# HBA 1200 Software/Firmware Release Notes

© 2022 Microchip Technology Inc.
and its subsidiaries

# Table of Contents


1. About This Release....3
   - 1.1. Release Identification....3
   - 1.2. Files Included in this Release....3
2. What's New?....6
   - 2.1. Fixes and Enhancements....6
   - 2.2. Limitations....12
3. Updating the Controller Firmware....16
   - 3.1. Updating Controllers to Latest Firmware....16
4. Revision History....17

The Microchip Website....18

Product Change Notification Service....18

Customer Support....18

Microchip Devices Code Protection Feature....18

Legal Notice....18

Trademarks....19

Quality Management System....20

Worldwide Sales and Service....21

# 1. About This Release

The release described in this document includes firmware, OS drivers, tools, and host management software for the HBA 1200 solutions from Microchip.

## 1.1 Release Identification

The firmware, software, and driver versions for this release are shown in the following table.

**Table 1-1. Release Summary**

| | |
|---|---|
| **Solutions release** | 3.2.0 |
| **Package release date** | July 20, 2022 |
| **Firmware version** | 3.01.14.62 |
| **UEFI/Legacy BIOS** | 2.2.4/2.2.2 |
| **Driver versions** | **Windows Drivers**:<br>• Windows 2022, 2019, 2016, Windows 11, 10: 1010.42.0.1020<br>**Linux SmartPQI**:<br>• RHEL 7/8/9: 2.1.18-045<br>• SLES 12/15: 2.1.18-045<br>• Ubuntu 18/20/21/22: 2.1.18-045<br>• Oracle Linux 7/8: 2.1.18-045<br>• Citrix Xenserver 8: 2.1.18-045<br>• Debian 10/11: 2.1.18-045<br>• CentOS 7/8: 2.1.18-045<br>**VMware**:<br>• VMware ESX 7: 4330.0.116<br>**FreeBSD/Solaris**:<br>• FreeBSD 12/13: 4280.0.1007<br>• Solaris: 11: 11.4120.0.1005 |
| **ARCCONF/maxView** | B25335 |
| **PLDM** | 6.10.14.0 |

## 1.2 Files Included in this Release

This section details the files included in this release.

**Table 1-2. Firmware Files**

| Component | Description | Pre-Assembly Use | Post-Assembly Use |
|---|---|---|---|
| SmartFWx200.bin | Production-signed programmable NOR Flash File. Use to program NOR Flash for boards that are already running firmware. | | X |

© 2022 Microchip Technology Inc. and its subsidiaries

**Table 1-3. Firmware Programming Tools**

| Tool | Description | Executable |
|---|---|---|
| ARCCONF | ARCCONF CLI Utility | ARCCONF BXXXXX.zip |
| maxView | maxView Utility | MAXVIEW XXX BXXXXX.zip |

**Driver Files**

**Table 1-4. Windows Drivers**

| OS | Version |
|---|---|
| Server 2022, 2019, 2016, Windows 11, 10 | x64 |

**Table 1-5. Linux Drivers**

| OS | Version |
|---|---|
| RHEL 9.0[1], 8.6[1], 8.5, 8.4, 7.9, 7.8 | x64 |
| CentOS 8.4, 8.3, 8.0 ,7.9 ,7.8 | x64 |
| SLES 12 SP5, SP4 | x64 |
| SLES 15 SP4[1], SP3, SP2 | x64 |
| Ubuntu 20.04.4, 20.04.3, 20.04, 18.04.5, 18.04.4 | x64 |
| Ubuntu 22.04, 21.04 | x64 |
| Oracle Linux 7.9 UEK6U3 | x64 |
| Oracle Linux 8.5, 8.4 UEK6U3 | x64 |
| Debian 11.1, 10.10 | x64 |
| Fedora 35 (inbox) | x64 |
| XenServer 8.2 | x64 |

**Note:**

1. New OS support—minimally tested drivers in this release. Fully supported drivers are expected in the next release.

**Table 1-6. FreeBSD, Solaris, and VMware Drivers**

| OS | Version |
|---|---|
| ESX7.0 U3/U2 | x64 |
| FreeBSD 13, 12.3 | x64 |
| Solaris 11.4 | x64 |

**Host Management Software**

**Table 1-7. maxView and ARCCONF Utilities**

| Description | OS | Executable |
|---|---|---|
| ARCCONF Command Line Utility | Windows x64<br>Linux x64<br>VMware 6.5 and above<br>XenServer<br>UEFI support | See the arcconf_B#####.zip for the installation executables for the relevant OS. |
| maxView Storage Manager | Windows x64<br>Linux x64<br>VMware 6.5 and above<br>XenServer<br>UEFI support | See the maxview_linux_B#####.zip, maxview_win_ B#####.zip,and the maxview_vmware_B#####.zip for the installation executables. |
| maxView vSphere Plugin | VMware 6.5 and above | See the maxview_vmware_B#####.zip for the installation executables. |
| Boot USB (offline or pre-boot) for ARCCONF and maxView Storage Manager | Linux x64 | See the maxview_offline_bootusb_B#####.zip for the .iso file. |

© 2022 Microchip Technology Inc. and its subsidiaries

# 2. What's New?

This section shows what’s new in this release.

## 2.1 Fixes and Enhancements

This section shows the fixes and enhancements for this release.

### 2.1.1 Firmware Fixes

This section shows the firmware fixes and enhancements for this release.

#### 2.1.1.1 Fixes and Enhancements for Firmware Release 3.01.14.62

This release provides the following fixes and enhancements.

