



Division of Information Technology & Sciences
Department of Computer & Digital Forensics
FOR 120 – Introduction to Digital Forensic Analysis

Image Formats

Overview:

The lab consists of four tasks. The objective of this lab is to learn how to acquire a digital forensic image of a disk drive. The lab tasks focus on creating forensic images of different types, including dd and E01 formats.

Notes:

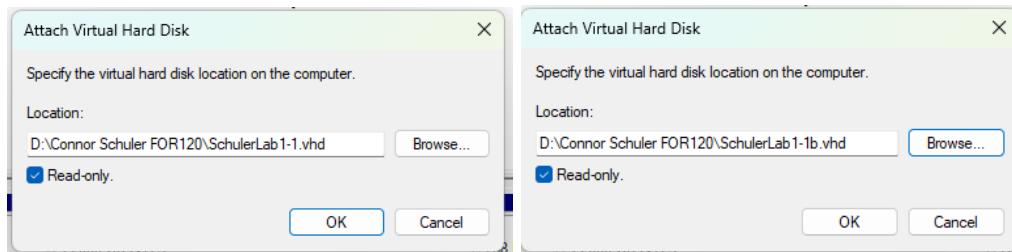
1. You are required to provide screenshots of any step performed during the Lab. Screenshots should clearly show any step used and its results. This could be done using a tool such as the “Snip and Sketch” tool, to highlight your work.
2. A thorough explanation and analysis are required to demonstrate your understanding of all steps that you performed.
3. Submission rules: please submit all answers to canvas.
4. Make sure to always report the image verification results.

Required Tools: FTK Imager

TASK #1 – ATTACH THE VHD FILES

1. Attach the VHD files that were created in the previous lab

Images show two VHDs being attached, it specifies the paths of the VHDs as on the D: drive is a folder called “Connor Schuler FOR-120.”

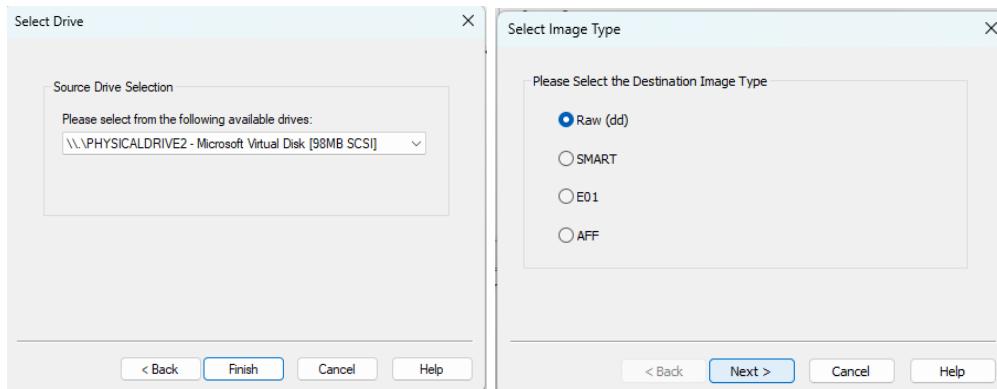


TASK #2 – ACQUIRE A DD IMAGE

Please read all steps before starting the acquisition

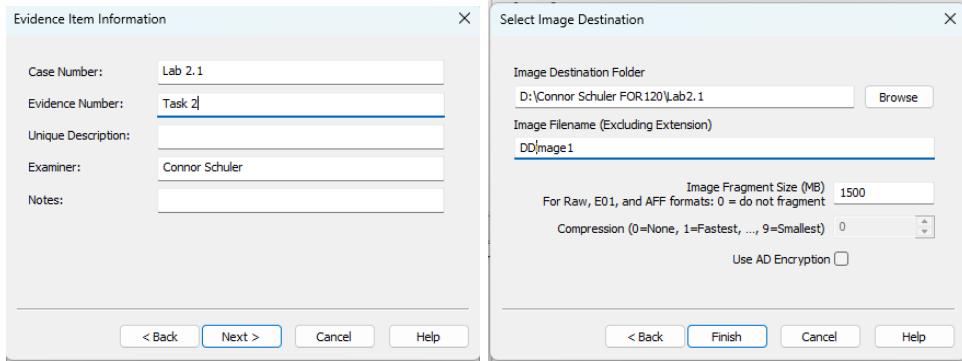
1. Use the FTK imager to create a **dd** physical forensic image from evidence #1 VHD.

