

Intel® Solid State Drive Firmware Update Tool

User Guide

Software Version 2.2.x or later



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Contents

Document Revision History	4
Glossary	4
1.0 Overview.....	5
1.1 System Requirements	5
1.2 Known Compatibility Issues	6
1.2.1 Run Compatibility Issue with Secure Boot Enabled	6
1.2.2 Boot Compatibility Issues.....	6
2.0 Windows* 7/8/10 Instructions	7
2.1 Setting Up	7
2.2 Option 1: Download the Intel® SSD Firmware Update Tool to Blank CD	8
2.3 Option 2: Download the Intel® SSD Firmware Update Tool to USB Flash Drive.....	10
2.4 Run the Intel® SSD Firmware Update Tool	11
3.0 Apple Macintosh Instructions	18
3.1 Setting Up	18
3.2 Downloading the Intel® SSD Firmware Update Tool to Blank CD.....	18
3.3 Starting the Firmware Update Process	21
4.0 Additional Information – Burning the ISO Image in Windows* XP, Windows* Vista* or Linux* OS ..	22
5.0 Troubleshooting	23
5.1 Computer Does Not Recognize ISO Images.....	23



Document Revision History

Date	Revision	Description
August 2009	001	Initial release.
October 2009	002	Deleted the Apple Safari* content from Known Issues section. The Intel® SSD Firmware Update Tool now works with this website. Modified various graphics to reflect the new 1.3 firmware release.
November 2009	003	Modified graphics version information. Modified instructions in Run the Intel® SSD Firmware Update Tool section. Modified instructions in Verify New Firmware Update section.
January 2011	004	Updated document to reflect new firmware release.
August 2011	005	Added support for Intel® Solid State Drive 320 Series. Miscellaneous documentation changes.
June 2013	006	Added support for Intel® Solid State Drive DC S3700 Series Added support for Intel® Solid State Drive 335 Series Updated for version 2.0 of the Intel® SSD Firmware Update Tool software.
October 2015	007	Added support for Intel® Solid State Drive Pro 2500 and 535 Series. Added support for Intel® Solid State Drive 750 Series Added support for Intel® Solid State Drive DC S3710, DC S3610, DC S3510, DC S3500 M.2 and DC S3500 HD Series. Tool support for Windows 10
October 2016	008	Updates to known issues
April 2017	009	Modified for release of version 2.2.0
May 2017	010	Modified for release of version 2.2.1 – for systems using Intel® Optane™ Memory as a system accelerator.

Glossary

Terms and Acronyms

Term	Description
ATA	Advanced Technology Attachment
FUT	Intel® SSD Firmware Update Tool
ISO	International Organization for Standardization
ISO image	An archive file or disk image of an optical disk that uses the ISO format. Typically, the file has an .ISO extension; however, Apple Mac OS* ISO images often use a .CDR extension.
OS	Operating System
RAID	Redundant Array of Independent Disks (formerly Redundant Array of Inexpensive Disks)
SATA	Serial ATA
SSD	Solid State Drive



1.0 Overview

This document describes how to use the Intel® Solid State Drive Firmware Update Tool to update the firmware on Intel® Solid State Drives (Intel® SSDs) in all capacities.

NOTES:

- The Intel SSD Firmware Update Tool recognizes all Intel SSDs, but if there is no updated firmware available for a specific model, the tool does not provide any functionality.
- The Intel SSD Firmware Update Tool requires that Legacy Boot is enabled in the BIOS.
- If you purchased your Intel SSD from an OEM, your firmware version may have a different naming. Contact your local OEM representative for latest firmware revisions.

For Microsoft Windows* and Linux* operating systems, follow the firmware update instructions in Section 2.0, "[Windows* 7/8/10 Instructions](#)".

For Apple Mac OS* systems, follow the instructions in Section 3.0, "[Apple Macintosh Instructions](#)".

The firmware update process involves three steps:

1. Perform the setup

Prior to updating the SSD firmware, perform such activities as backing up your data and closing all other applications.

2. Download the Intel® SSD Firmware Update Tool to a USB Flash Drive or blank CD (CD-R or CD-RW)

The tool is a self-contained firmware update package formatted as an ISO image, which must be downloaded and burned on a USB flash drive (Windows and Linux only) or blank CD-R.

3. Run the Intel® SSD Firmware Update Tool

When installed into a host system, the CD boots its own custom Linux-based environment and runs the necessary firmware update software to modify your Intel SSD.

