Intel® Rapid Storage Technology (Intel® RST) 17.5.2.1024 – Production Version Release

07 August 2019

Supported Operating Systems
Microsoft Windows 10 Redstone 19H1 x64*
Microsoft Windows Server 2016 x64 Edition*

Revision History

Date	Driver Revision	Build Number
07 August 2019	17.5.2.1024 PV Release	1024

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 17.5.2.4317, the driver and user interface version is 17.5.2.1024 and Intel® Optane™ Memory and Storage Management (HSA) driver version 17.5.1009.0. 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.

3. **RST driver Injection in WinPE image**: CHKDSK tool reports an error after WinPE is loaded on the Intel® Optane™ Memory volume and 17.x RST Driver is not injected to WinRE image.

   - Intel® RST driver17.0 or later is required to be injected in WinPE image.

   - It is recommended not to load WinPE image if Intel® Optane™ Memory H10 is already paired and if RST driver 17.0 or later is not loaded in WinPE image.

4. **Security update [starting with RST 17.5.1.1021]:** Intel® RST 17.5.1.1021 and later has been updated to include functional and security updates. Users should update to the latest Intel® RST version. Users should update to the latest Intel® RST version.
   - Configuration Impacted: Intel® Optane Memory volume – 32 GB and higher.

5. **Enabling Intel® Optane™ memory with H10 (Teton glacier) SSD recommendation**
   - Intel® Optane™ Memory H10 must be enabled in AC mode.
   - In addition, good practice is to match the Intel® RST driver version in Windows* PE manufacturing and the shipping image.

6. **Intel® Optane™ memory volume roaming:** Intel® Optane™ memory volume when moved from Intel® RST Premium with Intel® Optane System Acceleration (RAID Mode) to AHCI/non-Optane mode configuration and switched back to Intel® RST Premium with Intel® Optane System Acceleration (RAID Mode) can make the drive non-bootable.

7. **RTD3:** 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.

Supported Hardware

Initial Intel® RST Release Version	Chipset Name	Platform / PCH / (Segment)	PCH SKU Details
17.x / 16.x	Intel® 300 Series Chipset Intel® X299 Chipset Mobile Intel® 300 Series Chipset Mobile Intel® CM246 Chipset	Desktop	Intel® H310 Chipset[A] Intel® H310C Chipset Intel® Q370 Chipset Intel® H370 Chipset Intel® B360 Chipset[O] Intel® B365 Chipset Intel® Z370 Chipset Intel® Z390 Chipset
		High End Desktop	Intel® X299 Chipset
		Workstation	Intel® C246 Chipset
		Mobile	Intel® HM370 Chipset Intel® QM370 Chipset Intel® CM246 Chipset
N - 1			
	Intel® H110 Chipset Intel® 200 Series Chipset Intel® C236 Chipset Mobile Intel® 100 Series Chipset Mobile Intel® CM238 Chipset	Desktop	Intel® H110 Chipset[A] Intel® Q250 Chipset[O] Intel® H270 Chipset Intel® B250 Chipset[O] Intel® Z270 Chipset
		Workstation	Intel® C236 Chipset
		Mobile	Intel® HM175 Chipset Intel® QM175 Chipset Intel® CM238 Chipset

[A] This SKU of the chipset supports AHCI mode only
[O] This SKU of the chipset supports both AHCI mode and Optane™ non-Premium mode (non-RAID)

Resolved Issues

	Resolved Issues In 17.5.2.1024 – Release	
ID	**Title**	**Operating System**
1807053857	[BSOD] IRQL_NOT_LESS_OR_EQUAL (a) during file verification	NA
1807697044	Intel® Optane™ volume can't be identified under WinPE	windows.10_rs5.x64
1807843569	Intel® Optane™ volume can't be identified under WinPE - HMB not disabled on driver unload.	windows.10_rs5.x64
1807834015	0x139_27_INVALID_DISPATCH_CONTEXT_i aStorAfs!EventCollector::_EventCollector	NA
1807747826	Remapport fixing AlignmentMask for software remapped devices.	NA
1807715549	Sporadic 0xA0 bugcheck when entering S4 and S5-Fast startup	NA
1807362826	Intel® RST GUI will show error if install Optane™ on PEG x16 slot with Intel® RST remapping disable	windows.10_rs3.x64
1807588985	The system will show "No Operating System" on first power on.	windows.10_rs5.x64
1807580778	0xA0 bugcheck when entering S4 and S5-Fast startup	windows.10_rs5.x64
1806504889	Mark as Spare option for Teton Glacier is Active in RST UI	windows.10_rs5.x64
1807510991	ISDI2.dll crash and TestSuiteCli.exe crash after disabling Intel® Optane™ Memory	
1306396396	Unknown controller in Intel® RST GUI	windows.10_rs5.x64
1807509318	Secure Erase Format returns error 1117	
1806236632	DVDRAM GUE0N lost when run S3(F/R: 1/9unit; 200/3600cycles)	windows.10_rs4.x64
1806943522	Error code 0xA008000F when trying to disable Intel® Optane™ Memory with SMART on fast drive	
1407537680	[Teton Glacier]: SMART Critical Warnings require system reboot to flag in Intel® RST Driver	windows.10_rs5.x64
1807362826	Intel® RST GUI will show error if install Optane™ on PEG x16 slot with Intel® RST remapping disable	windows.10_rs3.x64

