Simple Imaging. Tactical Triage. Zero Clicks.

CIPHER TECH SOLUTIONS

AGENDA

- **IO Overview**
  - Why IO?
  - Imaging Overview
  - Logging Overview
  - What makes IO unique?
- **Triage**
- **Open Source Engagement**

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WHY IO?

- Simple
- Prevents imaging incorrect device
- Triage concurrently while imaging
- Extensible
- Developed in Java

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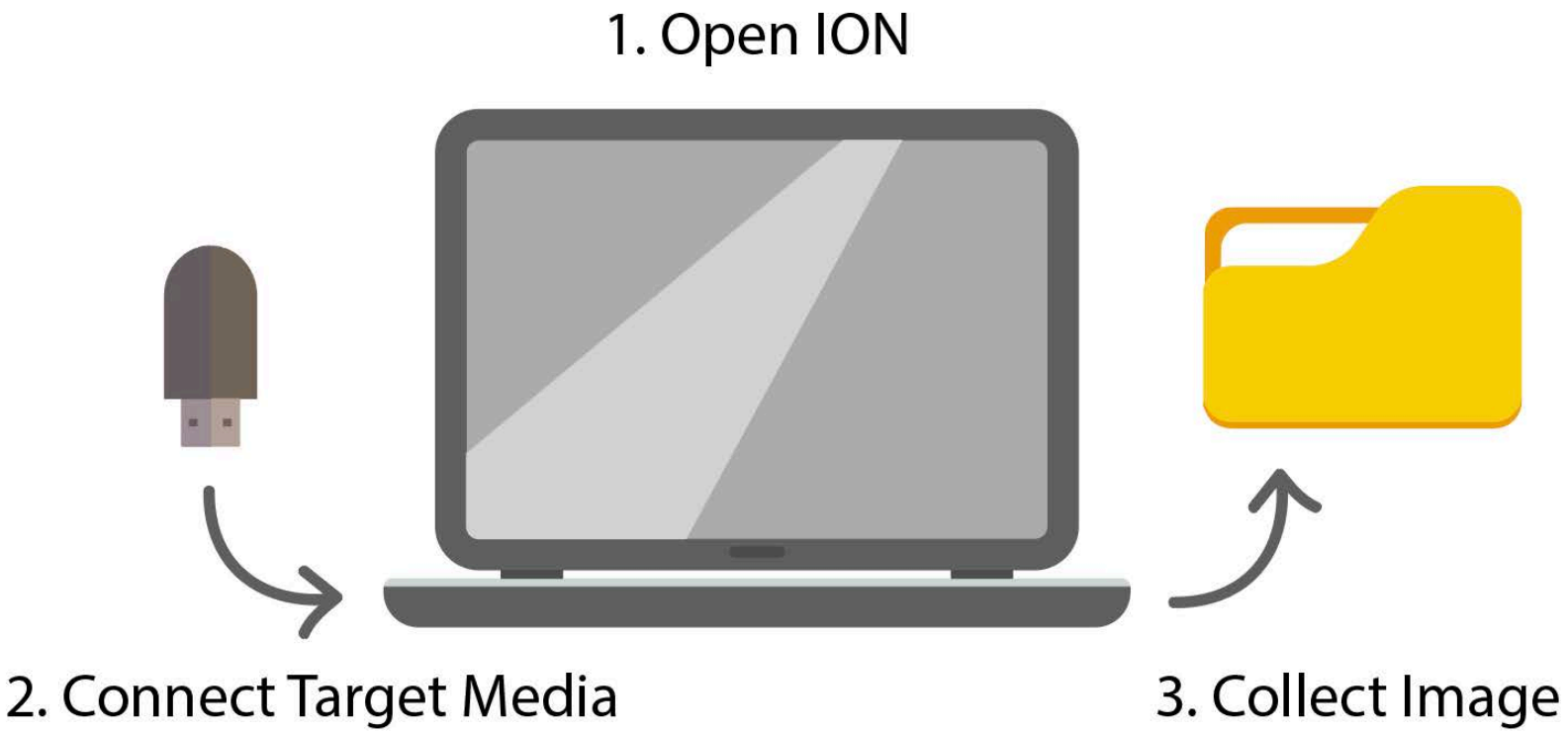
IMAGING OVERVIEW



