Intel® SSD Firmware Update Tool

User Guide

March 2024

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Figures

Revision History

Revision Number	Description	Date
017US	• Release for software version 4.1.248	March 2024
016US	• Release for software version 4.1.17	December 2022
015US	• Updates to the document to reflect removals of NAND related material	September 2022
014US	• Updated format and minor changes for creating USB key	April 2021
013US	• Removed Windows XP* and Windows Vista* related content • Added instruction on creating the USB Key • Update Mac* instructions • Added Linux* Instructions	March 2021
012US	• Updated Notes in Overview Section	September 2019
011US	• Modified for release of version 3.0.0. • Modified Intel® SSD Firmware Update Tool software to be Command-Line Interface (CLI) based only instead of GUI.	February 2018
010US	• Modified for release of version 2.2.1 – for systems using Intel® Optane™ Memory as a system accelerator	May 2017
009US	• Modified for release of version 2.2.0	April 2017
008US	• Updates to Known Issues	October 2016
007US	• Added support for Intel® SSD Pro 2500 and 535 Series • Added support for Intel® SSD 750 Series • Added support for Intel® Optane™ SSD S3710, Intel® Optane™ SSD S3610, Intel® Optane™ SSD S3510, Intel® Optane™ SSD S3500 M.2 and Intel® Optane™ SSD S3500 HD Series • Tool support for Windows* 10	October 2015
006US	• Added support for Intel® Optane™ SSD S3700 Series • Added support for Intel® SSD 335 Series • Updated for version 2.0 of the Intel® SSD Firmware Update Tool software	June 2013
005US	• Added support for Intel® SSD 320 Series • Miscellaneous documentation changes	August 2011
004US	• Updated document to reflect new firmware release	January 2011
003US	• Modified graphics version information • Modified instructions in the Run the Intel® SSD Firmware Update Tool section • Modified instructions in the Verify New Firmware Update section	November 2009
002US	• Deleted the 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	October 2009
001US	• Initial release	August 2009

1 Overview

This document describes how to use the Intel® SSD Firmware Update Tool to update the firmware on Intel® Optane™ Solid State Drives and Intel® Optane™ Memory devices in all capacities.

Notes:

- Before initiating the Intel® SSD firmware update, read and follow the instructions included in the firmware update guidelines and release notes.
- 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 firmware update process is interrupted, your Intel® SSD may not function properly.
- If you are a Windows* user, take advantage of the Intel® Memory and Storage Tool (Intel® MAS) to perform firmware updates, which is the preferred method for most Windows* users.
- 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 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.
- The Intel® SSD Firmware Update Tool requires that Legacy Boot is enabled in the BIOS.
- For a listing of the latest Firmware on all products, see the Firmware listing page. While the latest firmware might appear on the Firmware listing page, this tool may not yet be updated to provide the Firmware update. Check the release notes to confirm that the Firmware update is available in this tool.
- If you are a Mac* 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® MAS to get the latest production firmware.
- If you need any assistance with the firmware update or experience issues, contact Intel Customer Support.
- This download contains both Intel proprietary software and an open-source Linux* operating environment. The Intel proprietary software is licensed under the Intel's Software License Agreement only. The components of the open-source Linux* operating environment provided in this download are licensed under the GNU Lesser General Public License (LGPL) 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 Windows* 7, 8, 10, and 11 Instructions.

For Apple macOS* systems, follow the instructions in Mac* Instructions.

For Linux* OS systems, follow the instructions in Linux* Instructions.

The firmware update process involves three steps:

1. **Perform the setup**
   Prior to updating the Intel® 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 International Organization for Standardization (ISO) image, which must be downloaded and burned on a USB flash drive 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 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 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 been completed.

1.2 Known Compatibility Issues

1.2.1 Run Compatibility Issue with Secure Boot Enabled

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

- HP ENVY TouchSmart Ultrabook*
- Dell Inspiron 15z Ultrabook*

- Intel® NUC Kit NUC7i3DNHE

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

1.2.1.1 HP ENVY TouchSmart Ultrabook*

To run the Intel® SSD Firmware Update Tool on an HP ENVY TouchSmart Ultrabook*, first 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.**
4. Legacy Support is disabled by default.
5. Enable Legacy Support.
6. Answer **YES** to the question.

Note: Changing this setting may make the system unable to boot.

7. To modify the Legacy boot order, set **USB disk on key/USB** as **First Boot** using the **F6** Key.
8. Press **F10** to save and exit the BIOS.

After you are finished with the Intel® SSD Firmware Update Tool, you can reset BIOS to the Default values.

1.2.1.2 Dell Inspiron 15z Ultrabook*

To run the Intel® SSD Firmware Update Tool on a Dell Inspiron 15z Ultrabook*, first 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 the Intel® SSD Firmware Update Tool, return to the BIOS.
8. Reset **Secure Boot** to **Enabled**.
9. Save and exit.

1.2.1.3 Intel® NUC Kit NUC7i3DNHE

To run the Intel® SSD Firmware Update Tool from Intel® NUC Kit NUC7i3DNHE, first disable the Secure Boot feature using the following procedure:

1. Enter the **BIOS** by pressing the **F2** key while powering up the system.

2. Click **Advance** drop-down, select **boot**
3. Move to **Secure Boot** tab
4. Add or remove check on Secure boot

1.2.2 Boot Compatibility Issues

The Intel® SSD Firmware Update Tool has 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 other issues that relate to the tool's bootable Linux* environment.

2 Windows* 7, 8, 10, and 11 Instructions

2.1 Setup

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

1. **Back Up the Intel® 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 Intel® SSD.
   Following a successful firmware update, data restoration should not be required.
2. **Plug in the Power**
   For mobile PCs, ensure that the computer battery is fully charged. For desktop PCs, ensure that the system is that the 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 begin 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 with 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 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 you start the firmware download process, close all applications except for your web browser.

