Test Results for Digital Data Acquisition Tool: EnCase Linen 5.05f
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January 2008
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Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the National Institute of Justice (NIJ), the research and development organization of the U.S. Department of Justice, and the National Institute of Standards and Technology’s (NIST’s) Office of Law Enforcement Standards 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, U.S. Internal Revenue Service Criminal Investigation Division Electronic Crimes Program, and the U.S. Department of Homeland Security’s Bureau of Immigration and Customs Enforcement and 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. This approach to testing computer forensic tools is based on well-recognized methodologies for conformance and quality testing. The specifications and test methods are posted on the CFTT Web site (http://www.cftt.nist.gov/) for review and comment by the computer forensics community.

This document reports the results from testing EnCase Linen, version 5.05f, against the Digital Data Acquisition Tool Assertions and Test Plan Version 1.0, available at the CFTT Web site (http://www.cftt.nist.gov/DA-ATP-pc-01.pdf).

Test results from other software packages and the CFTT tool methodology can be found on NIJ’s computer forensics tool testing Web page, http://www.ojp.usdoj.gov/nij/topics/ecrime/cftt.htm.
Test Results for Digital Data Acquisition Tool

Tool Tested: EnCase Linen
Version: 5.05f
Run Environments: Helix 1.7 Linux Boot CD, Fedora Core 5 & SuSe 10.0
Supplier: Guidance Software, Inc.
Address: 215 North Marengo Ave., Suite 250
Pasadena, CA 91101
Tel: 626–229–9191
Fax: 626–229–9199
WWW: http://www.guidancesoftware.com/

1 Results Summary
Except for two test cases (DA–08 and DA–09), the tested tool acquired all visible and hidden sectors completely and accurately from the test media. The two exceptions are the following:

1. Up to seven sectors contiguous to a defective sector may be replaced by zeros in the acquisition (DA–09–1 and DA–09–2).
2. The sectors hidden by a device configuration overlay (DCO) are not acquired (DA–08–DCO).

2 Test Case Selection
Not all test cases or test assertions are appropriate for all tools. In addition to the base test cases, each remaining test case is linked to optional tool features needed for the test case. If a given tool implements a given feature then the test cases linked to that feature are run. Table 1 lists the features available in EnCase Linen and the linked test cases. Table 2 lists the features not available in EnCase Linen and the linked test cases.

Table 1 Selected Test Cases

<table>
<thead>
<tr>
<th>Supported Optional Feature</th>
<th>Cases selected for execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Cases</td>
<td>06, 07 &amp; 08</td>
</tr>
<tr>
<td>Destination Device Switching</td>
<td>13</td>
</tr>
<tr>
<td>Read error during acquisition</td>
<td>09</td>
</tr>
<tr>
<td>Create an image file in more than one format</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 2 Omitted Test Cases

<table>
<thead>
<tr>
<th>Unsupported Optional Feature</th>
<th>Cases omitted (not executed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a clone during acquisition</td>
<td>01, 02 &amp; 04</td>
</tr>
</tbody>
</table>
Create cylinder aligned clones 03, 15, 21 & 23
Convert an image file from one format to another 26
Insufficient space for image file 12
Device I/O error generator available 05, 11 & 18
Fill excess sectors on a clone device 19, 20, 21, 22 & 23
Create a clone from an image file 14 & 17
Create a clone from a subset of an image file 16
Detect a corrupted (or changed) image file 24 & 25

Some test cases have variant forms to accommodate parameters within test assertions. These variations cover the execution environment, acquisition interface to the source drive, and type of digital object acquired. Variations were also created for image file format and error granularity (test case DA–9).

The tool was executed in one of the following Linux run time environments: Helix 1.7, Fedora Core 5 or SuSe 10.0.

The following source interfaces were tested: ATA28, ATA48, SATA28, SATA48, SCSI, USB, and FireWire.

The following digital sources were tested: partitions (FAT12, FAT16, FAT32, FAT32X, EXT2, and NTFS), and thumb drive.

The image files were created on FAT32 partitions.

### 3 Results by Test Assertion

Table 3 summarizes the test results by assertion. The column labeled **Assertion** gives the text of each assertion. The column labeled **Tests** gives the number of test cases that use the given assertion. The column labeled **Anomaly** gives the section number in this report where the anomaly is discussed. Two test assertions only apply in special circumstances. The assertion AO–22 is checked only for tools that create block hashes. This assertion does not apply to EnCase Linen. The assertion AO–24 is only checked if the tool is executed in a run time environment that does not modify attached storage devices, such as MS DOS. In normal operation an imaging tool is used in conjunction with a write block device to protect the source drive; however a blocker was not used during the tests so that assertion AO–24 could be checked.

<table>
<thead>
<tr>
<th>Assertions Tested</th>
<th>Tests</th>
<th>Anomaly</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM–01 The tool uses access interface SRC–AI to access the digital source.</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

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AM–02 The tool acquires digital source DS.

AM–03 The tool executes in execution environment XE.

AM–05 If image file creation is specified, the tool creates an image file on file system type FS.

AM–06 All visible sectors are acquired from the digital source.

AM–07 All hidden sectors are acquired from the digital source.

AM–08 All sectors acquired from the digital source are acquired accurately.

AM–09 If unresolved errors occur while reading from the selected digital source, the tool notifies the user of the error type and location within the digital source.

AM–10 If unresolved errors occur while reading from the selected digital source, the tool uses a benign fill in the destination object in place of the inaccessible data.

AO–01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.

AO–02 If an image file format is specified, the tool creates an image file in the specified format.

AO–04 If the tool is creating an image file and there is insufficient space on the image destination device to contain the image file, the tool shall notify the user.

AO–05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.

AO–10 If there is insufficient space to contain all files of a multi-file image and if destination device switching is supported, the image is continued on another device.

AO–23 If the tool logs any log significant information, the information is accurately recorded in the log file.

AO–24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Table 4 lists the assertions that were not tested, usually due to the tool not supporting some optional feature, e.g., creation of cylinder aligned clones.

Table 4 Assertions not Tested

<table>
<thead>
<tr>
<th>Assertions not Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM–04 If clone creation is specified, the tool creates a clone of the digital source.</td>
</tr>
<tr>
<td>AO–03 If there is an error while writing the image file, the tool notifies the user.</td>
</tr>
<tr>
<td>AO–06 If the tool performs an image file integrity check on an image file that has not been changed since the file was created, the tool shall notify the user that the image file has not been changed.</td>
</tr>
<tr>
<td>AO–07 If the tool performs an image file integrity check on an image file that has been changed since the file was created, the tool shall notify the user that the image file has been changed.</td>
</tr>
<tr>
<td>AO–08</td>
</tr>
<tr>
<td>AO–09</td>
</tr>
<tr>
<td>AO–11</td>
</tr>
<tr>
<td>AO–12</td>
</tr>
<tr>
<td>AO–13</td>
</tr>
<tr>
<td>AO–14</td>
</tr>
<tr>
<td>AO–15</td>
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<tr>
<td>AO–16</td>
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<tr>
<td>AO–17</td>
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<tr>
<td>AO–18</td>
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<tr>
<td>AO–19</td>
</tr>
<tr>
<td>AO–20</td>
</tr>
<tr>
<td>AO–21</td>
</tr>
<tr>
<td>AO–22</td>
</tr>
</tbody>
</table>

### 3.1 Acquisition of HPA and DCO

The tool does not remove either Host Protected Areas (HPAs) or DCOs. However, the Linux test environment automatically removed the HPA on the test drive, allowing the tool to image sectors hidden by an HPA. The tool did not acquire sectors hidden by a DCO.

### 3.2 Acquisition of Faulty Sectors

For each variation of test case DA–09 some readable sectors as acquired to the image file differed from the source drive. To determine which sectors were accurately acquired, the image file was restored to a clone using EnCase 5.05f and the clone was compared to the source drive.

Linen 5.05f allows the user to specify a granularity value for an acquisition. The value specifies the number of sectors that the tool should zero fill surrounding and including a faulty sector if a read error is encountered during acquisition. If a granularity greater than 1 is specified, some readable sectors may be replaced with zeros in the image file. This is
a design decision in the tool that trades off zeroing the content of sectors near a faulty sector for a faster acquisition.

For test cases DA–09–01 and DA–09–02 (granularity values of 1 and 2), the actual number of zeroed sectors was 8 rather than the specified granularity value.

For tested granularity values greater than 8 the number of zeroed sectors was as documented for the specified granularity with some readable sectors in the image file filled with zeros.

It should be noted that only the ATA interface on Linux (kernel version 2.6) was used in the testing. Other interfaces, e.g., USB, Firewire or SCSI, or other versions of Linux, may exhibit other behavior in variations DA–09–01 and DA–09–02.

4 Testing Environment
The tests were run in the NIST CFTT lab. This section describes the test computers available for testing.

4.1 Test Computers
Five test computers were used.

Joe and Max have the following configuration:

Intel® Desktop Motherboard D865GB/D865PERC (with ATA–6 IDE on board controller)
BIOS Version BF86510A.86A.0053.P13
Adaptec SCSI BIOS V3.10.0
Intel® Pentium™ 4 CPU 3.4Ghz
2577972KB RAM
SONY DVD RW DRU–530A, ATAPI CD/DVD–ROM drive
1.44 MB floppy drive
Two slots for removable IDE hard disk drives
Two slots for removable SATA hard disk drives
Two slots for removable SCSI hard disk drives

Paladin and AndWife have the following configuration:

Intel® D845WNL Motherboard
BIOS Version HV84510A.86A.0022.P05
Intel® Pentium™ 4 CPU 2.0Ghz
512672K RAM
Adaptec 29160 SCSI Adapter card
Tekram DC–390U3W SCSI Adapter card
Plextor CR–RW PX–W124TS Rev: 1.06
LG 52X CDROM
1.44 MB floppy drive
Three slots for removable IDE hard disk drives
Two slots for removable SCSI hard disk drive

**Aramis** has the following configuration:

Shuttle SD37P2 Motherboard
BIOS Phoenix Award
Intel® Core™2 Duo Core 2 775 CPU 1.86GHz
Memory (4) 240 pin DDR2 DIMM slots
3x2GB (2 GB 240–pin PC2–4200 non-ECC DDR2 non-Registered DIMM (p/n AMF) per DIMM (Max 6 GB)
1x512 MB (1 512MB 240–pin)
Lite-on IT Corp Model CD–RW/DVD–ROM SOHC–5236V Drive
3–port FireWire 800 (2x 9–pin, 1x 6–pin) PCI Express x1 card. RoHS compliant.
8 USB 2.0 ports
1 IEEE 1394 port (Mini)
1 IEEE 1394 port
1 External SATA port
1 RJ45 Gigabit LAN port
1 Coaxial S/PDIF out

### 4.2 Support Software

A package of programs to support test analysis, FS–TST Release 2.0, was used. The software can be obtained from: http://www.cftt.nist.gov/diskimaging/fs-tst20.zip.

