Forensics
Disdks

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Overview

Imaging and mounting

File recovery

Timeline creation

Overview

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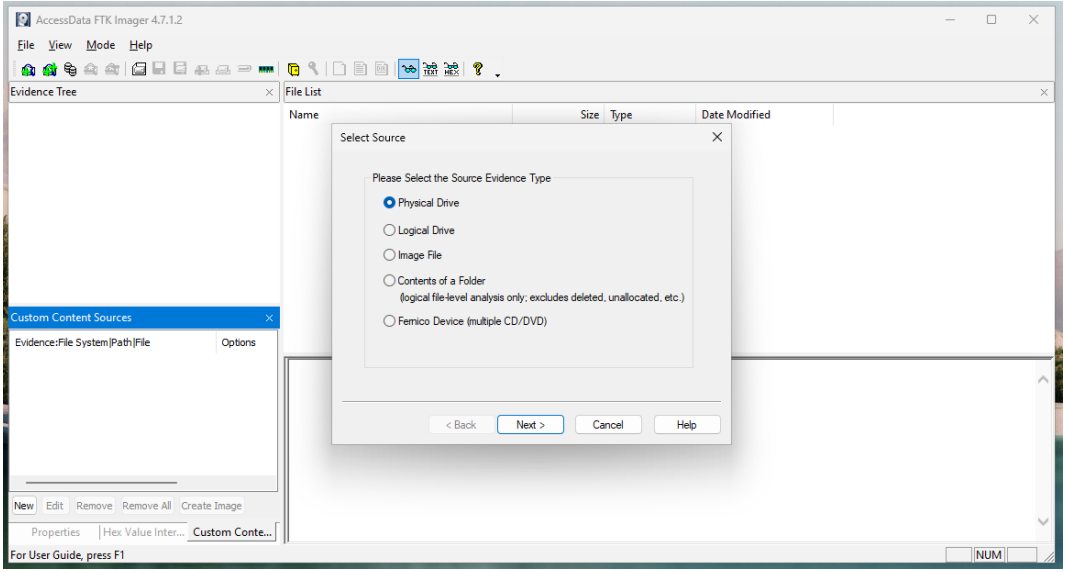
bit by bit copy if possible to have an exact copy

- We don't want to **alter the orginal disk** => we must create a copy (image)
- Disk is organized in partitions and filesysems FS is used to manage file and directory on a device
  - different imaging strategies
  - image may contain multiple partitions (and filesystems)
- FS don't wipe data => we can recover deleted files
- FS store timings (created, updated, accessed) => we can create timelines

Imaging and mounting

Imaging with FTK Imager



Imaging with FTK Imager

Exercise

1. Download FTK imager
2. Create the image of a USB key (E01 format)

E01 Format add some additional metadata

Mount a dd image in SIFT

dd image = bit to bit image

ro = read only

```
sudo mount -t <fs> -o loop,ro /path/to/image /path/to/mountpoint

sudo mount -t <fs> -o loop,ro,offset=<offset in bytes> /path/to/image /pat
```

Mount a dd image in SIFT

Exercise

- Download the exercise file `usb-01.img.zip` from https://cylab.be/s/fFMqA
- This file is a dd image of a USB drive.
- What is the content of the file password.txt ?

Mount an E01 image in SIFT

1. use the ewfmount command to 'expose' the raw disk image inside the E01 container:

```
sudo ewfmount /path/to/image.E01 /mnt/e01
```

2. use mount to mount the partition:

```
sudo mount -o ro,loop /mnt/e01/ewf1 /mnt/windows
```

Mount an E01 image in SIFT

```
umount path/to/mount -> to unmount an image
```

Exercise

- Download the exercise file `usb-02.E01` from https://cylab.be/s/5Lne8
- This file is an `E01` image of a USB drive.
- What is the content of the file `password.txt` ?

Partitions information

list the partitions contained in an image:

```
mmls <image>
```

display type and details about a file system:

```
fsstat -o <offset in sectors> <image>
```

Partitions information

Exercise

- Download and extract `usb-03.img.zip` from https://cylab.be/s/LOz9Z
- This image contains multiple partitions
- List the different partitions and filesystems

Mount with offset

If the image contains multiple partitions:

```
sudo mount -t <fs> -o loop,ro,offset=<offset> /path/to/image /path/to/mount
```

where `<offset>` must be specified **in Bytes**

Mount with offset

Exercise

Download the image `usb-06.E01` from https://cylab.be/s/Y1seb

This image contains multiple partitions.

- use `ewfmount` and `mmls` to **mount the ext4 partition**
- what is the content of the file `file.txt`?

Mount E01 split file

Exercise

- Download and extract `usb-05.zip` from https://cylab.be/s/iYJtY
- This is a split E01 image
- Mount the partition and extract the contained file

File recovery

File recovery

list deleted files:

`fls -d <image>` -d to filter to only see the deleted files

shows, for each file, the corresponding inode number or FAT entry number (inum)

use icat to extract the content of a file:

`icat -r <image> <inum>`

File recovery

Exercise

In usb-01.img, what is the content of the deleted file `deleted.txt` ?

File recovery

Exercise

Download usb-04.E01 from https://cylab.be/s/kbcRa

The image contains 3 deleted files (PDF, DOCX, PNG). Recover the files...

Timeline creation

Timeline creation

Extract timings to *body file* format:

```
fls -m -r <image> > <bodyfile.txt>
```

Create report (in chronological order):

```
mactime -b <bodyfile.txt>
```

Timeline creation

File system	m (modified)	a (accessed)	c (changed)	b (birth)
Ext4	Modified	Accessed	Changed	Created
Ext2/3	Modified	Accessed	Changed	N/A
FAT	Written	Accessed	N/A	Created
NTFS	File Modified	Accessed	MFT Modified	Created
UFS	Modified	Accessed	Changed	N/A

Timeline creation

Exercise

Create a timeline from `usb-01.img`