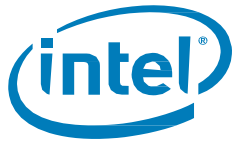


Intel® Solid State Drive Firmware Update Tool Release Notes

September 2017
Revision 2.2.3



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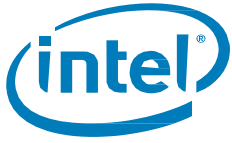
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Intel® SSD Firmware Update Tool Revision History

| Date | Revision | Description |
|----------------|----------|---|
| September 2017 | 2.2.3 | This revision adds a firmware update for the Intel® SSD 545s and DC S3520 Series drives. |
| July 2017 | 2.2.2 | This revision adds a firmware update for the Intel® SSD 540s and Pro 5400s Series drives. |
| May 2017 | 2.2.1 | This revision adds a firmware update for the Intel® Optane™ Memory, the Intel® SSD 600p, Pro 6000p, E 6000p, 540s, Pro 5400s and E 5400s Series, and Intel® SSD DC P3100 and DC S3100. Known Limitation: Intel SSD Firmware Update Tool will not work on Intel® Optane™ Memory when configured as a system accelerator. |
| April 2017 | 2.2.0 | This revision includes updates to the tool's bootable Linux environment addressing various loading issues seen on earlier versions. This revision adds firmware updates for the Intel® SSD 750, Intel® SSD Pro 5400s (80/120GB), Intel® SSD DC P3520 and Intel® SSD DC S3520 Series products. |
| December 2016 | 2.1.7 | This revision adds a firmware update for the Intel® SSD 600p, Intel® SSD Pro 6000p, Intel® SSD E 6000p, Intel® SSD DC P3100, Intel® SSD DC S3610 and the Intel® SSD DC S3710 Series products. |
| October 2016 | 2.1.6 | This revision adds a firmware update for the Intel® SSD 750 Series products. |
| July 2016 | 2.1.5 | This revision adds a firmware update for the Intel® SSD 540s, E 5400s, Pro 5400s Series and the Intel® SSD DC S3100 Series products. |
| June 2016 | 2.1.3 | This revision adds a firmware update for the Intel® SSD 540s, E 5400s Series and the Intel® SSD DC S3100 Series products. |
| March 2016 | 2.1.2 | This revision adds a firmware update for the Intel® SSD DC S3700, DC S3500, DC S3710, DC S3610 and DC S3510 Series products. |
| November 2015 | 2.1.1 | This revision adds a firmware update for the Intel® SSD 750 Series products. |
| October 2015 | 2.1.0 | This revision adds a firmware update for the Intel SSD Pro 2500, 750 and 535 Series and the Intel® SSD DC S3710, DC S3610, DC S3510, DC S3500 M.2 and DC S3500 HD Series drives along with the following tool changes: <ul style="list-style-type: none"> • Prevents firmware update on unhealthy drives • Added notification if drive in bootloader state • Added detection of PCIe* NVMe* products |
| December 2014 | 2.0.14 | This revision clarified 512B/4KB support for the Intel SSD DC S3700 and S3500 products. No firmware changes were made from the previous release. |
| July 2014 | 2.0.13 | This revision fixes issues associated with working on several Apple* systems. No firmware changes were made from the previous release. |
| February 2014 | 2.0.10 | This revision adds firmware updates for both Intel SSD DC S3700 and S3500 products. |
| December 2013 | 2.0.9 | This revision adds a firmware update for all of the Intel SSD 530 Series drives. |
| August 2013 | 2.0.6 | This revision adds a firmware update for the Intel SSD 530 Series. No other firmware changes were made from the previous release. |
| July 2013 | 2.0.4 | This revision adds a firmware update for the Intel SSD DC S3500 series. No other firmware changes were made from the previous release. |
| June 2013 | 2.0.3 | This revision changes the Firmware Update Tool from a command line to a graphic user interface and adds the ability to update multiple Intel SSDs with a single button. |
| November 2012 | 1.9.3 | This revision adds a firmware update for the Intel SSD 335 series No other firmware changes were made from the previous release. |



| Date | Revision | Description |
|----------------|----------|--|
| September 2011 | 1.9.2 | This revision of the Firmware Update Tool: <ul style="list-style-type: none">• Fixes issues associated with correctly detecting Intel SSDs in Apple* systems• Updates Intel 320 Series firmware specific to Lenovo* systems to the most current version. No other firmware changes were made from the previous release. |



Intel® Optane™ Memory

Click on the appropriate Memory to go to the firmware revision history for your unit:

| Memory | Latest Firmware Version(s) |
|--|----------------------------|
| Intel® Optane™ Memory Revision History | K3110310 |

List of Intel® Solid State Drives

NOTE: If you purchased your Intel SSD from an OEM, your firmware version may have a different naming. Contact your local OEM representative for the latest firmware revisions.