- Added Passive SED support.
- Added support for multi-actuator drives.
- Added support to send SCSI timestamp to drives to sync host system time (RTC).
- Updated maximum power required for controllers so that the device can operate in PCIe 25W slots.
- Added SPDM Protocol for Attestation and Authentication Credentials.
- Added display ASIC minor version.
- Improved IO performance by speeding up internal manufacturing data command.
  - *Root cause*: A request to get manufacturing data was taking a long time.
  - *Fix*: Cache the data needed for this command so that it can be returned quicker.
  - *Risk*: Low
- Fixed an issue with two UBM backplanes connected to one connector and one UBM backplane incorrectly identified itself as not on a bifurcated cable.
  - *Root cause*: The logic for each connector was trying to take ownership of the drives, which resulted in controller locking up since drives should only be owned by one box.
  - *Fix*: Do not discover drives on second connector if drives have already been marked.
  - *Risk*: Low
- Fixed an issue where Real Time Clock (RTC) timestamp was not being sent to SES-based storage enclosure SEPs attached to internal connectors of the enclosure.
  - *Root cause*: Firmware was only sending the RTC timestamp to SEPs that were connected to external connectors of the controller.
  - *Fix*: Removed check for externally connected enclosure so timestamp now gets sent to all SEPs.
  - *Risk*: Low
- Fixed a potential UBM backplane flash issue where image start index is not aligned with the start sector.
  - *Root cause*: Controller was not calculating start index, and assumed the start index aligns with the start sector.
  - *Fix*: Calculate the start index correctly.
  - *Risk*: Low
- Fixed an issue where hang detection detects a hang while an IO is in the error task being spunup.
  - *Root cause*: A drive is being spun up in error task. That can take a long time.
  - *Fix*: Hang timer starts when a drive starts to be spun up. This timer was incrementing with no resets while all steps are performed. Fix was to restart this hang timer it moves to next step.
  - *Risk*: Low
- Fixed an issue where the drive slot number shown for a failed drive is wrong.
  - *Root cause*: If the SES enclosure has a valid additional status page, then the bay number for each drive in the enclosure is used by the firmware from the additional status page information. If the drive has an invalid SAS address in the additional status page, the bay number is assigned from the expander drive slot number by the firmware. When the firmware is traversing through physical drives to validate the additional status page, the validation flag is overwritten with the latest drive's additional status page validity status.

© 2022 Microchip Technology Inc. and its subsidiaries

This overwriting resulted in firmware not updating the bay number if the drive had an invalid SAS address in the additional status page.
  - *Fix*: Stop overwriting the validation flag of the drive's additional status page when any drive in the list has an invalid status.
  - *Risk*: Low
- Fixed an issue where an unconfigured drive still reports as StandbyOffline.
  - *Root cause*: After a Clear Controller Configuration was completed the PLDM event callback was not invoked.
  - *Fix*: After Clear Controller Configuration completes, make call to wake up the PLDM task thread.
  - *Risk*: Low
- Fixed an issue where firmware continuously retries a command to the SEP device that was completed with the TASK SET FULL status.
  - *Root cause*: Firmware retries indefinitely on any command to the SEP device that was completed with TASK SET FULL status and the request's retry count was still greater than 1.
  - *Fix*: Firmware decreases the request's retry count for all the retry commands to the SEP device regardless of the SCSI error status.
  - *Risk*: Low
- Fixed an issue to set controller PHY rate to 12G during hot-plug of an expander with IO running.
  - *Root cause*: While running heavy IO to SATA drives behind an expander, bringing down PHYs and re-enabling resulted in PHYs not being set to 12G. This was a result of IOs timing out, which resulted in the controller phy rate not to be set to 12G.
  - *Fix*: Ensure the controller PHY rate is set to 12G even if the IO times out.
  - *Risk*: Low
- Fixed an issue where the product ID of an enclosure was not showing correctly.
  - *Root cause*: Product IDs that had a space in the middle of the string were being truncated.
  - *Fix*: Corrected code to ensure that any characters after the space are displayed.
  - *Risk*: Low
- Fixed an issue with a UBM backplane where not all drives were discovered.
  - *Root cause*: The backplane supported 10 DFC connectors but the firmware assumed no more than eight.
  - *Fix*: Increased the maximum DFC connectors to 15.
  - *Risk*: Low
- Fixed an issue where random sense data could be returned when the target is a host.
  - *Root cause*: The command responsible for filling out the sense data was only filling specific fields and assumed that the rest of the fields were zero.
  - *Fix*: Zero out sense data before filling it.
  - *Risk*: Low

### 2.1.2 UEFI/Legacy BIOS Fixes

This section shows the UEFI/Legacy BIOS fixes and enhancements for this release.

#### 2.1.2.1 Fixes and Enhancements for UEFI Build 2.2.4/Legacy BIOS Build 2.2.2

This release provides the following fixes and enhancements.

- Driver health error codes are consolidated from 0x17xx and 0x18xx series to a 0x19xx series.
- Added an Unlock Controller option in the HII menu when controller password is set for controller-based encryption (CBE).
- Fixed an issue where the controller could lock up during transition from preboot to OS.
  - *Root cause*: The UEFI driver sends I/O command to the controller without using a timeout value. During the transition from preboot to an OS, if an I/O command is still pending and the UEFI driver triggers a command interface change, the controller encounters a lockup.
  - *Fix*: Timeout value added for I/O commands.
  - *Risk*: Low

- Fixed an issue where there was an incorrect location representation for non-disk devices such as SES and expander devices.
  - *Root cause*: Location represented as `port:box:bay` for non-disk devices. Bay number is not applicable for non-disk devices.
  - *Fix*: Location for non-disk devices updated to only show `port:box` format.
  - *Risk*: Low

### 2.1.3 Driver Fixes

This section shows the driver fixes and enhancements for this release.

