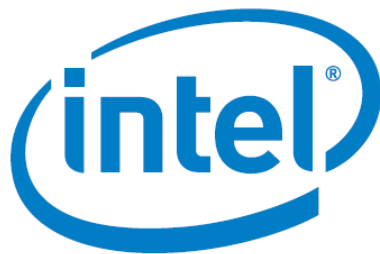


Intel® Rapid Storage Technology enterprise (RSTe) 4.5.0.2125 NVMe PV Customer Release Notes

August, 2016

Revision 1.3



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Document Revision History

Date	Version	Description
April 2015	1.0	Initial Beta release for Intel RSTe with NVMe Support
July 2015	1.1	PV release for Intel RSTe with NVMe Support
February 2016	1.2	Intel RSTe 4.5 NVMe PV release 4.5.0.2123
August 2016	1.3	Intel RSTe 4.5 NVMe PV release 4.5.0.2125 with Windows* Server 2016 Support

1 Overview

The Intel® RSTe 4.5.0.2125 NVMe PV release package contains the PV release version of the Windows* drivers, and utilities to support Intel® NVMe storage technology using Intel® NVMe SSDs.

Intel® RSTe 4.5.0.2125 NVMe does not support booting from an NVMe RAID Volume. As such, the Intel RSTe Pre-OS complement does not apply to the Intel® RSTe 4.5.0.2125 NVMe PV release package.

2 System Requirements

The Intel® RSTe 4.5.0.2125 NVMe PV release package is only supported on the following platforms:

- Intel® C610/C620 series chipset
- Intel® C230 series chipset

The Intel® RSTe 4.5.0.2125 NVMe PV release package installation process requires the use of a different Device ID from the standard RAID mode Device ID. To support Intel® RSTe NVMe installation, the following platform Device ID will be used.

Platform	Grantley (CPU DID)	Grantley-Refresh (CPU DID)	Greenlow (PCH DID)
Device ID (DID) Used	0x2F9C	0x6F9C	0xA135

This document covers the package contents, supported hardware configurations, credits, support, known issues and resolved issues.

3 Microsoft* OS Support

The Intel® RSTe 4.5.0.2125 NVMe PV release package supports both 32 and 64 bit versions of the following Microsoft* OSs:

- Windows* 7
- Windows* Server 2008 R2 (64 bit only)
- Windows* Server 2012
- Windows* 8.1
- Windows* Server 2012 R2 (64 bit only)
- Windows* 10
- Windows* Server 2016 (64 bit only)

* Other brands and names may be claimed as the property of others.

4 Support on Internet

Support for Intel® RSTe 4.5.0.2125 NVMe PV release package is provided via the Intel® Validation Internet Portal <https://platformsw.intel.com/>.

For answers to your Intel® C610 series chipsets questions and to obtain other technical collateral, please contact your local Intel FAE.

5 Package Components and Versions

Intel® RSTe 4.5.0.2125 NVMe PV release package is the PV release package to support the Intel NVMe drives on C610/620/230 series chipset based platforms. It is available on Intel® Validation Internet Portal as a kit. The contents of this kit include the following components:

- Rapid Storage Technology enterprise Installation
 - Intel RSTe Technical Product Specification 2.1
 - Intel RSTe OEM Technical Guide 1.0
 - Intel RSTe 4.5.0.2125 Release Notes
 - RSTe_4.5.0.2125_Install.zip Install package includes NVMe drivers and user applications (GUI) for all supported OS's
 - INVME_CD.exe
 - INVME_ENU.exe
 - INVME_ALL.zip
 - INVME_CD.zip
 - INVME_ENG.zip
- Intel RSTe f6 Drivers (drivers and utilities)
 - RSTe_4.5.0.2125_F6-Drivers.zip
 - Intel® RSTe 4.5.0.2125 F6 Win7 OS NVMe Installation Drivers
 - iaRNVMc.free.win7.32bit 4.5.0.2122
 - iaRNVMc.free.win7.64bit 4.5.0.2122
 - Intel® RSTe 4.5.0.2125 F6 Windows* 8.1 / Server 2012 (2012 R2) / Server 2016 / Windows* 10 OS NVMe Installation Drivers
 - iaRNVMc.free.win8.32bit 4.5.0.2122
 - iaRNVMc.free.win8.64bit 4.5.0.2122
- Intel RSTe CLI Staging
 - Intel RSTe CLI Specifications-1.2.pdf
 - RSTe_4.5.0.2125_CLI.zip
 - Rstcli.exe (32-bit version)
 - Rstcli64.exe (64-bit version)