Click on the appropriate SSD to go to the firmware revision history for your drive:

| Solid State Drive | Latest Firmware Version(s) |
|---|---|
| Intel® Solid State Drive DC P3520 Series | MDV10271 |
| Intel® Solid State Drive DC P3100 Series | 119D |
| Intel® Solid State Drive DC S3710 Series | G2010160 – same as S3610 |
| Intel® Solid State Drive DC S3700 Series | 5DV12270 |
| Intel® Solid State Drive DC S3610 Series | G2010160 – same as S3710 |
| Intel® Solid State Drive DC S3520 Series | N2010121 |
| Intel® Solid State Drive DC S3510 Series | G2010150 |
| Intel® Solid State Drive DC S3500 Series | Default: D2012370 M.2: G2010150 HD: G2010150 |
| Intel® Solid State Drive DC S3100 Series | 041D |
| Intel® Solid State Drive E 6000p Series | 121E |
| Intel® Solid State Drive E 5400s Series | 041E: 80GB/120GB/180GB/240GB/360GB/480GB/1TB 015P: 256GB/512GB |
| Intel® Solid State Drive Pro 6000p Series | 121P |
| Intel® Solid State Drive Pro 5400s Series | 041P |
| Intel® Solid State Drive Pro 2500 Series | M.2: TG16 2.5 inch: TG21 |
| Intel® Solid State Drive 750 Series | Firmware: 8EV101H0 Bootloader: 8B1B0133 |
| Intel® Solid State Drive 600p Series | 121C |
| Intel® Solid State Drive 545s Series | LHF002C |
| Intel® Solid State Drive 540s Series | 041C: 120GB/180GB/240GB/360GB/480GB/1TB 015C: 256GB/512GB |
| Intel® Solid State Drive 535 Series | M.2: RG11 2.5 inch: RG21 |



| Solid State Drive | Latest Firmware Version(s) |
|---|--|
| Intel® Solid State Drive 530 Series | M.2: DC31 2.5 inch: DC32 mSATA: DC33 |
| Intel® Solid State Drive 335 Series | 335u |
| Intel® Solid State Drive 320 Series | 4PC10362 |
| Intel® X25-E (50nm) SSD | 045C8855 |
| Intel® X18-M/X25-M (50nm) SSD | 045C8820 |
| Intel® X18-M/X25-M/25-V (34nm) SSD | 2CV102M3 |

Intel® Optane™ Memory Revision History

| Date | Revision | Description |
|----------|----------|---|
| May 2017 | K3110310 | This firmware version contains fixes for intermittent enumeration issues. |

Intel® Solid State Drive DC P3520 Series Revision History

| Date | Revision | Description |
|------------|----------|---|
| March 2017 | MDV10271 | This firmware versions contain the following enhancements: <ul style="list-style-type: none"> Improvements to drive behavior during die offline events, LBA mismatches, handling errors during PLI events Boot drive capability issue addressed |

Intel® Solid State Drive DC P3100 Series Revision History

| Date | Revision | Description |
|---------------|----------|---|
| May 2017 | 119D | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Improved link initializations <p>This firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Drive hangs intermittently after Format NVM command. Format NVM command occasionally failing with PCIe ASPM enabled. Data miscompare caused by intermittent data corruption during heavy write workload with small file transfer size. Incorrect drive behavior for command with Forced Unit Access setting. |
| December 2016 | 109D | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Improvements to PHY initialization process Improved end of life management of bad blocks for better reliability <p>This firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Fixed potential issue of incorrect data may be read during resume from low power state |



