



AUTOPSY

LINUX AND WINDOWS

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Abstract

Autopsy® is a digital forensics platform and graphical interface to The Sleuth Kit® and other digital forensics tools. It is an open-source tool for digital forensics which was developed by Basis Technology. This tool is free to use and is very efficient in the nature investigation of hard drives. It also consists of features like multi-user cases, timeline analysis, keyword search, email analysis, registry analysis, EXIF analysis, detection of malicious files, etc

The forensic investigation that is carried out on the disk image is displayed here. The results obtained here are of help to investigate and locate relevant information. This tool is used by law enforcement agencies, local police and can also be used in the corporates to investigate the evidence found in a computer crime. It can likewise be utilized to recuperate information that has been erased.

AUTOPSY

KALI LINUX

Autopsy for Kali Linux

The tool can manage cases, check the integrity of the image, keyword search and other automated operations.

- Investigator can analyse Windows and UNIX storage disks and file systems like NTFS, FAT, UFS1/2, Ext2/3 using Autopsy.
- Autopsy is used by law enforcement, military, and corporate examiners to conduct investigations on a victim's or a criminal's PC.
- One can also use it to recover photos from one's camera's memory card.



Autopsy Forensic Browser is a built-in application in Kali Linux operating system, so let's power on the Kali in a Virtual Machine.

Purpose of Autopsy



- For analysis of metadata information.
- To recover the deleted data.
- To search data based on regular expression.
- To analyse the contents of a folder and its deleted files.
- To report the activities of the recovered image.

Creating a New Case

Open a new terminal and type 'Autopsy' and open **<http://localhost:9999/autopsy>** in your browser where you will be redirected to the home page of Autopsy Forensic Browser. It will run on our local web server using the port 9999.

```
root@Jeenali:~# autopsy  
  
Autopsy Forensic Browser  
http://www.sleuthkit.org/autopsy/  
ver 2.24  
  
Evidence Locker: /var/lib/autopsy  
Start Time: Wed Aug 12 20:37:30 2020  
Remote Host: localhost  
Local Port: 9999  
  
Open an HTML browser on the remote host and paste this URL in it:  
http://localhost:9999/autopsy  
  
Keep this process running and use <ctrl-c> to exit
```

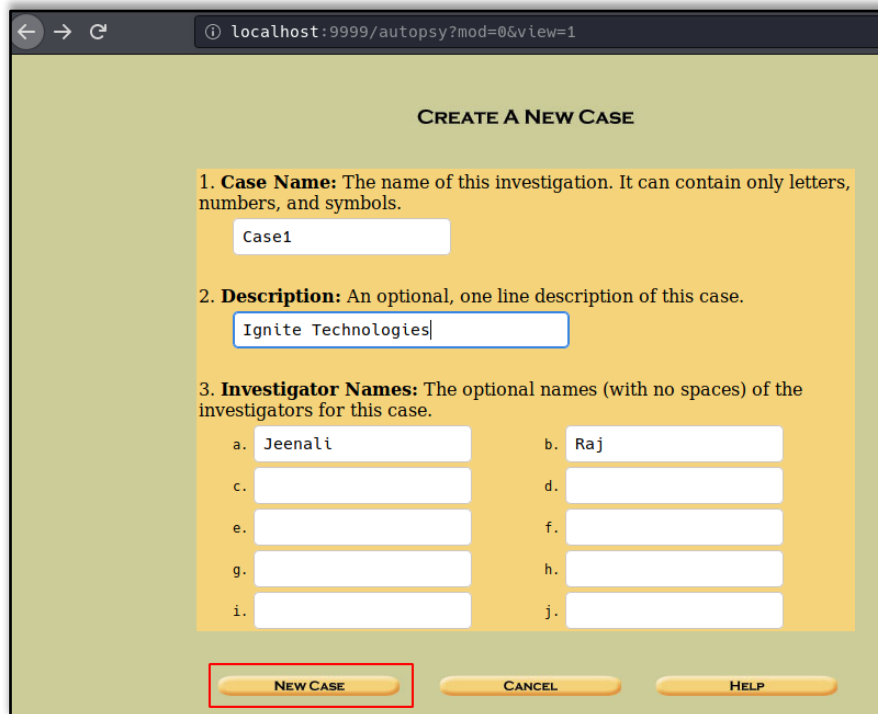
Now you will see three options on the home page.

- Open Case
- New Case
- Help

For investigation, you need to create a new case and click on '**New case**'. In doing this it will add a new case folder to the system and allow you to begin adding evidence to the case.



Now you will be directed to a new page, where it will require case details. You can Name the case and mention the description. You can also mention the names of multiple investigators working the case. After filling in these details, now you can select '**New case**'.

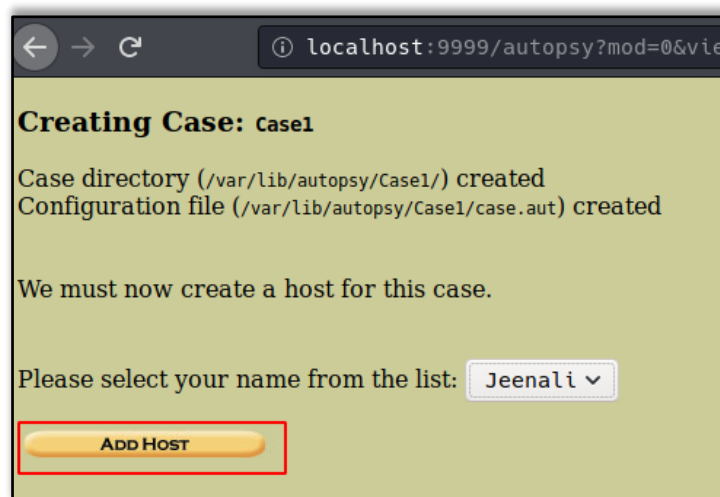


The screenshot shows a web browser window with the address bar displaying `localhost:9999/autopsy?mod=0&view=1`. The page title is "CREATE A NEW CASE". The form contains three main sections:

- Case Name:** The name of this investigation. It can contain only letters, numbers, and symbols. The input field contains "Case1".
- Description:** An optional, one line description of this case. The input field contains "Ignite Technologies".
- Investigator Names:** The optional names (with no spaces) of the investigators for this case. There are two columns of input fields labeled a. through j. The first field in column a. contains "Jeenali" and the first field in column b. contains "Raj".

At the bottom of the form, there are three buttons: "NEW CASE" (highlighted with a red box), "CANCEL", and "HELP".

The new case will be stored in i.e., `/var/lib/autopsy/case1/`, and the configuration file will be stored in `/var/lib/autopsy/case01/case.aut`. Now, create the host for investigation and click on 'Add Host'.



The screenshot shows a web browser window with the address bar displaying `localhost:9999/autopsy?mod=0&vie`. The page title is "Creating Case: case1". The page displays the following information:

- Case directory (`/var/lib/autopsy/Case1/`) created
- Configuration file (`/var/lib/autopsy/Case1/case.aut`) created

Below this, it says: "We must now create a host for this case."

Then it says: "Please select your name from the list:" followed by a dropdown menu showing "Jeenali" with a downward arrow.

At the bottom, there is a button labeled "ADD HOST" (highlighted with a red box).

Once you add the host, put the name of the computer you are investigating and describe the investigation. You can also mention the time zone or you can also leave it blank which will select the default setting, time skew adjustments may be set if there is a difference in time and you can add the new host. Click on 'Add Host'.

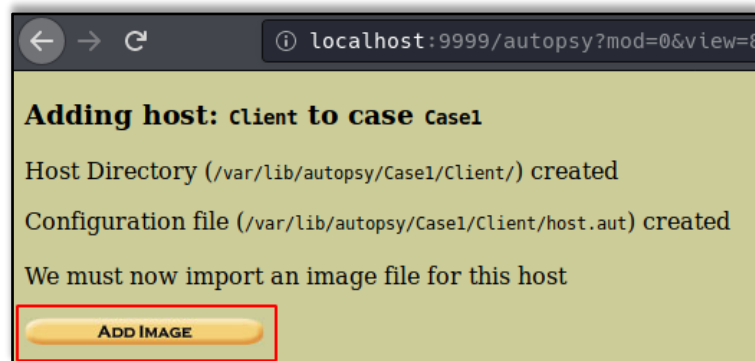
localhost:9999/autopsy?mod=0&view=7&case=Jeenali&inv=Jeenali

ADD A NEW HOST

- Host Name:** The name of the computer being investigated. It can contain only letters, numbers, and symbols.
- Description:** An optional one-line description or note about this computer.
- Time zone:** An optional timezone value (i.e. EST5EDT). If not given, it defaults to the local setting. A list of time zones can be found in the help files.
- Timeskew Adjustment:** An optional value to describe how many seconds this computer's clock was out of sync. For example, if the computer was 10 seconds fast, then enter -10 to compensate.
- Path of Alert Hash Database:** An optional hash database of known bad files.
- Path of Ignore Hash Database:** An optional hash database of known good files.

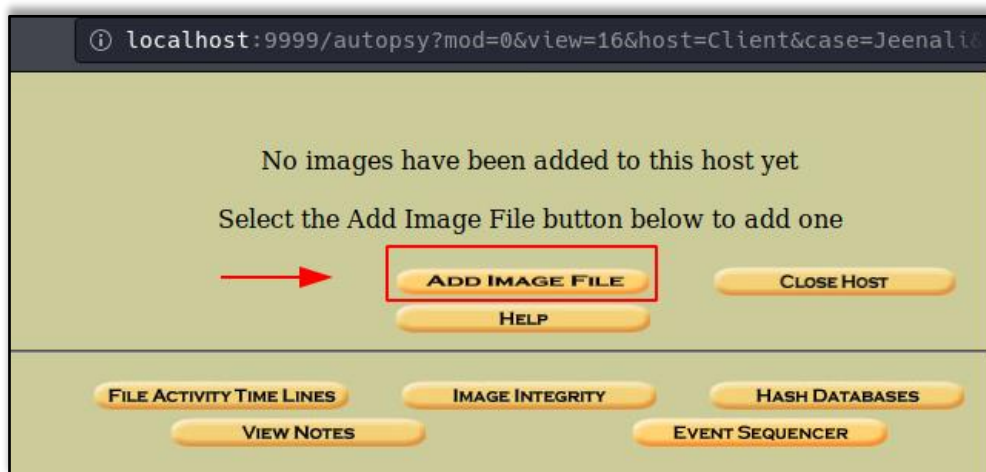
Add Image File

The path to the evidence directory will be displayed and now you can proceed to add an image for investigation.



It is a golden rule of Digital forensics, that one should never work on the original evidence and hence an image of the original evidence should be created. An image can be created in various methods and tools as well as in various formats.

Once the image is acquired, the 'Add Image File' option will allow you to import the image file to analyse.



Mention the path to the image file and select the file type. Also, choose the import method of your choice and click on 'Next'.

The screenshot shows a web browser window with the URL `localhost:9999/autopsy?mod=0&view=13&host=Client&case=Case1&inv`. The page title is "ADD A NEW IMAGE". It displays the case information: "Case: Case1" and "Host: Client". The form is divided into three sections:

- 1. Location**
Enter the full path (starting with /) to the image file.
If the image is split (either raw or EnCase), then enter '*' for the extension.
The input field contains: `/home/jeenali/Desktop/image2*`
- 2. Type**
Please select if this image file is for a disk or a single partition.
The "Disk" radio button is selected.
- 3. Import Method**
To analyze the image file, it must be located in the evidence locker. It can be imported from its current location using a symbolic link, by copying it, or by moving it. Note that if a system failure occurs during the move, then the image could become corrupt.
The "Copy" radio button is selected.

At the bottom of the form, there are three buttons: "NEXT" (highlighted with a red box), "CANCEL", and "HELP".

You can now confirm the Image file being added to the evidence locker and click on 'Next'.

The screenshot shows a web browser window with the URL `localhost:9999/autopsy?mod=0&view=14&host=Client&case=Case1&inv`. The page title is "Split Image Confirmation". It displays the following text:

The following images will be added to the case.
If this is not the correct order, then you should change the naming convention.
Press the Next button at the bottom of the page if this is correct.

Below the text, there is a list of image files. The first item is highlighted with a red box and a red arrow pointing to it:

- 0 /home/jeenali/Desktop/image2.e01

At the bottom of the page, there are two buttons: "NEXT" (highlighted with a red box) and "CANCEL".

Image file details will appear and the details of the file systems, the number of partitions and the mount points will be displayed and then you can click on 'Add' to proceed.

The screenshot shows a web browser window with the URL `localhost:9999/autopsy?case=Case1&host=Client&inv=Jeenali&mod=0`. The page title is "Image File Details". Below the title, the "Local Name" is displayed as `"/home/jeenali/Desktop/image2.e01"`. The "File System Details" section contains the text "Analysis of the image file shows the following partitions:". It lists four partitions with their details:

- Partition 1** (Type: Basic data partition):
 - Add to case? ☒
 - Sector Range: 2048 to 1085439
 - Mount Point:
 - File System Type:
- Partition 2** (Type: EFI system partition):
 - Add to case? ☒
 - Sector Range: 1085440 to 1288191
 - Mount Point:
 - File System Type:
- Partition 3** (Type: Microsoft reserved partition):
 - Add to case? ☒
 - Sector Range: 1288192 to 1320959
 - Mount Point:
 - File System Type:
- Partition 4** (Type: Basic data partition):
 - Add to case? ☒
 - Sector Range: 1320960 to 83884031
 - Mount Point:
 - File System Type:

At the bottom of the form, there are three buttons: "ADD", "CANCEL", and "HELP". The "ADD" button is highlighted with a red rectangle.

Now the Autopsy will test the partitions and links them to the evidence locker, then click on 'OK' to proceed.

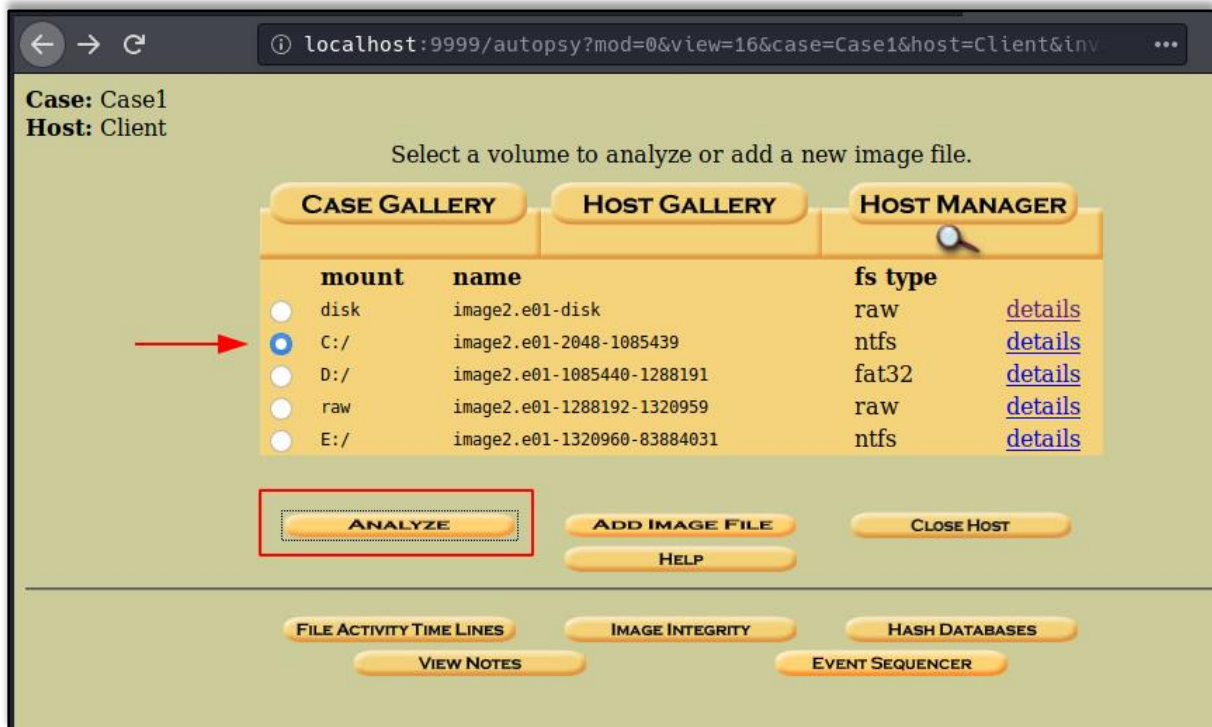
The screenshot shows the Autopsy interface with the URL `localhost:9999/autopsy?mod=0&view=15&img_path=%2Fhome%2Fjeenal`. The interface displays the following text:

```
Testing partitions
Linking image(s) into evidence locker
Image file added with ID img1

Disk image (type gpt) added with ID vol1
Volume image (2048 to 1085439 - ntfs - C:) added with ID vol2
Volume image (1085440 to 1288191 - fat32 - D:) added with ID vol3
Volume image (1288192 to 1320959 - raw - /3/) added with ID vol4
Volume image (1320960 to 83884031 - ntfs - E:) added with ID vol5
```

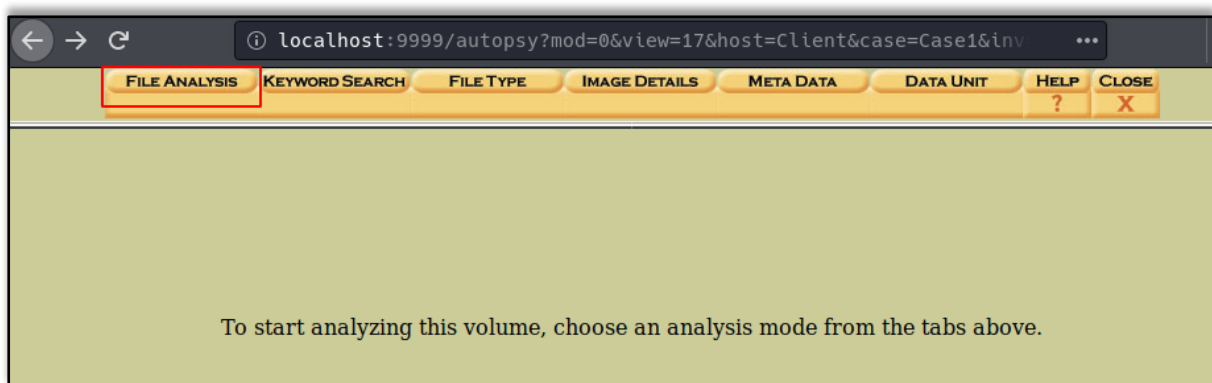
At the bottom, there are two buttons: "OK" and "ADD IMAGE". The "OK" button is highlighted with a red rectangle.