### 5 Test Results

The main item of interest for interpreting the test results is determining the conformance of the device with the test assertions. Conformance with each assertion tested by a given test case is evaluated by examining **Log File Highlights** box of the test report summary.

#### 5.1 Test Results Report Key

A summary of the actual test results is presented in this report. The following table presents a description of each section of the test report summary.

<table>
<thead>
<tr>
<th>Heading</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Line:</td>
<td>Test case ID, name, and version of tool tested.</td>
</tr>
<tr>
<td>Case Summary:</td>
<td>Test case summary from <em>Digital Data Acquisition Tool Assertions and Test Plan Version 1.0</em>.</td>
</tr>
<tr>
<td>Assertions:</td>
<td>The test assertions applicable to the test case, selected from <em>Digital Data Acquisition Tool Assertions and Test Plan Version 1.0</em>.</td>
</tr>
<tr>
<td><strong>Heading</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tester Name:</td>
<td>Name or initials of person executing test procedure.</td>
</tr>
<tr>
<td>Test Host:</td>
<td>Host computer executing the test.</td>
</tr>
<tr>
<td>Test Date:</td>
<td>Time and date that test was started.</td>
</tr>
<tr>
<td>Drives:</td>
<td>Source drive (the drive acquired), destination drive (if a clone is created) and media drive (to contain a created image).</td>
</tr>
<tr>
<td>Source Setup:</td>
<td>Layout of partitions on the source drive and the expected hash of the drive.</td>
</tr>
<tr>
<td>Log Highlights:</td>
<td>Information extracted from various log files to illustrate conformance or nonconformance to the test assertions.</td>
</tr>
<tr>
<td>Results</td>
<td>Expected and actual results for each assertion tested.</td>
</tr>
<tr>
<td>Analysis</td>
<td>Whether or not the expected results were achieved.</td>
</tr>
</tbody>
</table>

**5.2 Test Details**
### DA-06-ATA28

**Case Summary:**

DA-06 Acquire a physical device using access interface AI to an image file.

**Assertions:**

- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AM-09 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AM-10 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl

**Test Host:** Max

**Test Date:** Thu Jan 4 11:58:47 2007

**Drives:**

- src (43)
- dst (none)
- other (EF)

**Source**

- src hash (SHA1): <888E2E7F7AD237DC7A732281DD93F525065E5871>

**Setup**

- src hash (MD5): <BC39C3F7EE7A50E77B9BA1E65A5EEF7>
- 7825000 total sectors (40000000000 bytes)

**Model**

- (BBB-75HCM ) serial # ( WD-WMAMC46588)

**Partition Hashes**

- 43F12 md5sum 16418304 CBA0C9984F51778E89DEF0C6BED06864
- 43F16 md5sum 1077479424 37E81F9B31C84A4AA4882237500908E
- 43F32 md5sum 4301789184 2C4D8D450E5AD28329F616D87114CFFB
- 43swap md5sum 2154999104 4B602964A30FE20D12B2046A7375A7C
- 43x2 md5sum 5371075584 C7A84DE9ACBCB05463604CE8823D0874
- 43NTFS md5sum 14188575744 5D42F3A17C802ACFEF2D313092D7411E

**Log**

- Actual Date: 01/05/07 02:52:32PM

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Results of Linen 5.05f 8/7/2007
Test Case DA-06-ATA28 Linen 5.05f

Highlights:
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: bc39c3f7ee7a50e77b9ba1e65a5aeeef7
- Verify Hash: bc39c3f7ee7a50e77b9ba1e65a5aeeef7
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 40,000,000,000 bytes (37.3GB)
- Total Sectors: 78,125,000
- Rehash of Source MD5: BC39C3F7EE7A50E77B9BA1E65A5AEEF7

Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.2 DA-06-ATA48

Test Case DA-06-ATA48 Linen 5.05f

Case Summary:
DA-06 Acquire a physical device using access interface AI to an image file.

Assertions:
AM-01 The tool uses access interface SRC-AI to access the digital source.
AM-02 The tool acquires digital source DS.
AM-03 The tool executes in execution environment XE.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AM-09 If image file creation is specified, the tool creates an image file on file system type FS.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AM-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AM-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: Max
Test Date: Wed Jan 24 16:56:08 2007
Drives: src(4C) dst (none) other (28-IDE)

Source
src hash (SHA1): < 8FF620D2BEDC8412EDAAD6C8554F872EFBF >

Setup:
src hash (MD5): < D10F763B56D4CEBA2D1311C61F9FB382 >
390721968 total sectors (20049647616 bytes)
24320/254/63 (max cyl/hd values)
24321/255/63 (number of cyl/hd)
IDE disk: Model (WDC WD2000JB-00KFA0) serial # (WD-WMAMR1031111)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 390700737 sectors 200038777344 bytes

Log
Actual Date:01/24/07 05:27:21PM
File Integrity: Completely Verified, 0 Errors
Acquisition Hash: d10f763b56d4ceba2d1311c61f9fb382
Verify Hash: d10f763b56d4ceba2d1311c61f9fb382
EnCase Version: 5.05f
System Version: Linux
Error Granularity: 64
Total Size: 200,049,647,616 bytes (186.3GB)
Total Sectors: 390,721,968
Rehash of Source MD5: D10F763B56D4CEBA2D1311C61F9FB382

Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-09 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved

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# 5.2.3 DA-06-FIRE

## Test Case DA-06-FIRE Linen 5.05f

**Case Summary:**

DA-06 Acquire a physical device using access interface AI to an image file.

**Assertions:**

- **AM-01** The tool uses access interface SRC-AI to access the digital source.
- **AM-02** The tool acquires digital source DS.
- **AM-03** The tool executes in execution environment XE.
- **AM-05** If image file creation is specified, the tool creates an image file on file system type FS.
- **AM-06** All visible sectors are acquired from the digital source.
- **AM-08** All sectors acquired from the digital source are acquired accurately.
- **AM-05** If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- **AO-01** If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- **AO-05** If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- **AO-22** If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- **AO-23** If the tool logs any log significant information, the information is accurately recorded in the log file.
- **AO-24** If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl

**Test Host:** AndWife

**Test Date:** Tue Jan 16 11:35:41 2007

**Drives:**

- **src(63-FU2)**
- **dst (none)**
- **other (RF)**

**Log Highlights:**

- **Actual Date:** 01/16/07 01:57:57PM
- **File Integrity:** Completely Verified, 0 Errors
- **Acquisition Hash:** see217bc4f4f3d1b4021d29b065aa9ec
- **Verify Hash:** see217bc4f4f3d1b4021d29b065aa9ec
- **EnCase Version:** 5.05f
- **System Version:** Linux
- **Error Granularity:** 64
- **Total Size:** 60,060,155,904 bytes (55.9GB)
- **Total Sectors:** 117,304,992

**Results:**

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>
Test Case DA-06-FIRE Linen 5.05f

| Analysis: | Expected results achieved |

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5.2.4 DA-06-SATA28

**Test Case DA-06-SATA28 Linen 5.05f**

**Case Summary:**
DA-06 Acquire a physical device using access interface AI to an image file.

**Assertions:**
- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl
**Test Host:** Max
**Test Date:** Wed Jan 17 14:17:03 2007

**Drives:**
- src(07) dst (none) other (EF)

**Source Setup:**
- src hash (SHA1): < 655E9BDDDB36A3F9C5C4CC8BF32B8C5B41AF9F52E >
- src hash (MD5): < 2EAF712DA80F66E30DEAA00365B4579B >
- 156301488 total sectors (80026361856 bytes)
- Model (WDC WD800JD-32HK) serial # (WD-WMAJ91510044)
- N Start LBA Length. Start C/H/S End C/H/S boot Partition type
- 1 P 000000063 156280257 0000/001/01 1023/254/63 Boot 07 NTFS
- 2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
- 3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
- 4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
- 1 156280257 sectors 80015491584 bytes

**Log Highlights:**
- Actual Date: 01/17/07 02:26:24PM
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: 2eaf712dad80f66e30dea00365b4579b
- Verify Hash: 2eaf712dad80f66e30dea00365b4579b
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 80,026,361,856 bytes (74.5GB)
- Total Sectors: 156,301,488
- Rehash of Source MD5: 2EAF712DA80F66E30DEAA00365B4579B

**Results:**

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
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<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
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<tr>
<td>AO-05 Multifile image created.</td>
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</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

**Analysis:** Expected results achieved
5.2.5 DA-06-SATA48

**Test Case DA-06-SATA48 Linen 5.05f**

**Case Summary:** DA-06 Acquire a physical device using access interface AI to an image file.

**Assertions:**
- **AM-01** The tool uses access interface SRC-AI to access the digital source.
- **AM-02** The tool acquires digital source DS.
- **AM-03** The tool executes in execution environment XE.
- **AM-05** If image file creation is specified, the tool creates an image file on file system type FS.
- **AM-06** All visible sectors are acquired from the digital source.
- **AM-08** All sectors acquired from the digital source are acquired accurately.
- **AM-05** If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- **AO-01** If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- **AO-05** If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- **AO-22** If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- **AO-23** If the tool logs any log significant information, the information is accurately recorded in the log file.
- **AO-24** If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl
**Test Host:** Max
**Test Date:** Tue Jan 16 16:51:34 2007
**Drives:** src(0D) dst (none) other (EF)

**Log Highlights:**
- Actual Date: 01/16/07 05:13:52PM
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: 1fa7c3cbe60eb9eb8963ded2411e40c9
- Verify Hash: 1fa7c3cbe60eb9eb8963ded2411e40c9
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 250,059,350,016 bytes (232.4GB)
- Total Sectors: 488,397,168
- Rehash of Source MD5: 1fa7c3cbe60eb9eb8963ded2411e40c9

**Results:**

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
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</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
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<tr>
<td>AM-02 Source is type DS.</td>
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<tr>
<td>AM-03 Execution environment is XE.</td>
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</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
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</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
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<tr>
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<tr>
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<td>AO-05 Multifile image created.</td>
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</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
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</tr>
</tbody>
</table>

**Analysis:** Expected results achieved
## Test Case DA-06-SCSI Linen 5.05f

**Case Summary:**
DA-06 Acquire a physical device using access interface AI to an image file.

**Assertions:**
- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-05 If the tool creates a multi-file image of a requested size, then all the individual files shall be no larger than the requested size.
- AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl  
**Test Host:** Max  
**Test Date:** Wed Jan 10 15:22:26 2007  
**Drives:** src(2A) dst (none) other (EF)