Intel® Solid State Drive DC S3710 and DC S3610 Series Revision History

| Date | Revision | Description |
|---------------|----------|--|
| December 2016 | G2010160 | This firmware version includes support for the ACS-3 command set. |
| March 2016 | G2010150 | <p>The following changes are included in this firmware update:</p> <ul style="list-style-type: none"> Fixed SATA CRC errors seen when running at 3Gbps Corrected SMART 05h behavior Fixed power consumption on Staggered Spin-up. <p>This latest firmware also includes a fix for a specific use condition where in certain cases if the device receives a command that violates the SATA protocol specification, the drive may ASSERT or stop responding to host commands (See Intel Advisory INTEL-SA-00050).</p> |
| October 2015 | G2010140 | <p>This release provides the following improvements:</p> <ul style="list-style-type: none"> Added support for SMART Attribute F3h Modification to Secure Erase to include NAND Erase Improvements to the Maximum Latency for all Sequential and Random Write workloads Added a fourth PHY mode setting to accommodate long interconnects (> 8-inches) |

Intel® Solid State Drive DC S3700 Series Revision History

| Date | Revision | Description |
|---------------|----------|---|
| March 2016 | 5DV12270 | This latest firmware include a fix for a specific use condition where in certain cases if the device receives a command that violates the SATA protocol specification, the drive may ASSERT or stop responding to host commands (See Intel Advisory INTEL-SA-00050). |
| February 2014 | 0270 | <p>This release provides the following improvements:</p> <ul style="list-style-type: none"> In the unlikely event that a drive fails, the drive will now report the correct serial number and actual capacity. The error code is available in ID block word 140 and GPL address 0xDD. When a power-off is less than 500ms the drive will automatically reset and allow proper drive enumeration. Support for the reporting of both 512B and 4KB physical sector size. The default setting is 4K as reported in Word 106 of the identifying drive data. The default sector size can be changed by using the Intel® Solid State Drive Data Center Tool. As blocks are retired, the SMART E8h value will decrease linearly. After a power cycle, timed workload variables will resume from the last saved values and update after 60 minutes and every minute thereafter. SMART Attribute 05h now has a normalized value of 100. SMART Attribute C2h now reports the correct temperature. |
| June, 2013 | 0265 | <p>This release addresses the following issues:</p> <ul style="list-style-type: none"> The drive may exhibit longer latency behind certain HBA/RAID cards under specific sequential workloads. SMART attribute EAh was not correctly incrementing. Drive returns incorrect response or becomes unresponsive to an LBA write above 32bit address. |



Intel® Solid State Drive DC S3520 Series Revision History

| Date | Revision | Description |
|----------------|----------------------|--|
| September 2017 | N2010121 | <p>These firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none">Subsequent firmware updates no longer require a power cycle of the system.Drive may enter a disabled logical state or report SMART AFh failure if powered on after storage in certain conditions.Drive may enter disabled logical state when executing SMART Extended self-test routine in captive mode.Sanitize feature set cannot be re-enabled following an SSP disable and COMRESETMisc. sightings closure and improvement on product health. |
| March 2017 | N2010112 (2.5" only) | <p>These firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none">Correction to SMART attribute BBh and F1h increment behaviorFix to drive behavior when power loss occurs during Secure EraseFixed issue where SCT Extended Status Code, Action Code and Function Code were not being cleared on a COMRESETFix to address occasional Standby Immediate failureLegacy ATA commands not relevant in ACS-3 no longer abortedCorrection to drive behavior when running SMART self-test using Smartctl* and ABORT command received |

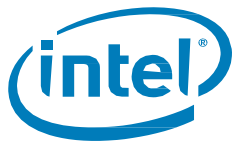
Intel® Solid State Drive DC S3510 Series Revision History

| Date | Revision | Description |
|--------------|----------|--|
| March 2016 | G2010150 | <p>The following changes are included in this firmware update:</p> <ul style="list-style-type: none">Fixed SATA CRC errors seen when running at 3GbpsCorrected SMART 05h behaviorFixed power consumption on Staggered Spin-up. <p>This latest firmware also includes a fix for a specific use condition where in certain cases if the device receives a command that violates the SATA protocol specification, the drive may ASSERT or stop responding to host commands (See Intel Advisory INTEL-SA-00050).</p> |
| October 2015 | G2010140 | <p>This release provides the following improvements:</p> <ul style="list-style-type: none">Added support for SMART Attribute F3hModification to Secure Erase to include NAND EraseImprovements to the Maximum Latency for all Sequential and Random Write workloadsAdded a fourth PHY mode setting to accommodate long interconnects (> 8-inches) |



