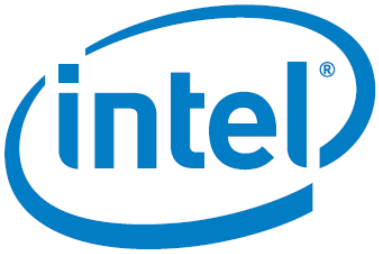

Intel® Rapid Storage Technology enterprise (Intel® RSTe) 4.7 PV

Customer Release Notes

July, 2018

Revision 1.55

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Document Revision History

Date	Version	Description
November, 2017	1.53	Intel RSTe 4.7 Initial Release
December, 2017	1.54	Updates made to Intel RSTe 4.7 Initial Release
July, 2018	1.55	Updated Installer

1 Overview

Intel® RSTe 4.7 Production Validation (PV) release package contains the PV release version of the Intel RSTe Windows* drivers, Pre-OS components and utilities to support platforms built with the Intel® C610, C230, and C240 series chipsets.

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

NOTE: For platforms that contain 8 SATA ports. Intel recommends ports 7 and 8 not be used as part of the OS installation. Please restrict the OS installation process to ports 1 through 6. This is critical for customers who have customized Subsystem Vendor and Subsystem Device IDs.

2 Supported Platforms

This Intel® RSTe 4.7 PV release package is intended to be used on customer platforms based off The Intel® RSTe 4.7 NVMe release package is supported on the following Platforms:

- 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.

Intel RSTe 4.7 NVMe introduces Support for the following platform:

- Intel® Xeon® E Processor Family with the Intel® C240 series Chipset

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

3 Intel® C600 / C220 Series Chipsets End of Life

After Intel RSTe 4.5 Release, all C600 / C220 Series Chipsets are “End of Life”, including the following platforms:

- Intel® C600 series chipset
- Intel® C220 series chipset

Any future or existing issues filed on these platforms will be addressed on a case-by-case basis for critical issues only, and any approved fixes will be addressed in the 4.5 release version only.

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4 Microsoft* OS Support

Intel® RSTe will support the following Microsoft* OS, 32 and 64 bit, unless noted otherwise:

- Intel® RSTe will no longer provide updated drivers for the following Operating Systems (Intel will only address critical/show stopping issues filed against these OSs):
  - Windows* Vista (Support/Updates conclude with 4.1.2.1011 – Release Kit 108877)
  - Windows* Server 2003 (Support/Updates conclude with 4.0.2.1019 – Release Kit 110031)
  - Windows* Server 2008 SP2 (Support/Updates conclude with 4.0.2.1019 – Release Kit 110031)
  - Windows* 8 (Support/Updates conclude with 4.2.2.1005 – Release Kit 110030)
  - Windows* Server 2012 (Support/Updates conclude with 4.2.2.1005 – Release Kit 110030)
- Windows* 7 (Not supported on Intel® C240 series chipset)
- Windows* Server 2008 R2 (64 bit only, and not supported on Intel® C240 series chipset)
- Windows* PE 3.0
- Windows* 8.1 (64 bit only)
- Windows* Server 2012 R2 (64 bit only)
- Windows* 10 RS2 (64bit only for SATA and sSATA)
- Windows* Server 2016 (64 bit only)

5 Support on Internet

Support for Intel® RSTe 4.7 PV release package is provided via the Intel® Validation Internet Portal https://platformsw.intel.com/.

For answers to your Intel® C610 / C230 /C240 series chipsets questions and to obtain other technical collateral, please contact your local Intel FAE.

6 Package Components and Versions

Intel® RSTe 4.7 PV release is the production release package to support the Intel® C610, C230, and C240 series chipset based platforms. It is available on Intel®

Validation Internet Portal as a kit. The contents of this kit include the following components:

