

Version 4.1.04

User Manual

Contents

Preface	3
Terminology	3
Supported Mac Hardware.....	4
Live Image (booted from internal disk).....	4
Before You Start.....	4
Requirements.....	5
Live System Boot.....	6
Getting Started with LLIMAGER.....	6
LLIMAGER Menu	8
Menu Option (Full Disk)	11
Menu Option (Targeted).....	17
Menu Option (Targeted – Using Filtering)	21
Menu Option (Convert).....	24
Menu Option (Hash)	28
Disk Acquisition Log Sample	32
Targeted Acquisition Log Sample.....	34

LLIMAGER

Changelog	36
End User License Agreement	37
Support & Feedback.....	40
Acknowledgements.....	40

LLIMAGER

Preface

Welcome to LLIMAGER 4.1.04, the cutting-edge solution for mac forensic imaging. As a complete rewrite, LLIMAGER 4.1.04 has been meticulously crafted to meet the demanding needs of digital investigators, e-discovery services providers, law enforcement professionals, and cybersecurity experts. Powered by Apple's Swift language, this new version combines robust functionality with an intuitive user interface, making it the go-to tool for acquiring and preserving digital evidence. Whether you're conducting criminal investigations, e-discovery, or incident response, LLIMAGER 4.1.03 empowers you to extract critical data from Mac systems with precision and efficiency.

LLIMAGER was created in response to emerging trends in macOS forensic imaging such as limited "dead box" options, and Apple's macOS security enhancements that tend to restrict access.

It was designed to meet the need for robust and comprehensive forensic imaging of Mac computers, capable of capturing targeted folders (logical images) and active space from all APFS synthesized volumes and HFS+ volumes.

LLIMAGER is user-friendly and easy enough for entry level digital forensics examiners. The application leverages built-in Mac utilities, providing a versatile solution compatible with a wide range of macOS versions, both past and present. This ensures the tool remains functional across diverse system configurations.

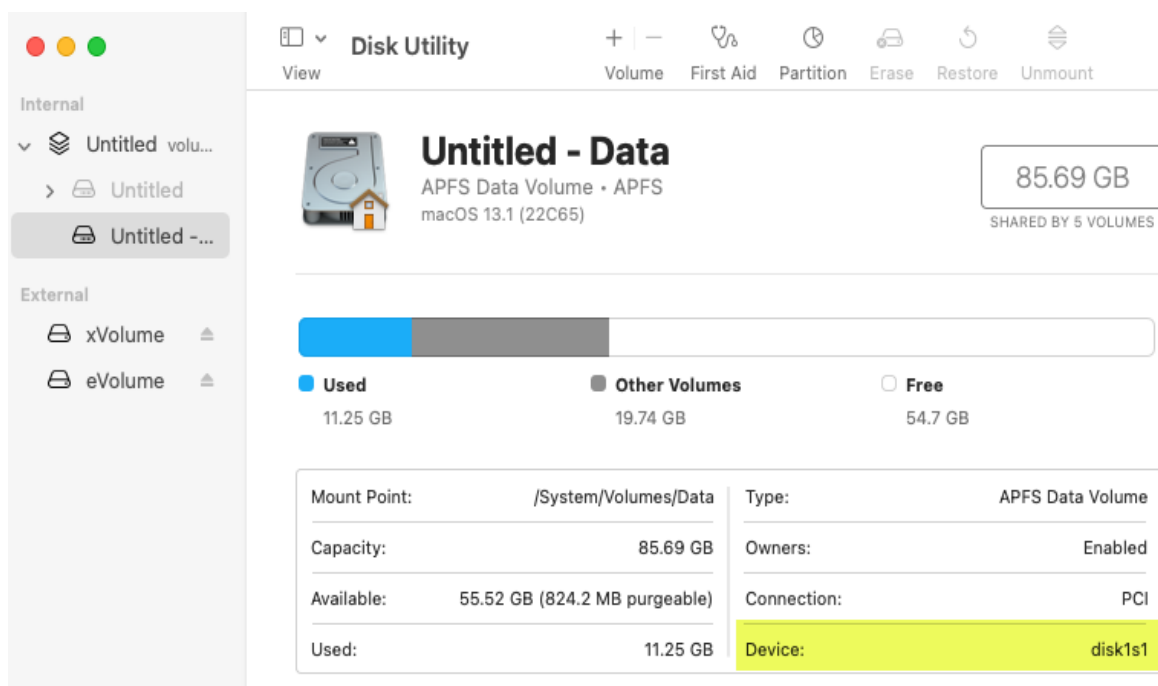
Terminology

Sparse image file: a native macOS image format that is dynamic and used within the Mac environment. The file grows as data is added to the image, taking up only as much disk space as stored in it.

DMG file: a native macOS disk image format like the sparse image but less versatile. It is used primarily to distribute software to Mac users. It is more compatible with other commercial software and can be imported into any modern forensic applications.

Device Identifier (ID): the term used herein refers to the unique identifier used by the operating system to identify a mounted storage device with a disk number (disk1, disk1s1, etc.). This can be located using the Disk Utility as seen highlighted in the following picture.

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USB Label / Name: This is the name of a mounted partition, physical or virtual. It can be found using Finder, on the left side of the window. Note that a disk can have more than one partition, hence, each partition will be mounted with its own name.

LLIMAGER USB Drive: This is a USB drive with the two DMG files containing the executable file of the same name, and the license key file. The executable is “llimager.app”.

Supported Mac Hardware

Live Image (booted from internal disk)

LLIMAGER works with Intel-based Macs and new Silicon processors including M3s.

Before You Start

The Mac native Apple Software Restore (ASR) utility is used for the imaging process, thus basically any Mac can be imaged from an admin authenticated session on the Mac computer, and there should be no issues with Apple data encryption, be it FileVault of T2 chipset, or Apple new hardware M1/M2/M3.

The imaging process will first create a sparse image container and use it as the destination of the disk's image. Once the imaging of the disk has completed, the sparse image will be used to create a compressed

read-only DMG file that can be processed with popular forensic and e-discovery pre-processing applications¹.

The application does not provide an option to encrypt the DMG, as encrypted DMGs are not currently supported by many forensics' applications.

In the event a DMG image must be securely encrypted, the following options are recommended:

1. Usage of a hardware-encrypted external USB disk to save the unencrypted image.
2. Encrypt the DMG and place it on a normal unencrypted disk.
3. Copy the unencrypted image to a compatible encrypted container on a normal USB disk.

The image format is limited to those used by Apple, in our case, DMG. Other applications can be used to convert the DMG to other formats (e01, ...).

Requirements

- **A local admin password** for the Mac computer to be imaged.
- **LLIMAGER must have "Full Disk Access" permission** (set this in: Settings > Privacy & Security > Full Disk Access)
- **LLIMAGER USB disk:** Containing a copy of the imager executable "llimager.app" and the required license file (llimager.lic).
- **Temporary Image USB disk (if used):** Since LLIMAGER creates a temporary sparse Image, the optimal method of acquisition is to have a holding disk for it. The disk can either be the LLIMAGER USB or another dedicated USB drive. In both cases, enough free space is required, which should be equivalent to *the total used space plus 10% or larger*.
- **Destination USB disk:** external disks formatted with exFAT are recommended to be used as the destination of the disk image (for compatibility between Operating Systems). Of course, any Mac writeable partition format will work.
 - *The USB disk should have free space equal to or greater than twice the size of the source device's used space plus 10%.* If a separate Temporary Image USB disk is used, each should have free space equal to at least the size of the used space plus 10% of the source device. Use these guides as a rule:

Source Size	Source Space Used	Minimum Disk Size (when using One Destination Disk for Temp & DMG)	Minimum Disk Size (when using two Destination Disks for Temp & DMG)
500GB	50GB	110GB	55GB, 55GB
500GB	400GB	880GB	440GB, 440GB
2TB	120GB	264GB	132GB, 132GB

¹ Forensic applications change over time, and support for image types may vary. Test the image produced by LLIMAGER during the trial period to ensure compatibility with your application(s).

- **The best practice with respect to optimal performance is to use two USB disks, one for the sparse image, and one for the final converted DMG. This will significantly reduce the time to convert the sparse image to the DMG file.**
- When using two USB disks, each must have a unique name.

Live System Boot

Boot the computer normally and login using an account with admin privileges. This is the most straightforward option. An admin password is needed however to run the application.

Getting Started with LLIMAGER

Refer to the pertinent scenario below.

USB SSD/HDD Version

- Login as an admin into the target Mac computer and connect the LLIMAGER USB SSD drive that contains the copy of the imager (Ilimager.app, manual and license key file).
- Connect the destination disk(s) – refer to Requirements section for details on options and best practices.
- Open Finder to identify the destination USB volume names for the sparse image, and for the DMG by opening Finder.
- On the LLIMAGER USB SSD, navigate to /Ilimager and double click on “Ilimager.app” .
- Proceed to image.

User-Supplied USB SSD/HDD Version

- Login to any Windows computer.
- Prepare the USB SSD/HDD by:
 - Insert an SSD into a Windows computer and create an exFAT partition named “Ilimager” (case sensitive). This can be a relatively small partition, e.g., 35GB.
 - Create a folder named “Ilimager”, which when mounted on a mac, should result in “/Volumes/Ilimager/Ilimager” and on Windows “\Ilimager”.
 - Download the most current version of LLIMAGER from “www.Ilimager.com/download” and unzip into “\Ilimager”
 - Copy the purchased license file (Ilimager.lic) into “\Ilimager”.
 - Your disk is now properly loaded, and you can open the manual or download it from “Ilimager.com/resources/Ilimager-manual”

- Login as an admin into the target Mac computer.
- Connect the user-supplied USB SSD drive that contains the copy of the imager (llimager.app, manual and license key file).
- Connect the destination disk(s) – refer to Requirements section for details on options and best practices.
- Open Finder to identify the destination USB volume names for the sparse image, and for the DMG by opening Finder.
- On your USB SSD, navigate to /llimager and double-click on “llimager.app”.

WARNING: if you receive an error message, “llimager.app is damaged and can't be opened” or “The application “LLIMAGER” can't be opened” you have run into a mac quarantine issue and you need to reload the software from a Windows computer; see FAQ #1 on our website.