1.1 System Requirements

To use the Intel® SSD Firmware Update Tool, you need the following items:

- Supported Intel SSD
- Host system with an available USB port (Windows and Linux only) or a Read/Writable (R/W) CD-ROM drive
- ISO image burning software usually provided with the R/W CD-ROM drive, or freely available online
- Blank USB Flash Drive (Windows and Linux only) or blank CD (CD-R or CD-RW)
- A charged battery, if the update occurs on a mobile system

For systems accelerated with Intel® Optane™ Memory, system acceleration must be disabled temporarily to run the firmware update. System acceleration can be re-enabled after the firmware update has completed.



1.2 Known Compatibility Issues

1.2.1 Run Compatibility Issue with Secure Boot Enabled

The Intel® SSD Firmware Update Tool has a known run compatibility issues with, but not limited to:

- HP Envy Touchsmart Ultrabook
- Dell Inspiron Ultrabook 15z

The following are examples for disabling the Secure Boot feature. Instructions may vary on other platforms.

To run the Intel® SSD Firmware Update Tool on an HP Envy Touchsmart Ultrabook, you will first need to disable the Secure Boot feature using the following procedure:

1. Enter the **BIOS** by pressing the **F10** key while powering up the system
2. Go to **System Configuration**
3. Select **Boot Options**
Legacy Support is disabled by default
4. Enable Legacy Support.
5. Answer **YES** to the question.
Changing this setting may make the system unable to boot.
6. To modify the Legacy boot order, set **USB Diskette on key/USB hardDisk** as **First Boot** using the **F6** Key
7. Press **F10** to save and exit the BIOS

After you are finished with FUT you can reset BIOS to the Default values

To run the Intel® SSD Firmware Update Tool on a Dell Inspiron Ultrabook 15z, you will first need to disable the Secure Boot feature using the following procedure:

1. Enter the BIOS by pressing the **F2** key while powering up the system
2. Go to the **Boot** menu
3. Go to the **Secure Boot** option
4. Select **Disabled**
5. Exit with Save Changes and reset
6. Answer **Yes** to *Save configuration and reset* question
7. After using FUT return to the BIOS
8. Reset **Secure Boot** to **Enabled**
9. Save and exit

1.2.2 Boot Compatibility Issues

The Intel® SSD Firmware Update Tool has a known boot compatibility issues with, but not limited to:

- AMD Turion X2 system
- Samsung NC20 VTA NANO U2250

There is no fix in the tool or known workaround at this time for these boot compatibility issues. We are continuously investigating solutions to these and others issues that relate to the tool's bootable Linux environment.



2.0 Windows* 7/8/10 Instructions

2.1 Setting Up

Complete the following steps before starting the firmware update process on the PC containing the SSD.

1. Back Up the SSD

Perform a complete system backup on your Intel SSD to ensure that no data is lost during the firmware update process. Intel is not responsible for any data loss that might occur during or after a firmware update on an SSD.

Following a successful firmware update, data restoration should not be required.

2. Plug in the Power

For mobile PCs, ensure the computer battery is fully charged. For desktop PCs, ensure the system is plugged into AC power during the update process. Do not remove power at any time during the firmware update process as this could produce incomplete results and may render your Intel SSD unusable.

3. Turn Off Drive Password Protection

Some systems provide the ability to password-protect their drives. If your system has password protection enabled, the Intel SSD may reject any requests from the host to update the firmware. You may need to turn off the drive password protection prior to beginning the firmware update process.

Although it varies from system to system, you can usually find the Drive Password Protection feature located in the BIOS. Consult your system documentation for the BIOS settings and passwords.

If you need help disabling the drive password protection feature, contact Intel Customer Support: <http://www.intel.com/go/ssdsupport>

4. Check the Boot Order

This procedure requires booting from a USB flash or CD-ROM drive before the system drive. To determine the boot order for your system, reboot and enter BIOS Setup. Depending on the BIOS vendor, look for a parameter named **Boot Device Priority** or **Boot Load Order**. Ensure that the system boots the USB flash, or CD-ROM drive before the drive that contains the operating system (OS).

For more information on how to set the CD-ROM drive boot order, consult the system documentation for your PC.

If you still need additional assistance checking the boot order, contact Intel Customer Support: <http://www.intel.com/go/ssdsupport>

5. Close Applications

Before beginning the firmware download process, close all applications except for your Internet browser.

