



Seagate 5005/4005/3005 Series Release Notes for Firmware Version GN280R014-01/GT280R014-01

Part Number: 207355200-00

Version: A

Published: January 2024

© 2023 Seagate Technology LLC or its affiliates.

The information contained herein is subject to change without notice. The only warranties for Seagate products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Seagate shall not be liable for technical or editorial errors or omissions contained herein.

Acknowledgments

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

Description

This package delivers firmware for 5005/4005/3005 Series controller enclosures and expansion enclosures. Expansion-enclosure firmware is embedded in GN280R014-01/GT280R014-01 firmware bundles and is updated when attached to one of the following controller enclosures.

| Model | Firmware version |
|-------|------------------|
| 5005 | GN280R014-01 |
| 4005 | GT280R014-01 |
| 3005 | GT280R014-01 |

Update recommendation

This is a recommended firmware update for 5005/4005/3005 Series products.

Operating systems

Supported operating systems include the following.

Controller/expansion enclosures

- Microsoft Windows Server 2022, 2019
- Red Hat Enterprise Linux 8.5, 7.9, 7.8
- SuSE Linux Enterprise Server 15.3
- Ubuntu 22.04, 20.04

JBOD enclosures

- Microsoft Windows Server 2022, 2019
- Red Hat Enterprise Linux 8.5, 7.9, 7.8
- SuSE Linux Enterprise Server 15.3
- Ubuntu 22.04, 20.04
- VMware ESXi Server 7.0 U3

Installation instructions

To install this firmware by using either the Storage Management Console (SMC) or the FTP/SFTP interface, see the *Seagate 5005/4005/3005 Series Storage Management Guide*.

NOTE: Certain enclosure firmware components are not managed by the system firmware bundle (for example, power supplies and fan controllers). Firmware for these components can be uploaded using the FTP/SFTP method. Contact Seagate technical support for assistance with this process if required.

Features or enhancements introduced in GN280R014-01/GT280R014-01

- Security enhancements implemented.
- In the CLI, the `clear degraded-disk` command can now be used to set a degraded disk's health to OK and clear the disk's error count. After this command is run, error counts used to measure disk medium errors are restarted. The minimum role to use the command is Standard. The syntax is `clear degraded-disk <disks>`. For information about specifying disks, see the command syntax topic in the CLI Reference Guide.
- Added firmware support for 764W AC PCMs and updated firmware for 764W DC PCMs.

Issues fixed in GN280R014-01/GT280R014-01

- Fixed an issue where an EMP reported an alert condition on a voltage sensor.
- Fixed an issue where a pool was offline due to inconsistent metadata.
- Fixed an issue where, after a brief power loss, disks in an expansion enclosure became inaccessible though disks in the controller enclosure remained accessible.
- Fixed an issue with ADAPT spare capacity after disk replacement.
- Fixed an issue with replication in a single-controller configuration.
- Fixed an issue where the customer could not repurpose a foreign FDE-capable disk in a secured system.
- Fixed an issue where SED disks went into an Unusable/Leftover state after the system was power-cycled.
- Fixed an issue where FDE disks were not detected when a system was power-cycled.
- Fixed an issue described as "A virtual pool was offline because a metadata volume is unreadable or missing."
- Fixed an issue related to upgrading the GEM version in 5U84 enclosures having Lattice sideplanes.
- Fixed an issue that caused the system to display an FDE protocol error.
- Fixed an issue where missing VPD values caused an improper health warning to appear for 764W DC PCMs.
- Fixed an issue where storage performance was degraded and the controller restarted automatically.
- Fixed an issue where a dual-controller crash occurred while performing a rebalance operation.
- Fixed an issue where physical PHY mapping was not enabled for Lattice sideplanes.
- Fixed an issue where firmware update failed for a system with a mixed Lattice and Intel IOM configuration.
- Fixed an issue where a misleading health message led to the wrong part being replaced. For health reason "A midplane SGPIO bus failure was detected" the health recommendation has changed to "Contact technical support."
- Fixed an issue where the disk count shown for a disk group was wrong after replacement of a failed disk.
- Fixed a VPD issue that prevented zoning for 2U enclosures using certain midpanes.
- Fixed an issue where both virtual pools were offline with health reason "The virtual pool is too large."
- Fixed an issue where, after disk replacement and disk-group rebuild and rebalance, system performance was degraded.
- Fixed an issue where, after changing the password of a default user, the old password still worked.
- Fixed an issue where attempting to update 5U84 JBOD IOM firmware failed due to a firmware mismatch.
- Fixed an issue where updating to UUT 6.23 on a 5U84 system changed PHY mappings.
- Fixed an issue where a disk group remained in a degraded state after replacement of a faulty disk.

