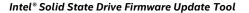


User Guide Software Version 3.0.0 or later

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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.
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February 2018	011	Modified for release of version 3.0.0. Modified Intel® SSD Firmware Update Tool software to be CLI based only instead of GUI.
September 2019	012	Update to Notes in Overview Section

Glossary of Terms

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

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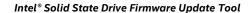


1.0 Overview

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 Original Equipment Manufacturer (OEM), your Firmware version may have different naming. Contact your local OEM representative for latest Firmware revisions.
- For a listing of the latest Firmware on all products, please see the <u>Firmware listing page</u>.
 While the latest firmware might appear on the Firmware listing page, this tool may not yet be updated to provide the Firmware update. Please check the release notes to confirm the Firmware update is available in this tool. For <u>Intel SSD Firmware Update</u>
 <u>Tool</u> usage instructions and known issues, please see the User Guide.
- Before initiating the Intel SSD Firmware update, be sure to read and follow the instructions included in the Firmware update guidelines, and release notes.
- If your system is accelerated with Intel® Optane™ Memory, you will need to temporarily disable system acceleration to run the Intel SSD Firmware Update Tool.
- If you are a Windows* user, please take advantage of the Intel® SSD Toolbox to perform Firmware updates which is the preferred method for most Windows users. For the Intel® SSD 540s Series, Intel® SSD Pro 5400s Series, Intel® SSD E 5400s Series, and the Intel® SSD DC S3100 Series products, updating from the original production Firmware is only available through the Intel® SSD Firmware Update Tool.
- If you are an Apple* or Linux* user, you will continue to use the Intel SSD Firmware Update Tool for firmware updates.
- The Firmware included in this package is intended to enable your Intel SSD to deliver the best performance in your PC. Use this update tool or the Intel SSD Toolbox to get the latest production firmware.
- If you need any assistance with the firmware update or experience issues, please contact Intel Customer Support.
- The Firmware update process is done entirely at your own risk. Before attempting to
 update the firmware, it is your responsibility to back up or make copies of your files. If
 the Intel SSD firmware update process is interrupted, your Intel SSD may not function
 properly.
- This download contains both Intel proprietary software and an open source Linux operating environment. The Intel proprietary software is licensed under the Intel® Software License Agreement only. The components of the open source Linux operating environment provided in this download are licensed under the GNU L/GPL and other licenses as applicable. These licenses are included in the "licenses" folder in the download image. You can see the source code for this open source operating environment.





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.

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.

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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.
- Answer YES to the question.
 Changing this setting may make the system unable to boot.
- 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.

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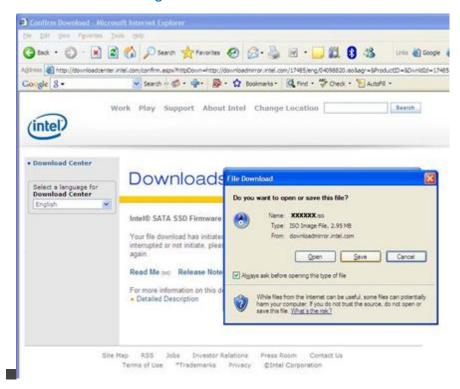
2.2 Option 1: Download the Intel® SSD Firmware Update Tool to Blank CD

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 located at http://www.intel.com/go/ssdfirmware.
- 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.
- 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 <u>Section 4.0, "Additional Information – Burning the ISO Image in Windows XP, Windows Vista or Linux OS."</u>

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 <u>Section 5.1</u>, "Computer Does Not Recognize ISO Images."

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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).

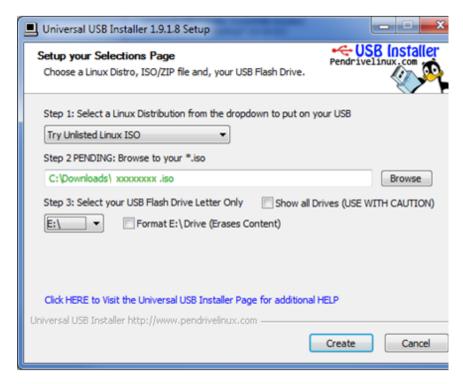
This means that you cannot simply copy an ISO image to a blank USB Flash Drive. (It will appear as a data file and will not work correctly.) The ISO image must be decoded with software and installed onto a blank USB Flash Drive to make it bootable with the Intel® SSD Firmware Update Tool.

