Test Results for Digital Data Acquisition Tool: Logicube Forensic Talon (Software Version 2.43)
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## Table of Contents

Introduction ..................................................................................................................................... 1

1 Results Summary ...................................................................................................................... 2

2 Test Case Selection ................................................................................................................... 2

3 Results by Test Assertion .......................................................................................................... 3
  3.1 PCMCIA Acquisition ......................................................................................................... 6

4 Testing Environment ................................................................................................................. 6
  4.1 Test Computers .................................................................................................................. 6
  4.2 Support Software ............................................................................................................... 6
  4.3 Test Drive Creation ............................................................................................................ 6
  4.4 Test Drive Analysis ............................................................................................................ 7
  4.5 Note on Test Drives ........................................................................................................... 8

5 Test Results ............................................................................................................................... 8
  5.1 Test Results Report Key .................................................................................................... 8
  5.2 Test Details ........................................................................................................................ 9
    5.2.1 DA-01-ATA28 ............................................................................................................ 9
    5.2.2 DA-01-ATA48 .......................................................................................................... 12
    5.2.3 DA-01-PCMCIA ...................................................................................................... 14
    5.2.4 DA-01-SATA28 ...................................................................................................... 16
    5.2.5 DA-01-SATA48 ...................................................................................................... 18
    5.2.6 DA-01-USB .............................................................................................................. 20
    5.2.7 DA-01-XUSB ........................................................................................................... 22
    5.2.8 DA-04 ....................................................................................................................... 24
    5.2.9 DA-06-ATA28 .......................................................................................................... 26
    5.2.10 DA-06-ATA48 ........................................................................................................ 28
    5.2.11 DA-06-SATA28 ...................................................................................................... 30
    5.2.12 DA-06-SATA48 ...................................................................................................... 32
    5.2.13 DA-06-USB ............................................................................................................ 34
    5.2.14 DA-07-CF ............................................................................................................... 36
    5.2.15 DA-08-ATA28 ........................................................................................................ 38
    5.2.16 DA-08-ATA48 ........................................................................................................ 40
    5.2.17 DA-08-DCO ............................................................................................................ 42
    5.2.18 DA-09-RETRY ....................................................................................................... 44
    5.2.19 DA-09-RETRY-SATA ........................................................................................... 47
    5.2.20 DA-09-SKIP-ATA ................................................................................................. 52
    5.2.21 DA-09-SKIP-SATA ............................................................................................... 55
    5.2.22 DA-12 ..................................................................................................................... 60
    5.2.23 DA-19 ..................................................................................................................... 61
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 (DOJ), 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. The CFTT 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 the Logicube Forensic Talon, software version 2.43, 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 tools and the CFTT tool methodology can be found on NIJ’s computer forensics tool testing Web page, http://www.ojp.usdoj.gov/nij/topics/technology/electronic-crime/cftt.htm.
Test Results for Digital Data Acquisition Tool

Tool Tested: Logicube Talon
Software Version: 2.43
Supplier: Logicube
Address: 19755 Nordhoff Place
         Chatsworth, CA 91311
Tel: 888–494–8832
Fax: 818–700–8466
WWW: http://www.logicube.com/

1 Results Summary
Except for one test case, DA–01–PCMCIA, the tested tool acquired all visible and hidden sectors completely and accurately from the test media without anomaly. The following anomaly was observed:

- Data was inaccurately acquired over the PCMCIA interface (DA–01–PCMCIA).

2 Test Case Selection
Test cases used to test disk imaging tools are defined in Digital Data Acquisition Tool Assertions and Test Plan Version 1.0. To test a tool, test cases are selected from the Test Plan document based on the features offered by the tool. Not all test cases or test assertions are appropriate for all tools. There is a core set of base cases (DA–06, DA–07 and DA–08) that are executed for every tool tested. Tool features guide the selection of additional test cases. 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 the Forensic Talon and the linked test cases selected for execution. Table 2 lists the features not available in the Forensic Talon and the test cases not executed.

Table 1 Selected Test Cases

<table>
<thead>
<tr>
<th>Supported Optional Feature</th>
<th>Cases selected for execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a clone during acquisition</td>
<td>01</td>
</tr>
<tr>
<td>Create a truncated clone from a physical device</td>
<td>04</td>
</tr>
<tr>
<td>Base Cases</td>
<td>06, 07 &amp; 08</td>
</tr>
<tr>
<td>Read error during acquisition</td>
<td>09</td>
</tr>
<tr>
<td>Insufficient space for image file</td>
<td>12</td>
</tr>
<tr>
<td>Fill excess sectors on a clone acquisition</td>
<td>19</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 an unaligned clone from a digital source</td>
<td>02</td>
</tr>
<tr>
<td>Create cylinder aligned clones</td>
<td>03, 15, 21 &amp; 23</td>
</tr>
<tr>
<td>Convert an image file from one format to another</td>
<td>26</td>
</tr>
<tr>
<td>Destination Device Switching</td>
<td>13</td>
</tr>
<tr>
<td>Device I/O error generator available</td>
<td>05, 11 &amp; 18</td>
</tr>
<tr>
<td>Fill excess sectors on a clone device</td>
<td>20, 21, 22 &amp; 23</td>
</tr>
<tr>
<td>Create a clone from an image file</td>
<td>14 &amp; 17</td>
</tr>
<tr>
<td>Create a clone from a subset of an image file</td>
<td>16</td>
</tr>
<tr>
<td>Detect a corrupted (or changed) image file</td>
<td>24 &amp; 25</td>
</tr>
</tbody>
</table>

Some test cases have variant forms to accommodate parameters within test assertions. These variations cover the acquisition interface to the source drive and how the tool treats faulty sectors encountered on source media. Acquisition speed was also varied between test cases.

The following source interfaces were tested: ATA28, ATA48, SATA28, SATA48, USB, XUSB, and PCMCIA. These are noted as variations on test cases DA–01, DA–06, and DA–08. See section 4 for a discussion of testing the USB, XUSB, and PCMCIA source interfaces.

For test case DA–09 the Forensic Talon’s methods for treating faulty sectors encountered on source media are varied so that reads of faulty sectors are either retried (RETRY) or not retried (SKIP).

The compact flash digital source type was tested in test case DA–07–CF.

Acquisition speeds were varied between UDMA–0, UDMA–3, UDMA–5, and PIO–AUTO.

### 3 Results by Test Assertion

A test assertion is a verifiable statement about a single condition after an action is performed by the tool under test. A test case usually checks a group of assertions after the action of a single execution of the tool under test. Test assertions are defined and linked to test cases in *Digital Data Acquisition Tool Assertions and Test Plan Version 1.0*. Table 3 summarizes the test results for all the test cases by assertion. The column labeled **Assertions Tested** 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 any observed anomalies are discussed.