- Intel Rapid Storage Technology enterprise Installation
  - Intel RSTe 4.7 Release Notes
  - Intel RSTe Technical Product Specification
  - Readme.txt files and other pertinent documentation
  - RSTe_4.7.0.1119_Install.zip Install package includes drivers and user applications (GUI) for all supported OS's and AHCI controllers
    - IATA_CD.exe
    - IATA_ENU.exe
    - IATA_ALL.zip
    - IATA_CD.zip
    - IATA_ENG.zip
- RSTe Pre-OS component images and utilities
  - PreOS-1014.zip
    - Intel® RSTe 4.7 SATA Legacy RAID Option ROM image
    - Intel® RSTe 4.7 SATA DOS* based RAID Configuration utility
    - Intel® RSTe 4.7 SATA DOS* based RAID Comply utility
    - Intel® RSTe 4.7 sSATA Legacy RAID Option ROM image
    - Intel® RSTe 4.7 sSATA DOS* based RAID Configuration utility
    - Intel® RSTe 4.7 sSATA DOS* based RAID Comply utility
    - Intel® RSTe 4.7 UEFI SATA RAID driver
    - Intel® RSTe 4.7 UEFI based SATA RAID Comply utility (Secure Boot must be disabled to use this tool)
    - Intel® RSTe 4.7 UEFI based SATA RAID Command Line Interface (CLI) utility (Secure Boot must be disabled to use this tool)
    - Intel® RSTe 4.7 UEFI based SATA SGPIO/LED Test Command Line Interface (CLI) utility (Secure Boot must be disabled to use this tool)
    - Intel® RSTe 4.7 UEFI sSATA RAID driver
    - Intel® RSTe 4.7 UEFI based sSATA RAID Comply utility (Secure Boot must be disabled to use this tool)
    - Intel® RSTe 4.7 UEFI based sSATA RAID Command Line Interface (CLI) utility (Secure Boot must be disabled to use this tool)
    - Intel® RSTe 4.7 UEFI based sSATA SGPIO/LED Test Command Line Interface (CLI) utility (Secure Boot must be disabled to use this tool)
- RSTe f6 Drivers (drivers and utilities)
  - RSTe_4.7.0.1119_F6-Drivers.zip
  - Intel® RSTe 4.7.0.1119 F6 Win7 OS SATA RAID Installation Drivers
    - iaStorA.free.win7.32bit 4.7.0.1098

        - iaStorA.free.win7.64bit 4.7.0.1098
    - Intel® RSTe 4.7.0.1119 F6 Windows* 8.1/Server 2012 R2/Windows* 10\ Server 2016 OS SATA RAID Installation Drivers
        - iaStorA.free.win8.32bit 4.7.0.1098
        - iaStorA.free.win8.64bit 4.7.0.1098
- RSTe CLI Staging
    - RSTe CLI Specifications document
    - RSTe_4.7.0.1119_CLI.zip
        - Win32\Rstcli.exe (32-bit version)
        - X64\Rstcli64.exe
- RSTe CIM Staging
    - setupCIM.exe
    - setupCIM_win8.exe

6.1 Supported Configurations

6.1.1 Intel® C230 and C240 series chipsets Silicon Stepping

The D0/D1 stepping of the Intel® C230 / C240 series chipset (both AHCI Mode and RAID Mode) is supported.

6.2 Intel® RSTe 4.7 PV Release Documentation

It is strongly recommended that all documentation provided with this release package be reviewed prior to installing the Intel® RSTe 4.7 Windows* driver package.

6.3 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 Intel RSTe 4.7 PV Release Package

7.1 New Feature/Behaviors Introduced with 4.7.0.1119 PV Release Package

The purpose of this release is to address:

- DLL injection vulnerability (INTEL-SA-00154) was fixed with this release
- For more information on INTEL-SA-00154, please visit the following link - https://www.intel.com/content/www/us/en/security-center/advisory/intel-sa-00154.html

7.2 New Feature/Behaviors Introduced with 4.7 PV Release Package

7.2.1 New Intel Platform Support

Intel RSTe 4.7 Introduces Support for the following platform:
Intel® Xeon® E Processor Family with the Intel® C240 series Chipset

7.2.2 Windows 10 RS2/RS3 Support

Intel RSTe 4.7 introduced support for Windows 10 RS2/RS3 x64 bit only for SATA and sSATA. The Intel SCU support for Windows is not included in this release package.

NOTE: This package does contain a Windows 10 RS3 signature, but it is not fully Universal Windows Driver (UWD) compliant.

8 Issue Format

The issues are broken down into two sub sections. The first outlines those issues that are resolved, and the other section are those issues being worked on or are planned to be corrected in a future release. The last section 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

9 Issues Resolved in This Release

Issues Resolved in the Release of 4.7 PV Release Package

Title#	**Intel RSTe RAID Volume May Become Degraded or even Fail After Unexpected Power Loss**
Reference	1805245740
Product	Intel® RSTe 4.7
Version	4.5 PV
Operating System	Windows*
Description	When running in an environment where there is heavy I/O to a RAID volume and an unexpected power loss is encountered, the RAID volume should return in a Verify and Repair state. If a media error is encountered, the Verify and Repair state may for the RAID volume into a Degraded state, forcing a Rebuild. During the Rebuild, if another media error is encountered, the RAID volume could be marked as Failed.
Resolution	Issue resolved in the 4.7 PV release

Title#	**Grantley system hangs coming out of S4 Win10 with large DRAM and large data drives**
Reference	1805245734 / 1209735709 / 00165052
Product	Intel® RSTe 4.7
Version	4.5 PV
Operating System	Windows*

