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# USB Write Protection, Disk Imaging, and Forensic Analysis Using Autopsy

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Digital Forensics



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## Setting a USB to Read-Only

### Step 1: Run Command Prompt as Administrator and Open Diskpart Tool

- Press Windows + S key together.
- Type cmd in the search bar.
- Right-click on "Command Prompt" → Select "Run as administrator".
- In the Command Prompt window, type: diskpart
- Press Enter.

```
C:\Windows\System32>diskpart

Microsoft DiskPart version 10.0.26100.1150

Copyright (C) Microsoft Corporation.
On computer: DESKTOP-GSKU1I7

DISKPART>
```

### Step 2: List all disks and select your USB drive

- type: list disk; it will show all the disks connected to your computer
- Press Enter.
- Find your USB drive with size
- Type: select disk X (Replace X with your USB's disk number.)
- Press Enter

```
DISKPART> list disk

Disk ###  Status       Size       Free       Dyn  Gpt
-----  -
Disk 0    Online      476 GB     2048 KB
Disk 1    Online      29 GB      0 B

DISKPART> select disk 1

Disk 1 is now the selected disk.

DISKPART> _
```

### Step 3: Set the USB as Read-Only

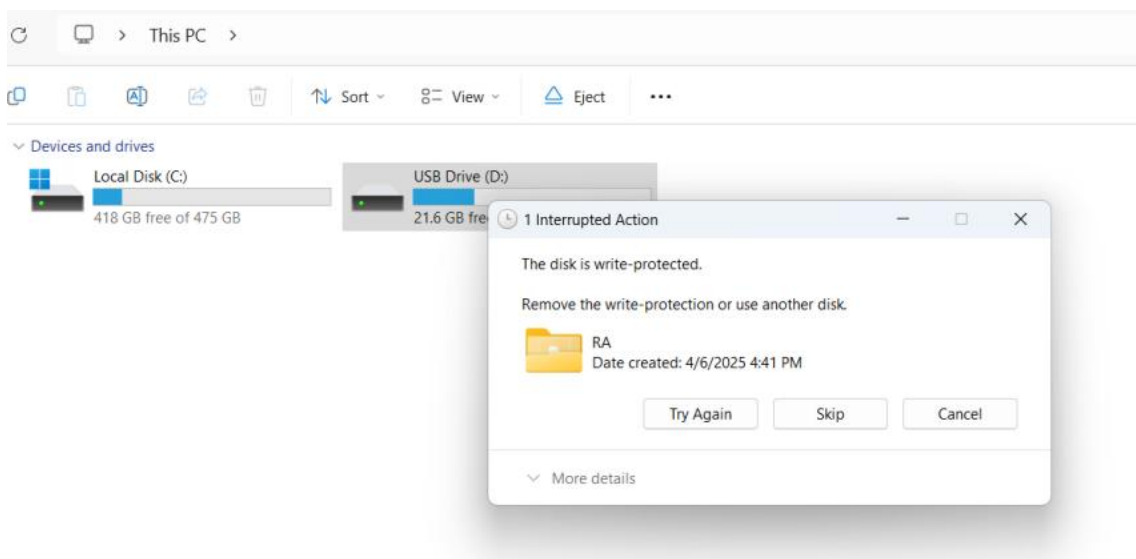
- type: attributes disk set readonly
- Press Enter, a message will be displayed: "Disk attributes set successfully."

```
DISKPART> select disk 1  
  
Disk 1 is now the selected disk.  
  
DISKPART> attributes disk set readonly  
  
Disk attributes set successfully.  
  
DISKPART> _
```

## Confirm if the USB has been set to read-only

### Method 1: Try copying a file

- Open File Explorer.
- Try copying a new file to the USB.
- Windows will show an error message like: "The disk is write-protected. Remove the write protection or use another disk." This error confirms that the USB is read-only.