2.2 Option 1: Download the Intel® SSD Firmware Update Tool to a USB Flash Drive

The Intel® SSD Firmware Update Tool is packaged as an ISO* image. Like an archive file or a disk image, an ISO* image is specifically designed for optical disks like CDs in a format specified by the ISO.

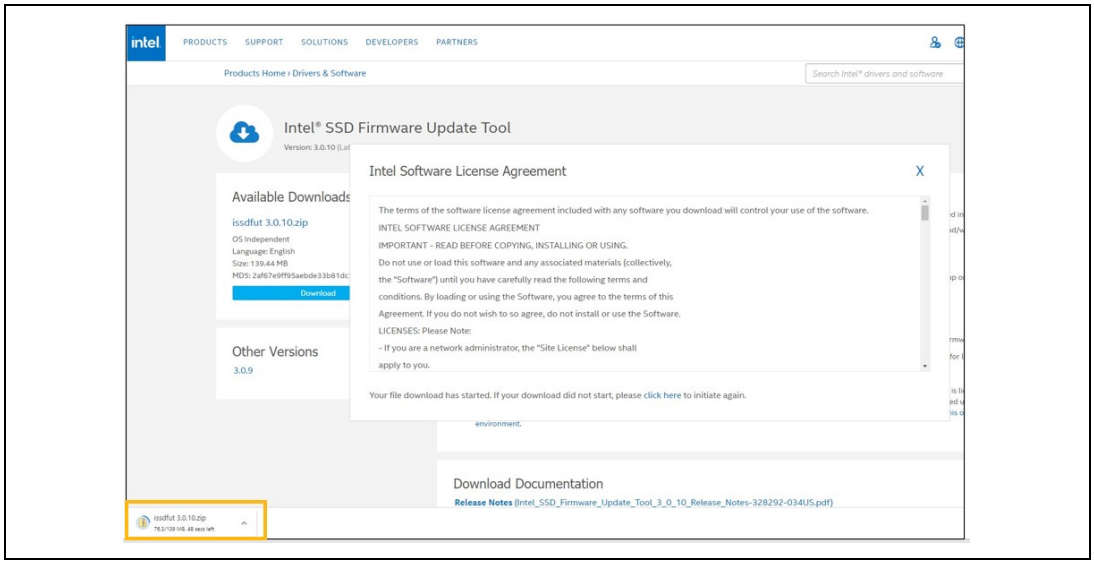
This means that you cannot simply copy an ISO* image to a blank USB flash drive because it will appear as a data file and will not work correctly. The ISO* image must be decoded with software and installed onto a blank USB flash drive to make it bootable with the Intel® SSD Firmware Update Tool.

Note: Along with the steps below, a video of this process can be found in the following link: How to Update Firmware on Intel® SSDs with the Intel® Firmware Update Tool

To illustrate, Intel is using a Universal USB installer software from www.pendrivelinux.com, but you may use any installer that you prefer.

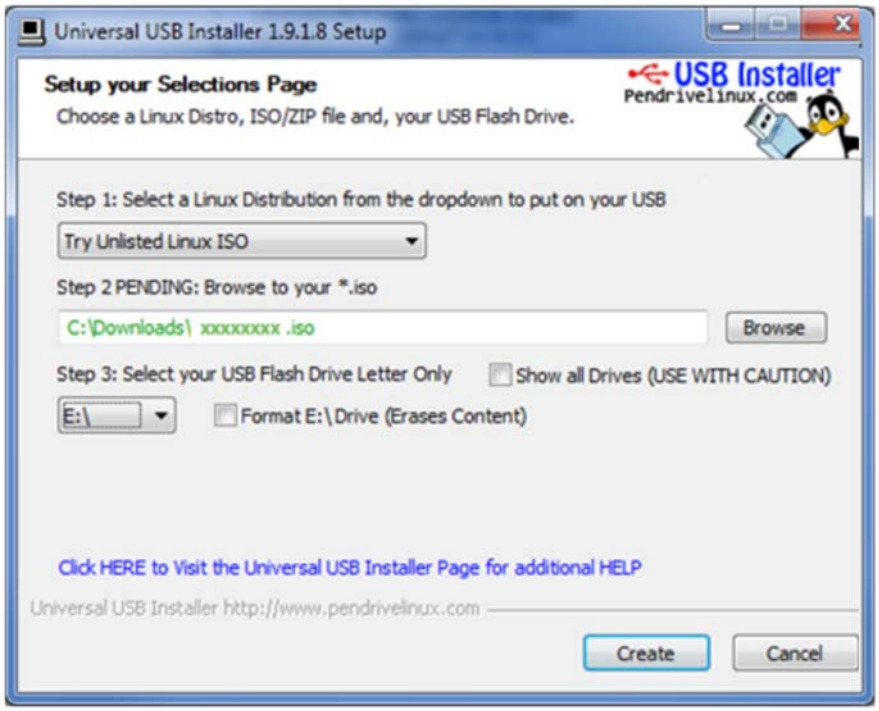
1. Go to the Intel download website located at www.intel.com/go/ssdfirmware.
2. Review the "Read Me" file to better understand the firmware update process. The "Read Me" file contains high-level instructions for using the Intel® SSD Firmware Update Tool.
3. Review the *Intel® SSD Firmware Update Tool Release Notes* for a quick summary of the firmware changes for each product.
4. Click **Download** to display the terms of the license agreement. See Figure 2-1 (**The "Read Me" 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**.

Figure 2-1. Download the ISO* Image



6. Go to www.pendrivelinux.com and download the freeware Universal USB Installer.
7. Install and run the Universal USB Installer (see Figure 2-2).
8. Select the Try Unlisted Linux* ISO*.
9. Browse to the location of the Intel® SSD Firmware Update Tool ISO* and select it.
10. Select the drive letter that corresponds to your blank USB flash drive.
11. Click **Create**.