Description	When system contains a large amount of DRAM and a data drive on another controller that is much larger than the OS drive, Windows 10 moves pagefile.sys to the data drive. When system resumes from S4 system will hang
Resolution	Issue resolved in the 4.7 PV release

Title#	**Blue Screen Event after writing on degraded volume**
Reference	1805475929
Product	Intel RSTe 4.7
Version	Intel RSTe 4.7.0.1054
Operating System	Windows* Server 2012R2
Description	When IO is written to a RAID volume when RAID is degraded, a Blue Screen Event occurs
Resolution	Issue is resolved in the 4.7 PV release

10 Known Issues

This section outlines the known issues with the Intel® RSTe 4.7 to be resolved in a future release.

Title#	**EventID 129 occurs on Win 10 RS2 with Seagate PharaohOasis HDDs**
Reference	1805245761
Product	Intel RSTe 4.7
Version	Intel RSTe 4.6.0.1048
Operating System	Windows* 10
Problem Description	Event ID 129 occurs in system events with RSTe 4.6.0.1048 on Win 10 RS2 with Seagate PharaohOasis HDDs. This occurs on the OS and data disks. Data disks show a Disk event, Surprise Removal, however the OS does not show surprise removal.
Resolution	None At This Time

Title#	**A connected data drive is not available in device manager and not listed in drives after running S3 loops**
Reference	1805245746
Product	RSTe 4.7 Grantley
Version	RSTe 4.6.0.1048
Operating System	Microsoft* Windows* 10 RS1
Problem Description	On system with SSD and HDD; After preload finishes on an SSD, run S3 for several loops. The connecting Hard drive is NOT available in device manager, and not listed in drives, it is still available in RSTe manager utility.
Resolution	Workaround: Run re-scan in device manager

11 Errata

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

Title#	**SGPIO signal sometimes wrong on Windows server 2016**
Reference	1805245736
Product	4.7PV
Version	4.6.0.1080
Operating System	Windows 2016
Problem Description	The SGPIO signal sometimes wrong during RAID 5 rebuild.
Resolution	No Plan to Fix in the 4.X baseline.

Title#	**Hybrid S3 is not supported by RSTe 4.6**
Reference	109765 /1209281820
Product	Intel RSTe 4.0
Version	Intel RSTe 4.2.0.1143
Operating System	Windows* 10
Problem Description	With the configuration of NVMe SSD off CPU as system drive, and 6TB data hard drive attached to SATA controller on PCH,

	the data drive might be dropped when resuming back from Hybrid S3 on Windows 10.
Resolution	No Plan to Fix in the 4.X baseline.. Hybrid S3 not supported.

Title#	**Need about 8 minutes to enter S4 when RSTe RAID5 at Degraded or Rebuild with HDD on Win7 64**
Reference	111349/1208846543
Product	Intel RSTe 4.5
Version	Intel RSTe 4.5.0.1334_S
Operating System	Windows* 7
Problem Description	When surprise hot plug of SATA RAID member during idle state, then going into S4, system takes more than 5 min. to resume
Resolution	No Plan to Fix in the 4.X baseline..

Title#	**SATA PHY Power Management Idle Timers May Not Be Properly Managed**
Reference #	3006800
Product	Intel® RSTe 3.0
Version	3.0.0.1065
Operating System	Windows*
Problem Description	Running heavy I/O to a HIPM capable drive, on a platform that has Power Management enabled, may result in a failure condition. Workaround: Avoid running with Power Management enabled when HIPM capable drives attached.
Resolution/Status	No plan to resolve this issue in the Intel RSTe 3.x product baseline.

Title#	**Intel RSTe driver version may appear to be older than Intel(R) C600 series chipset driver version**
Reference	3235327
Product	Intel® RSTe 3.0
Version	3.0.0.1111

Operating System	Windows*
Problem Description	When installing the Intel RSTe driver on Intel(R) C600 series chipset based platform (after the chipset drivers have been installed), the installation process my report that the chipset driver version is newer then the Intel RSTe driver version.
Resolution	No plan to resolve this issue in the Intel RSTe 3.x product baseline

Title#	**Hot-plug an Expander While IO is Running May Result in the Disks Going Offline**
Reference	3235625
Product	Intel® RSTe 3.0
Version	3.0.0.3002
Operating System	Windows* 2003 64-bit
Problem Description	Hot-plugging an expander while I/O is being performed may result in the disks not being rediscovered and going offline.
Resolution	No Plan to Fix in the 4.X baseline..

