Intel® Rapid Storage Technology (Intel® RST) 19.5.1.1040 – Production Version Release

9 October 2022

Supported Operating Systems
Microsoft Windows 11 22H2 x64*
Microsoft Windows 11 x64*
Microsoft Windows 10 20H2 x64*

Revision History

Date	Driver Revision	Build Number
9 October 2022	19.5.1.1040 PV release	1040

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 19.5.0.5676, the driver and user interface version is 19.5.1.1040 and Intel® Optane™ Memory and Storage Management (HSA) driver version 19.0.1034.0. 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.

3. **New features and updates added:**

   - Support for Microsoft Windows* 11 22H2 x64 OS
   - Support for Microsoft DirectStorage* Optimization with Windows*11 22H2
   - Support for Intel® 700 Series Desktop Chipsets(Z790)

Resolved Issues

ID	Title	Operating System	Component
Resolved Issues In 19.5.1.1040 – Release			
15011736348	CSMI support issue under SATA drive. (RAID or Passthru)	Windows*11	Driver
18020455891	Intel® Optane memory NAND member lost in device manager during stress test	Windows*11	MW
18023417818	The "License Agreement" language is not localized in ABH(Dutch) /AB2(simplified Chinese) when launch "Intel® Optane™ Memory and Storage Management" application.	Windows*11	HSA
15011726640	Failure with mup.xml in installer	Windows*11	Installer
18021442159	Outdated Zlib reported by BDBA (Black Duck Binary Analysis) scan. Workaround: HSA RDX Demo removed from kit	Windows*11	HSA RDX Demo
NA	Updated Signature for Windows*11 SV2 issue #KB5017241	Windows*11	Driver

ID	Title	Operating System	Component
18022326870	Observed Unexpected shutdown/ Restart issue in CS/S3 Cycle	NA	Driver
18022307602	BugCheck 7A appeared during SX tests intermittently	NA	Driver
15011264308	Workaround for OS Windows*11 22H2 changes causing BSOD 0x1D5 when Drvload Intel® RST driver with image having injected RST driver	NA	Driver
15010920477	[NVMe]HMB enabled twice during D0 transition which is not required	NA	Driver
18016796133	BSOD 9F seen intermittently during RAID degrade scenario	NA	Driver
18021308286	When rebuild RAID 1 volume with another plugging SSD via "Mark as spare", it would show "Failed to Mark as spare" error message.	NA	HSA
18021476046	Can't open Intel® Optane™ Memory and Storage Management on Simplified Chinese language	NA	HAS
NA	Intel platform RAID 0/1/5 performance issue when NVMe RAID is created in BIOS HII preOS menu	NA	PreOS

15010973464	No boot disk shows in boot menu after removing 1 disk of RAID1 volume.	NA	PreOS
22014866561	CPU exception happens during warm reset while skipping the password to unlock the devices after TperReset Command.	NA	PreOS
18020866494	RAID 5 Volume shows Failed in BIOS with one drive failure.	Windows*11	Driver
18020738037	Auto run feature is not working on certain ODD when SATA controller mapped under VMD.	Windows*11	Driver
18020149978	[IOCTL][CSMI] Added support for PTLs higher than 4:0:0 in GetSataSignature CSMI IOCTL	Windows*11	Driver
18020149978	[IOCTL][CSMI] Reverted to correct CSMI Structure - CSMI_SAS_PHY_INFO	Windows*11	Driver
18020623139	[IOCTL] Sending NvmePassThrough Identify command to get ActiveNsidList fails when Raid is in degraded state	Windows*11	Driver
18020292466	Intel platform RAID 0/1/5 performance issue when SATA RAID is created in BIOS HII preOS menu	NA	PreOS
18020665187	Remove unsupported attribute shown in the UI i.e. Host Managed Cache (HMC) support	NA	HSA
8020150323	VMD PEIM EDKII_PEI_STORAGESECURITY_CMD_PPI.GetDevicePath returns the different NVMe device path from the one returned by VMD DXE Driver if a SATA ODD is installed	NA	PreOS
18018445872	Unexpected value of GetNextDevice from AtaPassthru	NA	PreOS
18019996805	RstVmdInfo - MappedDevices section - incorrect call to display PCI bar values.	NA	PreOS
18020003499	Certain NVMe drive causes ~3-4 minutes of delay during boot.	NA	PreOS
18020003499	[ZPODD]ZPODD missing after Modern Standby or S4 cycle	windows.20h2	Driver
18020233914	BSOD 0x9f when running S4 stress under RAID1 system	windows.20h2	Driver
18018445872	[HSA] VMD remapping window FAILED and Create RAID volume FAILED	NA	HSA
18019996805	BSOD 9F seen intermittently during S4 stress with RAID config	windows.10_rs5.x64	Driver
18020003499	Uncompleted IO after ModernStandby, OS unable to shut down	NA	Driver

18018871399	BSOD: DPC_WATCHDOG_VIOLATION (133) – seen intermittently during stress test	windows.20h2	Driver
18017178396	Intel® RST driver hot-plug feature is not work when plug-in SATA HDD/SSD to system on OS.	windows.20h1	Driver
1509806721	BSOD 0xA0 intermittently seen with RST driver	windows.20h2	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.20h2	Driver
18017605715	Rstcli64.exe remapping all disks under VMD when all disks are already remapped	windows.21h2	Driver
18016991417	BSOD KERNEL_MODE_HEAP_CORRUPTION (13a) intermittently seen during CS Cycling	NA	Driver
18016831101	CC_CSMI_SAS_STP_PASSTHRU calls not completed when disk is in low power state	windows.20h2	Driver
18017667215	[RAID] 0x9F after Sx flows with RAID migration in progress	windows.20h2	Driver
18017425624	[IOCTL][VMD] IOCTL_STORAGE_QUERY_PROPERTY doesn't return drive with PTL greater than 9	windows.20h2	Driver
18017178396	Intel® RST driver hot-plug feature is not work when plug-in SATA HDD/SSD to system on OS.	windows.20h1	Driver
18018445872	[HSA] VMD remapping window FAILED and Create RAID volume FAILED	NA	HAS

Known Issues

Known Issues In 19.5.1.1040 – Release		
ID	**Title**	**Operating System**
18017232295	[HSA] Proposed configuration not accessible after RAID creation in the UI	NA
22015268688	BSOD 124 observed infrequently during S4	Windows* 11
18022711714	BSOD D1 intermittently seen during Warm Reset with Intel® Optane™ Memory	Windows*11
18021775214	[PreOS][19.5] RstVmdConfig returns wrong serial number for Intel® disks	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 = 1024^2 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