Figure 2-2. Universal USB Installer



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Note: Your screen will display the name of the current Intel® SSD Firmware Update image file (xxxxxxxx.iso).

2.3 Option 2: Download the Intel® SSD Firmware Update Tool to a Blank CD

The Intel® SSD Firmware Update Tool is packaged as an ISO* image. Like an archive file or a disk image, an ISO* image is specifically designed for optical disks like CDs in a format specified by the ISO*.

You cannot simply copy an ISO* image to a blank CD because 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 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.
5. The browser prompts you to select **Open**, **Save, or Cancel**.
6. Following are the steps to burn the ISO* image to a blank CD-R or CD-RW for your operating system.

2.3.1 Burning the ISO* Image to a Blank CD-R or CD-RW - Windows* 8, 10, 11

1. Insert a blank CD into your drive
2. Click **Save** to download the file
3. Specify a folder location when prompted (such as c:\temp)
4. Press the **Windows* key**  on your keyboard to go to the desktop, then click the **File Explorer**  icon on the taskbar
5. Navigate to the file folder that you specified in **Step 3**
6. Right-click the ISO* file and select **Burn disc image**
7. Click **Burn**. The ISO* image is burned to the CD
8. Click **Close** when finished

2.3.2 Burning the ISO* Image to a Blank CD-R or CD-RW - Windows* 7

1. Insert a blank CD into your drive
2. Click **Save** to download the file
3. Specify a folder location when prompted (such as c:\temp)
4. Open the Windows **Start** menu  , open the **File Explorer**  , and go the file folder you specified in the previous step
5. Right-click the ISO* file and select **Open With**
6. Select **Windows* Disk Image Burner**
7. Click **Burn**. The ISO* image is burned to the CD
8. Click **Close** when finished

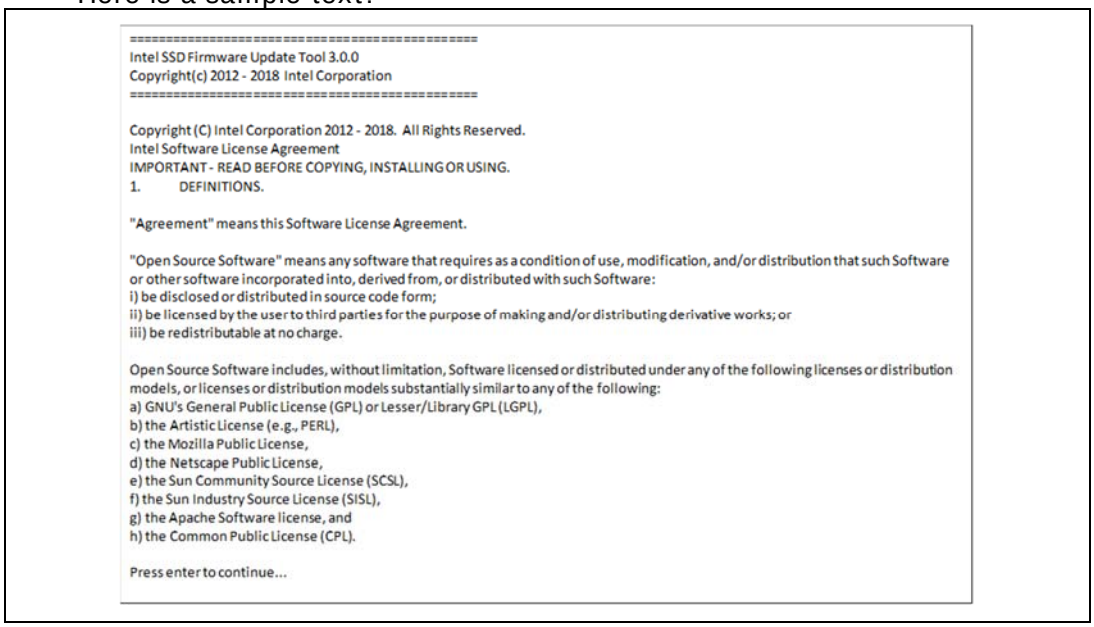
2.4 Run the Intel® SSD Firmware Update Tool

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

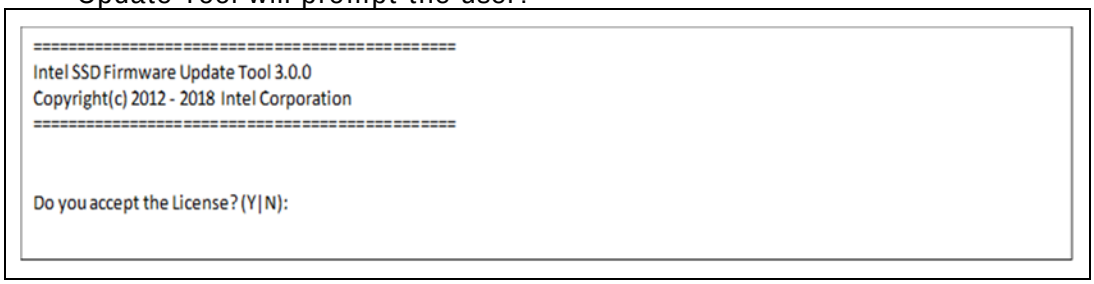
- Back up the Intel® SSD
- Turn off Drive Password Protection
- Designate the USB flash drive or CD-ROM (as appropriate) to boot first or prior to the OS drive
- Fully charge the battery (for mobile computers)
- Plug in the power cable (for desktop computers)

