BSY and F_BSY are valid Class 2 exchanges before processing.
[ER50431]	Corrected an issue where MSI interrupts would not be reported.
[ER48900]	Extended Memory Builds only. Corrected reporting of sense data that is greater than 32 bytes.
[ER49629]	2322 only. Additional Auto Negotiation changes related to [ER44240].
[ER47998]	Corrected a condition where the firmware would incorrectly detect that it is connected to an N-Port instead of an F-Port. This would prevent the firmware from reaching Ready state.
[ER50237]	MID only. Corrected a firmware error (8002h) during processing of an MSIOCB PLOGI request.
[ER49380]	2322 only. Corrected firmware error (8002h) reported when aborting an exchange concurrently with receiving FCP_RSP or FCP_XFRRDY for the exchange.
[ER47596]	MIDX build only. Corrected a condition where Port Logout Mailbox Command (56h) would not send the LOGO ELS.

Bug Fixes (*continued*)

Error Report	Description
From 3.03.20 to 3.03.21	
[ER44276]	SB2 only. Corrected firmware error (8002h) that could result if an ABTS is received while waiting for an ACK for a Class 2 frame.
[ER45423]	Corrected a condition where the firmware could incorrectly return an IO with a completion status of timeout.
[ER45667]	2322 only. Fixed various FC tape error recovery issues.
[ER45809]	2322 only. Corrected a condition that could cause an IO hang after servicing an Abort Task Mailbox Command (68h).
[ER46040]	MIDX builds only. Corrected various issues affecting MIDX builds.
[ER46039] [ER45609]	2322 only. Corrected firmware error (8002h) reported by firmware during fault injection.
[ER46473]	SB2 only. Corrected errors found during Terminated Exchange Recovery.
[ER46855]	SB2 only. Corrected a stall condition after receiving a Class 2 SB2 IU.
[ER45666]	Corrected an issue where a fatal firmware error (8002h) would be reported in Target Mode if the cable was moved from one switch port to another. This would only occur if No Implicit Logout on Link Failure (bit 15) was selected in Additional firmware Options.
[ER45923]	2Gb FC Controller (2312) only. Corrected a firmware induced PCIX Master Abort error that could occur when aborting transmit operations.
[ER45647]	2Gb FC Controller (2322) only. Corrected a condition where the firmware would stop responding during failover/failback operations.
[ER46669] [ER47133]	SB2 only. Corrected various SB2 transmit timeout and transmit error handling conditions. Return timeout status in completion IOCB on SB2 Sequence Timeout.
[ER47134]	Class 2 only. Corrected a condition where the FC Controller would delay sending an R_RDY in an N_Port – N_Port configuration when the FC Controller is the responder of a PLOGI.
From 3.03.19 to 3.03.20	
[ER44676]	SB2 only. Corrected frame routing for Diagnostic Echo Test (0044h) and Diagnostic Loopback (0045h) mailbox commands.
[ER44670]	2Gb FC Controller (2322) only. Corrected firmware error (8002h) that could happen if a LIP occurred right after an immediate CLS was received in response to an OPN.
[ER44698]	Corrected firmware error (8002h) that could happen during processing of Execute Command IOCB (0012h) or Execute IOCB A64 (0054h) mailbox commands.
[ER44781]	Corrected spurious parity error reported after fault injection.
[ER44801]	Corrected an issue that could cause the FC Controller to stop responding to OPN after a LIP.
[ER44802]	2Gb FC Controller (2322), CRC Mode. and Target Mode only. Corrected a condition that could cause the 2Gb FC Controller (2322) to stop transmitting data.
[ER44880] [ER44989]	2Gb FC Controller (2322) only. Corrected firmware error (8002h) and firmware hang that could happen during fault injection.
From 3.03.18 to 3.03.19	
[ER43740]	Correctly set the Hard ID Valid bit in the Port Database structure.
[ER44251]	2Gb FC Controller (2322) only. Corrected a condition that could result in IOCB's not being returned in a private loop topology. This could happen if the target port repeatedly sends immediate CLS in response to OPN, and the firmware retry limit is reached.
[ER43950]	Corrected potential hang condition during Unload IP (0079h) mailbox command.
[ER44307]	Corrected a condition that could cause a CTIO to be incorrectly returned with Port Unavailable (28h) status.
[ER43736]	2Gb FC Controller (2322) only. Corrected a condition that could unnecessary LIPs to be initiated by the FC Controller.
[ER43721]	Corrected a condition that could prevent the firmware from going to READY state after a configuration change.
[ER43703]	2Gb FC Controller (2322) only. Corrected false underrun status reported for some IOCB's after timeout of another unrelated IOCB.