**Source Setup:**
- src hash (SHA1): `< F5F9F2903DCA3B895F36E270FB22A722E27981825 >`
- src hash (MD5): `< 91E0AC905F682ECEF6DE4E9835089B519 >`
- 17783249 total sectors (9105023488 bytes)
- Model (QM39100TD-SCA ) serial # (PCB=20-116711-06 HDAQM39100TD-SCA )
- N Start LBA Length Start C/H/S End C/H/S boot Partition type
  1 000000063 01775176 0000/001/01 1023/254/63 Boot 07 NTFS
  2 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  3 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  4 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  1 017751762 sectors 9088902144 bytes

**Log Highlights:**
- Actual Date:01/12/07 05:48:38PM  
- File Integrity: Completely Verified, 0 Errors  
- Acquisition Hash:91e0ac905f682ecf6de4e9835089b519  
- Verify Hash:91e0ac905f682ecf6de4e9835089b519  
- EnCase Version:5.05f  
- System Version:Linux  
- Error Granularity:64  
- Total Size:9,105,023,488 bytes (8.5GB)  
- Total Sectors:17,783,249  
- Rehash of Source MD5: 91E0AC905F682ECEF6DE4E9835089B519

**Results:**

<table>
<thead>
<tr>
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<tr>
<td>AM-01 Source acquired using interface AI.</td>
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</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
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<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

**Analysis:** Expected results achieved
**5.2.7 DA-06-USB**

**Test Case DA-06-USB Linen 5.05f**

**Case Summary:**
DA-06 Acquire a physical device using access interface AI to an image file.

**Assertions:**
- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AM-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AM-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-01 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-22 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl

**Test Host:** AndWife

**Test Date:** Wed Jan 24 13:58:01 2007

**Drives:**
- src (63-FU2)
- dst (none)
- other (RF)

**Source:**
- src hash (SHA1): < F7069EDC863C88DECE68159F2DA96BE99B >
- src hash (MD5): < EE217BC4FA4F3D1B4021D29B065AA9EC >

**Setup:**
- 117304992 total sectors (60060155904 bytes)
- Model (SP0612N ) serial # ()

**Log Highlights:**
- Actual Date:01/24/07 02:08:31PM
- File Integrity:Completely Verified, 0 Errors
- Acquisition Hash:ee217bc4fa4f3d1b4021d29b065aa9ec
- Verify Hash:ee217bc4fa4f3d1b4021d29b065aa9ec
- EnCase Version:5.05f
- System Version:Linux
- Error Granularity:64
- Total Size:60,060,155,904 bytes (55.9GB)
- Total Sectors:117,304,992

**Results:**

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
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</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

January 2008 19 of 58 Results of Linen 5.05f 8/7/2007
<table>
<thead>
<tr>
<th>Test Case DA-06-USB Linen 5.05f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis:</td>
</tr>
<tr>
<td>Expected results achieved</td>
</tr>
</tbody>
</table>
5.2.8 DA-07-NT

Test Case DA-07-NT Linen 5.05f

Case Summary:
DA-07 Acquire a digital source of type DS to an image file.

Assertions:
AM-01 The tool uses access interface SRC-AI to access the digital source.
AM-02 The tool acquires digital source DS.
AM-03 The tool executes in execution environment XE.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AM-09 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AM-10 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AO-02 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: AndWife
Test Date: Wed Feb 7 16:30:39 2007

Drives: src(43) dst (none) other (EF)

Source hash (SHA1): < 888E2E7F7AD237DC7A732281DD93F325065E5871 >
Source hash (MD5): < BC39C3F7EE7A50E77B9BA1E65A5AEEF7 >
78125000 total sectors (4000000000 bytes)

Model (0BB-75JHC0 ) serial # ( WD-WMAMC46588)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 000000063 020980827 0000/001/01 1023/254/63 0C Fat32X
2 X 020980890 057143205 1023/000/01 1023/254/63 05 extended
3 S 000000063 000032067 1023/001/01 1023/254/63 01 Fat12
4 x 000032130 002104515 1023/000/01 1023/254/63 05 extended
5 S 000000063 002104452 1023/001/01 1023/254/63 06 Fat16
6 x 002136645 004192965 1023/000/01 1023/254/63 05 extended
7 S 000000063 004192902 1023/001/01 1023/254/63 16 other
8 x 006329610 008401995 1023/000/01 1023/254/63 05 extended
9 S 000000063 008401932 1023/001/01 1023/254/63 0B Fat32
10 x 014731605 010490445 1023/000/01 1023/254/63 05 extended
11 S 000000063 010490382 1023/001/01 1023/254/63 83 Linux
12 x 025222050 004209030 1023/000/01 1023/254/63 05 extended
13 S 000000063 004208967 1023/001/01 1023/254/63 82 Linux swap
14 x 029431080 027712125 1023/000/01 1023/254/63 05 extended
15 S 000000063 027712062 1023/001/01 1023/254/63 07 NTFS
16 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
17 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
18 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 020980827 sectors 10742183424 bytes
2 000032067 sectors 16418304 bytes
3 000032067 sectors 16418304 bytes
5 002104452 sectors 1077479424 bytes
6 004192902 sectors 1077479424 bytes
7 004192902 sectors 1077479424 bytes
9 008401932 sectors 1077479424 bytes
11 010490382 sectors 1077479424 bytes
13 004208967 sectors 1077479424 bytes
15 027712062 sectors 1077479424 bytes

Partition Hashes
43F12 md5sum 16418304 CBA0C9984F51778E89DEF0C6BED06864
43F16 md5sum 1077479424 37E81FFB31C3CB38AA48B2237500908E
43F32 md5sum 4301789184 2C4DBD450E5AD28329F616D8711GCCFE
43F32x md5sum 10742183424 5980C0BFA68E8962C65765DF50F0090E
43swap md5sum 2154991104 4BF602964A30FR020DB2B046A7375A7C
43x2 md5sum 5371075584 C7A84DE9ACB6C5463604CE8823D0874
43NTFS md5sum 14188575744 5D42FA317C8022CAEFE2D0313092D7411E

Log
Total Capacity:14,188,572,672 bytes (13.2GB)
**Test Case DA-07-NT Linen 5.05f**

| Highlights:    | Total Clusters:3,464,007 Unallocated:14,118,940,672 bytes (13.1GB) |
|               | Actual Date:02/07/07 04:36:33PM                                      |
|               | File Integrity: Completely Verified, 0 Errors                        |
|               | Acquisition Hash:5d42fa317c802acfeff2d313092d7411e                    |
|               | Verify Hash:5d42fa317c802acfeff2d313092d7411e                         |
|               | EnCase Version:5.05f                                                 |
|               | System Version:Linux                                                 |
|               | Error Granularity:64                                                 |
|               | Total Size:14,188,575,744 bytes (13.2GB)                             |
|               | Total Sectors:27,712,062                                              |
|               | Rehash of Source MD5: BC39C3F7EE7A50E77B9BA1E65A5AEEF7                |

| Results:   | Assertion & Expected Result                                      | Actual Result |
|           | AM-01 Source acquired using interface AI.                       | as expected   |
|           | AM-02 Source is type DS.                                       | as expected   |
|           | AM-03 Execution environment is XE.                             | as expected   |
|           | AM-05 An image is created on file system type FS.              | as expected   |
|           | AM-06 All visible sectors acquired.                           | as expected   |
|           | AM-08 All sectors accurately acquired.                         | as expected   |
|           | AO-01 Image file is complete and accurate.                     | as expected   |
|           | AO-05 Multifile image created.                                 | as expected   |
|           | AO-22 Tool calculates hashes by block.                         | option not available |
|           | AO-23 Logged information is correct.                           | as expected   |
|           | AO-24 Source is unchanged by acquisition.                      | as expected   |

**Analysis:** Expected results achieved
DA-07: Acquire a digital source of type DS to an image file.

**Assertions:**
- AM-01: The tool uses access interface SRC-AI to access the digital source.
- AM-02: The tool acquires digital source DS.
- AM-03: The tool executes in execution environment XE.
- AM-05: If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06: All visible sectors are acquired from the digital source.
- AM-08: All sectors acquired from the digital source are acquired accurately.
- AO-01: If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-05: If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-22: If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23: If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24: If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl
**Test Host:** AndWife
**Test Date:** Tue Feb 6 16:22:18 2007
**Drives:**
- src(C1-CF) dst (none) other (52-IDE)

**Source**
- src hash (SHA1): < 5B8235178DF99FA307430C088F81746606E38A0B >
- src hash (MD5): < 776DF8B4D2589E21DEBCF589EDC16D78 >

**Setup**
- 503808 total sectors (257949696 bytes)

**Model**
- CF, serial # ()

**Log**

**Highlights:**

- Actual Date:02/06/07 04:29:07PM
- File Integrity:Completely Verified, 0 Errors
- Acquisition Hash:776df8b4d2589e21debcf589edc16d78
- Verify Hash:776df8b4d2589e21debcf589edc16d78
- EnCase Version:5.05f
- System Version:Linux
- Error Granularity:64
- Total Size:257,949,696 bytes (246MB)
- Total Sectors:503,808

**Results:**

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>Test Case DA-07-CP Linen 5.05f</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>Analysis: Expected results achieved</td>
<td></td>
</tr>
</tbody>
</table>

January 2008 24 of 58 Results of Linen 5.05f 8/7/2007
5.2.10 DA-07-F12

Test Case DA-07-F12 Linen 5.05f

Case Summary:
DA-07 Acquire a digital source of type DS to an image file.