- Proceed to image.

Trial Versions

- Login to a Windows computer.
- Download the trial from “llimager.com/trial-1” on to the internal disk and after receiving the license file (llimager.lic) from e-Forensics, you are ready to proceed.
- Prepare your USB Flash or SSD by:
 - Insert Flash/SSD into a Windows and create a small (~35GB) exFAT partition named “llimager” (case sensitive)
 - Create a folder named “llimager”, which should result in “\llimager”
 - While in Windows, download the most current version of LLIMAGER from “llimager.com/download” and unzip into “\llimager”
 - Copy the trial license file (llimager.lic) into “\llimager”.
 - Your trial version disk is now properly loaded, and you can open the manual or download it from “llimager.com/resources/llimager-manual”
- Login as an admin into the target Mac computer.
- Connect your USB Flash/SSD drive that contains the trial copy of the imager (llimager.app, manual and license key file).

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- Connect the destination disk(s) – refer to Requirements section for details on options and best practices.
- Open Finder to identify the destination USB volume names for the sparse image, and for the DMG by opening Finder.
- On your USB Flash/SSD, navigate to /llimager and double-click on “llimager.app”.
- **WARNING: if you receive an error message, “llimager.app is damaged and can't be opened” or “The application “LLIMAGER” can't be opened” you have run into a mac quarantine issue and you need to reload the software from a Windows computer; see FAQ #1 on our website.**
- Proceed to image.

NOTE: What to do if a window pops up with the message “llimager cannot be opened because it is from an unidentified developer” or any other message related to security restrictions.

Temporarily disable Gatekeeper and try running the app again. Once the imaging is completed, exit the application, and re-enable Gatekeeper. To disable, or re-enable Gatekeeper, open a Terminal window, and use one of the following commands accordingly to disable/enable, an admin password is required:

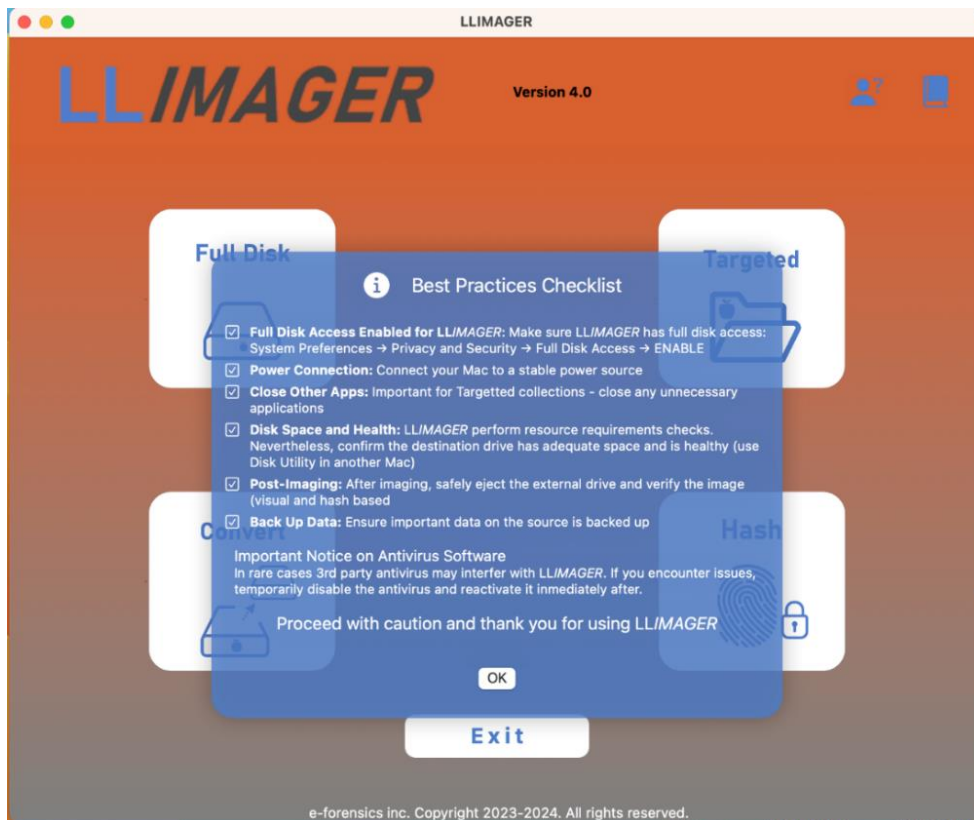
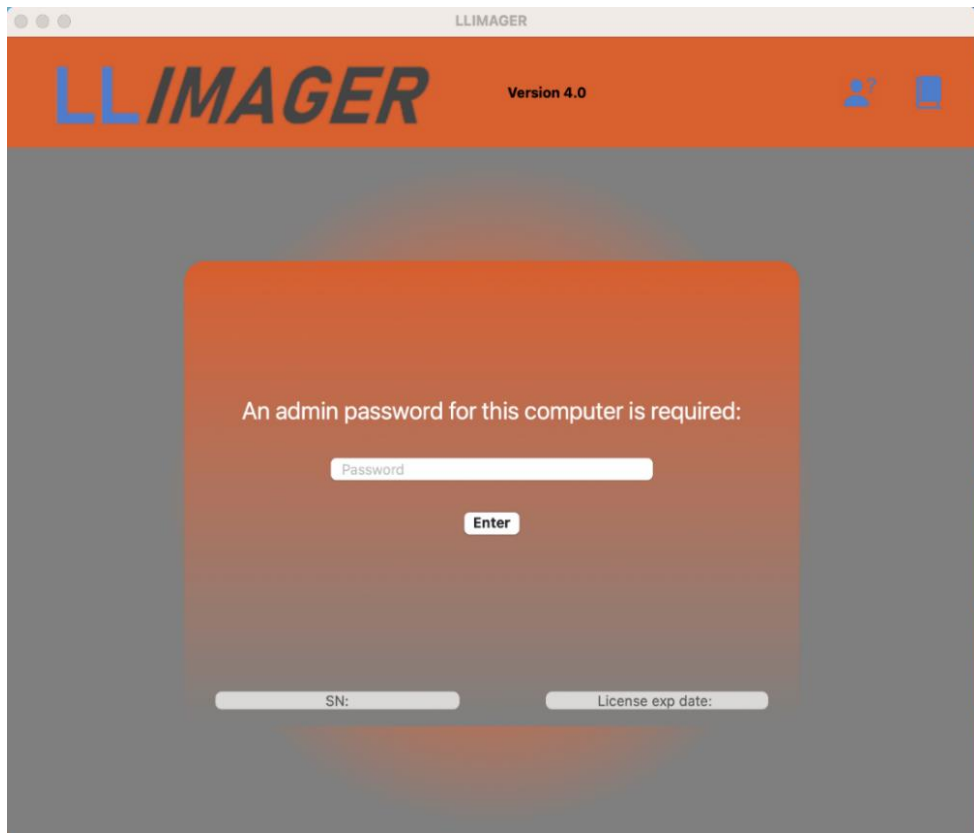
```
sudo spctl --master-disable
```

```
sudo spctl --master-enable
```

LLIMAGER Menu

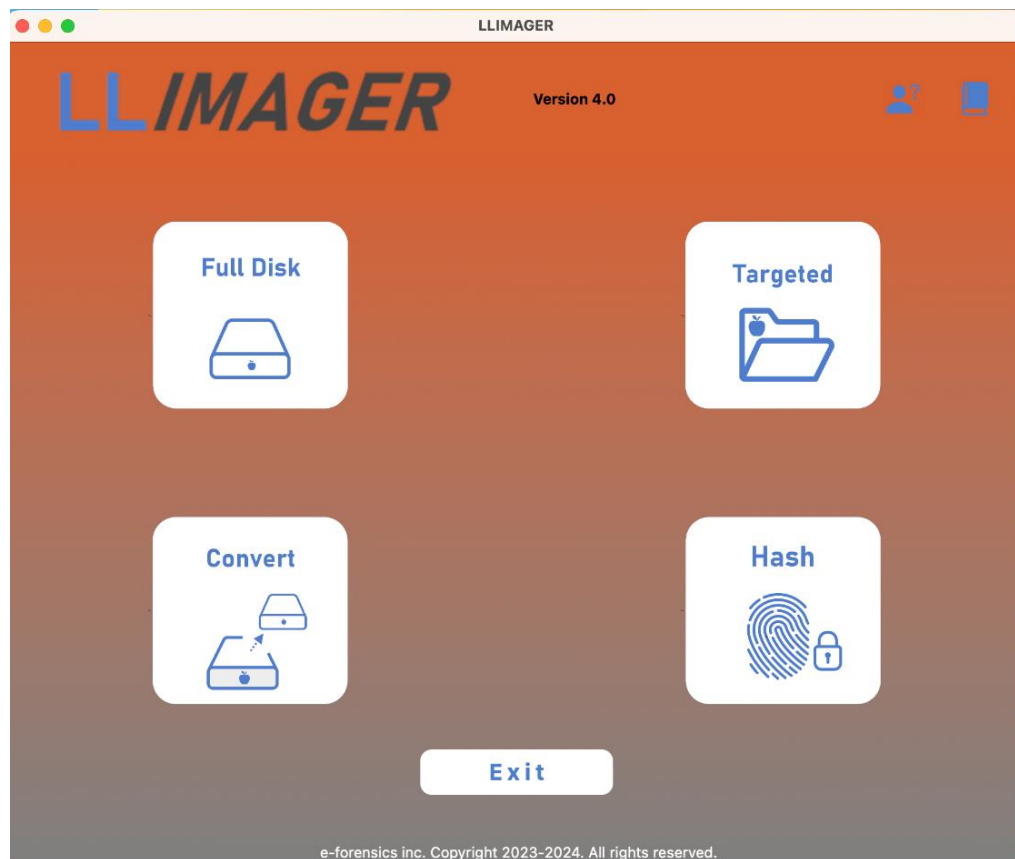
The application starts by requesting a password from a user with admin rights, followed by a best practices checklist. The password will be used throughout the usage of the app in any of the task's selection where it is required.