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

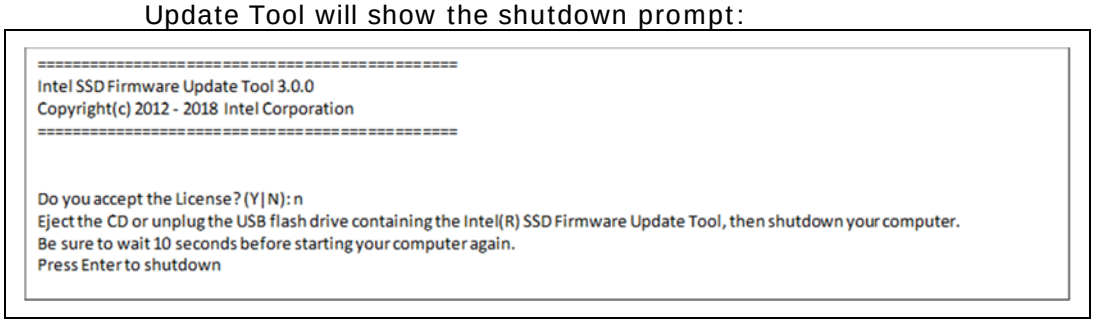
1. Intel® SSD Firmware Update Tool will boot and present the end-user software license. You will need to press "enter" to continue and read fully. Here is a sample text:



2. Once you click through and read the license, the Intel® SSD Firmware Update Tool will prompt the user:

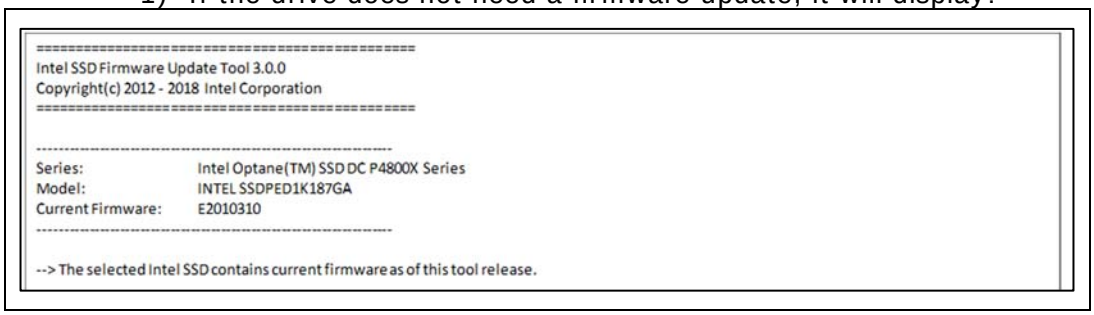


a. If the user declines the license agreement, Intel® SSD Firmware Update Tool will show the shutdown prompt:



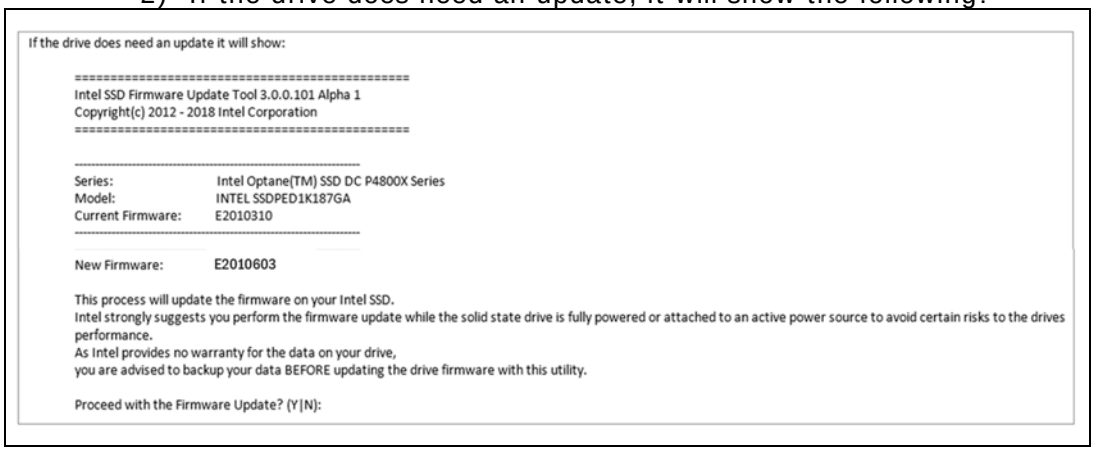
b. If user says “y” (yes) to the license prompt, then Intel® SSD Firmware Update Tool will scan for Intel® SSDs.

1) If the drive does not need a firmware update, it will display:

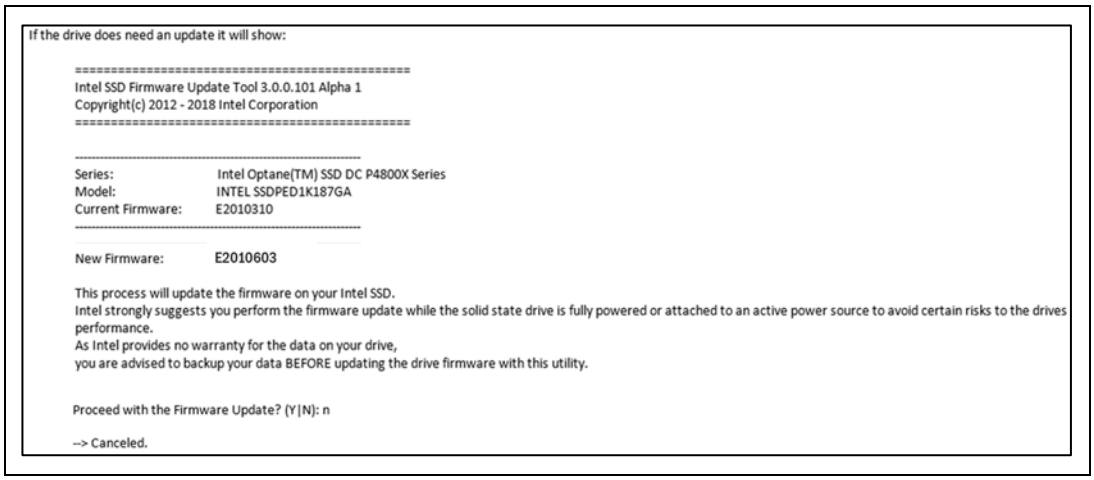


Note: The message displayed previously could change depending on why the drive does not need an update. It could be because the drive is an invalid SKU or in a disabled logical state.