See section 2 for a discussion of source access interface and digital source.
Table 3 Assertions Tested

<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>23</td>
<td></td>
</tr>
<tr>
<td>AM-02 The tool acquires digital source DS.</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>AM-03 The tool executes in execution environment XE.</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>AM-04 If clone creation is specified, the tool creates a clone of the digital source.</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>AM-05 If image file creation is specified, the tool creates an image file on file system type FS.</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>AM-06 All visible sectors are acquired from the digital source.</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>AM-07 All hidden sectors are acquired from the digital source.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>AM-08 All sectors acquired from the digital source are acquired accurately.</td>
<td>22</td>
<td>3.1</td>
</tr>
<tr>
<td>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.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AO-05 If the tool creates a multifile image of a requested size then all the individual files shall be no larger than the requested size.</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>AO-11 If requested, a clone is created during an acquisition of a digital source.</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>AO-13 A clone is created using access interface DST-AI to write to the clone device.</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>AO-14 If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>AO-17 If requested, any excess sectors on a clone destination device are not modified.</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>AO-18 If requested, a benign fill is written to excess sectors of a clone.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AO-19 If there is insufficient space to create a complete clone, a truncated clone is created using all available sectors of the clone device.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>AO-20 If a truncated clone is created, the tool notifies the user.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>AO-23 If the tool logs any log significant</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>
Two test assertions only apply in special circumstances. The assertion AO–22 is checked only for tools that create block hashes. For the Forensic Talon block hash computation was only tested in five test cases. 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 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>
<th>Tests</th>
<th>Anomaly</th>
</tr>
</thead>
<tbody>
<tr>
<td>AO-02 If an image file format is specified, the tool creates an image file in the specified format.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO-03 If there is an error while writing the image file, the tool notifies the user.</td>
<td></td>
<td></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>
<td></td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>AO-08 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 of the affected locations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO-09 If the tool converts a source image file from one format to a target image file in another format, the acquired data represented in the target image file is the same as the acquired data in the source image file.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO-10 If there is insufficient space to contain all files of a multifile image and if destination device switching is supported, the image is continued on another device.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO-12 If requested, a clone is created from an image file.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO-15 If an aligned clone is created, each sector within a contiguous span of sectors from the source is accurately written to the same disk address on the clone device relative to the start of the span as the sector occupied on the original digital source. A span of sectors is defined to be either a mountable partition or a contiguous sequence of sectors not part of a mountable partition. Extended partitions, which may contain both mountable partitions and unallocated sectors, are not mountable partitions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO-16 If a subset of an image or acquisition is specified, all the subset is cloned.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AO-21 If there is a write error during clone creation, the tool notifies the user.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.1 **PCMCIA Acquisition**

In test case DA–01–PCMCIA where the PCMCIA interface was used to acquire a laptop’s internal hard drive the tool did not acquire all sectors accurately. 220,416 sectors were not acquired. In their place, sectors from earlier and later parts of the source drive were written to the destination drive. The acquisition hash computed by the tool did not match the source drive’s reference hash.

4 **Testing Environment**

The tests were run in the NIST CFTT lab. This section describes the test computers available for testing, using the support software, and notes on other test hardware.

The majority of the tests were run using a standard configuration of the Forensic Talon and the natively supported ATA and SATA interfaces. Three test cases tested alternate configurations and interfaces. Test case DA–01–USB tested the acquisition of USB devices using the Logicube Omni Port adapter. DA–01–PCMCIA and DA–01–XUSB acquired devices over the PCMCIA and USB interfaces using vendor-supplied boot CDs and DOS programs.

4.1 **Test Computers**

For most test cases the Forensic Talon images a drive without assistance from a computer, however for test cases DA–01–PCMCIA and DA–01–XUSB the test computer, Chip, was used.

**Chip** has the following configuration:

- Dell Latitude D800
- Phoenix Technologies BIOS Revision A09
- Intel® Pentium™ M CPU 1.7Ghz
- Intel® 855PM chipset
- 2GB RAM
- Samsung SN–324S CDRW/DVD-ROM drive
- 1 PCMCIA port
- 3 USB 2.0 ports
- 1 IEEE 1394 port

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](http://www.cftt.nist.gov/diskimaging/fs-tst20.zip).

4.3 **Test Drive Creation**

There are three ways that a hard drive may be used in a tool test case: as a source drive that is imaged by the tool, as a media drive that contains image files created by the tool under test, or as a destination drive on which the tool under test creates a clone of the
source drive. In addition to the operating system drive formatting tools, some tools (diskwipe and diskhash) from the FS-TST package are used to setup test drives.

To setup a media drive, the drive is formatted with one of the supported file systems. A media drive may be used in several test cases.

The setup of most source drives follows the same general procedure, but there are several steps that may be varied depending on the needs of the test case.

1. The drive is filled with known data by the diskwipe program from FS-TST. The diskwipe program writes the sector address to each sector in both C/H/S and LBA format. The remainder of the sector bytes is set to a constant fill value unique for each drive. The fill value is noted in the diskwipe tool log file.
2. The drive may be formatted with partitions as required for the test case.
3. An operating system may optionally be installed.
4. A set of reference hashes is created by the FS-TST diskhash tool. These include both SHA1 and MD5 hashes. In addition to full drive hashes, hashes of each partition may also be computed.
5. If the drive is intended for hidden area tests (DA–08), an HPA, a DCO or both may be created. The diskhash tool is then used to calculate reference hashes of just the visible sectors of the drive.

The source drives for DA–09 are created such that there is a consistent set of faulty sectors on the drive. Each of these source drives is initialized with diskwipe and then their faulty sectors are activated. For each of these source drives, a second drive of the same size with the same content as the faulty sector drive, but with no faulty sectors serves as a reference drive for images made from the faulty drive.

To setup a destination drive, the drive is filled with known data by the diskwipe program from FS-TST. Partitions may be created if the test case involves restoring from the image of a logical acquire.

4.4 Test Drive Analysis

For test cases (DA–01, DA–09, and DA–19) that create on a destination drive a cloned version of a source drive, the source is compared using the FS-TST programs diskcmp (for an entire drive) and partcmp (for a single partition) to the destination and any differences are noted. For test case DA–09, using a drive with known bad sectors, the program anabad is used to compare the bad sector reference drive to a cloned version of the of the bad sector drive.

For test cases such as DA–06 and DA–07 the acquisition hash is compared to the reference hash of the source to check that the source is completely and accurately acquired.
4.5 Note on Test Drives

The testing uses several test drives from a variety of vendors. The drives are identified by an external label that consists of a two digit hexadecimal value and an optional tag, e.g., 25–SATA. The combination of hex value and tag serves as a unique identifier for each drive. The two digit hex value is used by the FS-TST diskwipe program as a sector fill value. The FS-TST compare tools, diskcmp and partcmp, count sectors that are filled with the source and destination fill values on a destination that is larger than the original source.

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 the 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. The Tester Name, Test Host, Test Date, Drives, Source Setup and Log Highlights sections for each test case are populated by excerpts taken from the logfiles produced by the tool under test and the FS-TST tools that were executed in support of test case setup and analysis.

<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 Digital Data Acquisition Tool Assertions and Test Plan Version 1.0.</td>
</tr>
<tr>
<td>Assertions:</td>
<td>The test assertions applicable to the test case, selected from Digital Data Acquisition Tool Assertions and Test Plan Version 1.0.</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

### 5.2.1 DA-01-ATA28

<table>
<thead>
<tr>
<th>Case Summary</th>
<th>DA-01 Acquire a physical device using access interface AI to an unaligned clone.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assertions</td>
<td>AM-01 The tool uses access interface SRC-AI to access the digital source.</td>
</tr>
<tr>
<td></td>
<td>AM-02 The tool acquires digital source DS.</td>
</tr>
<tr>
<td></td>
<td>AM-03 The tool executes in execution environment XE.</td>
</tr>
<tr>
<td></td>
<td>AM-04 If clone creation is specified, the tool creates a clone of the digital source.</td>
</tr>
<tr>
<td></td>
<td>AM-06 All visible sectors are acquired from the digital source.</td>
</tr>
<tr>
<td></td>
<td>AM-08 All sectors acquired from the digital source are acquired accurately.</td>
</tr>
<tr>
<td></td>
<td>AO-11 If requested, a clone is created during an acquisition of a digital source.</td>
</tr>
<tr>
<td></td>
<td>AO-13 A clone is created using access interface DST-AI to write to the clone device.</td>
</tr>
<tr>
<td></td>
<td>AO-14 If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.</td>
</tr>
<tr>
<td></td>
<td>AO-17 If requested, any excess sectors on a clone destination device are not modified.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.</td>
</tr>
<tr>
<td></td>
<td>AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.</td>
</tr>
</tbody>
</table>