Intel® Solid State Drive DC S3500 Series Revision History

| Date | Revision | Description |
|---------------|--|--|
| March 2016 | For DC S3500 M.2, DC S3500 HD only G2010150 For DC S3500 only D2012370 | These latest firmwares include a fix for a specific use condition where in certain cases if the device receives a command that violates the SATA protocol specification, the drive may ASSERT or stop responding to host commands (See Intel Advisory INTEL-SA-00050). |
| October 2015 | For DC S3500 M.2 DC S3500 HD only G2010140 | This firmware release is only applicable for the Intel® SSD DC S3500 M.2 and DC S3500 HD Series drives. This release provides the following improvements: <ul style="list-style-type: none"> • Added support for SMART Attribute F3h • Modification to Secure Erase to include NAND Erase • Improvements to the Maximum Latency for all Sequential and Random Write workloads • Added a fourth PHY mode setting to accommodate long interconnects (> 8-inches) |
| February 2014 | 0370 | This release provides the following improvements: <ul style="list-style-type: none"> • In the unlikely event that a drive fails, the drive will now report the correct serial number and actual capacity. The error code is available in ID block word 140 and GPL address 0xDD. • When a power-off is less than 500ms the drive will automatically reset and allow proper drive enumeration. • Support for the reporting of both 512B and 4KB physical sector size. The default setting is 4K as reported in Word 106 of the identifying drive data. The default sector size can be changed by using the Intel® Solid State Drive Data Center Tool. • As blocks are retired, the SMART E8h value will decrease linearly. • After a power cycle, timed workload variables will resume from the last saved values and update after 60 minutes and every minute thereafter. • SMART Attribute 05h now has a normalized value of 100. • SMART Attribute C2h now reports the correct temperature. |
| July, 2013 | 0355 | This release provides an update to the SMART Error Log after download microcode command is executed. Other ongoing improvements were made to address manufacturability and IOPs consistency. |



Intel® Solid State Drive DC S3100 Series Revision History

| Date | Revision | Description |
|-----------|----------|---|
| May 2017 | 041D | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Optimized SATA signal integrity Optimized behavior entering and resuming from low-power states <p>This firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Intermittent errors when resuming from unsafe shutdown Fixed issues around use in Connected Standby Fixes to intermittent boot error in Linux Mitigates a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00079) |
| July 2016 | 036D | <p>This firmware release provides the following change</p> <ul style="list-style-type: none"> Fixes issue that BSOD occurs during S3/S4 resume on systems supporting devsleep Mitigates a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00055) |
| June 2016 | 031D | <p>This firmware release provides the following changes:</p> <ul style="list-style-type: none"> Corrected SMART AAh, E8h, ABh, and ACh behavior Corrected DIPM enabled after COMRESET issue Corrected errant FIS causing BSOD when Write Cache disabled Corrected SATA NCQ Command Error log reporting issue Mitigated a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00053). |

Intel® Solid State Drive E 6000p Series Revision History

| Date | Revision | Description |
|---------------|----------|---|
| May 2017 | 121E | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Improved link initializations <p>This firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Drive hangs intermittently after Format NVM command. Format NVM command occasionally failing with PCIe ASPM enabled. Data miscompare caused by intermittent data corruption during heavy write workload with small file transfer size. Incorrect drive behavior for command with Forced Unit Access setting. |
| December 2016 | 109E | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Improvements to PHY initialization process Improved end of life management of bad blocks for better reliability <p>These firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Fixed potential issue of incorrect data may be read during resume from low power state |



Intel® Solid State Drive E 5400s Series Revision History

| Date | Revision | Description |
|-----------|----------|---|
| May 2017 | 041E | This firmware versions contain the following enhancements: <ul style="list-style-type: none"> • Optimized SATA signal integrity • Optimized behavior entering and resuming from low-power states This firmware versions contain fixes for the following issues: <ul style="list-style-type: none"> • Intermittent errors when resuming from unsafe shutdown • Fixed issues around use in Connected Standby • Fixes to intermittent boot error in Linux • Mitigates a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00079) |
| July 2016 | 036E | This firmware release provides the following change <ul style="list-style-type: none"> • Fixes issue that BSOD occurs during S3/S4 resume on systems supporting devsleep • Mitigates a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00055) |
| June 2016 | 031E | This firmware release provides the following changes: <ul style="list-style-type: none"> • Corrected SMART AAh, E8h, ABh, and ACh behavior • Corrected DIPM enabled after COMRESET issue • Corrected errant FIS causing BSOD when Write Cache disabled • Corrected SATA NCQ Command Error log reporting issue • Mitigated a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00053). |

