December 2023

Test Results for File Carving Tool: File Juicer Version 4.98

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1 Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the U.S. Department of Homeland Security's (DHS) Science and Technology Directorate (S&T), the National Institute of Justice, and the National Institute of Standards and Technology's (NIST) Special Programs Office and Information Technology Laboratory. CFTT is supported by other organizations, including the Federal Bureau of Investigation, the U.S. Department of Defense Cyber Crime Center, the U.S. Internal Revenue Service's Criminal Investigation Division Electronic Crimes Program, and the DHS' U.S. Immigration and Customs Enforcement, U.S. Customs and Border Protection and the U.S. Secret Service. The objective of the CFTT program is to provide measurable assurance to practitioners, researchers, and other applicable users that the tools used in computer forensics investigations provide accurate results. Accomplishing this requires the development of specifications and test methods for computer forensics tools and subsequent testing of specific tools against those specifications.

Test results provide the information necessary for developers to improve tools, users to make informed choices, and the legal community and others to understand the tools' capabilities. The CFTT approach to testing computer forensics tools is based on well-recognized methodologies for conformance and quality testing. Interested parties in the computer forensics community can review and comment on the specifications and test methods posted on the CFTT website (https://www.cftt.nist.gov/).

This document reports the results from testing File Juicer Version 4.98.

Test results from other tools can be found on the DHS S&T-sponsored digital forensics webpage, http://www.dhs.gov/science-and-technology/nist-cftt-reports.

2 How to Read This Report

This report is organized into the following sections:

1. **Introduction:** This section presents a brief introduction to the CFTT project.
2. **How to read this report:** This section lists the main sections in the report.
3. **Tested Tool Description:** This section lists the tool name, version, and vendor information.
4. **Testing Organization:** This section includes the name and contact information for the organization testing the tool.
5. **Results Summary:** This section provides a summary of the major results revealed by the testing.
6. **Testing Environment:** This section provides a description of the hardware used for testing the tool.
7. **Appendix -- Test Results Details:** This appendix presents the details of each test run as a series of tables. The appendix is the raw data that is used as a basis for the conclusions presented in the Results Summary section. For each file type there is a subsection with one

table to describe all the source files of the given type. Then there are several variations on arranging chunks of the source files in the test image file. There is a table describing the layout of each image file, a summary table of the carved results and an analysis table of the carved results.

Test Results for File Carving Tool

3 Tested Tool Description

Tested Tool Name: File Juicer
Tool Version: 4.98

Supplier: Echo One by Henrik Dalgaard, Rosenfeldt 40, 3600 Frederikssund, Denmark Contact Information: hd@echoone.com
Web Site: https://echoone.com/filejuicer/

Tool Description: This tool is a stand-alone file carving tool.

4 Testing Organization

Testing Organization: NIST/CFTT
Contact Information: cftt@nist.gov

5 Results Summary

The tool was tested for carving graphic files from an unformatted image file in various layouts. The following file types of files were tested: HEIC, PNG, JPG, BMP, TIFF, and GIF. Three layouts were tested for each file type:

1. Contiguous: layout of six files separated with various amounts of benign fill between files. All files are aligned on sector boundaries within the image file.
2. Non-aligned: layout of six files separated with various amounts of benign fill between files. None of the source files are aligned on sector boundaries within the image file.
3. Fragmented: layout of six files separated with various amounts of benign fill between files. In addition, each file is fragmented into several fragments with benign fill inserted between them. Details of the fragmentation are presented in the Appendix (section 7). All files are aligned on sector boundaries within the image file.

5.1 Observations and Anomalies

- HEIC, JPG, PNG, TIFF and GIF files had no anomalies for the contiguous and non-aligned layouts.
- Nothing was carved from the fragmented layout for PNG or TIFF files. Only one signature was identified from the GIF fragmented layout.
- One file, a “smoked chicken,” was consistently missed from all three layouts of the BMP files.

- In general, for the fragmented layouts of HEIC and BMP files, the carved files included the fill between fragments and were missing the same amount of content from the end of the carved file. For example, if a file originally consisting of 1,000 blocks is fragmented into two pieces with 100 blocks between the two fragments, the carved file would be 1,000 blocks long, would include the 100 blocks of fill, and would be missing the last 100 blocks from the original file. For the JPG and GIF files, the carved files included all the fragments and the fill between the fragments with no missing content.
- For the BMP files, two files were not carved correctly.

It should be noted that while the File Juicer tool is not designed to support carving fragmented files it does carve some fragmented files but does not attempt to recover any fragmented files from TIFF or PNG.

5.2 Optional Features

No embedded thumbnails were extracted by this tool.

6 Test Environment and Test Cases

This section describes the test hardware, test data sets and tool settings used.

6.1 Test Hardware Used

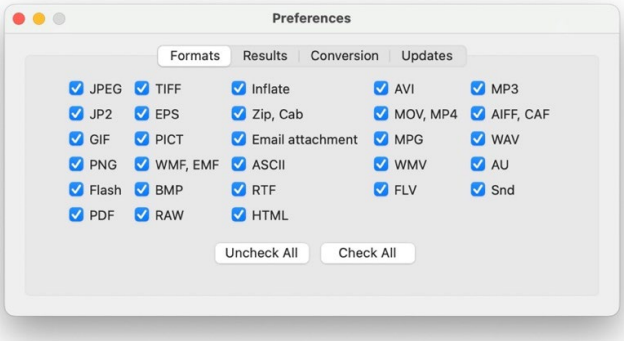
Test Hardware Description:
Test Hardware was an Apple iMac 3.6 GHz 10-Core Intel Core i9 running macOS Ventura 13.5.
The test data is a set of image files that can be found in the CFReDS repository (https://cfreds.nist.gov/) under the title **File Carving Graphic Files** with a date of **2023**.

6.2 Test Data Sets Used

The test data is a set of image files that can be found in the CFReDS repository (https://cfreds.nist.gov/) under the title **File Carving Graphic Files** with date of **2023**.

6.3 Tool Settings Used

The following tool settings were used:



7 Appendix: Test Result Details

This section describes the test results more in depth using a series of tables:

For each type of file to be carved there is a table of source file profiles to describe the size of each source file of the given file type.
Each image file to be carved is made up of the source files in one of several possible layouts. The layout table describes the layout of each image file used as input to the carving tool.