### Method 2: Check using diskpart

- Open Command Prompt as Administrator
- Type: diskpart → list disk → select disk X (Replace X with USB disk number) → attributes disk

If disk current status is shown as "Current Read-only State": Yes, "Read-only": Yes, then your USB is successfully set as Read-Only.

```
DISKPART> select disk 1

Disk 1 is now the selected disk.

DISKPART> attributes disk
Current Read-only State : Yes
Read-only      : Yes
Boot Disk     : No
Pagefile Disk  : No
Hibernation File Disk : No
Crashdump Disk : No
Clustered Disk : No

DISKPART>
```

## Remove Write-Protection from USB

- Open Command Prompt as Administrator
- Type: diskpart → list disk → select disk X (Replace X with USB disk number)
- Type: attributes disk clear readonly.

```
UNIQUEID    - Displays or sets the GUID partition table (GPT) identifier or
               master boot record (MBR) signature of a disk.

DISKPART> exit
Leaving DiskPart...

C:\Windows\System32>diskpart

Microsoft DiskPart version 10.0.26100.1150

Copyright (C) Microsoft Corporation.
On computer: DESKTOP-GSKU1I7

DISKPART> list disk

   Disk ###  Status       Size      Free      Dyn  Gpt
   -----  -
   Disk 0      Online        476 GB   2048 KB          *
   Disk 1      Online        29 GB         0 B

DISKPART> select disk 1

Disk 1 is now the selected disk.

DISKPART> attributes disk clear readonly

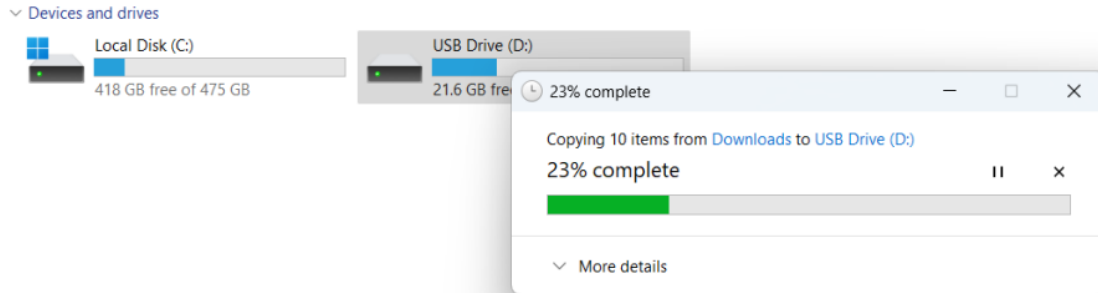
Disk attributes cleared successfully.

DISKPART>
```

## Confirm USB is No Longer Write-Protected

### Method 1: Try copying a file

- Open File Explorer.
- Try copying a new file to the USB.
- If the file copies successfully, your USB is writable again



### Method 2: Check using diskpart

- Open Command Prompt as Administrator and type: diskpart → list disk → select disk X (Replace X with USB disk number) → attributes disk. If disk current status is shown as “Current Read-only State”: No, “Read-only”: No, then your USB is now writable.

```
Leaving DiskPart...

C:\Windows\System32>diskpart

Microsoft DiskPart version 10.0.26100.1150

Copyright (C) Microsoft Corporation.
On computer: DESKTOP-GSKU1I7

DISKPART> list disk

   Disk ###  Status       Size       Free       Dyn  Gpt
   -----  -
   Disk 0      Online        476 GB     2048 KB           *
   Disk 1      Online        29 GB         0 B

DISKPART> select disk 1

Disk 1 is now the selected disk.

DISKPART> attributes disk
Current Read-only State : No
Read-only               : No
Boot Disk               : No
Pagefile Disk           : No
Hibernation File Disk   : No
Crashdump Disk          : No
Clustered Disk          : No

DISKPART>
```

## DD Imaging

To create a forensic image of the USB drive, the dd command-line tool is used through Command Prompt on a Windows system.

The 'dd-0.6beta3' tool is first downloaded and extracted then the following command is entered on the command prompt to begin imaging:

