

Intel® Rapid Storage Technology (Intel® RST) 17.11.0.1000 – Production version Release

13 October 2021

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Supported Operating Systems

Microsoft Windows 10 20H1/20H2 x64*

Revision History

| Date | Driver Revision | Build Number |
|-----------------|--|--------------|
| 13 October 2021 | 17.11.0.1000 | 1000 |
| 5 March 2021 | 17.9.6.1019 | 1019 |
| 2 March 2021 | 17.9.1.1009.5 Release with installer update | 1009 |
| 19 June 2020 | 17.9.1.1009 | 1009 |

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 17.8.0.4507, the driver and user interface version are 17.11.0.1000 and Intel® Optane™ Memory and Storage Management App version is 17.9.1008.0. 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 in RST 17.9.1:
 - a) 20H1 OS support
 - b) End-of-Life of Intel® RST User Interface (UI) and Intel® Optane™ Memory UI
 - c) Intel® Optane™ Memory and Storage Management Application Improvement –
 - Windows* Narrator Support
 - Enhancing Visual Presentation of Intel® Hybrid SSD
 - d) Intel® RST driver package Updates –
 - Added new extension files for HSA (ExtensionHSA) and Pinning (ExtensionPinning) to meet DCH compliance requirements.
 - a. Shellpackage.msi will no longer be provided and the same functionality will be provided through extension inf (ExtensionPinning).
 - b. *iaStorHsa_Ext.inf*, *iaStorHsa_Ext.cat*, *iaStorHsaComponent.inf*, *iaStorHsaComponent.inf* : Required for HSA installation through driver inf and the same extension is used by installer to invoke HSA installation.
 - Installer package update – New SetupRST.exe installer will install the appropriate Intel® RST driver in the system and the Intel® Optane™ Memory and Storage Management application . During the installation process,
 - a. If the end-user chooses to install the Intel® Optane™ Memory and Storage Management application, the installer will initiate the request for Windows* Store to install the application at the next system reboot.
 - b. If the end-user chooses NOT to install the Intel® Optane™ Memory and Storage Management application, they can still directly go to Windows* Store and install the application later.
4. **Security update:** Intel® RST 17.9.6.1019 has been updated to include functional and security updates. Users recommended to update to the latest Intel® RST version.
 - Configuration Impacted: Intel® Optane Memory volume – 32 GB and higher.
5. Intel® Optane™ Memory Pinning Extension missing after Windows* OS upgrade issue:
 - There was a known issue related to "Intel® Optane™ memory pinning extensions dll missing pop-up" upon OS upgrade which is addressed in the Intel technical support article titled "[How to Resolve Intel® Optane™ Memory Pinning Error: 'Unable to load DLL 'iaStorAfsServiceApi.dll' Encountered](#)".

- Customer will still be able to pin the files and maintain their pinning files through the multiple Intel® RST UI's.
- Configurations impacted: Systems updated by the user through Intel® RST/Optane installer packages from Intel® RST version 16.3.x – 17.2.x to Intel® RST 17.5.x - 17.8 prior to OS upgrade.
- A system with factory installed (fresh OS installation) of Intel RST drivers between 17.5.x-17.9.x are not affected by this issue.
- Recommend updating to Intel® RST 17.9.1.1009 driver to prevent the issue from happening before upgrading to Windows* OS 20H1.

Resolved Issues

Resolved Issues In 17.11.0.1000 – Release

| ID | Title | Operating System |
|-------------|---|------------------|
| 18016991417 | BSOD KERNEL_MODE_HEAP_CORRUPTION (13a) observed during CS Cycling | Windows 11 x64 |

Resolved Issues In 17.9.6.1019 – Release

| ID | Title | Operating System |
|-------------|---|---|
| N/A | SQLite security update | N/A |
| 18011332230 | 20H1 HKL - Connect Standby IO Stress test failed on SATA SSD intermittently | windows.19h1.x64 |
| 1809575911 | Intel® Optane™ Memory H10 with SSD CDMv6 Seq Write performance can't meet spec intermittently | windows.19h1.x64, windows.19h2_vanadium.x64 |
| 18011907306 | Intermittent Windows hang during IOMeter workload | windows.19h2_vanadium.x64 |
| 18014750358 | System will occur black screen/BSOD and can't enter OS after resume from S4 & set wrong password for HDD. | windows.19h2_vanadium.x64 |
| 18011984387 | Intel® Optane™ Memory cannot be enabled with Win10 20H1 build intermittently | windows.20h1_vibranium.x64 |
| 18012147233 | System gives black screen sporadically with BSOD 0x139 dump during reboot stress testing. | Windows.19h1.x64 |

Resolved Issues In 17.9.1.1009.5 – Release

| ID | Title | Operating System |
|----------------|--|------------------|
| INTEL-TA-00545 | Intel® RST Installer Advisory Doc ID intel-sa-00545 Installer version updated to 17.9.0.34 | N/A |