Now select the volume to be analyzed and click on 'Analyze'.

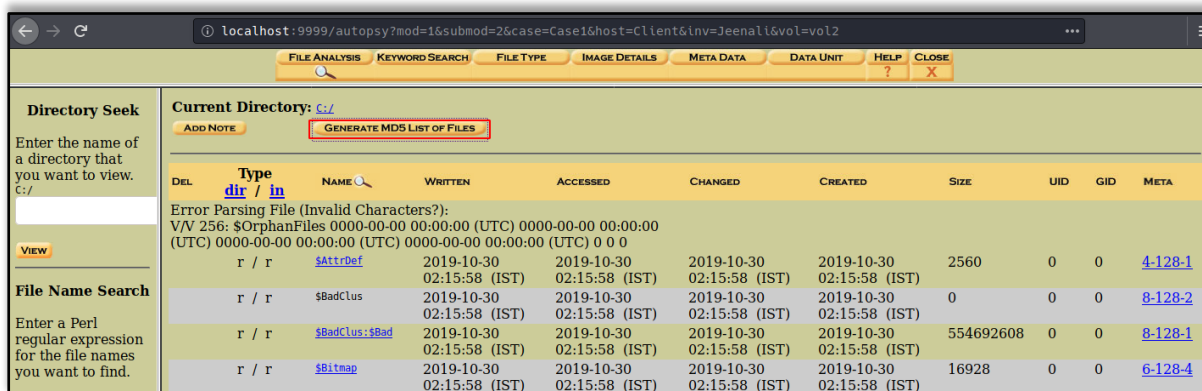


File Analysis

Now, it will ask you to choose the mode of analysis that you want to conduct and here we are conducting analysis of file, therefore click on 'File Analysis'.



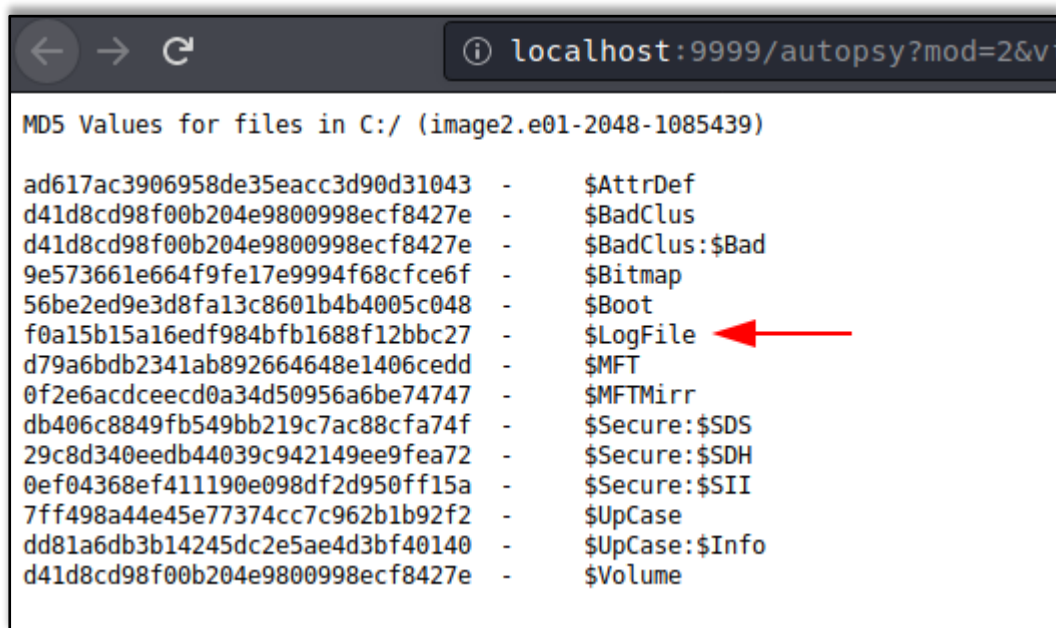
Now files will appear, which will give you the list of files and directories that are inside in this volume. From here you can analyze the content of the required image file and conduct the type of investigation you prefer. You can first generate a MD5 hash list of all the files present in this volume to maintain the integrity of the files, hence click on 'Generate MD5 List of Files'.



The screenshot shows the Autopsy web interface. The 'Current Directory' is 'C:/'. The 'Generate MD5 List of Files' button is highlighted. Below it, a table lists files with their MD5 hashes. The table has columns: DEL, Type, NAME, WRITTEN, ACCESSED, CHANGED, CREATED, SIZE, UID, GID, and META.

DEL	Type	NAME	WRITTEN	ACCESSED	CHANGED	CREATED	SIZE	UID	GID	META
	dir / in									
		\$AttrDef	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2560	0	0	4-128-1
		\$BadClus	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	0	0	0	8-128-2
		\$BadClus:\$Bad	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	554692608	0	0	8-128-1
		\$Bitmap	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	16928	0	0	6-128-4

Now you can see the MD5 values of the files in volume C of the image file.



The screenshot shows the Autopsy web interface displaying the MD5 values for files in volume C. The title is 'MD5 Values for files in C:/ (image2.e01-2048-1085439)'. The table lists files with their MD5 hashes and names. A red arrow points to the '\$LogFile' entry.

MD5 Hash	File Name
ad617ac3906958de35eacc3d90d31043	\$AttrDef
d41d8cd98f00b204e9800998ecf8427e	\$BadClus
d41d8cd98f00b204e9800998ecf8427e	\$BadClus:\$Bad
9e573661e664f9fe17e9994f68cfce6f	\$Bitmap
56be2ed9e3d8fa13c8601b4b4005c048	\$Boot
f0a15b15a16edf984bfb1688f12bbc27	\$LogFile
d79a6bdb2341ab892664648e1406cedd	\$MFT
0f2e6acdcecd0a34d50956a6be74747	\$MFTMirr
db406c8849fb549bb219c7ac88cfa74f	\$Secure:\$SDS
29c8d340eedb44039c942149ee9fea72	\$Secure:\$SDH
0ef04368ef411190e098df2d950ff15a	\$Secure:\$SII
7ff498a44e45e77374cc7c962b1b92f2	\$UpCase
dd81a6db3b14245dc2e5ae4d3bf40140	\$UpCase:\$Info
d41d8cd98f00b204e9800998ecf8427e	\$Volume

The file browsing mode consists of details of the directories that are shown below. The details include the time and date of the last time the directories were Written, Accessed, Changed and the time it was created with its size and also about its metadata. All the details are displayed in this, so in order to view the metadata, click on the 'Meta' option of Log file that you want to view.

DEL	Type	NAME	WRITTEN	ACCESSED	CHANGED	CREATED	SIZE	UID	GID	META
	dir / in									
Error Parsing File (Invalid Characters?): V/V 256: \$OrphanFiles 0000-00-00 00:00:00 (UTC) 0000-00-00 00:00:00 (UTC) 0 0 0										
	r / r	\$AttrDef	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2560	0	0	4-128-1
	r / r	\$BadClus	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	0	0	0	8-128-2
	r / r	\$BadClus:\$Bad	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	554692608	0	0	8-128-1
	r / r	\$Bitmap	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	16928	0	0	6-128-4
	r / r	\$Boot	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	8192	48	0	7-128-1
	d / d	\$Extend/	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	552	0	0	11-144-4
	r / r	\$LogFile	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	4374528	0	0	2-128-1
	r / r	\$MFT	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	262144	0	0	0-128-6
	r / r	\$MFTMirr	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	4096	0	0	1-128-1
	r / r	\$Secure:\$SDH	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	56	0	0	9-144-11
	r / r	\$Secure:\$SDS	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	263604	0	0	9-128-8

Here you can see the metadata information about the directory. In order to see more details, click on the first cluster '44067' in order to view its header information to find any relevant information to the case.

FILE ANALYSIS
KEYWORD SEARCH
FILE TYPE
IMAGE DETAILS
META DATA
DATA UNIT
HELP
CLOSE

MFT Entry Number:
2-128-1
VIEW
ALLOCATION LIST

Accessed: 2019-10-30 02:15:58.098799200 (IST)

\$FILE_NAME Attribute Values:
Flags: Hidden, System
Name: \$LogFile
Parent MFT Entry: 5 Sequence: 5
Allocated Size: 4374528 Actual Size: 4374528
Created: 2019-10-30 02:15:58.098799200 (IST)
File Modified: 2019-10-30 02:15:58.098799200 (IST)
MFT Modified: 2019-10-30 02:15:58.098799200 (IST)
Accessed: 2019-10-30 02:15:58.098799200 (IST)

Attributes:
\$STANDARD_INFORMATION (16-0) Name: N/A Resident size: 72
\$FILE_NAME (48-2) Name: N/A Resident size: 82
\$DATA (128-1) Name: N/A Non-Resident size: 4374528 init_size: 4374528

44067 44068 44069 44070 44071 44072 44073 44074
44075 44076 44077 44078 44079 44080 44081 44082
44083 44084 44085 44086 44087 44088 44089 44090
44091 44092 44093 44094 44095 44096 44097 44098
44099 44100 44101 44102 44103 44104 44105 44106
44107 44108 44109 44110 44111 44112 44113 44114
44115 44116 44117 44118 44119 44120 44121 44122
44123 44124 44125 44126 44127 44128 44129 44130
44131 44132 44133 44134 44135 44136 44137 44138
44139 44140 44141 44142 44143 44144 44145 44146
44147 44148 44149 44150 44151 44152 44153 44154
44155 44156 44157 44158 44159 44160 44161 44162
44163 44164 44165 44166 44167 44168 44169 44170
44171 44172 44173 44174 44175 44176 44177 44178
44179 44180 44181 44182 44183 44184 44185 44186
44187 44188 44189 44190 44191 44192 44193 44194
44195 44196 44197 44198 44199 44200 44201 44202

Here you can see the information about the header of the cluster.

[illegible]

Then in order to view the file types of the directories, then click on 'File Type'

FILE ANALYSIS

KEYWORD SEARCH

FILE TYPE

IMAGE DETAILS

META DATA

DATA UNIT

HELP

CLOSE

Directory Seek

Enter the name of a directory that you want to view.

VIEW

Current Directory: C:/

ADD NOTE

GENERATE MD5 LIST OF FILES

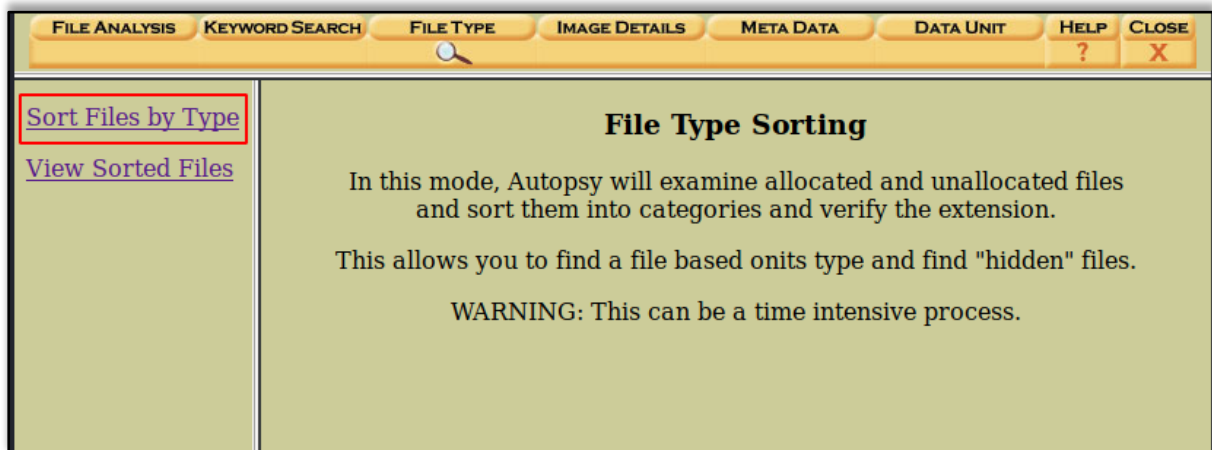
DEL	Type	NAME	WRITTEN	ACCESSED	CHAR
	dir / in				
	Error Parsing File (Invalid Characters?):				
	V/V 256: \$OrphanFiles 0000-00-00 00:00:00 (UTC) 0000-00-00 00:00:00 (UTC) 0000-00-00 00:00:00 (UTC) 0000-00-00 00:00:00 (UTC) 0 0 0				
	r / r	\$AttrDef	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)
	r / r	\$BadClus	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)	2019-10-30 02:15:58 (IST)
	r / r	\$BadClus:\$Bad	2019-10-30	2019-10-30	2019-10-30

File Name Search

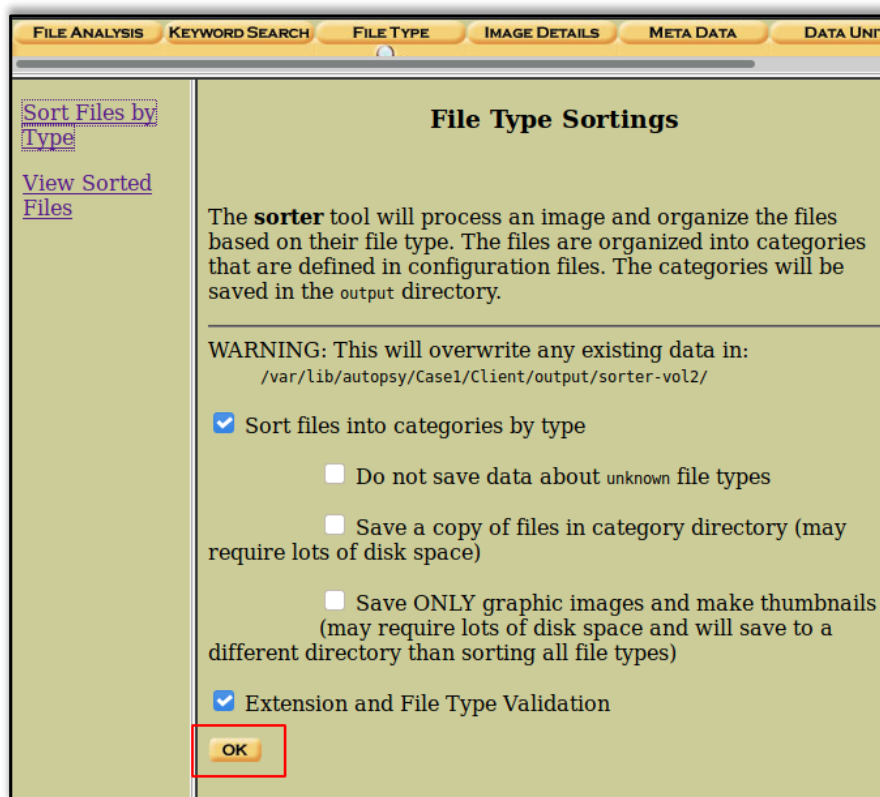
Enter a Perl regular expression

File Type

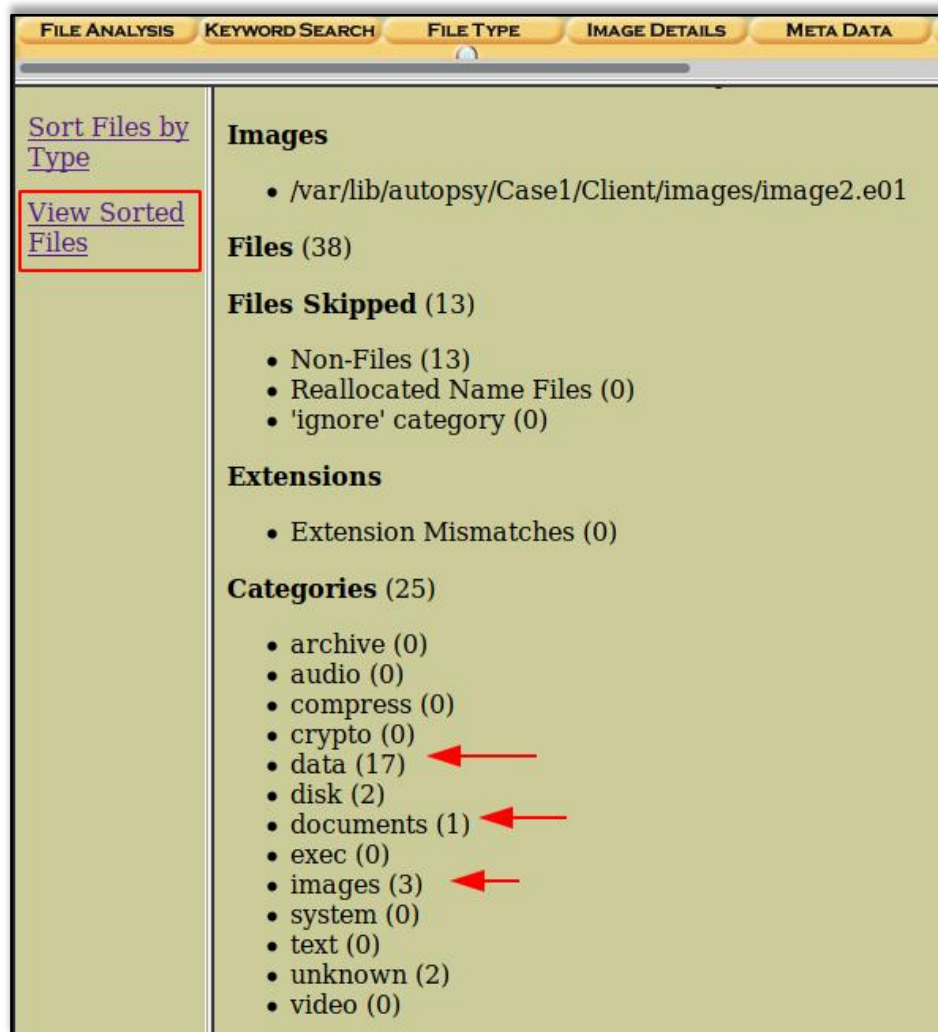
Here you will be able to sort the files based on the different types of files in the volume. By using this feature, you can examine allocated, unallocated as well as hidden files. To sort the file, click on '**Sort Files by Type**'.