Assertions:
AM-01 The tool uses access interface SRC-AI to access the digital source.
AM-02 The tool acquires digital source DS.
AM-03 The tool executes in execution environment XE.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: AndWife
Test Date: Wed Feb 7 14:21:01 2007

Drives:
- src(43) dst (none) other (EF)

Source:
- src hash (SHA1): < 888E2E7F7AD237DC7A732281DD93F352506565871 >
- src hash (MD5): < BC39C3F7EE7A50E77B9BA165A5AEFF7 >

Model (0BB-75JHC0 ) serial # ( WD-WMAMC46588)

<table>
<thead>
<tr>
<th>N</th>
<th>Start LBA Length</th>
<th>Start C/H/S End C/H/S</th>
<th>boot Partition type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P 000000063</td>
<td>020980827 0000/001/01</td>
<td>1023/254/63 0C Fat32X</td>
</tr>
<tr>
<td>2</td>
<td>X 020980890</td>
<td>057143205 1023/000/01</td>
<td>1023/254/63 0F extended</td>
</tr>
<tr>
<td>3</td>
<td>S 000000063</td>
<td>000032067 1023/001/01</td>
<td>1023/254/63 01 Fat12</td>
</tr>
<tr>
<td>4</td>
<td>X 0000003130</td>
<td>002104515 1023/001/01</td>
<td>1023/254/63 05 extended</td>
</tr>
<tr>
<td>5</td>
<td>S 000000063</td>
<td>002104452 1023/001/01</td>
<td>1023/254/63 06 Fat16</td>
</tr>
<tr>
<td>6</td>
<td>X 002156645</td>
<td>004192965 1023/000/01</td>
<td>1023/254/63 05 extended</td>
</tr>
<tr>
<td>7</td>
<td>S 000000063</td>
<td>004192902 1023/001/01</td>
<td>1023/254/63 16 other</td>
</tr>
<tr>
<td>8</td>
<td>X 006329610</td>
<td>008401995 1023/000/01</td>
<td>1023/254/63 05 extended</td>
</tr>
<tr>
<td>9</td>
<td>S 000000063</td>
<td>008401932 1023/001/01</td>
<td>1023/254/63 0B Fat32</td>
</tr>
<tr>
<td>10</td>
<td>X 014731605</td>
<td>014904455 1023/000/01</td>
<td>1023/254/63 05 extended</td>
</tr>
<tr>
<td>11</td>
<td>S 000000063</td>
<td>014903832 1023/001/01</td>
<td>1023/254/63 03 Linux</td>
</tr>
<tr>
<td>12</td>
<td>X 025222050</td>
<td>042909930 1023/000/01</td>
<td>1023/254/63 05 extended</td>
</tr>
<tr>
<td>13</td>
<td>S 000000063</td>
<td>042909667 1023/001/01</td>
<td>1023/254/63 82 Linux swap</td>
</tr>
<tr>
<td>14</td>
<td>X 029341080</td>
<td>027712125 1023/000/01</td>
<td>1023/254/63 05 extended</td>
</tr>
<tr>
<td>15</td>
<td>S 000000063</td>
<td>027712062 1023/001/01</td>
<td>1023/254/63 07 NTFS</td>
</tr>
<tr>
<td>16</td>
<td>S 000000000</td>
<td>000000000 0000/000/00</td>
<td>00 empty entry</td>
</tr>
<tr>
<td>17</td>
<td>P 000000000</td>
<td>000000000 0000/000/00</td>
<td>00 empty entry</td>
</tr>
<tr>
<td>18</td>
<td>P 000000000</td>
<td>000000000 0000/000/00</td>
<td>00 empty entry</td>
</tr>
</tbody>
</table>

Log:
- Total Capacity:16,384,000 bytes (15.6MB)
### Test Case DA-07-F12 Linen 5.05f

**Highlights:**
- Total Clusters: 14,000
- Unallocated: 15,208,448 bytes (14.5MB)
- Actual Date: 02/07/07 02:26:56PM
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: cba0c9984f51778e89def0c6bed06864
- Verify Hash: cba0c9984f51778e89def0c6bed06864
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 16,418,304 bytes (15.7MB)
- Total Sectors: 32,067

Rehash of Source MD5: BC39C3F7HE7A50E77B9BA1E65A5AEEF7

### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
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<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
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<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

### Analysis:

Expected results achieved
Test Case DA-07-F16 Linen 5.05f

Case Summary:
DA-07 Acquire a digital source of type DS to an image file.

Assertions:
AM-01 The tool uses access interface SRC-AI to access the digital source.
AM-02 The tool acquires digital source DS.
AM-03 The tool executes in execution environment XE.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: AndWife
Test Date: Wed Feb 7 15:13:42 2007
Drives: src(43) dst (none) other (EF)

Source (SHA1): < 88BE2E7F7AD237DC7A732281DD93F250656E5871 >
Setup (MD5): < BC393C3FEE7A50E77B98A1E65A5EEF7 >

78125000 total sectors (40000000000 bytes)
Model (0BB-75JHC0) serial # ( WD-WMAMC46588)

Partition Hashes
43F12 md5sum 16418304 CBA0C9984F51778E89DEF0C6BED06864
43F16 md5sum 1077479424 37E81F8B13C3CB3AA4882B237500908E
43F32 md5sum 4301789184 2C4D8D450E5AD28329F61ED87114C8FB
43F32x md5sum 10742183424 5980CB0FA68E88B62C65765DF50D09006
43swap md5sum 2154991104 4B602964A30F20DD122B046A7375A7C
43x2 md5sum 5371075584 C7A84DE9ACBCB05463604CE8823D0B74
43NTFS md5sum 14188575744 5D42FA317C802ACF82F331092D7411E

Log
Total Capacity:1,077,313,536 bytes (1GB)
## Test Case DA-07-F16 Linen 5.05f

### Highlights:
- Total Clusters: 32,877
- Unallocated: 1,076,953,088 bytes (1GB)
- Actual Date: 02/07/07 03:18:50PM
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: 37e81ffb31c3cb38aa48b2237500908e
- Verify Hash: 37e81ffb31c3cb38aa48b2237500908e
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 1,077,479,424 bytes (1GB)
- Total Sectors: 2,104,452
- Rehash of Source MD5: BC39C3F7EE7A50E77B9BA1E65A5AEEF7

### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
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</thead>
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<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

### Analysis:
Expected results achieved
5.2.12 DA-07-F32

Test Case DA-07-F32 Linen 5.05f

Case Summary:
DA-07 Acquire a digital source of type DS to an image file.

Assertions:
AM-01 The tool uses access interface SRC-AI to access the digital source.
AM-02 The tool acquires digital source DS.
AM-03 The tool executes in execution environment XE.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: Max
Test Date: Thu Feb 8 09:52:27 2007
Drives: src(43) dst (none) other (EF)
Source src hash (SHA1): < 888E2E7F7AD237DC7A732281DD93F325065E5871 >
Setup: src hash (MD5): < BC39CF3FE7A50E77B9BA1E65A5AEEF7 >
78125000 total sectors (40000000000 bytes)
Model (0BB-75JHC0 ) serial # ( WD-WJAMC46588)

<table>
<thead>
<tr>
<th>N</th>
<th>Start LBA Length</th>
<th>Start C/H/S</th>
<th>End C/H/S</th>
<th>boot Partition type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0000000063 020980827 0000/001/01 1023/254/63</td>
<td>0C Fat32X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>020980890 057143205 1023/000/01 1023/254/63</td>
<td>0F extended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0000000063 000032067 1023/000/01 1023/254/63</td>
<td>01 Fat12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0000000063 002104515 1023/000/01 1023/254/63</td>
<td>05 extended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0000000063 02104452 1023/000/01 1023/254/63</td>
<td>06 Fat16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0000000063 04192965 1023/000/01 1023/254/63</td>
<td>05 extended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>0000000063 04192902 1023/000/01 1023/254/63</td>
<td>16 other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>006329610 004192902 1023/000/01 1023/254/63</td>
<td>05 extended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0000000063 04192932 1023/000/01 1023/254/63</td>
<td>0B Fat32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>014731605 010490382 1023/000/01 1023/254/63</td>
<td>05 extended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>0000000063 010490382 1023/000/01 1023/254/63</td>
<td>83 Linux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>025222050 004209030 1023/000/01 1023/254/63</td>
<td>05 extended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>0000000063 004209897 1023/000/01 1023/254/63</td>
<td>82 Linux swap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>004209867 027712125 1023/000/01 1023/254/63</td>
<td>05 extended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>004209867 027712062 1023/000/01 1023/254/63</td>
<td>07 NTFS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>0000000000 000000000 0000/000/00 0000/000/00</td>
<td>00 empty entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>0000000000 000000000 0000/000/00 0000/000/00</td>
<td>00 empty entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>0000000000 000000000 0000/000/00 0000/000/00</td>
<td>00 empty entry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Partition Hashes
43F12 md5sum 16418304 bytes (4GB)
43F16 md5sum 10742183424 bytes (4GB)
43F32 md5sum 14188575744 bytes (4GB)

Log
Total Capacity:4,293,382,144 bytes (4GB)
## Test Case DA-07-F32 Linen 5.05f

### Highlights:
- Total Clusters: 1,048,189
- Unallocated: 4,293,173,248 bytes (4GB)
- Actual Date: 02/08/07 09:59:44AM
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: 2c4d8d450e5ad28329f616d87114ccfe
- Verify Hash: 2c4d8d450e5ad28329f616d87114ccfe
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 4,301,789,184 bytes (4GB)
- Total Sectors: 8,401,932

Rehash of Source MD5: BC39C3F7EE7A50E77B9BA1E65A5AE6F7

### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
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<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

### Analysis:
- Expected results achieved
5.2.13 DA-07-F32X

Test Case DA-07-F32X Linen 5.05f

Case Summary: DA-07 Acquire a digital source of type DS to an image file.

Assertions: AM-01 The tool uses access interface SRC-AI to access the digital source.
AM-02 The tool acquires digital source DS.
AM-03 The tool executes in execution environment XE.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: AndWife
Test Date: Wed Feb 7 10:30:22 2007
Drives: src(43) dst (none) other (52-IDE)
Source src hash (SHA1): <888E2E77FAD237DC7A732281DD93F325065E5871>
78125000 total sectors (40000000000 bytes)
Model (0BB-75JHC0) serial # (WD-WMA4C46588)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 000000063 020980827 0000/001/01 1023/254/63 0C Fat32X
2 020980890 057143205 1023/000/01 1023/254/63 0F extended
3 000000063 000032067 1023/001/01 1023/254/63 01 Fat12
4 000000063 002104515 1023/001/01 1023/254/63 05 extended
5 000000063 002104452 1023/001/01 1023/254/63 06 Fat16
6 000013645 004192965 1023/001/01 1023/254/63 05 extended
7 000000063 004192902 1023/001/01 1023/254/63 16 other
8 0006329610 008401995 1023/001/01 1023/254/63 05 extended
9 000000063 008401932 1023/001/01 1023/254/63 0B Fat32
10 014731605 010490445 1023/001/01 1023/254/63 05 extended
11 000000063 010490382 1023/001/01 1023/254/63 83 Linux
12 0025222050 004209030 1023/001/01 1023/254/63 82 Linux swap
14 0029431080 027712125 1023/001/01 1023/254/63 05 extended
15 000000063 027712062 1023/001/01 1023/254/63 07 NTFS
16 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
17 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
18 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 020980827 sectors 10742183424 bytes
2 000032067 sectors 16418304 bytes
5 002104452 sectors 1077479424 bytes
7 004192902 sectors 16418304 bytes
9 008401932 sectors 16418304 bytes
11 010490382 sectors 16418304 bytes
13 002104452 sectors 16418304 bytes
15 027712062 sectors 14188575744 bytes
Partition Hashes
43F12 md5sum CBA0C9984F51778E9DEF0C6ED06864
43F16 md5sum 37E81FFB31C3CB38AA48B237500908E
43F32 md5sum 2C4DBD450E5AD28329F616D87114CCFEB
43Fx2 md5sum 59B0C5CF6E8E9862C65765DF5GF09006
43swap md5sum 01742183424 5B980CBAF68E9862C65765DF5GF09006
AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Log Total Capacity:10,731,683,840 bytes (10GB)
### Test Case DA-07-F32X Linen 5.05f