**Tester Name:** brl  
**Test Host:** Athos  
**Test Date:** Wed Oct 17 10:06:36 2007  
**Drives:** src(43) dst (23-SATA) other (none)  
**Source**  
- src hash (SHA256): <2658F47603DE6B1D883B64823E9733F578658D08D06A4BB8C053C4F578DC615E>  
- src hash (SHA1): <888E2E7F7AD237DC7A732281DD93F325065E5B71>  
- src hash (MD5): <BC39C3F7EE7A50E77B9A1E65A5AEEF7>  
- 78125000 total sectors (40000000000 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 0F extended  
3 S 000000063 00032067 1023/001/01 1023/254/63 01 Fat12  
4 x 00032130 00104515 1023/000/01 1023/254/63 05 extended  
5 S 000000063 00104452 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 000800063 008401932 1023/001/01 1023/254/63 08 Fat32  
10 x 014731605 014900445 1023/001/01 1023/254/63 05 extended  
11 S 000000063 01490382 1023/001/01 1023/254/63 83 Linux  
12 x 025222050 04209030 1023/000/01 1023/254/63 05 extended  
13 S 000000063 04208967 1023/001/01 1023/254/63 82 Linux swap  
14 x 029431080 027712062 1023/000/01 1023/254/63 07 NTFS  
15 S 000000063 027712062 1023/001/01 1023/254/63 00 empty entry  
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  
3 000032067 sectors 16418304 bytes  
5 002104452 sectors 1077479424 bytes  
7 004192902 sectors 2146765924 bytes  
9 008401932 sectors 43017819184 bytes  
11 010490382 sectors 5371075584 bytes  
13 00420967 sectors 2154991104 bytes  
15 027712062 sectors 14188575744 bytes
Log

Highlights:
156301488 sectors wiped with 23

Comparison of original to clone Drive
Sectors compared: 78125000
Sectors match: 78125000
Sectors differ: 0
Bytes differ: 0

Sectors differ:
Source (78125000) has 78176488 fewer sectors than destination (156301488)
Zero fill:
0
Src Byte fill (43):
0
Dat Byte fill (23): 78176488
Other fill:
0
Other no fill:
0
Zero fill range:
Src fill range:
Dat fill range: 78125000–156301487
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

Test Case DA-01-ATA28 F-TALON V2.43

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****

SESSION SETTINGS
Operating Mode: Capture
Address Mode: LBA
Verify: SHA-256
Speed: UDMA-0
Connection: Direct

100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!
Operator declined FULL and remainder Destination Drive erase!

*************** SOURCE DRIVE ********************

Physical Characteristics
Drive Model: WDC WD400BB-75JHC0
Serial: WD-WMAMC465888
Cylinders: 77504
Heads: 16
Sectors: 63
Total Sectors: 78125000
Drive Size: 37.3 GB
Computed SHA-256 Value:
2658f47603de6b1d88364823e9733f5786580d06a4b8c053c4f57bdc615e
Skipped Sectors: 0

*************** DESTINATION DRIVE ********************

Physical Characteristics
Drive Model: ST380013AS
Serial: 5JVCYJCF
Cylinders: 155061
Heads: 16
Sectors: 63
Total Sectors: 156301488
Drive Size: 74.5 GB
Computed SHA-256 Value: NONE
Skipped Sectors: 0

Settings: error skip
speed UDMA-0

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-04 A clone is created.</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-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-17 Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not tested</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-01-ATA48 F-TALON V2.43

**Case Summary:** DA-01 Acquire a physical device using access interface AI to an unaligned clone.

**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-04 If clone creation is specified, the tool creates a clone of the digital source.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AO-11 If requested, a clone is created during an acquisition of a digital source.
- AO-13 A clone is created using access interface DST-AI to write to the clone device.
- AO-14 If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.
- AO-17 If requested, any excess sectors on a clone destination device are not modified.
- 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 Highlights:**
- Destination setup: 490234752 sectors wiped with 2B
- Comparison of original to clone Drive
- Sectors compared: 390721968
- Sectors match: 390721968
- Sectors differ: 0
- Bytes differ: 0
- Diffs range: 1 sector
- Source (390721968) has 390721968 fewer sectors than destination (490234752)
- Zero fill: 0
- Src Byte fill (4C): 0
- Dst Byte fill (2B): 99512784
- Other fill: 0
- Other no fill: 0
- Zero fill range: 0
- Src fill range: 0
- Dst fill range: 99512784
- Other fill range: 0
- Other not filled range: 0 source read errors, 0 destination read errors

---

**Tester Name:** brl

**Test Host:** Athos

**Test Date:** Wed Oct 17 16:48:21 2007

**Drives:**
- src(4C) dst (2B-IDE) other (none)

**Source Setup:**
- src hash (SHA1): `<8FF620D2BEDCCAFE8412EAAAD56C8554F872EFBF`
- src hash (MD5): `<D10F763B56D4CEBA2D1311C61F9FB382`
- 390721968 total sectors (200049647616 bytes)
- 24320/254/63 (max cyl/hd values)
- 24321/255/63 (number of cyl/hd)
- IDE disk: Model (WDC WD2000JB-00KFA0) serial # (WD-WMAMR1031111)

<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>000000063</td>
<td>390700737</td>
<td>0000/001/01</td>
<td>1023/254/63</td>
<td>Boot</td>
<td>07 NTFS</td>
</tr>
<tr>
<td>2</td>
<td>000000000</td>
<td>0000000000</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00 empty entry</td>
</tr>
<tr>
<td>3</td>
<td>000000000</td>
<td>0000000000</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00 empty entry</td>
</tr>
<tr>
<td>4</td>
<td>000000000</td>
<td>0000000000</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00 empty entry</td>
</tr>
</tbody>
</table>

1 390700737 sectors 200038777344 bytes
## Test Case DA-01-ATA48 F-TALON V2.43

<table>
<thead>
<tr>
<th>Operating Mode: Capture</th>
<th>Address Mode: LBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify: NW-MD5</td>
<td>Speed: UDMA-4</td>
</tr>
<tr>
<td>Connection: Direct</td>
<td></td>
</tr>
</tbody>
</table>

100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!

Operator declined FULL and remainder Destination Drive erase!

************************** SOURCE DRIVE **************************

- **Drive Model:** WD2000JB-00KFA0
- **Serial:** WD-WMAMR103111
- **Cylinders:** 387621
- **Heads:** 16
- **Sectors:** 63
- **Total Sectors:** 39072196
- **Drive Size:** 186.3 GB
- **Computed MD5 Value:** D10F763B 56D4CEBA 2D1311C6 1F9FB382
- **Skipped Sectors:** 0

************************ DESTINATION DRIVE ****************************

- **Drive Model:** Maxtor 7Y250P0
- **Serial:** Y63DQXCE
- **Cylinders:** 486344
- **Heads:** 16
- **Sectors:** 63
- **Total Sectors:** 49023475
- **Drive Size:** 233.8 GB
- **Computed SHA-256 Value:** NONE
- **Skipped Sectors:** 0

**Settings:** error skip speed UDMA-5

### 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-04 A clone is created.</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-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-17 Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not tested</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
### 5.2.3 DA-01-PCMCIA

#### Test Case DA-01-PCMCIA F-TALON V2.43

**Case Summary:** DA-01 Acquire a physical device using access interface AI to an unaligned clone.

**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-04** If clone creation is specified, the tool creates a clone of the digital source.
- **AM-06** All visible sectors are acquired from the digital source.
- **AM-08** All sectors acquired from the digital source are acquired accurately.
- **AM-11** If requested, a clone is created during an acquisition of a digital source.
- **AM-13** A clone is created using access interface DST-AI to write to the clone device.
- **AM-14** If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.
- **AO-11** If requested, any excess sectors on a clone destination device are not modified.
- **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:** Athos

