Release Notes for MSA Drive FW Update Bundle, v2023.10

Installation Instructions:

Instructions to Validate Windows Smart Component Executable:
To verify the HPE SHA256 Authenticode digital signature, do the following steps:

- Download cpxxxxxxx.exe to a system running a supported version of Microsoft Windows Server OS. By downloading this file, you are agreeing to the license terms in HPE License Agreement v1.pdf, listed in the 'License' field.
- Right-click the filename then select Properties.
- When the Properties window displays, click the Digital Signature tab.
- Select the entry in the Signature List where Digest algorithm is SHA256 and click the Details button.
- The signature status will display at the top of the Details dialog.
- If the signature message states that "This digital signature is OK.", then the firmware package is authenticated as an HPE package.
- If the message "This digital signature is not OK." displays, then do the following:
    - Do not deploy the firmware.
    - Download firmware a second time and verify the signature again. If the signature is not OK, then contact HPE Technical Support.

To verify the SHA256 hash value, do the following steps:

- Use Microsoft Windows CRC/SHA tool to calculate the SHA256 hash value for cpxxxxxxx.exe.
- Compare the calculated value with the SHA256 value displayed in the Installation Instruction tab of the HPE Support Center download page.
- If the values match, then the integrity of the downloaded file has been verified.
- If the values do not match, do not deploy the file or its contents.
- Download the file a second time and compare the new hash value.
- If the hash values do not match, then do not deploy the downloaded file and contact HPE Technical Support.

Windows Smart Component Installation Instructions
The Smart Component package is a self-extracting executable. Please make sure to have a minimum of 200MB free disk space in C drive for successful extraction. You can execute this module from the Windows graphical user interface (GUI) or the command line console (CLI).

GUI option:

1. Place the downloaded firmware package in a temporary directory.
2. Using Windows Explorer, navigate to the directory containing the download.
3. Double click the executable file.
4. After you are prompted for logon information, enter credentials for an account with management access rights.
5. Follow onscreen instructions.
6. Wait for the installation to complete. Upon completion, a confirmation message is displayed.

CLI option:

1. Place the downloaded firmware package in a temporary directory.
2. Using Windows command prompt, navigate to the directory containing the download.
3. Execute the Smart Component by entering the following command:

    cpxxxxxxx.exe /target <ip_address> /user <username> /passwd <password> /disk <custom disk(s) location> /s
    where:

- ip_address is the management IP address of the storage system controller

- username is the user account with management rights
- password is the password for user account
- disk is an optional value to specify custom disk(s) location to upgrade
  Please refer to MSA CLI reference guide for examples on how to specify disks for custom disk(s) value.
  Wait for the installation to complete. Upon completion, a confirmation message is displayed.

NOTE:

- Stop all I/O to storage system before starting the firmware update.
- When prompted for logon information, enter credentials for an account with management access rights.
- For details on supported command options, see the online help by executing the command cpxxxxxxx.exe /h or /?
- Smart component supports LDAP user authentication for only HPE MSA 1050/2050/1060/2060 Storage System.

Instructions to Validate Linux Smart Component RPM:
Verify the RPM signature using the following steps:

- Download the HPE GPG 2048-bit Public Key (hpePublicKey2048_key1.pub), which is available from the HPE SDR web site: https://downloads.linux.hpe.com/keys.html
- Import the public key while logged in as root by running the following command:

  # rpm --import /path_to_the_key/file_name_of_the_key
  example # rpm --import /path_to_the_key/hpePublicKey2048_key1.pub

Verify the RPM:

- Use the rpm --checksig command to validate and verify the digital signature of the signed file. The output from the command indicates the validity of the signature.

  # rpm --checksig filename_of_the_rpm
  example result # rpm --checksig <File name>.rpm
  <File name>.rpm: rsa sha1 (md5) pgp md5 OK

- If your file does not pass verification or you do not have the Hewlett Packard Enterprise Company public key installed, you may see an error.

  # rpm --checksig filename_of_the_rpm
  <File name>.rpm: RSA sha1 ((MD5) PGP) md5 NOT OK (MISSING KEYS: (MD5) PGP#26c2b797)

To verify the SHA256 hash value, do the following steps:

- In this case then do not install the rpm. This means the file has been modified in some way since being released from Hewlett Packard Enterprise Company.
- Use sha256sum tool to calculate the SHA256 hash value for <File name>.rpm.
- Compare the calculated value with the SHA256 value displayed in the Installation Instruction tab of the HPE Support Center download page.
- If the values match, then the integrity of the downloaded file has been verified.
- If the values do not match, do not deploy the file or its contents.
- Download the file a second time and compare the new hash value.
- If the hash values do not match, then do not deploy the downloaded file and contact HPE Technical Support.

Linux Smart Component Installation Instructions
NOTE: When you download this module from the HPE.com web site, you cannot double click on the link. You will need to right click the link and select "save as" or similar option. This module is an rpm file. This module

only operates from the Linux command line. Please make sure to have a minimum of 200MB free disk space in C drive for successful extraction.