**Highlights:**
- Total Clusters: 1,310,020
- Unallocated: 10,729,906,176 bytes (10GB)
- Total Size: 10,742,183,424 bytes (10GB)
- Total Sectors: 20,980,827
- Rehash of Source MD5: BC39C3F7EE7A50E77B9BA1E65A5AEEF7

**Actual Date:** 02/07/07 10:35:56AM
**OEM Version:** MSWIN4.1
**Serial Number:** 4445-13C7
**File Integrity:** Completely Verified, 0 Errors
**Acquisition Hash:** 5980cb0fa6e9862c65765df50f00906
**Verify Hash:** 5980cb0fa6e9862c65765df50f00906
**EnCase Version:** 5.05f
**System Version:** Linux
**Error Granularity:** 64

### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
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<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

### Analysis:

Expected results achieved

---

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**5.2.14 DA-07-THUMB**

**Test Case DA-07-THUMB Linen 5.05f**

**Case Summary:**
DA-07 Acquire a digital source of type DS to an image file.

**Assertions:**
- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl
**Test Host:** Max
**Test Date:** Thu Feb 8 11:54:55 2007
**Drives:**
- src(DS-THUMB)
- dst (none)
- other (EF)

**Source and Setup:**
- src hash (SHA1): <DB6520EF74A336E49DCCF83815B7B08FDC53E38A>
- src hash (MD5): <C843593624B2B878596D8760B19954>
- 505856 total sectors (258998272 bytes)
- Model (usb2.0Flash Disk) serial # ()
- N Start LBA Length Start C/H/S End C/H/S boot Partition type
- 1 P 778135908 1141509631 0357/116/40 0357/032/45 Boot 72 other
- 2 P 16869522 1936028240 0288/115/43 0367/114/50 Boot 65 other
- 3 P 1869881465 1936028192 0366/032/33 0357/032/43 Boot 79 other
- 4 P 2885681152 000055499 0372/097/50 0000/010/00 Boot 0D other
- 1 1141509631 sectors 584452931072 bytes
- 2 1936028240 sectors 991246458880 bytes
- 3 1936028192 sectors 991246434304 bytes
- 4 000055499 sectors 28415488 bytes

**Log Highlights:**
- Actual Date:02/08/07 11:59:09AM
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: c843593624b2b3b878596d8760b19954
- Verify Hash: c843593624b2b3b878596d8760b19954
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 258,998,272 bytes (247MB)
- Total Sectors: 505,856
- Rehash of Source MD5: C843593624B2B878596D8760B19954

**Results:**

<table>
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<tr>
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<th>Actual Result</th>
</tr>
</thead>
<tbody>
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<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

January 2008 33 of 58 Results of Linen 5.05f 8/7/2007
<table>
<thead>
<tr>
<th>Test Case DA-07-THUMB Linen 5.05f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis:</td>
</tr>
<tr>
<td>Expected results achieved</td>
</tr>
</tbody>
</table>
## 5.2.15 DA-07-X2

### Test Case DA-07-X2 Linen 5.05f

**Case Summary:**
DA-07 Acquire a digital source of type DS to an image file.

**Assertions:**
- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AM-09 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-08 All visible sectors are acquired from the digital source.
- AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-02 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl

**Test Host:** Max

**Test Date:** Thu Feb 8 16:15:59 2007

**Drives:**
- `src`: (43) src hash (SHA1): `< 888E2E7F7AD237DC7A732281DD93F325065E5871 >`
- `dst`: (none) other (EF)

**Model:** (0BB-75JHC0 ) serial # ( WD-WDMAC46588)

**Partition Table:**

<table>
<thead>
<tr>
<th>N</th>
<th>Start LBA</th>
<th>Length</th>
<th>Start C/H/S</th>
<th>End C/H/S</th>
<th>Boot</th>
<th>Partition type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P 000000063</td>
<td>020980827</td>
<td>0000/001/01</td>
<td>1023/254/63</td>
<td>0C</td>
<td>Fat32X</td>
</tr>
<tr>
<td>2</td>
<td>X 020980890</td>
<td>057143205</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>0F</td>
<td>extended</td>
</tr>
<tr>
<td>3</td>
<td>S 000000063</td>
<td>00032067</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>01</td>
<td>Fat12</td>
</tr>
<tr>
<td>4</td>
<td>X 00032130</td>
<td>02104515</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>05</td>
<td>extended</td>
</tr>
<tr>
<td>5</td>
<td>S 000000063</td>
<td>02104452</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>06</td>
<td>Fat16</td>
</tr>
<tr>
<td>6</td>
<td>X 00213645</td>
<td>004192965</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>05</td>
<td>extended</td>
</tr>
<tr>
<td>7</td>
<td>S 000000063</td>
<td>004192902</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>16</td>
<td>other</td>
</tr>
<tr>
<td>8</td>
<td>X 006329610</td>
<td>08401995</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>05</td>
<td>extended</td>
</tr>
<tr>
<td>9</td>
<td>S 000000063</td>
<td>08401932</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>0B</td>
<td>Fat32</td>
</tr>
<tr>
<td>10</td>
<td>X 014731605</td>
<td>010490445</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>05</td>
<td>extended</td>
</tr>
<tr>
<td>11</td>
<td>S 000000063</td>
<td>010490382</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>83</td>
<td>Linux</td>
</tr>
<tr>
<td>12</td>
<td>X 025222050</td>
<td>004209030</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>82</td>
<td>Linux swap</td>
</tr>
<tr>
<td>13</td>
<td>S 000000063</td>
<td>004208967</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>07</td>
<td>NTFS</td>
</tr>
<tr>
<td>14</td>
<td>X 029431080</td>
<td>027712125</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>05</td>
<td>extended</td>
</tr>
<tr>
<td>15</td>
<td>S 000000063</td>
<td>027712062</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>00</td>
<td>empty entry</td>
</tr>
<tr>
<td>16</td>
<td>S 000000000</td>
<td>000000000</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00</td>
<td>empty entry</td>
</tr>
<tr>
<td>17</td>
<td>P 000000000</td>
<td>000000000</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00</td>
<td>empty entry</td>
</tr>
<tr>
<td>18</td>
<td>P 000000000</td>
<td>000000000</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00</td>
<td>empty entry</td>
</tr>
</tbody>
</table>

**Source**
- `src hash (MD5): < BC39C3F7EE7A507E7B98A1E65A5AEEF7 >`
- `src hash (SHA1): < 888E2E7F7AD237DC7A732281DD93F325065E5871 >`

**Setup**
- `78125000 total sectors (4000000000 bytes)`

**Partition Hashes**

- `43F12 md5sum 16418304 CBA0C9984F51778E89DEF0C6BED06864`
- `43F16 md5sum 1077479424 37E81F8B1C3CB3AA4882237509098E`
- `43F32 md5sum 4301789184 2C4DB4D50E5AD28329F616D87114C46E`
- `43swap md5sum 8789AB1C689B862C65765DF50DF0906`
- `43F12 md5sum 2154991104 48B02964A3D238DB42D2B046A375A7C`
- `43x2 md5sum 5371075584 C7A84DE9ACBCB50463604CE8823D0874`
- `43NTFS md5sum 14188575744 54D2FA317C802ACFEF2D3130927411E`

**Log**
- `Log Total Capacity:5,371,075,584 bytes (5GB)`
Test Case DA-07-X2 Linen 5.05f

Highlights:  Total Clusters:5,245,191  Unallocated:5,187,181,568 bytes (4.8GB)
            Actual Date:02/08/07 04:19:53PM
            File Integrity:Completely Verified, 0 Errors
            Acquisition Hash:c7a84de9acbc05463604ce8823d0874
            Verify Hash:c7a84de9acbc05463604ce8823d0874
            EnCase Version:5.05f
            System Version:Linux
            Error Granularity:64
            Total Size:5,371,075,584 bytes (5GB)
            Total Sectors:10,490,382
            Hash of Source MD5: BC39C3F7EE7A50E77B9BA1E65A5AEEF7

Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
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<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 All image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis:  Expected results achieved
5.2.16 DA-08-ATA28

Test Case DA-08-ATA28 Linen 5.05f

Case DA-08 Acquire a physical drive with hidden sectors to an image file.

Summary:

Assertions:

AM-01 The tool uses access interface SRC-AI to access the digital source.
AM-02 The tool acquires digital source DS.
AM-03 The tool executes in execution environment XE.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-07 All hidden sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: AndWife
Test Date: Mon Feb 5 13:20:03 2007
Drives: src (42) dst (none) other (28-IDE)

Source src hash (SHA1): < 5A75399023056E0EB905082B35F8AA1DB049229 >
src hash (MD5): < F4B9AAB24554EEEB2A962BDA554A9252 >
78165360 total sectors (40020664320 bytes)
65534/015/63 (max cyl/hd values)
65535/016/63 (number of cyl/hd)
IDE disk: Model (WDC WD400JB-00JJC0) serial # (WD-WCAMA3958512)
N  Start LBA Length   Start C/H/S End C/H/S  boot Partition type
1 P 000000063 070348572 0000/001/01 1023/254/63 Boot 07 NTFS
2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 070348572 sectors 36018468864 bytes
HPA created
BIOS, XBIOS and Direct disk geometry Reporter (BXDR)
BXDR 128 /S70000000 /P /fbxdrlog.txt
Setting Maximum Addressable Sector to 70000000
MAS now set to 70000000

Hashes with HPA in place
md5:9BF3C3DEADE47056A1DDC073C5F6B2E2
sha1:D76F909482B00767B62C295CADE2E202F92E61CD2E

Log

Highlights:

File Integrity: Completely Verified, 0 Errors
Acquisition Hash: f4b9aab24554eeeb2a962bda554a9252
Verify Hash: f4b9aab24554eeeb2a962bda554a9252
EnCase Version: 5.05f
System Version: Linux
Error Granularity: 64
Total Size: 40,020,664,320 bytes (37.3GB)
Total Sectors: 78,165,360

Rehash of Source MD5: 9BF3C3DEADE47056A1DDC073C5F6B2E2

Results:

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</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>Test Case DA-08-ATA28 Linen 5.05f</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-07 All hidden sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
Test Case DA-08-ATA48 Linen 5.05f

Case Summary:
DA-08 Acquire a physical drive with hidden sectors to an image file.