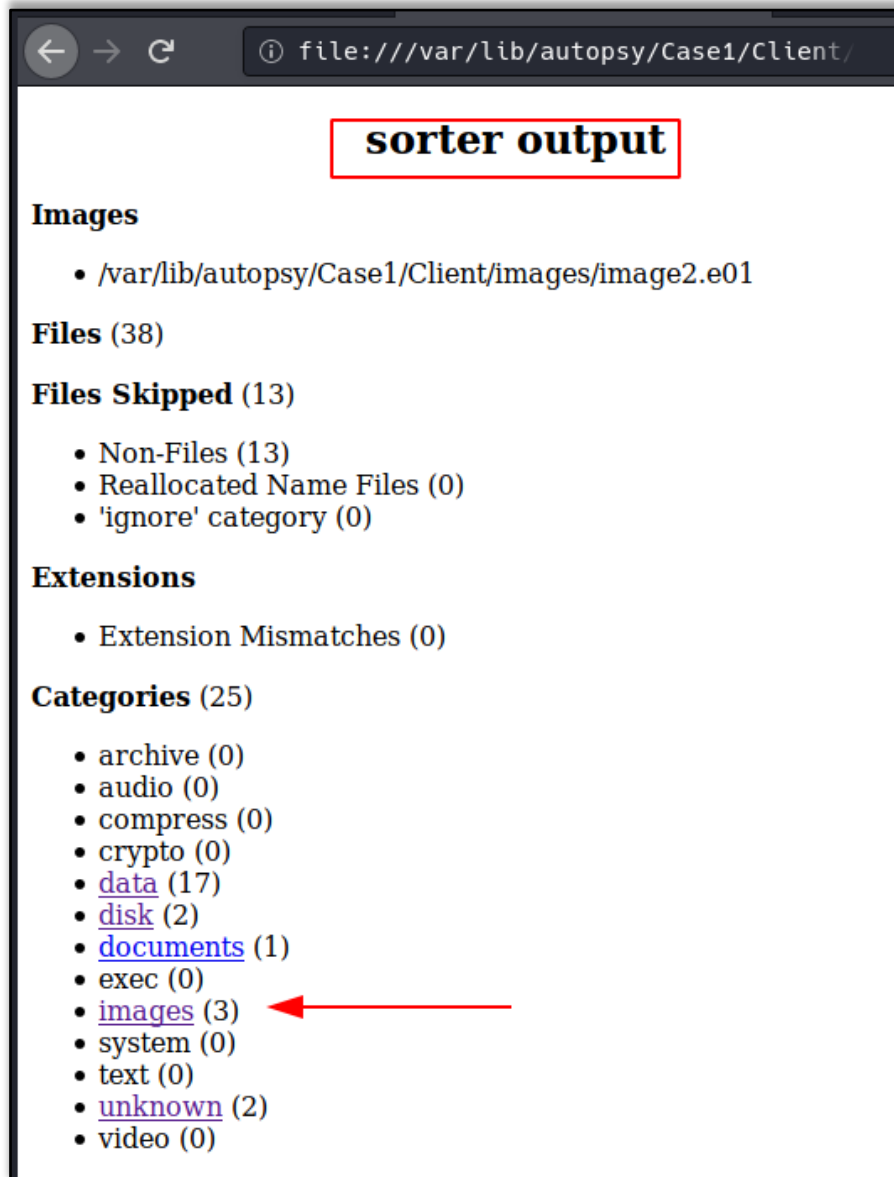
Click on 'Sort files into categories by type' which is selected by default and then click 'OK' to start sorting the files.



The categories of the file types will be displayed. Now to view the sorted files, click on 'View sorted files' and you will be displayed the list of sorted files.



The output folder locations will vary depending on the information specified by the user when first creating the case, but can usually be found at `/var/lib/autopsy/Case1/Client/output/sorter-vol2/index.html`. Once the `index.html` file has been opened, click on the images to view its contents.



Now you can see Images categories and further investigate the files depending on the case requirement.

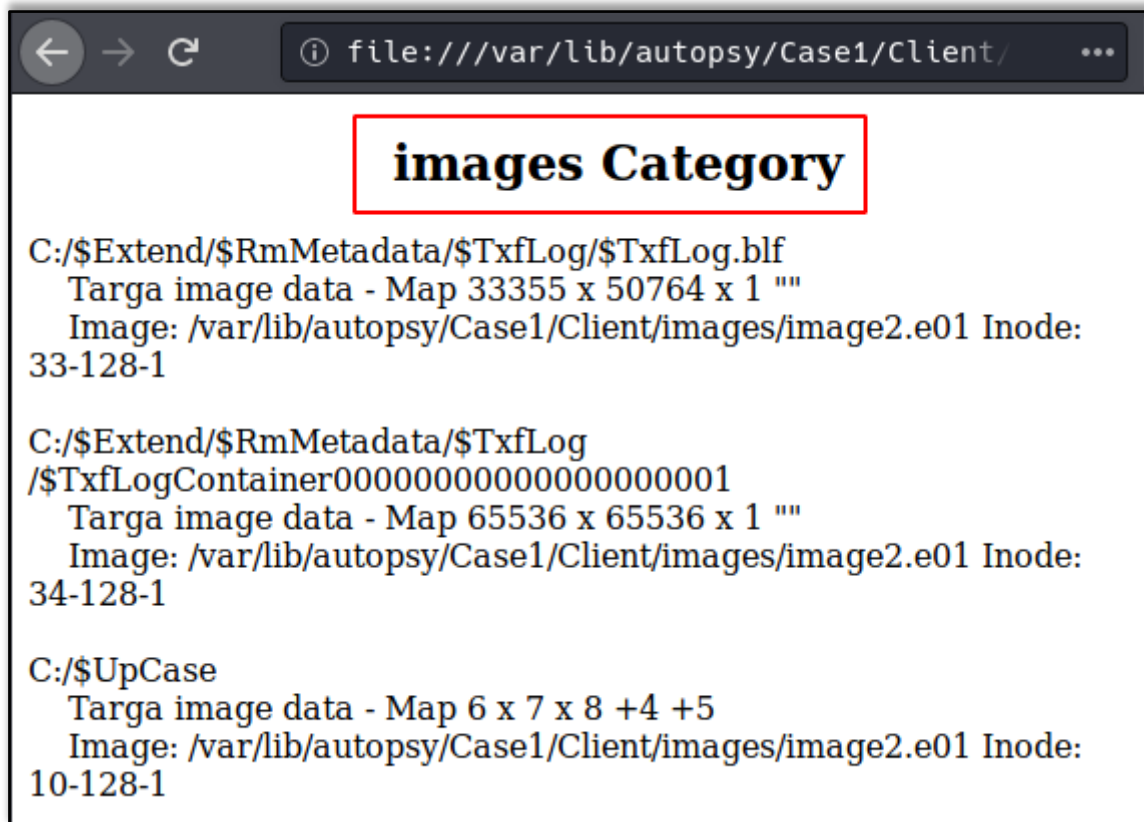
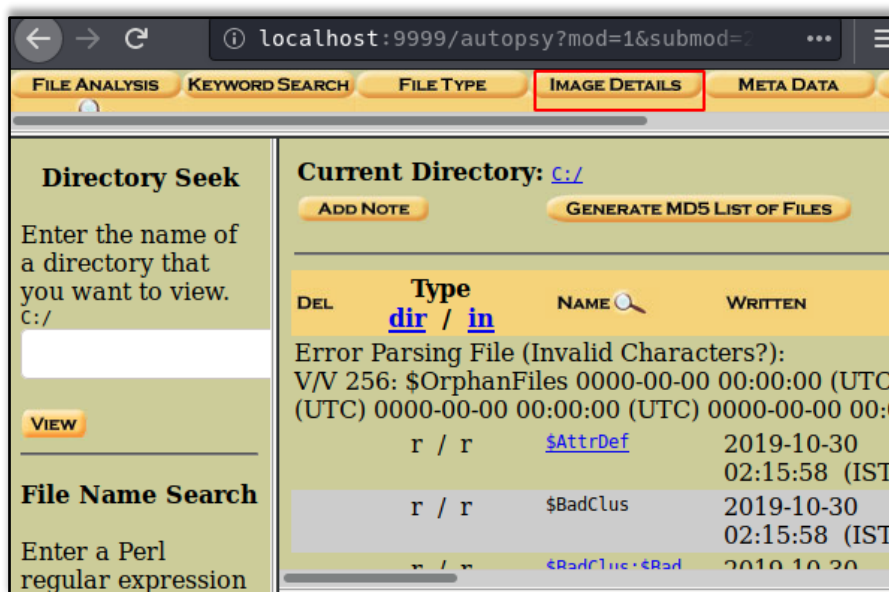


Image Details

Now click on the Image details options to view the important details about this image file.



Here in this option of file analysis you can see file system information, first cluster of MFT, cluster size etc.

The screenshot shows the Autopsy web interface at `localhost:9999/autopsy?mod=1&submod=7&c`. The 'FILE ANALYSIS' tab is selected. The 'General File System Details' section is highlighted with a red box. Below this, three sections are visible: 'FILE SYSTEM INFORMATION', 'METADATA INFORMATION', and 'CONTENT INFORMATION'. Red arrows point to specific values: 'File System Type: NTFS', 'First Cluster of MFT: 45141', and 'Cluster Size: 4096'.

General File System Details

FILE SYSTEM INFORMATION

- File System Type: NTFS
- Volume Serial Number: 9EA6DE0BA6DDE435
- OEM Name: NTFS
- Volume Name: Recovery
- Version: Windows XP

METADATA INFORMATION

- First Cluster of MFT: 45141
- First Cluster of MFT Mirror: 2
- Size of MFT Entries: 1024 bytes
- Size of Index Records: 4096 bytes
- Range: 0 - 256
- Root Directory: 5

CONTENT INFORMATION

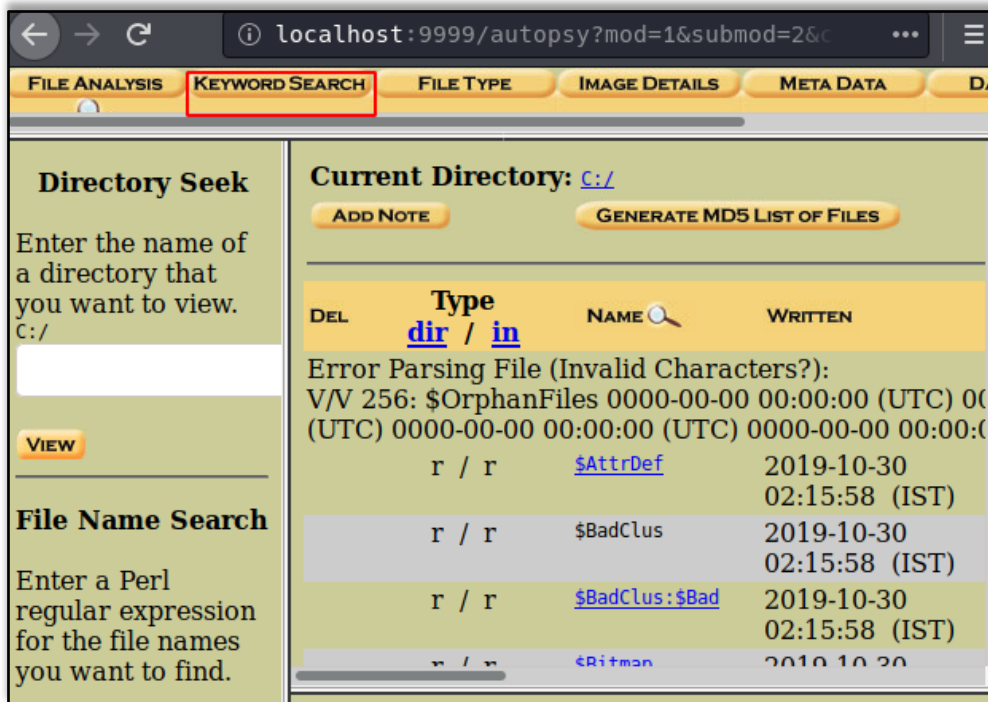
- Sector Size: 512
- Cluster Size: 4096
- Total Cluster Range: 0 - 135422
- Total Sector Range: 0 - 1083390

\$AttrDef Attribute Values:

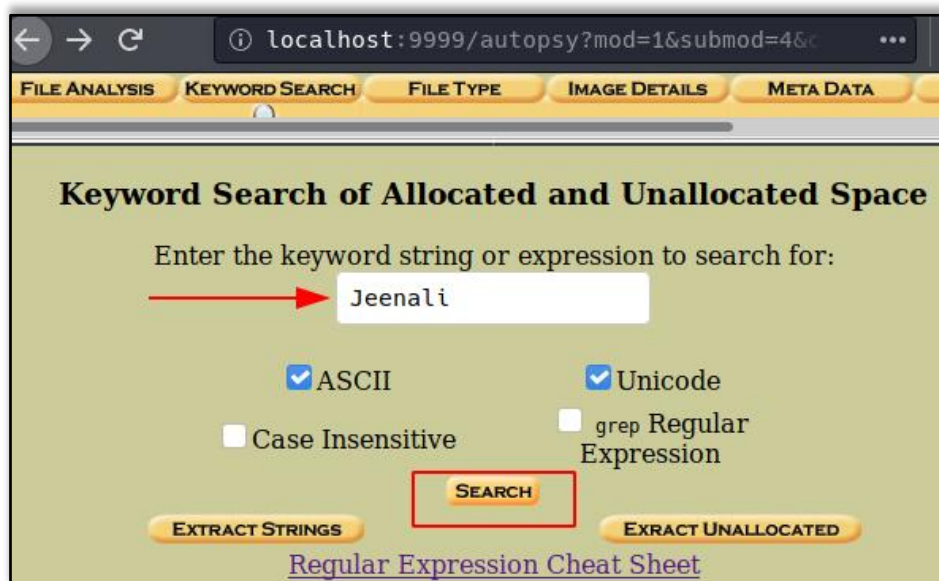
- \$STANDARD_INFORMATION (16) Size: 48-72 Flags: Resident
- \$ATTRIBUTE_LIST (32) Size: No Limit Flags: Non-resident
- \$FILE_NAME (48) Size: 68-578 Flags: Resident, Index
- \$OBJECT_ID (64) Size: 0-256 Flags: Resident
- \$SECURITY_DESCRIPTOR (80) Size: No Limit Flags: Non-resident

Keyword Search

To ease the search of a file or document you can make use of keyword search option to make your investigation time-efficient. Click on 'Keyword Search' to proceed.



You can input the keyword or any relevant string to proceed with the investigation and click on search.