The analysis of the file carving is presented in three tables:
The first table presents the results of a manual inspection and classification of each carved file.
A second table presents a summary of the characteristics of the carved files.
A third table presents a detailed analysis of the source of the content for each carved file.

7.1 Results for carving HEIC

This section describes details on how the HEIC data set images were created. The section also includes a description of the source files used, the layout of each image file used, and an analysis of carved files returned by the tested tool from each image file.

7.1.1 Source File Profile for HEIC

This section describes the source files used to build the image files for testing carving of HEIC files. The block size is 512 bytes. Spill is the number of data bytes in the last block. Slack is the number of bytes remaining in the last block. Spill + Slack = 512. If the Thumb source file has an embedded thumbnail in the Exif data, the Thumb column has a "yes."

HEIC Source File Size in Bytes & 512 Byte Blocks

Source File	Size in Bytes	Blocks	Spill	Slack	Thumb
canyon.heic	4,255,307	8,312	75	437	no
dinner.heic	1,511,948	2,954	12	500	no
garden.heic	1,712,952	3,346	312	200	yes
harvest.heic	2,206,404	4,310	196	316	yes
rainbow_pool.heic	2,297,966	4,489	110	402	yes
santa.heic	1,798,630	3,513	486	26	yes

7.1.2 Image Layout for HEIC Contiguous

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The

Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Contiguous Image of HEIC Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	canyon.heic	4,255,307	75	8,312	100.00	1
2	dinner.heic	1,511,948	12	2,954	100.00	2
4	garden.heic	1,712,952	312	3,346	100.00	0
6	harvest.heic	2,206,404	196	4,310	100.00	5
8	rainbow_pool.heic	2,297,966	110	4,489	100.00	34
10	santa.heic	1,798,630	486	3,513	100.00	21

7.1.3 Analysis of Carving Results for HEIC Contiguous

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Contiguous Image of HEIC Files

Tool Generated File Name	Abbreviation	Evaluation
image-contig-heic.dd-1.heic	C001	Complete no flaws
image-contig-heic.dd-2.heic	C002	Complete no flaws
image-contig-heic.dd-3.heic	C003	Complete no flaws
image-contig-heic.dd-4.heic	C004	Complete no flaws
image-contig-heic.dd-5.heic	C005	Complete no flaws
image-contig-heic.dd.heic	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Contiguous Image of HEIC Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	1,511,948	12	2,954	0	0	dinner.heic
C002	1,712,952	312	3,346	0	0	garden.heic
C003	2,206,404	196	4,310	0	0	harvest.heic
C004	2,297,966	110	4,489	0	0	rainbow_pool.heic
C005	1,798,630	486	3,513	0	0	santa.heic
C006	4,255,307	75	8,312	0	0	canyon.heic

6 HEIC signatures were found in the Contiguous image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 4 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Contiguous Image of HEIC Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	dinner.heic	1,510,400	2,950	100.00	4	0
C002	garden.heic	1,712,640	3,345	100.00	1	0
C003	harvest.heic	2,206,208	4,309	100.00	1	0
C004	rainbow_pool.heic	2,297,344	4,487	100.00	2	0
C005	santa.heic	1,797,632	3,511	100.00	2	0
C006	canyon.heic	4,253,696	8,308	100.00	4	0

7.1.4 Image Layout for HEIC Non-Aligned on Clusters

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Non-Aligned on Clusters Image (Offset 313 bytes) of HEIC Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	canyon.heic	4,255,307	75	8,312	100.00	1
2	dinner.heic	1,511,948	12	2,954	100.00	2
4	garden.heic	1,712,952	312	3,346	100.00	0
6	harvest.heic	2,206,404	196	4,310	100.00	5
8	rainbow_pool.heic	2,297,966	110	4,489	100.00	34
10	santa.heic	1,798,630	486	3,513	100.00	21

7.1.5 Analysis of Carving Results for HEIC Non-Aligned on Clusters

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Non-Aligned on Clusters Image of HEIC Files

Tool Generated File Name	Abbreviation	Evaluation
image-non-heic.dd-1.heic	C001	Complete no flaws
image-non-heic.dd-2.heic	C002	Complete no flaws
image-non-heic.dd-3.heic	C003	Complete no flaws
image-non-heic.dd-4.heic	C004	Complete no flaws
image-non-heic.dd-5.heic	C005	Complete no flaws
image-non-heic.dd.heic	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Non-Aligned on Clusters Image of HEIC Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	1,511,948	12	2,954	0	0	dinner.heic
C002	1,712,952	312	3,346	0	0	garden.heic
C003	2,206,404	196	4,310	0	0	harvest.heic
C004	2,297,966	110	4,489	0	0	rainbow_pool.heic
C005	1,798,630	486	3,513	0	0	santa.heic
C006	4,255,307	75	8,312	0	0	canyon.heic

6 HEIC signatures were found in the Non-Aligned on Clusters image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 4 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from

the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Non-Aligned on Clusters Image of HEIC Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	dinner.heic	1,510,400	2,950	100.00	4	0
C002	garden.heic	1,712,640	3,345	100.00	1	0
C003	harvest.heic	2,206,208	4,309	100.00	1	0
C004	rainbow_pool.heic	2,297,344	4,487	100.00	2	0
C005	santa.heic	1,797,632	3,511	100.00	2	0
C006	canyon.heic	4,253,696	8,308	100.00	4	0

7.1.6 Image Layout for HEIC Fragmented in Order

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Fragmented in Order Image of HEIC Files

Chunk	Seq	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	1	canyon.heic	3,829,760	0	7,480	89.99	100
2	2	canyon.heic	425,547	75	832	10.00	2
4	1	dinner.heic	755,712	0	1,476	49.97	300
6	2	dinner.heic	756,236	12	1,478	50.00	50
8	1	garden.heic	342,528	0	669	19.99	80
10	2	garden.heic	1,370,424	312	2,677	79.99	13
12	1	harvest.heic	551,424	0	1,077	24.99	210
14	2	harvest.heic	661,504	0	1,292	29.98	100
16	3	harvest.heic	882,176	0	1,723	39.98	2
18	4	harvest.heic	111,300	196	218	5.04	300
20	1	rainbow_pool.heic	2,067,968	0	4,039	89.98	50
22	2	rainbow_pool.heic	229,998	110	450	10.01	80
24	1	santa.heic	899,072	0	1,756	49.99	13
26	2	santa.heic	899,558	486	1,757	50.01	210