Images show physical drive 2 being selected, and the image as Raw/dd.



2. What are the available options that you can apply to a **dd** image?

Case number, evidence number, unique description, examiner, notes, image name/path, AD encryption, and image fragment size.



3. Make sure to submit the verification of the imaging, which means that the acquisition was done successfully without errors.

Image shows file hashes for image.

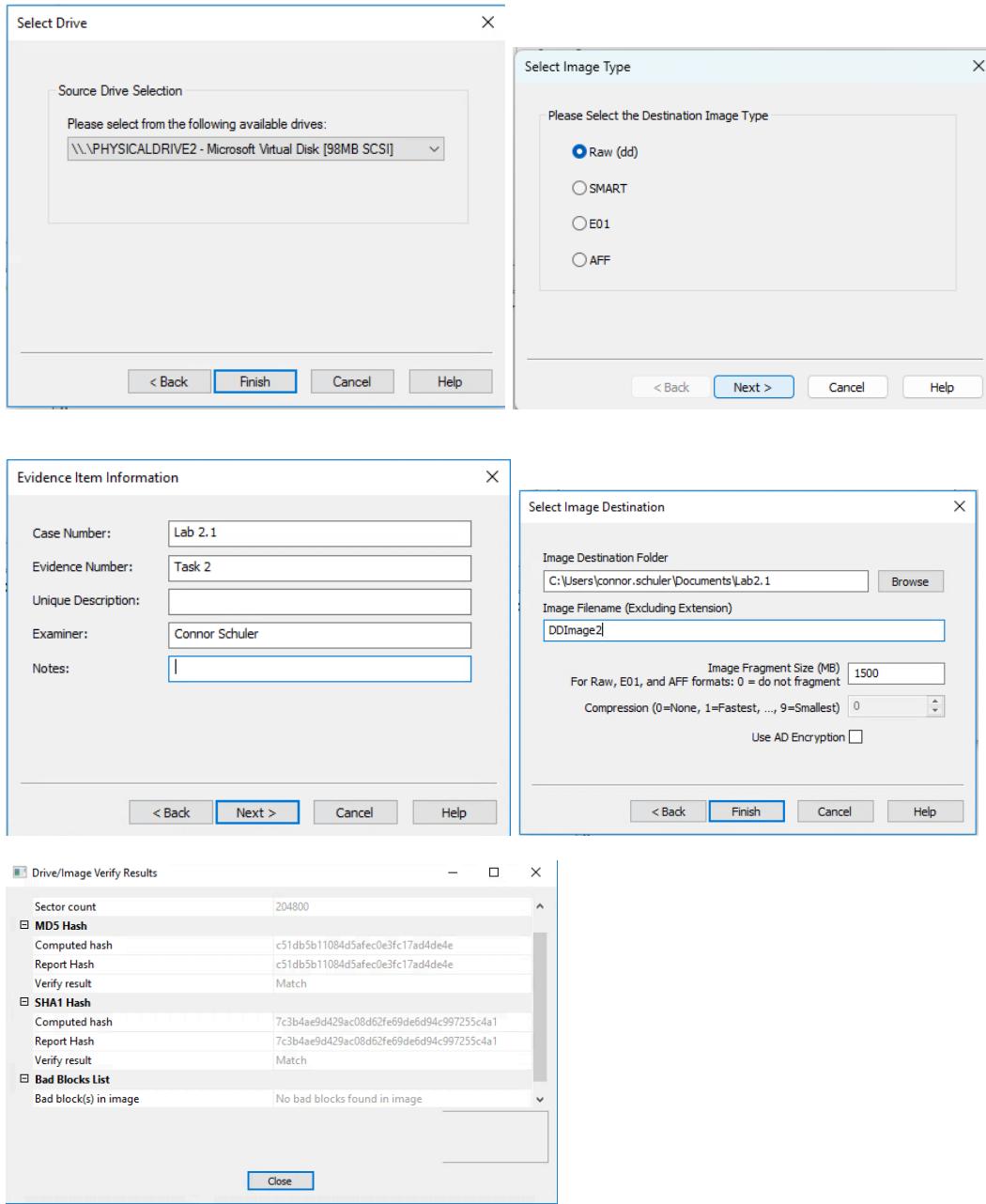
```
[Computed Hashes]
MD5 checksum: c51db5b11084d5afec0e3fc17ad4de4e
SHA1 checksum: 7c3b4ae9d429ac08d62fe69de6d94c997255c4a1

Image Information:
Acquisition started: Tue Jan 20 13:57:02 2026
Acquisition finished: Tue Jan 20 13:57:02 2026
Segment list:
D:\Connor Schuler FOR120\Lab2.1\DDimage1.001
COMPUTED HASH : c51db5b11084d5afec0e3fc17ad4de4e
COMPUTED HASH : 7c3b4ae9d429ac08d62fe69de6d94c997255c4a1

Image Verification Results:
Verification started: Tue Jan 20 13:57:02 2026
Verification finished: Tue Jan 20 13:57:03 2026
MD5 checksum: c51db5b11084d5afec0e3fc17ad4de4e : verified
SHA1 checksum: 7c3b4ae9d429ac08d62fe69de6d94c997255c4a1 : verified
```