Title#	**Intel RSTe 3.0 GUI May Show the Port of a Hot-plugged Drive as Unknown**
Reference	3236248
Product	Intel® RSTe 3.0
Version	3.0.0.3002
Operating System	Win7
Problem Description	When hot-plugging drives, the Intel RSTe 3.0 GUI information bubble may randomly show the port of the hot plugged device as unknown.
Resolution	No plan to resolve this issue in the Intel RSTe 3.x product baseline.

Title#	**WHQL Audio Fidelity Test fails with HDD or SSD boot/data disks on Intel controllers**
Reference	3236685
Product	Intel® RSTe 3.0
Version	3.0.0.3002
Operating System	Windows*
Problem Description	WHQL Audio Fidelity Test fails with HDD or SSD boot/data disks on Intel controllers
Resolution	Issue root caused to Microsoft WHQL test. Please refer to latest updates on this issue @winqual.microsoft.com.

Title#	**Flashing Cursor May Be Seen When Booting With the Intel RSTe SCU Legacy OROM**
Reference	4159273
Product	Intel® RSTe 3.0
Version	3.1.0.1068
Operating System	Windows*
Problem Description	When booting from the SCU controller using the Intel RSTe SCU Legacy OROM UI may result in a flashing cursor when the focus changes from one menu option to the next.
Resolution	No plan to resolve this issue in the Intel RSTe 3.x product baseline.

Title#	**Intel RSTe 3.8 May Not Properly Support Upgrading from Win7 to Win8 on the AHCI Controller**
Reference	4936753
Product	Intel® RSTe 3.0
Version	3.7.0.1093
Operating System	Windows*
Problem Description	When attempting to upgrade Windows* 7 to Windows* 8 (Windows* Server 2012) using Intel RSTe 3.7.0.1093 may not

	upgrade properly. With Windows* 7, Intel RSTe provides what is called a filter driver that works in conjunction with the actual Intel RSTe driver. Windows* 8 removed the requirement for a filter driver and no longer allows filter drivers. When migrating from Windows* 7 to Windows* 8, the Windows* 8 installer selects the inbox driver as the best suitable driver before it checks the HW ID. In this case, the inbox driver selected is RST 8.2. The Windows* 8 installer appears ignore the INF information of the loaded driver. Do to this limitation DO NOT migrate an OS if the boot volume is larger than 2TB.
Resolution	No plan to resolve this issue.

Title#	**System May Become Unresponsive Under Certain Stress Testing**
Reference	CCG0100297804
Product	Intel® RSTe 3.0
Version	3.1.0.1068
Operating System	Windows*
Problem Description	With the 3.1.0.1068 maintenance release, some performance modifications/improvements have been implemented. One modification was the addition of a performance specific registry key (PerformanceOptimizationsEnable) in the INF file. The default setting (established in the 3.1.0.1068 release) improves the performance of installations of the OS and other applications such as Windows* Live Essentials. On systems configured with 5 or more high performance SAS drives connected to the SCU controller, running specific small block I/O heavy stress tests (e.g. IOMeter 512 Byte Sequential READs) may result in the system becoming unresponsive. This unresponsiveness can become more pronounced with more drives attached and (the corresponding) heavier stress load placed on the system. Under some conditions, if stopping the I/O test does not recover, a system reboot may be required.

	It is believed that this issue will only be encountered with 5 or more high performance SAS drives running IOMeter 512B Sequential READs stress test. The architecture of IOmeter in conjunction with the Intel RSTe optimizations create a potential scenario were the CPU's (that are processing the I/Os) are 100% utilized and the system becomes unresponsive. It is possible that a custom kernel based (not application) stress tool may potentially encounter this issue. Application based stress tools will not encounter this issue. Workaround: Go into the registry and change the value of PerformanceOptimizationsEnable from 0 to 1. Exit the registry edit tool and reboot the system.
Resolution	No plan to resolve this.

Title#	**Rapid Hot-Plugging of an Expander Can Result in the Intel RSTe UI Becoming Unresponsive**
Reference	CCG0100467978/4160879
Product	Intel® RSTe 3.0
Version	3.2.0.1135
Operating System	Windows*
Problem Description	When attempting to perform a (or series) of rapid hot-plugs (remove and quickly re-insert) expanders connected to the SCU controller can result in the Intel RSTe UI becoming unresponsive. Work around: Closing and reopening the Intel RSTe UI usually resolved the issue.
Resolution	No plan to resolve this issue.

Title#	**Intel RSTe RAID Volume May Become Degraded with Multiple Bad Blocks**
Reference	CCG0100466365/4160877
Product	Intel® RSTe 3.0
Version	3.2.0.1135

Operating System	Windows*
Problem Description	When running in a configuration where an Intel RSTe RAID Volume resides on drives that have multiple Bad Blocks, the RAID Volume may become degraded.
Resolution	Extreme corner case condition, No Plan to resolve this issue.