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The Main Menu:



Full Disk - This option is equivalent to a full file system, and allows the entire process of imaging the computer's hard disk volumes' active space, saving the image to a Mac sparse image container and then conversion of the image to a compressed DMG file, and calculating the hash value of the DMG file. During the process, there will be an option to fully automate the process by creating the final DMG or to just generate the sparse file.

Targeted - This option allows the imaging of targeted files/folders on the computer's hard disk, saving the image to a compressed read-only DMG file, and calculating the hash value of the DMG file. It includes granular selection of documents and folders based on custom file types (extensions) and file system dates such as the birth time (creation), modified, accessed and the change time (inode delta). Moreover, profiles are available to save selections for future jobs.

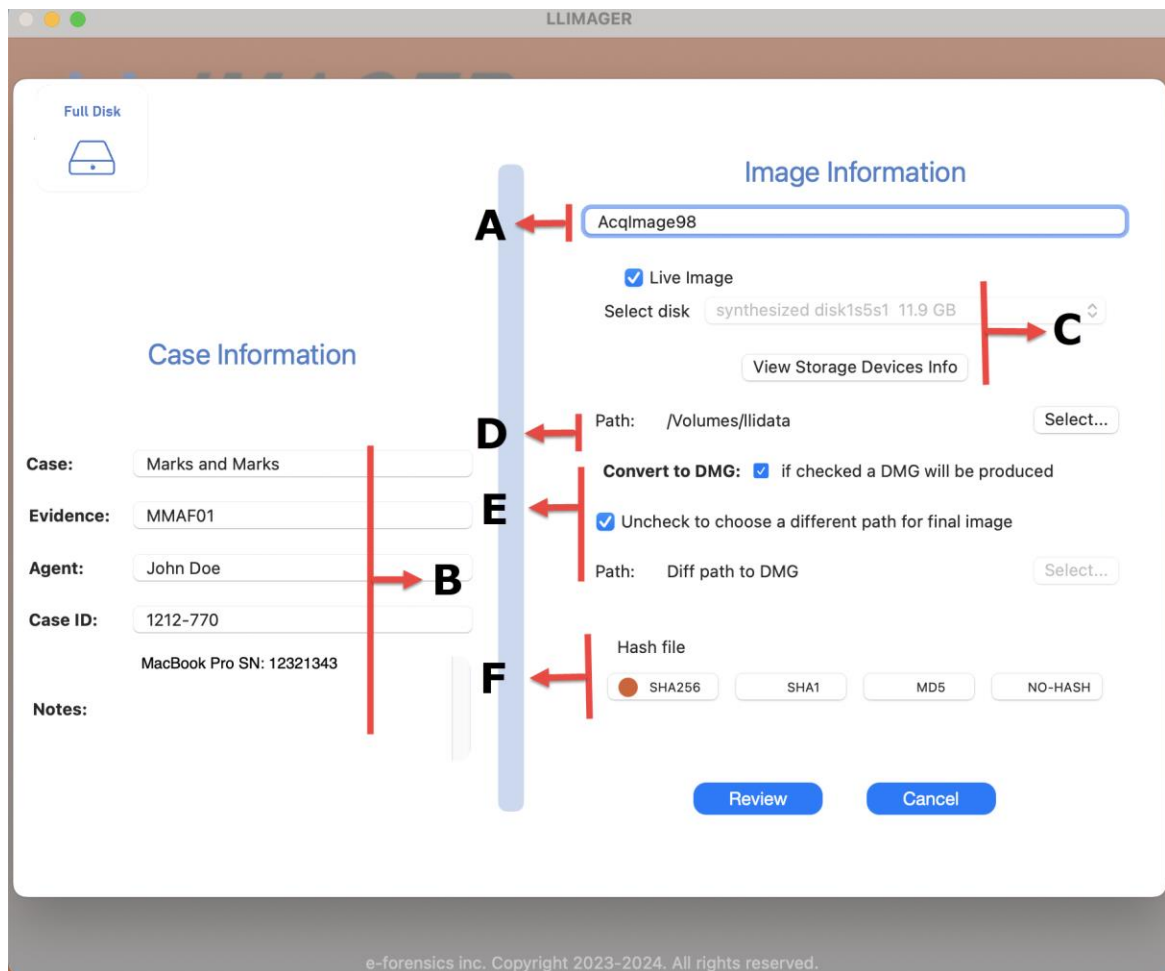
Convert - This option allows the process of converting a sparse image file to a compressed DMG file, and to calculate the hash value of the DMG file.

Hash - This option allows you to calculate the hash value of the sparse image, DMG or any file type.

Exit - This option will exit the application.

Menu Option (Full Disk)

Identify and input information about the device to be imaged, and the destination USBs where the image will be saved (see figure below). Additionally, provide information related to the case, name of the image and folders to use to save the file, select to convert or not to DMG, and choose to hash, and type of hash. The following picture shows the requested information.



See the below description of each section.

A – Related to the image. Name assigned to the image files (sparse and DMG)

B- Related to the case. Case name, evidence number, agent, case ID and notes.

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C – Related to the *device to be imaged*. Requires the selection of the device ID to be imaged. The app will verify the device and display the volume name, and the GB size of the device.

D – Related to the *destination of the sparse image and DMG file*. Requires the selection of the USB label (partition) to be used to save the files. The app will verify the device and display the device ID.


E – Select to convert or not to DMG, and to save to the same disk as the sparse or to a different disk.

F – Related to *hashing of the DMG file*. Specify if hashing should be done and type.

Note, there are power saving settings on the computer that may interfere and break the imaging process, these settings are temporarily disabled during the image.

After completing the selections, click on Review and a summary of the information provided will be displayed. See the following picture:

Full Disk



Case Information Entered

Case: Marks and Marks
Evidence: MMAF01
Agent: John Doe
Case ID: 1212-770
Notes: MacBook Pro SN: 12321343

Review Image Information

Image Name: Acqimage98
Image path: /Volumes/llidata
Live Image: true
Device to be imaged: synthesized disk1s5s1 11.9 GB
DMG to be produced: true
Path for DMG:
Selected Hash: SHA256

Mac computer to be imaged

Model Name: MacBook Pro
Model Identifier: MacBookPro14,1
Memory: 8 GB
Serial Number (...): FVFXNML4HV22
Hardware UUID: EB71A5DD-3BA7-500B-88C3-11821EC0874D

SOURCE

Mounted: Yes
Volume Used Space: 11.9 GB (11915608064 Bytes) (exactly 23272672 512-Byte-Units)
Device Identifier: disk1s5s1
Mount Point: /
Container Free Space: 25.3 GB (25301921792 Bytes) (exactly 49417816 512-Byte-Units)
Allocation Block Size: 4096 Bytes
Container Total Space: 121.0 GB (121018208256 Bytes) (exactly 236363688 512-Byte-Units)
Volume UUID: B8CE8BAA-4A75-42F3-BF8F-89412A84C937
Volume Name: Macintosh HD

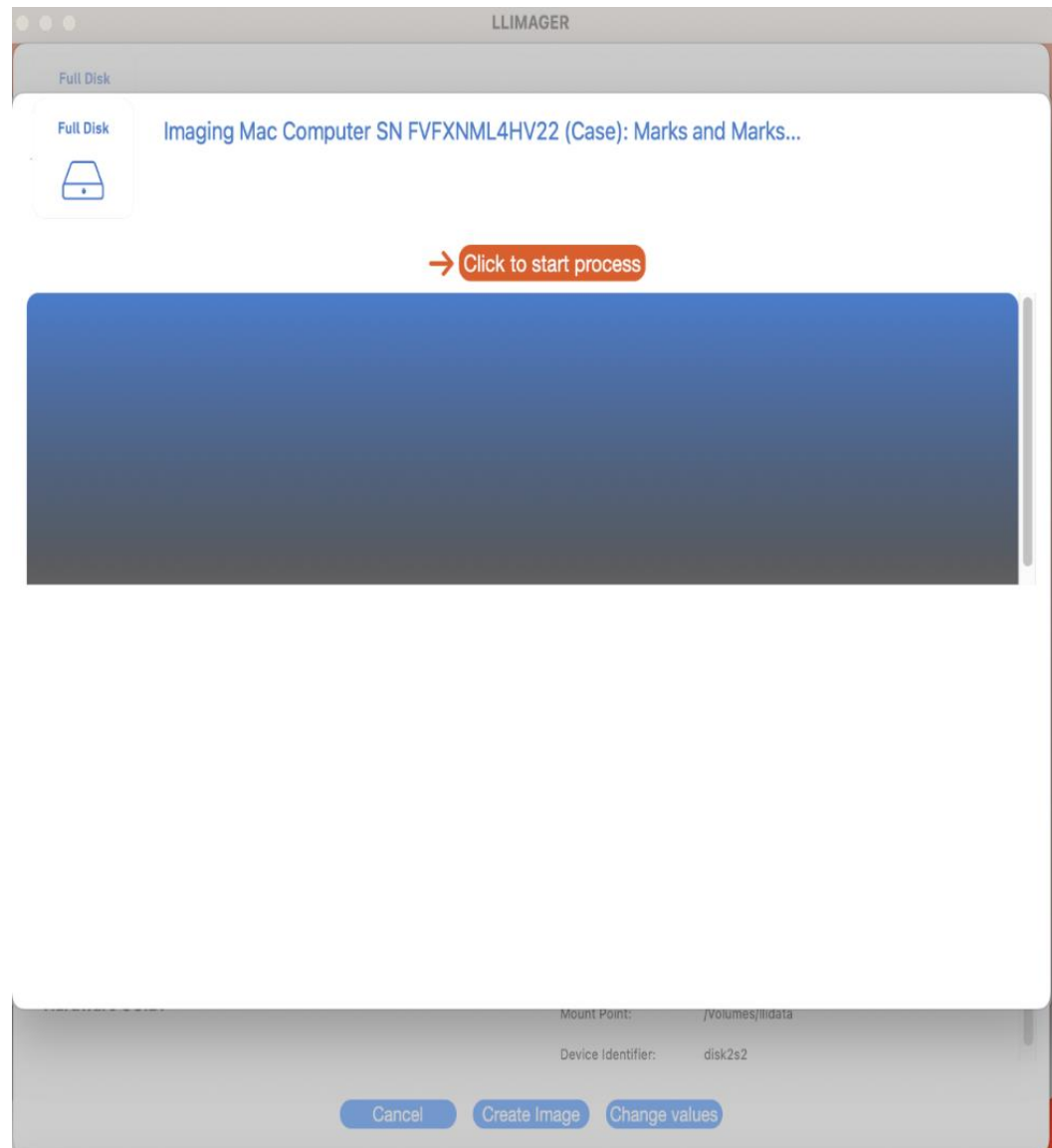
DESTINATION

Mount Point: /Volumes/llidata
Volume Used Space: 3.6 GB (3638034432 Bytes) (exactly 7105536 512-Byte-Units) (0.2%)
Volume Free Space: 2.0 TB (2002760761344 Bytes) (exactly 3911642112 512-Byte-Units) (99.8%)
Mounted: Yes
Volume Name: llidata
Device Identifier: disk2s2
Volume Total Space: 2.0 TB (2006398795776 Bytes) (exactly 3918747648 512-Byte-Units)
Allocation Block Size: 131072 Bytes
Volume UUID: 4215DA95-54DE-3730-B6A5-44DD8E3E515A