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IMAGING OVERVIEW

- **Automated initialization of software write-blocks prevent changes to target media**

- **Outputs EWF, Expert Witness Format, images**
  - Compressed and searchable
  - Allows for error detection using checksums
  - Segmented, using the ascending naming scheme E01

IMAGING OVERVIEW

- Automated detection of connected media - eliminates user error
- Resulting images conform to standard naming conventions, sizes, and E01 output specifications

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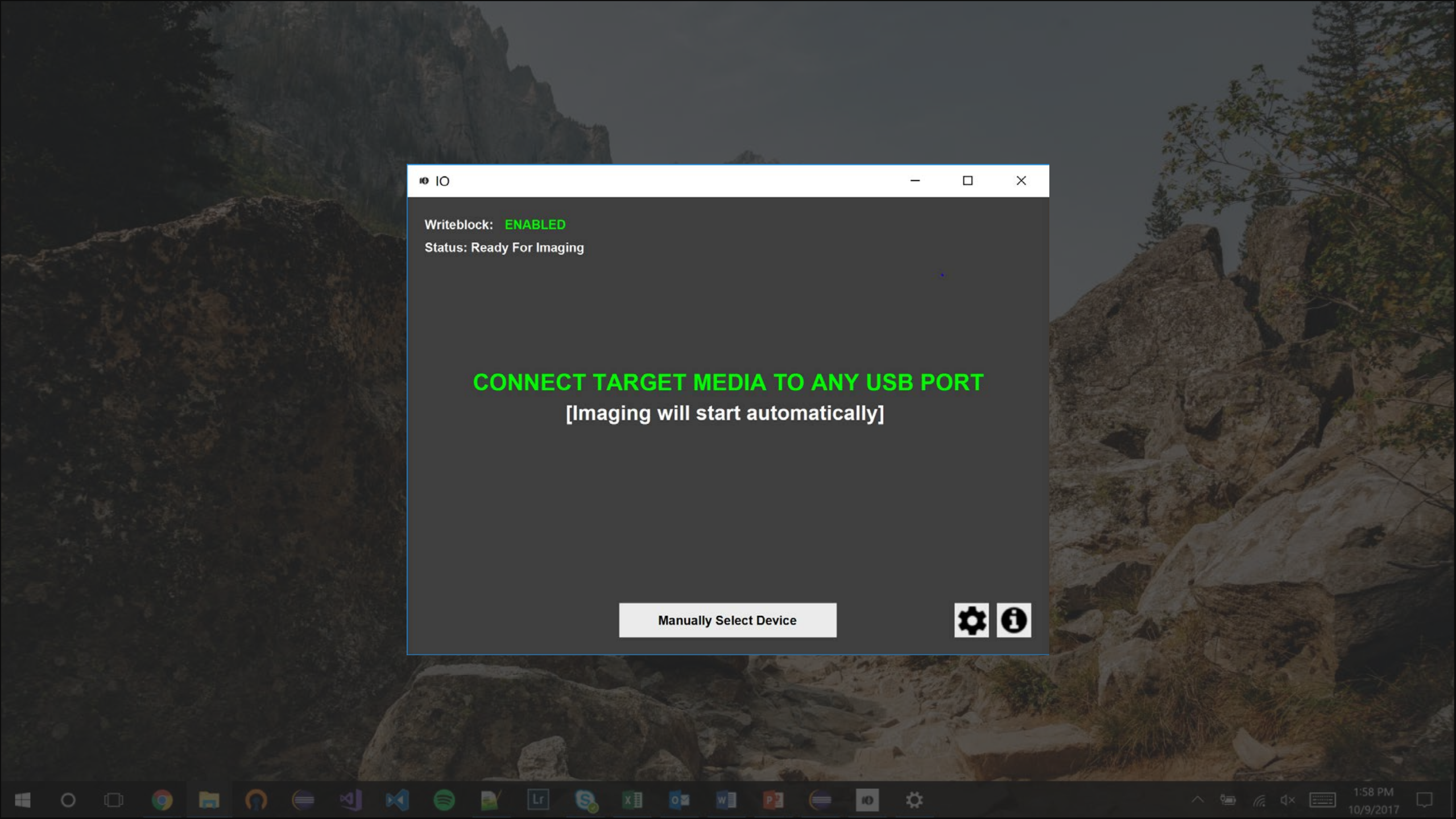
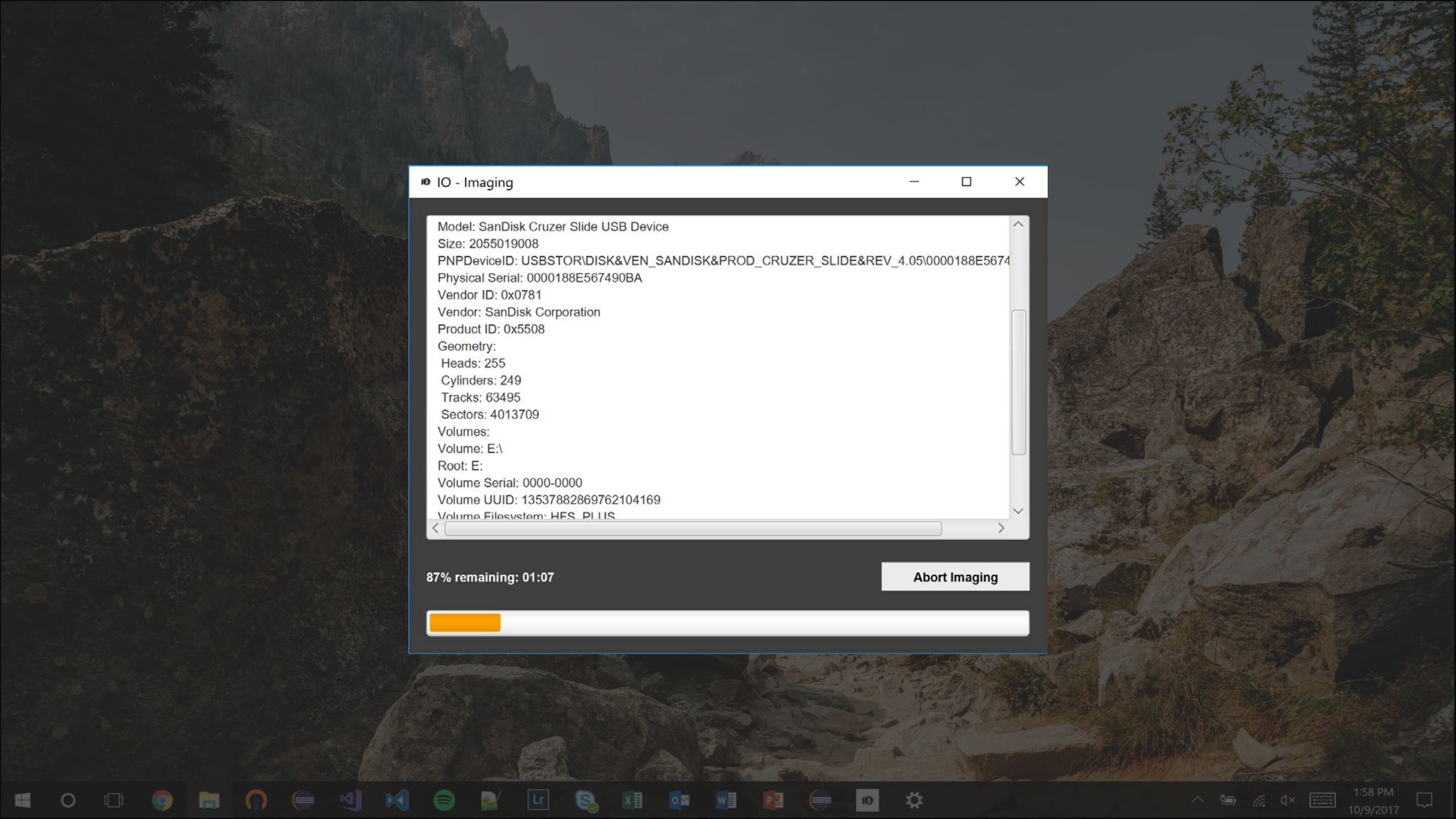
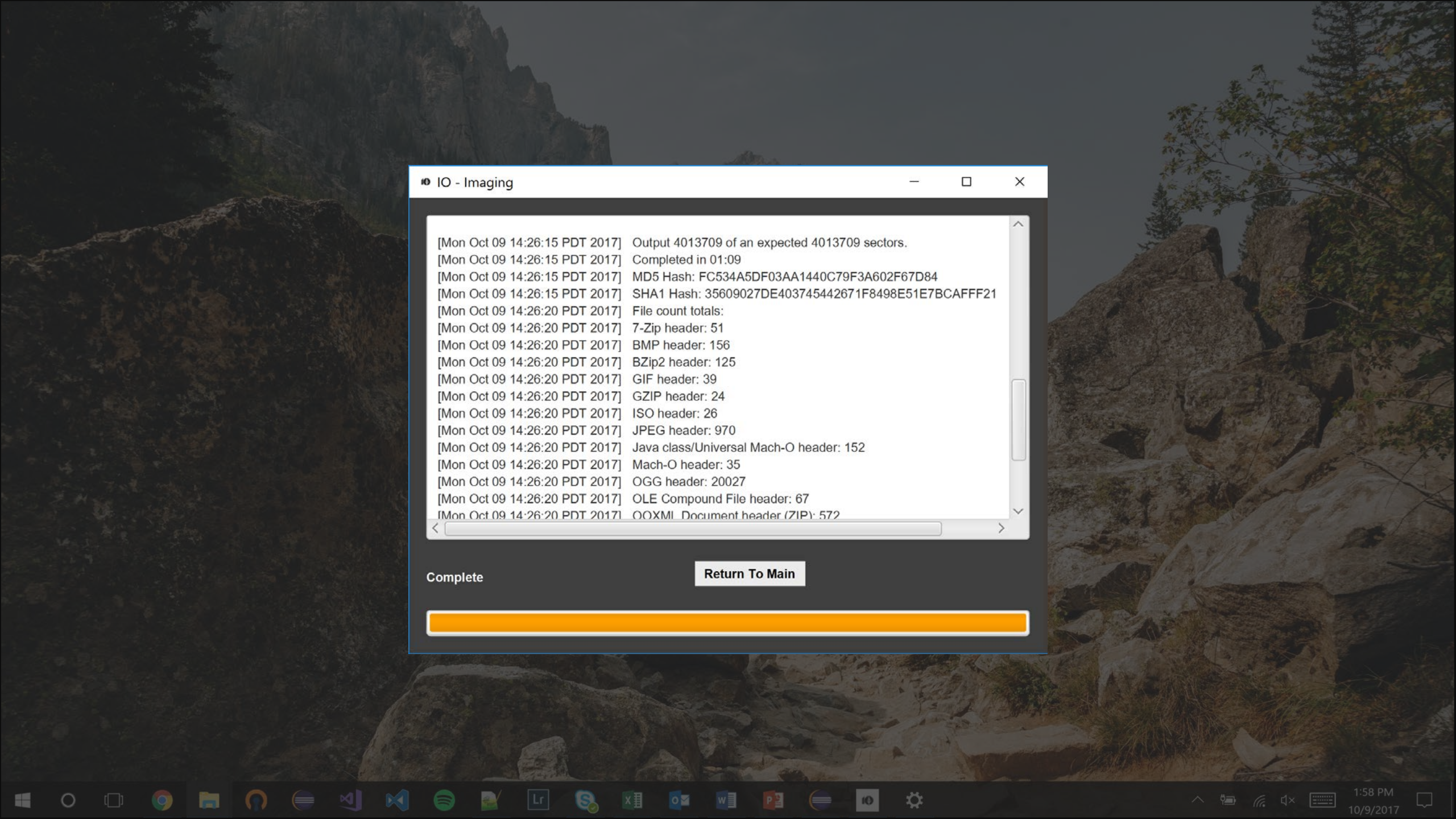
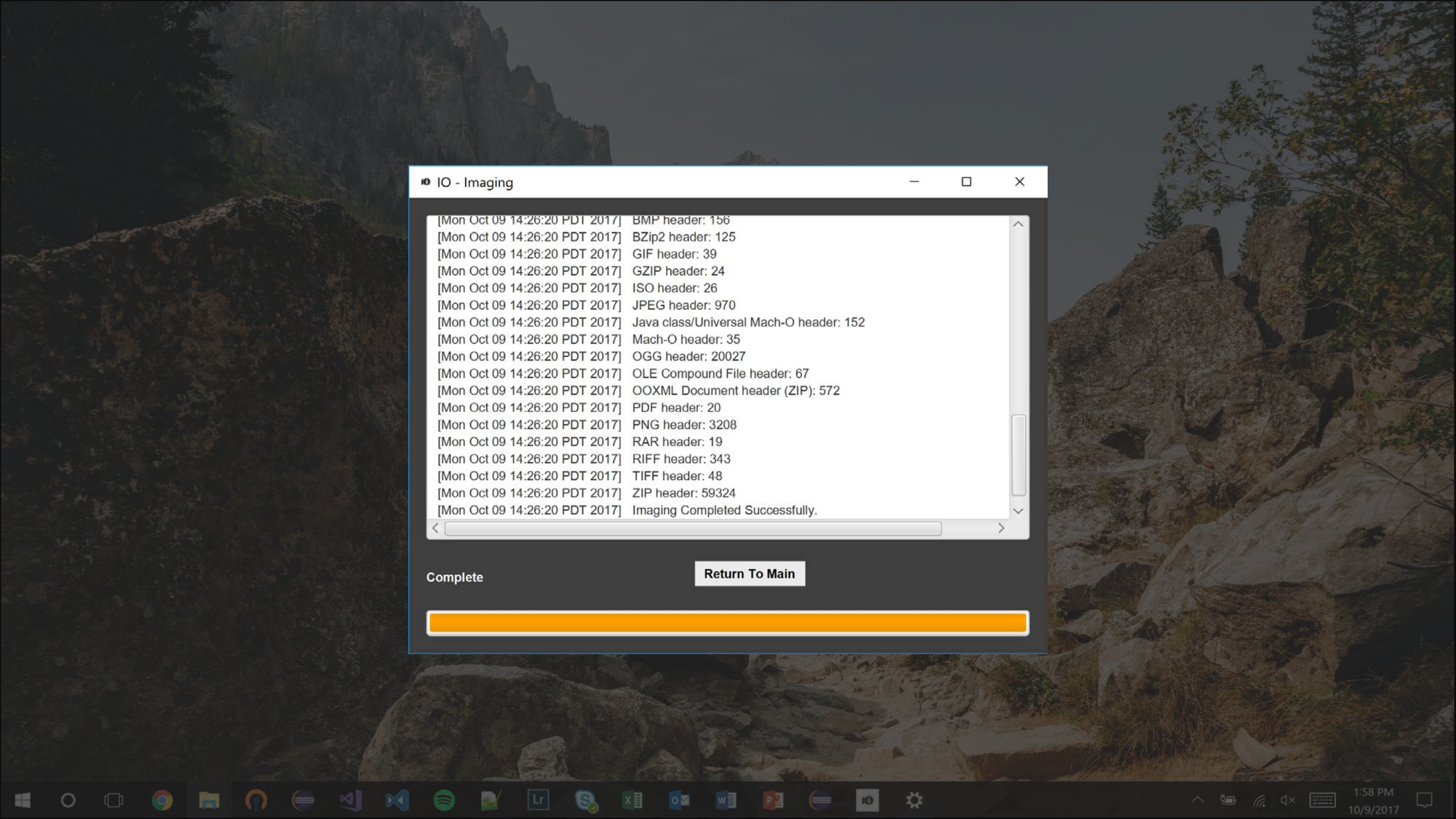
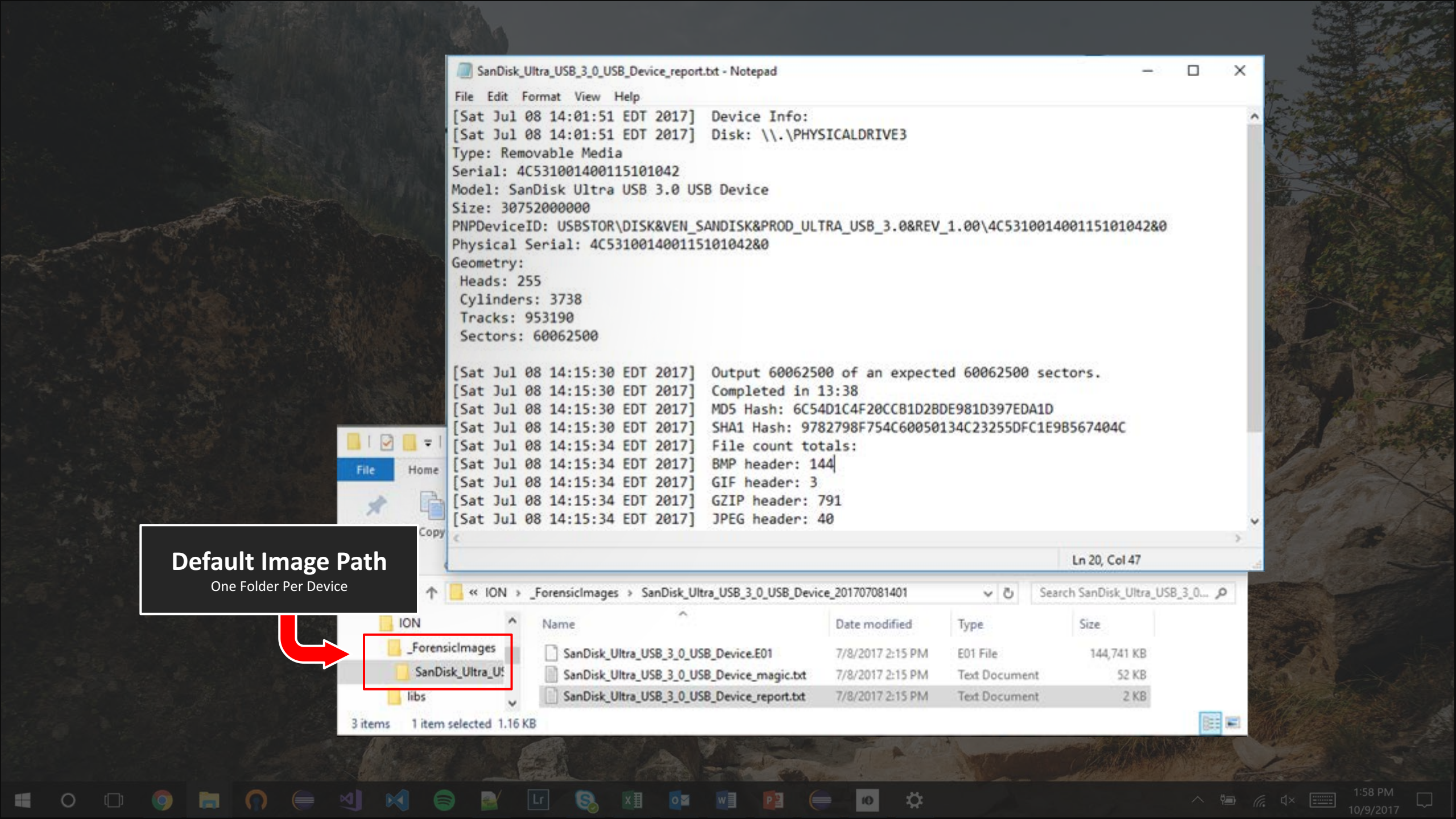