2.2 Option 1: Download the Intel® SSD Firmware Update Tool to Blank CD

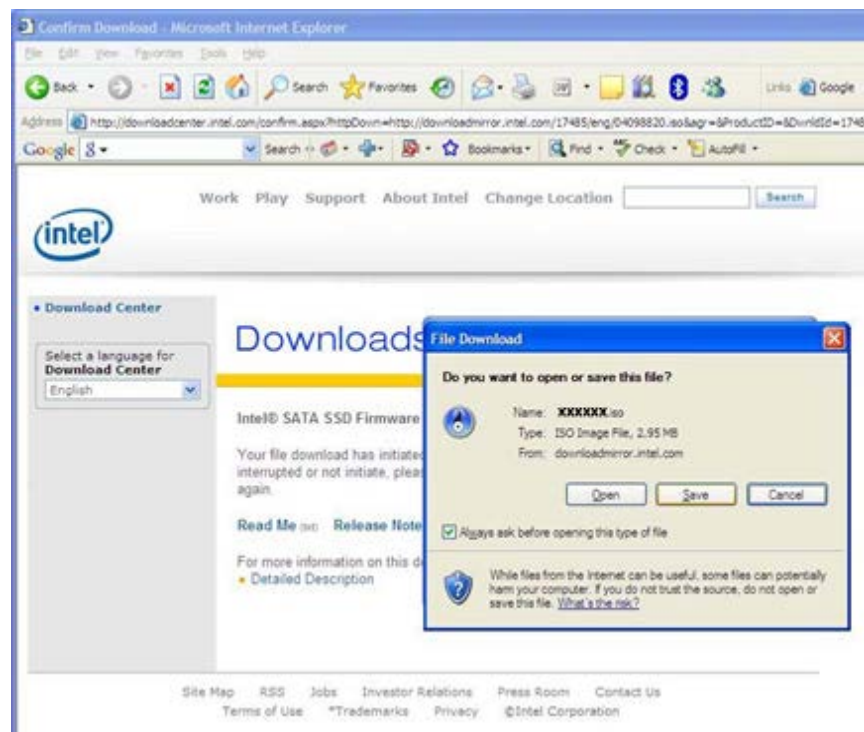
The Intel® SSD Firmware Update Tool is packaged as an ISO image. Similar to an archive file or a disk image, an ISO image is specifically designed for optical disks like CDs in a format specified by the International Organization for Standardization (ISO).

You cannot simply copy an ISO image to a blank CD. (It will appear as a data file and will not work correctly.) The ISO image must be decoded with software and installed onto a blank CD (CD-R or CD-RW).

1. Go to the [Intel download website](http://www.intel.com/go/ssdfirmware) located at <http://www.intel.com/go/ssdfirmware>.
2. Review the *Intel SSD Firmware Release Notes* document for a quick summary of the firmware changes for each product.
3. Click **Download** to display the terms of the license agreement.
4. After reading the agreement, click **ACCEPT** to start the download.

The browser prompts you to select **Open**, **Save** or **Cancel**.

Figure 1. Download the ISO Image




Your screen will display the name of the current firmware update image file (xxxxxx.iso).



5. Follow the steps for your operating system to burn the ISO image to a blank CD-R or CD-RW.

Windows* 8/10

- a) Insert a blank CD into your drive
- b) Click **Save** to download the file
- c) Specify a folder location when prompted (such as c:\temp)
- d) Press the **Windows key**  on your keyboard to go to the desktop, then click the **File Explorer** icon on the taskbar
- e) Navigate to the file folder you specified in **step b**
- f) Right-click the .ISO file and select **Burn disc image**
- g) Click **Burn**. The ISO image is burned to the CD
- h) Click **Close** when finished

Windows* 7

- a) Insert a blank CD into your drive
- b) Click **Save** to download the file
- c) Specify a folder location when prompted (such as c:\temp)
- d) Open the Windows **Start** menu, open the Computer folder, and go the file folder you specified in the previous step
- e) Right-click the .ISO file and select **Open With**
- f) Select **Windows Disk Image Burner**
- g) Click **Burn**. The ISO image is burned to the CD
- h) Click **Close** when finished

Windows XP and Windows Vista*

Your Read/Write CD-ROM drive software will guide you through the process of burning an ISO image. For more information, see [Section 6.0, "Additional Information – Burning the ISO Image in Windows XP, Windows Vista or Linux OS."](#)

If your R/W CD-ROM software does not recognize ISO images, you may see an "unknown file type" message when downloading the Intel® SSD Firmware Update Tool. See [Section 7.1, "Computer Does Not Recognize ISO Images."](#)



2.3 Option 2: Download the Intel® SSD Firmware Update Tool to USB Flash Drive

The Intel® SSD Firmware Update Tool is packaged as an ISO image. Similar to an archive file or a disk image, an ISO image is specifically designed for optical disks like CDs in a format specified by the International Organization for Standardization (ISO).

This means that you cannot simply copy an ISO image to a blank USB Flash Drive. (It will appear as a data file and will not work correctly.) The ISO image must be decoded with software and installed onto a blank USB Flash Drive to make it bootable with the Intel® SSD Firmware Update Tool.