#### 2.1.3.1 Windows Driver Fixes

This section shows the Windows driver fixes and enhancements for this release.

##### 2.1.3.1.1 Fixes and Enhancements for Windows Driver Build 1010.42.0.1020

This release provides the following fixes and enhancements.

- Added support for Multi-Actuator drives.
- Added driver internal ring buffer logging that allows the driver to log important messages to a driver allocated ring buffer memory.
- Fixed an issue where driver accesses Command Descriptor Block's (CDB) NULL pointer and BSOD occurs.
  - *Root cause*: The SmartPQI driver parses the SRB with CDB length = 0 and sets the CDB pointer to NULL. When the driver accesses the NULL CDB pointer an invalid memory access occurs.
  - *Fix*: The build SCSI request in the driver's SRB routine will return invalid command status when the CDB pointer is NULL.
  - *Risk*: Low
- Fixed an issue where driver might fail to load intermittently after a dirty system shutdown.
  - *Root cause*: There are two problems that can occur after a dirty system shutdown.
    - The first is that the driver can get confused about which mode the controller is in and request an unnecessary soft reset.
    - The second problem is that after requesting the unnecessary soft reset, the driver can access controller registers prematurely before the controller has completed the soft reset. This can result in the driver misinterpreting the state of the controller firmware.
  - *Fix*: Added additional checks to the driver initialization logic to make its Controller mode detection more robust and to prevent misinterpreting controller registers when the controller firmware is not fully up and running.
  - *Risk*: Low
- Fixed a BSOD due to driver and controller hardware not supporting greater than 16 byte CDB.
  - *Root cause*: BSOD is caused by driver copying greater than 16 bytes to the IOBypass request, thus overwriting critical error index field. Therefore, the IOBypass error index field used is out of range and causes the driver to access a bad address.
  - *Fix*: Added check in build I/O command path to check for CDBs greater than 16 byte and if found, reject the command at the driver level as an invalid command or a command that is not supported.
  - *Risk*: Low

#### 2.1.3.2 Linux Driver Fixes

This section shows the Linux driver fixes and enhancements for this release.

##### 2.1.3.2.1 Fixes and Enhancements for Linux Driver Build 2.1.18-045

This release includes the following fixes and enhancements.

- Added support for Multi-Actuator disk drives.
- Added support for displaying controller firmware version in the OS message log. The controller firmware version is printed to OS message log during driver initialization.
- Added support for a controller ready timeout module parameter (`ctrl_ready_timeout`). The valid range is 0 or 30–1800 seconds. The default value is 0, which causes the driver to use a timeout of 180 seconds (3 minutes).

© 2022 Microchip Technology Inc. and its subsidiaries

- Added module parameter to disable managed interrupts (`disable_managed_interrupts=1`).
- Fixed an issue where the sg_map tool issues `SCSI READ BLOCK LIMITS (0x5)` command and the firmware never completes it, causing a system call trace and sg_map hang.
  - *Root cause*: Driver is sending an incorrect data direction flag for the RAID path request.
  - *Fix*: Corrected the data direction flag for the RAID path request.
  - *Risk*: Low
- Fixed an issue where PQI Reset might fail with an error "− 6" if firmware takes more than 100 ms to complete Reset.
  - *Root cause*: Method used by the driver to detect controller firmware crash during PQI Reset was incorrect in some cases.
  - *Fix*: Changed method used by the driver to detect controller firmware crash during PQI Reset.
  - *Risk*: Low

#### 2.1.3.3 VMware Driver Fixes

This section shows the VMware driver fixes and enhancements for this release.

##### 2.1.3.3.1 Fixes and Enhancements for VMware Driver Build 4330.0.116

This release provides the following fixes and enhancements.

- Added support for Multi-Actuator disk drives.
- Added support for multiple tag table to improve performance by optimizing tag and requesting structure allocation.
- Added support for `ScsiAdapterCheckTarget` which performs a device lookup and returns true only when specified adapter/channel/target exists and is exposed as a SCSI device.
- Added a module parameter `CtrlReadyTimeoutSecs` for controller ready timeout. The valid range is 30–1800 seconds. The default value is 120 seconds.
- Fixed an issue where the `SCSI READ BLOCK LIMITS (0x5)` command is never completed by firmware and a TMF ABORT is issued in ESXi.
  - *Root cause*: Driver is sending an incorrect data direction flag for the RAID path request.
  - *Fix*: Corrected the data direction flag for the RAID path request.
  - *Risk*: Low
- Fixed an issue where during driver initialization a warning message appears about the DMA alignment setting, instead of an informational message.
  - *Root cause*: Improper flag on the message.
  - *Fix*: Change message level WARN to INFO.
  - *Risk*: Low
- Fixed an issue where PSOD is observed during driver load.
  - *Root cause*: Driver was creating a greater number of completion worlds than allowed, which resulted in a SCSI layer deadlock.
  - *Fix*: Set the SCSI completion world to the maximum supported value.
  - *Risk*: Medium
- Fixed an issue with cards that are running on older firmware where firmware features previously were potentially disabled due to incorrect placement in the firmware features table.
  - *Root cause*: Firmware feature parsing logic on the driver's side was incorrectly skipping some features that must have been enabled regardless of firmware's maximum known features. Firmware does not have the maximum known feature bit set, and the code stops evaluating the feature list when it finds this issue.
  - *Fix*: Lean on already implemented method of traversing valid feature entries using the num_elements field in the PQI firmware feature table, and reject support for any bit positions outside the valid bytes indicated by firmware.
  - *Risk*: Low
- Fixed an issue where the driver reports an error when the unsupported `SCSI Maintenance IN (0xA3)` command with service action "report supported opcode" (0xC) is sent to the logical drive.
  - *Root cause*: Firmware does not support command 0xA3 with service action 0xC and it returns an error to the driver.