Assertions:
- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-07 All hidden sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: Joe
Test Date: Tue Feb 6 17:32:06 2007
Drives: src(4B) dst (none) other (28-IDE)
Source src hash (SHA1): < F409920836FED76DBB6DEEF467A6DDE5BF48E >
Source src hash (MD5): < B5641B5A594912B4D60518304B1DE698 >
390721968 total sectors (20049647616 bytes)
24320/254/63 (max cyl/hd values)
24321/255/63 (number of cyl/hd)

IDE disk: Model (WDC WD2000JB-00GVC0) serial # (WD-WCAL78252964)
  N Start LBA Length Start C/H/S End C/H/S  boot Partition type
  1 P 000000063 351646722 0000/001/01 1023/254/63 Boot 07 NTFS
  2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 351646722 sectors 180043121664 bytes

HPA created
BIOS, XBIOS and Direct disk geometry Reporter (BXDR)
BXDR 128 /S351000000 /P /FHPA.TXT
Setting Maximum Addressable Sector to 351000000
MAS now set to 351000000

Hashes with HPA in place
md5:6BAFEFC000470C126434D933429C879B
shai:2D50DBDB82CD3DA90A65BF13B2B4080C40998A1

Log Highlights:
Actual Date:02/06/07 05:33:25PM
File Integrity:Completely Verified, 0 Errors
Acquisition Hash: b5641b5a594912b4d60518304b1de698
Verify Hash: b5641b5a594912b4d60518304b1de698
EnCase Version:5.05f
System Version:Linux
Error Granularity:64
Total Size:200,049,647,616 bytes (186.3GB)
Total Sectors:390,721,968

Rehash of Source MD5: 6BAFEFC000470C126434D933429C879B

Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
</tbody>
</table>
### Test Case DA-08-ATA48 Linen 5.05f

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-06</td>
<td>All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-07</td>
<td>All hidden sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08</td>
<td>All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01</td>
<td>Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05</td>
<td>Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22</td>
<td>Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23</td>
<td>Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24</td>
<td>Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

**Analysis:** Expected results achieved
5.2.18 DA-08-DCO

**Test Case DA-08-DCO Linen 5.05f**

**Case Summary:**
DA-08 Acquire a physical drive with hidden sectors to an image file.

**Assertions:**

- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-07 All hidden sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Assertions & Expected Result**

<table>
<thead>
<tr>
<th>Assertion</th>
<th>Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01</td>
<td>Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02</td>
<td>Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03</td>
<td>Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05</td>
<td>An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06</td>
<td>All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-07</td>
<td>All hidden sectors acquired.</td>
<td>DCO not acquired</td>
</tr>
<tr>
<td>AM-08</td>
<td>All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01</td>
<td>Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

**Tester Name:** brl

**Test Host:** Max

**Test Date:** Fri Jan 19 11:15:45 2007

**Drives:**
- src (92)
- dst (none)
- other (EF)

**Source Setup:**
- src hash (SHA1): <63E6F7BD3040A8ADA2CF5FB66A805B76DF10481>
- src hash (MD5): <E095DD1BD0B0DD6E603153A3FE1A2F3E>
- 5863344 total sectors (3002072128 bytes)
- 58167/015/63 (max cyl/hd values)
- 58168/016/63 (number of cyl/hd)
- IDE disk: Model (WDC WD300BB-00CAA0) serial # (WD-WMA8H2140350)
- N Start LBA Length Start C/H/S End C/H/S boot Partition type
  - 1 P 0000000063 0586050507 0000/001/01 1023/254/63 Boot 07 NTFS
  - 2 P 0000000000 0000000000 0000/000/00 0000/000/00 00 empty entry
  - 3 P 0000000000 0000000000 0000/000/00 0000/000/00 00 empty entry
  - 4 P 0000000000 0000000000 0000/000/00 0000/000/00 00 empty entry
- 1 058605057 sectors 30005789184 bytes

**Hashes with DCO in place:**
- md5:525963c6789423396fe1f3202a8cbd04
- sha1:55A3C6FE756B7BB034DCE771F7D7A477D8681B781

**Log Highlights:**
- Actual Date: 01/19/07 11:36:17AM
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: 525963c6789423396fe1f3202a8cbd04
- Verify Hash: 525963c6789423396fe1f3202a8cbd04
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 27,018,245,120 bytes (25.2GB)
- Total Sectors: 52,770,010
- Rehash of Source MD5: 525963c6789423396fe1f3202a8cbd04

**Results:**
- All assertions and expected results are satisfied as expected.
### Test Case DA-08-DC0 Linen 5.05f

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>AO-22</td>
<td>Tool calculates hashes by block. option not available</td>
</tr>
<tr>
<td>AO-23</td>
<td>Logged information is correct. as expected</td>
</tr>
<tr>
<td>AO-24</td>
<td>Source is unchanged by acquisition. as expected</td>
</tr>
</tbody>
</table>

**Analysis:** Expected results not achieved
### Test Case DA-09-01 Linen 5.05f

**Case Summary:**
DA-09 Acquire a digital source that has at least one faulty data sector.

**Assertions:**
- **AM-01** The tool uses access interface SRC-AI to access the digital source.
- **AM-02** The tool acquires digital source DS.
- **AM-03** The tool executes in execution environment XE.
- **AM-05** If image file creation is specified, the tool creates an image file on file system type FS.
- **AM-06** All visible sectors are acquired from the digital source.
- **AM-08** All sectors acquired from the digital source are acquired accurately.
- **AM-09** If unresolved errors occur while reading from the selected digital source, the tool notifies the user of the error type and location within the digital source.
- **AM-10** If unresolved errors occur while reading from the selected digital source, the tool uses a benign fill in the destination object in place of the inaccessible data.
- **AO-01** If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- **AO-05** If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- **AO-22** If requested, the tool calculates block hashes for a specified block size during the acquisition for each block acquired from the digital source.
- **AO-23** If the tool logs any log significant information, the information is accurately recorded in the log file.
- **AO-24** If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester**

- **Name:** brl

**Test Host:** Max

**Test Date:** Mon Feb 5 10:35:47 2007

**Drives:**
- src(ED-BAD-CPR1) dst (F3) other (EF)

**Source Setup:**
- Drive with known bad sectors
- Vendor: Maxtor Model: DiamondMax Plus 9

**Known Bad Sector List for ED-CPR-BAD-1**
- Manufacturer: Maxtor
- Model: 6Y060L0 DiamondMax Plus 9
- Serial Number: Y27KR6CE
- Capacity: 60GB
- Interface: SATA

**Log Highlights:**
- 156301488 sectors wiped with F3
- Comparison of original to clone Drive
- Sectors compared: 120103200
- Sectors match: 120102840
- Sectors differ: 360
- Bytes differ: 183960
- Diffs range 10069088-10069095, 10069904-10069911, 12023808-12023815, 18656259-18656259, 18656540-18656547, 18656856-18656863, 18662026-18662030, 18662112-18662119, 19746712-19746719, 22233904-22233911, 23098368-23098375, 23383000-23383007, 24102464-24102471, 24104248-24104255, 24106656-24106663, 24107456-24107463, 28959975-28959980, 41825784-41825791,

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### Test Case DA-09-01 Linen 5.05f

<table>
<thead>
<tr>
<th>Sector Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>41828992-41829999, 52655312-52655319</td>
</tr>
<tr>
<td>60522984-60522991, 68643840-68643847, 69973288-69973295</td>
</tr>
<tr>
<td>72714624-72714631, 72715288-72715295, 82148808-82148815</td>
</tr>
<tr>
<td>8310520-8310527, 85310856-85310863, 85313424-85313431</td>
</tr>
<tr>
<td>85314032-85314039, 86321208-86321215, 86323776-86323783</td>
</tr>
<tr>
<td>87186064-87186071, 87856312-87856319, 87856920-87856927</td>
</tr>
<tr>
<td>97191256-97191263, 100093144-100093151, 103861016-103861023</td>
</tr>
<tr>
<td>109706968-109706983, 110347944-110347951, 110350120-110350127</td>
</tr>
<tr>
<td>115664752-115664759, 115835512-115835519</td>
</tr>
</tbody>
</table>

Source (120103200) has 36198288 fewer sectors than destination (156301488)

Zero fill: 0
Src Byte fill (ED): 0
Dat Byte fill (F0): 0
Other fill (F3): 36198288
Other no fill: 0
Zero fill range:
Src fill range:
Dat fill range:
Other fill range: 120103200-156301487
Other not filled range:
0 source read errors, 0 destination read errors

Actual Date: 02/05/07 10:44:30AM
File Integrity: Completely Verified, 0 Errors
Acquisition Hash: e31c68c558503ecd0b7781bb5c942fbb
Verify Hash: e31c68c558503ecd0b7781bb5c942fbb
EnCase Version: 5.05f
System Version: Linux
Error Granularity: 1
Read Errors: 44
Total Size: 61,492,838,400 bytes (57.3GB)
Total Sectors: 120,103,200
Read errors:
10,069,088 (8)
10,069,904 (8)
12,023,808 (8)
18,652,592 (8)
18,656,040 (8)
18,656,856 (8)
18,660,296 (8)
18,661,112 (8)
19,746,712 (8)
22,233,904 (8)
23,098,368 (8)
23,383,000 (8)
24,102,464 (8)
24,104,248 (8)
24,106,656 (8)
24,107,456 (8)
28,959,968 (8)
41,825,784 (8)
41,828,992 (8)
52,654,576 (8)
52,655,312 (8)
60,522,984 (8)
68,643,840 (8)
69,973,288 (8)
72,714,624 (8)
72,715,288 (8)
82,148,808 (8)
83,810,520 (8)
85,310,856 (8)
85,313,424 (8)
85,314,032 (8)
86,321,208 (8)
86,323,776 (8)
87,186,064 (8)
87,856,312 (8)
87,856,920 (8)
97,191,256 (8)
## Test Case DA-09-01 Linen 5.05f

<table>
<thead>
<tr>
<th>Sector Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,093,144 (8)</td>
</tr>
<tr>
<td>103,861,016 (8)</td>
</tr>
<tr>
<td>109,706,968 (16)</td>
</tr>
<tr>
<td>110,347,944 (8)</td>
</tr>
<tr>
<td>110,350,120 (8)</td>
</tr>
<tr>
<td>115,664,752 (8)</td>
</tr>
<tr>
<td>115,835,512 (8)</td>
</tr>
</tbody>
</table>

### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>some sectors differ</td>
</tr>
<tr>
<td>AM-09 Error logged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-10 Benign fill replaces inaccessible sectors.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

### Analysis:

Expected results not achieved
5.2.20 DA-09-02

Test Case DA-09-02 Linen 5.05f

**Case Summary:**
DA-09 Acquire a digital source that has at least one faulty data sector.

**Assertions:**
- AM-01 The tool uses access interface SRC-AI to access the digital source.
- AM-02 The tool acquires digital source DS.
- AM-03 The tool executes in execution environment XE.
- AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AM-09 If unresolved errors occur while reading from the selected digital source, the tool notifies the user of the error type and location within the digital source.
- AM-10 If unresolved errors occur while reading from the selected digital source, the tool uses a benign fill in the destination object in place of the inaccessible data.
- AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester**
Name: brl
Test Host: AndWife
Test Date: Mon Jan 22 09:46:16 2007
Drives: src(ED-BAD-CPR1) dst (06) other (RF)