7.1.7 Analysis of Carving Results for HEIC Fragmented in Order

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is

assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Fragmented in Order Image of HEIC Files

Tool Generated File Name	Abbreviation	Evaluation
image-frag-heic.dd-1.heic	C001	Incomplete major flaws
image-frag-heic.dd-2.heic	C002	Failed to display
image-frag-heic.dd-3.heic	C003	Failed to display
image-frag-heic.dd-4.heic	C004	Failed to display
image-frag-heic.dd-5.heic	C005	Failed to display
image-frag-heic.dd.heic	C006	Failed to display

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Fragmented in Order Image of HEIC Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	1,511,948	12	2,954	300	1	dinner.heic
C002	1,712,952	312	3,346	80	1	garden.heic
C003	2,206,404	196	4,310	310	1	harvest.heic
C004	2,297,966	110	4,489	50	1	rainbow_pool.heic
C005	1,798,630	486	3,513	13	1	santa.heic
C006	4,255,307	75	8,312	100	1	canyon.heic

6 HEIC signatures were found in the Fragmented in Order image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 4 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Fragmented in Order Image of HEIC Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	dinner.heic	1,356,288	2,649	89.82	4	301

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C002	garden.heic	1,671,168	3,264	97.58	1	81
C003	harvest.heic	2,046,976	3,998	92.79	1	311
C004	rainbow_pool.heic	2,271,232	4,436	98.87	2	51
C005	santa.heic	1,790,464	3,497	99.61	2	14
C006	canyon.heic	4,201,984	8,207	98.78	4	101

7.2 Results for carving PNG

This section describes details on how the PNG data set images were created. The section also includes a description of the source files used, the layout of each image file used, and an analysis of carved files returned by the tested tool from each image file.

7.2.1 Source File Profile for PNG

This section describes the source files used to build the image files for testing carving of PNG files. The block size is 512 bytes. Spill is the number of data bytes in the last block. Slack is the number of bytes remaining in the last block. Spill + Slack = 512. If the Thumb source file has an embedded thumbnail in the Exif data, the Thumb column has a "yes."

PNG Source File Size in Bytes & 512 Byte Blocks

Source File	Size in Bytes	Blocks	Spill	Slack	Thumb
cactus.png	6,164,389	12,040	421	91	no
cave.png	8,182,655	15,982	383	129	no
forsythia.png	8,107,995	15,836	475	37	no
lavender.png	11,067,334	21,616	454	58	no
log.png	11,592,240	22,642	48	464	no
orchid.png	8,455,527	16,515	359	153	no

7.2.2 Image Layout for PNG Contiguous

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Contiguous Image of PNG Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	cactus.png	6,164,389	421	12,040	100.00	1
2	cave.png	8,182,655	383	15,982	100.00	2

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
4	forsythia.png	8,107,995	475	15,836	100.00	0
6	lavender.png	11,067,334	454	21,616	100.00	5
8	log.png	11,592,240	48	22,642	100.00	34
10	orchid.png	8,455,527	359	16,515	100.00	21

7.2.3 Analysis of Carving Results for PNG Contiguous

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Contiguous Image of PNG Files

Tool Generated File Name	Abbreviation	Evaluation
image-contig-png-1.png	C001	Complete no flaws
image-contig-png-2.png	C002	Complete no flaws
image-contig-png-3.png	C003	Complete no flaws
image-contig-png-4.png	C004	Complete no flaws
image-contig-png-5.png	C005	Complete no flaws
image-contig-png.png	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Contiguous Image of PNG Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	8,182,655	383	15,982	0	0	cave.png
C002	8,107,995	475	15,836	0	0	forsythia.png
C003	11,067,334	454	21,616	0	0	lavender.png
C004	11,592,240	48	22,642	0	0	log.png
C005	8,455,527	359	16,515	0	0	orchid.png
C006	6,164,389	421	12,040	0	0	cactus.png

6 PNG signatures were found in the Contiguous image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the

carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Contiguous Image of PNG Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	cave.png	8,182,784	15,982	100.00	0	0
C002	forsythia.png	8,108,032	15,836	100.00	0	0
C003	lavender.png	11,067,392	21,616	100.00	0	0
C004	log.png	11,592,704	22,642	100.00	0	0
C005	orchid.png	8,455,680	16,515	100.00	0	0
C006	cactus.png	6,164,480	12,040	100.00	0	0

7.2.4 Image Layout for PNG Non-Aligned on Clusters

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Non-Aligned on Clusters Image (Offset 313 bytes) of PNG Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	cactus.png	6,164,389	421	12,040	100.00	1
2	cave.png	8,182,655	383	15,982	100.00	2
4	forsythia.png	8,107,995	475	15,836	100.00	0
6	lavender.png	11,067,334	454	21,616	100.00	5
8	log.png	11,592,240	48	22,642	100.00	34
10	orchid.png	8,455,527	359	16,515	100.00	21

7.2.5 Analysis of Carving Results for PNG Non-Aligned on Clusters

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of

"pending" is given if the file has not yet been examined.

Inspection Results for Non-Aligned on Clusters Image of PNG Files

Tool Generated File Name	Abbreviation	Evaluation
image-non-png-1.png	C001	Complete no flaws
image-non-png-2.png	C002	Complete no flaws
image-non-png-3.png	C003	Complete no flaws
image-non-png-4.png	C004	Complete no flaws
image-non-png-5.png	C005	Complete no flaws
image-non-png.png	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Non-Aligned on Clusters Image of PNG Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	8,182,655	383	15,982	0	0	cave.png
C002	8,107,995	475	15,836	0	0	forsythia.png
C003	11,067,334	454	21,616	0	0	lavender.png
C004	11,592,240	48	22,642	0	0	log.png
C005	8,455,527	359	16,515	0	0	orchid.png
C006	6,164,389	421	12,040	0	0	cactus.png

6 PNG signatures were found in the Non-Aligned on Clusters image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Non-Aligned on Clusters Image of PNG Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	cave.png	8,182,784	15,982	100.00	0	0
C002	forsythia.png	8,108,032	15,836	100.00	0	0
C003	lavender.png	11,067,392	21,616	100.00	0	0
C004	log.png	11,592,704	22,642	100.00	0	0

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C005	orchid.png	8,455,680	16,515	100.00	0	0
C006	cactus.png	6,164,480	12,040	100.00	0	0

7.2.6 Analysis of Carving Results for PNG Fragmented in Order

No files carved for PNG files in Fragmented in Order layout.

