



ATTO Technology, Inc.

# Product Release Notes

## FibreBridge 7500N Firmware Release v2.40

### 1. General Release Information

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These product release notes define the new features, changes, known issues and release details that apply to the FibreBridge 7500N version 2.40 that was released 11 Dec 2015.

### 2. Product Firmware Details

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- **Version 2.40 (Released December 11, 2015)**

- **New Features Added**

- Implemented IOM12 Intermixing per spec "FB7500N IOM Support 08-21-15.docx"
- All SAS ports are enabled by default.
- Added "SNMP [enabled|disabled]" information to the CLI Info command output per NetApp request. This is available in both the CLI output and the associated READ BUFFER ID 0x0B.
- Validated interoperability of SAS Optical Cables with the FB7500N bridge hardware.

- **Fixes for issue found during NetApp testing of the FibreBridge 7500N Firmware**

- Fix for BURT 947364 (Data Abort in FC driver layer): Timing hole in FC Initiator Logout processing.
- Fix for BURT 915227 (Data Integrity fault with bridge ECC error): Set 'reset on ECC error' bit 10 in the BAU control register to protect against data corruption should an ECC error occur.
- Fix for BURT 955621 (SCSI Read Buffer ID 0bH missing the header): Added a header to the Read Buffer bridge info (0Bh) command.
- Fix BURT 950538 (SNTP Server configurations are lost on reboot): Fixed invalid storage of some IPv4 addresses in SNTPServer and DNSserver fields in NVRAM.
- Fix BURT 937202 and BURT 957113 (Disk information missing and FC Chip error): implemented a workaround for the FC Controller chip getting stuck when it runs out of RQ buffers, including FC driver changes and better use of Acceleration Engines during SAS Controller Reset operations.
- Fix for BURT 954848 (Failed disks when sending Target Reset to the bridge): Fix resource leak caused by the test.
- Fix for BURT 949135 (Crash Dump Info returns invalid checksum sometimes): enabled ECC when reading or writing a core dump to NAND Flash.
- Fixed BURT 949501 (IPv6 Prefix Length is not configurable through CLI): Made visible
- Fix for BURT 957257 (Disks going offline, reporting b/88/4/x): SMP Power-Cycle requests were improperly processed by the SAS interface and sent out as Power-Off requests to the wrong PHY / wrong drive.
- Fix for BURT 946680 (Bridge reboots with exception with more than 250Mbps broadcast traffic): Periodic wait added to task loop to fix watchdog failure for some speeds of network traffic.
- Fix for BURT 946680 and 947905 (Bridge may reboot when tested with Spirent Ethernet tester): If the problem is caused by invalid subnet configurations, the bridge

will detect the error and disable the 2nd port to connect. Efforts to manually configure invalid subnets will also be rejected.