- Fixed an issue where a system using mixed-size disks in an ADAPT disk group had a failure that left multiple disks in a leftover state.
- Fixed an issue where, after disk firmware updates, an ADAPT disk group became quarantined.
- Fixed an issue recorded as "Unexpected HW power state or mismatch between EBOD and Midplane CPLD power states for drive" in controller logs that caused a disk group to be quarantined.

Features or enhancements introduced in GN280R011-01/GT280R011-01

This update supports the latest G280 Lattice CPLD-support enhancement and the associated known issues. If an existing Intel CPLD fails, it must be replaced with a Lattice CPLD. This means the IOM or sideplane FRU that contains the CPLD must be replaced. For a successful fix, the firmware must be installed that supports the new Lattice CPLD prior to replacing the CPLD.

The following known issues exist.

- The new Lattice CPLD is not supported by firmware version GN280R010-01 or earlier. Attempting to use that firmware with the new hardware will result in unexpected behavior. The system must be updated to firmware version GN280R011-01.
- If the firmware update fails with the following code load error: `SP: Error: Fatal`, contact your Seagate account manager for a process to resolve it.
- In the case where a 5U84 expansion enclosure using the new CPLD is attached to a 5U84 system running GN280R010-01, and firmware update to GN280R011 is started with the PFU option enabled, the update may fail with error `Failed to push bundle to partner controller`. If this occurs, restart both controllers and repeat the firmware update. This is a one-time workaround; subsequent firmware update operations should proceed normally.

Issues fixed in GN280R011-01/GT280R011-01

- Fixed issue where SNMP service stopped responding.
- Fixed issue where SMI-S API broke after firmware upgrade to GT280R010-01.
- Added Lattice CPLD support.

Features or enhancements introduced in GN280R010-01/GT280R010-01

- Added support to the new Ecodesign 2.2kW Titanium PSUs for use in 5U84 enclosures.

Issues fixed in GN280R010-01/GT280R010-01

- Fixed `Overlapped command Check condition`.
- Fixed an issue of `Historical Performance Statistics` in Storage Management Console or Command Line Interface.
- Fixed a controller crash issue when global spare was assigned.
- Added support to SWAP bit using storage controller.
- Fixed an issue where a multicore system crashed with errors related to Macro Level I/O (MLIO).
- Fixed an issue where PCM firmware update failed with an I/O timeout error.
- Improved the event logging mechanism in storage controller logs.
- Fixed the ADAPT map corruption issue.
- Fixed an issue of swap bit of Host temp sensor in SES page 2.
- Fixed an issue where some host mappings were lost after cold booting a storage system.
- Fixed "send syslog" and SNMP notification issue when the system is configured with FQDN.
- Fixed an issue where a virtual pool's high capacity threshold was reached and controller A crashed.
- Enhanced DDR error handling in response to a dual-controller crash.
- Added drive status check in error handler to issue `FDE init` or `retry`.
- Fixed an issue where implementation of 802.1x certificates does not check for any activity in progress before activating the WPA 802.1x certificates.
- Increased sync IO timeout and re-issued original srb.