7.2 4Gb/8Gb HBAs

The following tables show the changes and bug fixes to the 4Gb and FC Controller/EP 25xx from version 4.00.26 to version 4.03.01.

Changes

Change	Description
4.03.00 to 4.03.01	
[ER58635]	2532 only. Added support for mezzanine HBAs. Added a new bit, Embedded HBA, in Flash to indicate an HBA that does not use SFP+, and transmits FC signal over a copper backplane or mid-plane.
4.02.02 to 4.03.00	
[ER57003]	Removed the requirement to set Option bit 15 for aborting a CT Pass-Thru IOCB. See ER56025.
[ER54823]	Added option to post Notify Acknowledge (NACK) IOCB after associated ELS has completed. This option can be enabled by setting (to 1) bit 14 of Incoming Mailbox Register 1 of the Set Additional Firmware Options (38h) Mailbox Command. When this bit is reset (default state), the NACK IOCB is returned when the firmware processes the IOCB. The following new status codes may be returned in the NACK IOCB: - 04h – Completed with Error. An error occurred during the ELS transmission. - 0bh – Command Timeout. A timeout occurred during the ELS process.
[ER54834]	Added feature to allow the firmware to post a completed Notify Acknowledge (NACK) IOCB (received from the driver) on the ATIO queue instead of the Response Queue. This option can be enabled by setting (to 1) bit 13 of Incoming Mailbox Register 1 of the Set Additional Firmware Options (38h) Mailbox Command.
4.02.01 to 4.02.02	
None	
4.02.00 to 4.02.01	
[ER57670]	2532 only. Updated Fibre Channel Serdes parameters.
4.01.00 to 4.02.00	
[ER54835]	Added an option in target mode to route some Asynchronous Events to the ATIO queue as Immediate Notify IOCBs. Contact Qlogic for additional information.
[ER52809]	Added support to trace selected Fibre Channel traffic to a host supplied buffer. Contact Qlogic for additional information.
[ER56700]	2532 only. MSI-X Vector 1 now requires the host driver to clear the Risc to Host Interrupt Request after processing.
4.00.32 to 4.01.00	
Initial Release	Initial release supporting FC Controller/EP 25xx 8Gb products.
[ER54777]	Performance improvements under certain IO loads.
[ER54934]	SB2 only. Various performance improvements.
[ER55113]	MID only. Firmware will now discard frames received with an invalid Destination ID instead of treating as a fatal error.
[ER54351]	Firmware will now retry a PLOGI/FLOGI when it receives a LS_RJT with retryable reason code.
[ER56425]	MID only. Firmware will now return the VP Index in the Pure (offset 6h) and ABTS Received (offset Eh) IOCB's.
[ER55441]	Removed command timeout restriction of 1999h on all IOCB types. Maximum timeout value is now FFFFh.
[ER56025]	Added support to abort a CT Pass Through IOCB via the Abort IO IOCB (type 33h). Bit 15 of the Abort Options must be set.
[ER56387]	MID only. Firmware will now return the number of VP's supported in outgoing mailbox 11 of Get Resource Counts Mailbox Command (42h).
[ER55731]	Return additional firmware maintained statistics counters. Contact QLogic for additional information.

4.00.32 to 4.01.00 (*continued*)

[ER55643]	The Firmware now sets to 1 the PRLI REC_SUPPORT bit (PRLI and PRLI ACC Word 3 Bit 10) as defined in the FCP-4 specification. The Firmware will reply to a received REC request. The driver can initiate a REC ELS request for a SCSI IO via the Get IO Status Mailbox Command (12h). See the *FC Controller Firmware Specification* for interface.

- Incoming Mailbox 9 – VpIndex (Multi-ID builds Only)
- Incoming Mailbox 10 – Options Bit 0 – When set to 1, the Firmware will locate the IO with the handle specified. If the IO is located and has been started, the Firmware will send a REC ELS to the remote device.
- Upon completion of the Mailbox Command:

    - Outgoing Mailbox 0
      – Command Complete (4000h). See Outgoing Mailbox 4 for IO status.
      – Command Error (4005h). Mailbox 1 will contain subcode. See FC Controller Firmware Specification for Sub-Error Codes for Mailbox Command Completion Status Code 4005h. In addition the following completion codes has been added.
      – Command parameter error (4006h). The specified N_Port Handle or VP Index is invalid.