**Test Date:** Wed Nov 14 09:58:03 2007

**Drives:**
- **src(09-LAP) dst (8C) other (none)**

**Source**
- src hash (SHA1): `<1185459903CBBB9E668DBFDD5D54832BE88E029>`
- src hash (MD5): `<602C740729A16808E42696C1D9C93C96>`
  - 195371568 total sectors (100030242816 bytes)
  - 12160/254/63 (max cyl/hd values)
  - 12161/255/63 (number of cyl/hd)
  - Model (A) serial # (5MH0KZ)

This drive has a DCO of 8000001 sectors

The hashes with DCO in place are:
- MD5: 00A81DE5822E84E9606DEF68D9D17367
- SHA1: 7A247D230345EFC1A412586A83AA6AD66266D2B1

**Setup**
- **Log Highlights:**
  - 39102336 sectors wiped with 8C
  - Comparison of original to clone Drive
  - Sectors compared: 8000001
  - Sectors match: 7779585
  - Sectors differ: 220416
  - Bytes differ: 2200591
  - Diffs range 8704-8959, 17920-18175, 27136-27391, 36352-36607, 45824-46079, 55040-55295, 64256-64511, 73728-73983, 82944-83199, 92160-92415, 101376-101631, 110848-111103, 120064-120319, 120280-120535, 138496-138751, 147968-148223, 157184-157439, 166400-166655, 175872-176127, 185088-185343. . . + 215296 more
  - Source (8000001) has 31102335 fewer sectors than destination (39102336)
  - Zero fill: 0
  - Src Byte fill (09): 0
  - Dst Byte fill (8C): 31102335
  - Other fill: 0
  - Other no fill: 0
  - Zero fill range:
  - Src fill range:
  - Dst fill range: 8000001-39102335
  - Other fill range:
Test Case DA-01-PCMCIA F-TALON V2.43

Other not filled range:
0 source read errors, 0 destination read errors

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****

SESSION SETTINGS
Operating Mode: Capture Address Mode: LBA
Verify : HW-MD5 Speed : PIO-MEDIUM
Connection : Direct
100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!
Operator declined FULL and remainder Destination Drive erase!

Physical Characteristics
Drive Model: ST910021A
Serial: SMH0X2YH
Cylinders Heads Sectors Total Sectors Drive Size
7936 16 63 8000001 3.8 GB
Computed MD5 Value: 552B58CF 8C7378F8 D5738E1D FE9ACDBC
Skipped Sectors: 0

Physical Characteristics
Drive Model: WDC WD200EB-00CSF0
Serial: WD-WMAAV2431177
Cylinders Heads Sectors Total Sectors Drive Size
38792 16 63 39102336 18.6 GB
Computed SHA-256 Value: NONE
Skipped Sectors: 0

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-04 A clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>some sectors omitted</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>some sectors differ</td>
</tr>
<tr>
<td>AO-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-17 Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not tested</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>not checked</td>
</tr>
</tbody>
</table>

Analysis: Expected results not achieved
5.2.4 DA-01-SATA28

Test Case DA-01-SATA28  F-TALON V2.43

Case Summary: DA-01 Acquire a physical device using access interface AI to an unaligned clone.

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-04 If clone creation is specified, the tool creates a clone of the digital source.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AO-11 If requested, a clone is created during an acquisition of a digital source.
AO-13 A clone is created using access interface DST-AI to write to the clone device.
AO-14 If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.
AO-17 If requested, any excess sectors on a clone destination device are not modified.
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: Athos
Test Date: Thu Oct 18 13:07:27 2007

Drives:
src(07-SATA) dst (23-IDE) other (none)

Source:
src hash (SHA1): < 655E98BDB36A3F9C5C4C08B32B6C41AF9F52E >
src hash (MD5): < 2EAF7120AD80F66E30DEA00365B4579B >
156301488 total sectors (80026361856 bytes)
Model (WD WD800JD-32HK) serial # (WD-WMAJ91S10044)
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 156280257 sectors 80015491584 bytes

Destination setup
195813072 sectors wiped with 23

Comparison of original to clone Drive
Sectors compared: 156301488
Sectors match: 156301488
Sectors differ: 0
Bytes differ: 0
Diffs range
Source (156301488) has 39511584 fewer sectors than destination (195813072)
Zero fill: 0
Src Byte fill (07): 0
Dst Byte fill (23): 39511584
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dst fill range: 156301488-195813071
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
SESSION SETTINGS
Operating Mode: Capture Address Mode: LBA
Verify: MD5+V Speed: UDMA-1
Test Case DA-01-SATA28 F-TALON V2.43

---

Connection: Direct

100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!

Operator declined FULL and remainder Destination Drive erase!

*************************** SOURCE DRIVE ***************************

**Physical Characteristics**

Drive Model: WDC WD800JD-32HKA0
Serial: WD-WMAJ91510044
Cylinders: 155061  Heads: 16  Sectors: 63  Total Sectors: 156301488  Drive Size: 74.5 GB
Computed MD5 Value: 2EAF712D AD80F66E 30DEA003 65B4579B
Skipped Sectors: 0

*************************** DESTINATION DRIVE ***************************

**Physical Characteristics**

Drive Model: Maxtor 6L100P0
Serial: L26YGVQG
Cylinders: 194259  Heads: 16  Sectors: 63  Total Sectors: 195813072  Drive Size: 93.4 GB
Computed MD5 Value: 2EAF712D AD80F66E 30DEA003 65B4579B
Skipped Sectors: 0

Settings: error skip speed UDMA-3

---

**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-04 A clone is created.</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-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-17 Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not tested</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
## 5.2.5 DA-01-SATA48

### Test Case DA-01-SATA48 F-TALON V2.43

**Case Summary:** DA-01 Acquire a physical device using access interface AI to an unaligned clone.

**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-04 If clone creation is specified, the tool creates a clone of the digital source.
- AM-06 All visible sectors are acquired from the digital source.
- AM-08 All sectors acquired from the digital source are acquired accurately.
- AO-11 If requested, a clone is created during an acquisition of a digital source.
- AO-13 A clone is created using access interface DST-AI to write to the clone device.
- AO-14 If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.
- AO-17 If requested, any excess sectors on a clone destination device are not modified.
- 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:** Athos

**Test Date:** Fri Oct 19 11:38:43 2007

**Drives:**
- src (0D-SATA)
- dst (0B-SATA)
- other (none)

**Source Hash (SHA1):** < BAAD80E8781E55F2E3EF528CA73BD41D228C1377 >

**Source Hash (MD5):** < 1FA7C3CBE60EB9E89863DED2411E40C9 >

**Model:** WDC WD2500JD-22FYB0

**Serial:** WMAEH2678216

**Partitions:**
- 1
  - Start LBA: 000000000
  - Length: 488375937
  - Start C/H/S: 0/0/0
  - End C/H/S: 1023/254/63
  - Boot: 0
  - Type: NTFS
- 2
  - Start LBA: 000000000
  - Length: 000000000
  - Start C/H/S: 0/0/0
  - End C/H/S: 000000000
  - Boot: 0
- 3
  - Start LBA: 000000000
  - Length: 000000000
  - Start C/H/S: 0/0/0
  - End C/H/S: 000000000
  - Boot: 0
- 4
  - Start LBA: 000000000
  - Length: 000000000
  - Start C/H/S: 0/0/0
  - End C/H/S: 000000000

**Log Highlights:**
- 488397168 sectors wiped with B
- Comparison of original to clone Drive
- Sectors compared: 488397168
- Sectors match: 488397168
- Sectors differ: 0
- Bytes differ: 0
- Diffs range
- 0 source read errors, 0 destination read errors

----- FORENSIC TALON Serial No.: 15881 Software: V2.43 -----

**Session Settings:**
- Operating Mode: Capture
- Address Mode: LBA
- Verify: HW-MD5
- Speed: UDMA-4
- Connection: Direct