**dd if=\\.\D: of="C:\Users\dell\Desktop\usb\_partition\_image.dd" bs=1M --progress**

The image below shows the successful creation of the USB disk image.

```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.26100.3775]
(c) Microsoft Corporation. All rights reserved.

C:\Users\dell\Downloads>dd-0.6beta3>dd if=\\.\D: of="C:\Users\dell\Desktop\usb_partition_image.dd" bs=1M --progress
rawwrite dd for windows version 0.6beta3.
Written by John Newbigin <jn@it.swin.edu.au>
This program is covered by terms of the GPL Version 2.

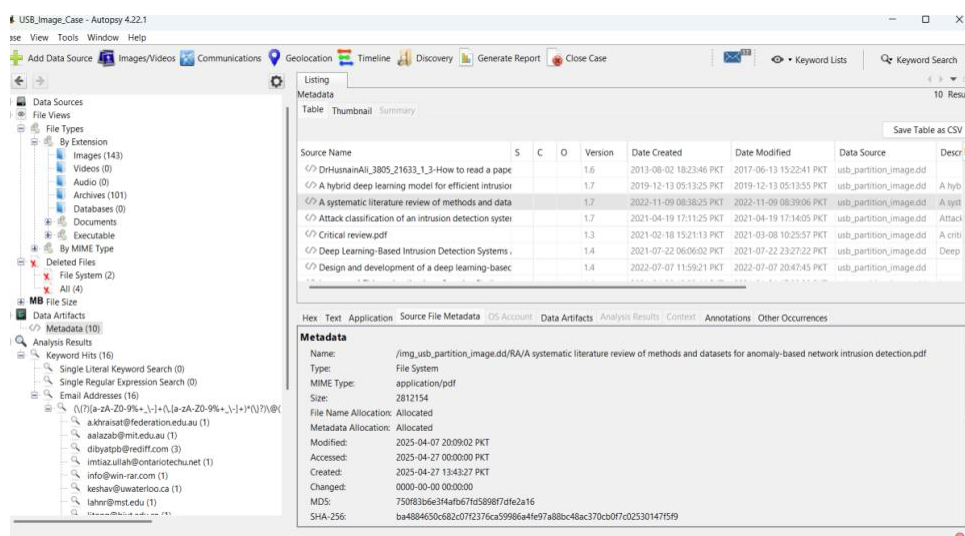
29,999M
29999+1 records in
29999+1 records out

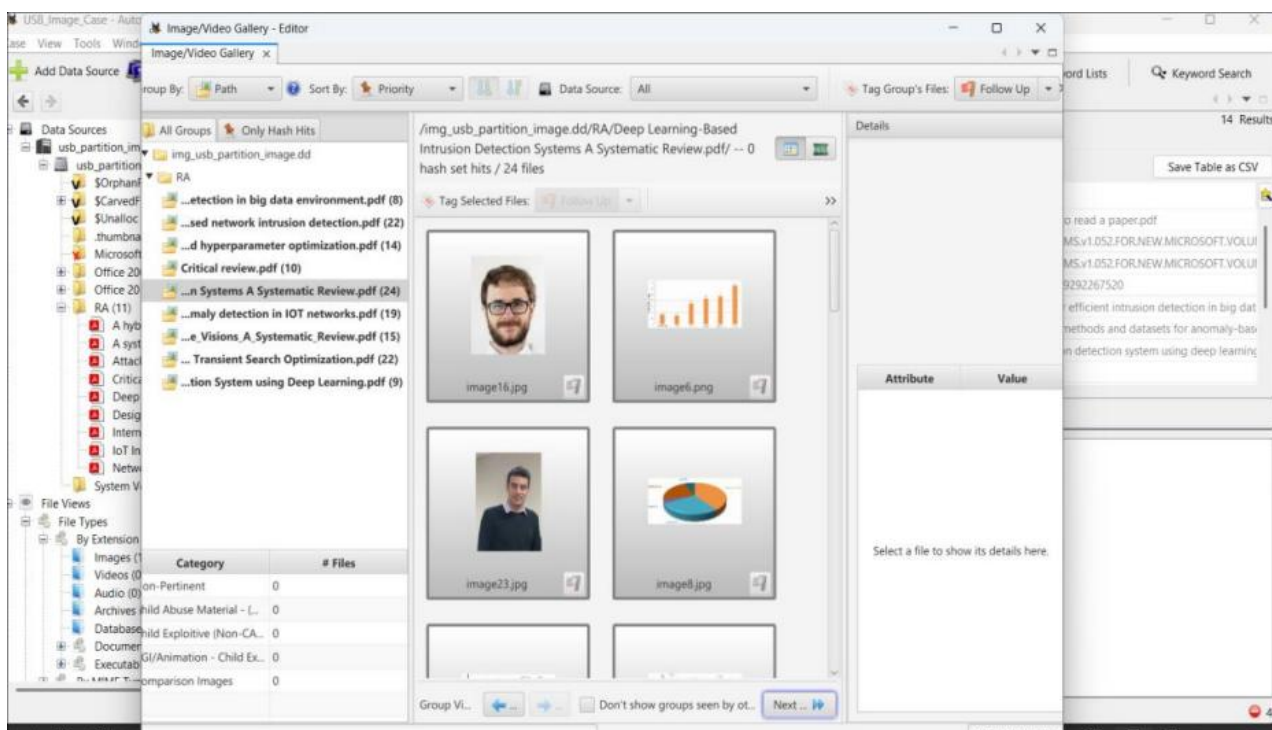
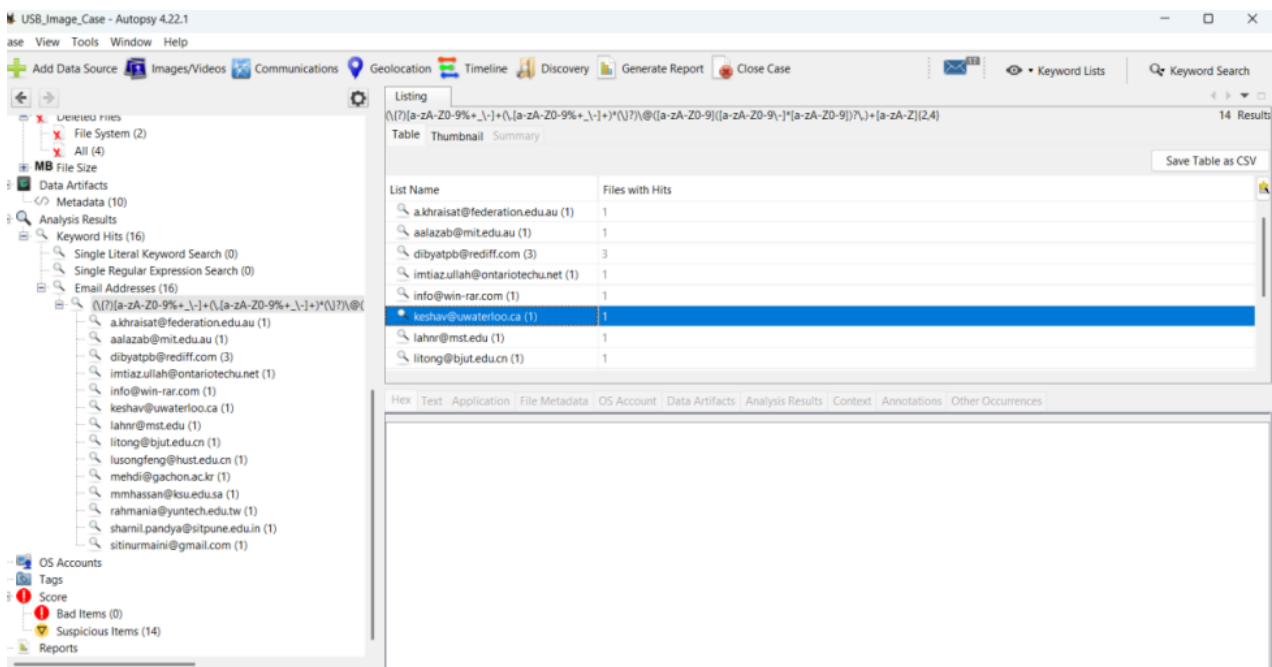
C:\Users\dell\Downloads>dd-0.6beta3>
```