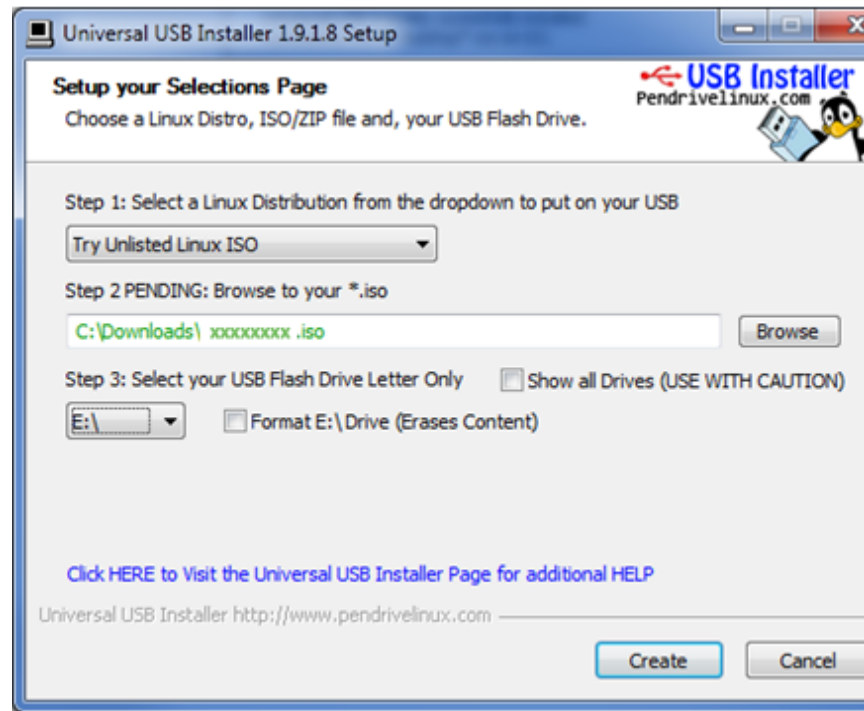
For the purpose of illustration, we are using Universal USB installer software from pendrivelinux.com, but you may use any installer that you prefer.

1. Go to the [Intel download website](http://www.intel.com/go/ssdfirmware) located at <http://www.intel.com/go/ssdfirmware>.
2. Review the *Read Me* file to better understand the firmware update process. The *Read Me* file contains high-level instructions for using the Intel® SSD Firmware Update Tool.
3. Review the Intel® SSD *Firmware Release Notes* document for a quick summary of the firmware changes for each product.
4. Click **Download** to display the terms of the license agreement. (The *Read Me.txt* file also includes the license agreement information.)
5. After reading the agreement, click **ACCEPT** to start the download.

The browser prompts you to select **Open**, **Save** or **Cancel**. See Figure 1 in the previous section to view a sample screen.

6. Go to <http://www.pendrivelinux.com/universal-usb-installer-easy-as-1-2-3/> and download the freeware Universal USB Installer
7. Install and run the Universal USB Installer (see Figure 2)
8. Select the Try Unlisted Linux ISO
9. Browse to the location of the FUT ISO and select it
10. Select the drive letter that corresponds to your blank USB Flash Drive
11. Click **Create**

Figure 2. Universal USB Installer



NOTE: Your screen will display the name of the current firmware update image file (xxxxxxx.iso).

2.4 Run the Intel® SSD Firmware Update Tool

After creating the ISO image CD or bootable USB flash drive, make sure you have completed the setup procedures before running the Intel® SSD Firmware Update Tool:

- Back up the SSD
- Turn off Drive Password Protection
- Designate the CD-ROM or USB Flash drive (as appropriate) to boot first or prior to the OS drive
- Fully charge the battery (for mobile computers)
- Plug in the power cable (for desktop computers)

NOTE: If at any time during the firmware update process the program fails or your system displays a blank screen, power down and reboot your computer. Run the firmware update process again. If the second attempt fails, contact Intel Customer Support:

<http://www.intel.com/go/ssdsupport>

1. Insert the CD containing the ISO image into the R/W CD-ROM drive, or the bootable USB flash drive into an available USB port
2. Click **Shutdown** from the Start menu to safely close down and power off the system
3. Wait for a count of 10 seconds once the system is completely powered off
4. Press the On button to boot the system from the CD-ROM or USB flash drive and automatically start the Intel® SSD Firmware Update Tool

