Computer Forensic Capabilities

Cybercrime Lab

Computer Crime and

Intellectual Property Section

United States Department of Justice

Agenda

- What is computer forensics?
- Where to find computer evidence
- Forensic imaging
- Forensic analysis

What is “Computer Forensics”?

- The preservation, identification, extraction, analysis, and interpretation of digital data, with the expectation that the findings will be introduced in a court of law.

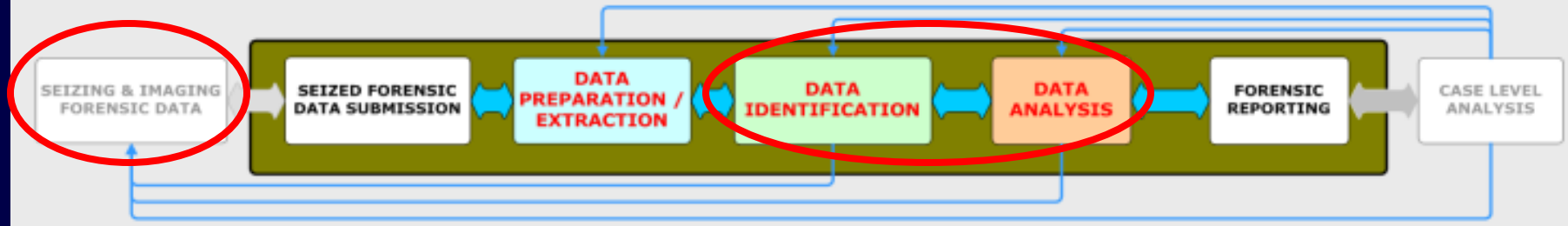
Capabilities

- Reveals direct evidence on the machine
- Associates a machine with data
- Provides investigative leads
- Reveals evidence that corroborates or refutes allegations or alibis
- Reveals behavioral evidence

Case Agent-Examiner Relationship

- The case agent and forensic examiner must work as a team
- Case agent
  - Involves examiner early
  - Explains case
  - Provides focused requests
- Forensic examiner
  - Educates and advises investigator
  - Explains results and limitations

PROCESS OVERVIEW



Where to Find Computer Evidence

- Seize items specified in the search warrant.
  - Computers, laptops, Network Equipment (hubs and switches)
  - Peripherals: CDR's, DVD-R's, Digital cameras, PDA's
  - External Media: CD's, floppy disks, USB thumb drives
  - Paper notes, documentation and manuals, post-it notes.
- Document computer equipment and peripherals prior to removal.
  - Digital pictures, diagrams

Types of Electronic Media

- Desktops to Servers

Variety of Media

But Wait, There's More

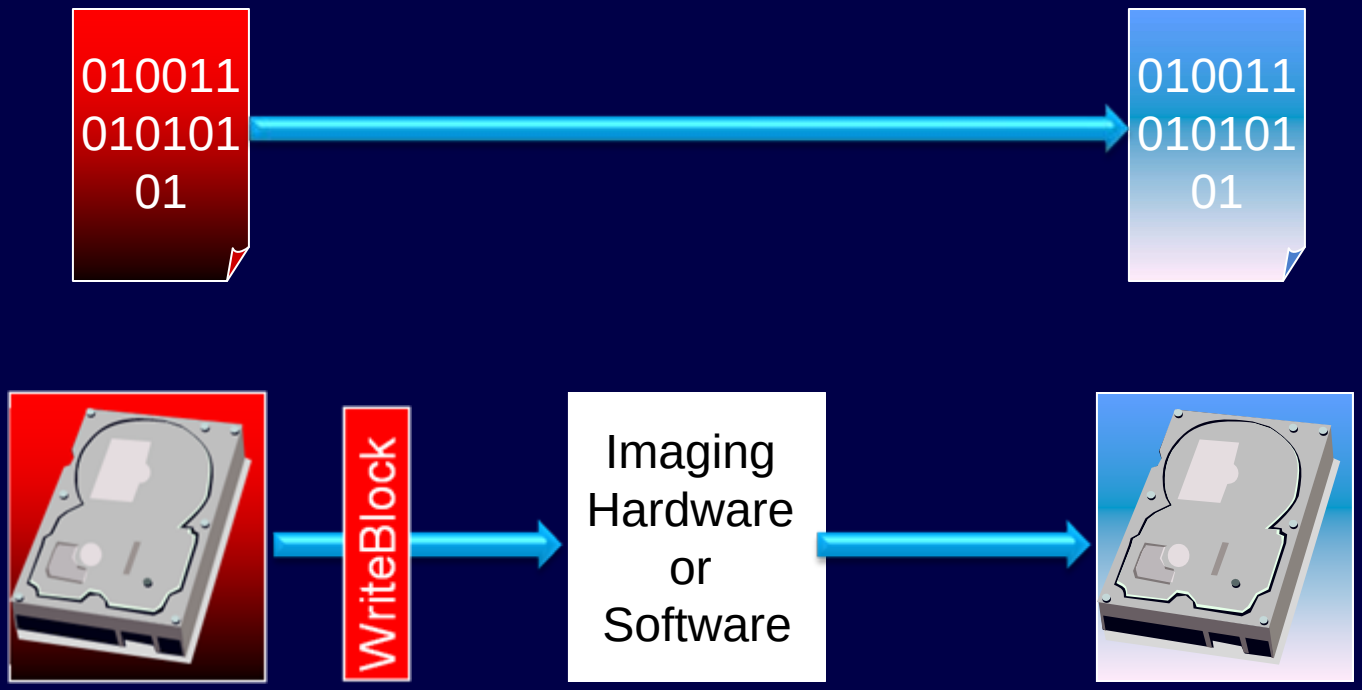
What is Forensic Imaging?