- *Fix*: Suppress error logs reported for `SCSI Maintenance IN (0xA3)` with service action 0xC.
- *Risk*: Low

#### 2.1.3.4 FreeBSD/Solaris Driver Fixes

This section shows the FreeBSD/Solaris driver fixes and enhancements for this release.

##### 2.1.3.4.1 Fixes and Enhancements for FreeBSD Driver Build 4280.0.1007

This release includes the following fixes and enhancements.

- Fixed an issue where the `SCSI READ BLOCK LIMITS (0x5)` command is never completed by firmware and a TMF ABORT is observed.
  - *Root cause*: Driver is sending an incorrect data direction flag for the RAID path request.
  - *Fix*: Corrected the data direction flag for the RAID path request.
  - *Risk*: Low

##### 2.1.3.4.2 Fixes and Enhancements for Solaris Driver Build 11.4120.0.1005

There are no fixes and enhancements for this version.

### 2.1.4 Management Software Fixes

This section shows the management software fixes and enhancements for this release.

#### 2.1.4.1 maxView Storage Manager/ARCCONF Fixes

This section shows the maxView Storage Manager/ARCCONF fixes and enhancements for this release.

##### 2.1.4.1.1 Fixes and Enhancements for maxView Storage Manager/ARCCONF Build 25335

This release provides the following fixes and enhancements:

- Removed the Log4J library usage completely from maxView.
  **Note:** Microchip strongly recommends users of maxView update to the latest version of the tool to avoid the security vulnerabilities with the previous releases.
- Added TASK and GETSTATUS commands support in UEFI ARCCONF.
- Added ASIC minor version display in maxView and ARCCONF.
- Added support in maxView and ARCCONF to sort the controllers based on the bus number, if the slot ID is not valid.
- Fixed an issue where ARCCONF was not displaying the controller PHY error log information.
  - *Root cause*: PHY error log was disabled in ARCCONF.
  - *Fix*: Added changes to enable the PHY error log from ARCCONF.
  - *Risk*: Low
- Fixed an issue where ARCCONF results in segmentation Fault when collecting the support archive.
  - *Root cause*: ARCCONF resulted in segmentation Fault when retrieving invalid vendor specific diagnostic page from the drive.
  - *Fix*: Added changes in ARCCONF to skip reading the invalid vendor specific diagnostic page.
  - *Risk*: Low
- Fixed an issue where ARCCONF was not displaying the updated expander firmware version after upgrading the expander firmware.
  - *Root cause*: The controller is returning the older expander firmware version instead of recently updated expander firmware version until the next controller power cycle.
  - *Fix*: Added changes in ARCCONF to send the SCSI inquiry command to the expander for retrieving the updated expander firmware version.
  - *Risk*: Low
- Fixed an issue of $I^2C$ devices not being detected when “SMBUSCHANNEL” is set to “ENABLE”.
  - *Root cause*: ARCCONF disabled the SMBUSCHANNEL when user enabled it.
  - *Fix*: Added changes in ARCCONF to set the correct user input value for SMBUSCHANNEL.
  - *Risk*: Low
- Fixed an issue where ARCCONF fails to set ATAPASSWORD for a SATA device.
  - *Root cause*: ARCCONF ATAPASSWORD command was disabled.

  - *Fix*: Added changes in ARCCONF to enable the ATAPASSWORD command.
  - *Risk*: Low
- Fixed an issue in ARCCONF where an invalid SMART attribute was displayed in the drive SMART STATS.
  - *Root cause*: ARCCONF was retrieving invalid attributes beyond the SMART attributes range.
  - *Fix*: Added changes in ARCCONF to block the retrieval of invalid attributes beyond the SMART attributes range.
  - *Risk*: Low
- Fixed an issue where ARCCONF was not displaying the connector information for the enclosure device.
  - *Root cause*: Connector ID for the enclosure device was missing.
  - *Fix*: Added changes to display the connector ID for the enclosure device in ARCCONF.
  - *Risk*: Low
- Fixed an issue where ARCCONF failed to execute SLOTCONFIG sub-command.
  - *Root cause*: ARCCONF SLOTCONFIG sub-command was disabled.
  - *Fix*: Added changes to enable SLOTCONFIG sub-command from ARCCONF.
  - *Risk*: Low
- Fixed an issue where ARCCONF was not displaying the negative temperatures for certain drive models.
  - *Root cause*: ARCCONF failed to decode the negative temperature for the specific drives.
  - *Fix*: Added changes to display the correct negative temperature for the supported drives.
  - *Risk*: Low

#### 2.1.4.2 PLDM Fixes

This section shows the PLDM fixes and enhancements for this release.

##### 2.1.4.2.1 Fixes and Enhancements for PLDM Release 6.10.14.0

This release provides the following fixes and enhancements.