AUTOPSY WINDOWS

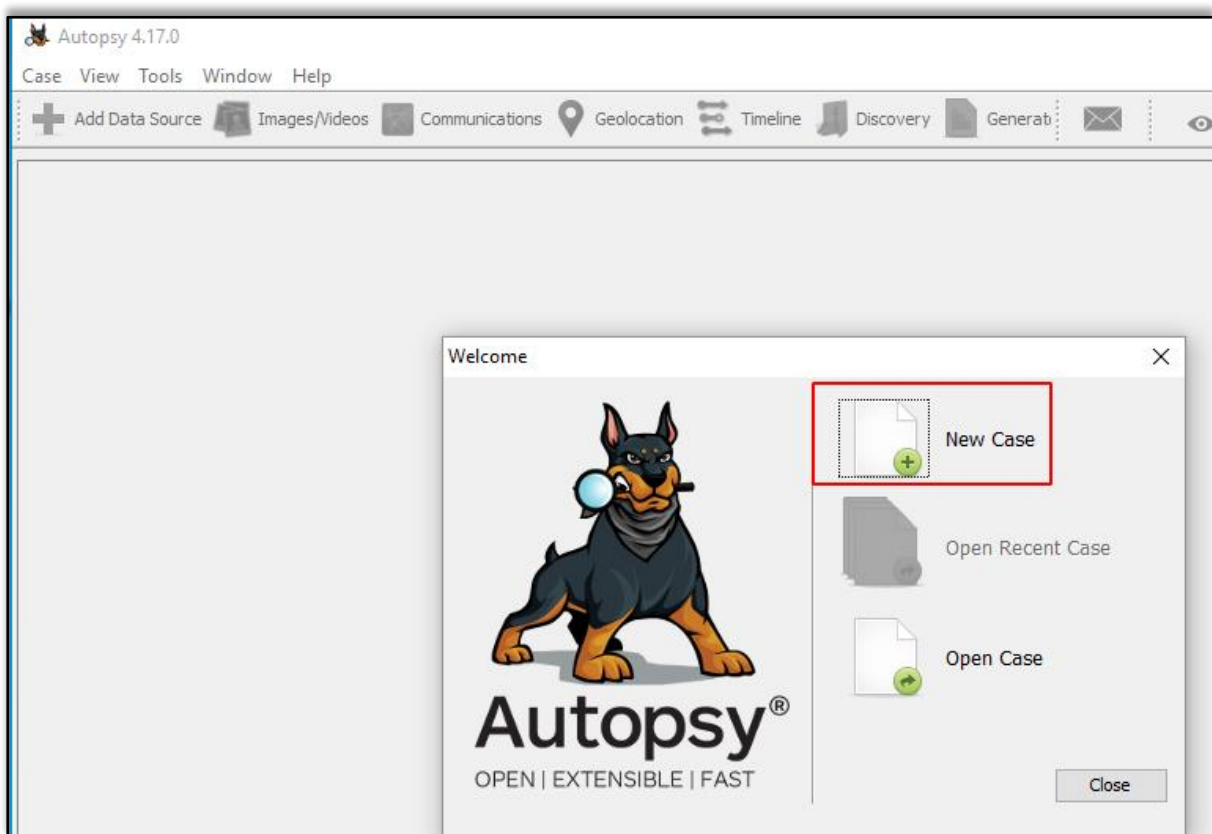
Autopsy for Windows



You can download the Autopsy Tool for Windows from [here](#).

Creating a New Case

Run the Autopsy tool on your Windows Operating System and click on “New Case” to create a new case.



Then fill in all the necessary case information like the case name and choose a base directory to save all the case data in one place.

The screenshot shows the 'New Case Information' dialog box with the 'Case Information' tab selected. The 'Steps' list on the left shows '1. Case Information' and '2. Optional Information'. The 'Case Information' section contains the following fields and controls:

- Case Name:** A text box containing 'Ignite'.
- Base Directory:** A text box containing 'C:\Users\raj\Desktop'. A 'Browse' button is located to the right of this field.
- Case Type:** Two radio buttons: 'Single-user' (selected) and 'Multi-user'.
- Case data will be stored in the following directory:** A text box containing 'C:\Users\raj\Desktop\Ignite'.

At the bottom of the dialog, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

You can also add additional optional information about the case if required.

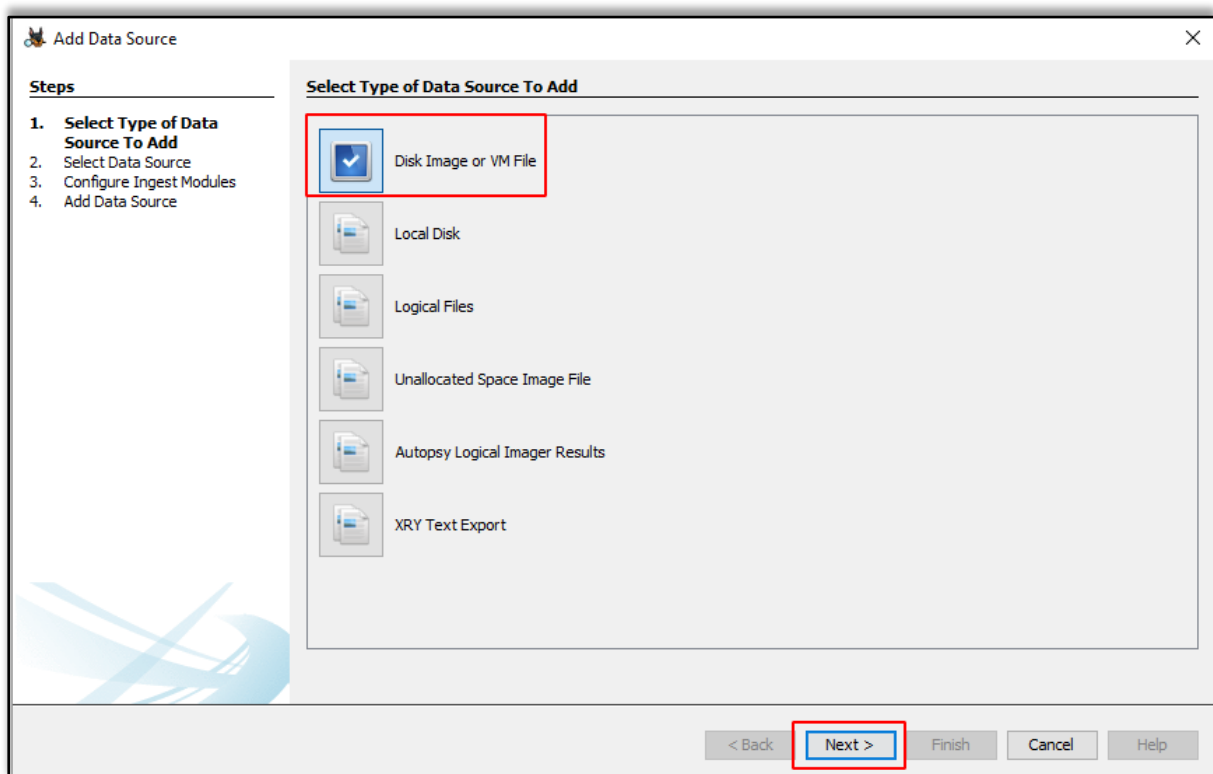
The screenshot shows the 'New Case Information' dialog box with the 'Optional Information' tab selected. The 'Steps' list on the left shows '1. Case Information' and '2. Optional Information'. The 'Optional Information' section contains the following fields and controls:

- Case:** A text box containing '001'.
- Examiner:** A section containing four text boxes: 'Name' (containing 'vishva'), 'Phone', 'Email', and 'Notes'.
- Organization:** A section containing a dropdown menu for 'Organization analysis is being done for:' (set to 'Not Specified') and a 'Manage Organizations' button.

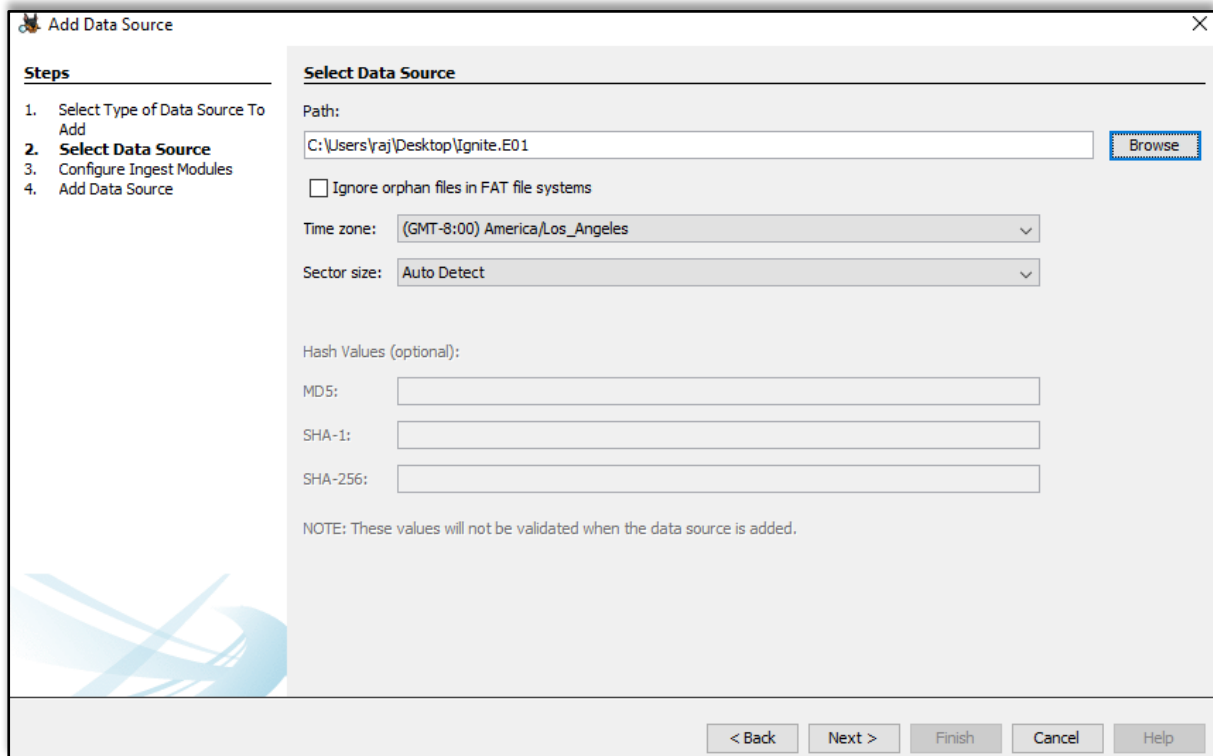
At the bottom of the dialog, there are five buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

Now let us add the type of data source. There are various types to choose from.

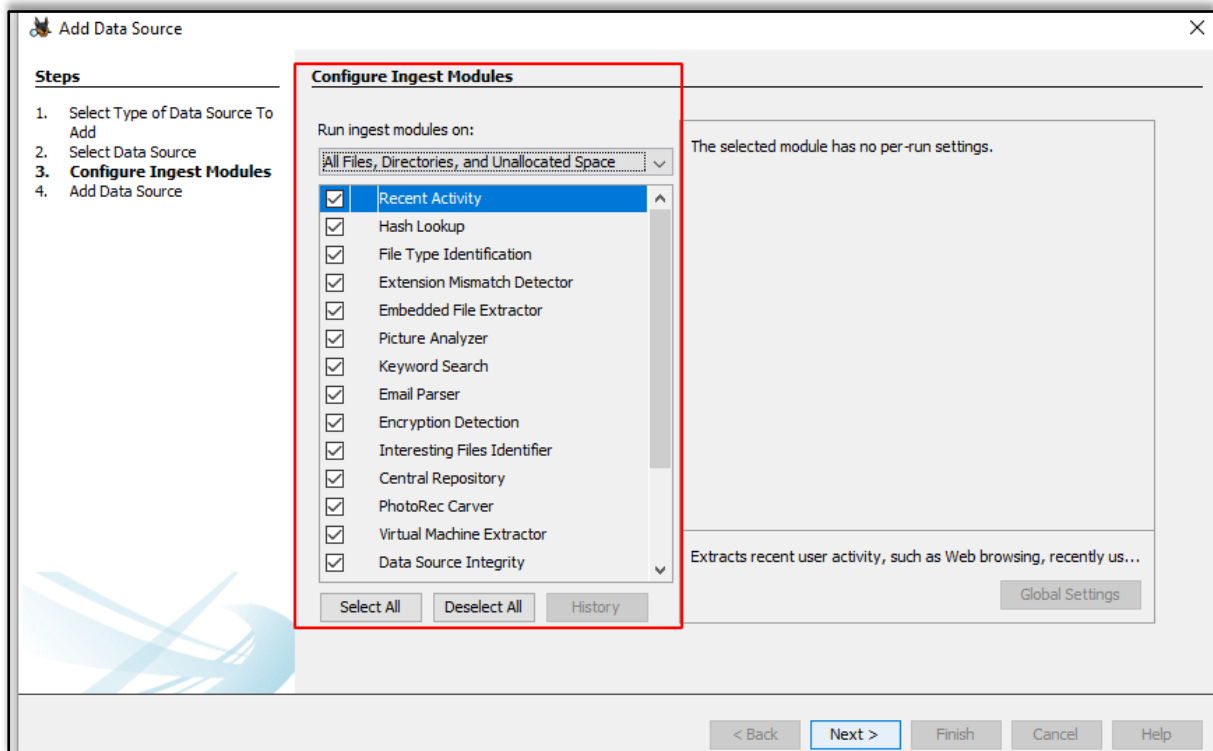
- **Disk Image or VM file:** This includes the image file which can be an exact copy of a hard drive, media card, or even a virtual machine.
- **Local Disk:** This option includes devices like Hard disk, Pen drives, memory cards, etc.
- **Logical Files:** It includes the image of any local folders or files.
- **Unallocated Space Image File:** They include files that do not contain any file system and run with the help of the ingest module.
- **Autopsy Logical Imager Results:** They include the data source from running the logical imager.
- **XRY Text Export:** This includes the data source from exporting text files from XRY.



Now let us add the data source. Here we have a previously created image file, so we will add the location of that file.



Next, you will be prompted to **Configure the Ingest Module**.



The contents of the Ingest module are listed below:

INGEST MODULE	
Recent Activity	It is used to discover the recent operations that were performed on the disk, like the files that were viewed recently.
Extension Mismatch Detector	It is used to identify files whose extensions were tampered with or had been changed to hide the evidence.
Hash Lookup	It is used to identify a particular file using its hash value.
File Type Identification	This is used to identify files based on their internal file signatures than just the file extensions.
Embedded File Extractor	It is used to extract embedded files like .zip, .rar, etc. and use those files for analysis.
Keyword Search	This is used to search for any particular keyword or a pattern in the image file.
Email Parser	This is used to extract information from email files if the disk holds any email database information.
Encryption Detection	This helps to detect and identifies encrypted password-protected files.
Interesting File Identifier	Using this feature the examiner is notified when results pertaining to the set of rules that are defined to identify a particular type of file.
PhotoRec Carver	This helps the examiner to recover files, photos, etc. from the unallocated space on the image disk.
Virtual Machine Extractor	It helps to extract and analyze if any Virtual machine is found on the disk image.
Data Source Integrity	It helps to calculate the hash value and store them in the database.

Data Source information displays basic metadata. Its detailed analysis is displayed at the bottom. It can be extracted one after the other.

The screenshot shows the Ignite - Autopsy 4.17.0 interface. The 'Data Sources' tab is active, displaying a table with the following data:

Name	Type	Size (Bytes)
Ignite.E01	Image	64420392960

Below the table, the 'Hex' view is displayed, showing the raw data of the image source. The hex view includes columns for Hex, Text, Application, File Metadata, Context, Results, Annotations, and Other Occurrences. The data is organized into rows, with the first row starting at 0x00000000 and ending at 0x00000080.

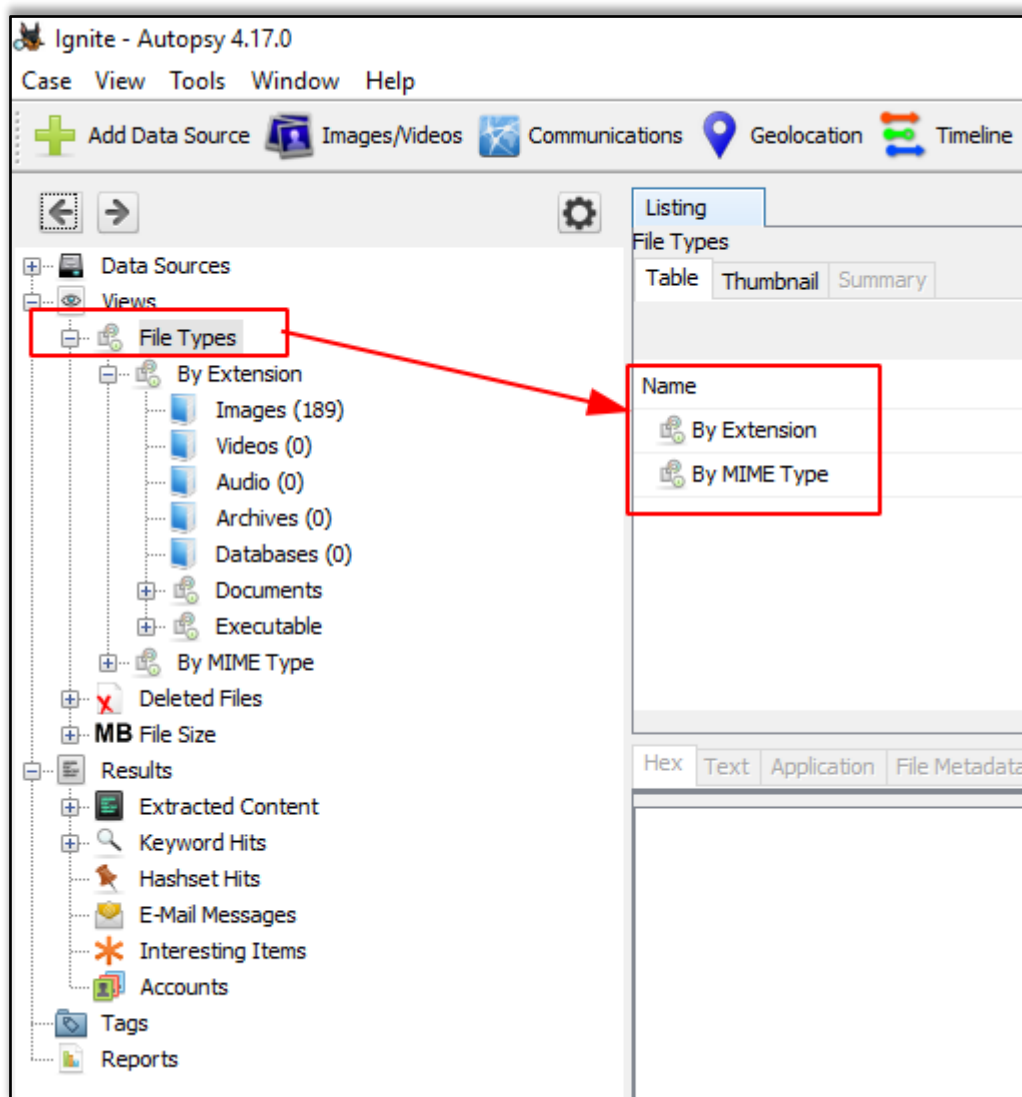
Views

File Type

It can be classified in the form of File extension or MIME type.