Title#	**Intel RSTe Installer Does Not Look For RAID Metadata**
Reference	CCG0100616963
Product	Intel® RSTe 3.0
Version	3.2.0.1135
Operating System	Windows*
Problem Description	When running in a configuration with the AHCI Controller is in AHCI Mode and the OS installed using the Microsoft Inbox driver (on a drive attached to the AHCI Controller), running the Intel RSTe installer may result in the system becoming unbootable with no recovery method. This corner case condition will only happen if the drive used to install the OS was previously part of an Intel RSTe RAID0 volume and that drive was not properly cleaned prior to OS installation. **Workaround**: Ensure that all system installations are performed on a new drive. If that is not possible use the latest rcfgsata.exe (or .efi) utility to remove any RAID metadata that may exists on the drive before using.
Resolution	No plan to resolve this issue.

Title#	**The Intel RSTe GUI May Report an Error When Attempting to Delete a RAID Volume**
Reference	43457
Product	Intel® RSTe 3.0
Version	3.7.0.1093

Operating System	Windows* 7 – 32bit
Problem Description	When running in a RAID5 configuration, if the BIOS has RAID 5 support disabled, the Intel RSTe GUI may not properly start.
Resolution	No plan to resolve this issue.

Title#	**The Intel RSTe GUI May Not Properly Show the Strip Size Help Bubble**
Reference	43464
Product	Intel® RSTe 3.0
Version	3.7.0.1093
Operating System	Windows*
Problem Description	When attempting to use the Intel RSTe GUI to view the RAID volume strip size help bubbles, the GUI may not properly show the bubble for a second RAID volume.
Resolution	No plan to resolve this issue.

Title#	**The Intel RSTe GUI System Report May Not Report Out ATAPI Information**
Reference	43574
Product	Intel® RSTe 3.0
Version	3.7.0.1093
Operating System	Windows*
Problem Description	When running in a configuration where there is an ATAPI device connected to Port 5, the Intel RSTe GUI System Report may not properly report the information about the ATAPI device.
Resolution	No plans to resolve this issue.

Title#	**The Device Manufacturer and Model Numbers May Not Be Properly Reported in the Intel RSTe System Report**
Reference	43582
Product	Intel® RSTe 3.0

Version	4.0.0.1013
Operating System	Windows*
Problem Description	When reviewing the device manufacturing and model number information, the Intel RSTe GUI may report different information in the System Report then what is seen in the device properties window.
Resolution	No plans to resolve this issue.

Title#	**Intel RSTe GUI May Encounter an Error Message When Attempting to Increase a RAID Volume Size**
Reference	43595
Product	Intel® RSTe 3.0
Version	3.7.0.1087
Operating System	Windows*
Problem Description	When running in a configuration where the RAID volume does not consume all of the available space, using the Intel RSTe GUI to increase the volume size may result in an error message window being displayed. Work around: Restarting the Intel RSTe GUI resolves the issue.
Resolution	No plan to resolve this issue.

Title#	**Intel RSTe GUI May Stop Working After A RAID Volume Completes Initializing**
Reference	43599
Product	Intel® RSTe 3.0
Version	3.7.0.1087
Operating System	Windows*
Problem Description	When running in a configuration where the RAID volume is created and initialized, the Intel RSTe GUI may stop working after the volume completes initializing.

	Work around: Restarting the Intel RSTe GUI resolves the issue.
Resolution	No plan to resolve this issue.

Title#	**UEFI RAID Configuration Tools (rcfgxxxx.efi) May Not Properly Show the RAID Volume size**
Reference	43829
Product	Intel® RSTe 3.0
Version	4.1.0.1019
Operating System	Windows*
Problem Description	When using the UEFI RAID Configuration Tools (rcfgxxxx.efi) with the /ST option, the tool may not report the volume size. The entry to report the "Size" may be missing from the report.
Resolution	No plan to resolve this issue.

Title#	**The Intel RSTe Installer May Not Properly Remove All of the Files When Uninstalling the Driver**
Reference	52000
Product	Intel RSTe 4.0
Version	Intel RSTe 4.2.0.1143
Operating System	Windows*
Problem Description	When attempting to use the integrated uninstaller (in the proper configuration) to remove Intel RSTe from the system, the Intel RSTe installer may not properly remove all of the files.