- Added support for the following Redfish ACTION requests:
  - Drive.#SecureErase
  - Drive.#Reset
  - Storage.#ResetToDefaults
    **Note:** ResetToDefaults does not support a ResetType of ResetAll when encrypted volumes exist on the controller. The user must first either delete or decrypt any encrypted volumes prior to issuing such an ACTION request.
- • Added support for Redfish PATCH requests for the following properties:
  - Drive.LocationIndicatorActive
  - Drive.WriteCacheEnabled
- Added the following Redfish alerts:
  - DriveOffline
  - DriveMissing
  - DriveMissingCleared
  - DriveOfflineCleared
  - ControllerDegraded
  - ControllerFailure
  - ControllerPreviousFailure
- Added support for firmware updates for physical drives.
- Added a new OperationName value of ‘Reverting’ which is used for Redfish GET responses targeting self-encrypting drives undergoing a revert.
- When targeting the physical drives temperature numeric sensor, GetSensorReading will now return the temperature of the hottest drive instead of a normalized temperature.
- Certain controller temperature sensor numeric sensors have had their EntityType changed from “I/O Controller” to “Add-in card”.
- RDE READ on a Drive resource will now omit the Vendor from Drive.Name property on some controllers.

© 2022 Microchip Technology Inc.
and its subsidiaries

- The Type 5 commands QueryDownstreamDevices, GetDownstreamFirmwareParameters, and QueryDownstreamIdentifiers will now report information for physical drives.
- Updated all resource schema dictionaries to the latest version available in the 2021.4 schema bundle. The individual dictionary versions are:
  - Annotations: v1.1.1
  - Drive: v1.14.0
  - Event: v1.7.0
  - Port: v1.6.0
  - PortCollection: unversioned
  - RedfishError: v1.0.1
  - Storage: v1.12.0
  - StorageController: v1.5.0
  - StorageControllerCollection: unversioned
- Fixed and issue where events would be sent continuously if the host does not respond to PlatformEventMessage.
  - *Root cause*: In case of an async event receiver, there was no logic to cap the number of retries when an event subscriber never responds to a PlatformEventMessage request.
  - *Fix*: Added logic to cap the number of retries to 3. After the max limit of retries is reached, no further events will be sent until new events are pushed in or event subscriber resets the event queue.
  - *Risk*: Medium
- Fixed and issue where the controller firmware update progress is underestimated.
  - *Root cause*: On controllers that require firmware to be flashed twice, the percent complete stalls at 95% after the first flash and doesn't update until the second flash completes.
  - *Fix*: The number of flashes required is now checked when initializing the percent complete increment.
  - *Risk*: Low
- Fixed and issue where a Port's ServiceLabel did not contain the parent StorageController's slot number.
  - *Root cause*: The Port READ response function was duplicating the Port Name property when publishing the ServiceLabel property.
  - *Fix*: Revised the ServiceLabel value string to contain both the controller slot number and port name in the format "Slot=x:Port=y".
  - *Risk*: Low
- Fixed and issue where an incorrect completion code is sent for Redfish requests which encounter an error.
  - *Root cause*: RDEOperationInit requests which encounters an error returns ERROR_OPERATION_FAILED. This does not conform to the DMTF PLDM Type 6 spec DSP0218.
  - *Fix*:Modified the processing of RDEOperationInit requests to conform to the DMTF PLDM Type 6 spec DSP0218, where any Type 6 operation which encounters an error and responds with extended error info should return ERROR_UNSUPPORTED instead of ERROR_OPERATION_FAILED.
  - *Risk*: Low
- Fixed and issue where the Drive.Identifiers.DurableName value for NVMe drives did not conform to the standards regular expression.
  - *Root cause*: The code to separate DurableName for NVMe drives with a colon was not implemented.
  - *Fix*: Modified the DurableName string for NVMe drives to separate each pair of characters with a colon.
  - *Risk*: Low

## 2.2 Limitations

This section shows the limitations for this release.

### 2.2.1 Firmware Limitations

This section shows the firmware limitations for this release.

#### 2.2.1.1 Limitations for Firmware Release 3.01.14.62

There are no known limitations for this release.

### 2.2.2 UEFI/Legacy BIOS Limitations

This section shows the UEFI/Legacy BIOS limitations for this release.

#### 2.2.2.1 Limitations for UEFI Build 2.2.4/Legacy BIOS Build 2.2.2

There are no known limitations for this release.

### 2.2.3 Driver Limitations

This section shows the driver limitations for this release.

#### 2.2.3.1 Windows Driver Limitations

This section shows the Windows driver limitations for this release.

##### 2.2.3.1.1 Limitations for Windows Driver Build 1010.42.0.1020

This release includes the following limitations:

- The following are the limitations of Multi-Actuator:
  - Supports only
    - HBA drive
    - Direct-Attached
    - Windows/Linux/VMware
    - Intel/AMD
    - UEFI mode (for multi-LUN display)
  - No Storage Manager support
  - No boot support

#### 2.2.3.2 Linux Driver Limitations

This section shows the Linux driver limitations for this release.