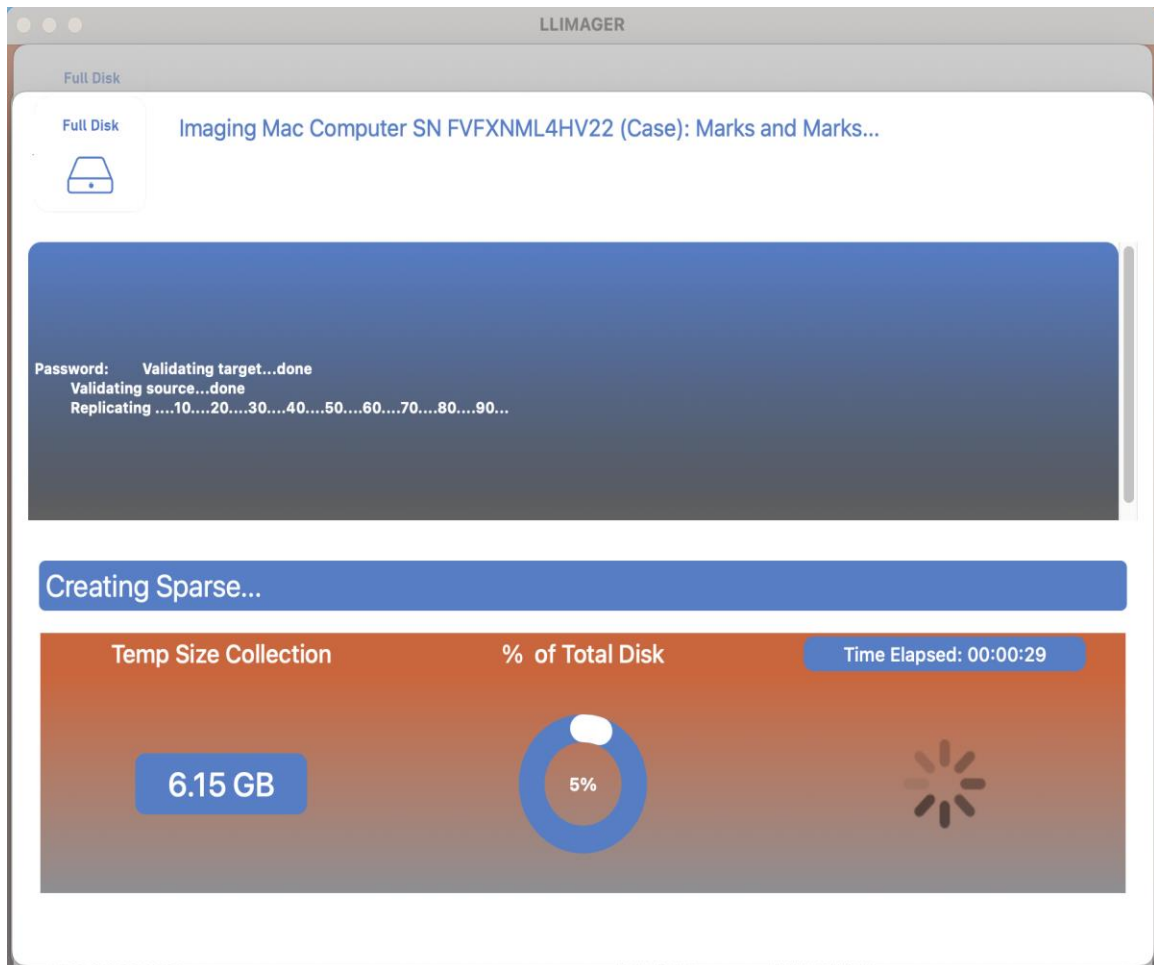
[Cancel](#) [Create Image](#) [Change values](#)

After validating and accepting the information, click on “Create Image” and the following will appear:

LLIMAGER



Click on “Click to start process” and as the process commences, a progress screen indicating that the sparse image is being generated will appear -- see below:



Once the sparse image is completed, if “Convert to DMG” was selected, LLIMAGER will proceed to create the DMG.

After the DMG conversion is completed, LLIMAGER will proceed to hash the DMG if “Hash file” was selected -- see below:

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The screenshot displays the LLIMAGER application window. At the top, the title bar reads "LLIMAGER". Below it, a header area shows "Full Disk" and the target device: "Imaging Mac Computer SN FVFXNML4HV22 (Case): Marks and Marks...". A progress bar is visible, with a blue section indicating the current progress. The main area shows a list of disk components being read, including the MBR, GPT Header, and various partitions. A central dialog box with a blue background and white text says "Processing Finished" and "Process finished, press Done Button or esc to return to main menu". Below this, a large orange progress bar shows "Creating DMG" with a circular progress indicator at 58%. The total size is "70.03 GB" and the time elapsed is "00:27:34". A "Done" button is located below the progress bar. At the bottom, a footer area shows "Mount Point: /Volumes/llidata" and "Device Identifier: disk2s2", with "Cancel", "Create Image", and "Change values" buttons.

Full Disk

Imaging Mac Computer SN FVFXNML4HV22 (Case): Marks and Marks...

Full Disk

Password:Preparing imaging engine...
Reading Protective Master Boot Record (MBR : 0)...
(CRC32 \$C76DD715: Protective Master Boot Record (MBR : 0))
Reading GPT Header (Primary GPT Header : 1)...
(CRC32 \$FE36DA34: GPT Header (Primary GPT Header : 1))
Reading GPT Partition Data (Primary GPT Table : 2)...
(CRC32 \$5B938FA5: GPT Partition Data (Primary GPT Table : 2))
Reading (Apple_Free : 3)...
(CRC32 \$00000000: (Apple_Free : 3))
Reading EFI System Partition (C12A7328-F81F-11D2-BA4B-00A0C93EC93B : 4)...
(CRC32 \$B54B659C: EFI System Partition (C12A7328-F81F-11D2-BA4B-00A0C93EC93B : 4))
Reading disk image (Apple_APFS : 5)...
(CRC32 \$929C40F7: disk image (Apple_APFS : 5))
Reading (Apple_Free : 6).....

Processing Finished

Process finished, press Done Button or esc to return to main menu

Creating DMG

70.03 GB

58%

All Completed!

Time Elapsed: 00:27:34

Done

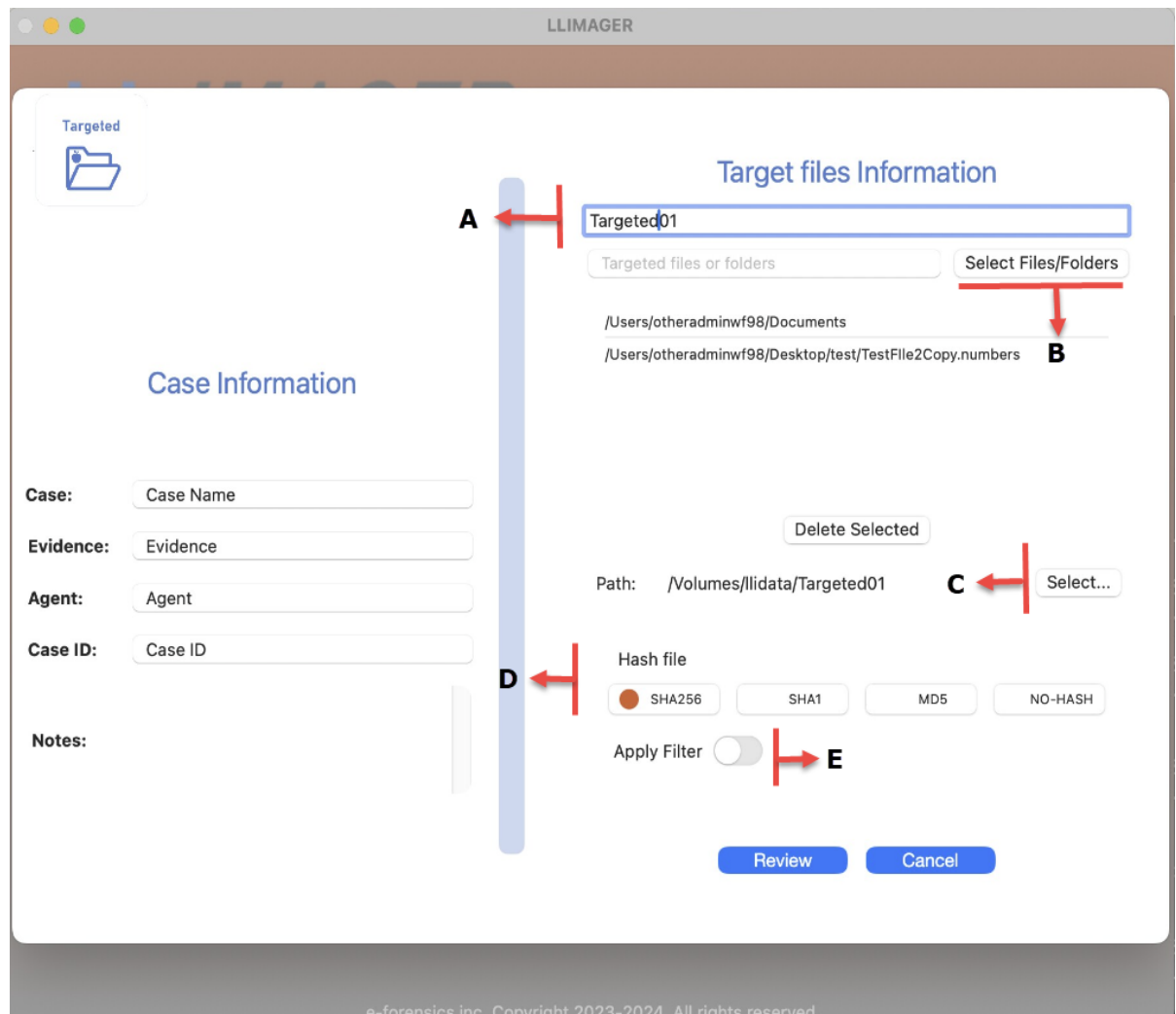
Mount Point: /Volumes/llidata

Device Identifier: disk2s2

Cancel Create Image Change values

Menu Option (Targeted)

Input the image destination name and location of the destination logical DMG file. Additionally, choose to hash and type of hash. The following picture shows the requested information.