5.1 Supported Configurations

5.1.1 Intel® C610 Series Chipset Silicon Stepping

All production SKUs supported.

5.1.2 Intel® C620 Series Chipset Silicon Stepping

All production SKUs supported.

5.1.3 Intel® C230 Series Chipset Silicon Stepping

All production SKUs supported.

6 Supported Platforms

This Intel® Intel RSTe 4.5.0.2125 NVMe PV release package is intended to be used on customer platforms that are based off

- Intel® C610/C620 series chipset
- Intel® C230 series chipset
 - Intel found an issue during late validation with the a device ID on C232/C236 QS parts that impacts Intel RSTe NVMe functionality
 - Intel RSTe uses the device ID associated with the ISH (Integrated Sensor Hub - [0xA135](#))
 - This device ID had been disabled on C232/C236 QS parts
 - Intel fixed this issue and will be providing limited quantities of QS^{*} for the C232/C236 SKUs so customers can complete checkout of the Intel RSTe functionality

Please contact your Intel FAE for all up to date information related to these supported platform components.

6.1 Intel® RSTe 4.5.0.2125 NVMe PV Release Documentation

It is strongly recommended that all documentation provided with this release package be reviewed prior to installing the Intel® RSTe 4.5.0.2125 Windows^{*} driver package.

6.2 Support

With this release, Intel will accept and process issues reported by customers. Intel makes no commitment to provide a driver update prior to the next scheduled release.

^{*} Other brands and names may be claimed as the property of others.

7 General Notes: Intel RSTe 4.5.0.2125 PV Release Package

7.1 New Features Introduced in this release

The release of the Intel RSTe 4.5.0.2125 kit includes a WHQLed support for Windows* Server 2016. All other components of this package are exactly the same as the Intel RSTe 4.5.0.2123 kit.

NOTE: Intel RSTe 4.5 supports up to 12 Intel NVMe Drives attached to the PCI express slots managed by the (supported) platform's CPU(s).

7.2 New Features Introduced in the 4.5.0.2123 Release

The release of Intel RSTe 4.5.0.2123 NVMe PV package introduces Hot Plug support of disk drives on the controllers of the Intel® C610/C620 and C230 series chipsets on platforms that include the Intel® SAS/SATA/NVMe Combo-Enclosures (attached to the PCI express slot managed by the CPU). The latest BIOS updates to the Intel® C610 series chipset is required to support this feature. Please contact your Intel FAE to obtain these latest BIOS updates.

7.3 New Features Introduced in the 4.3.0.1681 Release

The release of Intel RSTe 4.3.0.1681 NVMe PV release package introduces support for RAID volume management on Intel NVMe SSD drives. Included in this release are F6 drivers for installing one of the supported OSs to a single pass through NVMe drive.

7.4 Features/Configuration Restrictions

The following configurations and test scenarios are not supported in this release. As such, any issues reported against these configurations will not be accepted:

- MPIO Load Balancing in RAID Mode is unsupported
- Booting from an NVMe RAID volume (Pass-Through only)
- Intel® C600/220 series chipset is not supported
- Updating the Intel NVMe driver is not supported following the Windows driver update process through Device Manager. Please use the Intel NVMe Installation utility instead.