##### 2.2.3.2.1 Limitations for Linux Driver Build 2.1.18.045

This release includes the following limitations:

- On AMD/RHEL 7.9 systems, the system might panic due to a bug in the IOMMU module. For details, see https://lore.kernel.org
  - Workaround: Disable the IOMMU setting option in BIOS.
- The following are the limitations of Multi-Actuator:
  - Supports only
    - HBA drive
    - Direct-Attached
    - Windows/Linux/VMware
    - Intel/AMD
    - UEFI mode (for multi-LUN display)
  - No Storage Manager support
  - No boot support
- On AMD/UEK6 systems, the system might hang during kdump if IOMMU is enabled.
  - Workaround: Disable IOMMU setting option in BIOS.
- RHEL driver injection (DUD) install where OS ISO is mounted as virtual media on BMC based servers (non-ILO). Installer will hang after driver injection.
  Reported on RHEL 8.5, 8.6 and 9.0.
  - Workaround: Load OS from USB device instead of virtual media.
    Load OS from virtual media but initiation ISO verification (media test) during install followed by ESC to cancel media test.
- This release includes the following limitation when doing a driver injection (DUD) install. On some distributions (RHEL7.9, RHEL8.2, RHEL8.3, SLES15SP2, SLES15SP3), the DUD install will hang if an attached drive (either HBA mode or Logical Volume) has Write Cache enabled.
  - Workaround: There are two workarounds for this issue:
    i. Make sure the Write Cache is disabled for any attached drive.

© 2022 Microchip Technology Inc.
and its subsidiaries

ii. For RHEL7.9/8.2/8.3, add rd.driver.blacklist=smartpqi to the grub entry along with inst.dd.

- When multiple controllers are in a system, udev(systemd) can timeout during kdump/kexec resulting in an incomplete kdump operation. The usual indication of the timeout is the console log entry: "scsi_hostX: error handler thread failed to spawn, error = -4".
  - Workaround: Extend the udev(systemd) timeout during a kdump operation. The steps to increase the timeout for udev(systemd) are:
    i. vi /etc/sysconfig/kdump
    ii. add udev.event-timeout=300 to KDUMP_COMMANDLINE_APPEND
    iii. systemctl restart kdump
    iv. systemctl status kdump

#### 2.2.3.3 VMware Driver Limitations

This section shows VMware driver limitations for this release.

##### 2.2.3.3.1 Limitations for VMware Driver Build 4330.0.116

This release includes the following limitations:

- The following are the limitations of Multi-Actuator:
  - Supports only
    - HBA drive
    - Direct-Attached
    - Windows/Linux/VMware
    - Intel/AMD
    - UEFI mode (for multi-LUN display)
  - No Storage Manager support
  - No boot support

#### 2.2.3.4 FreeBSD/Solaris Driver Limitations

This section shows FreeBSD/Solaris driver limitations for this release.

##### 2.2.3.4.1 Limitations for FreeBSD Driver Build 4280.0.1007

This release includes the following limitations.

- FreeBSD OS installation on a NVMe physical device is not supported in this release.

##### 2.2.3.4.2 Limitations for Solaris Driver Build 11.4120.0.1005

There are no known limitations for this release.

### 2.2.4 Management Software Limitations

This section shows management software limitations for this release.

#### 2.2.4.1 maxView Storage Manager/ARCCONF Limitations

This section shows the maxView Storage Manager/ARCCONF limitations for this release.

##### 2.2.4.1.1 Limitations for maxView Storage Manager/ARCCONF Build 25335

This release includes the following limitations.

- With maxView B25335 build, user will not be able to modify the direct attached cable settings.
  - *Workaround*: Use the ARCCONF CLI tool as an alternate option or use the previous version of maxView.

#### 2.2.4.2 PLDM Limiations

This section shows the PLDM limitations for this release.

##### 2.2.4.2.1 Limitations for PLDM Release 6.10.14.0

This release includes the following PLDM limitations:

- Action `Storage.ResetToDefault` with a ResetType of 'ResetAll' is not supported when the controller has logical drives which are encrypted.
  - Workaround: None

- RDE update on `Drive.WriteCacheEnabled` is unsupported for physical drives that are part of a logical drive.
  - Workaround: None

# 3. Updating the Controller Firmware

This section describes how to update the controller firmware to the latest release.

## 3.1 Updating Controllers to Latest Firmware

If running firmware is 3.01.00.006 or lower, please contact Adaptec Apps team at ask.adaptec.com.

### 3.1.1 Upgrading to 3.0X.XX.XXX Firmware

1. For controllers running 3.01.02.042 or higher firmware, flash with 3.0X.XX.XXX version of firmware "SmartFWx200.bin" provided in this package using maxview or ARCCONF utility.
2. Power cycle the server.

© 2022 Microchip Technology Inc. and its subsidiaries

# 4. Revision History

**Table 4-1. Revision History**

| Revision | Date | Description |
|---|---|---|
| G | 07/2022 | Updated for SR 3.2.0 release. |
| F | 02/2022 | VMware driver version changed from 4250.0.120 to 4252.0.103. |
| E | 02/2022 | Updated for SR 3.1.8 release. |
| D | 12/2021 | Updated for SR 3.1.6.1 release. Updated Fixes and Enhancements for maxView Storage Manager/ ARCCONF section for log4j vulnerabilities. |
| C | 11/2021 | Updated for SR 3.1.6 release. |
| B | 08/2021 | Updated for SR 3.1.4 release. |
| A | 06/2021 | Document created. |

© 2022 Microchip Technology Inc.
and its subsidiaries

## The Microchip Website

Microchip provides online support via our website at www.microchip.com/. This website is used to make files and information easily available to customers. Some of the content available includes:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQs), technical support requests, online discussion groups, Microchip design partner program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

## Product Change Notification Service

Microchip's product change notification service helps keep customers current on Microchip products. Subscribers will receive email notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, go to www.microchip.com/pcn and follow the registration instructions.