    - Outgoing Mailbox 1
      – 0000h – The Firmware was unable to locate the specified IO.
      – 0020h – Attempt to send REC ELS to remote port that has the PRLI Retry bit set.

    - Outgoing Mailbox 4
      – 3h Reserved.
      – 4h – IO started, REC sent and REC ACC received (outgoing 1 to 3 contain exchange information of when REC ELS is sent and outgoing mailbox 5 to 8 contain REC ACC information). See Outgoing Mailbox 5 – 8 for REC ACC information.
      – 5h – IO started, REC sent and LS_RJT received (outgoing 1 to 3 contain exchange information of when REC ELS is sent and outgoing mailbox 5 and 6 contain REC reject reason code and reason explanation).

    - Outgoing Mailbox 5 – 6 contain reject reason code and reason explanation.

    - Outgoing Mailbox 5
      – FC4Value bits 15-0 (if IO Status = 4) or Reason Explanation bits 15-8 and Vendor Unique bits 7-0 (if IO Status = 5).

    - Outgoing Mailbox 6
      – FC4Value bits 31-16 (if IO Status = 4) or Reserved bits 31-24 and Reason code bits 23-16 (if IO Status = 5).

    - Outgoing Mailbox 7
      – E_STAT bits 15-0 (if IO Status = 4).

    - Outgoing Mailbox 8
      – E_STAT bits 31-16 (if IO status = 4).

4.00.31 to 4.00.32

None

4.00.30 to 4.00.31

[ER56199]	MID only. The firmware will now retry a FDISC ELS when a reject response is received.

4.00.29 to 4.00.30

[ER55918]	Updated default serdes parameters for FC Controller 24xx. Serdes parameters in the adapter NVRAM take precedence over these firmware defaults. This Change does not affect EP24xx.

4.00.28 to 4.00.29

[ER54165] [ER54164] [ER54421]	Customer-specific changes.
[ER54548]	MID only. Added option to disable MID to allow connection mode 2 to work with NPIV-aware switches. To enable this feature, set bit 1 of the Global VP option at offset 82h in Mailbox Command Multiple-ID Initialize Firmware (48h).
[ER53931]	MID only. When this bit is set, it assumes that the Clean Address bit in the received FLOGI ACC word 0 bit 31 is set. To enable this feature, set bit 0 of the Global VP Option at offset 82h in Mailbox Command Multiple-ID Initialize Firmware (48h). **NOTE**: Setting this option implies that the Fabric configuration is static.
[ER53932]	MID only. Firmware now allows the reserved port's N_Port Handle (in the range 7F0h-7FFh) to be released when using Login/ Logout IOCB with the Free Handle option enabled. Use this option to clear the association between a VP Index and the reserved N_Port Handle assigned to the well-known switch addresses.
[ER54361]	SB2 only. The firmware now returns devices with login state of 0404h when Mailbox Command Get ID List (7Ch) is issued. Previously, the firmware only returned devices with the Login state of 0606h.

4.00.27 to 4.00.28	
[ER51944]	Offset 4 of ABTS Received IOCB is reserved for specific customer use.
[ER52709]	MID only. When the firmware posts an RSCN Asynchronous Event 8015h, it now includes the VP Index that the RSCN was destined for in Outgoing Mailbox 3.
[ER52931]	Include additional information in Outgoing Mailbox Register 7 of Get ID Mailbox Command 20h. This field is valid if the returned connection type is F_Port (03h). Bit 10 – NPIV Supported by Fabric Switch Bit 12 – VSAN Supported by Fabric Switch Bit 13 – FC-SP Supported by Fabric Switch
[ER52581]	Update ZIO implementation to support target mode operation. include: - Asynchronous Event 8040h has been removed. It now uses the general queue update interrupt status codes (13h, 1ch and 1dh). - An FCP_CMD arriving into an empty ATIO queue causes an immediate interrupt. - An Immediate Notify IOCB placed in the ATIO queue causes an immediate interrupt.
[ER52708]	MID only. Added Error Code 'FDISC_FAILED' (06h). This completion code will be returned in the Status Field of the Modify Virtual Port IOCB if the firmware was unable to acquire an ID from the fabric.
4.00.26 to 4.00.27	
[ER49250]	SB2 only. Added support for ABTS Received IOCB. See FC Controller 2400 Series Firmware Interface Spec for details.
[ER51522]	Login/Logout IOCB now allows clean up of pending I/Os to the switch SNS port. The feature is enabled when doing an Implicit Logout All and bit 10 of the control flag field is set. **NOTE**: Driver will need to re-login to SNS port at well-known address FFFFFCh.
[ER50426]	Asynchronous Event 8016h now provides sub codes for LIP/NOS/OLS. Outgoing Mailbox 0 8016h Outgoing Mailbox 1 LIP Type (Valid if Outgoing Mailbox 2 = 0) Outgoing Mailbox 2 0=LIP, 1=NOS, 2=OLS
[ER51528]	MID only. Fill in the VpIndex in the SRR Immediate Notify IOCB to the driver.