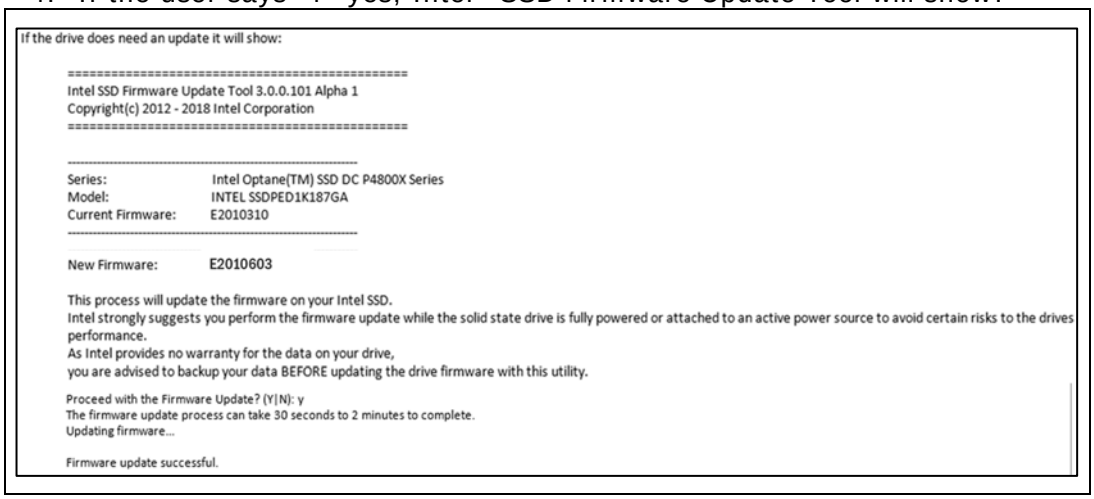
2) If the drive does need an update, it will show the following:



3. If the user says “n” (no) to the update, then Intel® SSD Firmware Update Tool will show:



4. If the user says “Y” yes, Intel® SSD Firmware Update Tool will show:



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 fails for some reason.

5. Then, it will go to the next Intel® SSD drive and show what was displayed. For example, if no update is needed or if there is an update.
6. Once Intel® SSD Firmware Update Tool has gone through all the drives, it will show the shutdown prompt.

3 Linux* Instructions

3.1 Setup

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

1. **Back Up the Intel® 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 Intel® SSD.
   Following a successful firmware update, data restoration must not be required.
2. **Plug In the Power**
   For mobile computers, ensure that the computer battery is fully charged. For desktop computers, ensure that 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 you start the firmware download process, close all applications except for your web browser.

3.2 Downloading the Intel® SSD Firmware Update Tool to a USB Flash Drive

The Intel® SSD Firmware Update Tool is packaged as an ISO* image. Like an archive file or a disk image, an ISO* image is specifically designed for optical disks like CDs in a format specified by the ISO*.

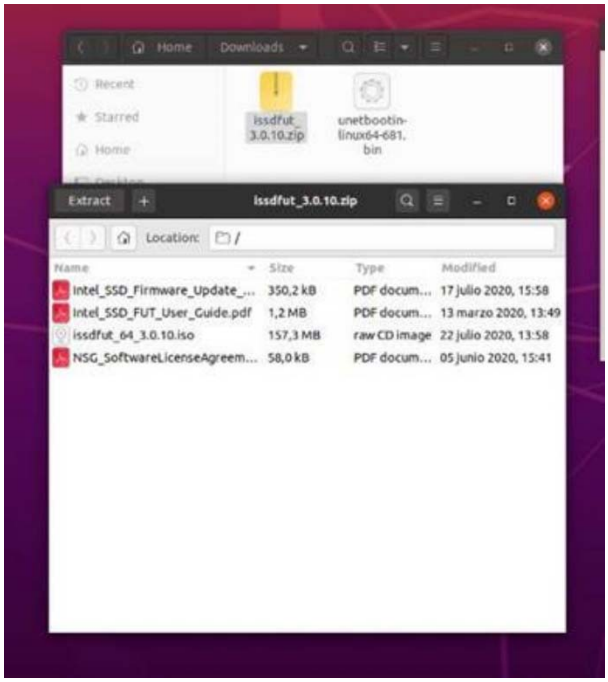
You cannot simply copy an ISO* image to a USB flash drive because it will appear as a data file and will not work correctly. The ISO* image must be decoded with software and installed onto a USB flash drive.

Note: To illustrate, Intel is using the UNetbootin* installer software from unetbootin.github.io, but you may use any installer that you prefer.