## Customer Support

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Embedded Solutions Engineer (ESE)
- Technical Support

Customers should contact their distributor, representative or ESE for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in this document.

Technical support is available through the website at: www.microchip.com/support

## Microchip Devices Code Protection Feature

Note the following details of the code protection feature on Microchip products:

- Microchip products meet the specifications contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is secure when used in the intended manner, within operating specifications, and under normal conditions.
- Microchip values and aggressively protects its intellectual property rights. Attempts to breach the code protection features of Microchip product is strictly prohibited and may violate the Digital Millennium Copyright Act.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of its code. Code protection does not mean that we are guaranteeing the product is "unbreakable". Code protection is constantly evolving. Microchip is committed to continuously improving the code protection features of our products.

## Legal Notice

This publication and the information herein may be used only with Microchip products, including to design, test, and integrate Microchip products with your application. Use of this information in any other manner violates these terms. Information regarding device applications is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. Contact your local Microchip sales office for additional support or, obtain additional support at www.microchip.com/en-us/support/design-help/client-support-services.

THIS INFORMATION IS PROVIDED BY MICROCHIP "AS IS". MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTIES RELATED TO ITS CONDITION, QUALITY, OR PERFORMANCE.

IN NO EVENT WILL MICROCHIP BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL, OR CONSEQUENTIAL LOSS, DAMAGE, COST, OR EXPENSE OF ANY KIND WHATSOEVER RELATED TO THE INFORMATION OR ITS USE, HOWEVER CAUSED, EVEN IF MICROCHIP HAS BEEN ADVISED OF THE POSSIBILITY OR THE DAMAGES ARE FORESEEABLE. TO THE FULLEST EXTENT ALLOWED BY LAW, MICROCHIP'S TOTAL LIABILITY ON ALL CLAIMS IN ANY WAY RELATED TO THE INFORMATION OR ITS USE WILL NOT EXCEED THE AMOUNT OF FEES, IF ANY, THAT YOU HAVE PAID DIRECTLY TO MICROCHIP FOR THE INFORMATION.

Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

## Trademarks

The Microchip name and logo, the Microchip logo, Adaptec, AnyRate, AVR, AVR logo, AVR Freaks, BesTime, BitCloud, CryptoMemory, CryptoRF, dsPIC, flexPWR, HELDO, IGLOO, JukeBlox, KeeLoq, Kleer, LANCheck, LinkMD, maXStylus, maXTouch, MediaLB, megaAVR, Microsemi, Microsemi logo, MOST, MOST logo, MPLAB, OptoLyzer, PIC, picoPower, PICSTART, PIC32 logo, PolarFire, Prochip Designer, QTouch, SAM-BA, SenGenuity, SpyNIC, SST, SST Logo, SuperFlash, Symmetricom, SyncServer, Tachyon, TimeSource, tinyAVR, UNI/O, Vectron, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

AgileSwitch, APT, ClockWorks, The Embedded Control Solutions Company, EtherSynch, Flashtec, Hyper Speed Control, HyperLight Load, IntelliMOS, Libero, motorBench, mTouch, Powermite 3, Precision Edge, ProASIC, ProASIC Plus, ProASIC Plus logo, Quiet- Wire, SmartFusion, SyncWorld, Temux, TimeCesium, TimeHub, TimePictra, TimeProvider, TrueTime, WinPath, and ZL are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, Augmented Switching, BlueSky, BodyCom, CodeGuard, CryptoAuthentication, CryptoAutomotive, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, Espresso T1S, EtherGREEN, GridTime, IdealBridge, In-Circuit Serial Programming, ICSP, INICnet, Intelligent Paralleling, Inter-Chip Connectivity, JitterBlocker, Knob-on-Display, maxCrypto, maxView, memBrain, Mindi, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, NVM Express, NVMe, Omniscient Code Generation, PICDEM, PICDEM.net, PICkit, PICtail, PowerSmart, PureSilicon, QMatrix, REAL ICE, Ripple Blocker, RTAX, RTG4, SAM-ICE, Serial Quad I/O, simpleMAP, SimpliPHY, SmartBuffer, SmartHLS, SMART-I.S., storClad, SQI, SuperSwitcher, SuperSwitcher II, Switchtec, SynchroPHY, Total Endurance, TSHARC, USBCheck, VariSense, VectorBlox, VeriPHY, ViewSpan, WiperLock, XpressConnect, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

The Adaptec logo, Frequency on Demand, Silicon Storage Technology, Symmcom, and Trusted Time are registered trademarks of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2022, Microchip Technology Incorporated and its subsidiaries. All Rights Reserved.

ISBN: 978-1-5224-9556-7

## Quality Management System

For information regarding Microchip's Quality Management Systems, please visit www.microchip.com/quality.