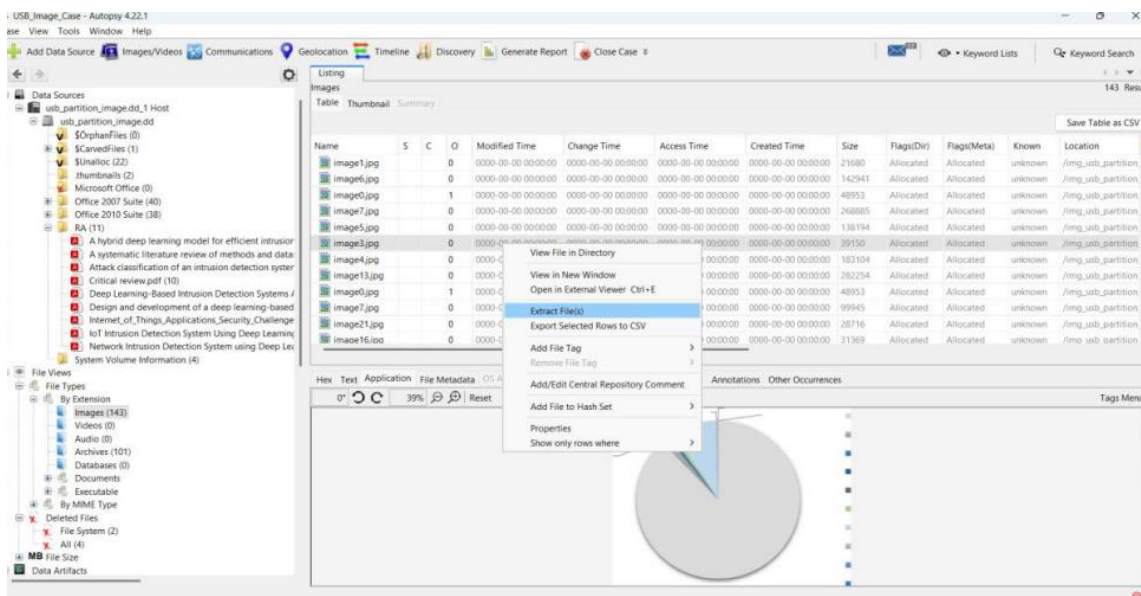
## Using Autopsy to Analyze the .dd Image