**Source Setup:**
No before hash for ED-BAD-CPR1 120103200 total sectors (61492838400 bytes)
- Drive with known bad sectors
- Vendor: Maxtor Model: DiamondMax Plus 9

**Known Bad Sector List for ED-CPR-BAD-1**
- Manufacturer: Maxtor
- Model: 6Y060L0 DiamondMax Plus 9
- Serial Number: Y27KK6CE
- Capacity: 60GB
- Interface: PATA
- 10069095, 10069911, 12023808, 18652594, 18656041, 18656857, 18660303, 18661119, 19746716-19746717, 22233904, 23098370, 23383001, 24102466-24102467, 24104250, 24104256, 24106656, 24107458, 28959971-28959972, 41825791, 41828995, 52654580, 52655318, 60522984, 68643842-68643843, 69973290, 72714626, 72715293, 82148809, 82148810, 83810525, 85310861, 85313430, 85314038-85314039, 86321211, 86323780, 97191260-97191261, 100093150-100093151, 103861021, 109706975-109706976, 110347947, 110350122-110350123, 115664758, 115835518

**Log Highlights:**
156301488 sectors wiped with 6
- Comparision of original to clone Drive
- Sectors compared: 120103200
- Sectors match: 120102840
- Sectors differ: 360
- Bytes differ: 183960
- Diff ranges: 10069095-10069905, 10069904-10069911, 12023808-12023815, 18652592-18652599, 18656040-18656047, 18656856-18656863, 18660296-18660303, 18661112-18661119, 19746712-19746719, 22233904-22233911, 23098938-23098937, 23383000-23383007, 24102464-24102471, 24104250-24104255, 24106656-24106636, 24107456-24107463, 28959971-28959975, 41825784-41825791,

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**Test Case DA-09-02 Linen 5.05f**

<table>
<thead>
<tr>
<th>Start Address</th>
<th>End Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>41828992-41828999</td>
<td>52655312-52655319</td>
</tr>
<tr>
<td>60522994-60522999</td>
<td>68643840-68643847</td>
</tr>
<tr>
<td>72714624-72714631</td>
<td>72715288-72715295</td>
</tr>
<tr>
<td>83810520-83810527</td>
<td>85310856-85310863</td>
</tr>
<tr>
<td>85314032-85314039</td>
<td>86321208-86321215</td>
</tr>
<tr>
<td>87186064-87186071</td>
<td>87856312-87856319</td>
</tr>
<tr>
<td>97191256-97191263</td>
<td>10093144-10093151</td>
</tr>
<tr>
<td>109706968-109706983</td>
<td>110347944-110347951</td>
</tr>
<tr>
<td>115664752-115664759</td>
<td>115835512-115835519</td>
</tr>
</tbody>
</table>

Source (120103200) has 36198288 fewer sectors than destination (156301488)

Zero fill: 0
Src Byte fill (ED): 0
Dat Byte fill (06): 36198288
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dat fill range: 120103200-156301487
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

**Actual Date:** 01/22/07 09:48:36AM
**File Integrity:** Completely Verified, 0 Errors
**Acquisition Hash:** e31c68c558503ecd0b77781bb5c942fbb
**Verify Hash:** e31c68c558503ecd0b77781bb5c942fbb
**EnCase Version:** 5.05f
**System Version:** Linux
**Error Granularity:** 2
**Read Errors:** 44
**Total Size:** 61,492,838,400 bytes (57.3GB)
**Total Sectors:** 120,103,200

**Read errors:**
- 10,069,088 (8)
- 10,069,904 (8)
- 12,023,808 (8)
- 18,652,592 (8)
- 18,656,040 (8)
- 18,656,856 (8)
- 18,660,296 (8)
- 18,661,112 (8)
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- 52,655,312 (8)
- 60,522,984 (8)
- 68,643,840 (8)
- 69,973,288 (8)
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- 85,314,032 (8)
- 86,321,208 (8)
- 86,323,776 (8)
- 87,186,064 (8)
- 87,856,312 (8)
- 87,856,920 (8)
- 97,191,256 (8)

---

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### Test Case DA-09-02 Linen 5.05f

<table>
<thead>
<tr>
<th>Sector Size</th>
<th>Expected Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,093,144 (8)</td>
<td>as expected</td>
</tr>
<tr>
<td>103,861,016 (8)</td>
<td>as expected</td>
</tr>
<tr>
<td>109,706,968 (16)</td>
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<tr>
<td>110,347,944 (8)</td>
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<td>110,350,120 (8)</td>
<td>as expected</td>
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<tr>
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<td>as expected</td>
</tr>
<tr>
<td>115,835,512 (8)</td>
<td>as expected</td>
</tr>
</tbody>
</table>

#### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface Ai.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>some sectors differ</td>
</tr>
<tr>
<td>AM-09 Error logged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-10 Benign fill replaces inaccessible sectors.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

#### Analysis:

Expected results not achieved
# Test Case DA-09-16 Linen 5.05f

## Case Summary:
DA-09 Acquire a digital source that has at least one faulty data sector.

## Assertions:
- **AM-01** The tool uses access interface SRC-AI to access the digital source.
- **AM-02** The tool acquires digital source DS.
- **AM-03** The tool executes in execution environment XE.
- **AM-05** If image file creation is specified, the tool creates an image file on file system type FS.
- **AM-06** All visible sectors are acquired from the digital source.
- **AM-08** All sectors acquired from the digital source are acquired accurately.
- **AM-09** If unresolved errors occur while reading from the selected digital source, the tool notifies the user of the error type and location within the digital source.
- **AM-10** If unresolved errors occur while reading from the selected digital source, the tool uses a benign fill in the destination object in place of the inaccessible data.
- **AO-01** If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- **AO-05** If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- **AO-22** If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- **AO-23** If the tool logs any log significant information, the information is accurately recorded in the log file.
- **AO-24** If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

## Tester
- **Name:** brl
- **Test Host:** Paladin
- **Test Date:** Tue Jan 23 15:38:52 2007

## Drives:
- **src**(ED-BAD-CPR1) dst (F3) other (EF)

## Source Setup:
- Drive with known bad sectors
- Vendor: Maxtor Model: DiamondMax Plus 9

## Known Bad Sector List for ED-CPR-BAD-1
- Manufacturer: Maxtor
- Model: 6Y060L0 DiamondMax Plus 9
- Serial Number: Y27KR6CE
- Capacity: 60GB
- Interface: PATA
- 10069095, 10069911, 12023808, 18652594, 18656041, 18656857, 18660303, 18661119, 19746716-19746717, 22233904, 23098370, 23383001, 24102466-24102467, 24104250, 24106656, 24107458, 28959971-28959972, 41825791, 41828995, 52654580, 52655318, 60522984, 68643842-68643843, 69973290, 72714626, 72715293, 82148809, 82148810, 93810525, 85310861, 85313430, 85314038-85314039, 86321211, 86323780, 87186066, 87856313, 87856922, 97191260-97191261, 10093150-10093151, 103861021, 109706975-109706976, 110347947, 110350122-110350123, 115664758, 115835518

## Log Highlights:
- 156301488 sectors wiped with F3
- Comparision of original to clone Drive
- Sectors compared: 120103200
- Sectors match: 120102480
- Sectors differ: 720
- Bytes differ: 367920
Test Case DA-09-16 Linen 5.05f


Source (120103200) has 36198288 fewer sectors than destination (156301488)

Zero fill: 0
Src Byte fill (ED): 0
Dat Byte fill (F3): 36198288
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dat fill range: 120103200-156301487
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

Actual Date: 01/23/07 03:10:59PM
File Integrity: Completely Verified, 0 Errors
Acquisition Hash: 474e17967f4d9ccc5a643a21f4907f17
Verify Hash: 474e17967f4d9ccc5a643a21f4907f17
EnCase Version: 5.05f
System Version: Linux
Error Granularity: 16
Read Errors: 44
Total Size: 61,492,838,400 bytes (57.3GB)
Total Sectors: 120,103,200

Read errors:
10,069,088 (16)
10,069,904 (16)
12,023,808 (16)
18,652,592 (16)
18,656,032 (16)
18,656,848 (16)
18,660,288 (16)
18,661,104 (16)
19,746,704 (16)
22,233,904 (16)
23,098,368 (16)
23,382,992 (16)
24,102,464 (16)
24,104,240 (16)
24,106,656 (16)
24,107,456 (16)
28,959,968 (16)
41,825,776 (16)
41,828,992 (16)
52,654,576 (16)
52,655,312 (16)
60,522,976 (16)
68,643,840 (16)
69,973,280 (16)
72,714,624 (16)
72,715,280 (16)
82,148,800 (16)
83,810,512 (16)
85,310,848 (16)
85,313,424 (16)
85,314,032 (16)
86,321,200 (16)
86,323,776 (16)
87,186,064 (16)
87,856,304 (16)
87,856,912 (16)
97,191,248 (16)
## Test Case DA-09-16 Linen 5.05f

<table>
<thead>
<tr>
<th>Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assertion &amp; Expected Result</strong></td>
</tr>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
</tr>
<tr>
<td>AM-03 Execution environment is XB.</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
</tr>
<tr>
<td>AM-09 Error logged.</td>
</tr>
<tr>
<td>AM-10 Benign fill replaces inaccessible sectors.</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
</tr>
</tbody>
</table>

### Analysis: Expected results not achieved
## DA-09-64

### Case Summary:
DA-09 Acquire a digital source that has at least one faulty data sector.

### Assertions:
- **AM-01**: The tool uses access interface SRC-AI to access the digital source.
- **AM-02**: The tool acquires digital source DS.
- **AM-03**: The tool executes in execution environment XE.
- **AM-05**: If image file creation is specified, the tool creates an image file on file system type FS.
- **AM-06**: All visible sectors are acquired from the digital source.
- **AM-08**: All sectors acquired from the digital source are acquired accurately.
- **AM-09**: If unresolved errors occur while reading from the selected digital source, the tool notifies the user of the error type and location within the digital source.
- **AM-10**: If unresolved errors occur while reading from the selected digital source, the tool uses a benign fill in the destination object in place of the inaccessible data.
- **AO-01**: If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
- **AO-05**: If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
- **AO-22**: If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- **AO-23**: If the tool logs any log significant information, the information is accurately recorded in the log file.
- **AO-24**: If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