See below for a description of each section.

A – Specify the name of the image.

B – Related to the *source files/folders*. Requires selection of the source files/folders to acquire.

C – Related to the *destination of the DMG* file. Requires selection of path where the DMG will be saved.

D – Related to *hashing of the DMG* file. Specify if the DMG will be hashed then specify the type of hash.

E – For granular selections and saving to profile.

After completing the selections, a summary of the information provided; see below.

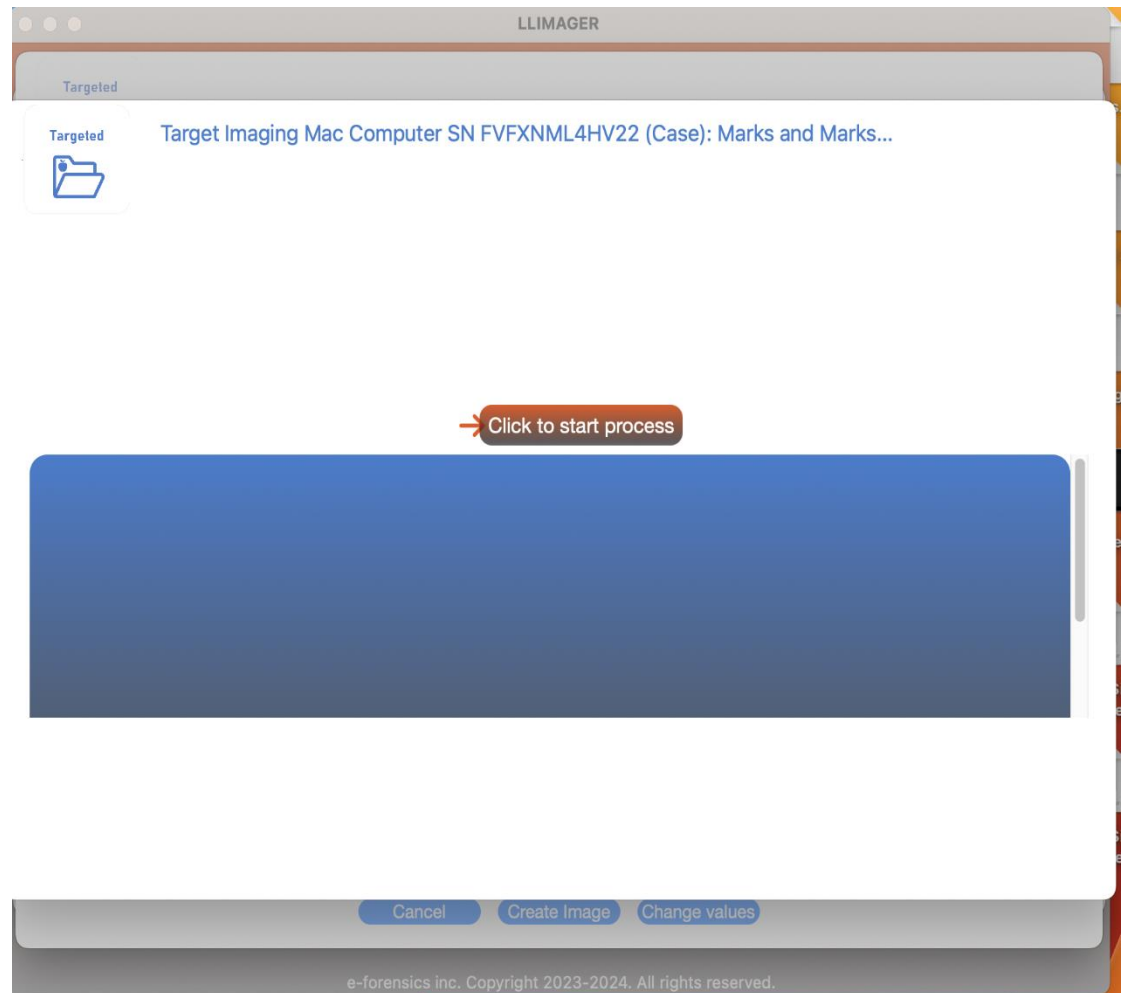
The screenshot shows the LLIMAGER application window with a 'Targeted' folder icon in the top left. The main content area is divided into two columns: 'SOURCE' and 'DESTINATION'. The 'SOURCE' column contains 'Case Information Entered' and 'Notes'. The 'DESTINATION' column contains 'Mac computer to be imaged' and 'DESTINATION' details. At the bottom, there are three buttons: 'Cancel', 'Create Image', and 'Change values'.

Case Information Entered		SOURCE
Case:	Case Name	/Users/otheradminwf98/Documents
Evidence:	Evidence	/Users/otheradminwf98/Desktop/test/TestFile2Copy.numbers
Agent:	Agent	
Case ID:	Case ID	
Notes:		

Mac computer to be imaged		DESTINATION
Model Name:	MacBook Air	Mount Point: /Volumes/llidata
Model Identifier:	Mac15,12	Allocation Block Size: 512 Bytes
Memory:	8 GB	Mounted: Yes
Serial Number (...)	MH7QRH74Q4	Volume UUID: 4215DA95-54DE-3730-B6A5-44DD8E3E515A
Hardware UUID:	BE58C0C7-446D-50D2-B60B-46095516383D	Volume Total Space: 2.0 TB (2006398926848 Bytes) (exactly 3918747904 512-Byte-Units)
		Volume Used Space: 1.2 TB (1231877832704 Bytes) (exactly 2406011392 512-Byte-Units) (61.4%)

Buttons: Cancel, Create Image, Change values

After validating and accepting the information, click on “Create Image” and the following will appear:



Click on “Click to start process” and as the process commences, a progress screen indicating that the DMG logical image is being generated will appear -- see below:

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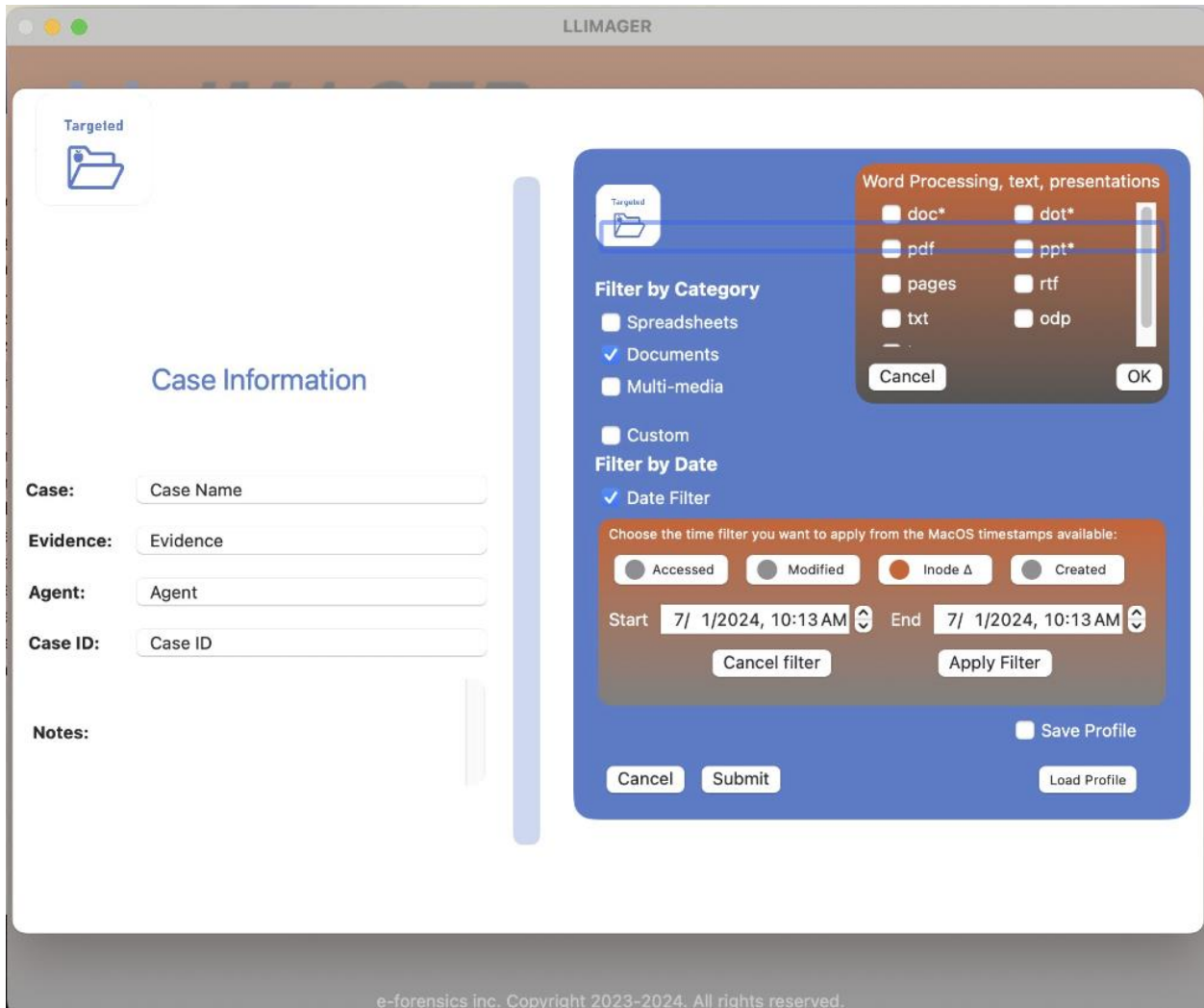
The screenshot displays the LLIMAGER application window. At the top, the title bar reads "LLIMAGER". Below it, a "Targeted" header is visible. The main content area shows a folder icon and the text "Target Imaging Mac Computer SN FVFXNML4HV22 (Case): Marks and Marks...". A blue progress bar is partially filled, with a circular gauge in the center showing "5.7%". To the left of the gauge, a box displays "0.00 GB" under the label "DMG size". To the right, a box shows "Time Elapsed: 00:00:14". A blue dialog box with a white border is centered over the progress bar, containing the text "Process finished, press Done Button or esc to return to main menu" and an "OK" button. Below the progress bar, a "Done" button is visible. At the bottom of the window, there are three buttons: "Cancel", "Create Image", and "Change values". The footer text reads "e-forensics inc. Copyright 2023-2024. All rights reserved."