Resolved Issues In 17.9.1.1009 – Release

| ID | Title | Operating System |
|-------------|--|----------------------------|
| N/A | Intel® Optane™ Memory Pinning Extension missing after Windows* OS upgrade issue (Refer Notes section bullet 4 for more details) | N/A |
| 18011380524 | Intel® Optane™ Memory and Storage Management UI show random code in AR image | N/A |
| 18011399810 | Intel® Optane™ Memory and Storage Management fails to launch – error: can't find root window page | N/A |
| 18011010166 | No "Rebuild to another disk" for degraded RAID volume in Intel® Optane™ Memory and Storage Management | N/A |
| 18011380949 | Error message pops up when choose "Responsiveness mode" to enable Intel® Optane™ Memory H10. | windows.20h1_vibranium.x64 |
| 1507913304 | Disable SATA APST to workaround SATA Controller with Automatic Partial to Slumber Transitions during S4 entry | N/A |
| 18011600940 | SUT show blue screen during BTOA/WBT download process under WinPE environment | windows.20h1_vibranium.x64 |
| 1808450221 | Intermittent BSOD 9F seen during S3/S4 power cycles | windows.19h1.x64 |
| 18011342849 | Intel® Optane™ Memory Status fail with older version of Intel® Optane™ Memory and Storage Management | Windows.19h1.x64 |
| 18010990692 | SSD is not located in diskpart during Factory process | Windows.19h1.x64 |
| 18011385598 | Switch marked as normal does not reset SMART event from RSTCLI | N/A |
| 18010989925 | SSD Unsafe shutdown count will increase after S4 or S5. | windows.19h1.x64 |
| 18010932182 | Disabling Optane™ hangs on 100% due to incorrectly handled time out event | N/A |
| 18010860708 | No license files found for Intel® Rapid Storage driver in Middleware | N/A |
| 1809303495 | BSOD 0x7B observed intermittently when FW is updated and Sx cycles performed | N/A |
| 18010987097 | RAID volume operation notifications displayed multiple times | N/A |
| 18011295475 | Intel® Optane™ Memory Enabled displayed with Double colon in the UI | windows.19h2.x64 |
| 1809270656 | SW drips is 0% and HW drip not generated on Intel® Optane™ Memory H10 | windows.10_rs5.x64 |
| 1807733920 | System might intermittently observe A0 BSOD while enabling/disabling Intel® Optane™ Memory | windows.19h2.x64 |
| 1507710493 | Host still sent PMREQ_S in Modern Standby entry even host is configured HIPM disabled | windows.19h1.x64 |
| 1809083529 | Intel® Optane™ Memory and Storage Management cannot recognize certain ODD's serial number. | windows.19h1.x64 |

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|-------------|---|------------------|
| 18010049009 | Error occurred while creating RAID1 volume, auto-shrinking failed intermittently. | Windows.19h1.x64 |
| 1809657160 | Intel® Optane™ Memory disappeared in diskpart and RSTCLI64.exe shows Intel® Optane™ Memory as "Unknown disk usage" after drvload 17.8 driver under Pure WinPE environment | Windows.19h1.x64 |

Known Issues

| Known Issues In 17.11.0.1000 – Release | | |
|--|--|--------------------|
| ID | Title | Operating System |
| 18011439481 | Error received DO_VERIFY_VOLUME when ODD returned 0x02 command during Read/Write operation | windows.19h1.x64 |
| 18010989925 | CrystalDiskInfo - SSD Unsafe shutdown count will increase after S4 or S5. | windows.19h1.x64 |
| 1807707264 | Intermittent BSOD 0xA0 observed during Optane™ Volume separation | windows.19h1.x64 |
| 1809264606 | Intel® RST PreOS Is Not Showing All devices in BIOS Page When Plugged H10 device. | windows.19h1.x64 |
| 2209998548 | BIOS Recovery failure when SATA mode is set to RST and the recovery image size is more than 32MB. | N/A |
| 1808766918 | Enabling Optane™ fails with error 0xA0070015 when system has a drive connected in Ronin mode | N/A |
| 1808631115 | Less bandwidth on TG disk after updating Intel® RST driver to 17.8.0.1022 and later with PCMark8* | N/A |
| 1808882565 | System configured with Intel® Optane™ Memory H10 - unable to boot or stuck in a boot loop/report bad system config very sporadically, while performing dirty shutdown during extensive IO stress tests. (workaround: Doing a cold reboot will recover the system in case the system is stuck in boot loop) | N/A |
| 1808580383 | Intel® RSTCLI returned incorrect code. Expected: Success Actual: InvalidParameters | windows.10_rs5.x64 |
| 1807748617 | NVMe is not listed in Boot Manager when disable CPU Attached feature in BCFS | N/A |
| 1805874759 | Volume failed to go into Normal or Rebuilding state after trying to recover from failed volume state | N/A |
| 1807684084 | CLI shows Roaming Supported when feature is disabled in the driver | N/A |

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 (NVMe), 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 |