Title#	**Multiple Intel RSTe Initialization Process May Encounter an "Unknown error" Message**
Reference	56313
Product	Intel RSTe 4.0
Version	Intel RSTe 4.2.0.1143
Operating System	Windows*
Problem Description	When attempting to initiate the initialization process on multiple RAID volumes at the same time may result in an "Unknown error" message being displayed.

Resolution	No plan to resolve this issue.

Title#	**Attempting to Delete RAID Volume During a Stress Test May Result in an "Unknown error" Message Being Displayed**
Reference	56593
Product	Intel RSTe 4.0
Version	Intel RSTe 4.2.0.1143
Operating System	Windows*
Problem Description	When attempting to delete a RAID volume during a stress test, the Intel RSTe GUI may encounter an "Unknown errors" message being displayed.
Resolution	No plan to resolve this issue.

Title#	**The Intel RSTe GUI Help Link in Email Preferences May Not Work Properly**
Reference	59970
Product	Intel RSTe 4.0
Version	Intel RSTe 4.2.0.1143
Operating System	Windows*
Problem Description	When attempting to view the "More help on this page" link in Email Preferences, the Intel RSTe GUI may not properly show the help information requested.
Resolution	No plan to resolve this issue.

Title#	**The Intel RSTe Command Line Interface (CLI) Tool May Cause the Intel RSTe GUI to Fail**
Reference	60130
Product	Intel RSTe 4.0
Version	Intel RSTe 4.2.0.1143
Operating System	Windows*
Problem Description	When attempting to use the Intel RSTe CLI tool with incorrect parameters, The Intel RSTe GUI and services may fail.
Resolution	No plan to resolve this issue.

Title#	**Installing Windows OS on a RAID Volume That Includes Ports 7 and/or 8.**
Reference	22738/1208951528

Product	Intel RSTe 4.0
Version	All Version
Operating System	Windows* 2012R2
Problem Description	When attempting to install a Windows Operating System onto a RAID volume that includes drives on port(s) 7 (and/or) 8, a message may appear reporting that installation of the operating system is not allowed. The Microsoft* inbox RAID driver (Rapid Storage Technology) is initially installed prior to the option to load the RSTe F6 driver. Due to the fact that the inbox RAID driver does not support more than 6 SATA ports, the RAID volume may inadvertently be marked as "Failed". This failure is not exposed to the user and when the RSTe driver is installed, the failed volume is seen and reported up. Microsoft installer then prevents any further action to be taken on this drive (RAID volume). Since this occurs prior to the RSTe (F6) driver being allowed to be installed, Intel recommends avoiding using ports 7 and/or 8 to install the OS.
Resolution	No plan to resolve this issue. Additional work around options: 1. Create a customer Microsoft OS installation package that includes the RSTe F6 drivers. 2. When the error is seen, press Shift-F10 to bring up a command prompt. Load the windows CLI tool onto a USB key and load it into the system so it can be accessed in the command prompt. Use the CLI tool to recreate the RAID volume and continue installing.

12 Issues Resolved in the Release of 4.6.0.1091 PV Release Package

This release is specifically for support of Windows 10 RS2 and does not include specific fixes for customer related issues.

13 Issues Resolved in the Release of 4.6.0.1085 PV

The following issues have been resolved in the Intel® RSTe 4.6.0.1085 PV release package.

Title#	**RSTe iastorf.sys incompatible with Win10 Redstone1 Device Guard**
Reference	1804687597
Product	Intel RSTe 4.7
Version	Intel RSTe 4.6
Operating System	Windows* 10
Problem Description	Windows 10 has a new feature called Device Guard that gives organizations the ability to lock down devices in a way that provides advanced malware protection against new and unknown malware variants as well as Advanced Persistent Threats (APTs). When running Driver Verifier compatibility checks on Windows 10 Enterprise Redstone1, iastorf.sys gets flagged as being incompatible.
Resolution	

Title#	**Not all Disks may be Present During Windows**
Reference	82630 / 83498
Product	Intel® RSTe 4.3.0.1219
Version	4.6 PV
Operating System	Windows*
Description	When attempting to install Windows Server 2012 R2 on a Greenlow platform having all 8 SATA ports populated drives, not all drives may be present in the Windows installation device page.
Resolution	Issue resolved in the 4.6.0.1085 PV release

Title#	**RSTe 4.5 F6 driver pre-load failed in WinPE environment**
Reference	102502 / 1208983151
Product	Intel® RSTe 4.5
Version	4.6 PV
Operating System	Windows*
Description	RSTe4.5 F6 driver with nvidia M60 and NVS810 installed Fail to finish preload in WinPE environment
Resolution	Resolution Issue resolved in the 4.6.0.1085 PV release.