7.5 Additional Chipset Configuration Information

The RAID PCI Device IDs supported are as follows:

- Intel® C610 series chipset

- Intel® C230 series chipset

The Intel® RSTe 4.5.0.2123 NVMe PV release package installation process requires the use of a different Device ID from the standard RAID mode Device ID. To support Intel® RSTe NVMe installation, the following platform Device ID will be used.

Platform	Grantley (CPU DID)	Grantley-Refresh (CPU DID)	Greenlow (PCH DID)
Device ID (DID) Used	0x2F9C	0x6F9C	0xA135

Unlike the traditional Intel® RSTe PCH/SATA package (which installs against the platform chipset PCH), the Intel® RSTe NVMe RAID driver is not able to install against the Intel® NVMe SSD controller Device ID. The reason is that Intel RSTe will stop working if the NVMe SSD is ever removed. As a result the Intel® RSTe NVMe RAID package must install against a fixed Device ID. The above are the Intel approved Device IDs that Intel® RSTe NVMe will use (for these corresponding platforms).

8 Specific Known Issues

This section outlines the known issues with the Intel® RSTe 4.5.0.2125 NVMe release package.

Note: This is neither a complete nor comprehensive list.

The known issues are broken down into two sub sections. The first outlines those issues that are being worked on or are planned to be corrected in a future release. The second outlines those issues that are considered permanent erratum.

KEY:

Title	Brief description of the issue to assist in identifying whether it affects the reader's application or no
Reference #	Used to reference Intel's internal database for further follow-up on inquiry
Product	Identifies which products are affected by this issue
Version	Identified which release set versions area affected by this issue
Operating System	Where applicable, identifies which operations systems are affected by this issue

Problem Description	Additional information to help the reader determine if this issue affects their application
Resolution/Status	Provides either the current status of the issue or the targeted release for a fix

8.1 Errata

The following is a list of issues that Intel RSTe has no current plans for resolving.

Title#	The Controller Manufacturer and Model Numbers May Not Be Properly Reported in the Intel RSTe System Report
Reference	43582
Product	Intel® RSTe NVMe
Version	4.3.0.1386
Operating System	Windows 7
Problem Description	When reviewing information about controllers connected to the system, the Controller manufacturer and model numbers may not be properly reported in the Intel RSTe GUI System Report.
Resolution	There is no plan to resolve this issue in RSTe.

Title#	Intel RSTe NVMe RAID 5 Sequential Write Performance
Reference	43582/57329
Product	Intel® RSTe NVMe
Version	4.3.0.1386
Operating System	Windows 7
Problem Description	<p>When running a RAID 5 sequential write performance test on Intel NVMe SSDs, the performance seen may be lower than other RAID configurations or a pass-through disk.</p> <p>The Intel NVMe SSDs have firmware optimization built in to improved sequential write performance. Pass-through drives and other RAID volumes are able to take advantage of this firmware optimization. Due to the nature of a RAID 5 data</p>

	access prevents the ability to take advantage of this optimization. As a result the Intel® NVMe SSD firmware will treat these I/O's as random writes.
Resolution	There is no plan to resolve this issue in RSTe.

8.2 Known Issues Being Worked

The following issues are being actively worked.

Title#	Running Verify and Repair on NVMe RAID Volume May produce an Unknown Error
Reference	45441
Product	Intel® RSTe NVMe
Version	4.3.0.1386
Operating System	Windows
Problem Description	When attempting to run Verify and Repair on an Intel RSTe NVMe RAID volume, the Intel RSTe GUI may result in an Unknown Error.
Resolution	Issue to be resolved in a future release.

Title#	Changing RAID Volume May Result in an "Unknown Error"
Reference	51296 / 66688
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	Attempting to change the RAID Volume type using the option "Change type" in volume properties of the Intel RSTe GUI may result in an "Unknown Error"
Resolution	Issue to be resolved in a future release.

Title#	RAID Volume Migration May Result in an "Unknown Error"
Reference	51343
Product	Intel® RSTe NVMe

Version	4.3.0.1681
Operating System	Windows*
Problem Description	Attempting to migrate a RAID1 volume with 2 disks to a RAID5 volume with 3 disks using the “Change type” option in the volume properties of the Intel RSTe GUI may result in an Unknown error. The migration will begin after the Intel RSTe GUI is closed and restarted.
Resolution	Issue to be resolved in a future release.

