Intel® Rapid Storage Technology (Intel® RST) 19.2.0.1003 – Production Version Release

13 December 2021

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Supported Operating Systems
Microsoft Windows 11 x64*

Revision History

Date	Driver Revision	Build Number
13 December 2021	19.2.0.1003 release	1003
18 November 2021	19.2.0.1000 release	1000
23 September 2021	19.1.0.1000 release	1000
4 August 2021	19.0.0.1067 release	1067
3 August 2021	19.0.0.1066 release	1066
23 July 2021	19.0.0.1065 release	1065
14 May 2021	19.0.0.1061 release	1061
26 May 2021	19.0.0.1059 release	1059
3 May 2021	19.0.0.1054 release	1054
23 April 2021	19.0.0.1052 release	1052
23 March 2021	19.0.0.1048 release	1048
21 January 2021	19.0.0.1042 release	1042
16 December 2020	19.0.0.1038 release	1038
9 October 2020	19.0.0.1030 release	1030
14 September 2020	19.0.0.1021 release	1021

13 August 2020	19.0.0.1020 release	1020

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 19.0.0.5428, the driver and user interface version is 19.2.0.1003 and Intel® Optane™ Memory and Storage Management (HSA) driver version 19.0.1022.0. 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.

Resolved Issues

Resolved Issues In 19.2.0.1003 – Release			
ID	**Title**	**Operating System**	**Component**
18018871399	DPC_WATCHDOG_VIOLATION (133) BSOD intermittently observed during S5 /Passmark test	Windows OCT21R	Driver

Resolved Issues In 19.2.0.1000 – Release			
ID	**Title**	**Operating System**	**Component**
1509806721	BSOD 0xA0 seen intermittently with RST driver upon upgrade to 18.x	Windows OCT21R	Driver
22013792817	Extended fix for 13A BSOD issue seen after windows 11 upgrade	Windows OCT21R	Driver
18018871399	BSOD: DPC_WATCHDOG_VIOLATION (133) pointing to "iaStorVD.sys" observed during S5 / Passmark test	Windows OCT21R	Driver

18017605715	Rstcli64.exe remapping all disks under VMD when all disks are already remapped	Windows OCT21R	RSTCli
18017178396	RST driver hot-plug feature is not working when plug-in SATA HDD/SSD to system on OS after resuming from D3	Windows OCT21R	Driver
18018027533	After all SATA drives are hot removed from system, AHCI controller cannot entry D3 from D0 when system is in idle state.	Windows OCT21R	Driver
18018913030	[Performance] Set default StorPort I/O Latency Capacity registry key to 0x0 removing previous workaround for older sata drive issues to increase latency as it is impacting performance on NVMe drives	Windows OCT21R	Driver

Resolved Issues In 19.1.0.1000 – Release			
ID	**Title**	**Operating System**	**Component**
18017245028	[VMD][PCIe] DPC watchdog violation BSOD due to link drop during getting capabilities	Windows OCT21R	Driver
18017525706	[ADL-P][CPUPCIe]- Uncorrectable errors detected with certain NVMe during Sx cycle	Windows OCT21R	Driver

Resolved Issues In 19.0.0.1067 – Release			
ID	**Title**	**Operating System**	**Component**
18017228338	BSOD/Hang intermittently seen during OS install observed following Optane creation in WINPE and reboot	windows.20h1_vibranium.x64	Driver

Resolved Issues In 19.0.0.1066 – Release			
ID	**Title**	**Operating System**	**Component**
18017148373	[Stability][S3] BSOD, volmgr, 161 during S3 flow with optane	Windows OCT21R	Driver
18016252287	[Visual] Whitespaces and missing characters in HSA UI	NA	HSA

Resolved Issues In 19.0.0.1065 – Release			
ID	**Title**	**Operating System**	**Component**