7.3 Results for carving JPG

This section describes details on how the JPG data set images were created. The section also includes a description of the source files used, the layout of each image file used, and an analysis of carved files returned by the tested tool from each image file.

7.3.1 Source File Profile for JPG

This section describes the source files used to build the image files for testing carving of JPG files. The block size is 512 bytes. Spill is the number of data bytes in the last block. Slack is the number of bytes remaining in the last block. Spill + Slack = 512. If the Thumb source file has an embedded thumbnail in the Exif data, the Thumb column has a "yes."

JPG Source File Size in Bytes & 512 Byte Blocks

Source File	Size in Bytes	Blocks	Spill	Slack	Thumb
dino.jpg	3,424,980	6,690	212	300	no
grizzly.jpg	2,785,455	5,441	175	337	no
jump.jpg	2,015,880	3,938	136	376	no
leaf.jpg	798,064	1,559	368	144	yes
oak-snow.jpg	1,370,140	2,677	28	484	yes
stonehenge.jpg	1,236,401	2,415	433	79	yes

7.3.2 Image Layout for JPG Contiguous

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Contiguous Image of JPG Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	dino.jpg	3,424,980	212	6,690	100.00	1
2	grizzly.jpg	2,785,455	175	5,441	100.00	2
4	jump.jpg	2,015,880	136	3,938	100.00	0

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
6	leaf.jpg	798,064	368	1,559	100.00	5
8	oak-snow.jpg	1,370,140	28	2,677	100.00	34
10	stonehenge.jpg	1,236,401	433	2,415	100.00	21

7.3.3 Analysis of Carving Results for JPG Contiguous

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Contiguous Image of JPG Files

Tool Generated File Name	Abbreviation	Evaluation
image-contig-jpg-1.jpg	C001	Complete no flaws
image-contig-jpg-2.jpg	C002	Complete no flaws
image-contig-jpg-3.jpg	C003	Complete no flaws
image-contig-jpg-4.jpg	C004	Complete no flaws
image-contig-jpg-5.jpg	C005	Complete no flaws
image-contig-jpg.jpg	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Contiguous Image of JPG Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	2,785,455	175	5,441	0	0	grizzly.jpg
C002	2,015,880	136	3,938	0	0	jump.jpg
C003	798,064	368	1,559	0	0	leaf.jpg
C004	1,370,140	28	2,677	0	0	oak-snow.jpg
C005	1,236,401	433	2,415	0	0	stonehenge.jpg
C006	3,424,980	212	6,690	0	0	dino.jpg

6 JPG signatures were found in the Contiguous image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 3 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column

labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Contiguous Image of JPG Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	grizzly.jpg	2,785,792	5,441	100.00	0	0
C002	jump.jpg	2,016,256	3,938	100.00	0	0
C003	leaf.jpg	797,696	1,558	100.00	1	0
C004	oak-snow.jpg	1,370,112	2,676	100.00	1	0
C005	stonehenge.jpg	1,235,968	2,414	100.00	1	0
C006	dino.jpg	3,425,280	6,690	100.00	0	0

7.3.4 Image Layout for JPG Non-Aligned on Clusters

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Non-Aligned on Clusters Image (Offset 313 bytes) of JPG Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	dino.jpg	3,424,980	212	6,690	100.00	1
2	grizzly.jpg	2,785,455	175	5,441	100.00	2
4	jump.jpg	2,015,880	136	3,938	100.00	0
6	leaf.jpg	798,064	368	1,559	100.00	5
8	oak-snow.jpg	1,370,140	28	2,677	100.00	34
10	stonehenge.jpg	1,236,401	433	2,415	100.00	21

7.3.5 Analysis of Carving Results for JPG Non-Aligned on Clusters

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of

"pending" is given if the file has not yet been examined.

Inspection Results for Non-Aligned on Clusters Image of JPG Files

Tool Generated File Name	Abbreviation	Evaluation
image-non-jpg-1.jpg	C001	Complete no flaws
image-non-jpg-2.jpg	C002	Complete no flaws
image-non-jpg-3.jpg	C003	Complete no flaws
image-non-jpg-4.jpg	C004	Complete no flaws
image-non-jpg-5.jpg	C005	Complete no flaws
image-non-jpg.jpg	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Non-Aligned on Clusters Image of JPG Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	2,785,455	175	5,441	0	0	grizzly.jpg
C002	2,015,880	136	3,938	0	0	jump.jpg
C003	798,064	368	1,559	0	0	leaf.jpg
C004	1,370,140	28	2,677	0	0	oak-snow.jpg
C005	1,236,401	433	2,415	0	0	stonehenge.jpg
C006	3,424,980	212	6,690	0	0	dino.jpg

6 JPG signatures were found in the Non-Aligned on Clusters image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 3 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Non-Aligned on Clusters Image of JPG Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	grizzly.jpg	2,785,792	5,441	100.00	0	0
C002	jump.jpg	2,016,256	3,938	100.00	0	0
C003	leaf.jpg	797,696	1,558	100.00	1	0
C004	oak-snow.jpg	1,370,112	2,676	100.00	1	0

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C005	stonehenge.jpg	1,235,968	2,414	100.00	1	0
C006	dino.jpg	3,425,280	6,690	100.00	0	0

7.3.6 Image Layout for JPG Fragmented in Order

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Fragmented in Order Image of JPG Files