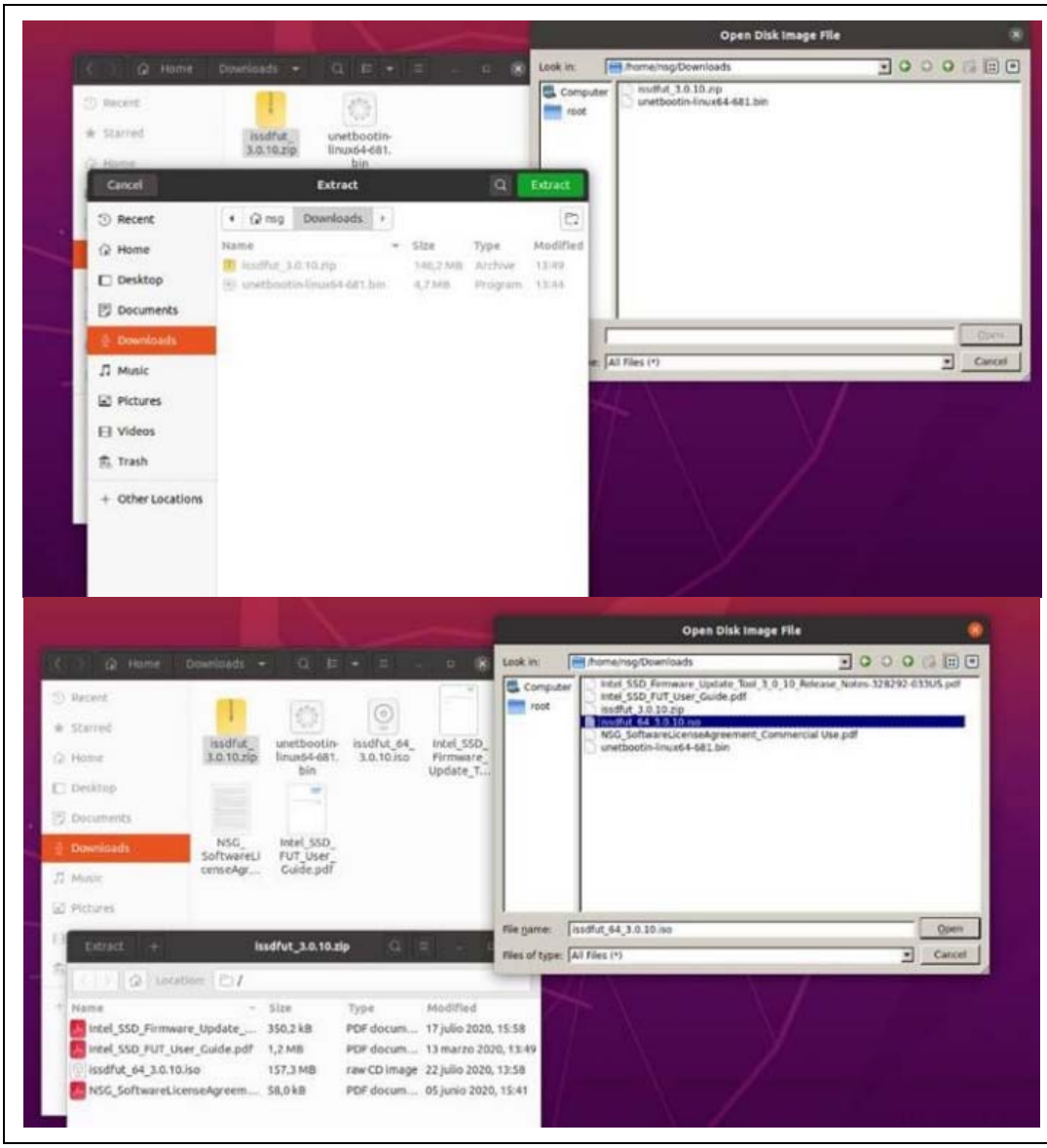
1. Go to the Intel download website located at www.intel.com/go/ssdfirmware.
   a. Review the “Read Me” file to better understand the firmware update process. The “Read Me” file contains high-level instructions for using the Intel® SSD Firmware Update Tool.
   b. Review the *Intel® SSD Firmware Update Tool Release Notes* for a quick summary of the firmware changes for each product.
   c. Click **Download** to display the terms of the license agreement (The “Read Me” file also includes the license agreement information).

d. After reading the agreement, click **ACCEPT** (at the bottom of the page) to download the firmware update package.

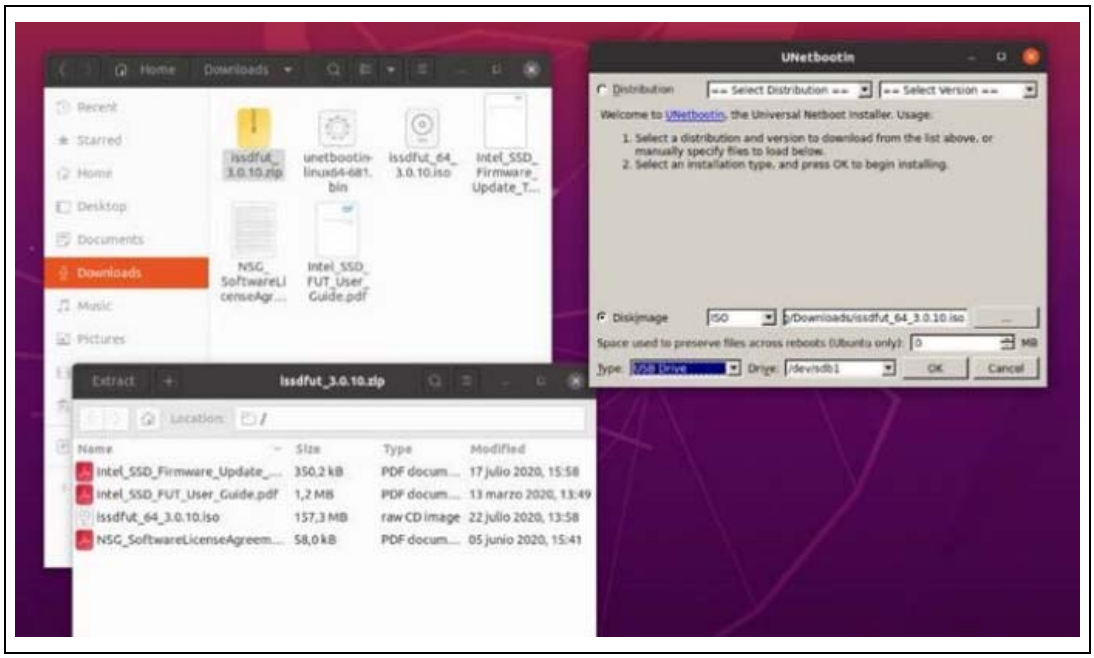
2. Go to https://unetbootin.github.io/ to download the UNetbootin* utility. This utility will be used to create a bootable USB flash drive with the Intel® SSD Firmware Update Tool ISO*.
3. Install process for UNetbootin*:
   a. `sudo add-apt-repository ppa:gezakovacs/ppa`
   b. `sudo apt-get update`
   c. `sudo apt-get install UNetbootin*`
4. After Downloading, Both Packages Will Be Located Under Downloads.