Installation instructions using Smart Component:

1. Place the downloaded firmware package in a temporary directory.
2. Open a Linux command console.
3. Install the firmware rpm using the command: *rpm -ivh <rpm_filename>.* This extracts the contents of the rpm to the '/usr/lib/x86_64-linux-gnu' location. Installing the firmware rpm package (rpm -ivh) does not update the firmware. It merely extracts the rpm content to the local system. Updating the firmware on the local system requires execution of CPxxxxxx.scexe with required arguments as described below.
4. *cd /usr/lib/x86_64-linux-gnu/scexe-compat*
5. *./*CPxxxxxx.scexe*--target <ip_address> --user <username> --passwd <password>* --disk <custom disk(s) location> (Please provide credentials for an account with management access rights.)
6. disk is an optional value to specify custom disk(s) location to upgrade. If the disk parameter is not specified, all disks which have firmware that is a different version than that available in the firmware package will be automatically upgraded.
   Please refer to MSA CLI reference guide for examples on how to specify disks for custom disk(s) value.
7. Follow onscreen instructions.
8. Wait for the installation to complete. Upon completion, a confirmation message is displayed.

NOTE:

- Stop all I/O to array before starting the firmware update.
- For details on supported command options, see the online help by executing the command ./CPxxxxxx.scexe or ./CPxxxxxx.scexe -h / --help.
- If the user name or password contains a special character, enclose the string in single quotes or enter a backslash (\) before the special character. For example, '!manage' or \!manage
- Smart component supports LDAP user authentication for only HPE MSA 1050/2050/1060/2060 Storage System.
- To uninstall the rpm, run the command: *rpm -e <rpm_package_name>*, which is the rpm filename without the '.rpm' extension.

Important Notes:

Please refer to the Release Notes for the complete listing of fixes and enhancements corresponding to this firmware.

WARNING! Do not power cycle or restart devices during a firmware update. If the update is interrupted or there is a power failure, the module could become inoperative. If this occurs, contact technical support. The module may need to be returned to the factory for reprogramming.

IMPORTANT: Ensure that no other user is performing administrative functions on the HPE MSA Storage System.

NOTE: Disk drive upgrades on the HPE MSA is an offline process. All host and storage system I/O must be stopped prior to the upgrade. For more information, see the HPE MSA CLI Reference Guide, the HPE MSA SMU Reference Guide or the HPE MSA Storage Management Guide for your MSA model from the HPE Support Center.

All firmware flash progress messages are logged to /var/cpq/MSA-Date~Time~ControllerSerialNumber.log and flash summary is logged to /var/cpq/Component.log.

IMPORTANT: Please refer to the best practices document for special considerations regarding the pre-install conditions for flashing hard drives in HPE MSA Storage System.

IMPORTANT: HTTPS or SSH service must be enabled on the storage system being updated and the corresponding connection must not be blocked by any firewall on the host system where the smart component is being executed. The Smart Component will manage the SFTP/FTP settings and PFU settings (enabled or disabled) in the storage system during flashing.

IMPORTANT: The Smart Component will flash multiple drives of the same family while minimizing risk of damaging drives. Flashing multiple drive concurrently can reduce overall process time.

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 1TB and 2TB 12G SAS 7.2K rpm SFF Drive Models (MM1000JEFRB and MM2000JEFRC)
Version: HPDA
Upgrade Requirements: **(Recommended)**

Fixes

- Firmware addresses a hot plug reporting concern

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 600GB and 1.2TB 12G SAS 10K rpm SFF Drive Models (EG000600JWFUV and EG001200JWFVA)
Version: HPD3
Upgrade Requirements: **(Recommended)**

Fixes

- This firmware changes some settings to comply with Microsoft Storage Spaces Certification requirements.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 300GB, 450GB and 600GB 12G SAS 15K rpm SFF Drive Models (EH0300JDXBA, EH0450JDXBB and EH0600JDXBC)
Version: HPD5
Upgrade Requirements: **(Recommended)**

Fixes

- Corrected Activity LED behaviour on HPE drive carrier.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 300GB 12G SAS 10K rpm SFF Drive Model (EG000300JWFVB)
Version: HPD2
Upgrade Requirements: **(Recommended)**

Fixes

- This firmware changes some settings to comply with Microsoft Storage Spaces Certification requirements.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (MO0400JFFCF, MO0800JFFCH, MO1600JFFCK, MO3200JFFCL)
Version: HPD8
Upgrade Requirements: (**Critical)**

Fixes

- The issue affects SSDs with an HPE firmware version prior to HPD8 that results in SSD failure at 32,768 hours of operation (i.e., 3 years, 270 days 8 hours), neither the SSD nor the data can be recovered, after the SSD failure occurs.
- In addition, SSDs which were put into service at the same time will likely fail nearly simultaneously.
- For more information, refer to HPE Customer Advisory at the following URL: https://support.hpe.com/hpsc/doc/public/display?docId=emr_na-a00092758en_us

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 300GB and 600GB 12G SAS 10K rpm SFF Drive Models (EG000300JWEBF and EG000600JWEBH)
Version: HPD5
Upgrade Requirements: **Recommended**

Fixes

- This firmware version updates the Vendor ID in the standard inquiry to 'HPE', in previous versions it was 'HP.'