- Fixed an issue where a controller killed its partner controller due to heartbeat loss.
- Fixed an issue where a data-unavailability situation occurred due to rebooting of a controller.
- Fixed incorrect status reported in SupportAssist logs and upgrade notifications.
- In the Storage Management Console, fixed inconsistencies between English and non-English languages in the confirmation dialog box when modifying a volume.
- Fixed an issue where a root expander experienced a communication fault.
- Fixed an issue where a PCIe crash exceeded an I/O synchronization timeout.
- Fixed an issue where a controller crashed in the NOCP area.
- Fixed an issue where a pool went offline after an ADAPT disk group became quarantined.
- Fixed an issue where sensitive information was shown in two system logs.
- Fixed an issue where a controller crashed due to Double Deletion of Host IO in ATS abort path.
- Fixed an issue where an incorrect string was shown for a temperature alert event on an enclosure.
- Fixed an issue where customer failed to configure an email account using smtp.office365.com.
- Fixed an issue where a user was unable to login to Storage Management Console if the username or password contains special characters like £.
- Fixed an issue where firmware upgrade failed on storage systems until the MC restarted.
- Fixed an issue where the CLI commands `show license` and `query peer-connection` showed inconsistent license information.
- Fixed an issue where the Management Controller failed to be ready.
- Fixed an issue where `UNMAP` feature for HDD drive incorrectly enabled during enclosure renumbering.
- Fixed an issue where Engineering lab storage systems failed to work using DHCP.
- Fixed an issue where a controller crashed while multiple copyback operation was running on the same disk group.
- Fixed an issue where disks were becoming degraded during firmware update.
- Fixed an issue where incompatible IOM firmware was detected on IOM A after a firmware upgrade.

Features or enhancements introduced in GN280R009-02/GT280R009-02

- Enclosure Management port is now compliant with IEEE 802.1x network authentication protocol.
- Added Storage Controller capability to detect Field Accessible Reliability Metrics Specification time series log.
- Added support to invoke and monitor Seagate Lyve Pilot agent (Unified Data Service).
- Added Unified Data Service commands `set protocol` and `show protocol`.
- Changed the default scrub interval from 24 hours to 360 hours (15 days).
- Added support for collecting logs.
- Added support to collect drive logs for Field Accessible Reliability Metrics frames.
- Added capability to allow full resynchronization of replication sets at will.

Issues fixed in GN280R009-02/GT280R009-02

- Developed Unified System Management (USM) Upgrade Toolkit for 5U84 and 2U12/2U24 JBODs.
- Fixed an issue where both controllers crashed after controller B was brought back up while deleting a volume.
- Fixed an issue where a dual controller crashed during the disaster reverse recovery operation, done using `kill/unkill` on the system.
- Fixed an issue where clear expander-status fails to clear expander-status for 5U84 enclosure.
- Fixed an issue where a crash happened due to a timeout detected by the auto stall recovery code during the shutdown/reboot test. This issue happened when couple of disks become bad during the shutdown/reboot test, due to which the disk group got

- quarantined, and one of the controllers detected a 'shutdown stall' for the other controller.
- Fixed an issue where the wrong disk was being failed during a bad-block recovery.
 - Fixed an issue of offline disk groups remaining quarantined even after the controller was live.
 - Implemented **Salvage** mode for field recovery red-alerts.
 - Fixed issue of reading incorrect enclosure configuration page and swapping of incorrect enclosure configurations, when the system is busy in SCSI rescanning.
 - Fixed an issue of controller crash due to heartbeat loss.
 - Fixed the wrong reporting where power supply failure reported capacitor failure.
 - Fixed an improper system request for a Performance Tier license after upgrade to GN280R002-03/ GT280R002-03.
 - Fixed an issue in the WBI where the Create Snapshot scheduler did not correctly convert AM/PM schedules (12-hour time format) to 24-hour time format.
 - Fixed an issue where the controller crashed while deleting read-cache disk group.
 - Fixed an issue where a user could successfully upload an expired certificate and install it to the array.
 - Added the ability to retrieve UDS and SM2 logs from the storage system without removing the disks. The logs can be retrieved using the `get logs` command or the `ftp` command.
 - Fixed an issue where, after firmware update, power supply firmware and VPD versions were not updated in the output of the CLI `show versions frus` command.
 - Fixed an issue where disk scrub was being attempted on FDE locked disks, causing them to be marked as 'Leftover'.
 - Fixed an issue where the replaced controller's IP address changed back to the controller's old IP address after enclosure power cycle or shutdown restart of both controllers.
 - Deprecated no-mirror cache optimization mode.
 - Global spare drive now gets selected by slot affinity and gets added as disk group spare.
 - Fixed the nested topology change issue.
 - Fixed issues where error detected in scrub caused controller to get killed.
 - The complete debug region memory buffer can now be used to extract disk logs.
 - Fixed self assert in case of compact flash diagnostic failure during boot.
 - Seagate storage systems now implement mechanism of self-detection of multi boot failure and avoids a re-boot.
 - For ADAPT disk groups, fixed an issue where disks that were not used in an expand operation were associated with the disk group during rebalance operation.
 - Made interprocessor communication (IPC) path changes to handle multi-context invocation and incorrect error address reporting.
 - Fixed page fault crash in Inband Management Read/Write path.
 - Fixed an issue where after upgrading to GN280R002-03/GT280R002-03, system is asking for Performance Tier license.
 - Fixed an issue where it was not possible to unlock FDE disk after using the `set fde-state repurpose` command.
 - Fixed an issue where while using WBI, it was not possible to set the SMTP server name if the domain suffix was more than 6 characters long.
 - Fixed an issue where while receiving traps on MIB browser it was displaying IP address of a different controller rather than the address of the controller on which it was configured.
 - Fixed an issue where the FDE passphrase was not masked in the GUI.
 - Fixed a large memory leak in root platform.
 - Fixed an error where the shared library libz.so was not loaded correctly.
 - Fixed an issue of flooding of logs due to repeated SCSI enclosure services (SES) page 2 control requests.
 - Fixed an issue where the virtual pool went offline due to unreadable metadata.
 - Fixed GEM CLI `ddump_pwrmgr` to show correct power cooling module /powersupply unit serial no.
 - Fixed disk-zone distribution among stripe zones in ADAPT rebalance after disk replacement.