IO
Writeblock: ENABLED
Status: Ready For Imaging
CONNECT TARGET MEDIA TO ANY USB PORT
[Imaging will start automatically]
Manually Select Device
1:58 PM
10/9/2017


IO - Imaging
Model: SanDisk Cruzer Slide USB Device
Size: 2055019008
PNPDeviceID: USBSTOR\DISK&VEN_SANDISK&PROD_CRUZER_SLIDE&REV_4.05\0000188E5674
Physical Serial: 0000188E567490BA
Vendor ID: 0x0781
Vendor: SanDisk Corporation
Product ID: 0x5508
Geometry:
Heads: 255
Cylinders: 249
Tracks: 63495
Sectors: 4013709
Volumes:
Volume: E:\
Root: E:
Volume Serial: 0000-0000
Volume UUID: 13537882869762104169
87% remaining: 01:07
Abort Imaging
1:58 PM
10/9/2017


IO - Imaging
[Mon Oct 09 14:26:15 PDT 2017] Output 4013709 of an expected 4013709 sectors.
[Mon Oct 09 14:26:15 PDT 2017] Completed in 01:09
[Mon Oct 09 14:26:15 PDT 2017] MD5 Hash: FC534A5DF03AA1440C79F3A602F67D84
[Mon Oct 09 14:26:15 PDT 2017] SHA1 Hash: 35609027DE403745442671F8498E51E7BCAFFF21
[Mon Oct 09 14:26:20 PDT 2017] File count totals:
[Mon Oct 09 14:26:20 PDT 2017] 7-Zip header: 51
[Mon Oct 09 14:26:20 PDT 2017] BMP header: 156
[Mon Oct 09 14:26:20 PDT 2017] BZip2 header: 125
[Mon Oct 09 14:26:20 PDT 2017] GIF header: 39
[Mon Oct 09 14:26:20 PDT 2017] GZIP header: 24
[Mon Oct 09 14:26:20 PDT 2017] ISO header: 26
[Mon Oct 09 14:26:20 PDT 2017] JPEG header: 970
[Mon Oct 09 14:26:20 PDT 2017] Java class/Universal Mach-O header: 152
[Mon Oct 09 14:26:20 PDT 2017] Mach-O header: 35
[Mon Oct 09 14:26:20 PDT 2017] OGG header: 20027
[Mon Oct 09 14:26:20 PDT 2017] OLE Compound File header: 67
Complete
Return To Main
1:58 PM
10/9/2017