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 146GB and 300GB 6G SAS 15K rpm SFF Drive Models (EH0146FCBVB and EH0300FCBVC)
Version: HPDA
Upgrade Requirements: **(Recommended)**

Fixes

- Spins down any drive that exceeds established motor current thresholds and identifies it for removal.
- Prevents the drive from spinning up again after a power cycle in case it is not removed.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 1.8TB 12G SAS 10K rpm SFF Drive Model (EG1800JEHMD)
Version: HPD6
Upgrade Requirements: **(Critical)**

Fixes

- Stale data is mistakenly used from cache.
- Stale data is returned on an unaligned overlapped write-read operation.
- During a sequential read and write workload when a recovered error is encountered, which could cause incomplete data to be read.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 900GB 6G SAS 10K rpm SFF Drive Model (ST900MM0036)
Version: 0004
Upgrade Requirements: **(Recommended)**

Fixes

- Fixed a mis-compare issue during repeated recovery operations.
- Fixed a drive stall during sanitize operation.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 1TB, 2TB, 3TB and 4TB 12G SAS 7.2k rpm LFF Drive Models (ST1000NM0045, ST2000NM0045, ST3000NM0025 and ST4000NM0025)
Version: N004
Upgrade Requirements: **(Recommended)**

Fixes

- Drive ceases operation on a Servo error with another fault.
- Drive ceases operation when a hard reset is received during an internal abort.
- Drive ceases operation on interrupted sequential READs.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (ST400FM0403, ST800FM0403, ST1600FM0403, ST3200FM0403)
Version: 0007
Upgrade requirements: **(Recommended)**

Fixes

- Drive ceases operation during firmware update.
- Issues where a drive will not be available after a power cycle.
- Slows down the write operation after extended idle time resulting in degraded performance.
- Drive Write operation times out during firmware update.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040 and P2000 G3 300GB, 600GB, 900GB and 1.2TB 12G SAS 10K rpm SFF Drive Models (EG0300JFCKA, EG0600JEMCV, EG0900JFCKB and EG1200JEMDA)
Version: HPD6
Upgrade Requirements: **(Recommended)**

Fixes

- This firmware contains a change to prevent an incorrect sense code from being posted when a Stop command is received during power-on sequence.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 600GB, 900GB and 1.2TB 12G SAS 10K rpm SFF Drive Models (EG0600JETKA, EG0900JETKB and EG1200JETKC)
Version: HPD7
Upgrade Requirements: **(Recommended)**

Fixes

- HPD7 firmware fixes an infrequent drive internal reset issue. When managing a Task Set Full condition in its firmware the drive may do an internal reset. The drive may not be accessible during the reset recovery process.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 900GB, 1.2TB 6G SAS 10K rpm SFF Drive Models (EG0900FDJYR and EG1200FDJYT)
Version: HPD4
Upgrade Requirements: **(Recommended)**

Fixes

- Drive mis-corrects user data while performing multiple super parity recovery
- Prevents UDS capture command failure

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (EG000600JWJNP, EG000600JXLVV, EG001200JWJNQ, EG001200JXLWA)
Version: HPD6
Upgrade Requirements: **(Recommended)**

Fixes

- Firmware addresses a hot plug reporting concern.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 1.8TB 12G SAS 10K rpm SFF Drive Model (EG001800JWFVC)
Version: HPD3
Upgrade Requirements: **(Critical)**

Fixes

- Improves JetStress READ Latency performance.
- Fixes the cause of internal reboots detected in the MSA system.
- Removes a vendor unique sense code that the controller does not handle properly.
- Includes changes to eliminate the cause of a potential hang condition.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (EG001800JWJNR, EG001800JXLWB, EG002400JWJNT, EG002400JXLWC)
Version: HPD8
Upgrade Requirements: **(Recommended)**

Fixes

- Firmware addresses a hot plug reporting concern.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 300GB, 450GB, 600GB and 900GB 6G SAS 10K rpm SFF Drive Models (EG0300FBVFL, EG0450FBVFM, EG0600FBVFP and EG0900FBVFQ)
Version: HPDE
Upgrade Requirements: **(Recommended)**

Fixes

- Fixed background seek algorithm to allow self-test to run in the background.
- Fixed problem with SMART temp warning on a full cache hit read workload.
- Enabled just in time seek (JIT) in low queue depth mixed sequential and random read workloads. JIT is a power saving feature. Seek acceleration is reduced, so the head arrives just in time for the target block. Customer will see reduced power draw in this workload.
- Fixed rare servo bug. Change servo processor to reset pending request for external memory accesses. Servo processor reset did not stop a pending external memory access request and could cause an error for an external memory access timeout. Use system-level reset of servo processor block that covers the external memory access timeout instead of internal servo processor soft reset.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040 and P2000 G3 300GB, 450GB, 600GB and 900GB 6G SAS 10K rpm SFF Drive Models (EG0300FCSPH, EG0450FCSPK, EG0600FCSPL and EG0900FCSPN)
Version: HPD2
Upgrade Requirements: **(Recommended)**

Fixes

- Reliability enhancement for applications that write data to a narrow range of tracks.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 300GB, 450GB, 600GB and 900GB 6G SAS 10K rpm SFF Drive Models (EG0300FCVBF, EG0450FCVBH, EG0600FCVBK and EG0900FCVBL)
Version: HPD9
Upgrade Requirements: **(Recommended)**

Fixes

- Drives could become unresponsive due to unexpected responses from the serial port diagnostic debug connection.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 300GB, 600GB, 900GB and 1.2TB 12G SAS 10K rpm SFF Drive Models (EG0300JEHLV, EG0600JEHMA, EG0900JEHMB and EG1200JEHMC)
Version: HPD5
Upgrade Requirements: **(Critical)**

Fixes

- A recoverable error occurs that might prevent a write command from completing properly.
- Incorrect re-ordering of commands, when overlapped commands occur.
- During very large blocks of sequential commands with a data transfer between 1020MB and 1024MB.
- During a sequential read and write workload when a recovered error is encountered, which could cause incomplete data to be read.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 1.2TB 6G SAS 10K rpm SFF Drive Model (EG1200FDNJT and EG1200FCVBQ)
Version: HPD8
Upgrade Requirements: **(Recommended)**

