Intel® Rapid Storage Technology (Intel® RST) 16.3.0.1007 Release

2 Feb 2018

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Supported Operating Systems

Microsoft Windows 10 Redstone2*
Microsoft Windows 10 Redstone3*
Microsoft Windows Server 2016 x64 Edition*

Revision History

Date	Driver Revision	Build Number
2 Feb 2018	16.3.0.1007 Release	1007

Notes:

1. Known Issue is defined as a potential Intel® RST issue that has been replicated internally by the Intel® RST team but has not been root caused to be an Intel® RST defect.
2. The RAID OROM & UEFI version for this release is 16.3.0.3377, the driver and user interface version is 16.3.0.1007. For Intel® RST Premium features (e.g. RAID, Intel® Optane™ memory, CPU Attached Storage), it is recommended that both the Intel® RST pre-OS and Intel® RST OS driver components are updated. Please contact your CE for further details.

3. If RTD3 is enabled, Windows can turn off disk for very short time (e.g. 20ms). The minimum off time for some disks can be much longer (even 1s). If the disk is turned on too fast, it can hang in some undefined state. RTD3 should be disabled if the disk specification states longer minimum off time.
4. This driver supports CPU Attached Storage – PCIe NVMe, Acceleration of Data Drives with Intel® Optane™ Memory and Intel® Optane™ Memory User Pinning. For more information on these features, please refer to RST_OEM TechGuide 16.3 rev.0.93.pdf which is released along with the driver package.

Supported Hardware

Initial Intel® RST Release Version	Chipset Name	Platform / PCH / (Segment)	PCH SKU Details
16.0	Intel® 300/240 Series Chipset Family	Cannon Lake (CNL)/Coffee Lake (CFL) PCH: Cannon Point-H (CNP-H) (DT)	- H310[A] - H370 - Z390 - Q370 - Q360[O] - B360[O]
		CNL/CFL PCH: CNP-H (WS)	- C246
		CNL/CFL PCH: CNP-H (HEDT)	- X399[SX]
		CNL/CFL PCH: CNP-H (Mobile Halo)	- QM370 - HM370 - CM246
	9th Generation Intel® Core™ Processor Family Platform I/O SATA AHCI/RAID Controller	CNL PCH: CNP-LP (Mobile LP)	- Premium-U - Base-U[A]
N - 1			
15.8 / 15.9	Intel® 200 Series Chipset Family	Coffee Lake (CFL-S) PCH: Kaby Point (KBP-H) (Desktop)	- Z370
15.7	Intel® 200 Series Chipset Family	Basin Falls (w/ KBL-X, SKL-X CPU) PCH: KBP-H (HEDT)	- X299
	8th Generation Intel® Core™ Processor Family Platform I/O SATA AHCI/RAID Controller	Kaby Lake Refresh (KBL-R) PCH: SPT-LP (Mobile-LP)	- Base-U[A] - Premium-U - Premium-Y
15.5	Intel® 100/C230 Series Chipset Family	Greenlow-Refresh (w/ KBL CPU) PCH: SPT PCH-H (WS)	- C236
15.2	Intel® 200 Series Chipset Family	KBL PCH: KBP-H (Desktop)	- Q250[O] - B250[O] - Z270 - H270 - Q270
	Intel® 100/C230 Series Chipset Family	(w/ KBL CPU) PCH: SPT-H (Mobile Halo)	- HM175 - QM175 - CM238
15.0	7th Generation Intel® Core™ Processor Family Platform I/O SATA AHCI/RAID Controller	(w/ KBL CPU) PCH: SPT-LP (Mobile-LP)	- Base-U[A] - Premium-U - Premium-Y

[A] This base SKU of the chipset supports AHCI mode only
[O] This base SKU of the chipset supports both AHCI and Intel® Optane™ memory modes only (non-RAID)
[SX] This SKU is supported with SKL-X CPU only

Resolved Issues In 16.3.0.1007 Release

ID	Title	Operating System
1805836784	BSOD "Process1 initialization failed" during S4 testing	windows.10_rs3.x64
1805844854	CRITICAL_PROCESS_DIED after Optane separation and creation with different drive	windows.10_rs3.x64
1805856962	Unknown bugcheck code (b50d) during S3 flow	windows.10_rs3.x64
1805823477	BSOD on NVMe during Sx cycling	windows.10_rs3.x64

Known Issues In 16.3.0.1007 Release

ID	Title	Operating System
1805911640	SYSTEM hang (BSOD with bugcheck code: 0x1000007E)	windows.10_rs3.x64
1805894760	RAID 10 volume cannot be created using SATA ports 6, 7 and two other ports between 0 - 5.	windows.10_rs2.x64
1805893933	Intel RST - Spend too much time when run the ADK Standby performance test.	windows.10_rs3.x64
1805890013	BIOS couldn't see the following SMM SSCP installed by Intel (R) RST 16.0.0.3318 RAID driver.	windows.10_th.x64
1805880640	Enable Optane in OS, the system BSOD occurs after first reboot. (0x7B)	windows.10_rs3.x64
1805878931	Report error for "unsupported chipset" when optane RST driver is installed.	windows.10_rs3.x64
1805878923	Intel RST - In RAID 5 mode, HDD utilization is always high.	windows.10_rs3.x64
1805873591	PreOS does not list disks in Boot Manager	preOS
1805867425	The "Auto-rebuild on hot plug" option in Preferences page cannot be enabled.	windows.10_rs3.x64
1805841067	System will BSOD (DPC_WATCHDOG_VIOLATION) during S3 stress testing	windows.10_rs2.x64
1805841055	BSOD 0x154 when performing s4 stress with certain HDD’s.	windows.10_rs3.x64
1805827687	System can't do BIOS recovery with RstPeim driver installed in RAID mode.	windows.10_th.x64