- Fix for BURT 930937 (Bridge reboots after pulling power cable and re-inserting): The PMC SAS Controller chip would hang due to invalid error detection of a replay error. The bridge workaround detects the false error and forces a hard reset of the chip.
  - Fix for BURT 958250 (Critical Out of Resources – DevPB and bridge reboot): Should a SCSI\_PERSIST\_RSV\_OUT command fail to read from the host, abort the persistent reservation queue to prevent a DevPB leak.
  - Fix for BURT 963412 (Disks lost, message “Negative Frntdev commands outstanding”): If retries are queued up to be sent by the bridge because BSAS drives are not fully spun up (i.e., sending default data instead of valid inquiry data) and, in conjunction, the SAS Controller is reset as part of managed error-handling, the retry requests were left on the queue. Fixed.
  - Fix for BURT 967125 (Bridge resets the SCSI SET TIMESTAMP with system date change): the Real-Time Clock chip was not being updated correctly.
  - Second Fix for BURT 957113 (FC Chip error): additional queue management was added to the bridge logic to prevent the Emulex FC chip from running out of queue space even when attached to 960 drives.
  - Fix for BURT 965221 (SNMP FC Port Status): additional logic was added to SNMP to force a refresh of fc port status on SNMP queries.
- **Fixes for issue found during ATTO testing of the FibreBridge 7500N Firmware**
- Fixed IR15834 (Invalid event log message at FC Initialization): removed the offending event log message.
  - Fixed IR15836 (Invalid log message “CRIT-Address 0.0.0.0 for MP1 already in use”): fixed the event message when there is an IPv6 conflict to correctly specify the conflicting address.
  - Fixed IR15813 (“ERROR speed is not 10 or 100?!” Printing while at the ready prompt): added event log entry for Ethernet hardware negotiation failure.
  - Fixed IR15881 (Occasional failure to recover from Ethernet overrun): corrected our use of the Overflow bit based on FE information (their manual was incorrect).
  - Fixed IR15870 (Bridge is hung after FC Chip Error): treat FC Chip Errors as fatal, and reboot the bridge.
  - Fixed IR15902 (Some ExpressNAV screens are missing help text): Enable some help text for this platform.
  - Fixed IR15933 (SES devices incorrectly being accelerated): Device Type is queried prior to setting acceleration flags.
  - Fixed IR15907 (Target Reset task management is obsolete): Bridge now rejects Target Reset commands, which have been obsolete since SPC-2.
  - Fixed IR15964 (PreFetch Abort with outstanding SMP commands when a device is deleted) by cleaning up outstanding SMP commands for a drive when that drive is removed.
  - Fixed IR15823 (Resource issue in READ BUFFER processing): READ BUFFER requests from more than one initiator at exactly the same time caused a resource conflict. The read buffers were made into sequential tasks to prevent this.
  - Fixed IR15870 (Bridge is hung after FC Chip Error): treat FC Chip Errors as fatal, and reboot the bridge.
  - Fixed IR15902 (Some ExpressNAV screens are missing help text): Enable some help text for this platform.
  - Fixed IR15933 (SES devices incorrectly being accelerated): Device Type is queried prior to setting acceleration flags.
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- **Reason for release**
  - Provide new, minor feature updates and additional validation.
  - Fix outstanding BURT's.
- **Version 2.10 (Released September 25, 2015)**
  - **New Features Added**
    - Implemented SET TIMESTAMP and REPORT TIMESTAMP functionality as per Time Synchronization for FB 7500N
    - Added log message indicating the start of Ethernet throttling due to overrun (related to BURT's 937529 and 933486; see Section 5, Known Issues and Advisements).
    - The CLI command "IPv6Prefix" was modified from "hidden" to "exposed"
    - A workaround was added to the FC target driver
  - **Fixes for issue found during NetApp testing of the FibreBridge 7500N Firmware**
    - Fixed BURT 912571 (7500N: bridge is not able to handle switch over resulting in multi disk panic) Mishandling of Reservation Conflict returned from the drives.
    - Fixed BURT 924644 (7500N: Disk level checksum verification failed after Target Reset commands): fixed resource leak when processing Target Reset commands from the host.
    - Fixed BURT 934350 (MCC:Interop:4 Node MCC:Pangolin: Pangolin bridge showing corrupted IP address): The improper display of IPv4 addresses and gateways containing the number 58 was fixed, along with improper display of manually set IPv4 prefixes containing octets that are not 255 or 0.
    - Fixed BURT 934374 (Interrupting an FTP FW update causes the bridge to fail) was caused by issuing a "flashimages" CLI command during FW update, so the command was disallowed until the update was complete.
    - Fixed BURT 937202 (7500: PANIC: assertion "desc != NULL" failed: file "prod/driver/ra/ra\_mlm\_lun.c"): the filer panic was fixed by removing a duplicate SAS device scan at discovery time.
    - Fixed BURT 947364 (7500: Data Abort in the FC hardware layer when trying to dequeue a request.) The code was modified to prevent a deadlock condition immediately following some Managed Error SAS Controller reset operations.
    - Fixed BURT 949888 (7500N: Pangolin DHCP Client ignores netmask set by DHCP server): Fixed improper display of DHCP netmask.
  - **Fixes for issue found during ATTO testing of the FibreBridge 7500N Firmware**
    - Added debug command to disable some IOM logs for testing purposes.
    - Fixed ATTO Incident IR15780 (IOM12's are not routing properly).
    - Made improvements to SAS Subsystem Trace feature.
    - Fixed bug with multiple "fforcecoredump save" commands in a row causing failure.
    - Fixed ATTO Incident IR15705: Set bridgeUniqueID field to be in keeping with current NetApp practice.
    - Fixed ATTO Incident IR15722: Disabled SNMP primaryFirmwareRevision at startup to avoid potential QSPI contention during in-band firmware update.
    - Fixed ATTO Incident IR15705 (The 7500N "bridgeUniqueid" field in the SNMP MIB contains 8 characters of garbage): Fixed bad initialization of the bridgeUniqueID SNMP field.
    - Added checkpoint messages to the event log.
    - Removed event log messages when expected underruns occur.
  - **Reason for release**
    - To incorporate the new Time Synchronization feature.
    - To address BURT's found during NetApp testing.
- **Version 2.00 (Released July 17, 2015)**
  - **Fixes for issue found during NetApp testing of the FibreBridge 7500N Firmware**