Bug Fixes

Error Report	Description
4.03.00 to 4.03.01	
[ER58617]	2432 only. Corrected a condition where Mailbox Commands issued to Function 1 would not complete after issuing Stop Firmware Mailbox Command (14h) to Function 0.
4.02.02 to 4.03.00	
[ER57227] [ER58323]	Corrected issues related to Fibre Channel Extended Firmware Tracing feature.
[ER57927]	Corrected Firmware handling of unexpected receipt of FCP-RSP, FCP-XFR-RD, and FCP-CONF frames.
[ER57845]	Stopped the system from returning a Good completion in Status IOCB if a misbehaving target sends inconsistent information in FCP_RSP frame.
[ER58260]	2532 only. Corrected an issue that could prevent the link from coming up when connected to McData 2Gb switches.
[ER51011]	CRC build only. Corrected an issue with runt block support that could overwrite the guard value.
[ER57000]	Customer-specific build. Corrected possible misreporting Underrun VS Overrun completion status.
[ER57642]	Corrected returned RNID information.
[ER57281]	2532 only. Improved access time when reading Digital Diagnostic data from SFP.
[ER57899]	Corrected a Fatal Firmware Error (8002h) reported when an SRR is received for an exchange that has a pending control frame to be transmitted.
[ER54982]	Modified settings of Buffer-to-Buffer credit and Buffer-to-Buffer Credit Management fields for PLOGI, PDISC, PLOGI ACC, and PDISC ACC Extended Link Service commands.
[ER57910]	MID only. Corrected a condition where an IOCB would be incorrectly returned with a Port Logged Out (29h) status after a Logout performed for a different VP.
[ER58167]	CRC build only. Corrected an unexpected DIF Error reported during DIF Remove operations.
[ER57574]	Corrected a Fatal Firmware Error (8002h) reported in Target Mode when aborting pending CTIO's.
[ER57507]	Corrected a Fatal Firmware Error (8002h) reported after exiting an internal Loopback test when configured for P-P operation only.
[ER57905]	MID only. Corrected a condition where a FLOGI would not be transmitted when a Virtual Port was enabled. The condition would only occur when configured for Target Mode only and Loop only topology.

Bug Fixes (*continued*)