- Fixed a race condition that happened between task management function (TMF) sent and the TMF aborted.
- Fixed issue where a disk-group initialization failure and then a scrub abort on the same disk group caused the disk group to go offline.
- Fixed the issue of data corruption that happened during adapt target rebuild and rescan.
- Security enhancements implemented.

Issues fixed in GN280R008-04/GT280R008-04

- Enabled retrieval of drive logs from Seagate drives.
- Fixed invalid string references on the Install License screen.
- Fixed the 24-hour start time format conversion.
- Enabled retrieval of drive logs from Seagate drives in Seagate storage systems.
- Security enhancements implemented.
- Increased default media scrub interval from 24 hours to 360 hours.
- Fixed failure in ADAPT disk movement in the chassis.
- Updated warning and critical temp thresholds.
- Ambient temperature sensor readings corrected on 2U12/2U24/4U24.
- Updated midplane CPLD low density to 15V.
- Enabled meter scrub duration.
- Supported single step upgrade from older release to latest G280 release.
- Upgraded OpenSSH to openssh8.2p1 version.
- Updated the USB core driver.
- Removed Dequarantine_Vdisk and Trust_Vdisk from Jenkins Silver list.
- Fixed read cache from running out of CEs for internal reads.
- Initiated invocation of nvdevice UID check for RSCU case.
- Added clearing of corresponding NV UID quarantine bit mask when container number is freed.
- Fixed incorrect reporting of All global spare deleted event when global spare still available.
- Changed severity of event 608 (backend miscabled) from Informational to Error.
- Updated logic to retrieve volume groups by name.
- Modified Validate_Sysinfo to skip lastANotified and lastBNotified.
- Corrected handling of disk group when associated disk is pulled.
- Corrected Mappings Verification text box.
- Fixed Create Initiator issue on SAS controllers.
- Removed unnecessary error prints from lone zone container.
- Added a confirmation message for the shutdown command.
- Improved reset all-statistics for the CLI handler.
- Fixed SEEPROM read from FRU event generation.
- Prevented unwanted removal of in-use disk group.
- Fixed page fault during restore defaults factory testing with SAS host interface.
- Improved the DMA-to-cache transfer function.
- Fixed shutdown stall when flushing unwritten cache data to a quarantined disk group.
- Fixed non-PI errors and prevented data corruptions.
- Fixed sideplane firmware downgrade issue for 5U84 enclosures.
- Set default storage type as paged for supported virtual disk groups.
- Fixed timing issue in SAFTE initialization.
- Implemented proper identification strings in disk reports.
- Fixed improper RAID-10 and RAID-50 preemptive reconstruct.