**Physical Characteristics:**
- Drive Model: WDC WD2500JD-22FYB0
- Serial: WMAEH2678216
- Cylinders: 18
- Heads: 14
- Sectors: 63
- Drive Size: 250048479744 bytes

---

**August 2009 Logicube Forensic Talon 12 14 2009.doc**
Test Case DA-01-SATA48 F-TALON V2.43

484521 16 63 488397168 232.9 GB
Computed MD5 Value: 1FA7C3CB E60EB9E8 9963DED2 411E40C9
Skipped Sectors: 0

**************************************************************************
DESTINATION DRIVE
**************************************************************************

Physical Characteristics

Drive Model: WDC WD2500JD-22FYB0
Serial: WD-WMAEH2677545

Cylinders  Heads  Sectors  Total Sectors  Drive Size
484521  16  63  488397168  232.9 GB

Computed SHA-256 Value: NONE
Skipped Sectors: 0

Settings: error skip speed UDMA-5

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-04 A clone is created.</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>A0-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>A0-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>A0-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>A0-17 Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td>A0-22 Tool calculates hashes by block.</td>
<td>option not tested</td>
</tr>
<tr>
<td>A0-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>A0-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
### 5.2.6 DA-01-USB

#### Test Case DA-01-USB F-TALON V2.43

<table>
<thead>
<tr>
<th>Case Summary</th>
<th>DA-01 Acquire a physical device using access interface AI to an unaligned clone.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Assertions</th>
<th>AM-01 The tool uses access interface SRC-AI to access the digital source.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM-02 The tool acquires digital source DS.</td>
</tr>
<tr>
<td></td>
<td>AM-03 The tool executes in execution environment XE.</td>
</tr>
<tr>
<td></td>
<td>AM-04 If clone creation is specified, the tool creates a clone of the digital source.</td>
</tr>
<tr>
<td></td>
<td>AM-06 All visible sectors are acquired from the digital source.</td>
</tr>
<tr>
<td></td>
<td>AM-08 All sectors acquired from the digital source are acquired accurately.</td>
</tr>
<tr>
<td></td>
<td>AO-11 If requested, a clone is created during an acquisition of a digital source.</td>
</tr>
<tr>
<td></td>
<td>AO-13 A clone is created using access interface DST-AI to write to the clone device.</td>
</tr>
<tr>
<td></td>
<td>AO-14 If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.</td>
</tr>
<tr>
<td></td>
<td>AO-17 If requested, any excess sectors on a clone destination device are not modified.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.</td>
</tr>
<tr>
<td></td>
<td>AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tester Name</th>
<th>brl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Host</td>
<td>Athos</td>
</tr>
<tr>
<td>Test Date</td>
<td>Wed Oct 31 15:30:12 2007</td>
</tr>
<tr>
<td>Drives</td>
<td>src (DS=THUMB) dst (22-SATA) other (none)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>srchash (SHA1): &lt; D68520EF74A336E49DCCF8381SB7B08FDC53E38A &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setup</td>
<td>srchash (MD5): &lt; C843593624B2B3B878596D8760B19954 &gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>(usb2.0Flash Disk) serial # ()</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Start LBA</td>
<td>Start C/H/S End C/H/S Boot Partition type</td>
</tr>
<tr>
<td>1 P</td>
<td>778135908 1141509631 0357/116/40 0357/032/45 Boot 72 other</td>
</tr>
<tr>
<td>2 P</td>
<td>168689522 1936028240 0288/115/43 0367/114/50 Boot 65 other</td>
</tr>
<tr>
<td>3 P</td>
<td>1869881465 1936028192 0366/032/33 0357/032/43 Boot 79 other</td>
</tr>
<tr>
<td>4 P</td>
<td>2885681152 000055499 0372/097/50 0000/010/00 Boot 0D other</td>
</tr>
<tr>
<td>1</td>
<td>1141509631 sectors 584452931072 bytes</td>
</tr>
<tr>
<td>2</td>
<td>1936028240 sectors 991246458880 bytes</td>
</tr>
<tr>
<td>3</td>
<td>1936028192 sectors 991246434304 bytes</td>
</tr>
<tr>
<td>4</td>
<td>000055499 sectors 28415488 bytes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Log Highlights</th>
<th>156301488 sectors wiped with 22</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Comparision of original to clone Drive</td>
</tr>
<tr>
<td></td>
<td>Sectors compared: 505856</td>
</tr>
<tr>
<td></td>
<td>Sectors match: 505856</td>
</tr>
<tr>
<td></td>
<td>Sectors differ: 0</td>
</tr>
<tr>
<td></td>
<td>Bytes differ: 0</td>
</tr>
<tr>
<td></td>
<td>Diffs range</td>
</tr>
<tr>
<td></td>
<td>Source (505856) has 155795632 fewer sectors than destination (156301488)</td>
</tr>
<tr>
<td></td>
<td>Zero fill: 0</td>
</tr>
<tr>
<td></td>
<td>Src Byte fill (D5): 0</td>
</tr>
<tr>
<td></td>
<td>Dst Byte fill (22): 155795632</td>
</tr>
<tr>
<td></td>
<td>Other fill: 0</td>
</tr>
<tr>
<td></td>
<td>Other no fill: 0</td>
</tr>
<tr>
<td></td>
<td>Zero fill range:</td>
</tr>
<tr>
<td></td>
<td>Src fill range:</td>
</tr>
<tr>
<td></td>
<td>Dst fill range: 505856-156301487</td>
</tr>
<tr>
<td></td>
<td>Other fill range:</td>
</tr>
<tr>
<td></td>
<td>Other not filled range:</td>
</tr>
<tr>
<td></td>
<td>0 source read errors, 0 destination read errors</td>
</tr>
</tbody>
</table>

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
### SESSION SETTINGS

- Operating Mode: Capture
- Address Mode: LBA
- Verify: HW-MD5
- Speed: PIO-AUTO
- Connection: Direct

**100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!**

Operator declined FULL and remainder Destination Drive erase!

---

### Source Drive

**Physical Characteristics**

- **Drive Model:** CRUCIAL usb2.0Flash Disk
- **Serial:**
- **Cylinders:** 501
- **Heads:** 16
- **Sectors:** 63
- **Total Sectors:** 505856
- **Drive Size:** 0.2 GB
- **Computed MD5 Value:** C8435936 24B2B3B8 78596D87 60B19954
- **Skipped Sectors:** 0

---

### Destination Drive

**Physical Characteristics**

- **Drive Model:** ST380013AS
- **Serial:** 5JVCQ731
- **Cylinders:** 155061
- **Heads:** 16
- **Sectors:** 63
- **Total Sectors:** 156301488
- **Drive Size:** 74.5 GB
- **Computed SHA-256 Value:** NONE
- **Skipped Sectors:** 0

Settings: error skip speed PIO-AUTO

---

### 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-04 A clone is created.</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-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-17 Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not tested</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-01-XUSB**

<table>
<thead>
<tr>
<th>Case Summary:</th>
<th>DA-01 Acquire a physical device using access interface AI to an unaligned clone.</th>
</tr>
</thead>
</table>
| **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-04 If clone creation is specified, the tool creates a clone of the digital source.  
AM-06 All visible sectors are acquired from the digital source.  
AM-08 All sectors acquired from the digital source are acquired accurately.  
AO-11 If requested, a clone is created during an acquisition of a digital source.  
AO-13 A clone is created using access interface DST-AI to write to the clone device.  
AO-14 If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.  
AO-17 If requested, any excess sectors on a clone destination device are not modified.  
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:** Wed Nov 14 10:16:27 2007  
**Drives:** src(09-LAP) dst (F9) other (none)  
**Source** hash (SHA1): <118459903C8BB9E6D68DBFD5D54832BE88E029>  
**Setup:**  
src hash (MD5): <602C740729A16808E42696C1D9C93C96>  
195371568 total sectors (100030242816 bytes)  
12160/254/63 (max cyl/hd values)  
12161/255/63 (number of cyl/hd)  
Model (A) serial # (5MH0KZ)  