1806122047	[BSOD] DRIVER_IRQL_NOT_LESS_OR_EQUAL (d1) | MODULE_NAME: hiber_iaStorAC | 16.5.0.1022 | Second NVME added while system in hybrid S3 or S4	windows.10_rs4.x64
1806943509	Warning message about SMART event overlap other UI elements and "Open Event Viewer" button does not work	
1807356618	Windows cannot boot when CPUa disk is present in system	
1806853630	RAID 10 Reporting Wrong RAID Level under Device Manager.	windows.10_rs5.x64
1807263061	Add support for new CFL-S 82 R0 CPU	N/A
1806593734	Link Power Management default is disabled in Performance tab of "Intel® Optane™ Memory and Storage Management" UI	windows.10_rs5.x64
1306030452	[RstMwService] RstMwService is not removed or turned off on Intel® RST uninstall/downgrade	N/A
2206428050	[HSA] HDD/RAID cannot show the correct size in Intel® Optane™ Memory and Storage Management UI with the HDD/RAID>1TB	windows.10_rs5.x64
2206429373	[HSA] Intel® Optane™ Memory and Storage Management APP will crash when click 'change type' in Raid0/1 manage UI	windows.10_rs5.x64
2206513115	[HSA] Intel® Optane™ Memory and Storage Management UI can't full screen normally.	windows.10_rs5.x64
2206782224	[HSA] Intel® Optane™ Memory and Storage Management App can't launch when RAID0/1/10/5/RRT all disabled with Pentium and Celeron CPU	windows.10_rs5.x64
2206585530	[HSA] Message "Enabling Intel® Optane™ Memory" always show when do dirty shutdown during Intel® Optane™ Memory enable process	windows.10_rs5.x64

Known Issues

ID	Title	Operating System
Known Issues In 17.5.2.1024 – Release		
1808033523	CHKDSK reports an error after WinPE is loaded on paired Teton Glacier and 17.x RST driver version is not injected in WinPE image	windows.10_rs5.x64
1807885745	In WinPE and 19H1 OS, after drvload TG could not be detected with RST v17.5.0.1017 - Optane is not visible.	windows.19h1.x64
1807885740	In WinPE and 19H1 OS, after drvload TG could not be detected with RST v17.5.0.1017 - Slaves are not detected.	windows.19h1.x64
1807969793	BSOD 0x9F Blackscreen without backlight when run S3 loop stress (1s shutdown)	windows.19h1.x64
1806549091	In Winpe to drvload F6 Driver with TG will happen BSOD when "Legacy Support" option is Disable	windows.10_rs5.x64
1807642041	[BSOD] DRIVER_POWER_STATE_FAILURE (9f) bugcheck occurs intermittently with S3/S4 power cycles	windows.19h1.x64
1807624730	[Optane] Smart event on fast drive not reported correctly in CLI/Optane UI	windows.19h1.x64
1807673668	Wrong Neptune Harbor Disk Serial is printed in rstcli.exe	windows.19h1.x64
1807630575	Brazil OS_Intel_RST_Storage install page translated wrong.	windows.19h1.x64
1806854820	[TG] [DDA] Optane volume status reported offline after disable DDA in PreOS **Workaround**: run DiskPart to put drive back to online state.	windows.10_rs5.x64
1807290841	BSOD 0x133 seen with pass thru SSD intermittently	windows.10_rs5.x64
1807075716	Intel® RST UEFI driver reports garbage names of some ODD	windows.10_rs3.x64
1805815700	Sporadically restart option not showing, After enabling/disabling Intel® Optane™ with one touch	windows.10_rs3.x64
1604306111	Unexpected_Kernel_Mode_Trap BSOD is observed during Shrink of Disk Partition (C:) drive after enable Optane before Restart the SUT	windows.10_rs1.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 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 = 1024^2 bytes

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