- Obtained by a method which does not, in any way, alter any data on the drive being duplicated
- Duplicate must contain a copy of every bit, byte and sector of the source drive
- Duplicate will not contain any data except filler characters (for bad areas of the media) other than that which was copied from the source media.
- Accurate, Verifiable, Reproducible

Value of Forensic Imaging

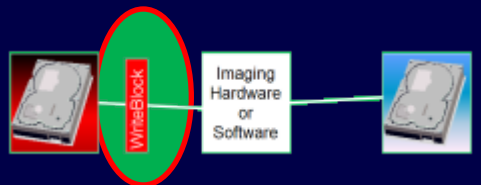
- Incident Response/Forensic Imaging is the MOST IMPORTANT step in the entire electronic investigation
- Failure can invalidate or make inadmissible all further information gathered from the digital evidence
  - Or at least give attorneys a headache

The Imaging Process

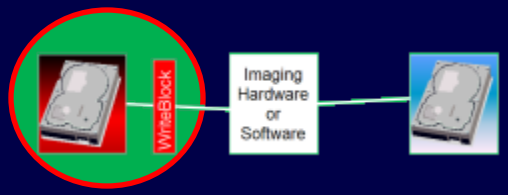


Physical Write Blocks

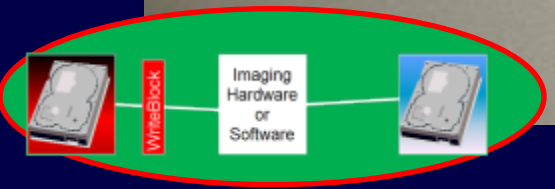
- What Are They?
  - Physical device that prevents writes to the evidence drive
  - BEST method of imaging



Attaching Write Block



Attaching Write Block

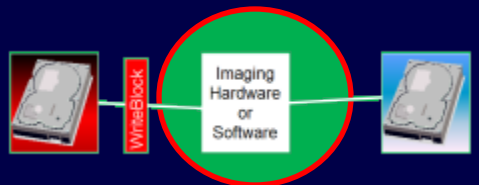


Hardware Imager

Software Imaging

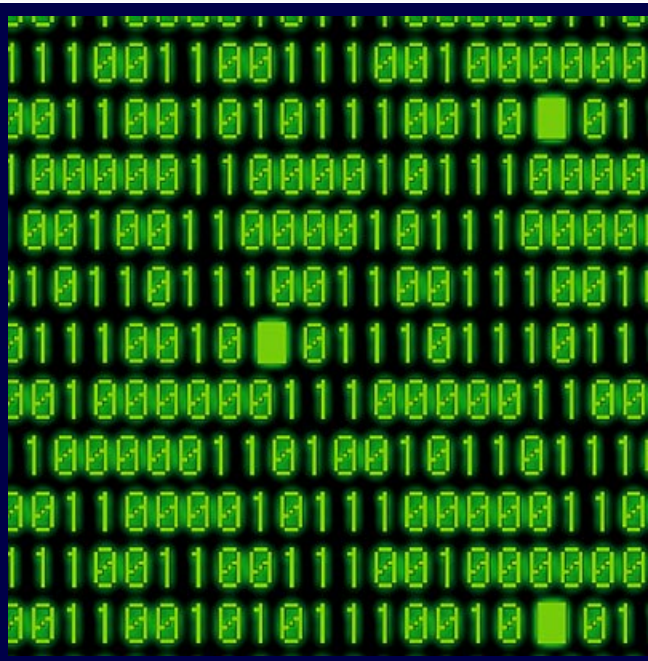
- Bootable CDs or floppies
- Control computer so it only issues read commands to the drive, never write
- Examples:
  - FTK Imager
  - EnCase
  - DD
  - Ghost
  - Others

SafeBack 3.0
Evidence Grade Bitstream Backup Utility

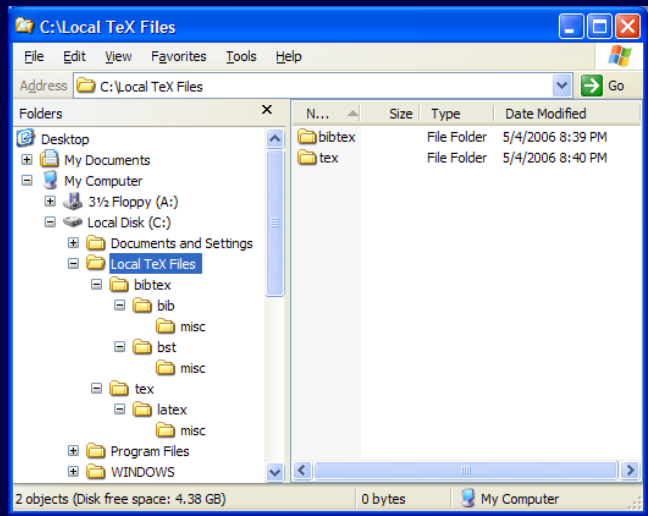


Physical vs. Logical

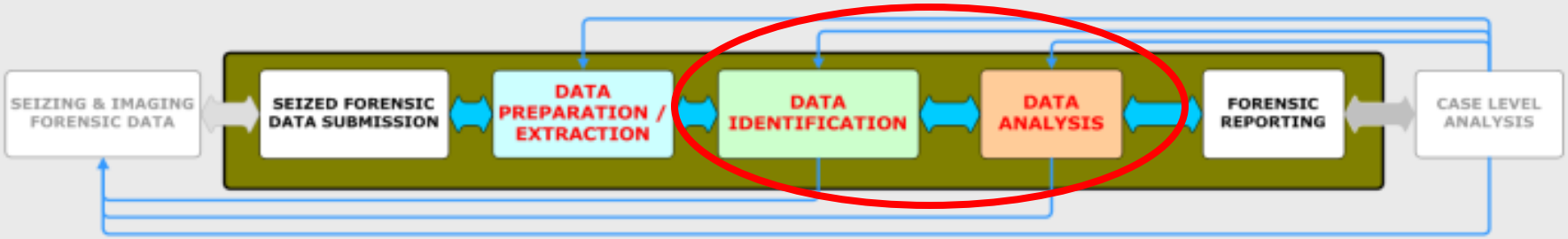
- Physical data structure refers to the actual organization of data on a storage device. Physical imaging gets all the zeros and ones possible from the device.



- Logical data structure refers to how the information appears to a program or user as seen through the operating system. Logical imaging misses data from areas not seen by the operating system.



PROCESS OVERVIEW



What Can the Examiner Find?