Fixes

- Fixed background seek algorithm to allow self-test to run in the background.
- Fixed problem with SMART temp warning on a full cache hit read workload.
- Enabled just in time seek (JIT) in low queue depth mixed sequential and random read workloads. JIT is a power saving feature. Seek acceleration is reduced, so the head arrives just in time for the target block. Customer will see reduced power draw in this workload.
- Fixed rare servo bug. Change servo processor to reset pending request for external memory accesses. Servo processor reset did not stop a pending external memory access request and could cause an error for an external memory access timeout. Use system-level reset of servo processor block that covers the external memory access timeout instead of internal servo processor soft reset.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 8TB 12G SAS 7.2K rpm LFF Drive Model (HUH728080AL5204)
Version: CD05
Upgrade Requirements: **(Recommended)**

Fixes

- Fixed an internal drive reset due to unaligned write handling
- Fixed an internal drive reset during power on sequence
- Fixed issues where the drive became unresponsive during READ operations

Enhancements

- Improved multiple sequential read performance

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 2TB and 4TB 12G SAS 7.2K rpm LFF Drive Models (HUS726020ALS214 and HUS726040ALS214)
Version: CD05
Upgrade Requirements: **(Recommended)**

Fixes

- Fixed issue where drive would become unresponsive during write operations.
- Fixed issues where drive would go offline temporarily.
- Fixed a timing issue which could result in read errors.

Enhancements

- Improved performance for some random read workloads.

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 2TB, 3TB and 4TB 6G SAS 7.2K rpm LFF Drive Models (HUS724020ALS640, HUS724030ALS640 and HUS724040ALS640)
Version: A3A0
Upgrade Requirements: **(Recommended)**

Fixes

- Fixes for various self-initiated Resets
- Fix for drive hang on spin-up

Enhancements

- Improvement for Random READ workload and sequential performance variance
- Added inquiry page 86 for reporting self-test time in minutes

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Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (HUH721008AL5204, HUH721010AL5204)
Version: C92C
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed issues causing drive resets.
- Fixed an issue causing a command timeout in read and write workloads.

Enhancements

- Improve performance in multi-stream workloads.

Firmware Flash Component - HP MSA 2040/P2000/MSA2000 300GB, 450GB, 600GB 15K SAS LFF Hard Drives (HUS156030VLS600, HUS156045VLS600, HUS156060VLS600)
Version: A760
Upgrade Requirement: **(Recommended)**

Fixes

- Fix for problem that can result in a self-initiated reset during queued sequential read.
- Fixed watchdog timeout after Hard Reset.
- Fix for buffer timeout causing delay in response for multi-stream sequential read workload.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040 and P2000 G3 6TB 6G SAS 7.2K rpm LFF Drive Model (HUS726060ALS644)
Version: C280
Upgrade Requirement: **(Recommended)**

Fixes

- Issues with self-initiated resets.
- Write Same issues.
- Issue with large sequential write transfers.

Enhancements

None

Firmware Flash Component - HP MSA 2040 200GB, 400GB and 800GB 6G SSD SAS SFF Drive Models (MO0200FCTRN, MO0400FCTRP and MO0800FCTRQ)
Version: HPD4
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed issue where the drive may not flush user data to media.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (MO0200JEFNV, MO0400JEFPA, MO0800JEFPB, MO1600JEFPC)
Version: HPD3
Upgrade Requirement: **(Recommended)**

Fixes

None

Enhancements

- Firmware version HPD3 supports NDU (non-disruptive update) firmware updates.

Firmware Flash Component - HP MSA 1040/2040, P2000 G3 and MSA2000 G2 2TB,1TB 6G SAS 7.2K rpm LFF Hard Drive (ST2000NM0001, ST1000NM0001)
Version: 0002
Upgrade Requirement: **(Recommended)**

Fixes

- Drive Hang Condition on Second Port When First Port Loses Connection
- Masked Unused Interrupt - Masked the presently unused "New primitive received" interrupt off for all configs.
- SAS Drives Encounter Assert failures.
- DOS Issue When Scanning Scan Units Entirely Mapped Out Due to Defects.
- Heavy Near Sequential Read/Write Workload With Head of Queue Causes Miscompare.

Enhancements

- Improvement for performance at low levels of RV in cabinets (RV below 5 rad/s2).
- Increase ramp load routine A2D sample magnitude to insure a full release at low temperatures from the head/suspension assembly protective mechanical latch (2TB only).

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 1TB, 2TB, 3TB and 4TB 6G SAS 7.2K rpm LFF Drive Models (ST1000NM0023, ST2000NM0023, ST3000NM0023 and ST4000NM0023)
Version: 0006
Upgrade Requirement: **(Recommended)**

Fixes

- Prevents the potential for incorrect data from being "read from" or "written to" the drive under extremely rare circumstances where the drive experiences consecutive error recoveries during a

background scan and the Error Correction Code (ECC) fails. This issue has only been observed in a rigorous test environment and has NOT been reported in a customer production environment.

Enhancements

- Improved internal Logging.
- Improved write performance in Sequential workloads.
- Implement random seek on idle and after system area access.