4. Create another dd image from the evidence #1 VHD.

Images show physical drive 2 being selected, and the image as Raw/dd. Then basic case/evidence information and a name/location. Final image shows the hash of the image.

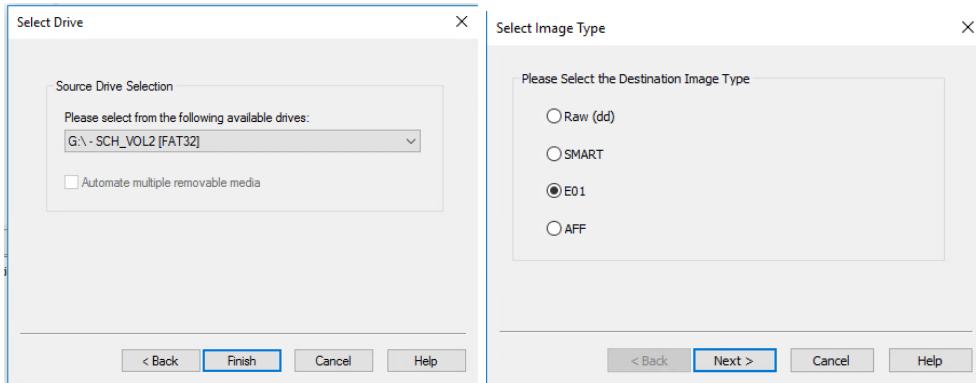


TASK #3 – ACQUIRE AN E01 IMAGE

Please read all five steps before starting the acquisition

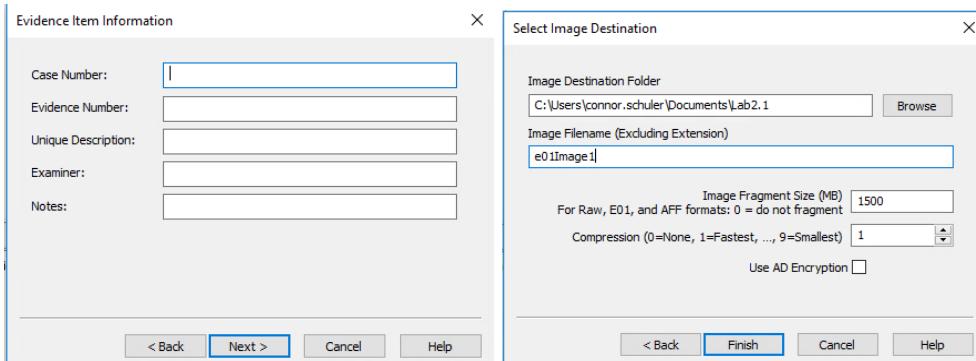
1. Use the FTK imager to create an **E01** logical forensic image from the FAT32 volume on evidence #2 VHD.

Images show the FAT32 volume being selected, and the image as E01.



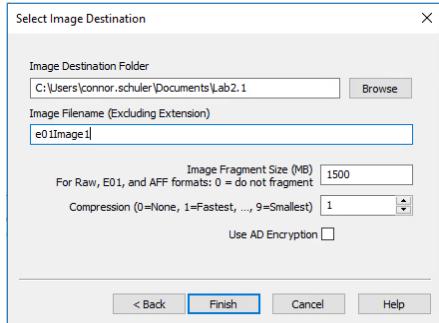
2. What are the available options that you can apply to an **E01** image before the acquisition?