- Deleted files
- Text fragments
- Enhanced metafiles (previously printed files)
- Enhanced metadata (embedded information)
- Date/time stamp information
- E-mail messages and chat logs
- Internet usage information (history)
- Archived and compressed files (zip)
- Encoded e-mail attachments
- Images (active and deleted)

- AND MORE...

Forensic Request from Case Agent

- EXAMPLE: Kidnapping assault of Heather Miller
  - Evidence of defendant's involvement with abduction
  - Search for victim's name
  - Pictures of victim
  - Evidence of threatening letter sent to victim
  - Evidence of references to date rape drugs
  - Evidence of conspirator
  - Activity on the computer during time of crime
  - User attribution

Getting Started

- Keyword Searches
- Drawbacks to key word searches
  - Adobe PDF documents
  - Faxes
  - Excel
  - Registry
  - Compound/Compressed Files
  - Several others

Getting Started

- Right now we have the Victim's name "Heather Miller" and we know what she looks like. What do you want to do first?
- Key word search for victim's name reveals no relevant Information.
- Next: review graphics

Graphics Review

AccessData FTK version 1.70.0 build 07.01.09 -- C:\Users\CCIPS\Desktop\FTK Exercise 2-Analysis\PSwift\

File Edit View Tools Help

Overview | Explore | Graphics | E-Mail | Search | Bookmark

BMP_708692[BMP_729731 BMP_766090[BMP_972188[bond3.jpg bordthumb[1] border_08[1]. border_09[1]. border_11[1].

border_14[1]. border_15[1]. border_17[1]. border_18[1]. border_20[1]. border_25[1]. border_26[1]. border_27[1]. border_29[1].

PswiftHD4FTK
Part_1
NONAME-NTFS
$BadClus
$Extend
$LogFile
$MFT
$Secure

List all descendants 0 2729 Total Flagged

OFF Unfiltered All Columns DTZ

File Name	Full Path	Recycl...	Ext	File Type	Category	Subject	Cr Dat
BMP_6485656[4250].bmp	PswiftHD4FTK\Part_1\NONAME-NTFS\DriveFr...		bmp	Bitmap File	Graphic		N/A
BMP_708692[2584].bmp	PswiftHD4FTK\Part_1\NONAME-NTFS\Docum...		bmp	Bitmap File	Graphic		2/12/2
BMP_7297317[4255].bmp	PswiftHD4FTK\Part_1\NONAME-NTFS\DriveFr...		bmp	Bitmap File	Graphic		N/A
[illegible].bmp	PswiftHD4FTK\Part_1\NONAME-NTFS\Docum...		bmp	Bitmap File	Graphic		2/12/2
BMP_972188[614].bmp	PswiftHD4FTK\Part_1\NONAME-NTFS\Docum...		bmp	Bitmap File	Graphic		2/12/2
bond3.jpg	PswiftHD4FTK\Part_1\NONAME-NTFS\Docum...		jpg	JPEG/JFIF File	Graphic		N/A

2729 Listed | 1 Checked Total | PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\L...\Outlook.pst>>Message0005>>Joy.zip>>Joy>>bond3.jpg

Graphics Review

AccessData FTK version 1.70.0 build 07.01.09 -- C:\Users\CCIPS\Desktop\FTK Exercise 2-Analysis\PSwift\

File Edit View Tools Help

Overview | Explore | Graphics | E-Mail | Search | Bookmark

Bookmarks
- Relevant Graphics: Relevant graphic files identified during initial triage of system
  - bond3.jpg
  - cuty1.jpg
  - cuty2.jpg
  - EMF_313456[3679].emf
  - EMF_313456[3685].emf
  - EMF_316920[3679].emf
  - EMF_316920[3685].emf
  - EMF_320300[3685].emf

Bookmark Name: Relevant Graphics

Bookmark Comment: Relevant graphic files identified during initial triage of system

Bookmarked Files: 26

File Name	File Path
bond3.jpg	PswiftHD4FTK\Part_1\NONAME-...
cuty1.jpg	PswiftHD4FTK\Part_1\NONAME-...

Remember file position/selection | Update to current position/selection

Save Changes | Clear Changes | Include in Report | Export files

All Columns | DTZ

File Name	
bond3.jpg	:\Documents and Settings\spike\Local Settings\Application Dat \Microsoft\Outlook\Outlook.pst>>Messar
cuty1.jpg	:\Documents and Settings\spike\Local Settings\Application Data\Microsoft\Outlook\Outlook.pst>>Messag
cuty2.jpg	:\Documents and Settings\spike\Local Settings\Application Data\Microsoft\Outlook\Outlook.pst>>Messag
EMF_313456[3679].emf	:\WINDOWS\system32\spool\PRINTERS\FP00000.SPL>>EMF_313456[3679].emf
EMF_313456[3685].emf	:\WINDOWS\system32\spool\PRINTERS\FP00001.SPL>>EMF_313456[3685].emf
EMF_316920[3679].emf	:\WINDOWS\system32\spool\PRINTERS\FP00000.SPL>>EMF_316920[3679].emf
EMF_316920[3685].emf	:\WINDOWS\system32\spool\PRINTERS\FP00001.SPL>>EMF_316920[3685].emf
EMF_320300[3685].emf	:\WINDOWS\system32\spool\PRINTERS\FP00001.SPL>>EMF_320300[3685].emf
EMF_80[36791.emf	:\WINDOWS\system32\spool\PRINTERS\FP00000.SPL>>EMF_80[36791.emf

Total | PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\L...\Outlook.pst>>Message0005>>Joy.zip>>Joy>>bond3.jpg

Email with attachment

Email Review

Deleted Email

AccessData FTK 1.70.0 DEMO VERSION -- C:\Users\CCIPS\Desktop\F4

File Edit View Tools Help

Overview | Explore | Graphics | E-Ma | Bookmark

Email
- Outlook.pst
  - Personal Folders
    - Top of Person
      - Calendar
      - Contacts
      - Deleted Ite

List all descendants

All Columns

File Name	
Message0002	Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application Data\Microsoft\Outlook\Outlook.pst>
Message0003	Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application Data\Microsoft\Outlook\Outlook.pst>
Message0004	t_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application Data\Microsoft\Outlook\Outlook.pst>
Message0005	PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application Data\Microsoft\Outlook\Outlook.pst>
Message0006	PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application Data\Microsoft\Outlook\Outlook.pst>
Personal Folders	PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application Data\Microsoft\Outlook\Outlook.pst>

Messag 005

Subject:	pics from last weekend
From:	Maryland Dirtbag
Date:	2/20/2007 1:22:41 PM
To:	pswift2007@gmail.com

Message Body

Buddy, here is the pics from last weekend. I flet like a king on presidents holiday.

