ATTO Technology, Inc.

Product Release Notes

ExpressSAS Host Adapter 12Gb v1.40 - Linux

1. General Release Information

These product release notes define the new features, changes, known issues and release details that apply to the ExpressSAS 12Gb HBA product line driver v1.40 that was released on December 12, 2017. This information pertains to the following Linux operating systems: CentOS 6, 7; Ubuntu 16.04 LTS; openSUSE 13.2, 42.1; Red Hat Enterprise Linux 6, 7; and SUSE Linux Enterprise Server 11 SP4,12

2. Changes

- ***Version 1.40 (Released 12/12/2017)***
  - **Note:** It is recommended that firmware dated 12/01/2017 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Added SMR drive support
    - Added support for displaying SATA device temperature in *atdevinfo*
    - Added support for *atdevinfo*, *atsasinfo* to replace *atsasphy*
    - Added *atdevinfo* and *atsasinfo* CLI tools
    - Fixed PHY state display in *atsasphy* when disabling a PHY with no active link
    - Added limited CLI tool use with degraded adapters
    - Fixed a discovery issue that could cause devices to be blocked from the system
    - Fixed an issue where task management could be sent to the wrong device
    - Fixed a compilation error on 4.12 kernel, and later

- ***Version 1.35 (Released 06/07/2017)***
  - **Note:** It is recommended that firmware dated 05/30/2017 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Resolved an issue where the driver incorrectly responded to a Check condition for ATA Pass-Through commands
    - Implemented a fix for Write Buffer mode 7 translation for SATA drives
    - The driver will now detect and explicitly disable host managed SMR SATA drives
    - Added an NVRAM setting to enable SEMB SATA devices as disks
    - Fixed SMP commands with smp_utils, and various expander attributes in /sysfs
    - Fixed a panic when one cable in a wide port is pulled and attached to another device
    - Stop logging the "unregistered handler" message (attocfg only)
    - Adapted to 4.11 kernel code changes
    - Resolved a memory corruption issue with T10-DIF and SAS enclosures

        - Fixed improper status being reported when a SATA drive is unplugged
        - Added support for Write Buffer modes D, E, and F for SATA drives
        - Updated driver to show 12Gb/s link speed in *sysfs* transport layer
        - Updated Power Center Pro RAID group management features for SATA drives

- ***Version 1.30 (Released 12/22/16)***
    - **Note:** It is recommended that firmware dated 12/21/2016 be used with this driver release.
    - **New Features, Enhancements and Changes**
        - Modified the driver so that the adapter SES device is not created until a device is attached (internal connectors only).
        - Fixed reporting adapter SES device status change when a device is removed (internal connectors only).
        - Resolved a rare issue where newly formatted T10-PI drives are marked as unavailable in *atpcpro*.
        - Fixed an issue where devices with corrupted formatting may be blocked from the system when Power Center Pro is enabled.
        - Allow communication to SATA drives when the minimum link rate of the expander topology does not match the drive rate.
        - Changed the I/O timeout policy during expander discovery of a single device to have minimal impact on the overall discovery process.
        - Fixed Write Same processing to some non-512 sector size SATA drives.
        - Disabled the Extended Power Conditions feature set for SATA drives.
        - Fixed a potential hang when a port goes down during discovery.
        - Fixed a potential task management and timeout error recovery conflict.
        - Fixed a potential crash when the user connects an invalid expander topology.
        - Fixed issues with inaccessible devices, due to invalid topologies, are not presented to the OS.
        - Fixed WHQL Hypervisor Code Integrity test failure.
        - Fixed issues when running certain CLI tools concurrently.

- ***Version 1.25 (Released 01/08/16)***
    - **Note:** It is recommended that firmware dated 01/05/2016 be used with this driver release.
    - **New Features, Enhancements and Changes**
        - Fixed Write and Verify support for SATA devices to verify the data when the device supports FUA.
        - Improved discovery of SATA devices that require excessive recovery time from a hard reset.
        - Added workaround for Super Micro expanders that report invalid discovery data for SATA drives.
        - Added faster processing of Write Same commands for SATA devices, if supported.
        - Added support for Extended Inquiry Data VPD page for SATA devices.

- ***Version 1.20 (Released 08/26/2015)***
    - **Note:** It is recommended that firmware dated 08/20/2015 be used with this driver release.
    - **New Features, Enhancements and Changes**
        - An NVRAM parameter has been added to disable/enable Power Center Pro support.