Chunk	Seq	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	1	dino.jpg	3,082,240	0	6,020	89.99	100
2	2	dino.jpg	342,740	212	670	10.01	2
4	1	grizzly.jpg	1,392,640	0	2,720	49.99	300
6	2	grizzly.jpg	1,392,815	175	2,721	50.00	50
8	1	jump.jpg	402,944	0	787	19.98	80
10	2	jump.jpg	1,612,936	136	3,151	80.00	13
12	1	leaf.jpg	199,168	0	389	24.95	210
14	2	leaf.jpg	239,104	0	467	29.96	100
16	3	leaf.jpg	318,976	0	623	39.96	2
18	4	leaf.jpg	40,816	368	80	5.11	300
20	1	oak-snow.jpg	1,232,896	0	2,408	89.95	50
22	2	oak-snow.jpg	137,244	28	269	10.01	80
24	1	stonehenge.jpg	617,984	0	1,207	49.98	13
26	2	stonehenge.jpg	618,417	433	1,208	50.01	210

7.3.7 Analysis of Carving Results for JPG Fragmented in Order

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Fragmented in Order Image of JPG Files

Tool Generated File Name	Abbreviation	Evaluation
image-frag-jpg-1.jpg	C001	Complete no flaws
image-frag-jpg-2.jpg	C002	Incomplete major flaws
image-frag-jpg-3.jpg	C003	Incomplete major flaws
image-frag-jpg-4.jpg	C004	Usable minor flaws
image-frag-jpg-5.jpg	C005	Usable minor flaws
image-frag-jpg.jpg	C006	Usable minor flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Fragmented in Order Image of JPG Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	2,939,055	175	5,741	300	0	grizzly.jpg
C002	2,056,840	136	4,018	80	0	jump.jpg
C003	957,808	368	1,871	312	0	leaf.jpg
C004	1,395,740	28	2,727	50	0	oak-snow.jpg
C005	1,243,057	433	2,428	13	0	stonehenge.jpg
C006	3,476,180	212	6,790	100	0	dino.jpg

6 JPG signatures were found in the Fragmented in Order image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 3 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Fragmented in Order Image of JPG Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	grizzly.jpg	2,785,792	5,441	100.00	0	0
C002	jump.jpg	2,016,256	3,938	100.00	0	0
C003	leaf.jpg	797,696	1,558	100.00	1	0
C004	oak-snow.jpg	1,370,112	2,676	100.00	1	0
C005	stonehenge.jpg	1,235,968	2,414	100.00	1	0
C006	dino.jpg	3,425,280	6,690	100.00	0	0

7.4 Results for carving BMP

This section describes details on how the BMP data set images were created. The section also includes a description of the source files used, the layout of each image file used, and an analysis of carved files returned by the tested tool from each image file.

7.4.1 Source File Profile for BMP

This section describes the source files used to build the image files for testing carving of BMP files. The block size is 512 bytes. Spill is the number of data bytes in the last block. Slack is the number of bytes remaining in the last block. Spill + Slack = 512. If the Thumb source file has an embedded thumbnail in the Exif data, the Thumb column has a "yes."

BMP Source File Size in Bytes & 512 Byte Blocks

Source File	Size in Bytes	Blocks	Spill	Slack	Thumb
amalfi.bmp	921,654	1,801	54	458	no
boudicca.bmp	8,798,374	17,185	166	346	no
iris-lavender.bmp	14,953,734	29,207	262	250	no
shoot.bmp	9,969,174	19,472	22	490	no
smoked-chicken.bmp	19,938,310	38,943	6	506	no
zen.bmp	25,747,254	50,288	310	202	no

7.4.2 Image Layout for BMP Contiguous

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Contiguous Image of BMP Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	amalfi.bmp	921,654	54	1,801	100.00	1
2	boudicca.bmp	8,798,374	166	17,185	100.00	2
4	iris-lavender.bmp	14,953,734	262	29,207	100.00	0
6	shoot.bmp	9,969,174	22	19,472	100.00	5
8	smoked-chicken.bmp	19,938,310	6	38,943	100.00	34
10	zen.bmp	25,747,254	310	50,288	100.00	21

7.4.3 Analysis of Carving Results for BMP Contiguous

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Contiguous Image of BMP Files

Tool Generated File Name	Abbreviation	Evaluation
image-contig-bmp.dd-1.bmp	C001	Complete no flaws
image-contig-bmp.dd-2.bmp	C002	Complete no flaws
image-contig-bmp.dd-3.bmp	C003	Complete no flaws
image-contig-bmp.dd-4.bmp	C004	Usable minor flaws
image-contig-bmp.dd.bmp	C005	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Contiguous Image of BMP Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	8,798,374	166	17,185	0	0	boudicca.bmp
C002	14,953,734	262	29,207	0	0	iris-lavender.bmp
C003	9,969,174	22	19,472	0	0	shoot.bmp
C004	20,000,000	256	39,063	0	1	zen.bmp
C005	921,654	54	1,801	0	0	amalfi.bmp

5 BMP signatures were found in the Contiguous image, 6 expected, no file signatures from an unknown source. 1 file was missed:
smoked-chicken.bmp
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Contiguous Image of BMP Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	boudicca.bmp	8,798,720	17,185	100.00	0	0
C002	iris-lavender.bmp	14,953,984	29,207	100.00	0	0
C003	shoot.bmp	9,969,664	19,472	100.00	0	0
C004	zen.bmp	19,999,744	39,062	77.68	0	11,226
C005	amalfi.bmp	922,112	1,801	100.00	0	0

7.4.4 Image Layout for BMP Non-Aligned on Clusters

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Non-Aligned on Clusters Image (Offset 313 bytes) of BMP Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	amalfi.bmp	921,654	54	1,801	100.00	1
2	boudicca.bmp	8,798,374	166	17,185	100.00	2
4	iris-lavender.bmp	14,953,734	262	29,207	100.00	0
6	shoot.bmp	9,969,174	22	19,472	100.00	5
8	smoked-chicken.bmp	19,938,310	6	38,943	100.00	34
10	zen.bmp	25,747,254	310	50,288	100.00	21

7.4.5 Analysis of Carving Results for BMP Non-Aligned on Clusters

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Non-Aligned on Clusters Image of BMP Files