>From: "Peter Swift" <pswift2007@gmail.com>
>To: <mdhosebag@hotmail.com>
>Subject: last one
>Date: Thu, 15 Feb 2007 14:53:26 -0500
>
>this is the last one for a bit, you should be able to get you jollies from

TO / FROM / SUBJECT/ DATE

- Message0005
  - Joy.zip
    - Joy
      - bond3.jpg
      - cuty1.jpg
      - cuty2.jpg
      - strugle.jpg
      - strugle2.jpg
      - tiptoe.jpg

Listed | 9 Checked Total | PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application Data\Micr...\Outlook.pst>>Message0005

Headers

Email Headers

Standard Header Information

Delivered-To: pswift2007@gmail.com
Received: by 10.64.153.3 with SMTP id a3cs152336qbe;
Tue, 20 Feb 2007 10:22:41 -0800 (PST)
Received: by 10.114.126.1 with SMTP id y1mr3442785wac.1171995758192;
Tue, 20 Feb 2007 10:22:38 -0800 (PST)

Tue, 20 Feb 2007 10:21:38 -0800
Message-ID: <BAY115-F286B576945D5DB4E9F0288B3890@phx.gbl>
Received: from 65.54.250.200 by by115fd.bay115.hotmail.msn.com with HTTP;
Tue, 20 Feb 2007 18:21:36 GMT
X-Originating-IP [66.166.254.82]
X-Originating-Email: [mdhosebag@hotmail.com]
X-Sender: mdhosebag@hotmail.com
From: "Maryland Dirtbag" <mdhosebag@hotmail.com>
To: pswift2007@gmail.com
Bcc:
Subject: pics from last weekend
Date: Tue, 20 Feb 2007 13:21:36 -0500
Mime-Version: 1.0
Content-Type: multipart/mixed; boundary="----=_NextPart_000_1290_1f21_3b10"
X-OriginalArrivalTime: 20 Feb 2007 18:21:38.0744 (UTC) FILETIME=[F6436B80:01C7551B]
Return-Path: mdhosebag@hotmail.com

Content-Type: multipart/mixed; boundary="----=_NextPart_000_1290_1f21_3b10"
X-OriginalArrivalTime: 20 Feb 2007 18:21:38.0744 (UTC)

Time Analysis

Types of Email Metadata

- What types of Metadata are available
  - When Created
  - How Created
  - When Sent
  - When Received
  - Who Sent/Received
  - Route
  - Time Analysis
  - Graphic Analysis
    - Origination
    - Who Created it
    - When Created
  - Application Logs

Time Analysis

Unfiltered | Default File List Column Se | DTZ

	File Name	R.	Cr Date
\Documents and Settings\spike\Local Settings\History\His...	MSHist0120070220200...		2/20/2007 1:22:10 PM
\Documents and Settings\spike\Local Settings\Application...	Message0005		2/20/2007 1:24:27 PM
\Documents and Settings\spike\Recent\Joy.zip.lnk	Joy.zip.lnk		2/20/2007 1:25:27 PM
\my joy\Thumbs.db\encryptable	encryptable		2/20/2007 1:26:55 PM
\my joy\Thumbs.db	Thumbs.db		2/20/2007 1:26:55 PM
\my joy\back yard fun\Thumbs.db\encryptable	encryptable		2/20/2007 1:26:56 PM
\my joy\back yard fun\Thumbs.db	Thumbs.db		2/20/2007 1:26:56 PM
\Documents and Settings\spike\Local Settings\Application...	Message0006		2/20/2007 1:27:40 PM
\Documents and Settings\spike\Local Settings\Temporary...	21342DD7F237E3C2D...		2/20/2007 1:30:25 PM

7 Highlighted

Reply email

Reply Email

AccessData FTK 1.70.0 DEMO VERSION -- C:\Users\CCIPS\Desktop\F4P-Exercise 2-Analysis\PSwift\

File Edit View Tools Help

Overview | Explore | Graphics | E-Mail | Search | Bookmark

- Case
  - PswiftHD4FTK
    - Part_1
      - NONAME-NTFS
        - $BadClus
        - $Extend
        - $Secure
        - [unnamed]
        - Documents and Settings
        - my joy
        - Program Files
        - System Volume Information
        - WINDOWS
    - UnpartSpace

List all descendants

Message0006

Subject:	**RE: pics from last weekend**
From:	Peter Swift
Date:	2/20/2007 1:29:00 PM
To:	'Maryland Dirtbag'

Message Body

Thank!

-----Original Message-----
From: Maryland Dirtbag [mailto:mdhosebag@hotmail.com]
Sent: Tuesday, February 20, 2007 1:22 PM
To: pswift2007@gmail.com
Subject: pics from last weekend

OFF Unfiltered | Default File List Column Se | DTZ

Full Path	File Name	R.	Cr Date	Mod Date
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\History\His...	MSHist0120070220200...		2/20/2007 1:22:10 PM	2/12/2007 3:35:29 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application...	Message0005		2/20/2007 1:24:27 PM	2/21/2007 7:28:26 AM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Recent\Joy.zip.lnk	Joy.zip.lnk		2/20/2007 1:25:27 PM	2/20/2007 1:32:02 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\my joy\Thumbs.db\encryptable	encryptable		2/20/2007 1:26:55 PM	2/12/2007 2:39:37 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\my joy\Thumbs.db	Thumbs.db		2/20/2007 1:26:55 PM	2/12/2007 2:39:37 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\my joy\back yard fun\Thumbs.db\encryptable	encryptable		2/20/2007 1:26:56 PM	2/12/2007 2:39:36 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\my joy\back yard fun\Thumbs.db	Thumbs.db		2/20/2007 1:26:56 PM	2/12/2007 2:39:36 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application...	Message0006		2/20/2007 1:27:40 PM	2/20/2007 1:27:40 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Temporary...	21342DD7F237E3C2D...		2/20/2007 1:30:25 PM	2/20/2007 1:30:25 PM

PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application Data\Micr...\Outlook.pst>>Message0006

Same info in temp internet files

Internet Cache-Copy of “Message005”

AccessData FTK 1.70.0 DEMO VERSION -- C:\Users\CCIPS\Desktop\FTK Exercise 2-Analysis\PSwift\

File Edit View Tools Help

Overview | Explore | Graphics | E-Mail | Search | Bookmark

Indexed Search | Live Search

Search Term: Add Import Options

Indexed Words	Co...	Search Items	Hits	Files

27 Hits - [pagefile.sys_02] PswiftHD4FTK\Part_1\NONAME-NTFS\pagefile.sys_02
26 Hits - [DriveFreeSpace110] PswiftHD4FTK\Part_1\NONAME-NTFS\DriveFreeSpace110
18 Hits - [Events Log.txt] PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\My Documents\My Chat Logs\Event
18 Hits - [$LogFile] PswiftHD4FTK\Part_1\NONAME-NTFS\$LogFile
15 Hits - [NTUSER.DAT] PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\NTUSER.DAT
12 Hits - [Outlook.NK2] PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Application Data\Microsoft\Outlook\
11 Hits - [CA2VCHQF] PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Temporary Internet Files
10 Hits - [DriveFreeSpace116] PswiftHD4FTK\Part_1\NONAME-NTFS\DriveFreeSpace116
8 Hits - [$I30] PswiftHD4FTK\Part_1

WHY

,[]
,"Feb 20, 2007 1:21 PM","pics from last weekend","",[["0.1","Joy.zip","application/zip",105373,-1,"0.1"]
]
,0,,,"Tue Feb 20 2007_1:21 PM","On 2/20/07, Maryland Dirtbag <mdhosebag@hotmail.com> wrote:","On 2/20/07, <b class\u003dgmail_sendername>Maryland Dirtbag <mdhosebag@hotmail.com> wrote:","hotmail.com",,,"","",0,,"<BAY115-F286B576945D5DB4E9F0288B3890@phx.gbl>",1171995696000,,0,"In reply to \"pics from last weekend\"",0]
,["mb","<div style\u003d\"direction:ltr\">Buddy, here is the pics from last weekend. I flet like a king on presidents
holiday.

>From: "Peter Swift" <<a onclick\u003d\"return top.js.OpenExtLink(window,event,this)\" href\u003d\"mailto:pswift2007@gmail.com\">pswift2007@gmail.com>
>To: <<a onclick\u003d\"return top.js.OpenExtLink(window,event,this)\" href\u003d\"mailto:mdhosebag@hotmail.com\">mdhosebag@hotmail.com>
>Subject: last one
>Date: Thu, 15 Feb 2007 14:53:26 -0500
>
>this is the last one for a bit, you should be able to get you jollies from
>these. Ill talk more later

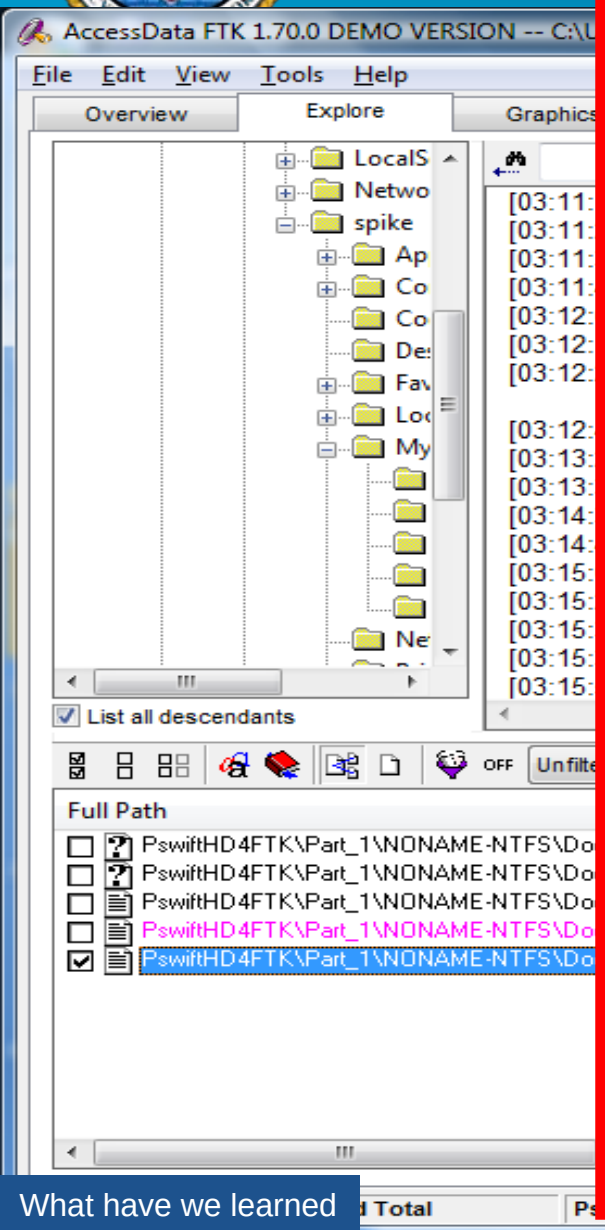
><< office10.jpg >>
 ",1]
,["mb","<div style\u003d\"direction:ltr\"><span class\u003dad>

File Name	Full Path	Cr Date	Acc Date	Mod Date	Recycl...	Ext	File Type
CA2VCHQF	PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Temporary Inter...	2/20/2007 1:31:06 PM	2/20/2007 1:31:06 PM	2/20/2007 1:31:06 PM			Unknown Fil...
change.log	PswiftHD4FTK\Part_1\NONAME-NTFS\System Volume Information_restore{593F298F-B7D6-4A3D-A2...	2/12/2007 3:35:19 PM	2/12/2007 2:38:52 PM	2/12/2007 2:38:52 PM		log	Unknown Fil...
DriveFreeSpace021	PswiftHD4FTK\Part_1\NONAME-NTFS\DriveFreeSpace021	N/A	N/A	N/A			Drive Free S...
DriveFreeSpace024	PswiftHD4FTK\Part_1\NONAME-NTFS\DriveFreeSpace024	N/A	N/A	N/A			Drive Free S...

PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Temporary Internet Files\Content.IE5\Q1BX2LXT\CA2VCHQF

Chat logs in time analysis

Chat Logs



Session Start: Friday, February 16, 2007
Participants:
Peter (pswift2007@hotmail.com)
Maryland (mdhosebag@hotmail.com)

[03:11:39 PM] Maryland: pics not doing it for me any more.
[03:11:48 PM] Peter: i know what you mean
[03:12:09 PM] Maryland: I found a suitable replacement
[03:12:12 PM] Peter: What are you thinking about
[03:12:29 PM] Maryland: you remember the drugged up mom I was telling you about?
[03:12:45 PM] Peter: Yeah? What do you have in mind?
[03:13:22 PM] Maryland: How about creating some pics of our own?
[03:13:30 PM] Peter: cool. how
[03:14:33 PM] Maryland: Daughter is at the bus stop every day at 3PM
[03:14:40 PM] Peter: yeah
[03:15:08 PM] Maryland: we "invite" her to our clubhouse.
[03:15:26 PM] Maryland: Then let the fun begin...
[03:15:31 PM] Peter: Nice, count me in
[03:15:35 PM] Peter: when?
[03:15:52 PM] Maryland: meet me sat at 2PM at the Exxon near the school.
[03:16:11 PM] Maryland: bring your digital camera, I have all the rest.
[03:16:19 PM] Peter: sweet
[03:16:25 PM] Peter: see ya at 2

What have we learned

Joy.zip

- Metadata from Joy.zip

How are we going to search for this? Keyword

Time Analysis

Unfiltered | Default File List Column Se | DTZ

	File Name	R.	Cr Date
\Documents and Settings\spike\Local Settings\History\His...	MSHist0120070220200...		2/20/2007 1:22:10 PM
\Documents and Settings\spike\Local Settings\Application...	Message0005		2/20/2007 1:24:27 PM
\Documents and Settings\spike\Recent\Joy.zip.lnk	Joy.zip.lnk		2/20/2007 1:25:27 PM
\my joy\Thumbs.db\encryptable	encryptable		2/20/2007 1:26:55 PM
\my joy\Thumbs.db	Thumbs.db		2/20/2007 1:26:55 PM
\my joy\back yard fun\Thumbs.db\encryptable	encryptable		2/20/2007 1:26:56 PM
\my joy\back yard fun\Thumbs.db	Thumbs.db		2/20/2007 1:26:56 PM
\Documents and Settings\spike\Local Settings\Application...	Message0006		2/20/2007 1:27:40 PM
\Documents and Settings\spike\Local Settings\Temporary...	21342DD7F237E3C2D...		2/20/2007 1:30:25 PM

7 Highlighted

Link File w/Thumb drive

Link File

AccessData FTK 1.70.0 DEMO VERSION -- C:\Users\CCIPS\Desktop\F4P-Exercise 2-Analysis\PSwift\

File Edit View Tools Help

Overview | Explore | Graphics | E-Mail | Search | Bookmark

- Case
  - PswiftHD4FTK
    - Part_1
      - NONAME-NTFS
        - $BadClus
        - $Extend
        - $Secure
        - [unnamed]
        - Documents and Settings
        - my joy
        - Program Files
        - System Volume Information
        - WINDOWS
    - UnpartSpace

List all descendants

Shortcut File

Link target information	
Local Path	E:\Joy.zip
Volume Type	Removeable Disk
Volume Label	TRANSCEND
Volume Serial Number	0899-373D
File size	0
Creation time (UTC)	N/A

OFF Unfiltered | Default File List Column Se | DTZ

Full Path	File Name	R.	Cr Date	Mod Date
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\History\His...	index.dat		2/20/2007 1:22:10 PM	2/20/2007 1:22:10 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\History\His...	index.dat		2/20/2007 1:22:10 PM	2/15/2007 3:09:46 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\History\His...	MSHist0120070212200...		2/20/2007 1:22:10 PM	2/12/2007 3:35:29 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\History\His...	MSHist0120070220200...		2/20/2007 1:22:10 PM	2/12/2007 3:35:29 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Local Settings\Application...	Message0005		2/20/2007 1:24:27 PM	2/21/2007 7:28:26 AM
PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Recent\Joy.zip.lnk	Joy.zip.lnk		2/20/2007 1:25:27 PM	2/20/2007 1:32:02 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\my joy\Thumbs.db\encryptable	encryptable		2/20/2007 1:26:55 PM	2/12/2007 2:39:37 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\my joy\Thumbs.db	Thumbs.db		2/20/2007 1:26:55 PM	2/12/2007 2:39:37 PM
PswiftHD4FTK\Part_1\NONAME-NTFS\my joy\back yard fun\Thumbs.db\encryptable	encryptable		2/20/2007 1:26:56 PM	2/12/2007 2:39:36 PM

PswiftHD4FTK\Part_1\NONAME-NTFS\Documents and Settings\spike\Recent\Joy.zip.lnk

Log file c:\my joy\joy.zip

What does this tell us?

AccessData FTK 1.70.0 DEMO VERSION -- C:\Users\CCIPS\Desktop\FTK Exercise 2-Analysis\PSwift\

File Edit View Tools Help

Overview | Explore | Graphics | E-Mail | Search | Bookmark

Indexed Search | Live Search

Search Term: Add Import Options

Indexed Words | Co... | Search Items | Hits | Files

Edit Item | Remove Item | Remove All | View Item Results »

Cumulative operator: AND OR | View Cumulative Results »