- Fixed BURT 878406 (SNMP querying of ATTO 6500N leads to Data TLB Error Interrupt Exception)
- Fixed BURT 899412 (MCC:Interop:SNMP:ATTO1.61:FATAL: Data TLB error interrupt occurred during SNMP vulnerability test from silvercreek)
- Fixed BURT 903484 (7500N - BAU Parity Error timeout)
- Fixed BURT 915227 (Data Corruption error)
- Fixed BURT 911599 (7500N: mini-sas HD connector payload has wrong offset)
- Fixed BURT 918737 (7500N - FC Error on Work Request): the logic loop was fixed. The event log message is still a valid condition, however, and the message will be seen if commands are being aborted just when an initiator logs out.
- Fixed BURT 899297 (MCC:Interop:SNMP:ATTO1.61:SET integer above range test from silvercreek is making bridge unreachable over IP (this was fixed in A04K but not marked as such)
- Fixed BURT 904217, 7500N: Intermittently 7500N bridges are getting rebooted while downloading the firmware
- Fixed BURT 921172: ATTO Bridge 7500N reports different p/s status over GUI and SNMP
- Fixed BURT 923208: SNMP sysName in 1.60/1.61 is still 8 chars (Fixed for FB7500N)
- Partial fix for BURT 923563 (7500N: Performance degraded in V2.0 (A04K)) – the discrepancy with drives connected to SAS port D is corrected. A smaller discrepancy (~20%) remains open.
- Fixed BURT 924385 (7500N: Data Abort Detected – associated with out-of-exchange condition)
- Fixed BURT 925384, “7500N: diskown.diskHasWrongInfo.error logs with multi-stack shelves & v2.00 (A04K)” – this is presumed to be fixed by the partial fix for 923563, but without full validation.
- Fixed BURT 922869 (Critical Error device status with Overtemp condition) by updating NVRAM temperature thresholds with a method for replacement that does require defaulting NVRAM.
- Fixed BURT 913443 (Bridge hitting "SWWD Exception) and BURT 924385 (Data Abort Detected) by modifying the logic to clean the task management queue when a FC initiator logs out.
- Fixed BURT 923576 (Pangolin FibreBridge reboots if the management port sees traffic at 7Mbps or above) by improving overrun protection and limiting the memory used by fragmented packets.
- Fixed BURT 923563 (Performance degraded in V2.0 (A04K)) with latest Emulex Firmware.
- Addressed BURT 923662 (CLI commands missing) by changing CLI commands as follows, per NetApp request: SerialPortBaudRate exposed, Zmodem hidden, CoreDump changed to CoreDumpGenerate. Made associated User Manual updates as well.
- Fixed memory leak in SNMP.
- Fixed IR15231 (SAS ports are not disabled during a critical thermal event)
- Removed unused entities from the Bridge MIB: Voltage Sensor table, Voltage Status Changed trap, and trapClientRowState object
- Changed max temperature threshold to 90C and warning threshold to 80C because temperature is measured at the PMC sensor – requires SaveConfiguration Default to take affect.
- Removed "Wrong platform" LogAsciiEvent when SAS QSFP buffer is requested from FB7500N
- Fixed IR15419 (FC Port Statistics Read Buffer(02h) returns incorrect data after port is enabled without SaveConfiguration Restart)
- Fixed IR15426 (SNMP power supply statuses incorrect until the SNMP MIB initializes powerSupplyTable)
- Fixed IR15450 (bridgePowerSupplyStatusChanged SNMP traps not received on Bridge startup)
- Fixed IR15465 (LUN numbers are incorrect after rapid SAS cable change of <30 seconds)
- Fixed text on the Restarting Page when the bridge is reserved