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 2TB and 4TB 6G SAS 7.2K rpm LFF Drive Models (ST2000NM0063 and ST4000NM0063)
Version: 0006
Upgrade Requirement: **(Recommended)**

Fixes

- Prevents the potential for incorrect data from being "read from" or "written to" the drive under extremely rare circumstances where the drive experiences consecutive error recoveries during a background scan and the Error Correction Code (ECC) fails. This issue has only been observed in a rigorous test environment and has NOT been reported in a customer production environment.

Enhancements

- Improved internal Logging.
- Improved write performance in Sequential workloads.
- Implement random seek on idle and after system area access.

Firmware Flash Component - HP MSA 1040/2040, P2000 G3 and MSA2000 1TB, 2TB 6G SAS 7.2K rpm LFF Drive Models (ST31000424SS, ST32000444SS)
Version: 0008
Upgrade Requirement: **(Recommended)**

Fixes

None

Enhancements

- Implemented an enhanced Head DIC(Data Integrity Check) algorithm to prevent false report of Head DIC(HDIC) failure.
- Made code changes to streamline the host sequential-command processing paths which are used when queue depths are above 32, when write caching is enabled (WCE=1). Also, code changes to force allocation of internal processing resources to commands, to be done based on host command arrival order, which is relevant when the command queue depth is greater than 64.
- Whenever user cache is reinitialized, abort pending IRAW requests to avoid false data error. Firmware change was made to resolve the issue where self seek was not working with the interface disconnected.
- Replaced cold reset with warm reset after the drive stops writing on block boundary in response to NPL. Cold reset causes the drive to be spun down and to report 02/0401/00 after wards, while warm reset does not.
- Updated code so that when the Power Loss Timer is started, after warm reset, both ports are set to busy state and will not accept connection requests until the timer expires. Instead of a constant for reset duration, system timer is utilized to accurately calculate the remaining time after the reset.

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Models (HUS726T4TAL5204, HUS726T6TAL5204)
Version: C9G0
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed a self-initiated reset.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 2TB, 4TB and 6TB 12G SAS 7.2K rpm LFF Drive Models (ST2000NM0034, ST4000NM0034 and ST6000NM0034)
Version: E0G5
Upgrade Requirement: **(Recommended)**

Fixes

- Performance loss after entering idle mode.
- Disk could be unresponsive after entering idle mode.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 8TB 12G SAS 7.2K rpm LFF Drive Model (ST8000NM0075)
Version: E004
Upgrade Requirement: **(Recommended)**
Filename: E004_SAS.lod

Fixes

- Fixed a servo issue which would result in a drive hang.
- Fixed a drive hang during near sequential read workloads.

Enhancements

- Enables support to LDAP user authentication to HPE MSA 1050/2050 Storage Array.

Firmware Flash Component - HP MSA 1040/2040, P2000 G3 and MSA2000 G2 146GB, 300GB 6G SAS 10K rpm SFF Drive Models (DG0146FARVU/EG0146FAWJC, DG0300FARVV/EG0300FAWJD, DG0146BAMYQ and DG0300BAMYR)
Version: HPDG
Upgrade Requirement: **(Recommended)**

Fixes

- This firmware corrects a possible condition in which stale data might be written to the disk. This results in unexpected data being returned in subsequent requests. This data issue has been duplicated in laboratory firmware stress tests.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040 and P2000 G3 146GB and 300GB 6G SAS 10K rpm SFF Drive Models (DG0146FAMWL, DG0300FAMWN, EG0146FAWHU and EG0300FAWHV)
Version: HPDG
Upgrade Requirement: **(Recommended)**

Fixes

- HP ProLiant servers would power down due a hard drive over-temp condition that was falsely reported.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 72GB, 146GB 6G SAS 15K rpm SFF Drive Models (DH0072FAQRD, DH0146FAQRE, EH0072FAWJA and EH0146FAWJB)
Version: HPDK
Upgrade Requirement: **(Recommended)**

Fixes

- HP ProLiant servers would power down due a hard drive overtemp condition that was falsely reported.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (EG000300JWSJP, EG000600JWJNH, EG001200JWJNK)
Version: HPD3
Upgrade Requirement: **(Recommended)**

Fixes

- This firmware version updates the Vendor ID in the standard inquiry to 'HPE', in previous versions it was 'HP.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (EG001800JWJNL, EG002400JWJNN)
Version: HPD3
Upgrade Requirement: **(Recommended)**

Fixes

- This firmware version updates the Vendor ID in the standard inquiry to 'HPE', in previous versions it was 'HP.

Enhancements

None

Firmware Flash Component - HP MSA 1040/MSA 2040, P2000 G3 and MSA2000 G2 146GB, 300GB 6G SAS 10K rpm SFF Drive Models (EG0146FARTR and EG0300FARTT)
Version: HPDA
Upgrade Requirement: **(Recommended)**

Fixes

- Firmware now correctly reports the maximum drive recommended operating temperature. The incorrect values reported in previous versions of the FW caused ProLiant system fans to operate at improper speeds.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040, P2000 G3 and MSA2000 G2 300GB, 450GB, 600GB 6G SAS 10K rpm SFF Drive Models (EG0300FBDBR, EG0450FBDBT and EG0600FBDBU)
Version: HPDA
Upgrade Requirement: **(Critical)**

Fixes

- This firmware corrects a possible condition in which stale data might be written to the disk. This results in unexpected data being returned in subsequent requests. This data issue has been duplicated in laboratory firmware stress tests.