5. Let the program run until it displays the License Agreement screen shown in Figure 3

Figure 3. Initial Start Screen



6. Click **Accept** to accept the license agreement and continue, or **Decline** to exit the tool without running it
7. The FUT scans your system for Intel SSDs and displays information similar to that shown in Figure 4. If your system contains more than one Intel SSD, the tool displays each one it detects in a separate tab

NOTE: If the tool does not find an Intel SSD, the following information will appear:





If you know an Intel SSD is installed and correctly connected to your system, please contact Intel Customer Support for further assistance at the following website:

<http://www.intel.com/go/support>

Figure 4. Intel® SSD Firmware Update Tool Home Screen



Depending on how many Intel SSDs are detected, you will see one or more tabs displayed. If five or more drives are detected, there will also be arrow buttons to the left and right of the tabs that enable scrolling through all detected drives.

Note the badge next to the drive picture on each tab.



A green badge with a check mark indicates that this Intel SSD has the latest firmware and does not need to be updated.



An orange badge with an Exclamation Point means that there is a firmware update available for this SSD.



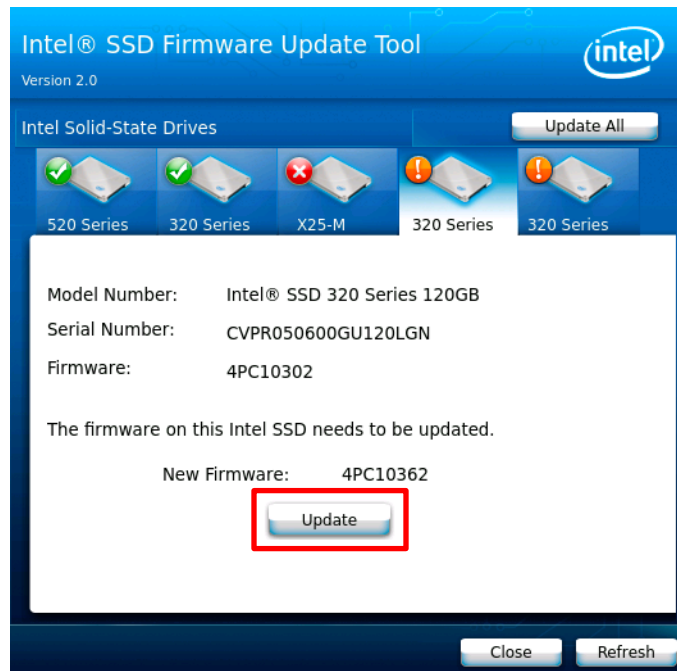
A red badge with an X indicates an issue will or has prevented the update. You will see a message on the drive's tab describing one of four possible conditions:

- 1) The SSD is security locked. In this case, please unlock the drive before attempting to update its firmware.
- 2) This drive is running pre-production firmware. If this message is displayed, please contact Intel Customer Support at <http://www.intel.com/go/ssdsupport> for further assistance.
- 3) Unsupported firmware. Please contact Intel Customer Support at <http://www.intel.com/go/ssdsupport> for further assistance.



- 4) An attempt to update the firmware has failed. Please see details on a failed update later in this guide.
8. To update a drive, click the appropriate tab and click the Update button (Figure 5)

Figure 5. Firmware Update Button



9. If more than one drive needs updating, you can also perform the update for all drives at once by clicking the **Update All** button (Figure 6).

Figure 6. Update All button



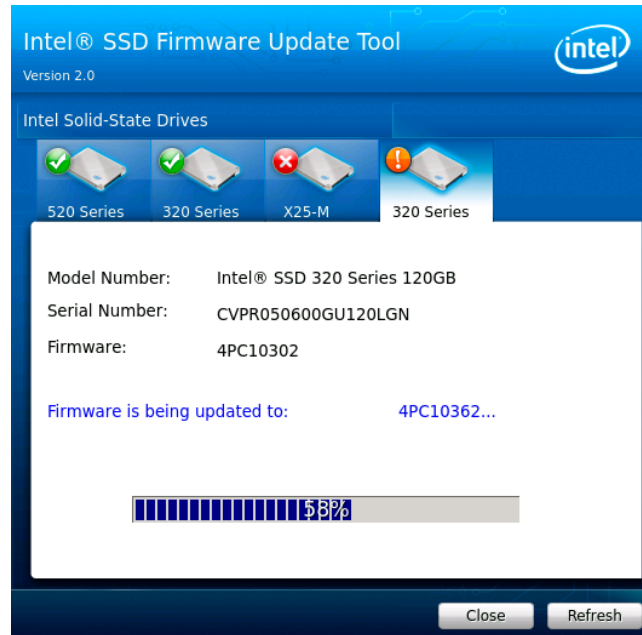
10. After pressing the Update or Update All button, the Warning Screen shown in Figure 7 will appear. Click **Yes** to proceed or **No** to cancel and exit without updating

Figure 7. Firmware Update Warning Screen



It will take from 30 seconds up to 2 minutes to update the firmware on each SSD. Note the progress bar in Figure 8. Until the firmware update has completed, **it is critical that you do not remove power or reboot your system**. Doing so will produce unpredictable results and may render your SSD inoperable.