Tool Generated File Name	Abbreviation	Evaluation
image-non-bmp.dd-1.bmp	C001	Complete no flaws
image-non-bmp.dd-2.bmp	C002	Complete no flaws
image-non-bmp.dd-3.bmp	C003	Complete no flaws
image-non-bmp.dd-4.bmp	C004	Usable minor flaws

Tool Generated File Name	Abbreviation	Evaluation
image-non-bmp.dd.bmp	C005	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Non-Aligned on Clusters Image of BMP Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	8,798,374	166	17,185	0	0	boudicca.bmp
C002	14,953,734	262	29,207	0	0	iris-lavender.bmp
C003	9,969,174	22	19,472	0	0	shoot.bmp
C004	20,000,000	256	39,063	0	1	zen.bmp
C005	921,654	54	1,801	0	0	amalfi.bmp

5 BMP signatures were found in the Non-Aligned on Clusters image, 6 expected, no file signatures from an unknown source. 1 file was missed:
smoked-chicken.bmp
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Non-Aligned on Clusters Image of BMP Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	boudicca.bmp	8,798,720	17,185	100.00	0	0
C002	iris-lavender.bmp	14,953,984	29,207	100.00	0	0
C003	shoot.bmp	9,969,664	19,472	100.00	0	0
C004	zen.bmp	19,999,744	39,062	77.68	0	11,226
C005	amalfi.bmp	922,112	1,801	100.00	0	0

7.4.6 Image Layout for BMP Fragmented in Order

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file

providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Fragmented in Order Image of BMP Files

Chunk	Seq	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	1	amalfi.bmp	829,440	0	1,620	89.95	100
2	2	amalfi.bmp	92,214	54	181	10.00	2
4	1	boudicca.bmp	4,399,104	0	8,592	50.00	300
6	2	boudicca.bmp	4,399,270	166	8,593	50.00	50
8	1	iris-lavender.bmp	2,990,592	0	5,841	20.00	80
10	2	iris-lavender.bmp	11,963,142	262	23,366	80.00	13
12	1	shoot.bmp	2,491,904	0	4,867	24.99	210
14	2	shoot.bmp	2,990,592	0	5,841	30.00	100
16	3	shoot.bmp	3,987,456	0	7,788	40.00	2
18	4	shoot.bmp	499,222	22	976	5.01	300
20	1	smoked-chicken.bmp	17,944,064	0	35,047	90.00	50
22	2	smoked-chicken.bmp	1,994,246	6	3,896	10.00	80
24	1	zen.bmp	12,873,216	0	25,143	50.00	13
26	2	zen.bmp	12,874,038	310	25,145	50.00	210

7.4.7 Analysis of Carving Results for BMP Fragmented in Order

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Fragmented in Order Image of BMP Files

Tool Generated File Name	Abbreviation	Evaluation
image-frag-bmp.dd-1.bmp	C002	Usable minor flaws
image-frag-bmp.dd-2.bmp	C003	Usable minor flaws
image-frag-bmp.dd-3.bmp	C004	Usable minor flaws
image-frag-bmp.dd-4.bmp	C005	Usable minor flaws
image-frag-bmp.dd.bmp	C006	Usable minor flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Fragmented in Order Image of BMP Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	6,148	4	13	0	13	unknown
C002	8,798,374	166	17,185	300	1	boudicca.bmp
C003	14,953,734	262	29,207	80	1	iris-lavender.bmp
C004	9,969,174	22	19,472	312	1	shoot.bmp
C005	20,000,000	256	39,063	13	1	zen.bmp
C006	921,654	54	1,801	100	1	amalfi.bmp

5 BMP signatures were found in the Fragmented in Order image, 6 expected, 1 file signatures from an unknown source. 1 file was missed:
smoked-chicken.bmp
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Fragmented in Order Image of BMP Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C002	boudicca.bmp	8,644,608	16,884	98.25	0	301
C003	iris-lavender.bmp	14,912,512	29,126	99.73	0	81
C004	shoot.bmp	9,809,408	19,159	98.40	0	313
C005	zen.bmp	19,993,088	39,049	77.66	0	11,239
C006	amalfi.bmp	870,400	1,700	94.40	0	101

7.5 Results for carving TIFF

This section describes details on how the TIFF data set images were created. The section also includes a description of the source files used, the layout of each image file used, and an analysis of carved files returned by the tested tool from each image file.

7.5.1 Source File Profile for TIFF

This section describes the source files used to build the image files for testing carving of TIFF files. The block size is 512 bytes. Spill is the number of data bytes in the last block. Slack is the number of bytes remaining in the last block. Spill + Slack = 512. If the Thumb source file has an embedded thumbnail in the Exif data, the Thumb column has a "yes."

TIFF Source File Size in Bytes & 512 Byte Blocks

Source File	Size in Bytes	Blocks	Spill	Slack	Thumb
gallop.tiff	18,364,670	35,869	254	258	no
jack-o-lantern.tiff	7,545,856	14,738	0	0	no
sliced-tomatoes.tiff	14,959,202	29,218	98	414	no
tulip-red.tiff	14,958,628	29,217	36	476	no
winter-street.tiff	14,959,202	29,218	98	414	no
yuck.tiff	25,838,702	50,467	110	402	no

7.5.2 Image Layout for TIFF Contiguous

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Contiguous Image of TIFF Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	gallop.tiff	18,364,670	254	35,869	100.00	1
2	jack-o-lantern.tiff	7,545,856	0	14,738	100.00	2
4	sliced-tomatoes.tiff	14,959,202	98	29,218	100.00	0
6	tulip-red.tiff	14,958,628	36	29,217	100.00	5
8	winter-street.tiff	14,959,202	98	29,218	100.00	34
10	yuck.tiff	25,838,702	110	50,467	100.00	21

7.5.3 Analysis of Carving Results for TIFF Contiguous

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Contiguous Image of TIFF Files

Tool Generated File Name	Abbreviation	Evaluation
image-contig-tiff-1.tiff	C001	Complete no flaws
image-contig-tiff-2.tiff	C002	Complete no flaws
image-contig-tiff-3.tiff	C003	Complete no flaws