IO - Imaging
[Mon Oct 09 14:26:20 PDT 2017] BMP header: 156
[Mon Oct 09 14:26:20 PDT 2017] BZip2 header: 125
[Mon Oct 09 14:26:20 PDT 2017] GIF header: 39
[Mon Oct 09 14:26:20 PDT 2017] GZIP header: 24
[Mon Oct 09 14:26:20 PDT 2017] ISO header: 26
[Mon Oct 09 14:26:20 PDT 2017] JPEG header: 970
[Mon Oct 09 14:26:20 PDT 2017] Java class/Universal Mach-O header: 152
[Mon Oct 09 14:26:20 PDT 2017] Mach-O header: 35
[Mon Oct 09 14:26:20 PDT 2017] OGG header: 20027
[Mon Oct 09 14:26:20 PDT 2017] OLE Compound File header: 67
[Mon Oct 09 14:26:20 PDT 2017] OOXML Document header (ZIP): 572
[Mon Oct 09 14:26:20 PDT 2017] PDF header: 20
[Mon Oct 09 14:26:20 PDT 2017] PNG header: 3208
[Mon Oct 09 14:26:20 PDT 2017] RAR header: 19
[Mon Oct 09 14:26:20 PDT 2017] RIFF header: 343
[Mon Oct 09 14:26:20 PDT 2017] TIFF header: 48
[Mon Oct 09 14:26:20 PDT 2017] ZIP header: 59324
[Mon Oct 09 14:26:20 PDT 2017] Imaging Completed Successfully.
Complete
Return To Main
1:58 PM
10/9/2017