Figure 8. Firmware Update in Process



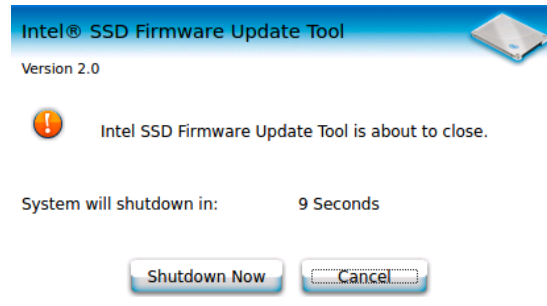
Once the update is complete, the tool displays a screen similar to Figure 9. Note that the orange (!) badge has changed to a green check mark badge

Figure 9. Firmware Update Successful



Once you have finished updating firmware, you can click the **Close** button to exit the Intel® SSD Firmware Update Tool

Figure 10. Intel® SSD Firmware Update Tool Shutdown Notice



Eject the CD or unplug USB flash drive with the Intel® SSD Firmware Update Tool, then click the Shutdown Now button to exit the Intel® SSD Firmware Update Tool and shut down your computer. Be sure to wait 10 seconds before starting your computer again.

If a firmware update fails for a drive, the badge will turn from the orange exclamation mark to the red X, and you will see the error message in figure 11:

Figure 11. Firmware Update Failure Message



The message indicates three steps you should take before attempting the update again:

- Disable the drive password in the computer's BIOS
- Enable SMART features in the computer's BIOS
- Enable legacy IDE mode in the computer's BIOS

If you are still unable to update the firmware after taking these steps, please contact Intel Customer Support at <http://www.intel.com/go/ssdsupport> for further assistance.



3.0 Apple Macintosh Instructions

3.1 Setting Up

Complete the following steps before starting the firmware update process on the computer containing the SSD.

1. **Back Up the SSD**

Perform a complete system backup on your Intel SSD to ensure that no data is lost during the firmware update process. Intel is not responsible for any data loss that might occur during or after a firmware update on an SSD.

Following a successful firmware update, data restoration should not be required.

2. **Plug In the Power**

For mobile computers, ensure the computer battery is fully charged. For desktop computers, ensure the system is plugged into AC power during the update process. Do not remove power at any time during the firmware update process as this could produce incomplete results and may render your Intel SSD unusable.

3. **Close Applications**

Before beginning the firmware download process, close all applications except for your Internet browser.

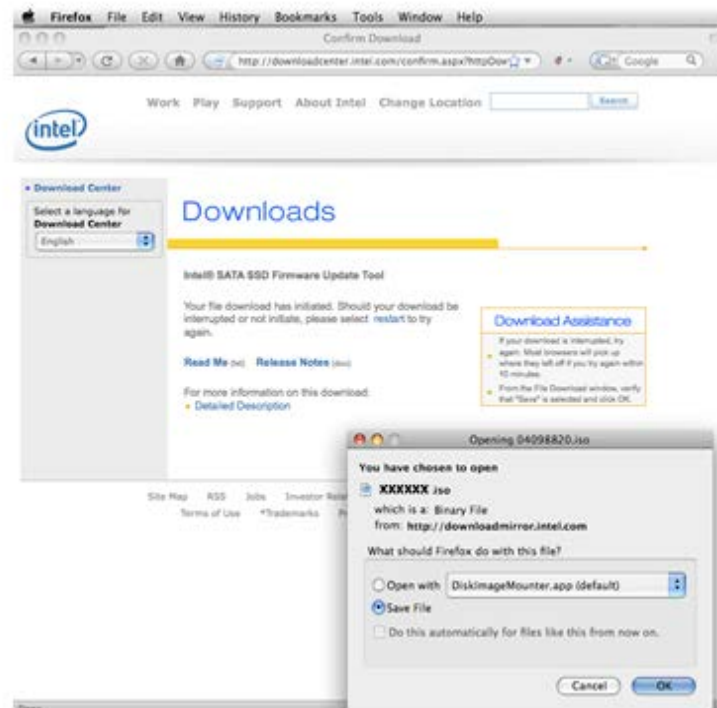
3.2 Downloading the Intel® SSD Firmware Update Tool to Blank CD

The Intel® SSD Firmware Update Tool is packaged as an ISO image. Similar to an archive file or a disk image, an ISO image is specifically designed for optical disks like CDs in a format specified by the International Organization for Standardization (ISO).