# Worldwide Sales and Service


| AMERICAS | ASIA/PACIFIC | ASIA/PACIFIC | EUROPE |
|---|---|---|---|
| **Corporate Office**<br>2355 West Chandler Blvd.<br>Chandler, AZ 85224-6199<br>Tel: 480-792-7200<br>Fax: 480-792-7277<br>Technical Support:<br>www.microchip.com/support<br>Web Address:<br>www.microchip.com<br>**Atlanta**<br>Duluth, GA<br>Tel: 678-957-9614<br>Fax: 678-957-1455<br>**Austin, TX**<br>Tel: 512-257-3370<br>**Boston**<br>Westborough, MA<br>Tel: 774-760-0087<br>Fax: 774-760-0088<br>**Chicago**<br>Itasca, IL<br>Tel: 630-285-0071<br>Fax: 630-285-0075<br>**Dallas**<br>Addison, TX<br>Tel: 972-818-7423<br>Fax: 972-818-2924<br>**Detroit**<br>Novi, MI<br>Tel: 248-848-4000<br>**Houston, TX**<br>Tel: 281-894-5983<br>**Indianapolis**<br>Noblesville, IN<br>Tel: 317-773-8323<br>Fax: 317-773-5453<br>Tel: 317-536-2380<br>**Los Angeles**<br>Mission Viejo, CA<br>Tel: 949-462-9523<br>Fax: 949-462-9608<br>Tel: 951-273-7800<br>**Raleigh, NC**<br>Tel: 919-844-7510<br>**New York, NY**<br>Tel: 631-435-6000<br>**San Jose, CA**<br>Tel: 408-735-9110<br>Tel: 408-436-4270<br>**Canada - Toronto**<br>Tel: 905-695-1980<br>Fax: 905-695-2078 | **Australia - Sydney**<br>Tel: 61-2-9868-6733<br>**China - Beijing**<br>Tel: 86-10-8569-7000<br>**China - Chengdu**<br>Tel: 86-28-8665-5511<br>**China - Chongqing**<br>Tel: 86-23-8980-9588<br>**China - Dongguan**<br>Tel: 86-769-8702-9880<br>**China - Guangzhou**<br>Tel: 86-20-8755-8029<br>**China - Hangzhou**<br>Tel: 86-571-8792-8115<br>**China - Hong Kong SAR**<br>Tel: 852-2943-5100<br>**China - Nanjing**<br>Tel: 86-25-8473-2460<br>**China - Qingdao**<br>Tel: 86-532-8502-7355<br>**China - Shanghai**<br>Tel: 86-21-3326-8000<br>**China - Shenyang**<br>Tel: 86-24-2334-2829<br>**China - Shenzhen**<br>Tel: 86-755-8864-2200<br>**China - Suzhou**<br>Tel: 86-186-6233-1526<br>**China - Wuhan**<br>Tel: 86-27-5980-5300<br>**China - Xian**<br>Tel: 86-29-8833-7252<br>**China - Xiamen**<br>Tel: 86-592-2388138<br>**China - Zhuhai**<br>Tel: 86-756-3210040 | **India - Bangalore**<br>Tel: 91-80-3090-4444<br>**India - New Delhi**<br>Tel: 91-11-4160-8631<br>**India - Pune**<br>Tel: 91-20-4121-0141<br>**Japan - Osaka**<br>Tel: 81-6-6152-7160<br>**Japan - Tokyo**<br>Tel: 81-3-6880- 3770<br>**Korea - Daegu**<br>Tel: 82-53-744-4301<br>**Korea - Seoul**<br>Tel: 82-2-554-7200<br>**Malaysia - Kuala Lumpur**<br>Tel: 60-3-7651-7906<br>**Malaysia - Penang**<br>Tel: 60-4-227-8870<br>**Philippines - Manila**<br>Tel: 63-2-634-9065<br>**Singapore**<br>Tel: 65-6334-8870<br>**Taiwan - Hsin Chu**<br>Tel: 886-3-577-8366<br>**Taiwan - Kaohsiung**<br>Tel: 886-7-213-7830<br>**Taiwan - Taipei**<br>Tel: 886-2-2508-8600<br>**Thailand - Bangkok**<br>Tel: 66-2-694-1351<br>**Vietnam - Ho Chi Minh**<br>Tel: 84-28-5448-2100 | **Austria - Wels**<br>Tel: 43-7242-2244-39<br>Fax: 43-7242-2244-393<br>**Denmark - Copenhagen**<br>Tel: 45-4485-5910<br>Fax: 45-4485-2829<br>**Finland - Espoo**<br>Tel: 358-9-4520-820<br>**France - Paris**<br>Tel: 33-1-69-53-63-20<br>Fax: 33-1-69-30-90-79<br>**Germany - Garching**<br>Tel: 49-8931-9700<br>**Germany - Haan**<br>Tel: 49-2129-3766400<br>**Germany - Heilbronn**<br>Tel: 49-7131-72400<br>**Germany - Karlsruhe**<br>Tel: 49-721-625370<br>**Germany - Munich**<br>Tel: 49-89-627-144-0<br>Fax: 49-89-627-144-44<br>**Germany - Rosenheim**<br>Tel: 49-8031-354-560<br>**Israel - Ra'anana**<br>Tel: 972-9-744-7705<br>**Italy - Milan**<br>Tel: 39-0331-742611<br>Fax: 39-0331-466781<br>**Italy - Padova**<br>Tel: 39-049-7625286<br>**Netherlands - Drunen**<br>Tel: 31-416-690399<br>Fax: 31-416-690340<br>**Norway - Trondheim**<br>Tel: 47-72884388<br>**Poland - Warsaw**<br>Tel: 48-22-3325737<br>**Romania - Bucharest**<br>Tel: 40-21-407-87-50<br>**Spain - Madrid**<br>Tel: 34-91-708-08-90<br>Fax: 34-91-708-08-91<br>**Sweden - Gothenberg**<br>Tel: 46-31-704-60-40<br>**Sweden - Stockholm**<br>Tel: 46-8-5090-4654<br>**UK - Wokingham**<br>Tel: 44-118-921-5800<br>Fax: 44-118-921-5820 |


© 2022 Microchip Technology Inc. and its subsidiaries