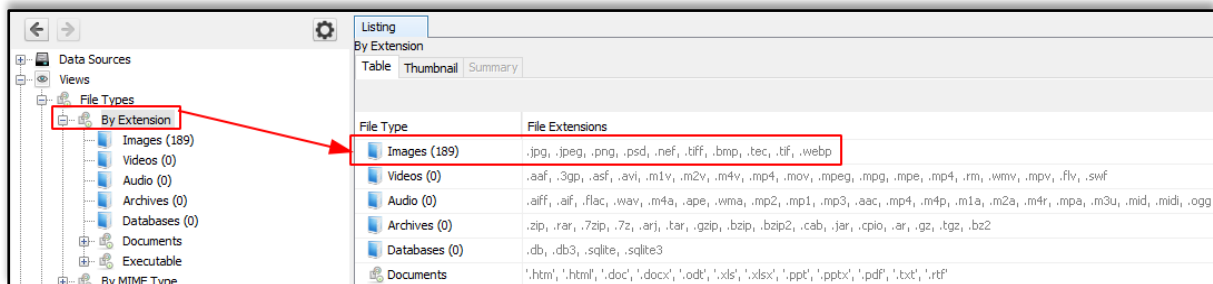
It provides information on file extensions that are commonly used by the OS whereas MIME types are used by the browser to decide what data to represent. It also displays deleted files.

Note: These file types can be categorized depending on Extension, Documents, Executables.

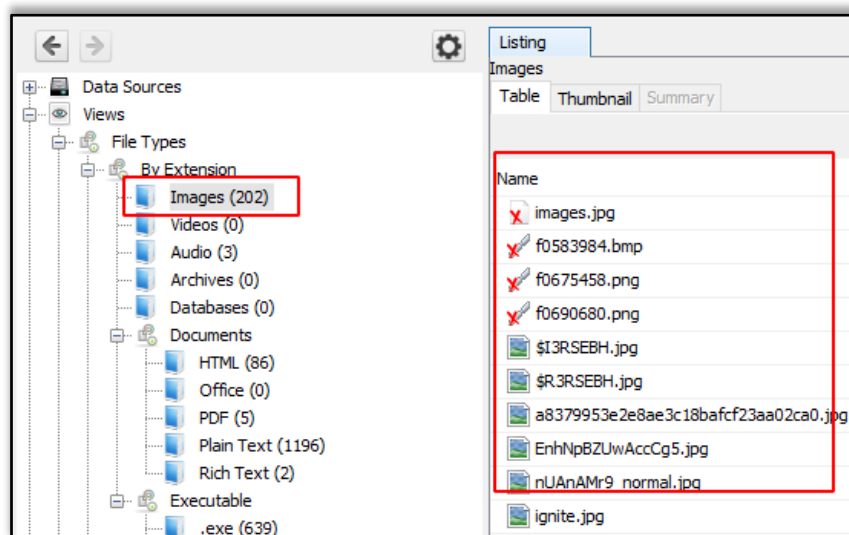


By Extension

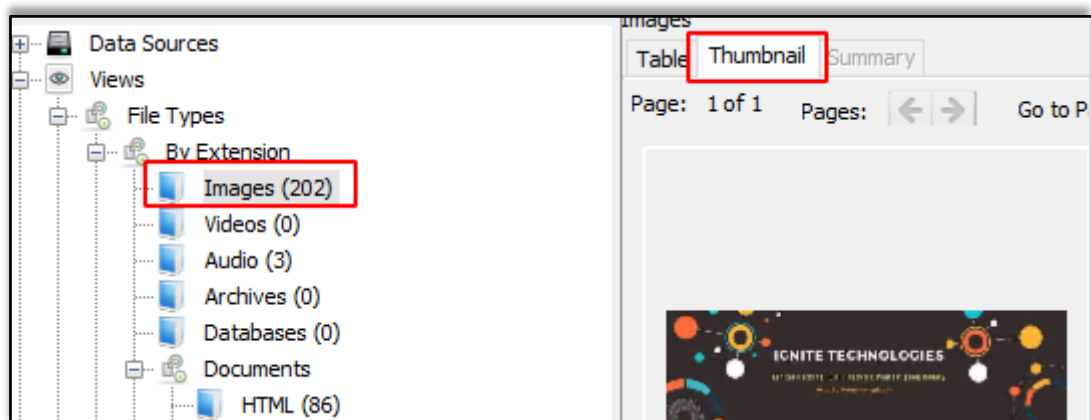
In the category Filetypes by extension and you can see that this has been sub-divided into file types like images, video, audio, archives, databases, etc.



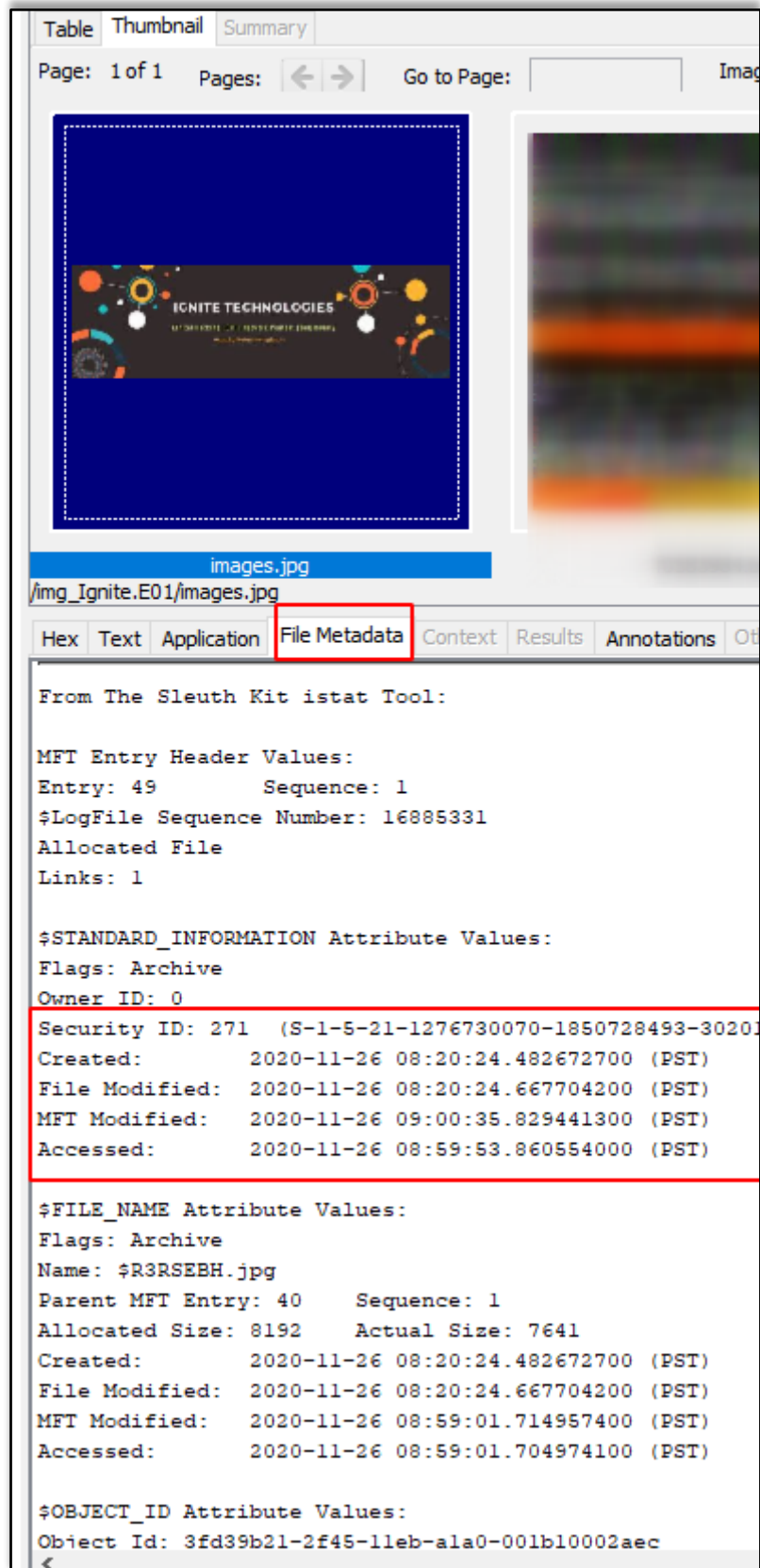
Let us click on images and explore the images that have been recovered.



We can also view the thumbnail of the images.



On viewing the thumbnail, you can view the file metadata and details about the image.



The screenshot displays a file viewer window with a 'Thumbnail' tab selected. The main area shows a thumbnail of a file named 'images.jpg'. Below the thumbnail, the file name 'images.jpg' is displayed, followed by the path '/img_Ignite.E01/images.jpg'. A red box highlights the 'File Metadata' tab, which is currently active. The metadata is displayed in a text area, showing details from the Sleuth Kit istat tool. The metadata includes MFT Entry Header Values, \$STANDARD_INFORMATION Attribute Values, \$FILE_NAME Attribute Values, and \$OBJECT_ID Attribute Values. The file is identified as 'R3RSEBH.jpg' and was created on 2020-11-26 at 08:20:24.482672700 (PST).

Table Thumbnail Summary

Page: 1 of 1 Pages: < > Go to Page: Image

images.jpg

/img_Ignite.E01/images.jpg

Hex Text Application **File Metadata** Context Results Annotations Other

From The Sleuth Kit istat Tool:

MFT Entry Header Values:
 Entry: 49 Sequence: 1
 \$LogFile Sequence Number: 16885331
 Allocated File
 Links: 1

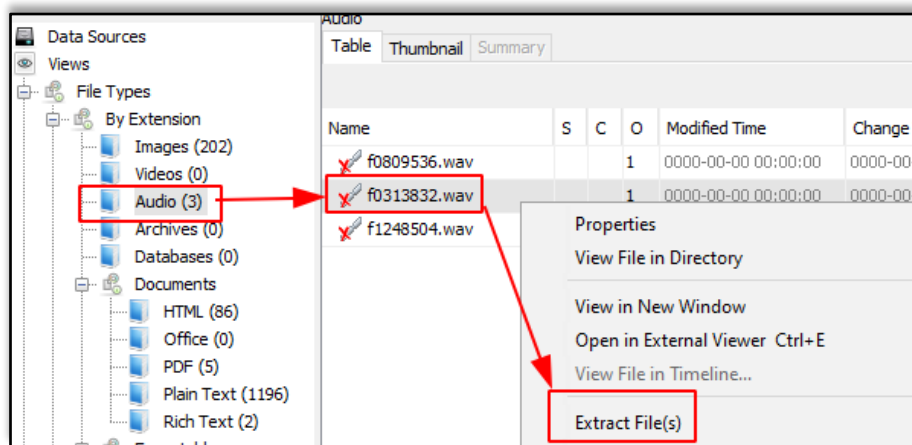
\$STANDARD_INFORMATION Attribute Values:
 Flags: Archive
 Owner ID: 0

Security ID: 271 (S-1-5-21-1276730070-1850728493-30201)
 Created: 2020-11-26 08:20:24.482672700 (PST)
 File Modified: 2020-11-26 08:20:24.667704200 (PST)
 MFT Modified: 2020-11-26 09:00:35.829441300 (PST)
 Accessed: 2020-11-26 08:59:53.860554000 (PST)

\$FILE_NAME Attribute Values:
 Flags: Archive
 Name: \$R3RSEBH.jpg
 Parent MFT Entry: 40 Sequence: 1
 Allocated Size: 8192 Actual Size: 7641
 Created: 2020-11-26 08:20:24.482672700 (PST)
 File Modified: 2020-11-26 08:20:24.667704200 (PST)
 MFT Modified: 2020-11-26 08:59:01.714957400 (PST)
 Accessed: 2020-11-26 08:59:01.704974100 (PST)

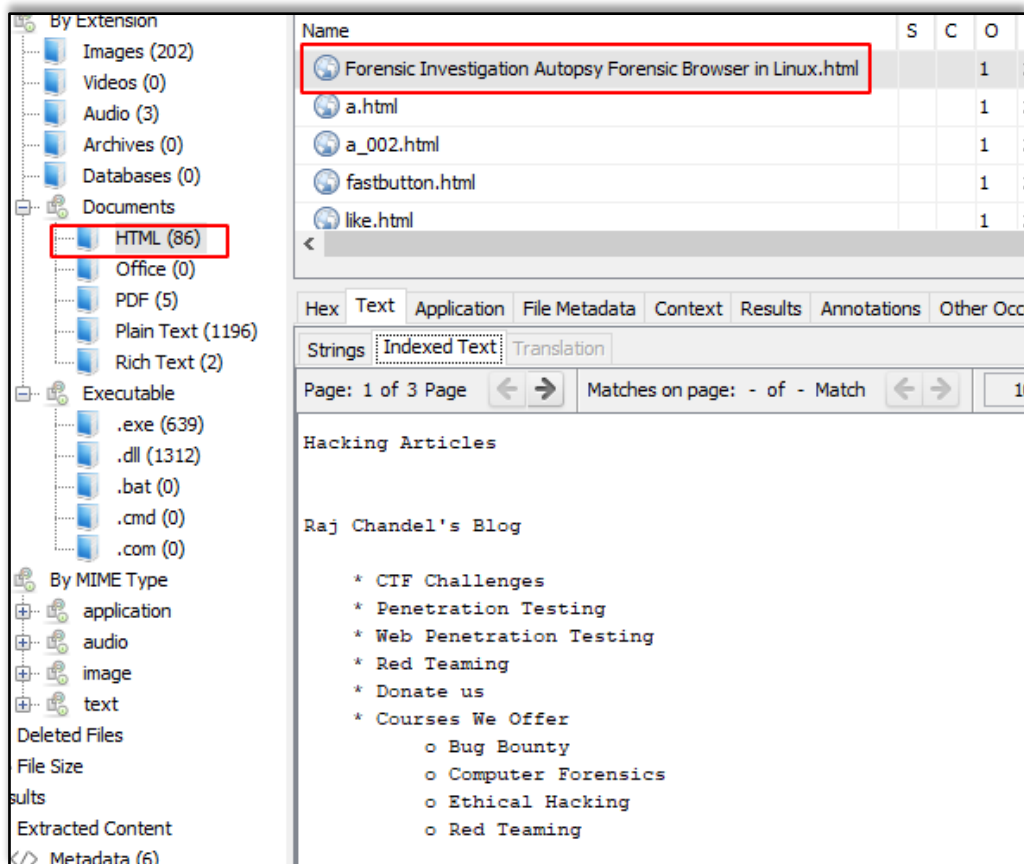
\$OBJECT_ID Attribute Values:
 Object Id: 3fd39b21-2f45-11eb-ala0-001b10002aec

Here we can also view a few audio files that have been recovered. We can extract these files from the system and hear to them using various software.