You cannot simply copy an ISO image to a blank CD. (It will appear as a data file and will not work correctly.) The ISO image must be decoded with software and installed onto a blank CD (CD-R or CD-RW).

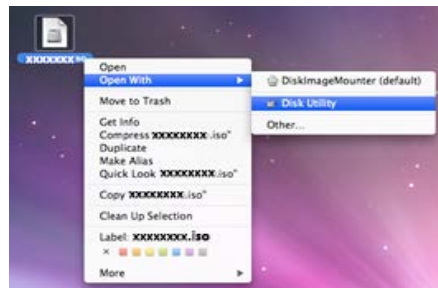
1. Go to the Intel download website located at <http://www.intel.com/go/ssdfirmware>.
2. Review the *Read Me.txt* file to better understand the firmware update process. The *Read Me* file contains high-level instructions for using the Intel® SSD Firmware Update Tool.
3. Review the *Release Notes* document for a quick summary of the firmware changes for each product.
4. Click **Download** to display the terms of the license agreement. (The *Read Me.txt* file also includes the license agreement information.) After reading the agreement, click **ACCEPT** (at the bottom of the page) to display the web page with the download firmware link.
5. Click **Intel® SSD Firmware Update Tool**. The browser prompts you to select **Open**, **Save** or **Cancel** (see Figure 12).

Figure 12. Download the ISO Image

**NOTES:**

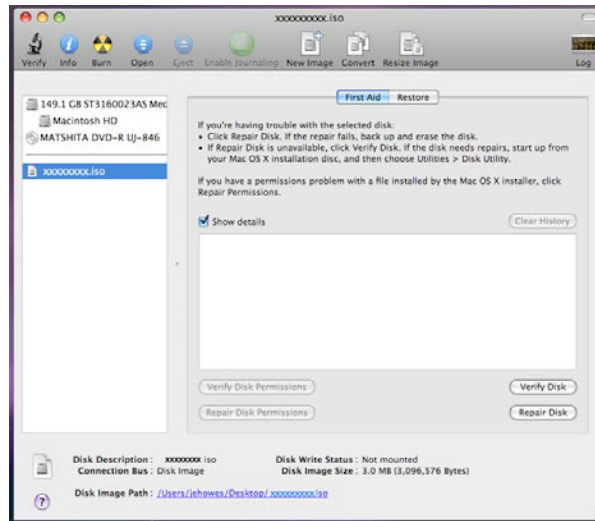
1. Mozilla Firefox* was used only as an example to create this screen shot and does not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).
6. Click **Save File** to download and save the ISO image.
7. Right click the ISO image and open **Disk Utility**. See Figure 13.

Figure 13. Selecting Disk Utility

**NOTES:**

1. These Apple* products were used only as examples to create this screen shot and do not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).
8. With the Disk Utility open, click the ISO image you downloaded.
9. Click the **Burn** button in the toolbar.

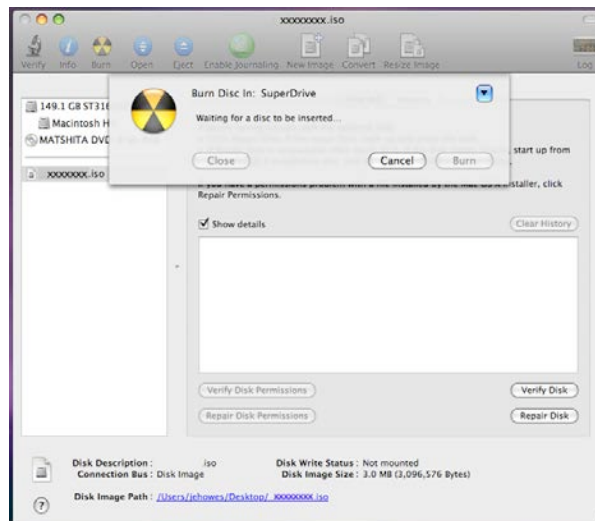
Figure 14. Using Disk Utility to Burn ISO Image



NOTE:

1. Your screens will display the current name of the firmware update image file (xxxxxxx.iso).
10. Install a blank CD (CD-R or CD-RW) when prompted.
11. Click the **Burn** button. The application displays a status screen similar to Figure 15.