This drive has a DCO of 8000001 sectors  
The hashes with DCO in place are:  
MD5: 00A81DE5822E849606DF68D917367  
SHA1: 7A247D230345FEC1A412586A83A6AD66266D2B1  
**Log Highlights:**  
40188960 sectors wiped with F9  
Comparison of original to clone Drive  
Sectors compared: 8000001  
Sectors match: 8000001  
Sectors differ: 0  
Bytes differ: 0  
Diffs range  
Source (8000001) has 32188959 fewer sectors than destination (40188960)  
Zero fill: 0  
Src Byte fill (09): 0  
Dst Byte fill (F9): 32188959  
Other fill: 0  
Other no fill: 0  
Zero fill range:  
Src fill range:  
Dst fill range: 8000001-40188959  
Other fill range:  
Other not filled range:  
0 source read errors, 0 destination read errors  
No Log file found (da-01-xusb)  
Settings: error skip
Test Case DA-01-XUSB F-TALON V2.43

speed n/a

<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-04 A clone is created.</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-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-17 Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not tested</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-04 F-TALON V2.43

Case Summary: DA-04 Acquire a physical device to a truncated clone.

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-04 If clone creation is specified, the tool creates a clone of the digital source.
AM-06 All visible sectors are acquired from the digital source.
AM-08 All sectors acquired from the digital source are acquired accurately.
AO-11 If requested, a clone is created during an acquisition of a digital source.
AO-13 A clone is created using access interface DST-AI to write to the clone device.
AO-14 If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.
AO-19 If there is insufficient space to create a complete clone, a truncated clone is created using all available sectors of the clone device.
AO-20 If a truncated clone is created, the tool notifies the user.
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: Aramis
Test Date: Thu Oct 25 02:30:54 2007
Drives: src(41) dst (AA) other (none)

Source Setup:
src hash (SHA256): < FBF3AA21489653D880FFAE714499A9F7E8EE4F56A6C38BF58A3A3FBB13203F1BD >
src hash (SHA1): < 15CAA1A307271160D8372668BF8A03FC45A51CC9 >
src hash (MD5): < 0A6A8EF788DC14E20261D16DC8C5607C >
78125000 total sectors (40000000000 bytes)
65534/105/63 (max cyl/hd values)
65535/106/63 (number of cyl/hd)
IDE disk: Model (WDC WD400BB-75JHC0) serial # (WD-WMAMC46S535)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 0000000063 078107967 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 078107967 sectors 39991279104 bytes

Log Highlights:
Destination setup
6030432 sectors wiped with AA
No Log file found (da-04)
Screen message:
Error Capturing Drive!
Cannot fit data to target drive!
Settings: error skip
speed UDMA-5

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-04 A clone is created.</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-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>Test Case DA-04 F-TALON V2.43</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-19 Truncated clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-20 User notified that clone is truncated.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not tested</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
## 5.2.9 DA-06-ATA28

**Test Case** DA-06-ATA28 F-TALON V2.43

**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-22** If requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.

### Tester Details:
- **Name:** brl
- **Test Host:** Athos
- **Test Date:** Wed Oct 31 12:30:07 2007
- **Drives:**
  - src(41) dst (none) other (22-SATA)

### Source and Setup:
- **src hash (SHA256):** `<FBF3AA21489653D80FFAE714499A9F7E8EE4F56A6C3B5F58A3A3FFB13203F1B1D>`
- **src hash (SHA1):** `<15CAA1A307271160D8372668BF8A03FC45A51CC9>`
- **src hash (MD5):** `<0A6A8EF78BDC14E2026710D8CCB5607C>`

### Reference MD5 hashes, Win size: 666238976 (bytes)

```
1 0-666238975 46E843537F40B1931C2859B4E36DA015 -
2 666238976-1332477951 34CA5E7FD7A3EF769C280FE338DBD2 -
3 1332477952-1998716927 DC8E8034A158BDCD492A992AE634BB -
  ...
59 38641860608-39308099583 646D67FA5B92F92C532559266672A3 -
60 39308099584-39974338559 1DCCF22DA92A1D933D539A139EDAA -
61 39974338560-40640577535 EBE66A702E41CD341BD9B109EOCD7ED -
```

7812500 total sectors (4000000000 bytes)

65534/015/63 (max cyl/hd values)

65535/016/63 (number of cyl/hd)

IDE disk: Model (WDC WD400BB-75JHC0) serial # (WD-WNAMC4658355)

### Log Highlights:

```
****** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
SESSION SETTINGS
Operating Mode: DD Img(650M) Address Mode: LBA
Verify : MD5=File Speed : PIO-AUTO
Connection : Direct

*************** SOURCE DRIVE ***************
Physical Characteristics
Drive Model: WDC WD400BB-75JHC0
Serial: WD-WNAMC4658355
Cylinders Heads Sectors Total Sectors Drive Size
77504 16 63 78125000 37.3 GB

*************** DESTINATION DRIVE ***************
Physical Characteristics
Drive Model: ST380013AS
Serial: 5JVCQ731
Cylinders Heads Sectors Total Sectors Drive Size
155061 16 63 156301488 74.5 GB
```
### Test Case DA-06-ATA28 F-TALON V2.43

- **Skipped Sectors:** 0  
  **Recovered Sectors:** 0

**Block Hashes**
- **06ATA28.001:** From:0, To:1332521, Size:1301248, MD5 Value: 46E843537F40B1931C2859B4E36DA015
- **06ATA28.002:** From:1301248, To:2633769, Size:1301248, MD5 Value: 34CA5E7FD7A3EF769C2C80FE3388D9D2
- **06ATA28.003:** From:2602496, To:3935017, Size:1301248, MD5 Value: DC8EF0B34A158DC592A992AE6340B
- **06ATA28.059:** From:75472384, To:76804905, Size:1301248, MD5 Value: 646D67FA5B92F92C5F325592D66672A3
- **06ATA28.060:** From:76773632, To:78106153, Size:1301248, MD5 Value: 1DCCFCD2AF92A1933D339A13A9EDAA
- **06ATA28.061:** From:78074880, To:79407401, Size:50120, MD5 Value: EE8E6AA702E441CD341BD9B109E0C7ED

**Settings:** error skip

**Speed:** PIO-AUTO

### 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>as expected</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
**5.2.10 DA-06-ATA48**

**Test Case DA-06-ATA48**

**F-TALON V2.43**

**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 a multi-file image of a requested size then all the individual files shall be no larger than the requested size.