- Fixed controller hangs during ADAPT preemptive reconstruct.
- Added check for cache and page storage initialization before starting ADAPT.
- Modified code to avoid continual rebuilding.
- Prevented unnecessary update in missing drive mask function when drives are missing.
- Fixed shutdown stall when flushing unwritten data when the controllers are shutdown and then rebooted using MC CLI or MUI.
- Fixed hangs in BBR recovery for copyback and fenced data detection.
- Fixed a crash for write I/O operations when the pool becomes full.
- Fixed a crash due to non-availability of memory resources.
- Improved handling of out of NV_CPU_BLPTS function.
- Fixed `Cancel Replication` message crash.
- Changed replication set queue policy from discard to queue-latest if either side's pool is over the high threshold.
- Changed a failed-over system to finish in-progress snapshot operations before attempting a failback.
- Improved the debug logs for better engineering analysis.
- Added support for new CAPI error codes.
- Fixed PSC removal during initialization.
- Resolved compilation error and removed `userArray` variable usage.
- Change made to mark a dead drive with an error without reading it to avoid accessing the physical failed drive.
- Modified controller shutdown to occur only once by sensor monitoring after detecting the error threshold.
- Fixed in-band management issue.
- Security enhancements implemented.

Issues fixed in GT280R007-03

- Added patch for CVE_2015_5364.
- Added patch for CVE-2015-1465.
- Prevented removal of a Paged Storage Component that is being used as the source of a metadata copy.
- Fixed page fault during restore defaults factory testing with SAS host interface.
- Fixed ATS state machine to return DMA to cache by checking for no Outstanding Worker IO's.
- Added patch for CVE-2016-7117.
- Added patch for CVE 2016-10229.
- Added patch for CVE 2014-2523.
- Fixed an issue of shutdown stall due to flushing of dirty data to a quarantined disk group.
- Handle non-PI WIO errors by retrying the WIO and Prevent Data Corruptions by propagating WIO error status into any associated coalesced WIOs.
- Sideplane firmware downgrade issue.
- For configurations where only paged disk-groups are supported, set the defaultarray type as paged.
- Fixed a timing issue in SAFTE init.
- Fixed the drives report `Degraded health (UNUSABLE)` after changing FDE state from `Unsecured` to `Secure`.
- Fixed RAID-10 and RAID-50 preemptive reconstruct if multiple drives are degraded.
- Fixed controller hangs during ADAPT preemptive reconstruct.
- Added a check for `Cache and Page Storage` initialized before starting ADAPT.
- Changed the code to not rebuild continually.
- When SC receives a manual dequarantine command, it needs to check the `missingDriveMask` of the container. If missing mask is non zero, then do not set a partition as dead and fail the manual dequarantine command. This will avoid an unnecessary update in the dead map when drives are missing.
- Initialize the drive down list earlier, so that down drives are correctly considered during the RAID initialization.

- When the issue of shutdown stall due to flushing of dirty data to a quarantined disk group is fixed (TT-51665/FMW-33107), avoid loss of dirty data when the controllers are shutdown and then rebooted using MC CLI or MUI.
- Fix hangs in BBR recovery running copyback and detecting fenced data.
- G280 CI: build#466 & build#499 Test - Schedules_Remain_After_Kill_Unkill.
- Fixed assert in the PS I/O error path when the pool is full.
- Improve handling of out of NV_CPU_BLPTS in Read Tree Actor and in Read BLPT actor.
- PS isBlpteLocked() - move check for TLPT lock to outside of non-null blpte clause.
- Fixed a crash which was caused when a `Cancel Replication` message is sent to a secondary system that doesn't have the Replication Set.
- Queue policy changed for pool high threshold reached.
- Finish active snapshots before failback.
- Improved NOPM tracing for debug.
- Fixed a NMI kill due to shutdown hang during SDR with replications.
- Added support for new CAPI error codes.
- Added Check pool limits before expanding a PSC.
- Fix for removing a PSC during initialization.
- Resolved compilation error. remove use of `userArray` variable.
- Fixed a crash due to excessive media errors.

Issues fixed in GT280R007-02

- Set the default `password changed` flag correctly for new user.
- Dual controller crash observed.
- [Codeload] Controller is down after codeload. Fix to only shutdown once when we have a temperature failure.
- Controller A crashed while running I/O on system with snapshot schedules.
- [AR] Controller A crash.
- Fix possible split write I/O volop deadlock.