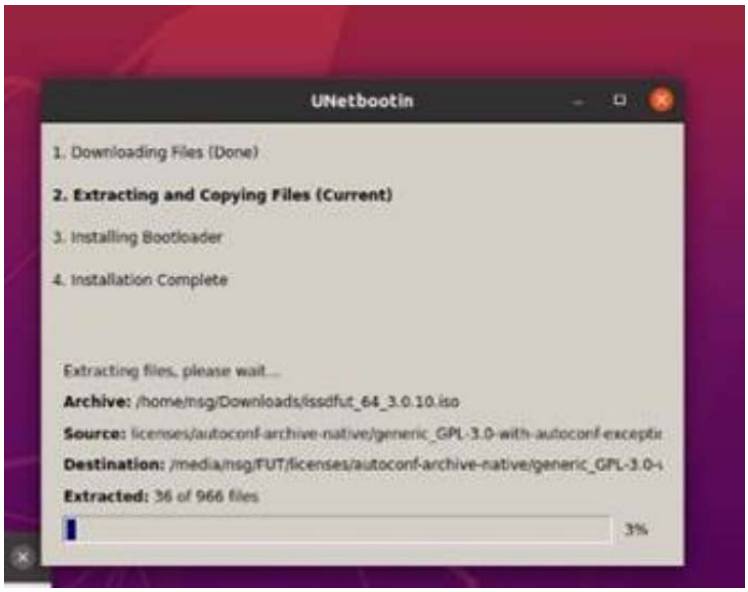
5. Extract the ZIP files to the preferred location.



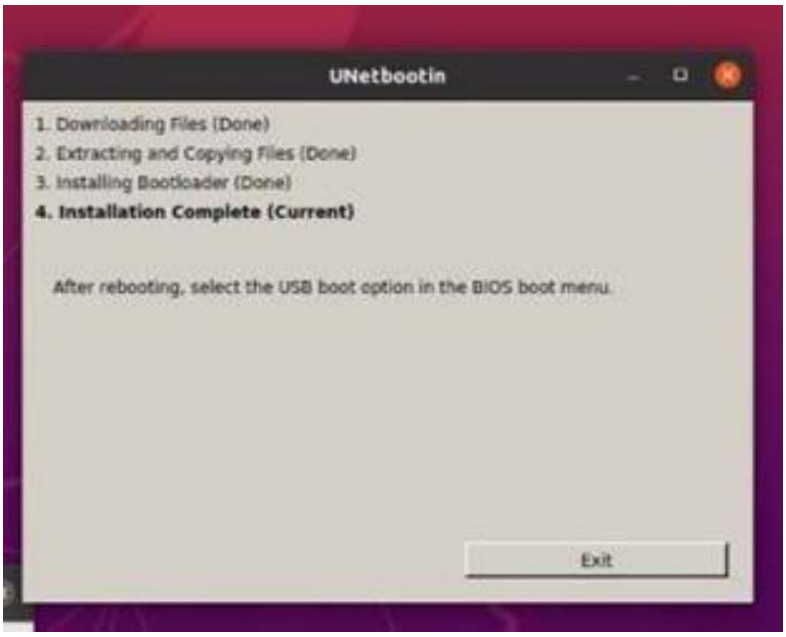
6. Open the UNetbootin* software. Make sure to have a blank USB flash drive attached to a USB port to install the ISO* on.
   a. Select the **Disk Image** option and upload the Intel® SSD Firmware Update Tool ISO* image.
   b. Under **Type**, select **USB Drive**.
   c. Under **Drive**, select the bank USB flash drive.



d. Press **OK** to start burning the image.



7. Restart the system and boot from the USB flash drive to load the Intel® SSD Firmware Update Tool.



3.3 Starting the Firmware Update Process

After creating the ISO* image USB flash drive, see Burning the ISO* Image to a Blank CD-R or CD-RW - Windows* 7 and follow the steps to update the firmware if one is available.

Note: To boot into the connected USB flash drive, hold down the proper key as defined by your system manufacturer during boot to change the Boot Order.

4 Mac* Instructions

4.1 Setup

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

1. **Back Up the Intel® 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 Intel® SSD.
   Following a successful firmware update, data restoration must not be required.
2. **Plug In the Power**
   For mobile computers, ensure that the computer battery is fully charged. For desktop computers, ensure that 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.
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4.2 Downloading Intel® SSD Firmware Update Tool to a USB Flash Drive

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1. Go to the Intel download website located at http://www.intel.com/go/ssdfirmware to download the ISO* for the Intel® SSD Firmware Update Tool
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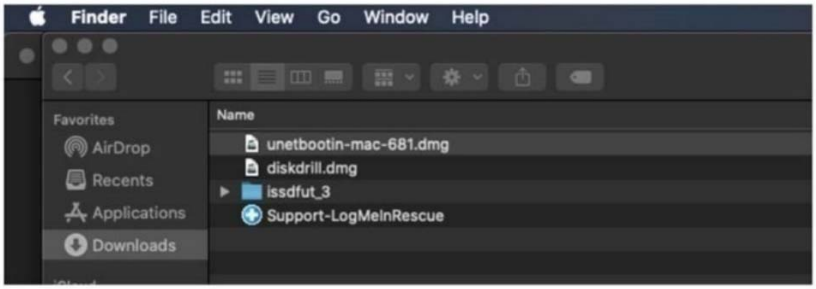
   b. Review the *Intel® SSD Firmware Update Tool Release Notes* for a quick summary of the firmware changes for each product.

c. Click **Download** to display the terms of the license agreement (The "Read Me" file also includes the license agreement information).

d. After reading the agreement, click **ACCEPT** (at the bottom of the page) to download the firmware package.