Title#	Adding an NVMe Drive to an Existing Intel RSTe RAID Volume may Result in an Unknown Error
Reference	51732 / 66681
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	Using the option “Add disk” in the RAID volume properties of the Intel RSTe GUI to add an additional available disk to a RAID 5 volume may result in an unknown error notification. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Trying to Increase an Initialized RAID10 Volume May Result in an Unknown Error
Reference	57443
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When attempting to increase an initialized Intel RSTe NVMe RAID10 volume using the “Increase size” option in the Intel RSTe GUI, an unknown error may occur. Consequently, the action will complete successful.

Resolution	Issue to be resolved in a future release.
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Title#	Trying to Delete RAID10 Volume During Initialization May result in an Unknown Error
Reference	57444
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When attempting to delete an Intel RSTe NVMe RAID10 volume which is initializing, an Unknown Error may occur. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Increasing size of RAID10 Volume May Result in an Unknown Error
Reference	57445 / 66686
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When attempting to increase the size of a RAID10 volume using the "Increase size" option in the Intel RSTe GUI, an unknown error may occur once the process has started. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Starting the Initialization Process on a RAID10 Volume May Result in an Unknown Error
Reference	57447
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*

Problem Description	When attempting to initialize a RAID10 volume using the “Initialize” option in the volume properties page of the Intel RSTe GUI, an unknown error may occur once initialization starts. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Starting the Initialization Process on a RAID1 Volume May Result in an Unknown Error
Reference	57460
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When attempting to initialize a RAID1 volume using the “Initialize” option in the volume properties page of the Intel RSTe GUI, an unknown error may occur once initialization starts. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Trying to Delete Initialized and Verified RAID1 Volume May Result in an Unknown Error
Reference	57461
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When attempting to delete the RAID1 volume which is initialized and verified using the “Initialize” followed by the “Verify” options in the volume properties page in the Intel RSTe GUI, an unknown error may occur. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Intel RSTe RAID Volume Initialization Process May not Start Automatically and May Not Be Able to be Deleted
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Reference	59482
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When attempting to create a RAID1 volume with 2 disks and attempting to initialize it, the RAID volume may disappear from the Intel RSTe GUI. After a restart of the GUI, the volume should reappear, but the Intel RSTe GUI may not be able to delete it until after the platform is rebooted.
Resolution	Issue to be resolved in a future release.

Title#	RAID Volume and NVMe Disks May Disappear After System Reboot
Reference	60667
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When running in a configuration where an Intel RSTe NVMe RAID volume is in “Migrating” status, the RAID volume and member disks may no longer appear in the Intel RSTe GUI after a system reboot. This is believed to occur on a 4 disk RAID 10 volume configuration.
Resolution	Issue to be resolved in a future release.

Title#	CLI Tool May Crash if Issuing Bad Command
Reference	60130
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*

Problem Description	When trying to issue a bad command such as in the example below, the CLI tool may crash. In addition, both the Intel RSTe GUI and the service may hang. Ex: Working command rstcli64.exe -C -l 1 -n volume0 1-0-0-0 1-1-0-0 Bad command rstcli64.exe -C -l 1 -v volume0 1-0-0-0 1-1-0-0
Resolution	Issue to be resolved in a future release.

Title#	BSOD May Occurred While Trying to Disable Hot-Plugged NVMe Disks
Reference	61141
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	Using Device Manager, attempting to disable an NVMe disk (not part of a RAID volume) that was hot-plugged in may result in a BSOD.
Resolution	Issue to be resolved in a future release.

Title#	Volume May Not be Visible When Created Using Drives Containing Data.
Reference	66211
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When creating a RAID volume using disks containing data, the volume may not be shown in the Intel RSTe GUI. After closing and restarting the Intel RSTe GUI, the volume will then be visible. .
Resolution	Issue to be resolved in a future release.