1805827543	System show BSOD - 0x133 DPC_WATCHDOG_VIOLATION when run stress S4 test.	windows.10_rs3.x64
1805823478	Optane Volume gets disabled if we use rstcli to clear cache.	windows.10_rs1.x64
1805816635	Updating storage driver intermittently causes drive letter swaps	
1805815700	Sporadically restart option does not show up after enabling/disabling Optane	windows.10_rs3.x64
1805814595	RAID 0 performance does not meet expectation with 3 760p drives.	windows.10_rs3.x64
1805800222	[CATERR][CPUattached] Issue observed after restart from OS	windows.10_rs3.x64
1805799491	[0x9F_3_disk_IMAGE_iaStorA.sys] Data drive visible and there is 1 request (bypass queued) in Storport for this drive.	
1805782067	Certain SATA SSD's cannot boot to OS after installing iRST driver.	windows.10_rs3.x64
1805767393	RST CLI tool hang	windows.10_rs2.x64
1805766960	Intel RST - The result of ATTO Disk Benchmark with RAID0/RAID1 and enable/disable writeback cache is lower than the Non-RAID JBOD value at 64KB size.	windows.10_rs3.x64
1805490049	RST UI crashes after system wakes up from Hyrbid S3 or Deep S4 or Hibernate, only if RST UI application was open earlier.	windows.10_rs3.x64
1805480515	[Optane] Windows is not detecting Optane drive after disruptive power off during disabling process	windows.10_rs2.x64
1805464013	Error event log ID7000/ID7009 (iaStorAfsService) show up after PBR reset/refresh.	windows.10_rs2.x64
1805116821	Unexpected page will show. It would not go back to previous page when press "ESC".	windows.10_rs2.x64
1305482762	Volume label of ODD drive remain unchanged after ejecting CD/DVD disc in Optane model.	windows.10_rs3.x64

Terminology

Common Terms and Acronyms	Definition
AEN	Asynchronous Event Notification
AHCI	Advanced Host Controller Interface
ATA	Advanced Technology Attachment
ATAPI	Advanced Technology Attachment Packet Interface
BIOS	Basic Input / Output System
BUS PROTOCOL GROUP	A bus protocol group represents a set of bus protocols with similar performance characteristics. Bus Protocol Groups are listed here in decending order of speed: 1- PCIe* 2- SATA
Chipset	A term used to define a collection of The PNHCI components required to make a PC function.
CSMI	OEM Common Storage Management Interface for reporting RAID configurations and SMP, SSP, STP pass through.
DEVSLP	Serial ATA Device Sleep
DMA	Direct Memory Access
DOS	Disk Operating System
DIPM	Device Initiated Power Management
Disk's Write Cache	A memory device within a hard drive, which is allocated for the temporary storage of data before that data is copied to its permanent storage location.
GB	Giga-byte = 1024^3bytes
HDD	Hard Disk Drive
HIPM	Host Initiated Power Management
Hot Plug	A term used to describe the removal or insertion of a SATA disk while the system is powered on.
ICH	Input / Output Controller Hub
InstantGo*	Microsoft Windows* 8.1 connected standby low-power state that features extremely low power consumption while maintaining Internet connectivity.
KB	Kilo-byte = 1024bytes
LPM	Link Power Management
M.2	Specification for internally mounted computer expansion cards and associated connectors. It replaces the mSATA standard. Formerly known as the Next Generation Form Factor (NGFF)
MB	Mega-bytes = 1024^2bytes
MEMORY GROUP	A memory group represents a set of backend storage media types with similar performance characteristics. Memory Groups are listed here in ascending order of speed: 1- Spindle Device (HDD) 2- NAND Spindle Hybrid Device 3- PCH SATA NAND Device (SSD) 4- PCIe* NAND Device (SSD) 5- PCIe* NAND Device (SXP)

mSATA	Computer bus interface that connects host bus adapters to mass storage devices such as hard disk drives and optical drives. Uses PCI Express Mini Card-like connector that is electrically SATA.
NAI	Notification Area Icon
NTFS	NT File System
NVC	Non-Volatile Cache
NVMe*	Non-Volatile Memory Express: Non-Volatile Memory Host Controller Interface Specification (NVMHCI), is a specification for accessing solid-state drives (SSDs) attached through the PCI Express (PCIe*) bus
OEM	Original Equipment Manufacturer
ODD	Optical Disk Drive
OROM	Option ROM
OS	Operating System
PCH	Platform Controller Hub
PCIe*	PCI Express (Peripheral Component Interconnect Express): is a high-speed serial computer expansion bus standard
Port	The point at which a SATA drive physically connects to the SATA controller.
PRD	Product Requirements Document
PUIS	Power Up In Standby - Drive feature that allows a spindle device to be powered up in standby mode without spinning the disk up.
RAID	Redundant Array of Independent Disks Matrix RAID: A configuration supporting two RAID levels by having two volumes in a single RAID array that use Intel® RST
RTD3	Runtime D3
RS2	Redstone2
SATA	Serial ATA
SIPM	Software Initiated Power Management
S.M.A.R.T.	Self-Monitoring, Analysis and Reporting Technology: an open standard for developing hard drives and software systems that automatically monitors a hard drive's health and reports potential problems.
SED	Self-Encrypting Drive
SRT	Intel® Smart Response Technology. Intel® RST's premium feature to use caching technology that enables caching of a device or volume using a faster device
SSD	Solid State Drive – non volatile memory used as storage media
SSHD	Solid-State Hybrid Drive
TB	Tera-byte = 1024^4bytes
UEFI	UEFI pre-OS driver
UI	User Interface
VC	Validation Candidate
ZPODD	Zero Power Optical Disk Drive