Title#	**Windows* 10 Cannot Return From S4**
Reference	102679
Product	Intel® RSTe 4.6
Version	4.6 PV
Operating System	Windows* 10
Description	INFs not added for Windows* 10 OS
Resolution	Resolution Issue resolved in the 4.6.0.1085 PV release.

Title#	**after power cycle the system the RSTe mirrored RAID volume state changed to verify and repair**
Reference	105640
Product	Intel® RSTe 4.5.0.1334
Version	4.5.0.1334
Operating System	Windows* Server 2012 R2
Problem Description	Enabling Microsoft feature for "Do not turn off system power after a Windows system shutdown has occurred" might encounter the following message when shutting down the system: “it is now safe to shut down the computer”. The RAID

	volume will be under verifying and repairing when powering on the system.
Resolution	Issue resolved in the 4.6.0.1085 PV release.

Title#	**Sporadic S4 problem with RSTe driver while ODD is present in Grantley System with Wellsburg Chipset**
Reference	97277
Product	Intel® RSTe 4.5.1.1026_S
Version	4.5.1.1026_S
Operating System	Windows* 10
Problem Description	BSOD after OS reboot during volume migration from R1D2 to R0D2.
Resolution	Issue resolved in the 4.6.0.1085 PV release.

Title#	**BSOD after OS reboot during volume migration from R1D2 to R0D2**
Reference	81100
Product	Intel® RSTe 4.5.0.1234_S
Version	4.5.0.1234_S
Operating System	Windows* 10
Problem Description	additional check needed when device present && device == null
Resolution	Issue resolved in the 4.6.0.1085 PV release.

Title#	**Driver Binding Stop of RSTe Sata driver is returning unsupported when reconnect -r is issued in shell**
Reference	22509
Product	Intel® RSTe 4.5.0.1018
Version	4.5.1.1040_S
Operating System	UEFI Driver

Problem Description	AHCI controller is unable to be reconnected
Resolution	Issue resolved in the 4.6.0.1085 PV release.

14 Issues Resolved in the Release of 4.5.0.1333

The following issues have been resolved in the Intel® RSTe 4.5.0.1333 PV release package.

Title#	**Migrating a System Disk to a RAID Volume May Encounter a System Failure**
Reference	64721
Product	Intel® RSTe 4.0
Version	4.1.0.1046
Operating System	Windows*
Problem Description	When attempting to migrate a single System OS drive to a RAID volume, the system may encounter a system failure condition. Intel recommends that the system OS does not reside on a RAID 0 volume.
Resolution	Issue resolved in the 4.5.0.1333 release.

Title#	**Windows Event 129 may Occur When Collecting Smart Events**
Reference	4938425 / 72424
Product	Intel® RSTe 4.0
Version	4.2.0.1143
Operating System	Windows* 7
Problem Description	Running on Windows 7 64 bit version, the OS may log event ID 129 when attempting to capture/collect SMART events
Resolution	Issue resolved in the 4.5.0.1333 release.

Title#	**Creating RAID Volume Including the OS disk May cause System Crash**
Reference	73735
Product	Intel® RSTe 4.0
Version	4.2.0.1143
Operating System	Windows* 7
Problem Description	Using the Intel RSTe GUI, in a configuration where by creating an RAID volume using disks attached to the sSATA controller and including the operating system disk as a member of that RAID volume, the system may crash with a BSOD during the process.
Resolution	Issue resolved in the 4.5.0.1333 release.

Title#	**BSOD may Occur When running specific IOmeter**
Reference	71999
Product	Intel® RSTe 4.0
Version	4.3.0.1198
Operating System	Windows*
Problem Description	When running in a configuration that includes a RAID 5 data volume spanned across 6 or 7 drives, running IOmeter performance testing set to 32KB sequential writes, a BSOD may occur.
Resolution	Issue resolved in the 4.5.0.1333 release.

Title#	**Attempting to Get Disk Info May Result in an Error**
Reference	69945
Product	Intel® RSTe 4.0
Version	4.3.0.1198
Operating System	Windows* 7

Problem Description	When running in a configuration that includes 1 or more data RAID arrays, attempting to get disk info using a command line utility may result in a failure.
Resolution	Issue resolved in the 4.5.0.1333 release.

Title#	**Running "DiskSpd" Utility may Render System Unresponsive**
Reference	68608
Product	Intel® RSTe 4.0
Version	4.3.0.1198
Operating System	Windows*
Problem Description	Attempting to run Microsoft utility "DiskSpd" may render the system unresponsive.
Resolution	Issue resolved in the 4.5.0.1333 release.