16 Hits - [$LogFile] PswiftHD4FTK\Part_1\NONAME-NTFS\$LogFile

```
><td width\u003d7><td><b><<Joy>>.zip</b><br>103K  <a href \u003d\"/mail/?attid\u003d0.1&disp\u003dattd&view\u
><td width\u003d7><td><b>Joy.<<zip>></b><br>103K  <a href \u003d\"/mail/?attid\u003d0.1&disp\u003dattd&view\u003d
Joy.lnk *RCRD( FILE0 Joy.lnk <<Joy>>.zip.lnk JOYZIP~1.LNK FILE0 Joy.zip.lnk0 JOYZIP~1.L *RCRD( LARams-LetsRamIt.lnk LARAMS
lnk *RCRD( FILE0 Joy.lnk Joy.<<zip>>.lnk JOYZIP~1.LNK FILE0 Joy.zip.lnk0 JOYZIP~1.L *RCRD( LARams-LetsRamIt.lnk LARAMS~1.l
y.zip.lnk JOYZIP~1.LNK FILE0 <<Joy>>.zip.lnk0 JOYZIP~1.L *RCRD( LARams-LetsRamIt.lnk LARAMS~1.LNK FILE0 LARAMS~1.LNKa
p.lnk JOYZIP~1.LNK FILE0 Joy.<<zip>>.lnk0 JOYZIP~1.L *RCRD( LARams-LetsRamIt.lnk LARAMS~1.LNK FILE0 LARAMS~1.LNKamI
lnk *RCRD( my joy.lnkN INDX( <<Joy>>.zip.lnk JOYZIP~1.LNK LARams-LetsRamIt.lnk LARAMS~1.LNK mdhosebag@hotmail.com
*RCRD( my joy.lnkN INDX( Joy.<<zip>>.lnk JOYZIP~1.LNK LARams-LetsRamIt.lnk LARAMS~1.LNK mdhosebag@hotmail.com.txt
oy.lnkN MYCHAT~1.LNK Joy.lnk <<Joy>>.zip.lnk JOYZIP~1.LNK LARams-LetsRamIt.lnk LARAMS~1.LNK mdhosebag@hotmail.co
nkN MYCHAT~1.LNK Joy.lnk Joy.<<zip>>.lnk JOYZIP~1.LNK LARams-LetsRamIt.lnk LARAMS~1.LNK mdhosebag@hotmail.com.t
Joy` spanky-home *RCRD( Joy.<<zip>>.zip Joy.zip TRANSCEND E:\Joy.zip LGFM<Q spike MYCHAT~1 zO6p My Chat Logs C:\Do
\Joy` spanky-home *RCRD( Joy.<<zip>> Joy.zip TRANSCEND E:\Joy.zip LGFM<Q spike MYCHAT~1 zO6p My Chat Logs C:\Docum
` spanky-home *RCRD( Joy.zip <<Joy>>.zip TRANSCEND E:\Joy.zip LGFM<Q spike MYCHAT~1 zO6p My Chat Logs C:\Documents
anky-home *RCRD( Joy.zip Joy.<<zip>> TRANSCEND E:\Joy.zip LGFM<Q spike MYCHAT~1 zO6p My Chat Logs C:\Documents an
Joy.zip Joy.zip TRANSCEND E:\<<Joy>>.zip LGFM<Q spike MYCHAT~1 zO6p My Chat Logs C:\Documents and Settings\spike\My
```

U63cU63c
C:\my joy\Joy
..\..\..\my joy\Joy`
spanky-home
*RCRD(
Joy.zip
Joy.zip
TRANSCEND
E:\Joy.zip
LGFM<Q
spike
MYCHAT~1

TRANSCEND?

OFF Unfiltered | All Columns | DTZ

File Name	Full Path	Cr Date	Acc Date	Mod Date	Recycl...	Ext	File Type
$LogFile	PswiftHD4FTK\Part_1\NONAME-NTFS\$LogFile	2/12/2007 12:54:37 ...	2/12/2007 12:54:37 ...	2/12/2007 12:54:37 ...			Unknown Fil...
$MFT	PswiftHD4FTK\Part_1\NONAME-NTFS\$MFT	2/12/2007 12:54:37 ...	2/12/2007 12:54:37 ...	2/12/2007 12:54:37 ...			Unknown Fil...

20 Listed | 1 Checked Total | PswiftHD4FTK\Part_1\NONAME-NTFS\$LogFile

What is TRANSCEND - Google

What is “Transcend”?

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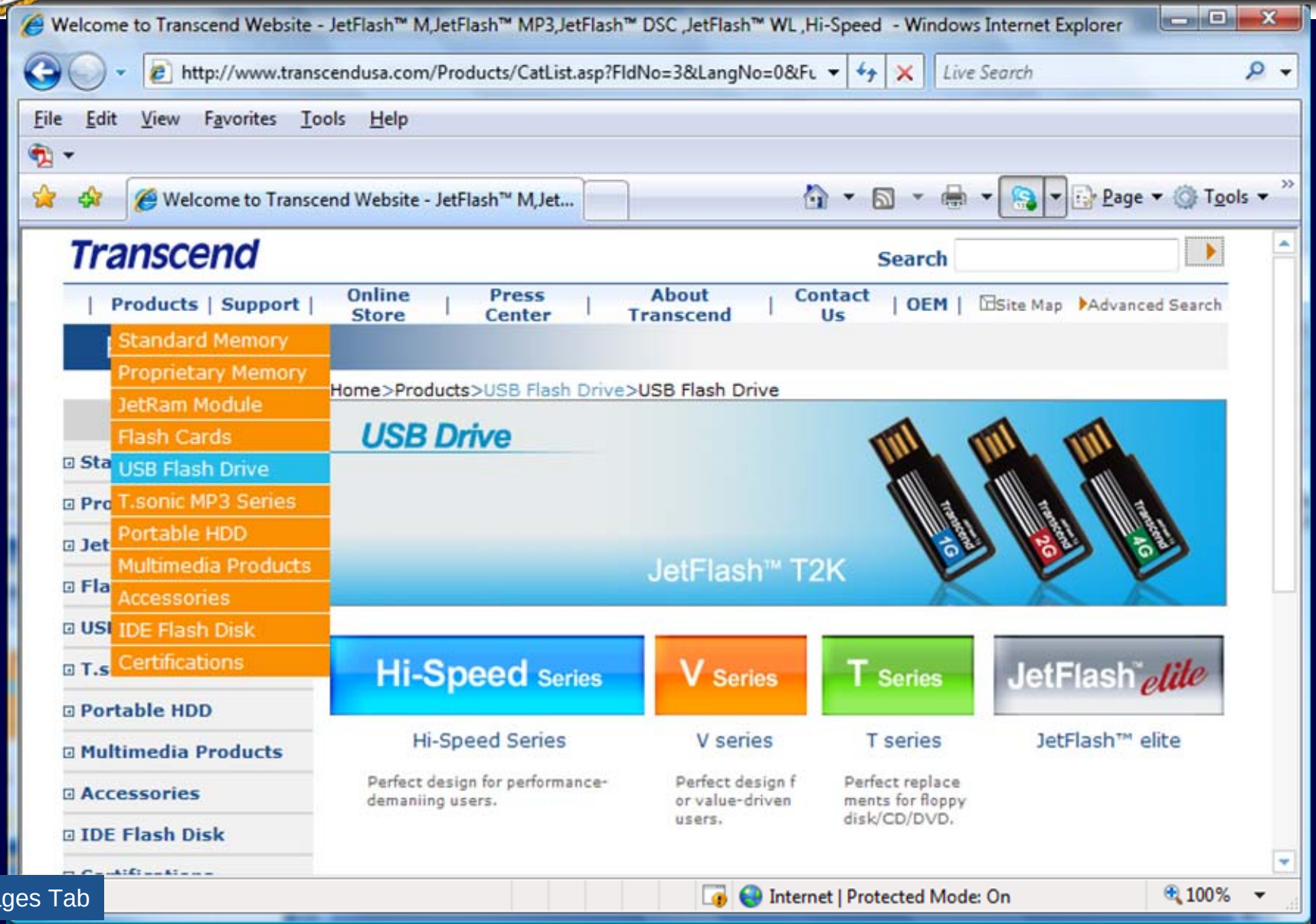