Case number, evidence number, unique description, examiner, notes, image name/path, AD encryption, compression level, and image fragment size.



3. Use compression (recommend level 1)

Image shows compression set to 1.,



4. Make sure to submit the verification of the imaging, which means that the acquisition was done successfully without errors.

Image shows hashes of E01 image, and no bad blocks in the image.

Drive/Image Verify Results	
Computed hash	1e40fb0e80a234ce90c90c8b8ffcf15a
Stored verification hash	1e40fb0e80a234ce90c90c8b8ffcf15a
Report Hash	1e40fb0e80a234ce90c90c8b8ffcf15a
Verify result	Match
SHA1 Hash	
Computed hash	3767e1fec3890d7aef277227942be3474440f2
Stored verification hash	3767e1fec3890d7aef277227942be3474440f2
Report Hash	3767e1fec3890d7aef277227942be3474440f2
Verify result	Match
Bad Blocks List	
Bad block(s) in image	No bad blocks found in image

5. Create another E01 image from the FAT32 volume using the same configurations you used for the first E01 image.

Images show the FAT32 volume being selected, and the image as E01. Then no case information, an image name on e01Image2 in the Lab2.1 folder in documents. The final image shows the validated hash.

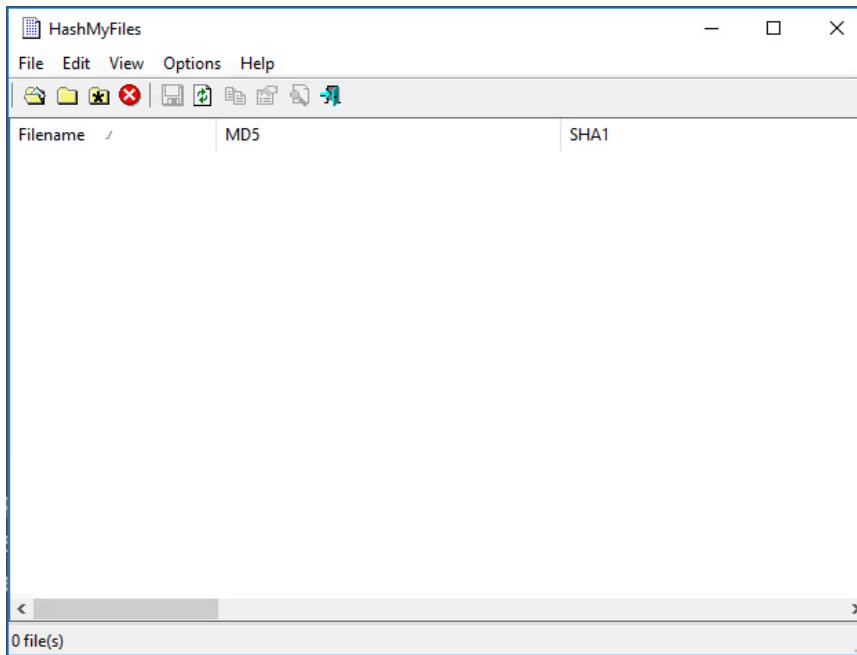
The image consists of four screenshots of a forensic software interface:

- Select Drive**: Shows "Source Drive Selection" with "G:\ - SCH_VOL2 [FAT32]" selected in a dropdown. There is also an unchecked checkbox for "Automate multiple removable media". Buttons at the bottom include < Back, Finish (highlighted in blue), Cancel, and Help.
- Select Image Type**: Shows "Please Select the Destination Image Type" with "E01" selected in a radio button group. Other options are Raw (dd), SMART, and AFF. Buttons at the bottom include < Back, Next >, Cancel, and Help.
- Evidence Item Information**: Shows fields for "Case Number" (empty), "Evidence Number" (empty), "Unique Description" (empty), "Examiner" (empty), and "Notes" (empty). Buttons at the bottom include < Back, Next >, Cancel, and Help.
- Select Image Destination**: Shows "Image Destination Folder" set to "C:\Users\connor.schuler\Documents\Lab2.1" with a "Browse" button. "Image Filename (Excluding Extension)" is "e01Image2". Under "Image Fragment Size (MB)", "1500" is selected. Under "Compression (0=None, 1=Fastest, ..., 9=Smallest)", "1" is selected. A checkbox for "Use AD Encryption" is unchecked. Buttons at the bottom include < Back, Finish (highlighted in blue), Cancel, and Help.
- Drive/Image Verify Results**: Shows a table of verification results. It includes rows for "Computed hash", "Stored verification hash", "Report Hash", and "Verify result" (all showing "Match"). It also includes sections for "SHA1 Hash" (with similar columns) and "Bad Blocks List" (showing "No bad blocks found in image"). A "Close" button is at the bottom.