Title#	Tray Icon May Not be Visible After Switching to Different User
Reference	66216
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When switching to another user in Windows, the Intel RSTe GUI tray icon may not be visible.
Resolution	Issue to be resolved in a future release.

Title#	Intel RSTe GUI May Display Intel NVMe SSDs attached to the PCH Controller
Reference	66390
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When running in a configuration where there is an Intel NVMe SSD attached to a PCI express port controlled by the PCH when the Intel RSTe NVMe package is installed, those devices will show up in the Intel RSTe GUI. The GUI may also allow those devices to be configured as part of a RAID volume.
Work Around	Please make sure that there are no NVMe devices attached to PCI express ports managed by the PCH (refer to your platform documentation for details)
Resolution	Issue to be resolved in a future release.

Title#	Deleting a RAID 10 Volume Using 50% Capacity of Disks May result in error
Reference	61040
Product	Intel® RSTe NVMe
Version	4.3.0.1681

Operating System	Windows*
Problem Description	Using the GUI, attempting to delete a 4 disk RAID 10 configured to use 50% of the 4 disk capacity may result in an unknown error pop up notification.
Work Around	Close the error notification and restart the system. The RAID volume can then be successfully deleted.
Resolution	Issue to be resolved in a future release.

Title#	Windows may Hang After Creating RAID 1 Volume
Reference	75395
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	Creating a 2 disk RAID 1 volume may cause Windows operating system to hang.
Resolution	Issue to be resolved in a future release.

Title#	Increasing Size of RAID 0 may Cause Unknown Error
Reference	76134
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In a configuration where a 2 disk RAID 0 is created using 50% of the disk capacity, using the "Increase size" function and clicking OK may result in an unknown error notification
Resolution	Issue to be resolved in a future release.

Title#	Volume May Not be Visible When Created Using Drives Containing Data
Reference	66653
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	Using the Intel RSTe GUI, when creating a RAID volume using disks containing data, the volume may not be shown in the Intel RSTe GUI. After closing and restarting the Intel RSTe GUI, the volume will then be visible.
Resolution	Issue to be resolved in a future release.

Title#	Disks Listed in Disk Management used in RAID Volume may not Disappear
Reference	81380 / 65758
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	After creating a RAID volume using the Intel RSTe GUI, Windows Disk Management may not list the new logical volume but instead continue to list all the disks that are members of the RAID volume
Resolution	Issue to be resolved in a future release.

Title#	Creating a RAID 10 Volume may Result in an Unknown Error
Reference	66582
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*

Problem Description	Using the Intel RSTe GUI, creating a RAID 10 volume may result in an unknown error notification. Consequently, the RAID volume is created but no actions on that volume can be initiated which includes deleting the volume.
Resolution	Issue to be resolved in a future release.

Title#	Running “Verify” on a RAID Volume may Result in an Unknown Error
Reference	66647
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In a configuration on a 2 disk RAID 1 after running the “Initialize” option in the Intel RSTe GUI volume properties, running “Verify” after the initialization has completed may result in an unknown error notification. The verification process runs successfully.
Resolution	Issue to be resolved in a future release.

Title#	Changing RAID volume Type may Result in an Unknown Error
Reference	66652 / 66682
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In the Intel RSTe GUI, attempting to change a RAID volume type using the “Change type” option or increasing the size of a RAID volume using the “Increase size” option in volume properties may result in an unknown error notification.
Resolution	Issue to be resolved in a future release.