4.02.02 to 4.03.00 (*continued*)	
[ER57825]	Corrected a condition where FCP2 related Command IOCB's, CTIO's or Port Control Blocks would be incorrectly terminated during fault injection.
[ER56843]	Corrected a condition that could result in dropped frames during Abort IO fault injection.
[ER57415]	Corrected a condition where the firmware would respond incorrectly to a PDISC or ADISC received before a FLOGI ACC is received when connected in Point-Point.
4.02.01 to 4.02.02	
[ER57530]	Corrected a firmware error (8002h) reported if a REC is scheduled to be transmitted when an FCP_RSP or FCP_XFER_RDY is received for the same exchange.
[ER57512]	Corrected an issue where pending IOs would not be terminated when the link topology changes from F<->FL without a Loss of Sync.
[ER57638]	Corrected a condition that prevented the SCR ELS from being sent when no resources are available.
[ER57727]	Corrected a condition where the Get IO Status Mailbox Command (12h) would not complete when a REC was requested for an exchange that was concurrently completing.
[ER57597]	Correctly set exchange re-use time after REC RJT ELS received.
4.02.00 to 4.02.01	
[ER56341]	2532 only. Corrected SFP+ detection to match 8Gb FC Controller (2532) Firmware Interface Specification Rev C.
[ER57469]	Corrected unused memory initialization to prevent reporting a RISC pause condition on one function when performing a firmware debug dump on the other function.
[ER57493]	The firmware will now return Underrun status (15h) when it detects a misbehaving device that sends a good FCP_RSP for a write command without requesting any data. This detection was missing for FCP-2 devices.
[ER57316]	Corrected a condition that caused the firmware state to not become ready if the current topology is Fabric Point-Point. This occurred when the previous topology was FL and the Firmware is waiting for a FAN ELS.
[ER57255]	Corrected a Task Management Function IOCB request to a FCP-2 device not being returned to the system driver upon timeout. This occurred if the FCP-CMD was dropped repeatedly by the target device or as a result of a bad link.
4.01.00 to 4.02.00	
[ER56527]	Corrected a Firmware Error or RISC Pause condition that occurred while doing fault injections when IP is enabled.
[ER56528]	Corrected a condition that could result in a Firmware Error being reported during an aborted transmit cleanup operation.
[ER56790]	2532 only. Corrected the Digital Diagnostic interface to the SFPs.
[ER56716]	2532 only. Corrected Flash Memory programming when writing more than FFFFh bytes via Load RAM Mailbox Command (0Bh).
4.00.32 to 4.01.00	
[ER54986]	MID only. Corrected a condition where the Firmware would return the wrong VP Index when the switch assigned the same D_ID to a new VP.
[ER54906]	SB2 only. Firmware was incorrectly dropping a SB2 IU of type 1ch.
[ER54988]	MID only. Fix potential RISC pause when issuing Get VP Database Mailbox Command (49h).
[ER55155]	SB2 only. Fix Fatal Firmware Error (8002h) reported when a SB2 exchange is aborted by an incoming ABTS.
[ER54857]	Corrected a condition in target mode where a LS_RJT could be sent in response to a REC request during FCP-2 error recovery. The correct response should have been LS_ACC.
[ER55209]	CRC Build Only. Fix an IO timeout incorrectly reported during a DIF remove operation.
[ER54833]	Correct possible false parity errors reported when receiving an incorrectly built non-data frame.
[ER55616] [ER55587]	Corrected a RISC pause reported when processing an incorrectly built SCSI command.
[ER55569]	Corrected memory leak that resulted from CTIO resources being lost when the CTIO Flags bit 8 option (Don't return CTIO on completion) was used in conjunction with continuation IOCB's.
[ER55838]	Corrected an issue when using MSI that could cause vector address or direction to be incorrect.
[ER55910]	SB2 only. Fixed a condition where a Port Database Asynchronous Event (8014h) would not be generated after a PLOGI ACC was sent.
[ER56177]	Corrected D_ID field in the FLOGI ACC transmitted when connected in a N-N topology.
4.00.31 to 4.00.32	
[ER56386]	Corrected a Firmware error reported during fault injection and FCP-3 retry is enabled for multi-LUN devices.

Bug Fixes (*continued*)