Menu Option (Targeted – Using Filtering)

With the release of 4.1.04, LLIMAGER includes enhanced filtering for improved digital forensics and e-discovery collection workflows. The filtering covers:

- File System dates:
 - Access Time (st_atime): This represents the last time the file's data was read or accessed.
 - Modification Time (st_mtime): This indicates the last time the file's content was modified.
 - Change Time (st_ctime): This reflects the last time the file's metadata was changed. This includes permission modifications, ownership changes, or any other alterations to the file's properties outside the content itself.
 - Birth Time (st_birthtime also referred to as st_ctime on some systems). This can be a bit confusing because depending on the file system implementation, st_ctime might sometimes refer to the birth time (creation time) on some systems.
- File Types:
 - File Categories:
 - Spreadsheets: common spreadsheet file extension names
 - Documents: common word processing, presentation, and text file extensions
 - Multi-Media: common audio, video and images file extensions
 - Custom: add custom file extensions.
- Profiles: Option to save filtered selections to a customer profile name.

Below is the screenshot representing the filtering options and saving to a profile:



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The screenshot displays the LLIMAGER application interface. On the left, there is a 'Case Information' form with the following fields:

- Case:** Case Name
- Evidence:** Evidence
- Agent:** Agent
- Case ID:** Case ID
- Notes:** (empty text area)

On the right, a 'Filter by Category' dialog box is open. It features a 'Targeted' icon and the following options:

- Filter by Category:**
 - Spreadsheets
 - Documents
 - Multi-media
 - Custom
- Filter by Date:**
 - Date Filter
 - Save Profile

The 'Save Profile' option is selected, and the profile name 'CollectionProfile7-1' is entered in the adjacent text field. At the bottom of the dialog, there are 'Cancel', 'Submit', and 'Save Profile' buttons.

A secondary dialog box is visible in the top right corner of the main dialog, titled 'Word Processing, text, presentations'. It contains the following checked items:

- doc*
- pdf
- pages
- txt
- dot*
- ppt*
- rtf
- odp

This secondary dialog has 'Cancel' and 'OK' buttons.

At the bottom of the application window, the text reads: e-forensics inc. Copyright 2023-2024. All rights reserved.

Menu Option (Convert)

This feature is available to convert the temp files, (sparse image) to a DMG.

Input the DMG file name and location of the destination logical DMG file. The following picture shows the requested information.

The screenshot shows the 'Convert Sparse to DMG' dialog box in LLIMAGER. On the left is a 'Case Information' section with fields for Case, Evidence, Agent, Case ID, and Notes. The main area contains fields for Image Name, a 'Select only one sparse image' dropdown, a 'Select Sparse Image' button, a table of available sparse images, a 'Delete Selected' button, a 'Path' field with a 'Select...' button, and a 'Hash file' section with radio buttons for SHA256, SHA1, MD5, and NO-HASH. At the bottom are 'Review' and 'Cancel' buttons. A vertical blue bar separates the Case Information from the main form. Red arrows and letters A, B, C, and D point to specific elements: A points to the Case Information fields, B points to the Image Name field, C points to the 'Select only one sparse image' dropdown, and D points to the Path field.

Convert

Convert Sparse to DMG

B Image Name:

Select only one sparse image **C** Select Sparse Image

/Volumes/l1idata/Acqimage98.sparseimage	93,909,782,528 bytes
Total Size	93,909,782,528 bytes

Delete Selected

Path: DESTINATION path

Hash file

SHA256 SHA1 MD5 NO-HASH

Case Information

Case:

Evidence:

Agent:

Case ID:

MacBook Pro SN: 12321343

Notes:

See below for a description of each section.

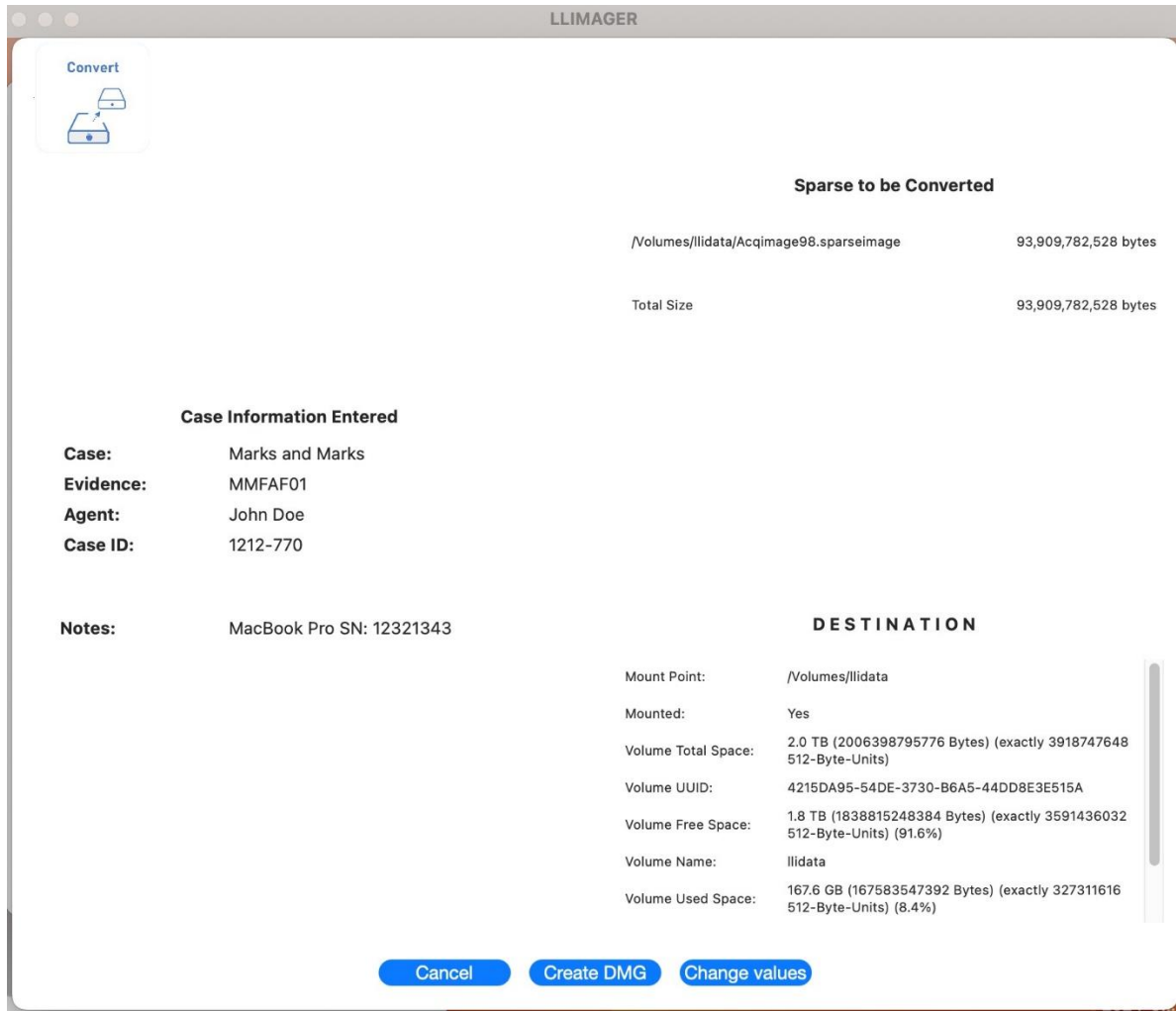
A – Specify case related information

B – Related to the name to give the DMG file.

C – Related to the source sparse image to be converted.