AM-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-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:** Aramis

**Test Date:** Fri Oct 26 00:41:27 2007

**Drives:**
- src(4C)
- dst (none)
- other (28-IDE)

**Source Setup:**
- src hash (SHA1): < 8FF62D2B6DCCAF8412E2A5D854F872EFBF >
- src hash (MD5): < D10F763B564CEBA2D131C61F9FB382 >

**Reference MD5 hashes, Win size: 3997433856 (bytes)**

<table>
<thead>
<tr>
<th>Hash</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHA1</td>
<td>8FF62D2B6DCCAF8412E2A5D854F872EFBF</td>
</tr>
<tr>
<td>MD5</td>
<td>D10F763B564CEBA2D131C61F9FB382</td>
</tr>
</tbody>
</table>

**Log Highlights:**

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****

**SESSION SETTINGS**

- Operating Mode: DD Img(4GB)
- Address Mode: LBA
- Verify: MD5-File
- Speed: UDMA-4
- Connection: Direct

**Physical Characteristics**

**Drive Model:** WDC WD2000JB-00KFA0
**Serial:** WD-WMMAR1031111

**Cylinders** | **Heads** | **Sectors** | **Total Sectors** | **Drive Size**
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>387621</td>
<td>16</td>
<td>63</td>
<td>390721968</td>
<td>186.3 GB</td>
</tr>
</tbody>
</table>

**DESTINATION DRIVE**

**Physical Characteristics**

**Drive Model:** WDC WD2500JB-00GVC0
**Serial:** WD-WCAL78181051

**Cylinders** | **Heads** | **Sectors** | **Total Sectors** | **Drive Size**
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>484521</td>
<td>16</td>
<td>63</td>
<td>488397168</td>
<td>232.9 GB</td>
</tr>
</tbody>
</table>

**Skipped Sectors:** 0
**Recovered Sectors:** 0
Test Case DA-06-ATA48 F-TALON V2.43

Block Hashes:
- 06ATA48.001: From:0, To:7926229, Size:7807488, MD5 Value: A24BA8F8CED07E07515A6FF70C21DC83
- 06ATA48.002: From:7807488, To:15733717, Size:7807488, MD5 Value: 5A3641B34D935EE37158329A81BA734
- 06ATA48.003: From:15614976, To:23541205, Size:7807488, MD5 Value: 296AB048E5214A74B21BCE0DC7F7AC3

... 
- 06ATA48.049: From:374759424, To:382685653, Size:7807488, MD5 Value: C090A2D73937250E97439F82EBA0EC
- 06ATA48.050: From:382566912, To:390493141, Size:7807488, MD5 Value: D0E8704F5C94ECB4674C7B29762009AF
- 06ATA48.051: From:390374400, To:398300629, Size:347568, MD5 Value: A7FD8741B79971412099A34AA5D027A4

Settings: error skip speed UDMA-5

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>as expected</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
5.2.11 DA-06-SATA28

**Test Case DA-06-SATA28**

**F-TALON V2.43**

**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-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:** Athos

**Test Date:** Tue Oct 30 14:53:17 2007

**Drives:**

**Source Setup:**
src hash (SHA1): < 655E9BBDB36A3F9C5C4CC8BF32B5B4A1F9F52E >
src hash (MD5): < 2EAF712DAD0F7E07EDF847 >

Reference SHA256 hashes, Win size: 3903744 (sectors)
1 0 - 3903743
133439cf79d522715c1e0b28a86b807d0112e46c1781decc6898e58bf5e40
2 3903744 - 7807487
86c2063f55fa5bdc0379a9f77a73e840909f79f5115ccc3523b13a5710cb5f
3 7807488 - 11711231
C4876353VCEBO814F8A5B522267B474113F0E1ECC64F6992662A11AA58138DC

39 148342272 - 152246015
1830C6D07DFEFA26B8855B81D6C02676B795E89F179C99F0ACC04B7F07EDF847
40 152246016 - 156149759
C7E9434D4443928C6A2BBF388C865DA3C3CF3738459764FF1ABD6393863049A
41 156149760 - 160053503
07AA55676265F5F5B4375FD43F3087920949275765388B27743819B8CF9DF
156301488 total sectors (80023661856 bytes)
Model (WD WD800JD-32HK) serial # (WD-WMAJ91510044)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 000000006 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:**

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
SESSION SETTINGS
Operating Mode: DD Img(2GB) Address Mode: LBA
Verify : SHA-FileV Speed : UDMA-5
Connection : Direct
AN EXACT DD IMAGE FILE COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!
******************************************************************** SOURCE DRIVE ********************************************************************
Physical Characteristics
Drive Model: WDC WD800JD-32HKA0
Serial: WD-WMAJ91510044
Cylinders Heads Sectors Total Sectors Drive Size
155061 16 63 156301488 74.5 GB
******************************************************************** DESTINATION DRIVE ********************************************************************
Physical Characteristics
Test Case DA-06-SATA28 F-TALON V2.43

Drive Model: MAXTOR STM3120814A
Serial: SL56PD25
Cylinders Heads Sectors Total Sectors Drive Size
232581 16 63 23441648 111.8 GB
Skipped Sectors: 0 Recovered Sectors: 0

Block Hashes
06SATA28.001: From:0, To:4017967, Size:3903744, SHA-256: 043AA9C79D022475C1E8B28AB86807DC11DE46C1781DECC0AB9BE85BF59E40
06SATA28.002: From:3903744, To:7921711, Size:3903744, SHA-256: 86C2063F5FFA5B522E67B474113F0E1ECC64F6992662A11AA58138DCC
06SATA28.003: From:7807488, To:11825455, Size:3903744, SHA-256: C4876353FCEB0814F8A5B522E67B474113F0E1ECC64F6992662A11AA58138DCC

Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
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<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
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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>as expected</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
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-04 All visible sectors are acquired from the digital source.
- AM-06 All sectors acquired from the digital source are acquired accurately.
- AM-07 If image file creation is specified, the tool creates an image file on file system type FS.
- AM-08 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 requested, the tool calculates block hashes for a specified block size during an acquisition for each block acquired from the digital source.
- AO-03 If the tool logs any log significant information, the information is accurately recorded in the log file.
- AO-04 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.

Tester Name: brl
Test Host: Athos
Test Date: Mon Oct 29 15:40:17 2007
Drives:
src(0D-SATA) dst (none) other (1D-SATA)

Source
src hash (SHA1): < BAAD80E781E510F2E3EF528CA73BD41D228C1377 >
src hash (MD5): < 1FA7C3CBE60EB9E89863DED2411E40C9 >
48839168 total sectors (25005930016 bytes)
30400/254/63 (max cyl/hd values)
30401/255/63 (number of cyl/hd)
Model (WDC WD2500JD-22FYB0) serial # (WD-WMAEH2678216)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 0000000063 488375937 0000/001/01 1023/254/63 Boot 07 NTFS
2 P 0000000000 000000000 0000/000/00 0000/000/00 00 empty entry
3 P 0000000000 000000000 0000/000/00 0000/000/00 00 empty entry
4 P 0000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 488375937 sectors 250048479744 bytes

Setup:
src hash (MD5): < 1FA7C3CBE60EB9E89863DED2411E40C9 >
48839168 total sectors (25005930016 bytes)
30400/254/63 (max cyl/hd values)
30401/255/63 (number of cyl/hd)
Model (WD2500JD-22FYB0) serial # (WD-WMAEH2678216)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 0000000063 488375937 0000/001/01 1023/254/63 Boot 07 NTFS
2 P 0000000000 000000000 0000/000/00 0000/000/00 00 empty entry
3 P 0000000000 000000000 0000/000/00 0000/000/00 00 empty entry
4 P 0000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 488375937 sectors 250048479744 bytes

Log Highlights:
***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
SESSION SETTINGS
Operating Mode: DD Img(650M) Address Mode: LBA
Verify : MD5-Disk Speed : UDMA-4
Connection : Direct
AN EXACT DD IMAGE FILE COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!

Physical Characteristics
Drive Model: WDC WD2500JD-22FYB0
Serial: WD-WMAEH2678216
Cylinders Heads Sectors Total Sectors Drive Size
484521 16 63 488397168 232.9 GB

Physical Characteristics
Drive Model: ST3320620AS
Serial: 5QF3YS2E
Cylinders Heads Sectors Total Sectors Drive Size
620181 16 63 625142448 298.1 GB

* Source Drive From:0, To:488397167, Size:488397168, MD5 Value:
Acquisition Hash
Source Drive From:0, To:488397167, Size:488397168, MD5 Value:
1FA7C3CBE60EB9E89863DED2411E40C9

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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<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 tested</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-06-USB**

<table>
<thead>
<tr>
<th>Test Case DA-06-USB F-TALON V2.43</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case</strong></td>
</tr>
<tr>
<td><strong>Summary:</strong></td>
</tr>
<tr>
<td><strong>Assertions:</strong></td>
</tr>
</tbody>
</table>

**Tester Name:** brl

**Test Host:** Athos

**Test Date:** Wed Oct 31 14:06:34 2007

**Drives:**
- src(D5-THUMB) dst (none) other (5A)

**Source Hash (SHA1):** < D68520EF7A33E49DCCF83815B7B08FDC53E38A >

**Setup:**
- src hash (MD5): < C843593624B2B3B87856D8760B19954 >
- 505856 total sectors (25899272 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 168698522 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:**

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****

SESSION SETTINGS
- Operating Mode: DD Img(4GB)
- Address Mode: LBA
- Verify: MDS-Disk
- Speed: PIO-AUTO
- Connection: Direct

AN EXACT DD IMAGE FILE COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!