Title#	Deleting a RAID Volume Configured with Smallest Available Size may Result in an Unknown Error
Reference	66660
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	Using the Intel RSTe GUI, attempting to delete a RAID volume that was configured with the smallest available size then initialized and verified using the functions “Initialize” and “Verify” in the volume properties may result in an unknown error notification. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Running “Initialize” on a RAID Volume may Result in an Unknown Error
Reference	66665 / 66685
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In a configuration that includes a RAID 1 or a RAID 5 volume, running the “Initialize” option in the volume properties of the Intel RSTe GUI may result in an unknown error notification. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Disk Management may Hang when Creating an MBR Partition on a RAID Volume
Reference	51660 / 66680
Product	Intel® RSTe NVMe
Version	4.3.0.1681

Operating System	Windows*
Problem Description	Using Windows Disk Management, creating an MBR partition on an Intel RSTe RAID 0 or RAID 5 volume that was created using the Intel RSTe GUI may result in Windows Disk Management becoming unresponsive.
Resolution	Issue to be resolved in a future release.

Title#	Deleting a RAID 10 Volume during “Initializing” status may Result in an Unknown error
Reference	66684
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	Attempting to delete an Intel RSTe RAID 10 volume after invoking the “Initialize” option in the volume properties and before it has completed may result in an unknown error notification. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

8.3 Issues Resolved in Production Release 4.5.0.2123

The following issues have been resolved with the Intel® RSTe 4.5.0.2123 release package.

Title#	Intel RSTe GUI May Display Intel NVMe SSDs attached to the PCH Controller
Reference	66390
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*

Problem Description	When running in a configuration where there is an Intel NVMe SSD attached to a PCI express port controlled by the PCH when the Intel RSTe NVMe package is installed, those devices will show up in the Intel RSTe GUI. The GUI may also allow those devices to be configured as part of a RAID volume.
Work Around	Please make sure that there are no NVMe devices attached to PCI express ports managed by the PCH (refer to your platform documentation for details)
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	The Intel RSTe GUI May Allow an NVMe System Drive to be Included in a RAID Volume
Reference	66455
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operate System	Windows*
Problem Description	When running in a configuration where the system OS is on an Intel NVMe SSD, after installing the Intel RSTe NVMe package the GUI may allow the system drive to be included in a RAID volume. Intel RSTe NVMe does not support booting from an OS located on an NVMe RAID volume.
Work Around	Avoid creating a RAID volume that includes the system OS (that resides on an Intel NVMe SSD).
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	Intel RSTe NVMe LED Management May Blink All Volume Drives During a Rebuild
Reference	66457
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*

Problem Description	When running in a configuration with the custom DLL implemented and installed to manage NVMe LEDs, a RAID Volume rebuild may result in the blinking of the LED on each drive in the volume.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	NVMe Disk Marked as Spare May Reset to Available After a Reboot
Reference	75234
Product	Intel® RSTe NVMe
Version	4.5.0.2123
Operating System	Windows* 2012R2
Problem Description	In a configuration where an Intel NVMe disk is marked as a spare disk, it may automatically be reset to available after a system reboot
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	Windows 10 version number May Differ from Intel RSTe System Report and MsInfo32 Tool
Reference	70738
Product	Intel® RSTe NVMe
Version	4.5.0.2123
Operating System	Windows* 10
Problem Description	When using Windows MsInfo32 tool to gather system information, the version number for Windows 10 may differ then what Intel RSTe System Report will show.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	A BSOD may Occur when Enabling or Disabling Fultondale PCIe NVMe disks
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Reference	66578
Product	Intel® RSTe NVMe
Version	4.5.0.2123
Operating System	Windows* 8.1
Problem Description	When running in a configuration that includes Fultondale PCIe NVMe devices, a BSOD may occur if enabling and disabling the devices in Windows Device Manager
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	Tray Icon Notification Message may State Incorrect Volume Status
Reference	66576 / 65464
Product	Intel® RSTe NVMe
Version	4.5.0.2123
Operating System	Windows* 2012R2
Problem Description	In a configuration where a RAID volume is created using a disk that contains a partition and selecting to keep the data, the immediate tray icon notification that occurs may incorrectly state "Initialization in progress". The correct notification text should state "Migration in progress".
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	Intel RSTe CLI May Not Properly Show Disk Model Information
Reference	43633
Product	Intel® RSTe NVMe
Version	4.1.0.1046
Operating System	Windows*