- Resolved issue where cable management errors prevented PHY enablement. We now attempt to bring up the PHY using default settings.
- We added *attrace* firmware core dump capability after a fatal controller error.
- We added forced event logging of internally generated I/O errors.
- DMA Auto-Activate has been enabled to improve SATA NCQ performance.

- ***Version 1.15 (Released 05/27/2015)***
  - **Note:** It is recommended that firmware dated 05/21/2015 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Enabled support for Linux target mode.
    - Devices in expander topologies with a link rate not applicable to the NVRAM setting are no longer presented to the system.
    - Added logical block provisioning support for SATA devices which includes trim support for SSDs.
    - Fixed SATA discovery error processing to clean up firmware resources that could prevent a future discovery from working correctly.
    - Add support for spinning up SATA drives that have PUIS enabled.
    - Stabilized performance on NUMA systems.
    - Coordinate I/O with discovery commands for SATA devices to prevent I/O errors.
    - Fixed a timing window that could cause a 6Gb SATA drive to not be discovered.
    - Fixed a problem where target device remained after a cable is pulled while system is coming out of hibernation, or sleep.
    - Fixed SGPIO operation on the H1208.
    - Fixed an issue where a SATA I/O timeout occurred if a protocol error prevented a retry of a command.
    - Fixed rediscovery of a device if it was moved within a topology from an expander to direct attached and a device was present on PHY 0.
    - In target mode, fixed discovery processing to never send task management to an initiator, as well as fixed sense data truncation when the sense data length was 13-20 bytes.

- ***Version 1.10 (Released 12/16/2014)***
  - **Note:** It is recommended that firmware dated 11/13/2014 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Added support for the ExpressSAS H1244, H1248 and H1288 host adapters.
    - Fixed several issues with recovering a device if task management fails.
    - Fixed an issue with the driver's device scan where devices would be blocked from the system if they didn't have a valid LUN 0.
    - In target mode, when configured for multiple targets, fixed an issue with task management handling that could abort I/O for targets not applicable to the task management.
    - Fixed an issue that could prevent the OS from seeing devices that swapped positions in the topology.
    - Fixed an issue that could cause devices to not be reinserted into a RAID group correctly. This could occur during power management cycles or during cable pull/replug within the link down timeout period.
    - Fixed an issue that could cause RAID groups to be degraded when resuming from power management.

- In the presence of multiple logical SAS ports, when the controller is reset or resumes from power management, fixed an issue that could result in the SAS ports not containing the correct PHYs. This could result in improper SAS discovery or detection of read-only ports.
- Fixed an issue that could cause a RAID group to disappear after a controller reset.
- Fixed an issue that could cause the adapter to go degraded before initialization is complete.
- Fixed a port reset issue that could cause newly attached devices to not be discovered.
- Fixed an issue that could cause discovery to be blocked forever if discovery command timeout recovery required a controller reset.
- All discovery operations in flight are correctly aborted if a controller reset occurs.
- I/O connection errors due to incomplete expander routing are now retried.
- Increased the discovery command timeout to account for slow SATA SSDs.
- Fixed an issue with aborting timed out discovery requests.
- Resolved issue where Modinfo did not display all of the available parameters.
- Resolved issue where cat /proc/scsis output had some errors in formatting.

- ***Version 1.05 (Released 8/1/2014)***
  - **Note:** It is recommended that firmware dated 7/30/2014 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - Fixed a potential crash when replacing a member of a RAID group.
    - Resolved an issue regarding correct interpretation of descriptor based sense data during the driver's device scan.
    - Fixed the potential for a direct attached wide ported device or expander to not be removed when the link went down.
    - Always log warning or critical RAID messages.
    - Increase the time to wait for devices to become ready from 30 to 60 seconds.

- ***Version 1.00 (Released 5/2/2014)***
  - **Note:** It is recommended that firmware dated 4/23/2014 be used with this driver release.
  - **New Features, Enhancements and Changes**
    - This is the initial release of the ExpressSAS 12G HBA driver for Linux.

3. Known Issues/Advisements

- None

4. Affected Products

Product Name
ExpressSAS H1208
ExpressSAS H1280
ExpressSAS H12F0
ExpressSAS H120F
ExpressSAS H1244
ExpressSAS H1288

5. 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, and is available Monday-Friday, 8:00 AM to 8:00 PM EST (except holidays and plant closings).

ATTO Technical Support can be contacted via phone or email:

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