ID	Title	Operating System	Component
18017007522	BSOD D1 intermittently seen during DPMO S3 with I/O testing	Windows OCT21R	Driver
18016991417	BSOD KERNEL_MODE_HEAP_CORRUPTION (13a) pointing to iaStorVD.sys during CS Cycling	Windows OCT21R	Driver
18016731101	Can't detect SD7.0 again after reboot and re-plug SD7.0 after 1 minutes.	windows.20h1_vibranium.x64	Driver
18016117789	NVMe IOCTL not completed when sent in D3 state	windows.20h1_vibranium.x64	Driver
18016547325	Platforms throw BSOD after drvload RST driver in WinPe with older RST driver injected.	Windows 11 x64	Driver
18016608767	[WHQL][COBALT]Hardware-enforced Stack Protection Compatibility Test fails against Intel(R) Chipset SATA/PCIe RST Premium Controller	Windows OCT21R	Driver
18016498268	SATA HDD lost when system resume from MODs with PS_ON enable	windows.20h2_vibranium.x64	Driver
18016343016	BSOD intermittently observed when RAID1 is degraded	windows.20h2_vibranium.x64	Driver
18016957351	[PG] Could not set thermal throttling level during tests	windows.20h1_vibranium.x64	Driver
18016811162	IOCTL fails (1117) on PG as offline array member (metadata only on one part)	windows.20h1_vibranium.x64	Driver
18015176334	[PreOs][19.0][ADL-S] B660 SKU – Not supported RAID volume is visible in Boot Manager	NA	PreOS

Resolved Issues In 19.0.0.1061 – Release			
ID	**Title**	**Operating System**	**Component**
18016390016	Failed to boot into OS after doing dirty shutdown during Optane disable process.	windows.20h1_vibranium.x64	CLI
18016498268	SATA HDD lost when system resume from modern standby with PS_ON enable	windows.20h1_vibranium.x64	PreOS
18015708098	Sporadically PS_ON is not working in RAID config during migration	windows.20h2/ windows.20h1_vibranium.x64	Driver
18016343016	BSOD D1 observed upon volume degrade intermittently	windows.20h1_vibranium.x64	Driver
18016278826	"What's new window" --> failed on Accessibility Insights for Windows tool	windows.20h1_vibranium.x64	HSA
1308686123	AutomationId changes when windows language was changed	windows.20h1_vibranium.x64	HSA

18015937717	Accessibility Insights for Windows failed on License text	windows.20h1_vibr anium.x64	HSA
18015257987	HSA RDX icons do not display properly	windows.20h1_vibr anium.x64	HSA
18015165466	Clear Metadata option visible where RAID is not supported on certain ADL sku	windows.20h1_vibr anium.x64	HSA
18016159866	RST PreOS re-enumeration code will go into infinite loop when AHCI/NVMe controller will fail during initialization.	NA	PreOS
18016411158	[PreOS] MMIO space is not assigned for PCI Bridges in nested mesh configuration causing I/O failure	NA	PreOS

Resolved Issues In 19.0.0.1059 – Release			
ID	**Title**	**Operating System**	**Component**
18016118720	[ADL-S][SATA] SATA SSD disks not visible in CLI	Windows OCT21R	CLI
18015176238	[ADL-S] Optane cannot be enabled in efi shell on B660 SKU	NA	PreOS
18015816852	BSOD 7E seen intermittently during s3/s4 stress testing	windows.20h1_vibr anium.x64	Driver
18014539261	BSOD/Blackscreen seen intermittently with RAID0 when running some S4 tests during "Add disk" migration	windows.20h1_vibr anium.x64	Driver
18015677923	[Acer][RVP] SATA HDD under VMD cannot perform S3 auto unlock successfully	NA	PreOS

Resolved Issues In 19.0.0.1052 – Release			
ID	**Title**	**Operating System**	**Component**
18014541564	PCH SKU Support – Showing RAID volume supported on unsupported platforms	windows.20h1_vibr anium.x64	Driver
18012485853	[HSA RDX] Default images are differently scaled Splash Screen in UWP startup application.	NA	HAS RDX
18014542640	[HSA Installer] Can`t check output from installer process after using switch -help	windows.20h2	Installer

Resolved Issues In 19.0.0.1048 – Release

ID	Title	Operating System	Component
18014541564	Logo screen flickering when running setupRST.exe	NA	Installer
18014968751	PCH SKU Support - do not present already existing RAID volumes on not supported platform	NA	Pre-OS
18014586788	[EFI Driver][19.0][ADL-S] B660 SKU specific RAID creating restriction is not working	NA	Pre-OS
18013267674	[WHQL][20H1] C4 BSOD from during HLK tests for Intel NVMe Controller (Ronin	windows.20h1_vibranium.x64	Driver
18013031766	[ADL-S+ADP -S] [BIOS][DDR5]:System soft hang during "DISKPART" in WIMager screen with WD+ VMD CPU combination	windows.20h1_vibranium.x64	Driver