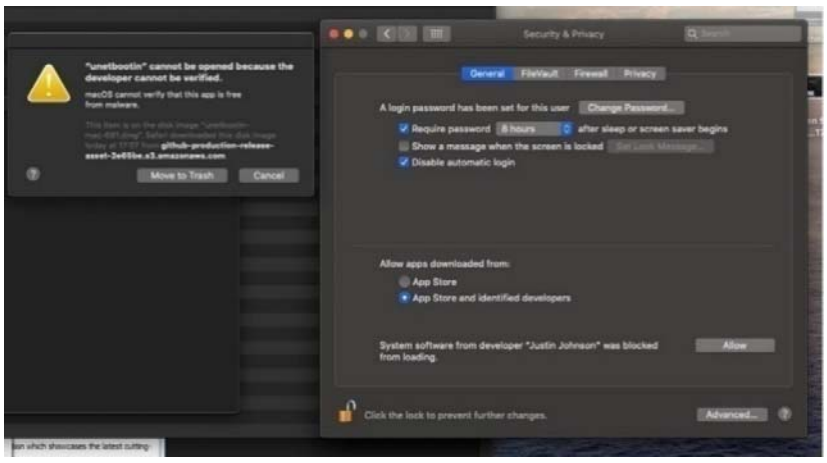
2. Go to unetbootin.github.io to download the UNetbootin* utility. This utility will be used to create a bootable USB flash drive with the Intel® SSD Firmware Update Tool ISO*



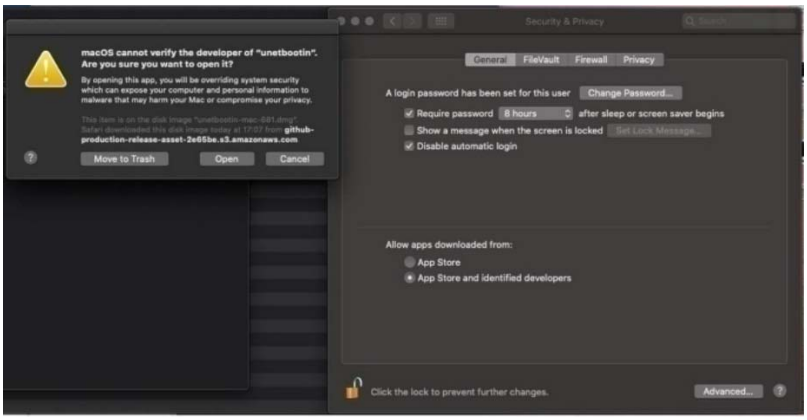
3. Install the UNetbootin* application.

Note: Permission will need to be granted for the application to run; otherwise, the following prompt will appear:

a. Open the **Security and Privacy** tab to select (App Store* and identified developers), then click **Allow**.



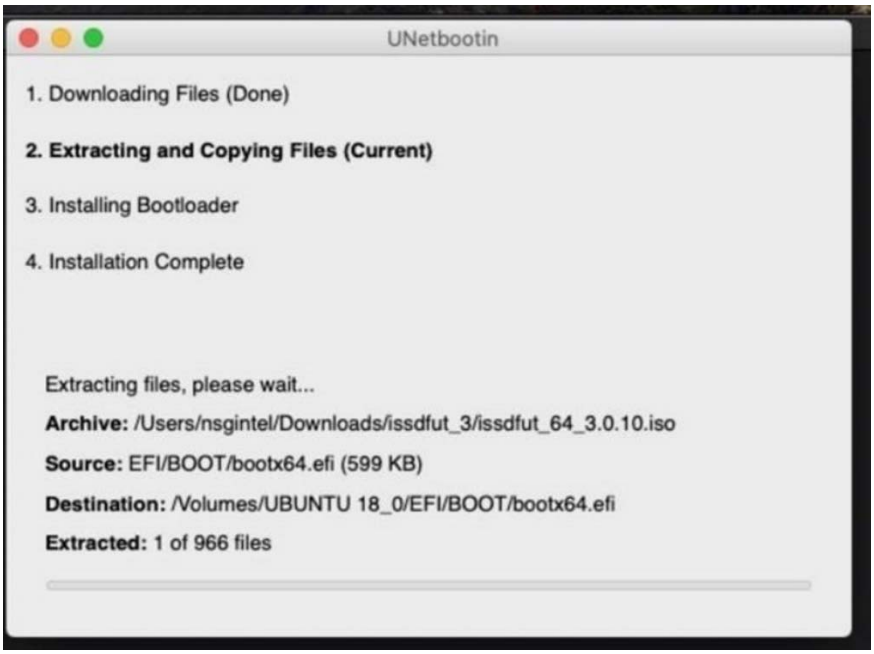
b. After providing access, restart UNetbootin*. The same message as seen in the previous figure appears, but now there is an additional tab to open the software. Click **Open**.



4. Within the tool, do the following to create the bootable USB flash drive. Make sure that a blank USB flash drive is currently connected to the system
   a. Select the **Disk Image** option and upload the Intel® SSD Firmware Update Tool ISO* image previously downloaded.

   b. Under **Type**, select **USB Drive**
   c. Under **Drive**, select the Blank USB flash drive

d. Press **OK** to start burning the image



e. Once the process is complete, the system will require to be restarted.

4.3 Starting the Firmware Update Process

After creating the ISO* image USB flash drive, see Burning the ISO* Image to a Blank CD-R or CD-RW - Windows* 7 and follow the steps to update the firmware if one is available.

Note: To boot into the connected USB flash drive, hold down the "**Option**" key to force your system to boot from the USB flash drive.