TASK #4 – IMAGE VERIFICATION

1. Download [HashMyFiles](#) tool.

Image shows the HashMyFiles program open and running.



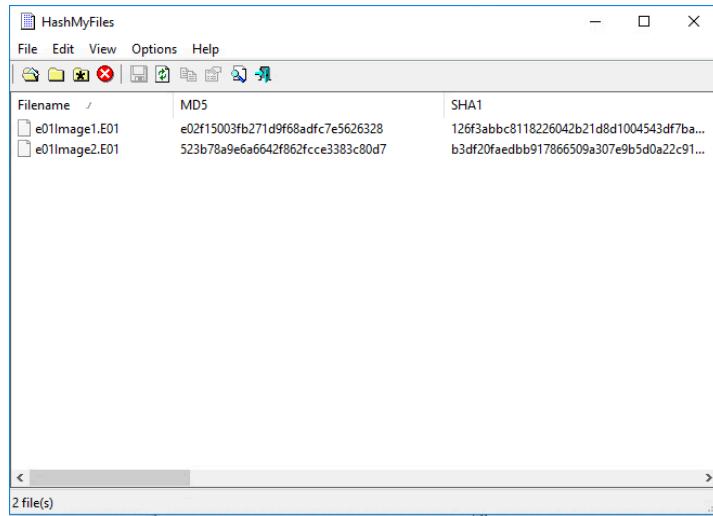
2. Compare the hashes of the two dd images that you created in task #2, are they the same? Why or why not?

They are the same, because they are direct bit for bit copies of the same drive/volume with no attached metadata.

Filename	MD5	SHA1
DDImage1.001	c51db5b11084d5afec0e3fc17ad4de4e	7c3b4ae9d429ac08d62fe69de6d94c99725c...
DDImage2.001	c51db5b11084d5afec0e3fc17ad4de4e	7c3b4ae9d429ac08d62fe69de6d94c99725c...

3. Compare the hashes of the two E01 images that you created in task #3, are they the same? Why or why not?

They are not the same, because E01 images store additional metadata within the E01 container. This means that the files have the same image, but have different hashes.



The screenshot shows a software window titled "HashMyFiles". The menu bar includes File, Edit, View, Options, and Help. The toolbar contains icons for file operations like Open, Save, and Hash. A table displays file information:

Filename	MD5	SHA1
e01Image1.E01	e02f15003fb271d9f68adfc7e5626328	126f3abbc8118226042b21d8d1004543df7ba...
e01Image2.E01	523b78a9e6a6642f062fcce3383c80d7	b3df20faedbb917866509a307e9b5d0a22c91...