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 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 (xxxxxxxx.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

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1. Tool will boot and present the end-user software license. They you will need to press "enter" to page through the full thing. Here is a sample text:

Intel SSD Firmware Update Tool 3.0.0
Copyright(c) 2012 - 2018 Intel Corporation
Copyright (C) Intel Corporation 2012 - 2018. All Rights Reserved. Intel Software License Agreement IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. 1. DEFINITIONS.
"Agreement" means this Software License Agreement.
"Open Source Software" means any software that requires as a condition of use, modification, and/or distribution that such Software or other software incorporated into, derived from, or distributed with such Software: i) be disclosed or distributed in source code form; ii) be licensed by the user to third parties for the purpose of making and/or distributing derivative works; or
iii) be redistributable at no charge.
Open Source Software includes, without limitation, Software licensed or distributed under any of the following licenses or distribution models, or licenses or distribution models substantially similar to any of the following: a) GNU's General Public License (GPL) or Lesser/Library GPL (LGPL), b) the Artistic License (e.g., PERL), c) the Mozilla Public License, d) the Netscape Public License, e) the Sun Community Source License (SCSL),
f) the Sun Industry Source License (SISL),
g) the Apache Software license, and
h) the Common Public License (CPL).
Press enter to continue

2. Once you click through and read the license the tool will prompt the user:

Intel SSD Firmware Update Tool 3.0.0 Copyright(c) 2012 - 2018 Intel Corporation	
Do you accept the License? (Y N):	

a. If the user declines the license agreement the tool will show the shutdown prompt:

- b. If user says "y" to the license prompt then the tool will scan for Intel SSDs.
 - i. If the drive does not need a firmware update it will show something like:



Intel SSD Firmware U Copyright(c) 2012 - 20	lpdate Tool 3.0.0 018 Intel Corporation
Series:	1 1
	INTEL SSDPED1K187GA
Current Firmware:	E2010310
Series:	I SSD contains current firmware Intel SSD DC S3500 Series INTEL SSDSC2BB800G4 D2012370
	D2012370 I SSD contains current firmware

Note: The message displayed above could change depending on why the drive doesn't need an update. It could be because the drive is an invalid SKU or in a disable logical state.

ii. If the drive does need an update it will show as below:

Copyright(c) 2012 - 20	pdate Tool 3.0.0.101 Alpha 1 018 Intel Corporation	
Series: Model:	Intel Optane(TM) SSD DC P INTEL SSDPED1K187GA	48UUX SEries
Current Firmware:		
> i ne selected intel	SSD contains current firmware	as of this tool release.
Series: Model: Current Firmware:	Intel SSD DC S4500 Series INTEL SSDSC2KB240G7 SCV10105	as of this tool release.
Series: Model: Current Firmware:	Intel SSD DC S4500 Series INTEL SSDSC2KB240G7 SCV10105	as of this tool release.

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3. If the user says "n" (no) to the update it will show:

If the user says "n" (no) to the update it will show: Series: Intel Optane(TM) SSD DC P4800X Series Model: INTEL SSDPED1K187GA Current Firmware: E2010310 --> The selected Intel SSD contains current firmware as of this tool release. Intel SSD DC S4500 Series Series: Model: INTEL SSDSC2KB240G7 Current Firmware: SCV10105 New Firmware: SCV10111 This process will update the firmware on your Intel SSD. Intel strongly suggests you perform the firmware update while the solid state drive is fully powered or attached to an active power source to avoid certain risks to the drives performance. As Intel provides no warranty for the data on your drive, you are advised to backup your data BEFORE updating the drive firmware with this utility. Proceed with the Firmware Update? (Y|N): n --> Canceled.