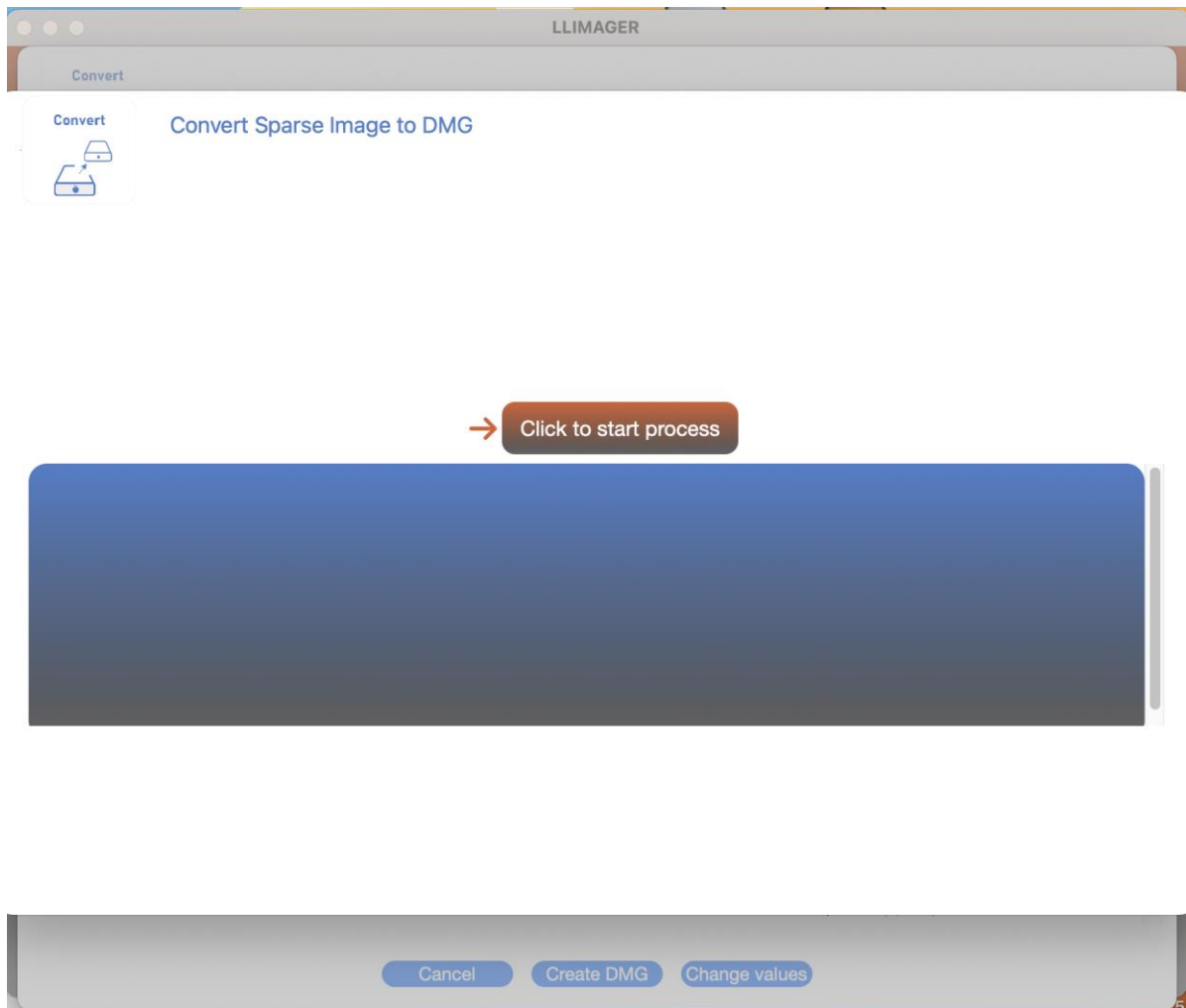
D – The path where the destination DMG will be stored.

After completing the selections, click on Review for summary of the information provided; see below.



Upon completing the review, click “Create DMG” and the following screen will appear, and click on “Click to start process”):

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Upon completion, the following will appear:

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Convert

Convert Sparse Image to DMG

Convert

Preparing imaging engine...
Reading Protective Master Boot Record (MBR : 0)...
(CRC32 \$C76DD715: Protective Master Boot Record (MBR : 0))
Reading GPT Header (Primary GPT Header : 1)...
(CRC32 \$FE36DA34: GPT Header (Primary GPT Header : 1))
Reading GPT Partition Data (Primary GPT Table : 2)...
(CRC32 \$5B938FA5: GPT Partition Data (Primary GPT Table : 2))
Reading (Apple_Free : 3)...
(CRC32 \$00000000: (Apple_Free : 3))
Reading EFI System Partition (C12A7328-F81F-11D2-BA4B-00A0C93EC93B : 4)...
(CRC32 \$B54B659C: EFI System Partition (C12A7328-F81F-11D2-BA4B-00A0C93EC93B : 4))
Reading disk image (Apple_APFS : 5)...

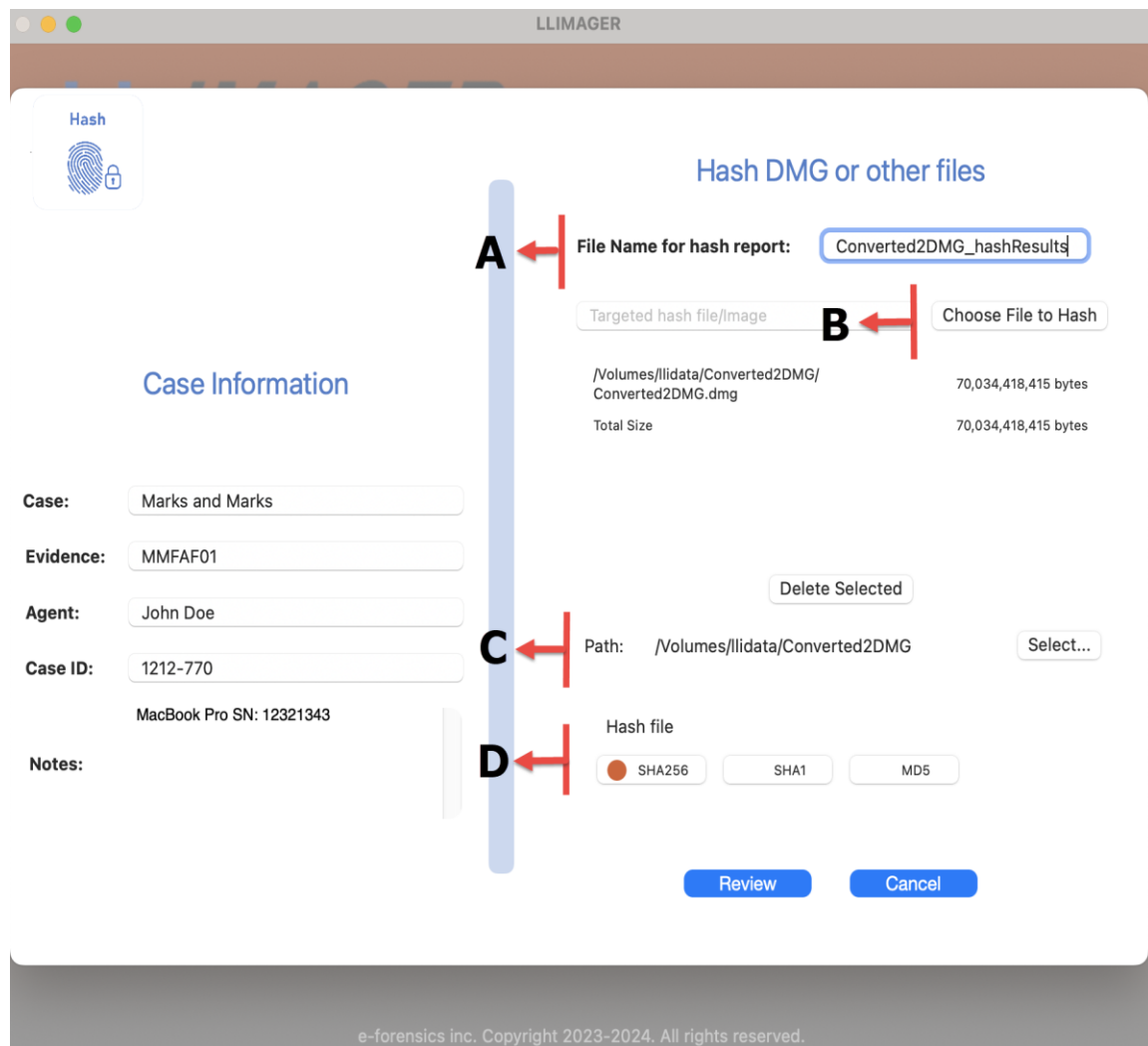
Creating DMG...

DMG size	% Size DMG vs Sparse	Time Elapsed: 00:00:24
1.54 GB	2%	

Cancel Create DMG Change values

Menu Option (Hash)

The hash option is used to calculate the hash of a file, be it sparse image, DMG or any other type, and the following picture shows the fields and selection options:



See below for a description of each section.

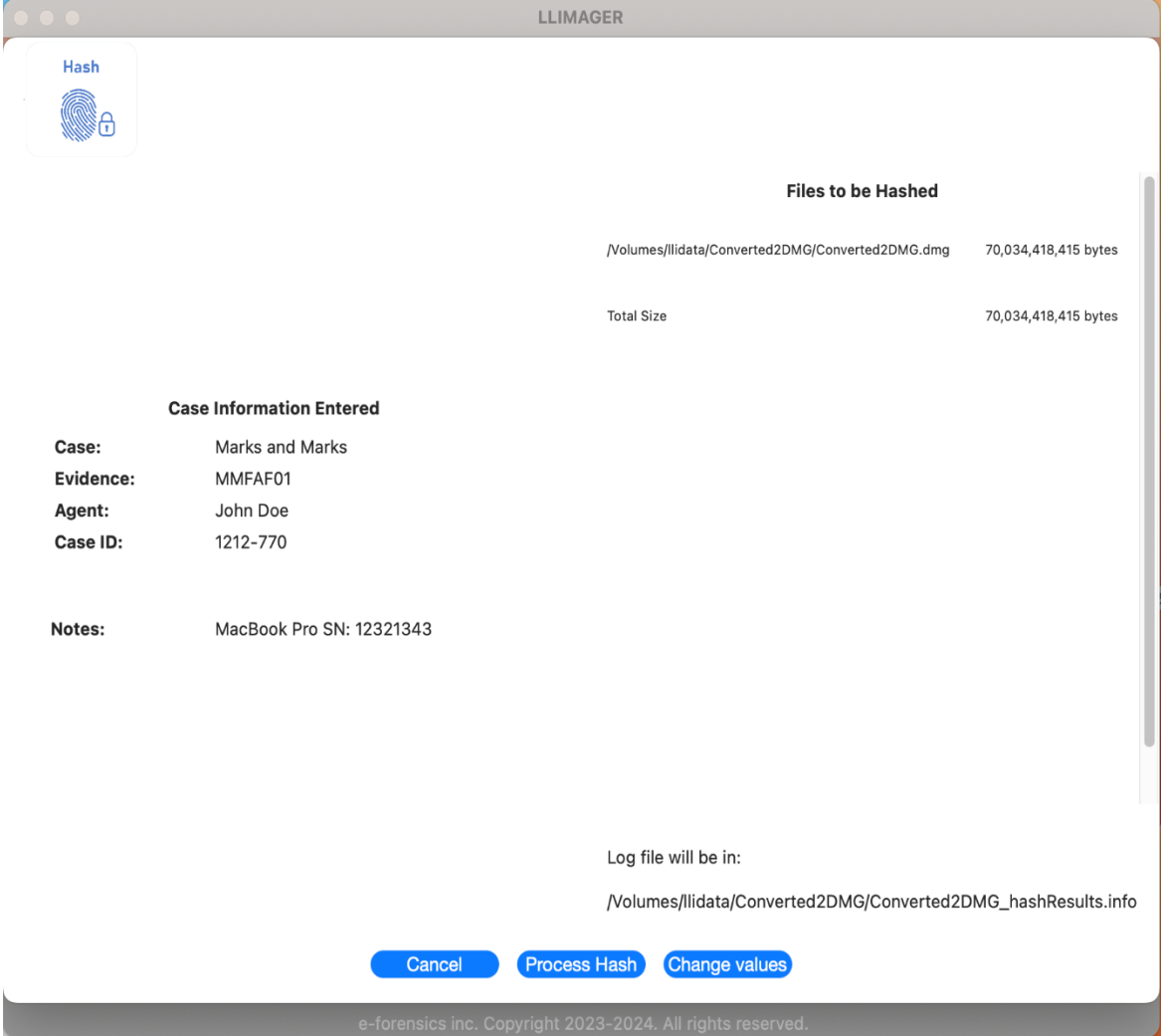
A – Specify the name of the hash report file.