Figure 15. Image Burning Process – Apple Mac OS*



NOTES:

1. The Apple* and Matsushita* products were used only as examples to create the screen shots on this page and do not imply any endorsement or warranty by Intel.
2. Your screen will display the current name of the firmware update image file (xxxxxxx.iso).

The process of burning a CD-ROM takes approximately five minutes.



3.3 Starting the Firmware Update Process

After creating the ISO image CD, make sure you have completed the setup procedures before starting the firmware update process:

- Back up the SSD
- Fully charge the battery (for mobile computers)
- Plug in the power cable (for desktop computers)

Go to [Section 4.4, "Run the Intel® SSD Firmware Update Tool"](#) and follow the steps to update the firmware.

NOTE: Hold down the "c" key to force your system to boot from the CD-ROM drive.

4.0 Additional Information – Burning the ISO Image in Windows* XP, Windows* Vista* or Linux* OS

This section describes how to burn the Intel® SSD Firmware Update Tool ISO image file on a blank CD (CD-R or CD-RW) using Microsoft Windows XP, Windows Vista, or Linux after you have downloaded the file (as described in Section 4.2).

Once the download process begins, you may see a screen similar to the one shown in Figure 16.

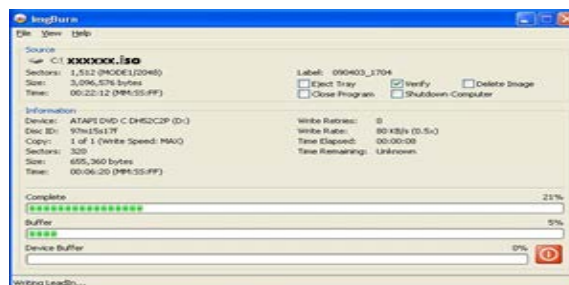
Figure 16. Burning an ISO Image



NOTE: Your screens will display the current name of the firmware update image file (xxxxxxx.iso).

1. Install a blank CD when prompted.
2. Click the **Burn** button to start the process. A status screen similar to Figure 17 appears. The process of burning a CD-ROM takes approximately five minutes.

Figure 17. Image Burning Process



NOTES:

1. The ImgBurn* and ATAPI DVD* products displayed on this page were used only as examples to create these screen shots and do not imply any endorsement or warranty by Intel.
2. Your screens will display the current name of the firmware update image file (xxxxxxx.iso).

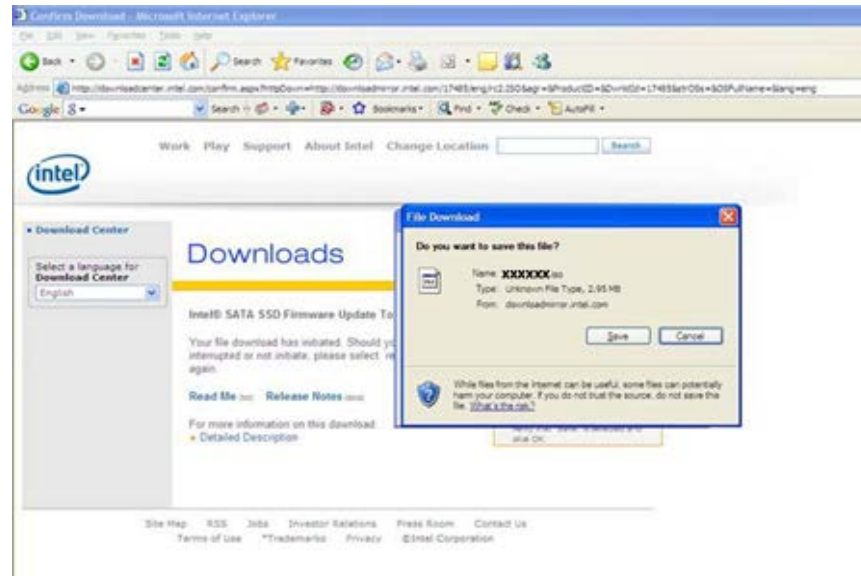


5.0 Troubleshooting

5.1 Computer Does Not Recognize ISO Images

If your CD-ROM software does not recognize ISO images (in Windows XP, Windows Vista, or Linux operating system), you may see an “unknown file type” message when downloading the Intel® SSD Firmware Update Tool similar to Figure 18.

Figure 18. R/W CD-ROM Software Does Not Recognize ISO Images



NOTE: Your screens will display the current name of the firmware update image file (xxxxxxx.iso).

1. Click **Save** to download the ISO image to your computer.
2. Locate a software application on the Internet that burns ISO images. Install the application.
3. Double-click the ISO image on your drive to decode the image and burn the Intel® SSD Firmware Update Tool onto a blank CD (CD-R or CD-RW).