Intel® Solid State Drive Pro 6000p Series Revision History

| Date | Revision | Description |
|---------------|----------|--|
| May 2017 | 121P | This firmware versions contain the following enhancements: <ul style="list-style-type: none"> • Improved link initializations This firmware versions contain fixes for the following issues: <ul style="list-style-type: none"> • Drive hangs intermittently after Format NVM command. • Format NVM command occasionally failing with PCIe ASPM enabled. • Data miscompare caused by intermittent data corruption during heavy write workload with small file transfer size. • Incorrect drive behavior for command with Forced Unit Access setting. • Mitigates a security vulnerability INTEL-SA-00078 |
| December 2016 | 109P | This firmware versions contain the following enhancements: <ul style="list-style-type: none"> • Improvements to PHY initialization process • Improved end of life management of bad blocks for better reliability These firmware versions contain fixes for the following issues: <ul style="list-style-type: none"> • Fixed potential issue of incorrect data may be read during resume from low power state |



Intel® Solid State Drive Pro 5400s Series Revision History

| Date | Revision | Description |
|------------|-----------|---|
| July 2017 | 041P/015P | Added support for 256GB/512GB skus: - same firmware changes as listed below. |
| May 2017 | | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Optimized SATA signal integrity Optimized behavior entering and resuming from low-power states <p>This firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Intermittent errors when resuming from unsafe shutdown Fixed issues around use in Connected Standby Fixes to intermittent boot error in Linux Mitigates a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00079) |
| March 2017 | 036P | Added support for missing 80/120GB skus – same firmware changes as listed below. |
| July 2016 | | <p>This firmware release provides the following changes:</p> <ul style="list-style-type: none"> Fixes issue that BSOD occurs during S3/S4 resume on systems supporting devsleep Fixes drive issues occurring when using WinMagic* software with drive Opal security Mitigates a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00055) |

Intel® Solid State Drive Pro 2500 Series Revision History

| Date | Revision | Description |
|--------------|----------------------------|---|
| October 2015 | M.2 – TG16, 2.5" – TG21 | <p>This firmware release provides the following changes:</p> <ul style="list-style-type: none"> Devsleep wake optimizations for more robust resume after devsleep Fix for Windows' disk error occurring after devsleep on systems with ATA user password Fix for I/O abort due to Sanitize Freeze Lock after COMRESET Fix for Drive Self-Test reporting incorrect status after test abort |



Intel® Solid State Drive 750 Series Revision History

| Date | Revision | Description |
|---------------|----------------------|---|
| March 2017 | 8EV101H0 8B1B0133 | This firmware version contains fixes for the following issues: <ul style="list-style-type: none"> • XN022 Assert Fixes • Sequential read performance improvement at end of life from firmware 8EV101F0 • Misc. sightings closure and improvement on product health. |
| October 2016 | 8EV101F0 8B1B0133 | This version provides a firmware and bootloader update for the Intel® SSD 750 Series. This firmware version contains fixes for the following issues <ul style="list-style-type: none"> • Added NVME IO Queue Metrics log page support • Added Secure Erase Command Monitoring log page support • Updated Secure Erase Command User Data Erase option • Fix for drive entering disable logical mode after frequent, repeated O/S reboots • Prefetch activate/deactivate logic enhancement • Fix for sequential read performance decay • Fix for formatting 4k+DIF causing read errors when using Intel SPDK • Misc. sightings closure and improvement on product health. |
| November 2015 | 8EV10174 8B1B0131 | The latest firmware revision is 8EV10174. The latest bootloader revision is 8B1B0131 (no change). This firmware version contains fixes for the following issue: <ul style="list-style-type: none"> • Fixed LED behavior to appear LED-On when drive active and LED-Off when drive idle. • Fix for some use cases where user data may be inaccessible or at risk of loss. (see Intel Advisory INTEL-SA-00047) • Misc. sightings closure and improvement on product health |
| October 2015 | 8EV10171 8B1B0131 | The latest firmware revision is 8EV10171. The latest bootloader revision is 8B1B0131. This firmware and bootloader version contains fixes for the following issues: <ul style="list-style-type: none"> • Vendor Unique Command to change SM BUS address on “NVMe™ Basic Management Command” • Improved TRIM IOPS operation • In-field Drive Configuration Update capability • Windows* Driver update with bug fixes • Misc. sightings closure and improvement on product health |