Problem Description	When using the Intel RSTe CLI utility to gather the information of the devices attached, the utility may not properly report the device model information.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	CLI Command may Fail if Trying to Get Information From Controller Without Disks
Reference	66659 / 61050
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When attempting to run CLI command "rstcli.exe -l" to get information about the RAID controller on a system having no NVMe disks attached, the CLI tool may return "REQUEST_FAILED" error message.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	CLI "Create" Command may Fail when creating RAID volume
Reference	66663
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When attempting to run CLI command "Create" followed with appropriate switches and parameters that should successfully create a RAID volume, the CLI tool may return "InvalidRequest" error message.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	Available size in Array Properties Pane may be incorrect
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Reference	65772
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In a configuration where a RAID volume is configured that is sized less than the full array capacity (ex: 50%), when starting to create an additional RAID volume but canceling it after having selected to add it to the array, the array available size listed in array properties may not be correct.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	Array Allocation slider may be Disabled on Second Volume
Reference	65771
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In a configuration where a RAID volume is configured that is sized less than the full array capacity (ex: 50%), when starting to create an additional RAID volume, in the "Volume Size" section, the Array Allocation slider may be disabled.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	Disks used in RAID volume that was Deleted may Disappear from Windows Device manager
Reference	65496
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*

Problem Description	In a configuration where a RAID 1 volume is partitioned, deleted, recreated selecting to keep data, deleted again may result in the disks disappearing from Windows Device manager.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	NVMe disk may appear in Intel RSTe UI as “Unknown SSD (0 GB)”
Reference	65335
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In a configuration where an NVMe SSD disk is disabled in Windows Device manager by the user, launching the Intel RSTe UI then re-enabling the disk may result in the Intel RSTe UI not refreshing and displaying the disk as “Unknown SSD (0 GB)”.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	After S4 During Migration UI may Show 2 Volumes instead of 1
Reference	56499/58301
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In a configuration where there is one RAID volume, after running a few S4 sleep states the UI may show 2 RAID volumes where there should only be 1.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	RAID Volume May Fail After Platform Dirty Shutdown During Migration
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Reference	57892/61035
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	<p>When running in a configuration where there are 2 Intel RSTe NVMe RAID volumes (ex: 3 disk RAID 0 and RAID 5) with data on the same array and an additional disk is added to the first volume, after the migration process begins and a dirty shutdown occurs (during the migration process) the RAID volume may fail. Additionally, the disk that was used to add to the first volume may be in an “Unknown” state as presented in the Intel RSTe GUI.</p> <p>This issue may also occur in a configuration where there is 1 RAID volume with data, “Increase size” is initiated for the RAID Volume and a dirty shutdown occurs.</p>
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	System may Restart when Running S3 and S4 Power States
Reference	59095/59969
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows* 10
Problem Description	When initiating S3 or S4 power state, the system may restart instead of entering the initiated sleep state.
Resolution	Issue resolved in the 4.5.0.2123 release.

Title#	RAID Volume in Rebuilding State may Fail After Connecting a New Disk
Reference	75809

Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	In a configuration where a RAID volume is in Rebuilding state, connecting a new disk during this time may fail the RAID volume.
Resolution	Issue resolved in the 4.5.0.2123 release.

8.4 Issues Resolved in Production Release 4.3.0.1681

The following issues have been resolved with the Intel® RSTe 4.3.0.1681 release package.

Title#	Read Patrol is Disabled in Intel RSTe NVMe
Reference	65515
Product	Intel® RSTe NVMe
Version	4.3.0.1681
Operating System	Windows*
Problem Description	When running in a system with an Intel RSTe NVMe RAID Volume, the Read Patrol functionality may cause the system to crash. To prevent this from occurring Read Patrol on Intel RSTe 4.3.0.1681 has been disabled.
Resolution	Issue resolved in the 4.3.0.1681 release.

8.5 Reference Documentation

Please refer to the following documentation for additional information:

TBD	Reserved for future use.
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