Enhancements

None

Firmware Flash Component - HP MSA 2040/P2000/MSA2000 300GB, 450GB, 600GB SAS 6G SFF Hard Drive (EG0300FBDSP, EG0450FBDSQ, EG0600FBDSR)
Version: HPD6
Upgrade Requirement: **(Recommended)**

Fixes

- This firmware reduces the possibility of the controller and drive not properly negotiating link signaling, resulting in the controller not being able to identify a drive attached to particular port/slot during system boot up.
- This firmware improves signal quality between the drive and the controller.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040, P2000 G3 and MSA2000 G2 900GB, 600GB, 450GB and 300GB 6G SAS 10K rpm SFF Drive Models (EG0900FBLSK, EG0600FBLSH, EG0450FBLSF and EG0300FBLSE)
Version: HPD8
Upgrade Requirement: **(Recommended)**

Fixes

- Hard disk drive firmware HPD8 resolves the issue where HP ProLiant servers would power down due a hard drive overtemp condition that was falsely reported.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040, P2000 G3 and MSA2000 G2 300GB, 450GB, 600GB and 900GB 6G SAS 10K rpm SFF Drive Models (EG0300FCHHR, EG0450FCHHT, EG0600FCHHU and EG0900FCHHV)
Version: HPD8
Upgrade Requirement: **(Recommended)**

Fixes

- Fixes a potential issue where the drive could become unresponsive if the host sent a high number of overlapping task management commands (the drive would require a power cycle to be recovered).

Enhancements

- Improved write protection robustness before drive spin down.
- Implemented minor performance improvements in RAID environments.

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 1.8TB 12G SAS 10K rpm SFF Drive Model (EG1800JEMDB)
Version: HPD5
Upgrade Requirement: **(Recommended)**

Fixes

- This firmware includes a fix for slow performance during sequential write workloads with small queue depth.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 1.8TB 12G SAS 10K rpm SFF Drive Model (EG1800JFHMH)
Version: HPD7
Upgrade Requirement: **(Critical)**

Fixes

- Improves JetStress READ Latency performance.
- Fixes the cause of internal reboots detected in the MSA system.
- Removes a vendor unique sense code that the controller does not handle properly.
- Includes changes to eliminate the cause of a potential hang condition.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (EH000300JWCPK, EH000300JXLVR, EH000600JWCPL, EH000600JXLVT, EH000900JWCPN, EH000900JXLVU)
Version: HPD8
Upgrade Requirement: **(Recommended)**

Fixes

- Firmware addresses a hot plug reporting concern.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (EH000300JWHPL, EH000600JWHPN, EH000900JWHPP)
Version: HPD8
Upgrade Requirement: **(Recommended)**

Fixes

- Provides proactive protection against contamination built up on the media and air-bearing surface of the heads by increased routine "sweeping" of the media surface.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040, P2000 G3 and MSA2000 72GB, 146GB 15K SAS 6G SFF Hard Drive (EH0072FARUA, EH0146FARUB)
Version: HPD9
Upgrade Requirement: **(Recommended)**

Fixes

- This firmware reduces the possibility of the controller and drive not properly negotiating link signaling, resulting in the controller not being able to identify a drive attached to particular port/slot during system boot up. This firmware improves signal quality between the drive and the controller.

Enhancements

None

Firmware Flash Component - HP MSA 2040/P2000/MSA2000 72GB, 146GB SAS 6G SFF Hard Drives (EH0072FARWC, EH0146FARWD)
Version: HPDD
Upgrade Requirement: **(Critical)**

Fixes

- This firmware corrects a possible condition in which stale data might be written to the disk. This results in unexpected data being returned in subsequent requests. This data issue has been duplicated in laboratory firmware stress tests.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 146GB, 300GB 6G SAS 15K rpm SFF Drive Models (EH0146FBQDC and EH0300FBQDD)
Version: HPD5
Upgrade Requirement: **(Recommended)**

Fixes

- HP ProLiant servers would power down due to a hard drive overtemp condition that was falsely reported.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 300GB, 450GB and 600GB 12G SAS 15K rpm SFF Drive Models (EH0300JDYTH, EH0450JDYTK and EH0600JDYTL)

Version: HPD6
Upgrade Requirement: **(Critical)**

Fixes

- A recoverable error occurs that might prevent a write command from completing properly.
- Incorrect re-ordering of commands, when overlapped commands occur.
- During very large blocks of sequential commands with a data transfer between 1020MB and 1024MB.
- During a sequential read and write workload when a recovered error is encountered, which could cause incomplete data to be read.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040 and P2000 G3 300GB, 450GB and 600GB 12G SAS 15K rpm SFF Drive Models (EH0300JEDHC, EH0450JEDHD and EH0600JEDHE)
Version: HPD4
Upgrade Requirement: **(Recommended)**

Fixes

- This firmware improves HDD reliability when HDDs are exposed to long periods of host inactivity that exceed 1 second. HDDs may become unresponsive when using HDD firmware prior to version HPD4.
- This firmware also contains a change which prevents an incorrect reassign status of a repaired sector from being logged.

Enhancements

None

Firmware Flash Components - HPE MSA 1050/2050/1060/2060 Drive Model (HUH721212AL5204)
Version: C9G0
Upgrade Requirement: **(Recommended)**

Fixes

- Fix for self-initiated reset.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Model (HUS726T4TALS204)
Version: C984
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed a self-initiated reset due to multiple command and task conflicts.
- Fixed a command timeouts during internal tasks.