SanDisk_Ultra_USB_3_0_USB_Device_report.txt - Notepad
File Edit Format View Help
[Sat Jul 08 14:01:51 EDT 2017] Device Info:
[Sat Jul 08 14:01:51 EDT 2017] Disk: \\.\PHYSICALDRIVE3
Type: Removable Media
Serial: 4C531001400115101042
Model: SanDisk Ultra USB 3.0 USB Device
Size: 30752000000
PNPDeviceID: USBSTOR\DISK&VEN_SANDISK&PROD_ULTRA_USB_3.0&REV_1.00\4C5310014001151010 42&0
Physical Serial: 4C531001400115101042&0
Geometry:
Heads: 255
Cylinders: 3738
Tracks: 953190
Sectors: 60062500
[Sat Jul 08 14:15:30 EDT 2017] Output 60062500 of an expected 60062500 sectors.
[Sat Jul 08 14:15:30 EDT 2017] Completed in 13:38
[Sat Jul 08 14:15:30 EDT 2017] MD5 Hash: 6C54D1C4F20CCB1D2BDE981D397EDA1D
[Sat Jul 08 14:15:30 EDT 2017] SHA1 Hash: 9782798F754C60050134C23255DFC1E9B567404C
[Sat Jul 08 14:15:34 EDT 2017] File count totals:
[Sat Jul 08 14:15:34 EDT 2017] BMP header: 144
[Sat Jul 08 14:15:34 EDT 2017] GIF header: 3
[Sat Jul 08 14:15:34 EDT 2017] GZIP header: 791
[Sat Jul 08 14:15:34 EDT 2017] JPEG header: 40
Ln 20, Col 47
Default Image Path
One Folder Per Device
ION › _ForensicImages › SanDisk_Ultra_USB_3_0_USB_Device_201707081401
Search SanDisk_Ultra_USB_3_0...
ION
_ForensicImages
SanDisk_Ultra_U
libs
Name
Date modified
Type
Size
SanDisk_Ultra_USB_3_0_USB_Device.E01 7/8/2017 2:15 PM E01 File 144,741 KB
SanDisk_Ultra_USB_3_0_USB_Device_magic.txt 7/8/2017 2:15 PM Text Document 52 KB
SanDisk_Ultra_USB_3_0_USB_Device_report.txt 7/8/2017 2:15 PM Text Document 2 KB
3 items 1 item selected 1.16 KB
1:58 PM
10/9/2017

LOGGING OVERVIEW

- Automatically extracts and logs critical information for down-stream examiners.
  - Standard Imaging Details
    - Device Type
    - Model
    - Size
    - Geometry
    - MD5 & SHA1 Hash
  - Hardware Serial Number
  - Volume Serial Number(s)
  - Device VID/PID (if applicable)
  - Volume UUID (if applicable)

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TRIAGE

- **To image a drive, we have to read all the data.** If we are reading all the data anyway, why not process it?
- Triage processing does not impact imaging time because the process is limited by disk read speed
- IO's API allows developers to create additional processing modules and customize output

TRIAGE

- **Base Triage Functionality**
  - File Snapshot: An estimate of how many files (by type) exist on the target device
  - Exif Geo Extraction: A list of all geo-location information extracted from JPEGs

- **Countless possibilities for additional in-line parsers**
  - File Extracts
  - Flash Review of Media Content
  - Incorporation of Text Selectors

TIMELINES

Traditio[illegible]  **[illegible]sing Track**

Acquire Media	Configure Tool	Imaging	Transfer Image	Triage	Further Examination	Additional Intel Report

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TIMELINES

Acquire Media

Imaging

Triage

Further Examination

Additional Intel Report

Traditional Media Processing Track

Acquire Media

Configure Tool

Imaging

Transfer Image

Triage

Further Examination

Additional Intel Report

ENGAGEMENT

- IO is open-source, fully tested, and is completely free to use and modify
- Cipher Tech will release updates as core functionality is improved

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ENGAGEMENT

- We plan to continue to extend IO's functionality, and invite the community to download IO, use it, and add triage methods
- IO's framework handles basic parallelization for new triage methods

IO is available on GitHub at:
https://github.com/ciphertechsolutions/IO

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CONTACT INFO

IO is available at:
https://www.ciphertechsolutions.com/open-source

Reach the IO team:
io@ciphertechsolutions.com

Keith D. Bertolino, CEO
Cipher Tech Solutions, Inc.
kbertolino@ciphertechsolutions.com

Matthew B. Kowalski, CTO
Cipher Tech Solutions, Inc.
mkowalski@ciphertechsolutions.com