4. If the user says "Y" yes it will show:

Intel SSD Firmware Update Tool 3.0.0.101 Alpha 1 Copyright(c) 2012 - 2018 Intel Corporation _____ Intel Optane(TM) SSD DC P4800X Series INTEL SSDPED1K187GA Current Firmware: E2010310 --> The selected Intel SSD contains current firmware as of this tool release Intel SSD DC S4500 Series INTEL SSDSC2KB240G7 Series: Model Current Firmware: SCV10105 New Firmware: SCV10111 This process will update the firmware on your Intel SSD. Intel strongly suggests you perform the firmware update while the solid state drive is fully powered or attached to an active power source to avoid certain risks to the drives performance As Intel provides no warranty for the data on your drive you are advised to backup your data BEFORE updating the drive firmware with this utility. Proceed with the Firmware Update? (Y|N): y The firmware update process can take 30 seconds to 2 minutes to complete. Updating firmware... Firmware update successful. Note: the last line "Firmware update successful" could be different depending on the status of the firmware update. This will change if the firmware update failed for some reason.

Note: the last line "Firmware update successful" could be different depending on the status of the firmware update. This will change if the firmware update failed for some reason.

5. After it will go to the next Intel solid state drive and show either what was displayed i.e. if no update is needed or if there is an update.

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6. Once the Tool has gone through all the drives it will show the shutdown prompt

Intel SSD Firmware Update Tool 3.0.0.101 Alpha 1
Copyright(c) 2012 - 2018 Intel Corporation

Intel Optane(TM) SSD DC P4800X Series INTEL SSDPED1K187GA E2010310

Current Firmware:

--> The selected Intel SSD contains current firmware as of this tool release.

Series: Model: Intel SSD DC S4500 Series INTEL SSDSC2KB240G7 Current Firmware: SCV10105

New Firmware: SCV10111

This process will update the firmware on your Intel SSD.

Intel strongly suggests you perform the firmware update while the solid state drive is fully powered or attached to an active power source to avoid certain risks to the drives performance. As Intel provides no warranty for the data on your drive,

you are advised to backup your data BEFORE updating the drive firmware with this utility.

Proceed with the Firmware Update? (Y| N): y The firmware update process can take 30 seconds to 2 minutes to complete. Updating firmware...

Firmware update successful.

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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 3).



Figure 3. 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 (xxxxxxxx.iso).
- 6. Click Save File to download and save the ISO image.
- 7. Right click the ISO image and open Disk Utility. See Figure 4.

Figure 4. Selecting Disk Utility



NOTES:

- 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 (xxxxxxxx.iso).
- 8. With the Disk Utility open, click the ISO image you downloaded.
- 9. Click the **Burn** button in the toolbar.

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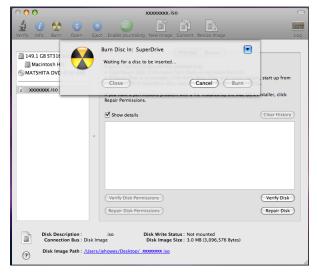
Figure 5. Using Disk Utility to Burn ISO Image



NOTE:

- 1. Your screens will display the current name of the firmware update image file (xxxxxxxx.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 5.

Figure 6. 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 (xxxxxxxx.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 <u>Section 2.4, "Run the Intel® SSD Firmware Update Tool"</u> 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.

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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 2.2).

Once the download process begins, you may see a screen similar to the one shown in Figure 7.

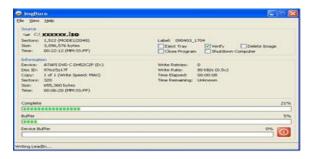
Figure 7. Burning an ISO Image



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

- 1. Install a blank CD when prompted.
- 2. Click the **Burn** button to start the process. A status screen similar to Figure 8 appears. The process of burning a CD-ROM takes approximately five minutes.

Figure 8. 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 (xxxxxxxx.iso).

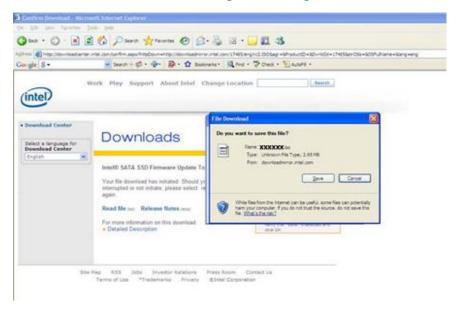


5.0 Troubleshooting

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 9.

Figure 9. R/W CD-ROM Software Does Not Recognize ISO Images



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

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