Resolved Issues In 19.0.0.1042 – Release

ID	Title	Operating System	Component
18014051315	[PreOS] BlockIO protocol is not installed for SATA drives locked by Shadow MBR.	NA	Pre-OS
18013715121	[VMD][PreOS] BIOS can't inform the SATA ODD information by UEFI Protocol tool	NA	Pre-OS
14012975700	In RAID 1, While waking from S3 system is getting Hung and Sporadically SUT asking for password.	NA	Pre-OS
18013482390	DiskInfo Protocol in PreOS is returning wrong value of function WhichIde IdeChannel	NA	Pre-OS
18013454210	TG/PG-Optane SSD show offline in Intel Optane Memory and Storage Management GUI	windows.20h2	HSA
18013051089	[HSA][Visual] About tab - whitespaces/typos	windows.20h2	HSA
18013192052	Restart message pops up without changing LPM settings when no sata disks	windows.20h2	HSA

Resolved Issues In 19.0.0.1038 – Release

ID	Title	Operating System	Component
18012486190	[HSA RDX] No Controller Type visible on disk properties in Optane Tab	windows.20h1_vibranium.x64	HSA RDX

18012820152	After RST installation, driver injection removes NoDefaultDriveLetter GPT attribute	windows.20h1_vibranium.x64	Installer
22011476003	When HddPwdPeim driver uses AtaPassThruPpi to get port by GetNextPort() with 0xFFFF, it will return EFI_INVALID_PARAMETER	NA	Pre-OS
18013724145	[ADL][PG][MS][BSOD] BSOD 0x7B_BSOD during MS	windows.20h1_vibranium.x64	Driver
18011179191	RST Middleware reported Optane volume disable error (A0070027: DestroyingBlockCacheFailed)	windows.20h1_vibranium.x64	Driver
18013140031	FW version not reported by PowerShell command Get-StorageFirmwareInformation	windows.20h1_vibranium.x64	Driver
18013213096	19.0 ReadmeCli does not contain all error codes (Shadow MBR is missing)	windows.20h1_vibranium.x64	CLI

Resolved Issues In 19.0.0.1030 – Release

ID	Title	Operating System
18012852606	SMART event notification displayed with several minutes delay	windows.20h1_vibranium.x64
18012648186	[VMD] Force block hot plug support for PCIe ports	windows.20h1_vibranium.x64
18012573853	HSA does not start: Open session failed with an error code 0xA0010001	windows.20h1_vibranium.x64
18011985110	"Error Code: 0x20000001" happens if click [Reboot] button for twice or more times.	windows.20h1_vibranium.x64
18012583988	HSA does not start: Error Code: 0xA0080000	windows.20h1_vibranium.x64
18012254779	[HSA]Wrong notification order during Optane™ rebuild	windows.20h1_vibranium.x64
18012823326	After waking from S3 observing system Hung and Sporadically SUT asking for password in RAID 1	windows.20h1_vibranium.x64
18012641847	RAID0 trim not working on VMD	windows.20h1_vibranium.x64
18012490317	System cannot boot up due to restart loop by RstVmdPeim.efi	windows.20h1_vibranium.x64
18012385881	Optane™ on H10 is not properly detected and wrong last LBA value by PEIM VMD Driver	windows.20h1_vibranium.x64

Known Issues

Known Issues In 19.2.0.1003– Release

18011763700	[CLI] System freeze intermittently during RAID 0 creation	windows.20h2
18015859054	[19.0][MW] Password protected field in HSA shows unknown for PCIe/AHCI disk	windows.20h2
18016881668	Improper GUID for RAIDs in Device Path in EfiShell map-r	NA
18017228338	Unable to install OS on Optane created from hybrid drives in EFI Shell	NA
18017232295	[HSA] Proposed configuration not accessible after RAID creation in the UI	NA
18017232583	[HSA Demo][RDX]Licenses aren't displayed properly	NA

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 descending 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 = 1024^3 bytes
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.
HSA	Hardware Supported App
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 = 1024^4 bytes
UEFI	UEFI pre-OS driver
UI	User Interface
VC	Validation Candidate
ZPODD	Zero Power Optical Disk Drive