Tool Generated File Name	Abbreviation	Evaluation
image-contig-tiff-4.tiff	C004	Complete no flaws
image-contig-tiff-5.tiff	C005	Complete no flaws
image-contig-tiff.tiff	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Contiguous Image of TIFF Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	7,545,856	0	14,738	0	0	jack-o-lantern.tiff
C002	14,959,202	98	29,218	0	0	sliced-tomatoes.tiff
C003	14,958,628	36	29,217	0	0	tulip-red.tiff
C004	14,959,202	98	29,218	0	0	winter-street.tiff
C005	25,838,702	110	50,467	0	0	yuck.tiff
C006	18,364,670	254	35,869	0	0	gallop.tiff

6 TIFF signatures were found in the Contiguous image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Contiguous Image of TIFF Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	jack-o-lantern.tiff	7,545,856	14,738	100.00	0	0
C002	sliced-tomatoes.tiff	14,955,008	29,209	100.00	9	0
C003	tulip-red.tiff	14,959,104	29,217	100.00	0	0
C004	winter-street.tiff	14,955,008	29,209	100.00	9	0
C005	yuck.tiff	25,839,104	50,467	100.00	0	0
C006	gallop.tiff	18,364,928	35,869	100.00	0	0

7.5.4 Image Layout for TIFF Non-Aligned on Clusters

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of

512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Non-Aligned on Clusters Image (Offset 313 bytes) of TIFF Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	gallop.tiff	18,364,670	254	35,869	100.00	1
2	jack-o-lantern.tiff	7,545,856	0	14,738	100.00	2
4	sliced-tomatoes.tiff	14,959,202	98	29,218	100.00	0
6	tulip-red.tiff	14,958,628	36	29,217	100.00	5
8	winter-street.tiff	14,959,202	98	29,218	100.00	34
10	yuck.tiff	25,838,702	110	50,467	100.00	21

7.5.5 Analysis of Carving Results for TIFF Non-Aligned on Clusters

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Non-Aligned on Clusters Image of TIFF Files

Tool Generated File Name	Abbreviation	Evaluation
image-non-tiff-1.tiff	C001	Complete no flaws
image-non-tiff-2.tiff	C002	Complete no flaws
image-non-tiff-3.tiff	C003	Complete no flaws
image-non-tiff-4.tiff	C004	Complete no flaws
image-non-tiff-5.tiff	C005	Complete no flaws
image-non-tiff.tiff	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Non-Aligned on Clusters Image of TIFF Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	7,545,856	0	14,738	0	0	jack-o-lantern.tiff
C002	14,959,202	98	29,218	0	0	sliced-tomatoes.tiff

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C003	14,958,628	36	29,217	0	0	tulip-red.tiff
C004	14,959,202	98	29,218	0	0	winter-street.tiff
C005	25,838,702	110	50,467	0	0	yuck.tiff
C006	18,364,670	254	35,869	0	0	gallop.tiff

6 TIFF signatures were found in the Non-Aligned on Clusters image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Non-Aligned on Clusters Image of TIFF Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	jack-o-lantern.tiff	7,545,856	14,738	100.00	0	0
C002	sliced-tomatoes.tiff	14,955,008	29,209	100.00	9	0
C003	tulip-red.tiff	14,959,104	29,217	100.00	0	0
C004	winter-street.tiff	14,955,008	29,209	100.00	9	0
C005	yuck.tiff	25,839,104	50,467	100.00	0	0
C006	gallop.tiff	18,364,928	35,869	100.00	0	0

7.5.6 Analysis of Carving Results for TIFF Fragmented in Order

No files carved for TIFF files in Fragmented in Order layout.

7.6 Results for carving GIF

This section describes details on how the GIF data set images were created. The section also includes a description of the source files used, the layout of each image file used, and an analysis of carved files returned by the tested tool from each image file.

7.6.1 Source File Profile for GIF

This section describes the source files used to build the image files for testing carving of GIF files. The block size is 512 bytes. Spill is the number of data bytes in the last block. Slack is the number of bytes remaining in the last block. Spill + Slack = 512. If the Thumb source file has an embedded thumbnail in the Exif data, the Thumb column has a "yes."

GIF Source File Size in Bytes & 512 Byte Blocks

Source File	Size in Bytes	Blocks	Spill	Slack	Thumb
bamboo-clump-anamated.gif	6,717,692	13,121	252	260	no
barn.gif	3,352,929	6,549	353	159	no
blini.gif	2,125,114	4,151	314	198	no
tapas.gif	2,242,264	4,380	216	296	no
tomatoes.gif	2,240,548	4,377	36	476	no
wat.gif	32,186	63	442	70	no

7.6.2 Image Layout for GIF Contiguous

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Contiguous Image of GIF Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	bamboo-clump-anamated.gif	6,717,692	252	13,121	100.00	1
2	barn.gif	3,352,929	353	6,549	100.00	2
4	blini.gif	2,125,114	314	4,151	100.00	0
6	tapas.gif	2,242,264	216	4,380	100.00	5
8	tomatoes.gif	2,240,548	36	4,377	100.00	34
10	wat.gif	32,186	442	63	100.00	21

7.6.3 Analysis of Carving Results for GIF Contiguous

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Contiguous Image of GIF Files

Tool Generated File Name	Abbreviation	Evaluation
image-contig-gif-1.gif	C001	Complete no flaws
image-contig-gif-2.gif	C002	Complete no flaws
image-contig-gif-3.gif	C003	Complete no flaws
image-contig-gif-4.gif	C004	Complete no flaws

Tool Generated File Name	Abbreviation	Evaluation
image-contig-gif-5.gif	C005	Complete no flaws
image-contig-gif.gif	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Contiguous Image of GIF Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	3,352,929	353	6,549	0	0	barn.gif
C002	2,125,114	314	4,151	0	0	blini.gif
C003	2,242,264	216	4,380	0	0	tapas.gif
C004	2,240,548	36	4,377	0	0	tomatoes.gif
C005	32,186	442	63	0	0	wat.gif
C006	6,717,692	252	13,121	0	0	bamboo-clump-anamated.gif

6 GIF signatures were found in the Contiguous image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Contiguous Image of GIF Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	barn.gif	3,353,088	6,549	100.00	0	0
C002	blini.gif	2,122,752	4,146	100.00	5	0
C003	tapas.gif	2,240,000	4,375	100.00	5	0
C004	tomatoes.gif	2,238,464	4,372	100.00	5	0
C005	wat.gif	32,256	63	100.00	0	0
C006	bamboo-clump-anamated.gif	6,717,952	13,121	100.00	0	0