Intel® Solid State Drive 600p Series Revision History

| Date | Revision | Description |
|---------------|----------|--|
| May 2017 | 121C | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Improved link initializations <p>This firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Drive hangs intermittently after Format NVM command. Format NVM command occasionally failing with PCIe ASPM enabled. Data miscompare caused by intermittent data corruption during heavy write workload with small file transfer size. Incorrect drive behavior for command with Forced Unit Access setting. |
| December 2016 | 109C | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Optimized drive shutdown sequence for better handling during poor system shutdown Improved power on behavior when resuming from an unsafe shutdown. Improvements to PS3 resume behavior Improvements to PHY initialization process Improvements to PERST# and CLKREQ# detection for corner case issues Improved end of life management of bad blocks for better reliability <p>These firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Fixed potential issue of incorrect data may be read during resume from low power state |

Intel® Solid State Drive 545s Series Revision History

| Date | Revision | Description |
|----------------|----------|---|
| September 2017 | LHF002C | <p>These firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Improved drive behavior during unsafe shutdown scenarios Improved drive behavior with non-aligned 4K workloads Improved garbage collection capabilities Updates to SMART table to provide persistent SMART behavior during power cycle, firmware upgrade and secure erase <p>Optimized Power Management behavior with DIPM enabled and transition to different power states</p> |

Intel® Solid State Drive 540s Series Revision History

| Date | Revision | Description |
|-----------|-----------|--|
| July 2017 | 041C/015C | Added support for 256GB/512GB skus: - same firmware changes as listed below. |
| May 2017 | | <p>This firmware versions contain the following enhancements:</p> <ul style="list-style-type: none"> Optimized SATA signal integrity Optimized behavior entering and resuming from low-power states <p>This firmware versions contain fixes for the following issues:</p> <ul style="list-style-type: none"> Intermittent errors when resuming from unsafe shutdown |



| Date | Revision | Description |
|-----------|----------|--|
| | | <ul style="list-style-type: none"> Fixed issues around use in Connected Standby Fixes to intermittent boot error in Linux Mitigates a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00079) |
| July 2016 | 036C | This firmware release provides the following change <ul style="list-style-type: none"> Fixes issue that BSOD occurs during S3/S4 resume on systems supporting devsleep Mitigates a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00055) |
| June 2016 | 031C | This firmware release provides the following changes: <ul style="list-style-type: none"> Corrected SMART AAh, E8h, ABh, and ACh behavior Corrected DIPM enabled after COMRESET issue Corrected errant FIS causing BSOD when Write Cache disabled Corrected SATA NCQ Command Error log reporting issue Mitigated a security vulnerability which in some cases resulted in corruption of user's data (see Intel Advisory INTEL-SA-00053). |

Intel® Solid State Drive 535 Series Revision History

| Date | Revision | Description |
|--------------|----------------------------|---|
| October 2015 | M.2 – RG11, 2.5" – RG21 | This firmware release provides the following changes: <ul style="list-style-type: none"> Fix for Windows' disk error occurring after devsleep on systems with ATA user password Fix for I/O abort due to Sanitize Freeze Lock after COMRESET Fix for Drive Self-Test reporting incorrect status after test abort |

Intel® Solid State Drive 530 Series Revision History

| Date | Revision | Description |
|---------------|---|--|
| December 2013 | M.2 – DC31, 2.5" – DC32, mSATA – DC33 | This firmware release provides the following changes: <ul style="list-style-type: none"> Default Software Settings Preservation (SSP) for DIPM is changed from a default = on, to a DEFAULT = OFF. This addresses situations in older systems where the drive was not found after a warm reset causing blue screens. Corrects an occasional miss-reporting of SMART attribute E3h (Timed Workload Read/Write ratio). The drive no longer increments SMART 0Ch (Power Cycle Count) after a SECURE ERASE operation. |
| August, 2013 | 2.5" – DC12, mSATA – DC13 | This firmware release addresses an occasional drive hang after resume from Link Power Management slumber state. |