Issues fixed in GT280R007-01

- Fix issue related to in-band management.
- Chelsio IOLibs changes - Fix a TX queue resource leak on TMF responses.
- Fix memory leak in PHClient.
- Rearranged the order in which commands to enable or disable both `CloudIQ` and `SupportAssist` are executed.
- Added missing UTC time zones in the list of valid parameters of `set support-assist-info` command.
- Increased width of container widget and removed some margins so that contained text on **Advanced Settings** screen is visible properly.
- Create Snapshot Scheduler does not convert time specified in PM to 24 hour format correctly.

Known issues and workarounds

Issue: Default values in Help section differ from actual output after performing `restore defaults factory`.

Workaround: None.

Issue: While adding a new disk group, user cannot change the disk group's type in the WBI.

Workaround: Use the CLI parameter `type linear|virtual|read-cache` to change a disk group's type while running the `add disk-group` command.

Issue: Firmware downgrade from G280 to G265 fails with the following error:

```
Firmware update blocked because the bundle contains firmware that does not support the system's
storage pools. Attempt to down-grade firmware on controller that doesn't support the system's
storage pools.
```

Workaround: Use the WBI or the CLI to delete the pools created with G280 firmware on the controller and retry the firmware downgrade. If you are unsure which disk groups were created using G280 firmware, please contact support for assistance.

Issue: The WBI does not support the `Copy Volume` action for linear volumes.

Workaround: You can use the CLI `copy volume` command to copy a linear volume if the destination volume is a virtual volume and is owned by the same controller as the linear volume.

Issue: Controller A crashed during a controller pull/push operation.

Workaround: None. This was a rare case.

Issue: GN280R007-02/GT280R007-02 has no midplane VPD/CPLD and PSU files included in the build.

Workaround: Use the FTP process to upload the midplane VPD/CPLD and PSU files.

Issue: Disk groups went offline as linear disk groups while upgrading from GN280R007-02/GT280R007-02 to GN280R007-03/GT280R007-03.

Workaround: Use the CLI `Trust` command.

Issue: The WBI error message (schedule was not found) is not appropriate while modifying/expanding the size of a volume.

Workaround: Use the CLI.

Issue: SSD disk groups can be created without a Performance Tier license.

Workaround: No workaround necessary.

Issue: MC (partner) is not ready while downgrading to GN275R003-01/GT275R003-01 with PFU disabled.

Workaround: None. Firmware must be upgraded/downgraded per the code load sheet.

Issue: Incorrect queue depth values are displayed for historical performance statistics.

Workaround: None.

Issue: The maximum volume size limit for an ADAPT virtual or linear disk group is 1 PiB ; for a non-ADAPT virtual disk group it is 128 TiB; and for a non-ADAPT linear disk group the maximum size is limited only by the size and capacity of member disks.

Workaround: None.

Issue: While upgrading from GN260R008-03 to GN280R008-09, firmware upgrade fails and the controllers starting crashing with page faults.

Workaround: Replace faulty disk before upgrading from G260 to G280.

Issue: When the drive spin down feature is enabled, it is not possible to unlock the FDE drives.

Workaround: Disable the drive spin down feature and wait for approximately 2-3 minutes, and perform a manual rescan. Once the drives spin up, the system can be unlocked by entering the FDE passphrase.

Issue: The Management Controllers reboot in a loop after creating a monthly snapshot schedule.

Workaround: While creating a scheduled snapshot, clear the **Repeat every** checkbox.

Issue: A disk detected timeout when you do a repetitive shutdown, restart with adapt reconstruction and manual rescan.

Workaround: None.

Issue: When using the Storage Management Console to replace a disk, the health panel does not correctly reflect the LED status of the disks until the disk group rebuild starts. Any amber LEDs illuminated on the disks are not shown as illuminated in the health panel.

Workaround: The health panel is updated after the disk group is rebuilt.

Issue: In the Storage Management Console and the `set chap-record` command, the `secret` and `mutual-secret` parameters accept the entry of a double-quote character ("), which is an invalid character.

Workaround: If a double-quote character was included in the `secret` or `mutual-secret` parameter, remove it and re-create those entries.

Issue: When creating a username during initial CLI login, the following invalid characters are allowed in the username: angle brackets (< >) and single quote (').

Workaround: Re-create the username without using angle brackets (< >) and single quote (').
