Intel® Rapid Storage Technology (Intel® RST) 17.7.0.1006 – Production Version Release

28 August 2019

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

Revision History

Date	Driver Revision	Build Number
28 August 2019	17.7.0.1006 release	1006

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 17.7.0.4404, the driver and user interface version is 17.7.0.1006 and Intel® Optane™ Memory and Storage Management (HSA) driver version 17.5.1010.0. 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. **New features and updates added:**
   - Command line tool (CLI) support for Non-OEMs
     - Starting with Intel® RST 17.7, a separate and scaled down CLI version is available for corporate users. This CLI version has a limited subset of functionality to allow corporate IT administrators to deploy and manage Optane volume on IT-image client computers in corporate environment.
   - Support for Glacier falls (GCF)

4. **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.
   - For more details please refer technical advisory titled "Guidance for Injecting Intel® Rapid Storage Technology Driver in Windows* Pre-Installation Environment (WinPE) Technical Advisory WW29, 2019" CDI # 613907.

5. **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.

6. **Intel® Optane™ Memory Pinning service:** Intel® Optane™ Memory's pinning service crash intermittently post Optane enabling, if there is a power On/Off event during Optane enablement.
   - This causes, pinning functionality to be disabled.
   - Workaround – Disable and enable Intel® Optane™ Memory to reset the pinning service.

7. **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.

8. **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.

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.

Supported Hardware

Initial Intel® RST Release Version	Chipset Name	Platform / PCH / (Segment)	PCH SKU Details
17.x / 16.x	Intel® 200 series Chipset Family Intel® 300 Series Chipset Mobile Intel® 300 Series Chipset Mobile Intel® CM246 Chipset	Desktop	Intel® X299 Chipset 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 17.7.0.1006 – Production Candidate Release		
ID	**Title**	**Operating System**
1807880313	Intel® RST - Pinning function reset problem.	windows.10_rs5.x64
1808053292	System lost after disable TG from BIOS	windows.19h1.x64
1806473192	After creating Raid0 using all Nvme remapped devices, enable Optane™ Memory option is still available	NA
1807587608	Disabled Optane™ via Intel® RST Optane™ Memory and Storage Management, shows keeping 100%	windows.10_rs5.x64
1808074869	Intel® RST driver report gsfailure causing bug check during update (update failed and rolled back)	NA
1807880464	Third party NvME SSD lost during Modern Standby test.	windows.10_rs5.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 = 1024 bytes
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 = 1024^4bytes
UEFI	UEFI pre-OS driver
UI	User Interface
VC	Validation Candidate
ZPODD	Zero Power Optical Disk Drive