B – Related to the *source files/folders*. Requires selection of the source files to hash.

C – Related to the *destination of the hash report* file. Requires selection of path hash report destination folder.

D – Related to *hashing type*. Specify the type of hash.

After completing the selections, a summary of the information is provided; see below.



Proceed to click on "Process Hash" and the following will appear:

LLIMAGER

Hash

Hash



Hash process



Hashing Files...

Size Collected

% Completed

Time Elapsed: 00:00:53

14,181,990.4 KB

20%



Cancel

Process Hash

Change values

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LLIMAGER

The screenshot displays the LLIMAGER application window titled "LLIMAGER". The main content area shows a "Hash process" window with a fingerprint icon and a large blue progress bar. Below the progress bar, a blue banner reads "Processing Finished". A summary panel shows "Size Collected" as 70,034,418.4 KB, "% Completed" as 100% (indicated by a circular progress indicator), and "Time Elapsed: 00:04:15". The text "All Completed!" is displayed on the right. A "Done" button is centered below the summary panel. At the bottom, a control bar contains "Cancel", "Process Hash", and "Change values" buttons. The footer text reads "e-forensics inc. Copyright 2023-2024. All rights reserved."

Hash

Hash process

Processing Finished

Size Collected

70,034,418.4 KB

% Completed

100%

Time Elapsed: 00:04:15

All Completed!

Done

Cancel Process Hash Change values

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Disk Acquisition Log Sample

The following is a sample of the disk acquisition log.

```
=====
LLimager V 4.0 - Mac Computers Forensics Imager
ACQUISITION DETAIL
-----
Case Summary
Case Name:      Marks and Marks
Evidence Name:  MMAF01
Agent Name:     John Doe
Case ID:        1212-770

Case Notes:     MacBook Pro SN: 12321343

Start Time:    2024-04-05 10:28:51
-----
Hardware information
Serial Number:  FVFXNML4HV22
Model Name:     MacBook Pro
Model Ident.:  MacBookPro14,1
Memory:        8 GB
Device UUID:    EB71A5DD-3BA7-500B-88C3-11821EC0874D
-----
Source Disk Information
Device Identifier:  disk1s5s1
Device Node:       /dev/disk1s5s1
Whole:            No
Part of Whole:    disk1

Volume Name:      Macintosh HD
Mounted:          Yes
Mount Point:      /

Partition Type:   41504653-0000-11AA-AA11-00306543ECAC
File System Personality:  APFS
Type (Bundle):    apfs
Name (User Visible):  APFS
Owners:           Enabled
```


LLIMAGER

OS Can Be Installed: No
Booter Disk: disk1s2
Recovery Disk: disk1s3
Media Type: Generic
Protocol: PCI-Express
SMART Status: Verified
Volume UUID: B8CE8BAA-4A75-42F3-BF8F-89412A84C937
Disk / Partition UUID: B8CE8BAA-4A75-42F3-BF8F-89412A84C937

Disk Size: 121.0 GB (121018208256 Bytes) (exactly 236363688 512-Byte-Units)
Device Block Size: 4096 Bytes

Volume Used Space: 11.9 GB (11915608064 Bytes) (exactly 23272672 512-Byte-Units)
Container Total Space: 121.0 GB (121018208256 Bytes) (exactly 236363688 512-Byte-Units)
Container Free Space: 25.3 GB (25298644992 Bytes) (exactly 49411416 512-Byte-Units)
Allocation Block Size: 4096 Bytes

Media OS Use Only: No
Media Read-Only: Yes
Volume Read-Only: Yes (read-only mount flag set)

Device Location: Internal
Removable Media: Fixed

Solid State: Yes
Hardware AES Support: No

This disk is an APFS Volume Snapshot. APFS Information:
APFS Snapshot Name: com.apple.os.update-A17B27811581529D33626973A757590AE0168469175C377BE4B1C7BDFDED1E84
APFS Snapshot UUID: B8CE8BAA-4A75-42F3-BF8F-89412A84C937
APFS Container: disk1
APFS Physical Store: disk0s2
Fusion Drive: No
APFS Volume Group: 890F1145-BA72-4388-B74E-D0E7C79835AB
EFI Driver In macOS: 2142140009000000
Encrypted: No
FileVault: Yes
Sealed: Broken
Locked: No

APFS Snapshots are defined upon this APFS Volume. Snapshot list:
Snapshot UUID: B8CE8BAA-4A75-42F3-BF8F-89412A84C937
Name: com.apple.os.update-A17B27811581529D33626973A757590AE0168469175C377BE4B1C7BDFDED1E84
XID: 58627287
Snapshot UUID: D56BC470-A1BF-436F-8F17-D82DA8C35346
Name: com.apple.os.update-MSUPPrepareUpdate
XID: 59597868

RESULTS

Sparse image process-----

Start time: 2024-04-05 10:28:54
End time: 2024-04-05 10:39:12
Image size: 93.91 GB

Sparse image created: /Volumes/llidata/Acqimage98.sparseimage

DMG image process-----

Start time: 2024-04-05 10:39:20
End time: 2024-04-05 10:56:29
Image size: 70.03 GB

DMG image created: /Volumes/llidata/Acqimage98.dmg

Hash DMG process-----

Start time: 2024-04-05 10:56:29
End time: 2024-04-05 11:00:36
SHA256 hash: 83b5601089817ea0fe72492e16d4e453cfbad051431ff93b40b03953f83c37e0

=====

Targeted Acquisition Log Sample

The following is a sample of the targeted folders acquisition log.

LLIMAGER

LLIMAGER V 4

=====
LLimager V 4.1.03 - Mac Computers Forensics Imager

A C Q U I S I T I O N D E T A I L

Case Summary

Case Name: Case Name
Evidence Name: Evidence
Agent Name: Agent
Case ID: Case ID

Start Time: 2024-07-01 08:58:00

Hardware information

Serial Number: MH7QRH74Q4
Model Name: MacBook Air
Model Ident.: Mac15,12
Memory: 8 GB
Device UUID: BE58C0C7-446D-50D2-B60B-46095516383D

Targeted Files and Folders Information

/Users/otheradminwf98/Documents
/Users/otheradminuser/Downloads
/Users/otherstandarduser/Desktop

Collecting only files with extensions:
numbers doc* pdf pages txt dot* ppt* rtf odp keynote
and within the following Inode & timestamps(ct):
Start date: 2024-06-25 08:56 --> End Date: 2024-06-25 20:56

R E S U L T S

Extract process -----

Start time: 2024-07-01 08:58:04
End time: 2024-07-01 08:58:05
Image size: 15.73 MB

DMG image process -----

Start time: 2024-07-01 08:58:08
End time: 2024-07-01 08:58:12
Image size: 3.74 MB

Hash DMG image process -----

Start time: 2024-07-01 08:58:12
End time: 2024-07-01 08:58:12
SHA256 value: 6b1ef479f51f28a3a620a09be472014c1fbf51fd3dfe4f8c735400ca933f58d8

Changelog

July 20, 2023: Commercial Version 3.5 (beta core)

September 8, 2023: Commercial Version 3.7: Major cosmetic

September 15, 2023: Commercial Version 3.7.1: Minor updates to license key processing, and packaging executables into DMGs

October 2, 2023: Commercial Version 3.7.2: Added new feature to create logical image of targeted folders.

November 14, 2023: Manual documentation update regarding resolution of LImager being damaged and can't open.

November 17, 2023: Update to EULA

December 8, 2023: Commercial Version 3.8: Major update

- Transparent management of System sleeping time.
- Removed the required input requesting confirmation to erase the sparse after selecting to run in Unattended mode.
- Updated messages during the process to make warning messages more notable.
- Updated the imaging of targeted folders.
- Changed the process to save all targeted folders into one DMG.
- Enhanced error trapping.
- Updates to the acquisition log file.
- Other minor changes to enhance performance.
- Manual documentation update regarding resolution of LImager_M1 being damaged and can't open.

April 8, 2024: Complete rewrite to GUI using in Swift.

July 1, 2024: Commercial Versions 4.1.03: Major update

- Granular targeted imaging
- Enhanced performance
- Improved error trapping and reporting
- Updated acquisition log

July 10, 2024: Bug fix to correct failed acquisitions due to copying to destination folders created by the user with a space in the name.

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LLIMAGER

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