Enhancements

None

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Model (HUS728T8TAL5204)
Version: C9G0
Upgrade Requirement: **(Recommended)**

Fixes

- Fix for self-initiated reset.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040, P2000 G3 and MSA2000 G2 1TB, 500GB 6G SAS 7.2K rpm SFF Hard Drive Models (MM1000FBFVR and MM0500FBFVQ)
Version: HPD9
Upgrade Requirement: **(Recommended)**

Fixes

- This Firmware prevents a condition in which data fails to be committed to disk after the host issues a hard reset in a lab stress test environment with write cache enabled.

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 1TB 6G SAS 7.2K rpm SFF Drive Model (MM1000FECVH)
Version: HPD2
Upgrade Requirement: **(Recommended)**

Fixes

- Drive self-test did not complete within the specified time.
- During a fully cached workload, SMART would report incorrect temperature values.
- The component would fail to flash drive firmware on a server with a Trusted Platform Module (TPM) enabled when using the /tpmbypass switch.

Enhancements

- Added servo improvements which reduce power consumption.

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 400GB, 800GB, 1.6TB and 3.2TB 12G SAS SSD SFF Drive Models (MO000400JWDKU, MO000800JWDKV, MO001600JWDLA, MO003200JWDLB, EO000400JWDKP, EO000800JWDKQ, EO001600JWDKR)
Version: HPD2
Upgrade Requirement: **(Recommended)**

Fixes

- The firmware was modified to resolve a timing condition in which a SAS port may go offline.
- The firmware was modified to fix a timing window in which a command with a zero transfer length can cause a self-initiated reset.
- Performance improvement in handling task management functions (TMFs) in certain situations.
- Multiple consecutive firmware downloads may result in a previous firmware being loaded after the last firmware download being aborted.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (MO000400JWFWN, MO000800JWFWP, MO001600JWFWQ, MO003200JWFWR)
Version: HPD5
Upgrade Requirement: **(Recommended)**

Fixes

- Enhancement Improved performance during a raid 5 drive rebuild.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Models (VO000960JWTBK, VO001920JWTBL, MO000400JWTBQ, MO000800JWTBR, MO001600JWTBT, MO003200JWTBU)
Version: HPD9
Upgrade Requirement: **(Recommended)**

Fixes

- Change Vendor Identification Field (VID data) from "HP" to "HPE".
- This firmware release introduces accumulated fixes.

Enhancements

None

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Models (ST10000NM0528, ST12000NM0038, ST14000NM0048)
Version: E003
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed a drive hang due to bus resets.
- Fixed a drive command timeout under high workload.

Enhancements

None

Firmware Flash Components for - HPE MSA 1060/2060 Drive Models (ST600MM0009, ST1200MM0009)
Version: N008
Upgrade Requirement: **(Recommended)**

Fixes

- Support minor hardware update.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 1.2TB 12G SAS 10K rpm SFF Drive Model (ST1200MM0069)
Version: NF03
Upgrade Requirement: **(Recommended)**

Fixes

- Drive would reset during self-test.
- Drive would go offline if frequent connection problems to the controller occurred.
- Drive reported error when no error occurred recovering from Idle.

Enhancements

None

Firmware Flash Component - HP MSA 2040/P2000/MSA2000 3TB SAS LFF Hard Drive (ST33000650SS)
Version: 0005
Upgrade Requirement: **(Recommended)**

Fixes

None

Enhancements

None

Firmware Flash Component - HP MSA 1040/2040 and P2000 G3 300GB, 450GB and 600GB 6G SAS 15K rpm LFF Drive Models (ST3300657SS, ST3450857SS and ST3600057SS)
Version 000B
Upgrade Requirement: **(Recommended)**

Fixes

- Hard resets could hang the drive.
- Unexpected power loss/port loss.
- Various issues which would cause the LED to flash.

Enhancements

- Improvements to command processing which improve performance in certain workloads.

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Models (ST4000NM005A, ST6000NM029A, ST8000NM001A)
Version: E004
Upgrade Requirement: **(Recommended)**

Fixes

- Drive reports command timeouts during write workloads.
- Internal process which caused unrecoverable READ errors.
- Drive becomes unresponsive after a power cycle.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Model (ST4000NM0125)
Version: E004
Upgrade Requirement: **(Recommended)**

Fixes

- Drive ceases operation on a Servo error with another fault.
- Drive ceases operation when a hard reset is received during an internal abort.
- Drive ceases operation on interrupted sequential READs.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Model (ST4000NM0135)
Version: NF04
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed an issue where a data is not protected during a power loss event.

Enhancements

- Improved seek operations under specific workloads.

Firmware Flash Component - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Model (ST4000NM015A)
Version: NFA2
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed an issue which could cause a drive SAS port to become unresponsive.
- Fixed an issue where the drive responds as Not Ready due to speed negotiation failure.
- Fixed a drive hang issue resulting from a host reset.

Enhancements

None

Firmware Flash Component - HPE MSA 1040/2040/1050/2050 Drive Model (ST6000NM0095)
Version: E004
Upgrade Requirement: **(Recommended)**

Fixes

- Drive ceases operation on a Servo error with another fault.
- Drive ceases operation when a hard reset is received during an internal abort.
- Drive ceases operation on interrupted sequential READs.

Enhancements

None

Firmware Flash Component - HPE MSA 1050/2050/1060/2060 Drive Model (WUH721414AL5204)
Version: C2L0
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed an issue which caused the drive to be degraded after a power loss.
- Fixed an issue which would cause internal drive reset.