Title#	**UEFI RAID Configuration Tools (rcfgxxxx.efi) May Show RAID types Possible Despite RAID 0, 1, 5 and 10 Disabled in the BIOS**
Reference	70298
Product	Intel® RSTe 4.0
Version	4.3.0.1198
Operating System	Windows*
Problem Description	Disabling RAID 0, 1, 5 and 10 in the BIOS may not remove the option to create these RAID volume types in the UEFI RAID Configuration Tools (rcfgxxxx.efi).
Resolution	Issue resolved in the 4.5.0.1333 release.

15 Hardware Compatibly

15.1 External Hardware Compatibility

The embedded file indicates the current list of external hardware used in validation and is subject to change without notice. Please contact your factory representative for questions on any specific hardware item.

Enterprise SATA Drives

Vendor	Family	Model Name/Number
Fujistu	A160 (2.5") 7200 RPM FDE Option Extended Duty	MHZ2080BK
Hitachi	Ultrastar A7k1000 (3.5") 7.2rpm	
Seagate	Barracuda 7200.10 Serial ATA	
Seagate	Barracuda 7200.11 Serial ATA	
Seagate	Barracuda ES	
Western Digital		WD1002FAEX
Western Digital		WD6000HLHX

Expanders and Enclosures

Vendor	Model Number
LSI	LSISAS2x36
LSI	LSISAS2x28
LSI	LSISAS2x24
PMC Sierra	PM8005 SXP
PMC Sierra	PM8004 SXP
LSI/Engenio	LCA Dx ESM JBOD (2u enclosure)
Adaptec	ASE-335 (Miramar)
Adaptec	SANbloc S50 (Enzo)
Adaptec	EVO
AIC	XJ1100
AIC	XJ1100
AIC	EM16-53C-01A2

AIC	EM24-54C-01A1
Dell	PowerVault MD1000
Dell	PowerVault MD1200
Dell	PowerVault MD1220
Dell	PowerVault MD3200
Dell	PowerVault MD3220
IBM	DS3500
Xyratex	RS1603X
Supermicro	CSE-M28E1
Supermicro	CSE-M28E2
Supermicro	SC836E1-R800V
ICY Dock	MB453SPF
ICY Dock	MB454SPF-B
ICY Dock	MB455SPF-B
HP	BK765A
HP	BK766A
HP	BK782A
HP	AW522A
HP	AJ940A
HP	BK766A
HP	StorageWorks D2600
HP	StorageWorks D2700
HP	AJ940-63002
ROHS	ARC8026 VER B
ROHS	ARC8026 VER B
ROHS	ARC8026 VER B
Xtore	XJ SAS26-224R
Xtore	XJ SAS24-316R (3G)
Xtore	XJSA12-316R

Xtore	XJSA12-316R
Startdom	ST8
ICY Dock	
USI	DES2122-P
Promise	Vtrack J310sVtrak E-Class E310
Promise	Vtrack J310sVtrak J-Class (J630S)
Promise	Vtrack J310s
Promise	Vtrack J630
Promise	Vtrack J630
EPSD	Scotch Valley
EPSD	Coyote Valley
LSI	LSI630J
LSI	LSI620J

16 Reference Documentation

Please refer to the following documentation for additional information:

CDI / IBL #	Title/Location
Reference Documents	
441979	**Intel® 6 Series Chipset/ Intel® C200 Series Chipset/ Patsburg Platform Controller Hub (PCH) BIOS Specification Update – NDA**
475122	**Intel Patsburg PhyTune Tool – RC Ver 2.0.0.3** **Note: This package contains the PhyTune tool along with the SASAddress efi utility. Please refer to the documentation included in the package for additional information.**
453321	**Intel® Server Platform Services Manageability Engine Firmware for Patsburg Chipset Product Line Firmware Startup Guide**
454672	**Patsburg Chipset SPI Programming Guide**
450911	**Patsburg Chipset External Design Specification (EDS)**
445721	**Patsburg Chipset External Design Specification (EDS) Specification Update - NDA**
458143	**Sandy Bridge-E Processor External Design Specification (EDS) - Volume One of Two**
458224	**Intel® RSTe 3.0 Technical Product Spec**
459924,	**Sandy Bridge-E Processor External Design Specification - Volume Two of Two**
30051	**RS – Intel® 6 Series Chipset/ Intel® C200 Series Chipset/ Patsburg Platform Controller Hub (PCH) BIOS Spec** ***Contact you Intel FAE to get access to this document through Anacapa***
Kit 33272	**Intel® Server Platform Services Alpha SPS_02.01.01.009.0** **Note: This package is the Intel® Server Platform Services Manageability Engine Firmware for Patsburg Product Line - Alpha Full Release and contains key tools such as FITc and fpt for the Intel® C600 series chipset** **This document can be downloaded from ARMS/VIP**

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