4.00.30 to 4.00.31 (*continued*)	
[ER54847]	MID only. Corrected an issue where the wrong topology could be reported by Get ID Mailbox Command (20h) after a FLOGI ELS failed.
[ER55336]	MID only. Corrected a condition where the Firmware would reject a ABTS Response IOCB.
[ER55153]	MID only. Corrected an issue where a Receive Error Asynchronous Event (8048h) would be reported by the firmware after processing a FDISC ACC ELS.
4.00.29 to 4.00.30	
None	
4.00.28 to 4.00.29	
ER54387 ER54527	Customer-specific build. Performance improvements under certain IO loads.
ER54298	Customer-specific build. Validate N_Port Handles used in IO requests.
ER54303	Customer-specific build. Improved handling of response exchange timeout.
ER54304	Customer-specific build. Added feature to allow clean up of all options.
ER54260	Customer-specific build. Implemented ER45376 in this build.
ER54297	Customer-specific build. Corrected issue where I/Os may not be returned after ABTS retry fails.
ER54300	Customer-specific build. Customer-specific feature added.
ER54308	Customer-specific build. Corrected firmware error (8002h) that resulted from aborting active receive exchanges.
ER54185	Corrected issue where IO activity could stall after aborting IO requests.
ER53967	Class 2 only. Corrected firmware error (8002h) reported after receiving a Class 2 PLOGI.
ER54166	Corrected a condition during FCP-2 error recovery that could result in data being re-transmitted before the associated SRR ACC was sent.
ER54320	Fixed a condition to correctly handle IOCB timeout calculation during repeated FCP-2 error recover attempts.
ER53617	Corrected firmware error (8002h) issue that could occur in an N_Port to N_Port connection when the link is reset.
ER52774	Improved cleanup processing when receive errors are detected or IO aborts are occurring.
ER54556	MID only. Corrected issue where the driver would receive a reject (error status 31h subcode 1bh) to a Login/Logout IOCB after the switch assigned a new D_ID after a VP disable/enable.
ER54559	Corrected a case where an LS_RJT would be incorrectly sent in response to a REC.
ER54344	MID only. Corrected an issue with target discovery when the switch assigned a new D_ID to the firmware. This would result in a fatal firmware error (8002h) or RISC pause being reported.
4.00.27 to 4.00.28	
ER51531	Corrected inconsistencies in RLS statistics.
ER52534	SB2 only. Class 2 frames can now be processed after receiving a Class 3 PLOGI with Class 2 Enabled.
ER52535	Corrected FLOGI Common Service Parameters Word 1 when connected in N-N topology.
ER49019 ER53832	Customer-specific fixes.
ER53620 ER53676	Customer-specific build. Corrected a firmware hang condition that occurred during fault injection.
ER52764	MID only. Corrected a RISC pause reported after numerous Execute IOCB Mailbox Command 54h issued to disable/enable port.
ER52342	Corrected FCP2 error recovery to not request retransmission of FCP DATA if only the FCP RSP was lost.
ER52944	Corrected firmware Error (8002h) reported while servicing multiple Task Management requests.
ER53002	Corrected transmit abort operation to ensure correct IO request is being aborted.
ER53640	Ensured clearing the System Defined 1 in firmware-initiated IOCBs.
ER51577	MID only. Corrected issue where the firmware would reject a Virtual Ports attempt to login to the Simple Name Server (SNS) after a LIP occurred.
ER53677	MID only. Corrected an issue where a frame was sent with the incorrect S_ID.
ER53670	Corrected issue retrieving Digital Diagnostic Data from some SFF/SFPs.
ER53067	Class 2 only. Corrected an issue where the FC Controller firmware incorrectly sent a P_RJT when receiving a driver-supported pass-through ELS frame from an originator that did not have an active login session.

Bug Fixes (*continued*)

4.00.26 to 4.00.27 (*continued*)	
ER49657	Corrected an issue of pending IO's not starting after IO's are internally queued due to Execution Throttle or resource limitations.
ER45398	Disk CRC only. Correct DIF context data after Relative Offset mismatch found.
ER50309	SB2 only. Verify that ELS Frames P_RJT, F_RJT, P_BSY and F_BSY are valid Class 2 exchanges before processing.
ER50346	Correct transmitted PRLO ACC Logout Parameter Page Word 0. Response code was incorrectly placed in bits 27:24 instead of bits 11:8.
ER50616	SB2 only. Added NOS/OLS/LR/LRR extended error counters. See 24xx SB-2 Interface Spec v1.10 for details.
ER50611 ER50612	Corrected recovery from multiple simultaneous receive errors that resulted in IO timeouts or internal firmware Errors (8002h).
ER51549	Customer-Specific Build: Corrected an internal memory access issue that would result in a RISC pause being reported. (ER50919)
ER50644	Disk CRC only. Corrected handling of multiple XFER_RDYS being received for same exchange.
ER51053	SB2 only. Corrected a Fatal Firmware Error (8002h) reported when the target system was reset.
ER50062	Corrected a Fatal Firmware Error (8002h) reported after link resets with misbehaving switches that send frames before link is established.
ER50829	Corrected an issue with MSI interrupts that could result in a missing interrupt.
ER49735	Corrected an issue that could result in an IO hang condition after aborting a transmit operation.
ER50732	Corrected RLS error counters for Loss of Signal and Loss of Sync.
ER49466	Corrected a potential incorrect rejection of an ABTS Receive IOCB from the system driver.
ER51758	Corrected a RISC pause condition that occurred when aborting an IO when the FCP_RSP was received.
ER49738	Corrected an issue in target mode where the system driver and firmware could be out of sync when aborting IO's.

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Web: http://support.qlogic.com

North America Contact Information
Email: support@qlogic.com
Phone: (952) 932-4040

Support contact information for other regions of the world is available at the QLogic website: http://support.qlogic.com

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