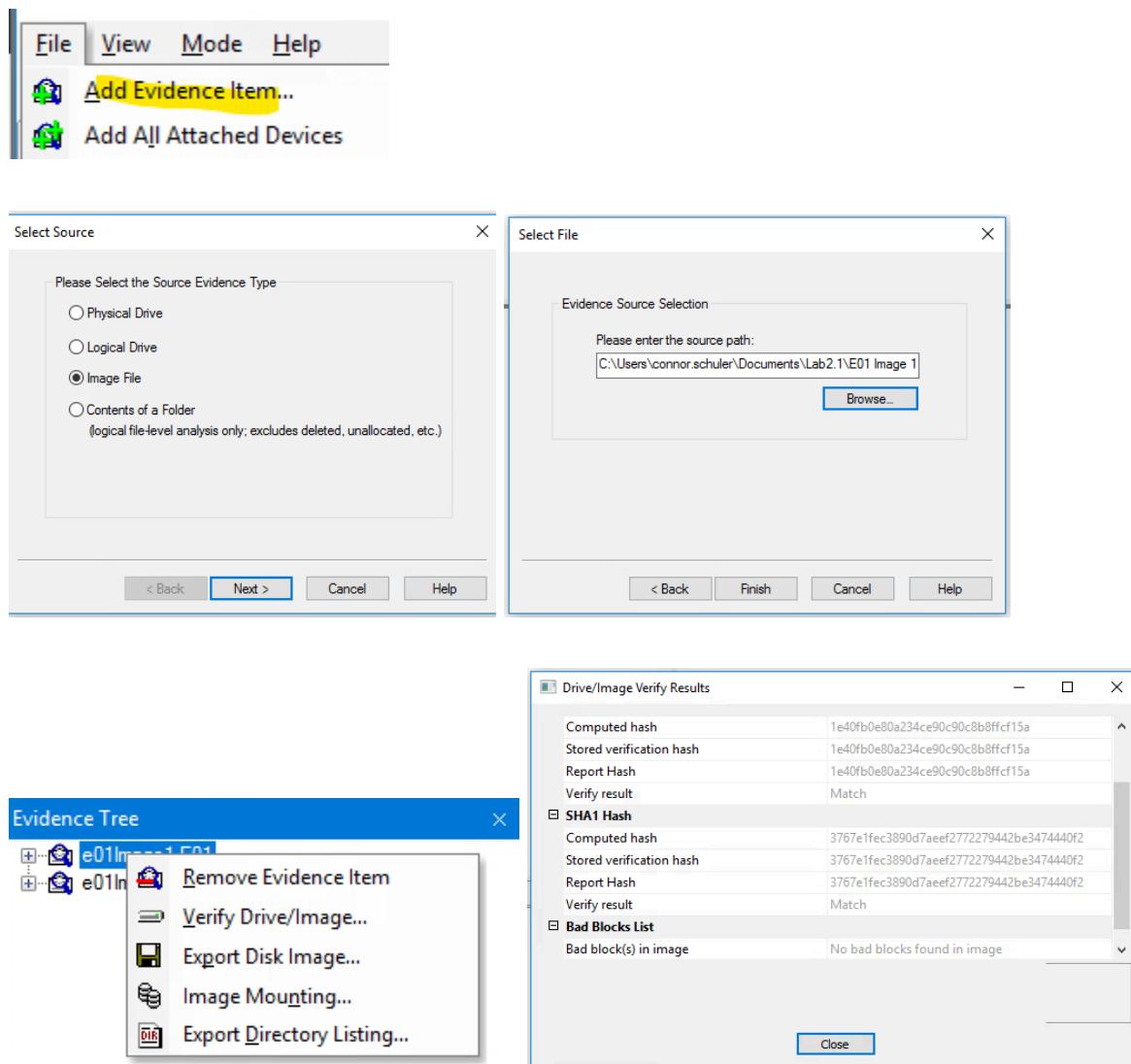
At the bottom, there are navigation arrows and a status bar indicating "2 file(s)".

4. How can we verify if two E01 images are the same?

Import image into FTK Imager and verify image.