Click on Images Tab

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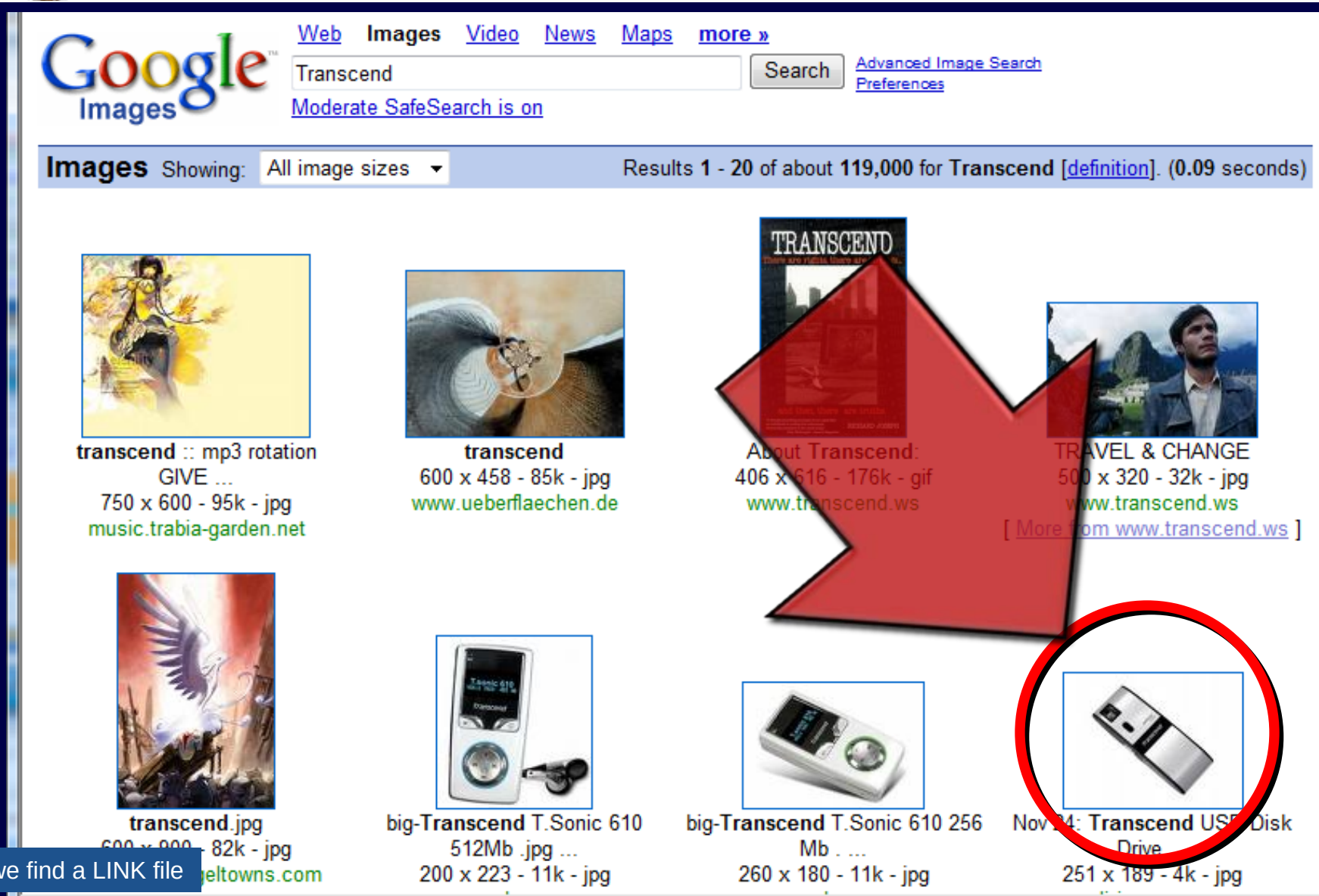

Next we find a LINK file

Web History

- Identify web surfing session
  - Where/when did they open browser?
  - How did they get to the significant finding?
  - Web mail
  - Other Activities?
- All goes toward user attribution

Summary

- Electronic evidence is everywhere
- Case agents must work closely with examiners
- Forensic examiners must look beyond the “Single File”
- Metadata can be critical to establishing user attribution
- Even if evidence itself has been deleted/destroyed, numerous artifacts can be found

Contact

Cybercrime Lab
Computer Crime and
Intellectual Property Section
United States Department of Justice

- Phone:202-514-1026
- Web:www.cybercrime.gov