- Fixed IR15427 (DHCP always fails the first time after a second port is plugged in)
  - Fixed IR15518, Invalid Port IDs on some event log messages
  - Fixed IR15537, SNMP, CLI and GUI report both Power Supplies are \*down\* for first 30 seconds
  - Fixed IR15454, ACB leak during LUN RESET processing
  - Fixed IR15479, FB7500N does not always issue task management response
  - As a result of confusion over the fix for BURT 918737 (7500N - FC Error on Work Request): event log messages were refined to better explain the condition.
  - Fixed IR15532, SWWD due to mismanagement of RXID pool when all RXIDs are in use. (This is one part of BURT 913443)
  - Fixed IR15536, CLI Info command may display stale information.
  - Fixed IR15540, SAS LEDs not operational when I/O is not accelerated
  - Fixed IR15548, Set BridgeName CLI command doesn't warn when a space is used in a bridge name, it just truncates the name.
  - Fixed IR15549, allow any number of events to be specified for DumpEventLog CLI command.
  - Additional fix for IR15479: handle overrun and overrun conditions in the acceleration engine instead of the off-ramp path.
  - Fixed ATTO Incident Report 15561 (SWWD following task management while running performance test with acceleration off) by modifying the handling of XCBs on a waitlist.
  - Fixed ATTO Incident Report 15577 (Firmware Update fails when using Telnet to dump the event log) by fixing QSPI Flash access conflicts between Telnet sessions and FTP image upload.
  - Added parameter to tune performance for some I/O patterns / workloads with latest Emulex firmware.
  - Fixed ATTO Incident Report IR15598 (Truncated SAS Event Log messages).
  - Fixed a condition where a Check Condition response did not contain the proper FRU code.
  - Fixed ATTO Incident Report IR15585 (SWWD in HwCheckTimeouts function while running performance test with acceleration off) by deleting task management commands on the FC Abort Queue when an initiator logs out.
  - Added Event Log Message text for Emulex Firmware Updates
- **Reason for release**
    - To incorporate Performance Improvements
    - To include Firmware Update enhancements including new in-band INFO, SCSI reservation on the bridge LUN and an extension to management session reservations per the document FB7500N FW Update 04-24-15.doc
    - To include new in-band Crash Dump Info per the document FB7500N Crash Dump Info 03-12-15.docx.
    - To add new Emulex Firmware to FB7500N Storage Controller.
    - To add support for IOM12 LUN Numbering
    - To add support for future updates of Emulex Firmware from within the Bridge Firmware update process (the ZBD update process).
- **Version 1.00 (Released March 2, 2015)**
    - **Initial release of FibreBridge 7500N Firmware**
      - Includes Multi-Stack Mapping per FB7500N Multi-Stack Mapping 01-13-15 document
      - Includes SNMP enhancements per FB 7500N SNMP Specification 02-18-15.doc
    - **Reason for release**
      - Initial 7500N firmware release to NetApp for full feature testing.
    - **Supported Browsers**

- The FibreBridge ExpressNAV interface supports Internet Explorer 8, Internet Explorer 9 and Internet Explorer 10, Mozilla Firefox up through and including version 20, and Google Chrome 26.

### 3. Known Issues/Advisements

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- BURT 915227 (Data Integrity fault with bridge ECC error): Since a single-bit corrected ECC error may cause Data Corruption, the bridge will treat this as a fatal error: it will immediately shut down interfaces to prevent data corruption, and the bridge will reboot. This will only occur in conjunction with a hardware error.
- Only 16Gb SFPs should be used with the FibreBridge FB7500N.

### 4. NetApp Feature Request Status

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- In-Band Firmware Update enhancements including new in-band INFO, SCSI reservation on the bridge LUN and an extension to management session reservations
- New in-band Crash Dump Info
- LUN assignments for IOM12s use the SMP REPORT MANUFACTURER INFO command's "PRODUCT IDENTIFICATION FIELD" to determine if the expander is an IOM12, and calculates LUN numbering accordingly.
- Added support for future updates of Emulex Firmware from within the Bridge Firmware update process (the ZBD update process).

### 5. Affected Products

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Product Name	SKU
FibreBridge 7500N	FCBR-7500-DN1