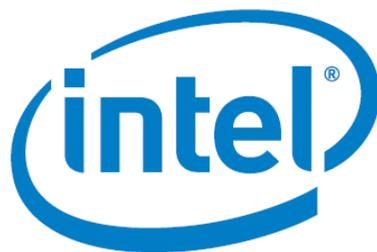


Intel® Rapid Storage Technology enterprise (RSTe) 4.5.0.2123 NVMe Public Customer Release Notes

March, 2016

Revision 1.0



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Document Revision History

Date	Version	Description
March 2016	1.0	Initial Public Release

1 Overview

The Intel® RSTe 4.5.0.2123 NVMe release package contains the release version of the Windows* drivers, and utilities to support Intel® NVMe storage technology using Intel® NVMe SSDs.

Intel® RSTe 4.5.0.2123 NVMe does not support booting from an NVMe RAID Volume.

2 System Requirements

The Intel® RSTe 4.5.0.2123 NVMe release package is only supported on Intel® Xeon® Processor E5 v3, v4 Families with the Intel® C610 series chipset, and Intel® Xeon® Processor E3 v5 Families with the Intel® C230 series chipset.

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

3 Microsoft* OS Support

The Intel® RSTe 4.5.0.2123 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
- Windows* 10

4 Support on Internet

Support for Intel® RSTe 4.5.0.2123 NVMe PV release package is provided via the Intel download center "<https://downloadcenter.intel.com/download/25771/>".

5 Package Components and Versions

Intel® RSTe 4.5.0.2123 NVMe release package is the package that supports the Intel NVMe drives (on supported platforms). It is available Intel support center <http://www.intel.com/content/www/us/en/support.html>. The contents of this kit include the following components:

- Rapid Storage Technology enterprise Installation
 - RSTe Public Technical Product Specification 1.0
 - RSTe 4.5.0.2123 Public Customer Release Notes

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

- RSTe_4.5.0.2123_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

6 Supported Platforms

This Intel® RSTe 4.5.0.2123 NVMe PV release package is intended to be used on customer platforms that are based off:

- Intel® Xeon® Processor E5 v3, v4 Families with the Intel® C610 series chipset
- Intel® Xeon® Processor E3 v5 Families with the Intel® C230 series chipset.

6.1 Intel® RSTe 4.5.0.2123 NVMe Release Documentation

It is strongly recommended that all documentation provided with this release package be reviewed prior to installing the Intel® RSTe 4.5.0.2123 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.

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7 General Notes: RSTe 4.5.0.2123 Release Package

7.1 New Features Introduced in this Release

The release of RSTe 4.5.0.2123 NVMe release package introduces support for RAID volume management on Intel NVMe SSD drives.

7.2 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:

- Booting from an NVMe RAID volume (Pass-Through only)
- 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.

8 Specific Known Issues

This section outlines the known issues with the Intel® RSTe 4.5.0.2123 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 RSTe has no current plans for resolving.

Title#	The Controller Manufacturer and Model Numbers May Not Be Properly Reported in the RSTe System Report
Reference	43582
Product	Intel® RSTe NVMe
Version	4.5.0.2123
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 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	4.5.0.2123
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 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.</p>
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
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Reference	45441
Product	Intel® RSTe NVMe
Version	4.5.0.2123
Operating System	Windows
Problem Description	When attempting to run Verify and Repair on an RSTe NVMe RAID volume, the 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	4.5.0.2123
Operating System	Windows*
Problem Description	Attempting to change the RAID Volume type using the option “Change type” in volume properties of the 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	4.5.0.2123
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 RSTe GUI may result in an Unknown error. The migration will begin after the RSTe GUI is closed and restarted.
Resolution	Issue to be resolved in a future release.

Title#	Adding an NVMe Drive to an Existing RSTe RAID Volume may Result in an Unknown Error
Reference	51732 / 66681
Product	Intel® RSTe NVMe

Version	4.5.0.2123
Operating System	Windows*
Problem Description	Using the option "Add disk" in the RAID volume properties of the 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	4.5.0.2123
Operating System	Windows*
Problem Description	When attempting to increase an initialized RSTe NVMe RAID10 volume using the "Increase size" option in the RSTe GUI, an unknown error may occur. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	Trying to Delete RAID10 Volume During Initialization May result in an Unknown Error
Reference	57444
Product	Intel® RSTe NVMe
Version	4.5.0.2123
Operating System	Windows*
Problem Description	When attempting to delete an 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	4.5.0.2123
Operating System	Windows*
Problem Description	When attempting to increase the size of a RAID10 volume using the "Increase size" option in the 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	4.5.0.2123
Operating System	Windows*
Problem Description	When attempting to initialize a RAID10 volume using the "Initialize" option in the volume properties page of the 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	4.5.0.2123
Operating System	Windows*
Problem Description	When attempting to initialize a RAID1 volume using the "Initialize" option in the volume properties page of the 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	4.5.0.2123
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 RSTe GUI, an unknown error may occur. Consequently, the action will complete successful.
Resolution	Issue to be resolved in a future release.

Title#	RSTe RAID Volume Initialization Process May not Start Automatically and May Not Be Able to be Deleted
Reference	59482
Product	Intel® RSTe NVMe
Version	4.5.0.2123
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 RSTe GUI. After a restart of the GUI, the volume should reappear, but the RSTe GUI may not be able to be 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	4.5.0.2123
Operating System	Windows*
Problem Description	When running in a configuration where an RSTe NVMe RAID volume is in “Migrating” status, the RAID volume and member disks may no longer appear in the 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#	BSOD May Occurred While Trying to Disable Hot-Plugged NVMe Disks
Reference	61141
Product	Intel® RSTe NVMe
Version	4.5.0.2123
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	4.5.0.2123
Operating System	Windows*
Problem Description	When creating a RAID volume using disks containing data, the volume may not be shown in the RSTe GUI. After closing and restarting the 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	4.5.0.2123
Operating System	Windows*
Problem Description	When switching to another user in Windows, the RSTe GUI tray icon may not be visible.
Resolution	Issue to be resolved in a future release.

Title#	RSTe GUI May Display Intel NVMe SSDs attached to the PCH Controller
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Reference	66390
Product	Intel® RSTe NVMe
Version	4.5.0.2123
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 RSTe NVMe package is installed, those devices will show up in the 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	4.5.0.2123
Operating System	Windows*
Problem Description	Using the RSTe UI, 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	4.5.0.2123
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	4.5.0.2123
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	4.5.0.2123
Operating System	Windows*
Problem Description	Using the RSTe GUI, when creating a RAID volume using disks containing data, the volume may not be shown in the RSTe GUI. After closing and restarting the 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	4.5.0.2123
Operating System	Windows*

Problem Description	After creating a RAID volume using the 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	4.5.0.2123
Operating System	Windows*
Problem Description	Using the 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	4.5.0.2123
Operating System	Windows*
Problem Description	In a configuration on a 2 disk RAID 1 after running the “Initialize” option in the 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	4.5.0.2123

Operating System	Windows*
Problem Description	In the 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	4.5.0.2123
Operating System	Windows*
Problem Description	Using the 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	4.5.0.2123
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 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
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Reference	51660 / 66680
Product	Intel® RSTe NVMe
Version	4.5.0.2123
Operating System	Windows*
Problem Description	Using Windows Disk Management, creating an MBR partition on an RSTe RAID 0 or RAID 5 volume that was created using the 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	4.5.0.2123
Operating System	Windows*
Problem Description	Attempting to delete an 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 Reference Documentation

Please refer to the following documentation for additional information:

TBD	Reserved for future use.
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