



ATTO Technology, Inc.

Product Release Notes

Celerity 16Gb Gen 5 and 16Gb/32Gb Gen 6 Fibre Channel Multipath Director™ Release v1.73MP – Linux®

1. General Release Information

These product release notes define the new features, changes, known issues and release details that apply to the Celerity 16Gb Gen 5 Fibre Channel adapter product and 16Gb/32Gb Gen 6 Fibre Channel adapter product driver v1.73MP that was released on November 5th, 2018. This information pertains to the following operating systems: Red Hat Enterprise Linux 6, 7; CentOS 6, 7; SUSE Linux Enterprise Server 11.4, 12.3; OpenSUSE Linux 42.2, 42.3; Ubuntu 16.04, 18.04 LTS. **Note:** It is recommended that the latest firmware available on the ATTO website be used with this driver release.

2. Changes

- **Version 1.73MP (Released 11/05/2018)**
 - Stability improvements on 4.18 kernels
 - Improve target mode performance.
 - Enable NVMe-oF support in RHEL/CentOS 7.5
 - -Driver modules now install with DKMS (Dynamic Kernel Module Support). This allows the kernel module to be automatically rebuilt on kernel updates.
 - The 'io_time_out' module parameter has now been obsoleted in favor of the OS's IO timeout value. If manually setting the command timeout is desired, the following command can be used, where `#{value}` is the timeout in seconds. ``echo #{value} > /sys/block/#{device-name}/device/timeout``
 - Stability improvements while freeing memory with high system processor count
 - Change the multipathing method for the Active XSG1 and Quantum QXS storage array to prevent saved configurations from being loaded incorrectly
- **Version 1.71MP (Released 04/16/2018)**
 - New Features/Enhancements
 - Added support for a new flash bundle format that supports smaller download portions compatible with the maximum transfer size for the driver
 - Addressed timer API compatibility in kernel 4.15 and later
 - Improved interoperability with SLES 11.4 and SLES 12.3
 - Fixed support for atfcvnr to change the node WWN
 - Improved support with SCST target mode
 - Updated default module parameters for improved performance
 - Add support for balancing MSI-X interrupts across CPUs
 - Note: ATTO recommends setting the hint policy to exact in your irqbalance configuration for best results. See readme installation instructions for details.
 - Additional support for Promise VTrak E630f and the DotHill DH3000
 - Improvements to displaying which offline devices are being presented to the OS (and displayed in ConfigTool).
 - Note: As a result of this change, previously saved configurations may need to be deleted and resaved to display correctly after reboot

- **Version 1.70MP (Released 12/18/2017)**
 - **New Features/Enhancements**
 - Full Inquiry data is now reported for multipathed devices
 - Added HP MSA 2050 support
 - Added ability to uninstall included CLI Tools and added additional CLI tools: atdevinfo, atfcinfo, and atlocate to the release package.
 - Enabled atto_log_mask based logging
 - Resolved compilation error on 4.12 and later kernels
 - Removed driver module parameters that have NVRAM equivalents
 - Added the Celerity FC 324E to the readme
- **Version 1.65MP (Released 08/31/2017)**
 - **New Features/Enhancements**
 - Added support for the new quad port Celerity FC-324E adapter.
 - The 16Gb speed setting is now enforced in NVRAM.
 - Modified several default performance parameters for better out-of-box experience.
 - Fixed a potential error when doing extended link bounce testing.
 - Fixed crash when connected to an IBM LT07 tape device configured as PTP preferred.
 - Resolved an issue to prevent a stuck command when unmapping a LUN.
- **Version 1.60MP (Released 05/03/2017)**
 - **New Features/Enhancements**
 - Added support for *atinfo* to display the SFP transceiver serial number
 - Added support for Ubuntu 16.04 LTS
 - Updated builds for kernel 4.3, and later
 - Added support for the Seagate 5825 storage array
- **Version 1.55MP (Released 12/20/2016)**
 - **New Features/Enhancements**
 - Added support for Dot Hill 6424 and 6844 storage.
 - Enabled MSI-X interrupt support
 - Modified driver to automatically unload the *attocfg* driver when switching between the MP and standard drivers
 - Reworked *ioctl* code to directly access user memory instead of double-buffering
 - Resolved issue with 32-bit driver builds for 4.x kernels
 - Modified driver to ensure INQUIRY data is correctly reported to the operating system
- **Version 1.51MP (Released 09/01/2016)**
 - **New Features/Enhancements**
 - Enabled LU-based MP for Quantum QXS storage
- **Version 1.50MP (Released 06/30/2016)**
 - **New Features/Enhancements**
 - Added support for Celerity 16Gb/32Gb Gen 6 Fibre Channel Host Bus Adapters.
 - Added support for LU-based multipathing.
 - Added support for configuring an alias.
 - Addressed a potential for failover to fail when large numbers of LUNs are present.
 - Addressed issues that could cause excessive completion times for failover or discovery.
- **Version 1.45MP (Released 01/21/2016)**
 - **New Features/Enhancements**
 - Updates to CLI tools and readme
 - Resolved a connection issue with previous versions of EMC storage
- **Version 1.40MP (Released 8/06/2015)**
 - **New Features/Enhancements**
 - Implemented T10-PI management improvements
 - Addressed a kernel panic that occurs during boot