7.6.4 Image Layout for GIF Non-Aligned on Clusters

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of

512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Non-Aligned on Clusters Image (Offset 313 bytes) of GIF Files

Chunk	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	bamboo-clump-anamated.gif	6,717,692	252	13,121	100.00	1
2	barn.gif	3,352,929	353	6,549	100.00	2
4	blini.gif	2,125,114	314	4,151	100.00	0
6	tapas.gif	2,242,264	216	4,380	100.00	5
8	tomatoes.gif	2,240,548	36	4,377	100.00	34
10	wat.gif	32,186	442	63	100.00	21

7.6.5 Analysis of Carving Results for GIF Non-Aligned on Clusters

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Non-Aligned on Clusters Image of GIF Files

Tool Generated File Name	Abbreviation	Evaluation
image-non-gif-1.gif	C001	Complete no flaws
image-non-gif-2.gif	C002	Complete no flaws
image-non-gif-3.gif	C003	Complete no flaws
image-non-gif-4.gif	C004	Complete no flaws
image-non-gif-5.gif	C005	Complete no flaws
image-non-gif.gif	C006	Complete no flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Non-Aligned on Clusters Image of GIF Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	3,352,929	353	6,549	0	0	barn.gif
C002	2,125,114	314	4,151	0	0	blini.gif

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C003	2,242,264	216	4,380	0	0	tapas.gif
C004	2,240,548	36	4,377	0	0	tomatoes.gif
C005	32,186	442	63	0	0	wat.gif
C006	6,717,692	252	13,121	0	0	bamboo-clump-anamated.gif

6 GIF signatures were found in the Non-Aligned on Clusters image, 6 expected, no file signatures from an unknown source. No files were missed.
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Non-Aligned on Clusters Image of GIF Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	barn.gif	3,353,088	6,549	100.00	0	0
C002	blini.gif	2,122,752	4,146	100.00	5	0
C003	tapas.gif	2,240,000	4,375	100.00	5	0
C004	tomatoes.gif	2,238,464	4,372	100.00	5	0
C005	wat.gif	32,256	63	100.00	0	0
C006	bamboo-clump-anamated.gif	6,717,952	13,121	100.00	0	0

7.6.6 Image Layout for GIF Fragmented in Order

The following table describes the layout of an image file. The image file is constructed from chunks of data from the source files, separated by chunks of fill data. All chunks are multiples of 512 bytes.

The Chunk column is the chunk identifier. The Source File column is the name of the file providing data. The Bytes column is the size of the chunk in bytes. The Spill column is the number of data bytes in the last block in the chunk (if less than 512). The Blocks column is the number of blocks in the chunk. The "%" column is the percentage of the file in the chunk. The Fill Blocks column is the number of blocks of fill data in the next chunk.

Layout for Fragmented in Order Image of GIF Files

Chunk	Seq	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
0	1	bamboo-clump-anamated.gif	6,045,696	0	11,808	89.99	100

Chunk	Seq	Source_file	Bytes	Spill	Blocks	%	Fill_Blocks
2	2	bamboo-clump-anamated.gif	671,996	252	1,313	10.00	2
4	1	barn.gif	1,676,288	0	3,274	49.99	300
6	2	barn.gif	1,676,641	353	3,275	50.00	50
8	1	blini.gif	424,960	0	830	20.00	80
10	2	blini.gif	1,700,154	314	3,321	80.00	13
12	1	tapas.gif	560,128	0	1,094	24.98	210
14	2	tapas.gif	672,256	0	1,313	29.98	100
16	3	tapas.gif	896,512	0	1,751	39.98	2
18	4	tapas.gif	113,368	216	222	5.06	300
20	1	tomatoes.gif	2,016,256	0	3,938	89.97	50
22	2	tomatoes.gif	224,292	36	439	10.01	80
24	1	wat.gif	15,872	0	31	49.21	13
26	2	wat.gif	16,314	442	32	50.58	210

7.6.7 Analysis of Carving Results for GIF Fragmented in Order

The following table presents the results of the manual inspection of carved files. The Tool Generated File Name column presents the names of the carved files as assigned by the tested tool. Because the name assigned to each carved file may be rather long, a short abbreviation is assigned to each file name. The abbreviation presented in the Abbreviation column is used to identify each carved file in the following two tables. The Evaluation column presents the evaluation assigned to the carved file during a manual examination of the file. A value of "pending" is given if the file has not yet been examined.

Inspection Results for Fragmented in Order Image of GIF Files

Tool Generated File Name	Abbreviation	Evaluation
image-frag-gif.gif	C001	Incomplete major flaws

The following table presents the size in bytes and 512-byte blocks of each carved file. The source of the first block is also noted. The file is identified by the short abbreviation defined in the table above.

Description of Carved Files From Fragmented in Order Image of GIF Files

File_Abbreviation	Bytes	Spill	Blocks	fill	unknown	FirstSource
C001	2,166,074	314	4,231	80	0	blini.gif

1 GIF signature was found in the Fragmented in Order image, 6 expected, no file signatures from an unknown source. 5 files were missed:
bamboo-clump-anamated.gif
barn.gif
tapas.gif
tomatoes.gif

wat.gif
0 EXIF embedded thumbnails found, 0 expected.

The following table presents a detailed analysis of the content of each carved file. For each carved file one or more rows follow with an analysis of each source that contributed to the carved file (identified by the file name abbreviation). The source file name is in the column labeled Src. The number of bytes from that source is listed in the Bytes_seen column. The number of 512-byte blocks from that source is in the Blocks column. The percent of the source file included in the carved file is in the "%" column. A count of ambiguous blocks that could belong to more than one source file is in the Multi column. The number of blocks missing from the source file, i.e., not carved, is in the Missing column.

Detailed Analysis of Carved Files From Fragmented in Order Image of GIF Files

Carved	Src	Bytes_seen	Blocks	%	Multi	Missing
C001	blini.gif	2,122,752	4,146	100.00	5	0