Enhancements

None

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Models (XS800LE70004, XS960SE70004, XS1600LE70004, XS1920SE70004, XS3200LE70004, XS3840SE70004)
Version: A005
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed an issue which would cause a drive hang during power state transitions.
- Fixed an issue where the drive issues an unexpected SCSI report after a power cycle.

Enhancements

None

Firmware Flash Components - HPE MSA 2040/2050/1060/2060 Drive Models (XS800LE70024, XS960SE70024, XS1600LE70024, XS1920SE70024)
Version: A205
Upgrade Requirement: **(Recommended)**
Fixes

- Fixed an issue which would cause a drive hang during power state transitions.
- Fixed an issue where the drive issues an unexpected SCSI report after a power cycle.

Enhancements

None

Firmware Flash Components - HPE MSA 1060/2060 Drive Models (KPM51RUG960G, KPM51RUG1T92, KPM51RUG3T84)
Version: 0108
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed an issue where a command timeout could occur after power on.
- Fixed an issue where an error is returned when a large unmap is performed.

Enhancements

None

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Models (ST10000NM013G, ST12000NM004J, ST14000NM004J, ST16000NM004J, ST18000NM004J)
Version: E004
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed SAS link issue at 12Gbps.
- Fixed drive not ready after power cycle.
- Fixed issue drive becomes inoperative during recovery operations.

Enhancements

None

Firmware Flash Components - HPE MSA 2040/2050/1060/2060 Drive Model (ST12000NM007J)
Version: EF02
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed a stability issue on the SAS link.
- Fixed an issue where the drive would not come ready.
- Fixed an issue where the drive would cease to function during a write operation.

Enhancements

None

Firmware Flash Components - HPE MSA 1060/2060 Drive Models (ST10000NM002G, ST12000NM002G, ST14000NM002G, ST16000NM002G)
Version: E004
Upgrade Requirement: **(Recommended)**

Fixes

- Command timeouts during WRITE operations
- Drive does not come ready after hot insertion

Enhancements

None

Firmware Flash Components - HPE MSA 1060/2060 Drive Model (ST12000NM008G)
Version: EF04
Upgrade Requirement: **(Recommended)**

Fixes

- Drive becomes inoperative during I/O operations in rare circumstances
- Drive becomes unresponsive after a reset

Enhancements

None

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Models (XS800LE70084, XS960SE70084, XS1600LE70084, XS1920SE70084, XS3200LE70084, XS3840SE70084)
Version: 0003
Upgrade Requirement: **(Recommended)**

Fixes

- Drive does not come ready after power cycle
- Command timeouts during correctable error processing

Enhancements

None

Firmware Flash Components - HPE MSA 2040/2050/1060/2060 Drive Models (XS800LE70104, XS960SE70104, XS1600LE70104, XS1920SE70104)
Version: 0202
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed an issue which caused a command timeout transitioning power states.
- Fixed an issue where the drive would not respond after a power cycle.

Enhancements

None

Firmware Flash Components - HPE MSA 1060/2060 Drive Model (MG08SCA16TE)
Version: 0105
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed an issue during multiple WRITE operations.
- Fixed an issue in error recovery process.

Enhancements

None

Firmware Flash Components - HPE MSA 1060/2060 Drive Models (WUH721816AL5204, WUH721818AL5204)
Version: C680
Upgrade Requirement: **(Recommended)**

Fixes

- This firmware release introduces accumulated fixes.

Enhancements

None

Firmware Flash Components - HPE MSA 1060/2060 Drive Models (ST1800MM0129, ST2400MM0129)
Version: C008
Upgrade Requirement: **(Recommended)**

Fixes

- Support minor hardware update.

Enhancements

None

Firmware Flash Components - HPE MSA 1060/2060 Drive Models (ST900MP0006)
Version: N006
Upgrade Requirement: **(Recommended)**

Fixes

- Drive becomes unresponsive after a reset.
- Performance improvement in light workloads or workloads with frequent idle.

Enhancements

None

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Models (ST4000NM025B, ST6000NM020B, ST8000NM018B)
Version: E002
Upgrade Requirement: **(Recommended)**

Fixes

- Internal process which caused unrecoverable READ errors.
- Drive becomes unresponsive due to exhausted internal resources.

Enhancements

None

Firmware Flash Components - HPE MSA 1040/2040/1050/2050/1060/2060 Drive Models (KPM6XRUG960G, KPM6XRUG1T92, KPM6XRUG3T84)
Version: 0107
Upgrade Requirement: **(Recommended)**

Fixes

- Drive fails to power on correctly
- Command timeout occur with small writes

Enhancements

None

Firmware Flash Components - HPE MSA 1060/2060 Drive Models (ST18000NM000D, ST20000NM002D)
Version: E003
Upgrade Requirement: **(Recommended)**

Fixes

- Fixed SAS link issue at 12Gbps.
- Fixed drive not ready after power cycle.
- Fixed issue drive becomes inoperative during recovery operations.

Enhancements

None

Firmware Flash Components - HPE MSA 1040/2040/1050/2050 Drive Models (XS800LE70045, XS960SE70045, XS1600LE70045, XS1920SE70045, XS3200LE70045, XS3840SE70045, XS7680SE70045)
Version: 0002
Upgrade Requirement: **(Recommended)**

Fixes

- Initial Release

Enhancements

None
