

Intel® Rapid Storage Technology (Intel® RST) 17.5.0.1017 – Production Version Release

30 May 2019

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Supported Operating Systems

Microsoft Windows 10 Redstone 19H1 x64*

Microsoft Windows Server 2016 x64 Edition*

Revision History

| Date | Driver Revision | Build Number |
|---------------|--------------------------|--------------|
| 30 May 2019 | 17.5.0.1017 PV Release | 1017 |
| 09 April 2019 | 17.5.0.1011 Beta release | 1011 |

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 17.5.0.4136, the driver and user interface version is 17.5.0.1017 and Intel® Optane™ Memory and Storage Management (HSA) driver version 17.5.1005.0. 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:**
 - Intel® Optane™ Memory M15 (Carson Beach) support – (Evaluation Only)
 - Registry to control APM level
 - Pyrite 2.0 password support
4. **ZPODD installer update:** ZpoddInstaller.exe is not included as part of Intel® RST 17.5 driver package due to installer issues. Will be fixed as part of a future release.
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.
 - For more details please refer technical advisory titled "Intel® Optane™ Memory H10 and Intel® RST Potential Black Screen or No Boot Device Detection" CDI # [612180](#).
6. **Security update:** Intel® RST 17.2.0.1009 and later has been updated to include SQLite DLL version 3.27.1, which includes functional and security updates. Users should update to the latest Intel® RST version. (SQLite DLL is used to maintain the database for storing file related information by the NGSa service which is used for File caching).
 - Configuration Impacted: Intel® Optane Memory volume – 32 GB and higher.
7. **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.
8. **RST HSA update:** Intel® Optane™ Memory and Storage Management (HSA) UI is supported only in Intel® RST Premium with Intel® Optane System Acceleration (RAID Mode). It is not supported in AHCI mode. Appropriate wording notification for "Intel® Optane™ Memory and Storage Management (HSA) being installed successfully in AHCI mode" added in the 17.3.1003.0 and later Intel® Optane™ Memory and Storage Management (HSA) release.
9. **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.
10. For more information on these features, please refer to RST_OEM Tech Guide 17.x-rev.1.2.1.pdf or later.

Supported Hardware

| Initial RST Release Version | Chipset Name | Platform / PCH / (Segment) | PCH SKU Details | |
|-----------------------------|--|---|--|--|
| 17.x/16.x | Intel® 200 Series Chipset Family | CLX-N1 Comet Lake (CML-LP) PCH: KBP-H Cannon Lake (CNL)/Coffee Lake (CFL) PCH: Cannon Point-H (CNP-H) (DT, HEDT) | - X299 - H310 ^(A) - B360 - B365 - H370 - Z390 - Q370 - H310C | |
| | Intel® 300/240 Series Chipset Family | CNL/CFL PCH: CNP-H (WS) | - C246 | |
| | | CNL/CFL PCH: CNP-H (Mobile Halo) | - QM370 - HM370 - CM246 | |
| | Intel® 8th Generation 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 | 15.7 | Intel® 200 Series Chipset Family | Coffee Lake (CFL-S, 8+2) PCH: Kaby Point (KBP-H) (Desktop) | - Z370*** |
| | | Intel® 200 Series Chipset Family | Basin Falls (w/ KBL-X) PCH: KBP-H (HEDT) | - X299 |
| | 15.5 | Intel® 8th Generation Core Processor Family Platform I/O SATA AHCI/RAID Controller | Kaby Lake Refresh (KBL-R) PCH: SPT-LP (Mobile-LP) | - Base-U - Premium-U - Premium-Y |
| | | 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 | Intel® 7th Generation 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 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 17.5.0.1017 – Release | | |
|--|--|--------------------|
| ID | Title | Operating System |
| 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 |

Resolved Issues In 17.5.0.1011 – Beta Release

| ID | Title | Operating System |
|------------|---|--------------------|
| 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

Known Issues In 17.5.0.1017 – Production Version Release

| ID | Title | Operating System |
|------------|---|------------------|
| 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 |

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|------------|---|--------------------|
| 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 |

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|--------------|--|
| 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 |

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|------------|--|
| 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 |