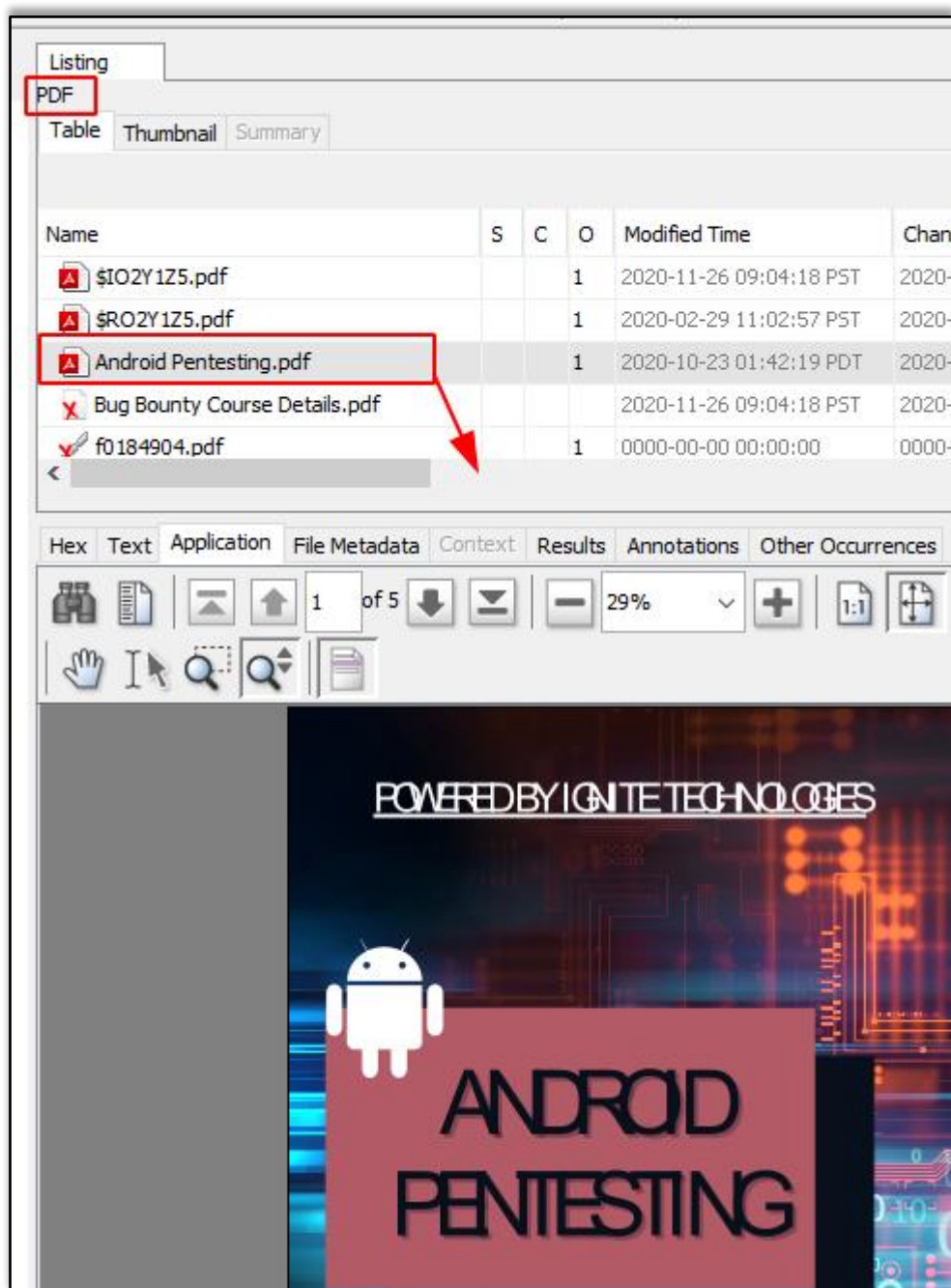


Documents

The documents are categorized into 5 types: HTML, office, PDF, Plain Text, Rich Text. On exploring the documents option, you can see all the HTML documents present, you can click on the important ones to view them.



On exploring the PDF option, you can also find the important PDF in the disk image.



Similarly, the various Plain text files can also be viewed. You can also recover deleted plain text files.

The screenshot shows a file recovery tool interface. On the left, a sidebar lists various file types, with 'Plain Text (1196)' highlighted. A red arrow points from this category to a table of files. The table has columns for Name, S, C, O, and Modified Time. The file '\$RK1MRRO.txt' is selected and highlighted in blue. Below the table, there are tabs for Hex, Text, Application, File Metadata, Context, Results, and Analysis. The 'Text' tab is active, showing the content of the selected file. The content includes a notice about a cancelled imaging operation, creation information, case details, and physical evidentiary item information.

Name	S	C	O	Modified Time
\$IK1MRRO.txt			1	2020-11-26 08:56:
\$RK1MRRO.txt			1	2020-11-26 08:55:
USB.txt			1	2020-09-09 07:15:
Ignite.E01.txt				2020-11-26 08:56:
f0484218.txt			1	0000-00-00 00:00:

Hex Text Application File Metadata Context Results Analysis

Strings Indexed Text Translation

Page: 1 of 1 Page Matches on page: - of - Mat

NOTICE: The imaging operation was cancelled!

Created By AccessData® FTK® Imager 4.3.1.1

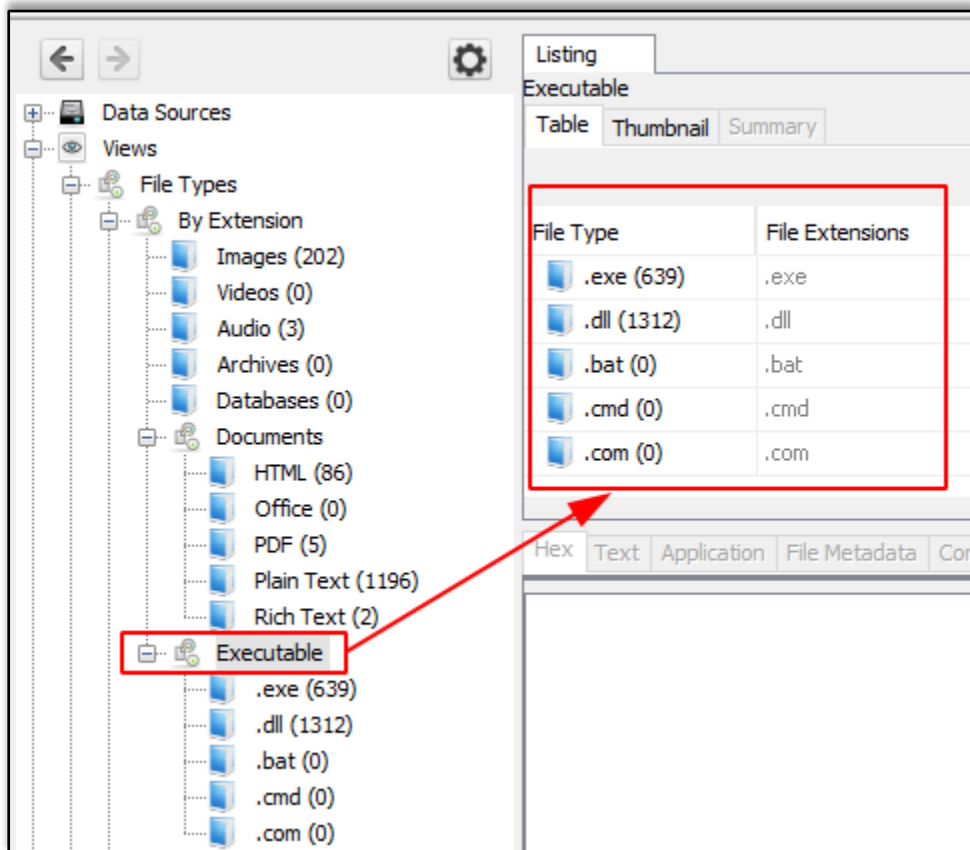
Case Information:
 Acquired using: ADI4.3.1.1
 Case Number: 001
 Evidence Number: AU001
 Unique description: Hacking Articles
 Examiner: Vishva
 Notes:

Information for E:\Ignite:

Physical Evidentiary Item (Source) Information
 [Device Info]
 Source Type: Logical
 [Drive Geometry]
 Bytes per Sector: 512
 Sector Count: 125,821,080
 [Physical Drive Information]
 Removable drive: False
 Source data size: 61436 MB
 Sector count: 125821080

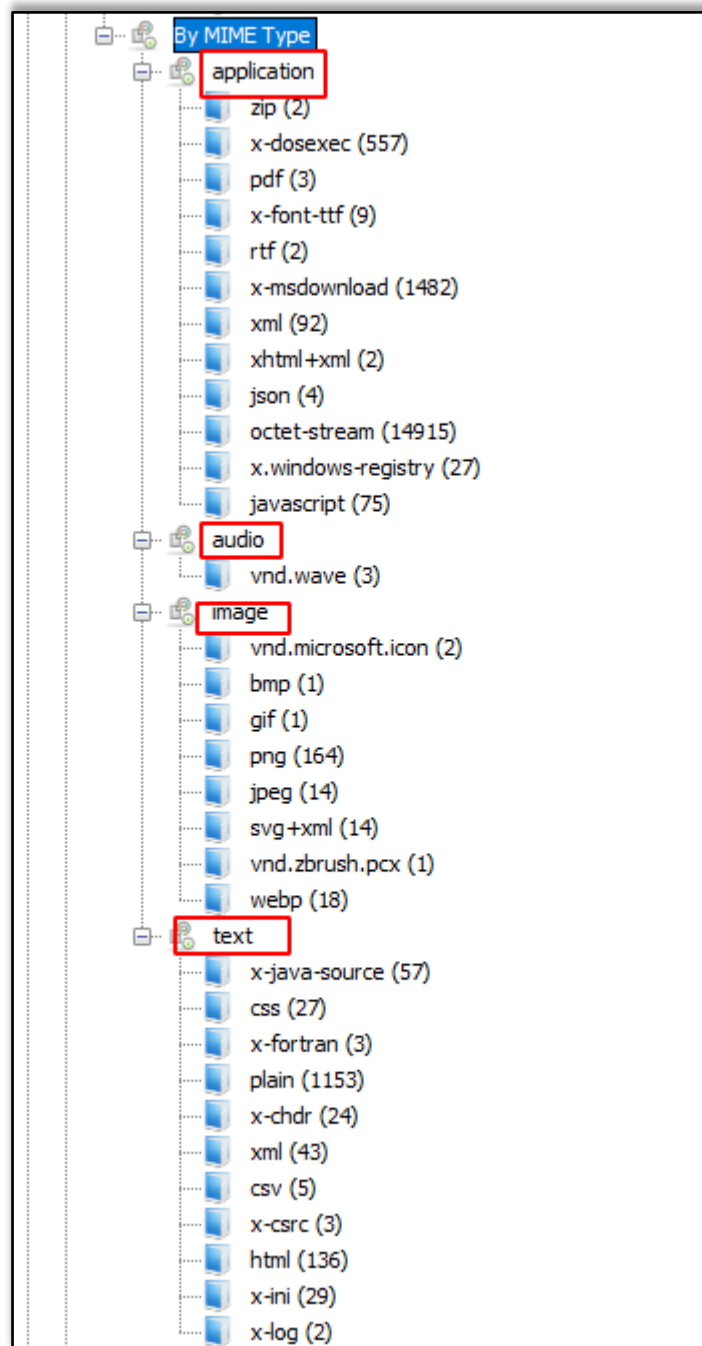
Executables

These file types are then sub-divided into .exe, .dll, .bat, .cmd and .com.



By Mime Type

In this type of category, there are four sub-categories like application, audio, image, and text. They are divided further into more sections and file types.



Deleted Files

It displays information about the deleted file which can be then recovered.

Name	S	C	O	Modified Time
20201014.mem			0	2020-10-13 13:39:50 PDT
adencrypt.dll			0	2020-05-11 21:03:46 PDT
adencrypt_gui.exe			0	2020-05-11 21:03:46 PDT
adfbfs_globals.dll			0	2020-05-11 21:03:46 PDT
adfs_globals.dll			0	2020-05-11 21:03:46 PDT
ADG_EULA.rtf			1	2020-02-05 15:48:36 PST
ADIso.exe			0	2020-05-11 21:03:46 PDT
ADIsoDLL.dll			0	2020-05-11 21:03:48 PDT
adshattrdefs.dll			0	2020-05-11 21:03:48 PDT
adtz_globals.dll			0	2020-05-11 21:03:48 PDT
ad_globals.dll			0	2020-05-11 21:03:46 PDT
ad_log.dll			0	2020-05-11 21:03:46 PDT
boost_chrono-vc140-mt-1_59.dll			0	2020-05-11 21:03:48 PDT
boost_date_time-vc140-mt-1_59.dll			0	2020-05-11 21:03:46 PDT
boost_filesystem-vc140-mt-1_59.dll			0	2020-05-11 21:03:50 PDT
boost_regex-vc140-mt-1_59.dll			0	2020-05-11 21:03:50 PDT
boost_system-vc140-mt-1_59.dll			0	2020-05-11 21:03:50 PDT
boost_thread-vc140-mt-1_59.dll			0	2020-05-11 21:03:50 PDT
FTK Imager.exe			0	2020-05-11 21:04:10 PDT

MB size Files

In this, the files are categorized based on their size starting from 50MB. This allows the examiner to look for large files.

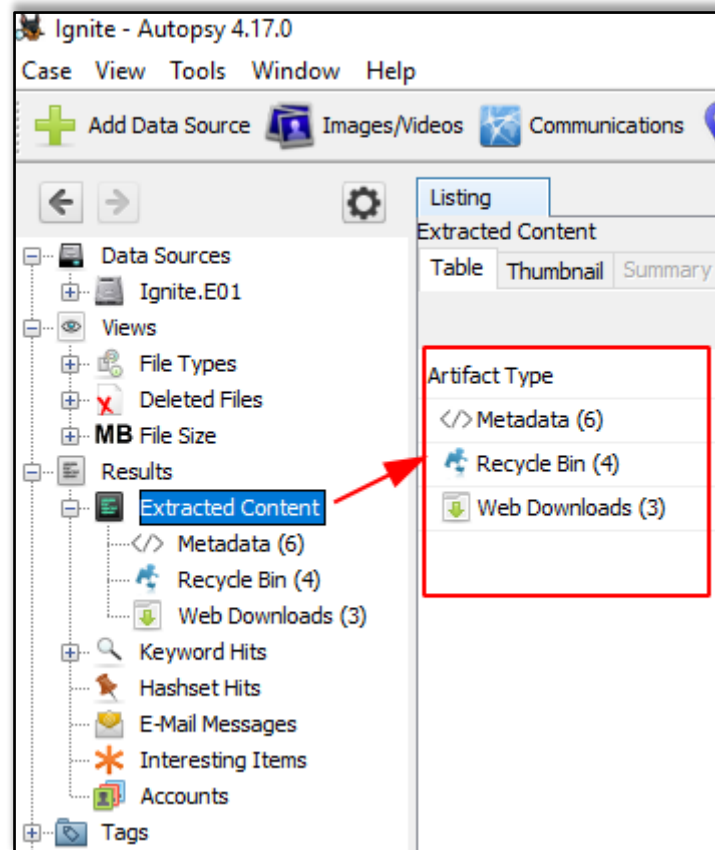
File Size	Table	Thumbnail	Summary	Size Range
MB 50 - 200MB (1)				MB 50 - 200MB (1)
MB 200MB - 1GB (2)				MB 200MB - 1GB (2)
MB 1GB+ (3)				MB 1GB+ (3)

Results

In this section, we get information about the content that was extracted.

Extracted Content

All the content that was extracted, is segregated further in detail. Here we have found metadata, Recycle Bin, and web downloads. Let us further view each one of them.



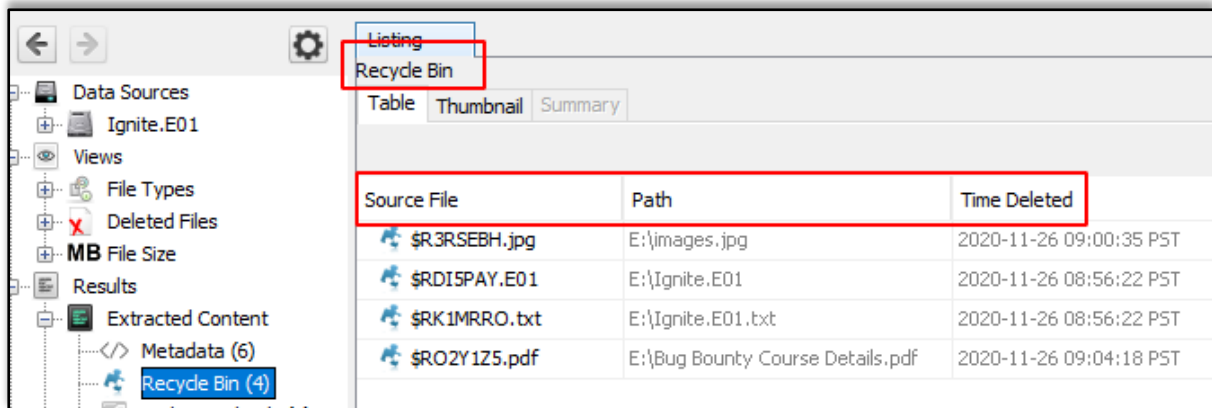
Metadata

Here we can view all the information about the files like the date it was created, to was modified, file's owner, etc.