Intel® Solid State Drive 335 Series Revision History

| Date | Revision | Description |
|---------------|----------|---|
| June, 2013 | 335u | This firmware revision has several continuous improvement optimizations intended to provide the best possible user experience with the Intel SSD. |
| November 2012 | 335t | This release adds a firmware update for the Intel SSD 335 Series fixing the following issue : - Incorrect reporting of the E9h media wear indicator value. |

Intel® Solid State Drive 320 Series Revision History

| Date | Revision | Description |
|-------------|----------|--|
| August 2011 | 4PC10362 | This firmware revision fixes various issues related to the BAD_CTX 13x (8MB capacity) problems associated with unsafe power-loss situations. |

Intel® X25-E (50nm product) Revision History

| Date | Revision | Description |
|---------------|-----------|--|
| August 2011 | No Change | No changes to Intel X25-E SATA SSD 50nm products. The most current firmware remains at 045C8855. |
| January 2011 | No Change | No changes to Intel X25-E SATA SSD 50nm products. The most current firmware remains at 045C8855. |
| November 2009 | 045C8855 | This firmware revision has several continuous improvement optimizations intended to provide the best possible user experience with the Intel SSD. |
| October 2009 | No Change | No change to Intel X25-E SATA SSD 50nm products. The most current firmware remains at 045C8850. |
| August 2009 | 045C8850 | This firmware revision is for Intel X25-E SATA SSD 50nm products only and has several continuous improvement optimizations intended to provide the best possible user experience with the Intel SSD. |

Intel® X18-M/X25-M (50nm product) Revision History

| Date | Revision | Description |
|---------------|-----------|---|
| August 2011 | No Change | No changes to Intel X18-M/X25-M SATA SSD 50nm products. The most current firmware remains at 045C8820. |
| January 2011 | No Change | No changes to Intel X18-M/X25-M SATA SSD 50nm products. The most current firmware remains at 045C8820. |
| November 2009 | No Change | No changes to Intel X18-M/X25-M SATA SSD 50nm products. The most current firmware remains at 045C8820. |
| October 2009 | No Change | No changes to Intel X18-M/X25-M SATA SSD 50nm products. The most current firmware remains at 045C8820. |
| August 2009 | No Change | No changes to Intel X18-M/X25-M SATA SSD 50nm products. The most current firmware remains at 045C8820. |
| August 2009 | No change | No changes to Intel X18-M/X25-M SATA SSD 50nm products. The most current firmware remains at 045C8820. |
| April 2009 | 045C8820 | This firmware revision has several continuous improvement optimizations intended to provide the best possible user experience with the Intel SSD. |



Intel® X18-M/X25-M/X25-V (34nm product) Revision History

| Date | Revision | Description |
|---------------|-----------|---|
| August 2011 | 2CV102M3 | No changes to Intel X18-M/X25-M SATA SSD 34nm products. The most current firmware remains at 2CV102M3. |
| January 2011 | 2CV102M3 | This firmware revision fixes enumeration and slow boot issues on SATA 6Gb/s controllers, adds improvements to S.M.A.R.T. attributes for more accurate reporting of drive health, along with improved NCQ capability. |
| November 2009 | 2CV102HD | This firmware revision includes several continuous improvement optimizations intended to provide the best possible user experience with the Intel SSD. |
| October 2009 | 2CV102HA | This firmware revision supports the ATA Data Set Management Command "Trim". Also, this firmware revision includes several continuous improvement optimizations that provide for increased write performance on 160GB drives. |
| August 2009 | No Change | No changes to Intel X18-M/X25-M SATA SSD 34nm products. The most current firmware remains at 2CV102G9. |
| August 2009 | 2CV102G9 | This firmware revision is for Intel X25-M SATA SSD 34nm products only (Intel X18-M SATA SSD 34nm products do not require this firmware update) and fixes the following two issues: 1) System hangs with BIOS drive password enabled. 2) System inoperable when BIOS drive password disabled or changed. |