### Tester Information:
- **Name**: brl
- **Host**: Paladin
- **Date**: Thu Jan 25 17:15:18 2007

### Drive Information:
- **Source Setup**: Drive with known bad sectors
  - **Vendor**: Maxtor
  - **Model**: DiamondMax Plus 9
  - **Capacity**: 60GB
  - **Interface**: PATA
  - **Known Bad Sector List for ED-CPR-BAD-1**
    - 10069095, 10069911, 12023808, 18652594, 18656041, 18656857, 18660303, 18661119, 19746716-19746717, 22233904, 23098370, 23383001, 24102466-24102467, 24104250, 24106656, 24107458, 28959971-28959972, 41825791, 41828995, 52654580, 52655318, 60522984, 68643842-68643843, 69973290, 72714626, 72715293, 82148809, 82148810, 83810525, 85310861, 85313430, 85314038-85314039, 86321211, 86323780, 87186066, 87856922, 97191260-97191261, 100093150-100093151, 103861021, 109706975-109706976, 110347947, 110350122-110350123, 11664758, 11853518

### Log Highlights:
- **Comparison of original to clone Drive**
- **Sectors compared**: 120103200
- **Sectors match**: 120100384
- **Sectors differ**: 2816
- **Bytes differ**: 1438976
- **Diffs range**: 10069056-10069119, 10069888-10069951, 12023808-12023871, 18652544-18652607, 18656000-18656063, 18656832-18656895, 18660288-18660351, 18661056-18661119, 19746688-19746751, 22233856-22233919, 23098368-23098431, 23382976-23383039, 24102464-24102527, 24104192-24104255, 24106624-24106687, 24107456-24107519, 28959936-28959999, 41825728-41825791
**Test Case DA-09-64 Linen 5.05f**

<table>
<thead>
<tr>
<th>Source Sectors</th>
<th>Destination Sectors</th>
</tr>
</thead>
</table>

Source (120103200) has 36198288 fewer sectors than destination (156301488)

- Zero fill: 0
- Src Byte fill (ED): 0
- Dst Byte fill (FO): 36198288
- Other fill: 0
- Other no fill: 0

Zero fill range:
- Src fill range: 
- Dst fill range: 120103200-156301487
- Other fill range: 
- Other not filled range: 0 source read errors, 0 destination read errors

Actual Date: 02/06/07 10:57:08AM

File Integrity: Completely Verified, 0 Errors

Acquisition Hash: f7537808758654f5d3bd66d0bc0ee827

Verify Hash: f7537808758654f5d3bd66d0bc0ee827

EnCase Version: 5.05f

System Version: Linux

Error Granularity: 64

Read Errors: 44

Total Size: 61,492,838,400 bytes (57.3GB)

Total Sectors: 120,103,200

Read errors:
- 10,069,056 (64)
- 10,069,888 (64)
- 12,023,808 (64)
- 18,652,544 (64)
- 18,656,000 (64)
- 18,658,832 (64)
- 18,660,288 (64)
- 18,661,056 (64)
- 19,746,688 (64)
- 22,233,856 (64)
- 23,098,368 (64)
- 23,382,976 (64)
- 24,102,464 (64)
- 24,104,192 (64)
- 24,106,624 (64)
- 24,107,456 (64)
- 28,959,936 (64)
- 41,825,728 (64)
- 41,828,992 (64)
- 52,654,528 (64)
- 52,655,296 (64)
- 60,522,944 (64)
- 68,643,840 (64)
- 69,973,248 (64)
- 72,714,624 (64)
- 72,715,264 (64)
- 82,148,800 (64)
- 83,810,496 (64)
- 85,310,848 (64)
- 85,313,408 (64)
- 85,313,984 (64)
- 86,321,152 (64)
- 86,323,776 (64)
- 87,186,048 (64)
- 87,856,256 (64)
- 87,856,896 (64)
- 97,191,232 (64)
Test Case DA-09-64 Linen 5.05f

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-09 Error logged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-10 Benign fill replaces inaccessible sectors.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Results:

Analysis: Expected results not achieved
5.2.23 DA-10-UNCOMPRESSED

Test Case DA-10-UNCOMPRESSED Linen 5.05f

Case: DA-10 Acquire a digital source to an image file in an alternate format.

Summary: The tool uses access interface SRC-AI to access the digital source. The tool acquires digital source DS. The tool executes in execution environment XE. If image file creation is specified, the tool creates an image file on file system type FS. All visible sectors are acquired from the digital source. All sectors acquired from the digital source are acquired accurately. The tool creates an image file, the data represented by the image file is the same as the data acquired by the tool. If image file format is specified, the tool creates an image file in the specified format. The tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size. If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool. If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source. If the tool logs any log significant information, the information is accurately recorded in the log file. If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: Aramis
Test Date: Thu Feb 8 06:09:12 2007
Drives: src(41) dst (none) other (52-IDE)

Source hash (SHA1): < 15CA1A3072716D8372668BF8A03FC5A51CC9 >
Source hash (MD5): < 0A6A8EF78BDC14E2026710D8CCB5607C >
78125000 total sectors (4000000000 bytes)
6534/015/63 (max cyl/hd values)
65535/016/63 (number of cyl/hd)
IDE disk: Model (WDC WD400BB-75JHC0) serial # (WD-WMAMC4658355)
N Start LBA Length Start C/H/S End C/H/S Boot Partition type
1 P 000000063 078107967 0000/001/01 1023/254/63 Boot 07 NTFS
2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 078107967 sectors 39991279104 bytes

Log Highlights: Actual Date:02/08/07 06:14:52AM
File Integrity: Completely Verified, 0 Errors
Acquisition Hash:0a6a8ef78bdc14e2026710d8cc5607c
EnCase Version:5.05f
System Version:Linux
Error Granularity:64
Total Size:40,000,000,000 bytes (37.3GB)
Total Sectors:78,125,000

Rehash of Source MD5: 0A6A8EF78BDC14E2026710D8CCB5607C

Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
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</tr>
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<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
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</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-02 Image file in specified format.</td>
<td>as expected</td>
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<td>AO-05 Multifile image created.</td>
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<tr>
<td>AO-22 Tool calculates hashes by block.</td>
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</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>Test Case DA-I0-UNCOMPRESSED Linen 5.05f</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Analysis:</td>
<td></td>
</tr>
<tr>
<td>Expected results achieved</td>
<td></td>
</tr>
</tbody>
</table>
**5.2.24 DA-13**

**Test Case DA-13 Linen 5.05f**

**Case Summary:** DA-13 Create an image file where there is insufficient space on a single volume, and use destination device switching to continue on another volume.

**Assertions:**

AM-01 The tool uses access interface SRC-AI to access the digital source.
AM-02 The tool acquires digital source DS.
AM-03 The tool executes in execution environment XE.
AM-05 If image file creation is specified, the tool creates an image file on file system type FS.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AO-01 If the tool creates an image file, the data represented by the image file is the same as the data acquired by the tool.
AO-04 If the tool is creating an image file and there is insufficient space on the image destination device to contain the image file, the tool shall notify the user.
AO-05 If the tool creates a multi-file image of a requested size then all the individual files shall be no larger than the requested size.
AO-10 If there is insufficient space to contain all files of a multi-file image and if destination device switching is supported, the image is continued on another device.
AO-22 If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.
AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

**Tester Name:** brl

**Test Host:** Max

**Test Date:** Mon Feb 12 11:35:37 2007

**Drives:**
- src (07) dst (61-FU2) other (82-FU2)

**Source Setup:**
- src hash (SHA1): < 655E9BDDB36A3F9C5C4CC8BF32B8CB541AF9F52E >
- src hash (MD5): < 2EAF712DA80F66E30DEA0365B4579B >

**Model:** (WDC WD800JD-32HK) serial # (WD-WMAJ91510044)

**N  Start LBA Length   Start C/H/S End C/H/S  boot Partition type**
- 1 P 000000063 156280257 0000/001/01 1023/254/63 Boot 07 NTFS
- 2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
- 3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
- 4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
- 1 156280257 sectors 80015491584 bytes

**Log Highlights:**
- Actual Date:02/09/07 10:58:37AM
- File Integrity: Completely Verified, 0 Errors
- Acquisition Hash: 2eaf712dad80f66e30dea00365b4579b
- Verify Hash: 2eaf712dad80f66e30dea00365b4579b
- EnCase Version: 5.05f
- System Version: Linux
- Error Granularity: 64
- Total Size: 80,026,361,856 bytes (74.5GB)
- Total Sectors: 156,301,488

**Rehash of Source MD5:** 2EAF712DA80F66E30DEA00365B4579B

**Results:**

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<td>AM-06 All visible sectors acquired.</td>
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<tr>
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</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-04 User notified if space exhausted.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multi-file image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-10 Image file continued on new device.</td>
<td>as expected</td>
</tr>
<tr>
<td>Test Case DA-13 Linen 5.05f</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

**Analysis:** Expected results achieved
About the National Institute of Justice

NIJ is the research, development, and evaluation agency of the U.S. Department of Justice. NIJ’s mission is to advance scientific research, development, and evaluation to enhance the administration of justice and public safety. NIJ’s principal authorities are derived from the Omnibus Crime Control and Safe Streets Act of 1968, as amended (see 42 U.S.C. §§ 3721–3723).

The NIJ Director is appointed by the President and confirmed by the Senate. The Director establishes the Institute’s objectives, guided by the priorities of the Office of Justice Programs, the U.S. Department of Justice, and the needs of the field. The Institute actively solicits the views of criminal justice and other professionals and researchers to inform its search for the knowledge and tools to guide policy and practice.

Strategic Goals

NIJ has seven strategic goals grouped into three categories:

Creating relevant knowledge and tools
1. Partner with State and local practitioners and policymakers to identify social science research and technology needs.
2. Create scientific, relevant, and reliable knowledge—with a particular emphasis on terrorism, violent crime, drugs and crime, cost-effectiveness, and community-based efforts—to enhance the administration of justice and public safety.
3. Develop affordable and effective tools and technologies to enhance the administration of justice and public safety.

Dissemination
4. Disseminate relevant knowledge and information to practitioners and policymakers in an understandable, timely, and concise manner.
5. Act as an honest broker to identify the information, tools, and technologies that respond to the needs of stakeholders.

Agency management
6. Practice fairness and openness in the research and development process.
7. Ensure professionalism, excellence, accountability, cost-effectiveness, and integrity in the management and conduct of NIJ activities and programs.

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In addressing these strategic challenges, the Institute is involved in the following program areas: crime control and prevention, including policing; drugs and crime; justice systems and offender behavior, including corrections; violence and victimization; communications and information technologies; critical incident response; investigative and forensic sciences, including DNA; less-than-lethal technologies; officer protection; education and training technologies; testing and standards; technology assistance to law enforcement and corrections agencies; field testing of promising programs; and international crime control.

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