Source File	Date Modified	Date Created	Owner	Data Source
</> \$RO2Y1Z5.pdf	2020-02-29 19:02:56 PST	2020-02-29 19:02:56 PST	Ignite Tech...	Ignite.E01
</> Android Pentesting.pdf	2020-10-23 08:42:07 PDT	2020-10-23 08:42:10 PDT	...	Ignite.E01
</> ADG_EULA.rtf		2016-02-25 02:55:00 PST	...	Ignite.E01
</> FTKImager_UserGuide.pdf	2012-03-21 20:52:22 PDT	2012-03-21 11:26:46 PDT	...	Ignite.E01
</> f0184904.pdf	2012-03-21 20:52:22 PDT	2012-03-21 11:26:46 PDT	...	Ignite.E01
</> f0002808.rtf		2016-02-25 02:55:00 PST	...	Ignite.E01

Recycle Bin

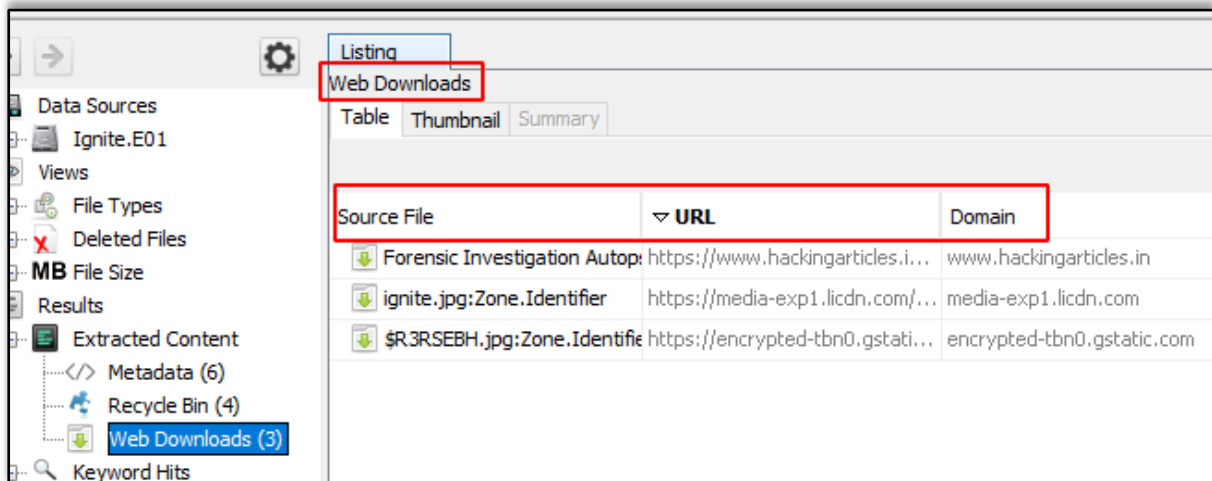
The files that were put in the recycle bin are found in this category.



Source File	Path	Time Deleted
\$R3RSEBH.jpg	E:\images.jpg	2020-11-26 09:00:35 PST
\$RDI5PAY.E01	E:\Ignite.E01	2020-11-26 08:56:22 PST
\$RK1MRRO.txt	E:\Ignite.E01.txt	2020-11-26 08:56:22 PST
\$RO2Y1Z5.pdf	E:\Bug Bounty Course Details.pdf	2020-11-26 09:04:18 PST

Web Downloads

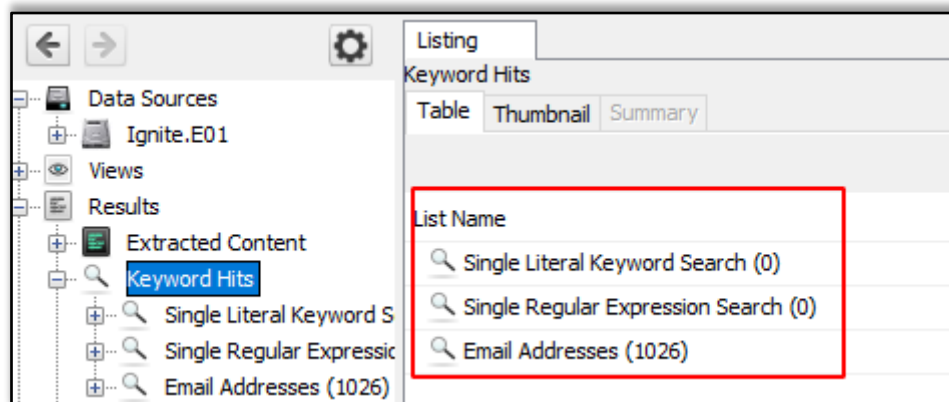
Here you can see the files that were downloaded from the internet.



Source File	URL	Domain
Forensic Investigation Autop...	https://www.hackingarticles.i...	www.hackingarticles.in
ignite.jpg:Zone.Identifier	https://media-exp1.licdn.com/...	media-exp1.licdn.com
\$R3RSEBH.jpg:Zone.Identifier	https://encrypted-tbn0.gstatic...	encrypted-tbn0.gstatic.com

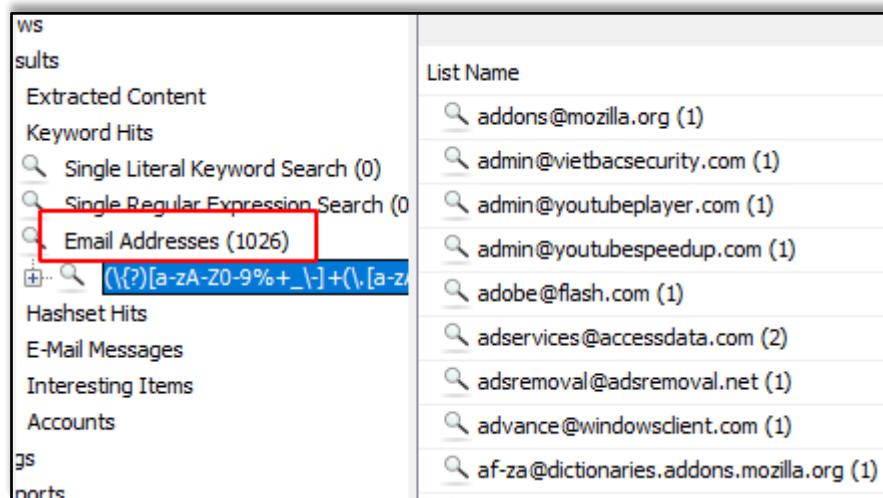
Keyword Hits

In this, any specific keywords can be looked up for in the disk image. The search can be conducted concerning the Exact match, Substring matches, Emails, Literal words, Regular expressions, etc.

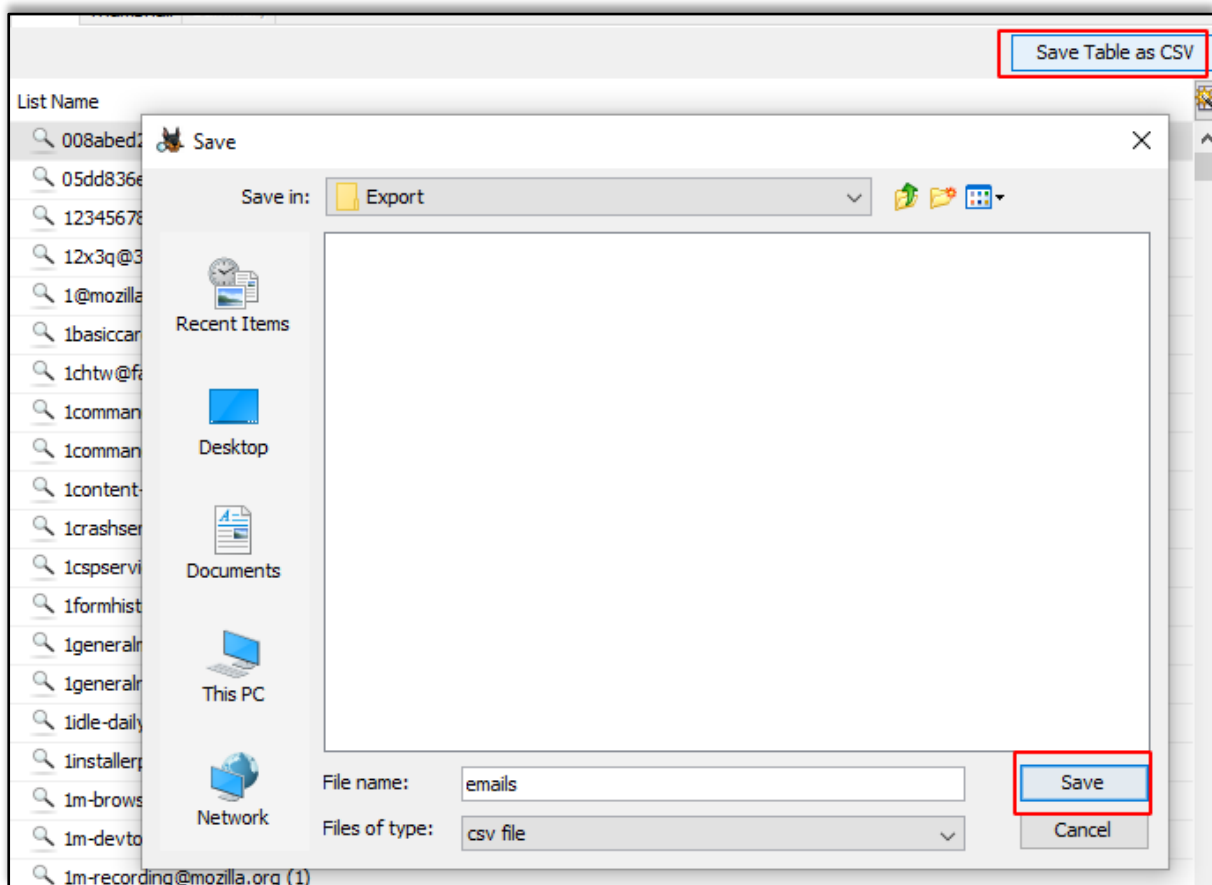


List Name
Single Literal Keyword Search (0)
Single Regular Expression Search (0)
Email Addresses (1026)

You can view the available email addresses.

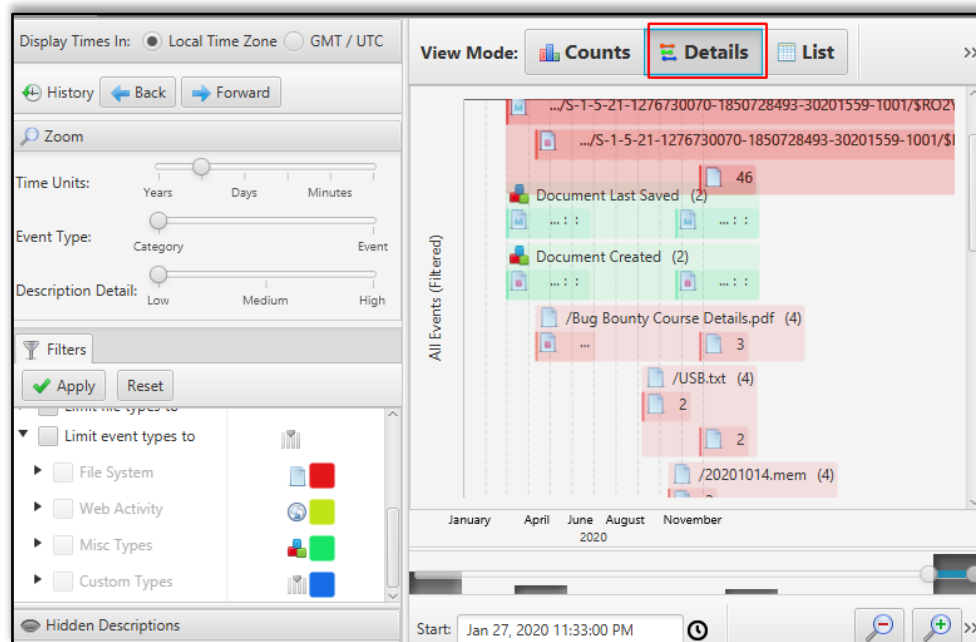
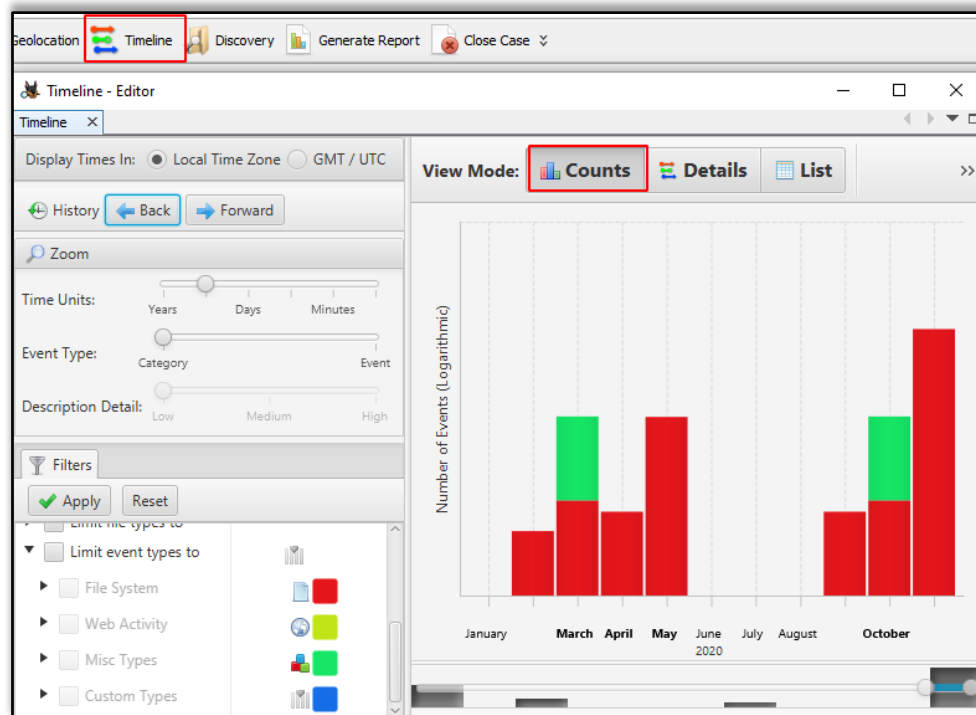


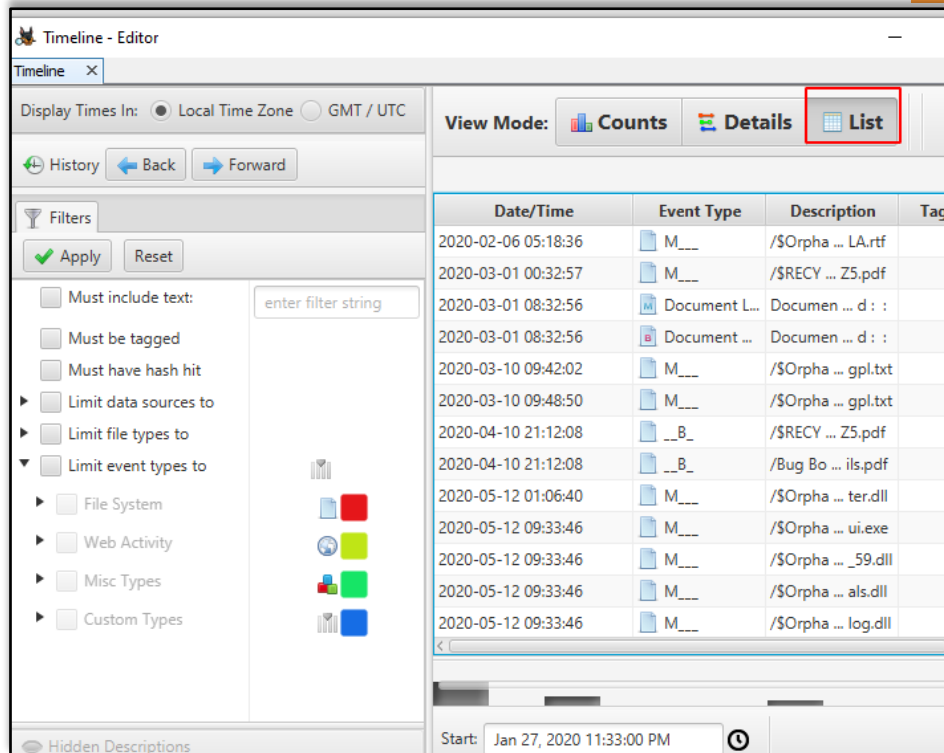
You can choose to export into a CSV format.



Timeline

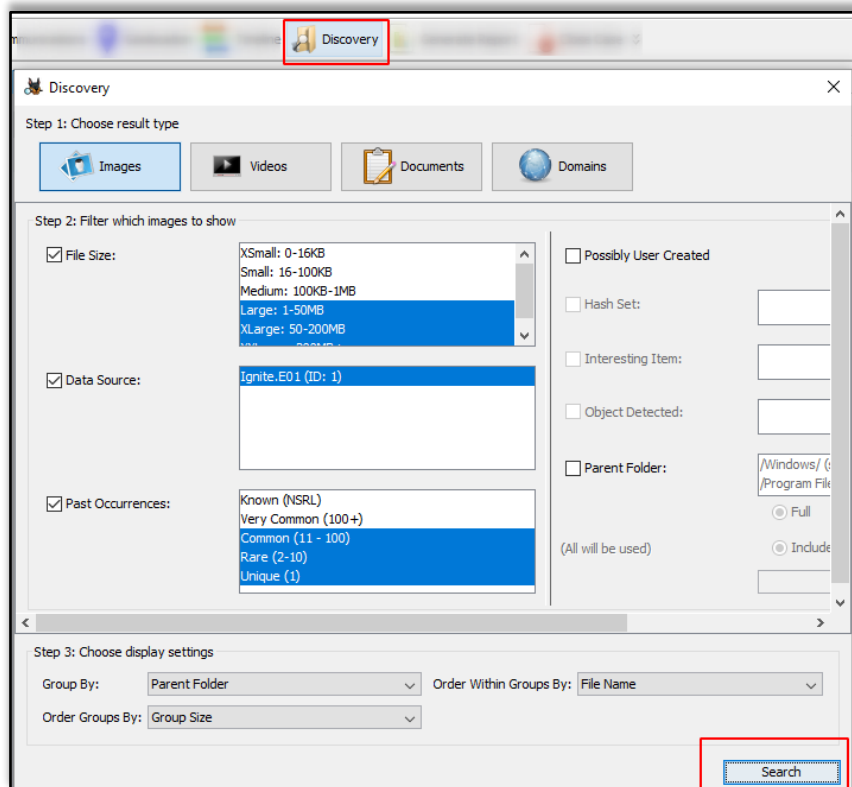
By using this feature, you can get information on the usage of the system in a statistical, detailed, or list form.