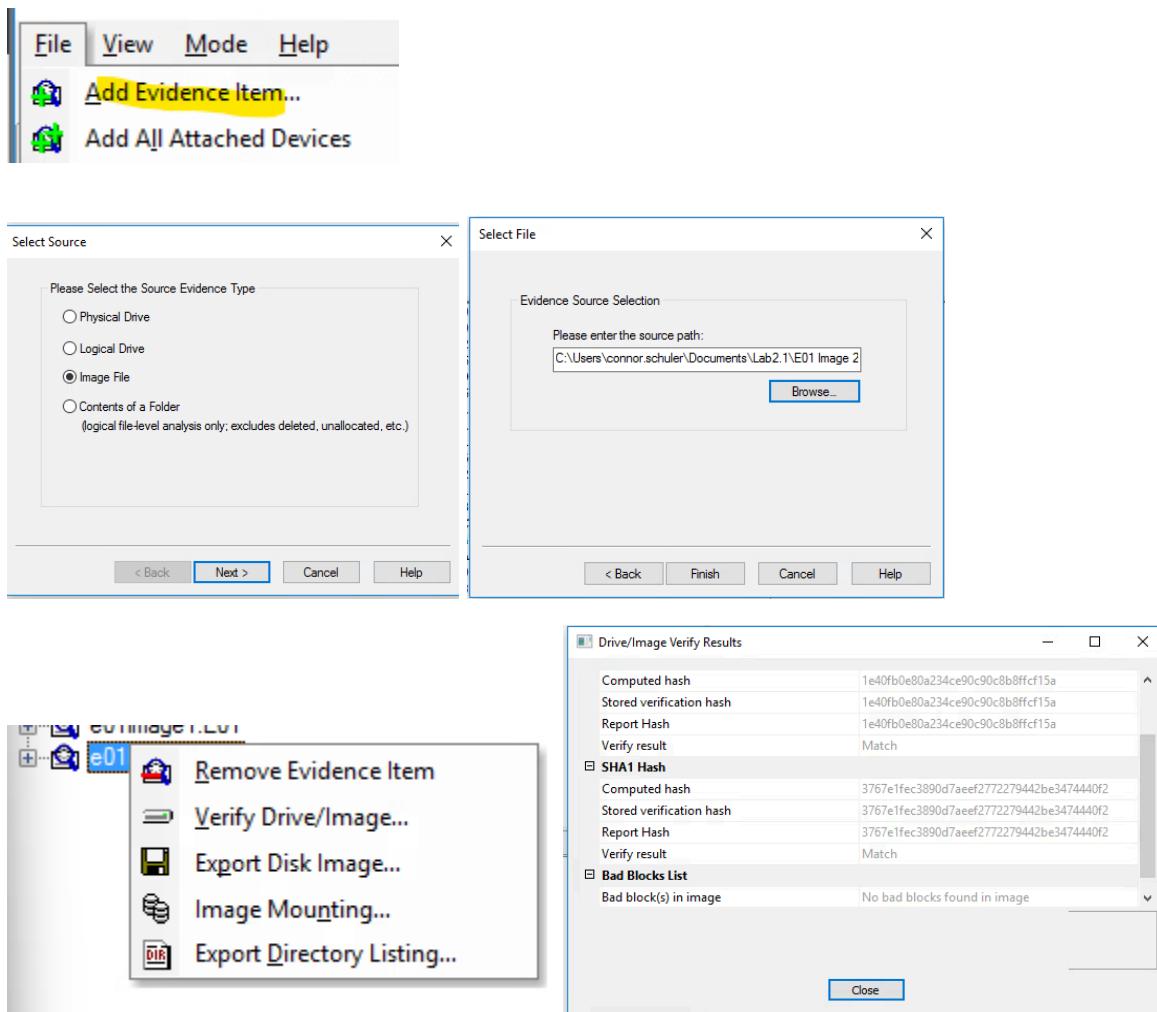
E01 Image 1:

Images show the E01 Image 1 being imported and verified.



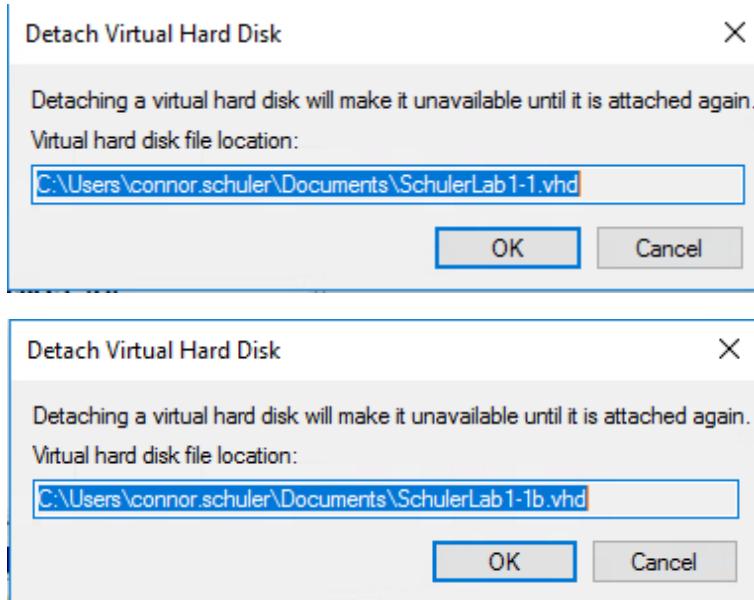
E01 Image 2:

Images show the E01 Image 2 being imported and verified. The reported and computed hashes match E01 Image 1.



** Remember to detach the VHD files when you finish the lab :)

Images show two VHDs being detached.



TASK #5 – REFLECT ON WHAT YOU LEARNED IN THIS LAB

This lab demonstrated that DD images will have the same hash, but E01 images will not because of additional metadata stored in the file. It also showed me how to validate both E01 and dd images.

IMPORTANT

Remember that VHD files are a virtual representation of Hard Disks, we use them to simulate a real hard disk drive. For testing purposes, it is easier to deal with VHDs than real disks.