- Launch Autopsy
- Create a New Case
- Add the .dd Image as a Data Source
- Configure Ingest Modules
- Ingestion Progress will start, once completed we can extract files.

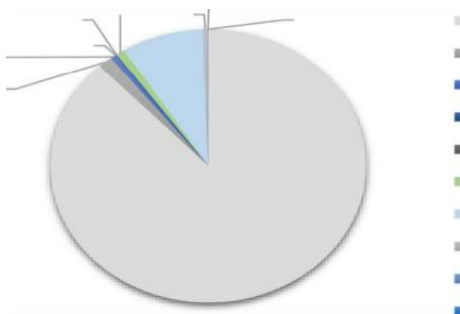
Below are the snapshots of the image extracted.



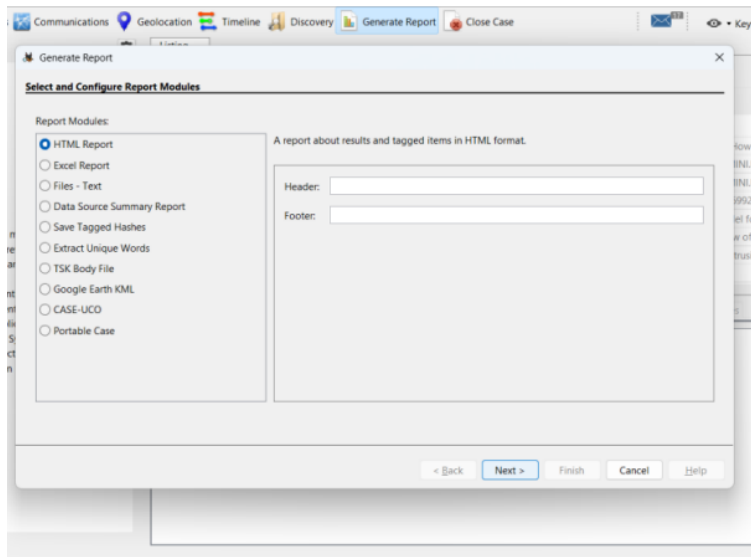




## Extracted Image

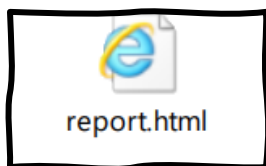


We can export the report in any format, as shown below;





## HTML Report for Forensic Case Summary



Autopsy Forensic Report for case: x

File | C:/Users/dell/Desktop/USB\_Image\_Case/Reports/USB\_Image\_Case%20HTML%20Report%202025-01-2025-21-56-32/report.html

### Report Navigation

- Case Summary
- ★ Data Source Usage (1)
- ★ Keyword Hits (16)
- Metadata (10)
- ★ Tagged Files (0)
- ★ Tagged Images (0)
- ★ Tagged Results (0)

## Autopsy Forensic Report

HTML Report Generated on 2025/05/01 21:56:32

Case: USB\_Image\_Case  
Case Number: 1  
Number of data sources in case: 1  
Examiner: Anjalee Jung

### Image Information:

usb\_partition\_image.dd

Timezone: Asia/Karachi  
Path: C:\Users\dell\Desktop\usb\_partition\_image.dd

### Software Information:

Autopsy Version:	4.22.1
Android Analyzer Module:	4.22.1
Android Analyzer (aLEAPP) Module:	4.22.1
Central Repository Module:	4.22.1
DJI Drone Analyzer Module:	4.22.1