- Added support for Dot Hill arrays
 - Integrated miscellaneous bug-fixes
- **Version 1.35MP (Released 3/19/2015)**
 - **New Features/Enhancements**
 - Added support for Fedora 21
 - Added support for SUSE Linux Enterprise Server 12
 - Now support the ability to map LUNs to LUNs and targets to targets
 - ALUA devices are now allowed to change the path mode from disabled to the default
 - Active/non-optimized paths are activated in the same manner as standby path by default.
 - Corrected identifier determination for some storage. As a result, previously saved configuration will no longer be in effect for some arrays. The configuration must be resaved after upgrading.
 - Addressed a timing issue when mounting volumes.
 - Fixed an issue of seeing LUNs in a direct attached environment.
 - Addressed an event logging issue.
 - Resolved a memory leak issue.
 - Addressed an I/O failure during controller reset.
- **Version 1.32MP (Released 1/27/2015)**
 - **New Features/Enhancements**
 - Addressed an exchange leak in HwContPlogiReq
- **Version 1.31MP (Released 1/15/2015)**
 - **New Features/Enhancements**
 - Added support DotHill arrays
 - Added support for Quantum StorNext arrays
- **Version 1.30MP (Released 10/30/2014)**
 - **New Features/Enhancements**
 - Added support for RHEL 7
 - Addressed a model description error
 - Fixed a kernel panic during local multipathing command processing
 - Addressed an issue where HBAs failed to properly recover from a controller reset.
- **Version 1.25MP (Released 9/25/2014)**
 - **New Features/Enhancements**
 - Improved IO performance for transactional Linux SAN environments
 - Increased default queuing parameters from 128 to 512
 - Enhanced diagnostic capabilities with improved event logging
 - Added new display information for atmpinfo
 - Added support for atreset
 - Added support for device display in atinfo
 - Addressed an issue where IO to a LUN could be stalled
 - Set default so that active/non-optimized paths are activated for IO in the same manner as standby paths
 - Addressed a failover issue when the preferred path is removed
 - Reduced the time it takes to discovery newly added LUNs using the rescan paths button.
 - Resolved an issues where MultiPath Director was no longer available after reboot
- **Version 1.10MP (Released 2/06/2014)**
 - **New Features/Enhancements**
 - Corrected an issue with path discovery for paths that are deactivated immediately after being found.
 - Addressed an issue with deactivating paths that are disabled due to I/O errors.
 - Fixed an issue where discovery or failover of a path could be delayed by a transitioning asymmetric access state for a port group that did not apply to the path.

- Resolved an issue where simultaneously reporting device changes on multiple HBA channels could result in the multipathed devices from being activated
 - Addressed an issue where path selection could prematurely fail an I/O when the last remaining path failed simultaneously
 - Corrected an issue where path rediscovery would not activate the path after the link down timeout previously expired
 - Paths that have a scan pending are considered retrying so I/O is suspended when no paths are active.
 - Feature added to allow path activations and deactivations during the link down timeout period to coordinate with other device events to prevent invalid path states.
 - Resolved a system hang on RedHat 5.9.
 - Fixed a kernel panic on StorNext MDC during controller firmware update test.
 - Addressed an issue where LUNs are not presented properly on SUSE 11 SP3.
 - Fixed multiple problems when handling aborted commands.
 - Corrected soft lockups reported during MP scans.
- **Version 1.01MP (Released 6/27/2013)**
 - **New Features/Enhancements**
 - Corrected Config Tool reporting error where the same LUN shows multiple times with MultiPath Director.
- **Version 1.00MP (Released 12/21/2012)**
 - **New Features/Enhancements**
 - Initial release of Linux multipathing drivers for the Celerity 16Gb FC adapters.

Known Advisements

- *If the card is placed in certain slots of an Intel Grosse Point machine, the system may not boot*
- *Multiple direct connections to a Xyratex drive array does not work. Contact ATTO Tech Support for more information.*
- *The system will not boot if the card is placed in an MSI 277A-GD80 motherboard and the System BIOS PCI ROM Priority is set for EFI Compatible ROM. The System BIOS is trying to run both the EFI and Legacy BIOS at the same time. To work around this issue, set the System BIOS PCI ROM Priority setting to Legacy ROM. Contact ATTO Tech Support for more information.*
- *After creating an entry in /etc/fstab for a LUN with file system check enabled, a subsequent reboot may cause the file system check to fail if the LUN is not ready. The work around is to use the "_netdev" option in the /etc/fstab entry. For example:*
 - */etc/fstab entry with _netdev option:*
`UUID=xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxxx/fs0 ext4 defaults,_netdev 02`
- *In Linux environments, set "intel_immou=off" in the kernel when using Multipath Director (MPD) drivers. It is also recommended that VT-d be disabled in the system BIOS (if available)*

3. Affected Products

Product Name	SKU
Celerity FC 164E	CTFC-164E-000
Celerity FC 162E	CTFC-162E-000
Celerity FC 161E	CTFC-161E-000
Celerity FC 81EN	CTFC-81EN-000
Celerity FC 82EN	CTFC-82EN-000
Celerity FC 84EN	CTFC-84EN-000
Celerity FC-164P	CTFC-164P-000
Celerity FC-162P	CTFC-162P-000
Celerity FC-161P	CTFC-161P-000
Celerity FC-324E	CTFC-324E-000
Celerity FC-322E	CTFC-322E-000
Celerity FC-321E	CTFC-321E-000

4. Contacting ATTO Support

ATTO Technology, Inc. is renowned for its technical support services. ATTO's goal is to provide you the quickest response possible for your technical support needs. Please visit <https://www.attotech.com/support/> for hours of operation.

ATTO Technical Support can be contacted via phone or email:

- Phone: 716.691.1999 ext. 242
- E-Mail: techsupport@attotech.com