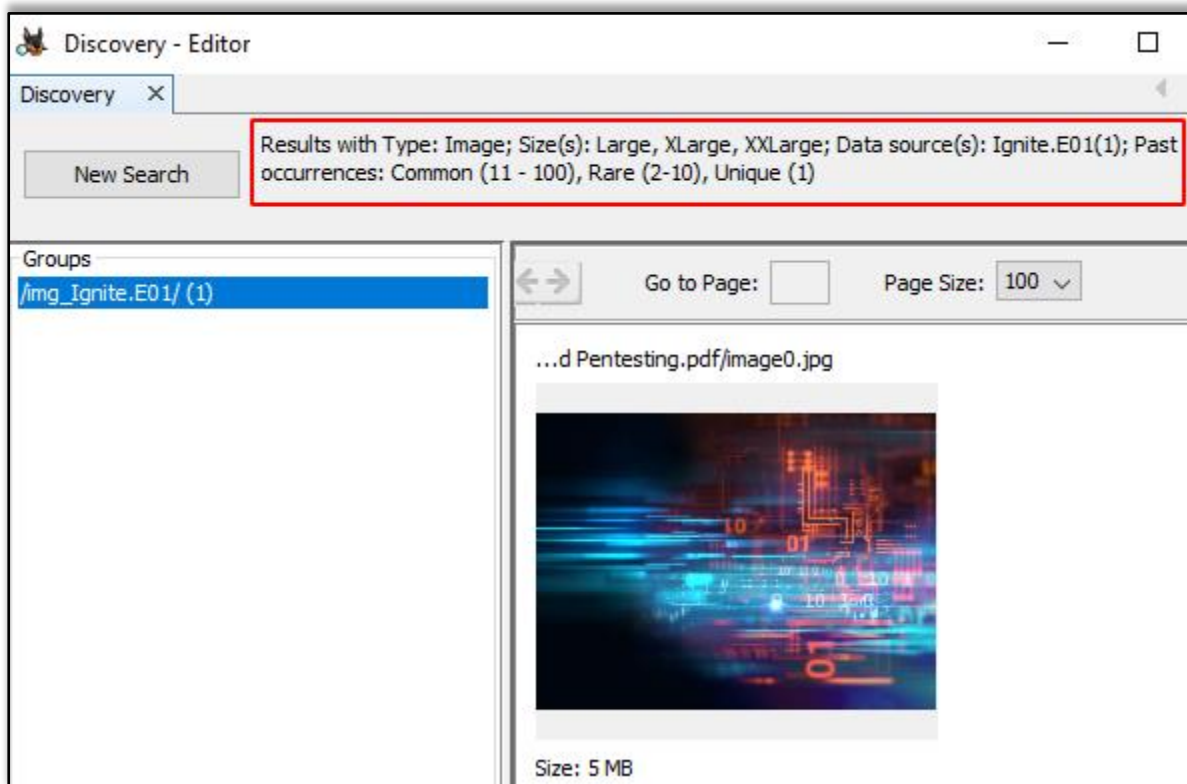


Discovery

This option allows finding media using different filters that are present on the disk image.

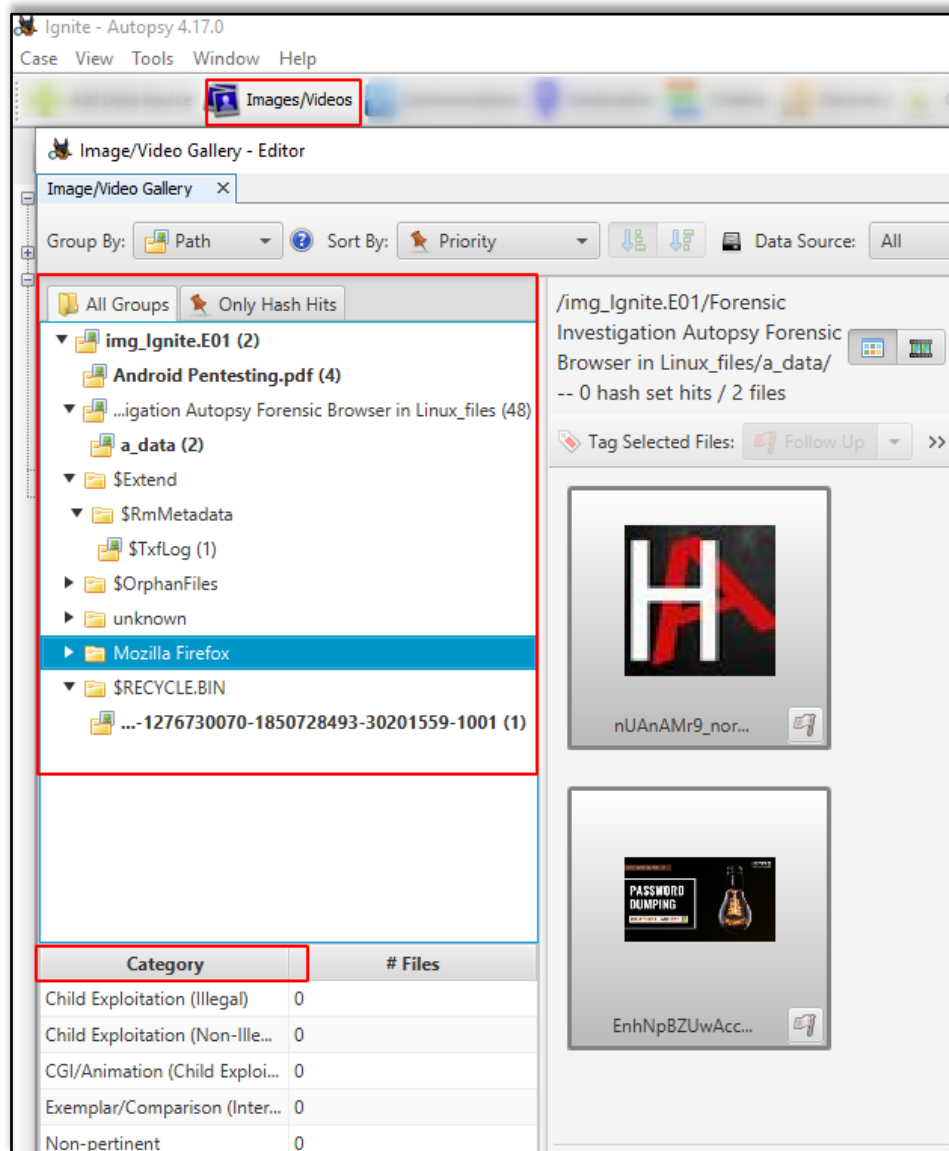


According to the selected options, you can get the desired results.



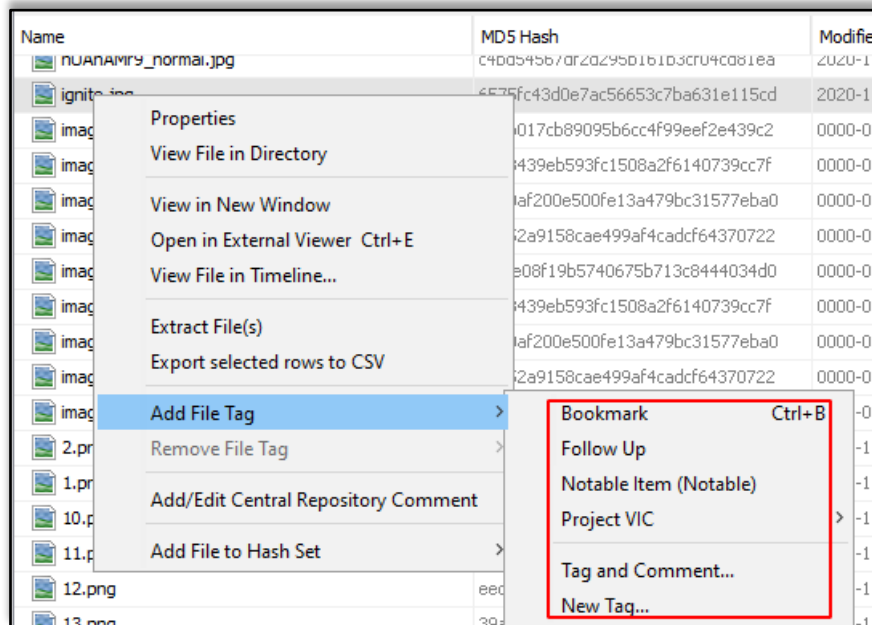
Images/Videos

This option is to find images and videos through various options and multiple categories

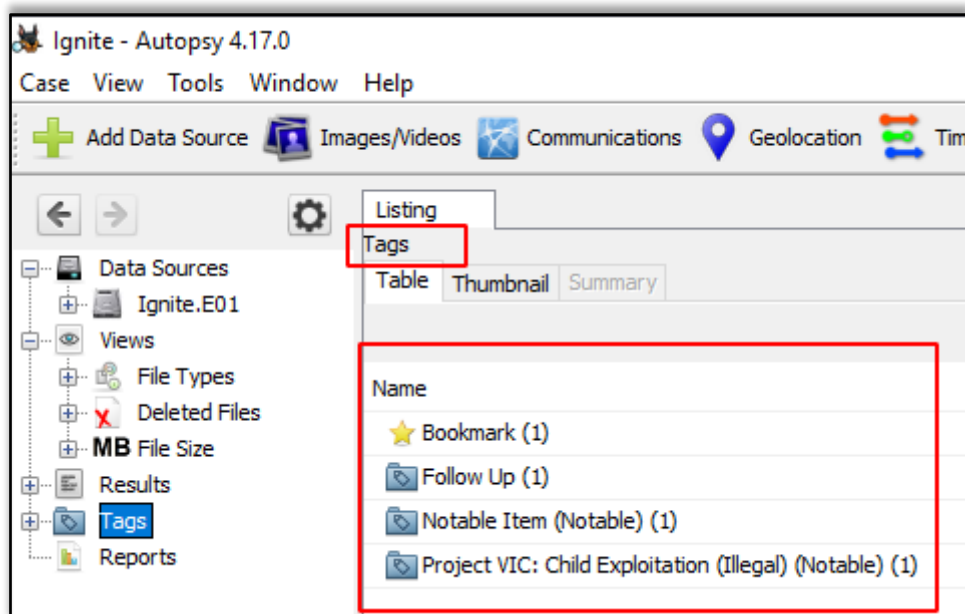


Add File Tag

Tagging can be used to create bookmarks, follow-up, mark as any notable item, etc.

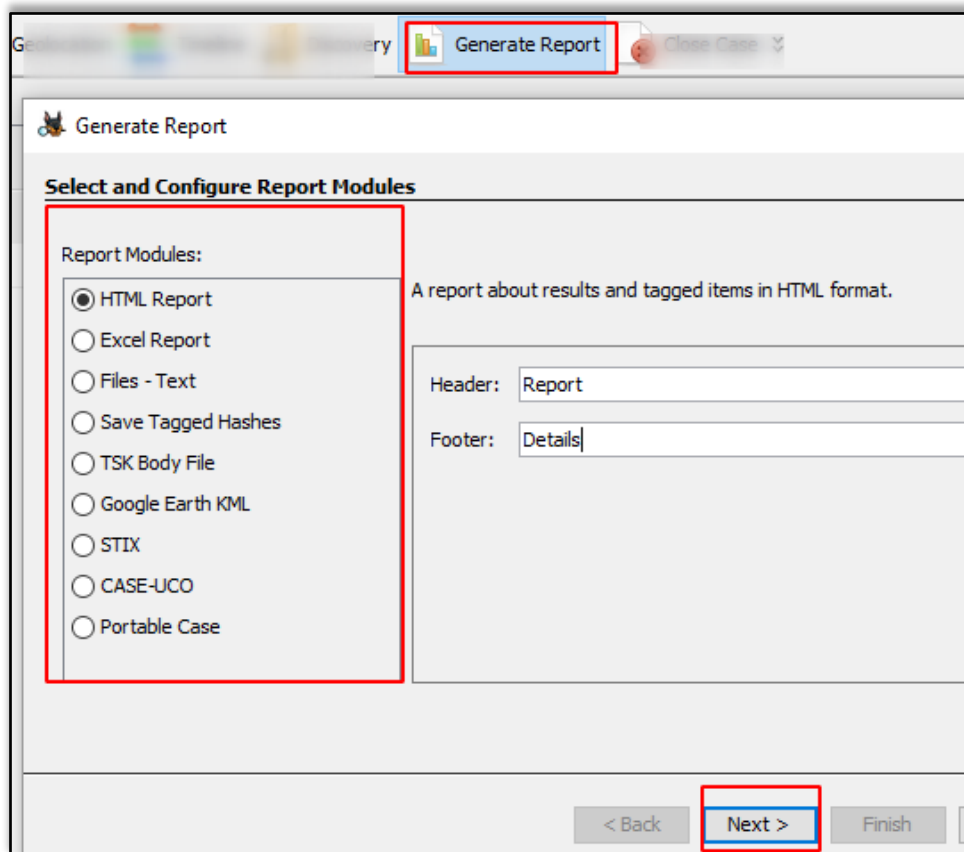


Now when you see the tags options, you will see that files were tagged according to various categories.



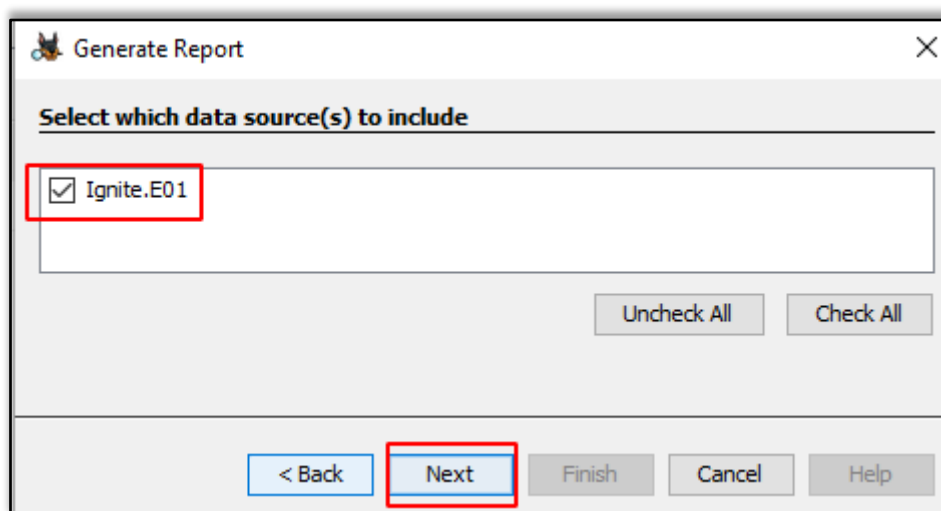
Generate Report

Once the investigation is done, the examiner can generate the report in various formats according to his preference.



The screenshot shows the 'Generate Report' dialog box. At the top, there is a 'Generate Report' button and a 'Close Case' button. The main section is titled 'Select and Configure Report Modules'. It contains a list of 'Report Modules' with radio buttons: HTML Report (selected), Excel Report, Files - Text, Save Tagged Hashes, TSK Body File, Google Earth KML, STIX, CASE-UCO, and Portable Case. To the right of the list, there is a description: 'A report about results and tagged items in HTML format.' Below this, there are input fields for 'Header:' (containing 'Report') and 'Footer:' (containing 'Details'). At the bottom, there are buttons for '< Back', 'Next >', and 'Finish'.

Check the data source whose report needs to be generated.



The screenshot shows the 'Generate Report' dialog box. The title bar says 'Generate Report'. The main section is titled 'Select which data source(s) to include'. It contains a list of data sources with checkboxes: 'Ignite.E01' (checked). Below the list, there are buttons for 'Uncheck All' and 'Check All'. At the bottom, there are buttons for '< Back', 'Next', 'Finish', 'Cancel', and 'Help'.

Here we chose to create the report in HTML format.

Source Module Name	Report Name	Created Time	Report File Path
HTML Report		2020-11-28 15:42:58 IST	C:\Users\raj\Desktop\Ignite\Reports\Ignite HTML Rep

Report Generation Progress...

Complete

HTML Report : C:\Users\raj\Desktop\Ignite\Reports\Ignite HTML Report 11-28-2020-15-42-58\report.html

Complete

Kudos! Your Autopsy Forensic Report is ready!

Report Navigation

- Case Summary
- Keyword Hits (1026)
- Metadata (6)
- Recycle Bin (4)
- Tagged Files (4)
- Tagged Images (4)
- Tagged Results (0)
- Web Downloads (3)

Autopsy Forensic Report

HTML Report Generated on 2020/11/28 15:42:58

Case:

Ignite

Case Number:

001

Number of data sources in case:

1

Examiner:

vishva

Image Information:

Ignite.E01

Timezone:

America/Los_Angeles

Path:

C:\Users\raj\Desktop\Ignite.E01

Software Information:

Autopsy Version:

4.17.0

Android Analyzer Module:

4.17.0

Central Repository Module:

4.17.0

Data Source Integrity Module:

4.17.0

Drone Analyzer Module:

4.17.0

References

- <https://www.hackingarticles.in/comprehensive-guide-on-autopsy-tool-windows/>
- <https://www.hackingarticles.in/forensic-investigation-autopsy-forensic-browser-in-linux/>

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