*************** SOURCE DRIVE ***************

Physical Characteristics
- Drive Model: CRUCIAL usb2.0Flash Disk
- Serial: C843593624B2B3B87856D8760B19954
- Cylinders: 501
- Heads: 16
- Sectors: 63
- Total Sectors: 505856
- Drive Size: 0.2 GB

*************** DESTINATION DRIVE ***************

Physical Characteristics
- Drive Model: IBM-DTTA-350640
- Serial: WDOWDPF9294
- Cylinders: 13431
- Heads: 15
- Sectors: 63
- Total Sectors: 12692736
- Drive Size: 6.1 GB

Settings: error skip speed PIO-AUTO

August 2009Logicube Forensic Talon 12 14 2009.doc 34 of 62 Test Result
<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>
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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>
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</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
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<td>option not tested</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
5.2.14 DA-07-CF
Test Case DA-07-CF F-TALON V2.43

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-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: Wed Oct 31 15:04:43 2007
Drives: src (C1-CF) dst (none) other (5A)

Source
src hash (SHA256): <
Setup:
src hash (SHA1): < 5B8235178DF99FA0374730C088F8174666638A0B >
src hash (MD5): < 776DF8B42D589E21DEBCF589EDC16D78 >
503808 total sectors (257949696 bytes)
Model (CF) serial # ( )
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 778135908 1141509631 0357/116/40 0357/032/45 Boot 72 other
2 168689522 1936028240 0288/114/50 Boot 65 other
3 1869881465 1936028192 0366/032/33 0357/032/43 Boot 79 other
4 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:
***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
SESSION SETTINGS
Operating Mode: DD Img(650M) Address Mode: LBA
Verify : MD5=File Speed : PIO-AUTO
Connection : Direct
AN EXACT DD IMAGE FILE COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!
Physical Characteristics
Drive Model: ICSI CF Card CF
Serial: 499 16 63 503808 0.2 GB

Physical Characteristics
Drive Model: IBM-DTTA-350640
Serial: WD0WDF99294
Cylinders Heads Sectors Total Sectors Drive Size
13431 15 63 12692736 6.1 GB
Skipped Sectors: 0 Recovered Sectors: 0
* 07CF.001: From:0, To:1325331, Size:503808, MD5 Value:
Acquisition Hash
07CF.001: From:0, To:1325331, Size:503808, MD5 Value:
776DF8B42D589E21DEBCF589EDC16D78

August 2009Logicube Forensic Talon 12 14 2009.doc
## Test Case DA-07-CP F-TALON V2.43

**Settings:**
- Error Skip
- Speed PIO-AUTO

### 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 tested</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
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: Paladin
Test Date: Wed Oct 31 16:00:24 2007
Drives: src(42) dst (none) other (23 - IDE)
Source Setup: src hash (SHA1): < 5A75399023056E0EB905082B35F8FAA1DB049229 >
src hash (MD5): < F4B9AB24554EEEB2A962BDA554A9252 >
Reference MD5 hashes, Win size: 1301248 (sectors)
10-1301247 4C09659BDFF6385AEC8430C6748DE2CE
2602496 - 3903743 35300547B2FE971755257FDA3FD76C77
... 59 75472384 - 76773631 6541BC90D2D418C8451A935DB6539206
60 76773632 - 78074879 E6F50867FE1285A3D74383EC17888AC
61 78074880 - 79376127 4D92ABF2A131DF5A5C3D0DFB318DDDE27
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 00000000 070348572 0000001/01/01 070348572 Boot NTFS
2 P 00000000 0000000000 0000/0000/0000 0000000000 00 empty entry
3 P 00000000 0000000000 0000/0000/0000 0000000000 00 empty entry
4 P 00000000 0000000000 0000/0000/0000 0000000000 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:D76F909482B00767862C295CADE202F92E61CD2E

Log Highlights:

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
SESSION SETTINGS
Operating Mode: DD Img(650M) Address Mode: LBA
Verify : MD5-File Speed : UDMA-4
Connection : Direct
AN EXACT DD IMAGE FILE COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!
******************************************************************************
Physical Characteristics
Test Case DA-08-ATA28 F-TALON V2.43

Drive Model: WD WD400JB-00JCC0
Serial: WD-WCAMA3958512
Cylinders Heads Sectors Total Sectors Drive Size
77545 16 63 78165360 37.3 GB

Physical Characteristics

Drive Model: Maxtor 6L100P0
Serial: L26YGVQG
Cylinders Heads Sectors Total Sectors Drive Size
194259 16 63 195813072 93.4 GB
Skipped Sectors: 0 Recovered Sectors: 0

Block Hashes
08ATA28.001: From:0, To:1342165, Size:1301248, MD5 Value: 4C09659BDF63855AEC8430C6748DE2CE
08ATA28.002: From:1301248, To:2643413, Size:1301248, MD5 Value: D1737C33CBE394D17EFA0C81576D498
08ATA28.003: From:2602496, To:3944661, Size:1301248, MD5 Value: 35300547B2FE971755257FDA3FD76C77
08ATA28.059: From:75472384, To:76814549, Size:1301248, MD5 Value: 6541BC902D418C8451A935DB6539206
08ATA28.060: From:76773632, To:78115797, Size:1301248, MD5 Value: E6F50867FE12B5A3D7438E6C17888AC
08ATA28.061: From:78074880, To:79417045, Size:90480, MD5 Value: 4D92AFB2A131DF5ADB3812DB318DDE27
Settings: error skip speed UDMA-5

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>
<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-07 All hidden sectors acquired.</td>
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<tr>
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<tr>
<td>AO-01 Image file is complete and accurate.</td>
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</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>as expected</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 F-TALON V2.43

**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:** Athos

**Test Date:** Thu Nov 1 10:39:58 2007

**Drives:**
- src(4B) dst (none) other (28-IDE)

**Source Setup:**
- src hash (SHA1): < F409920836FED76DBB6DEEEF467A6DDE5BF48E >
- src hash (MD5): < B5641B5A594912B4D605180430B1DE698 >

**Reference MD5 hashes, Win size: 7807488 (sectors)**

<table>
<thead>
<tr>
<th>Sector</th>
<th>MD5 Hash</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7807488</td>
</tr>
<tr>
<td>2</td>
<td>15614976</td>
</tr>
<tr>
<td>3</td>
<td>390374400</td>
</tr>
<tr>
<td>49</td>
<td>374759424</td>
</tr>
<tr>
<td>50</td>
<td>382566912</td>
</tr>
<tr>
<td>51</td>
<td>390374399</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

**IDE disk:** Model (WDC WD2000JB-00VGC0) serial # (WD-WCAL78252964)

**N Start LBA Length Start C/H/S End C/H/S Boot Partition type**

| 1 | 000000000 | 351646722 | 000/001/01 1023/254/63 Boot 07 NTFS |
| 2 | 000000000 | 000000000 | 000/000/00 000/000/00 00 empty entry |
| 3 | 000000000 | 000000000 | 000/000/00 000/000/00 00 empty entry |
| 4 | 000000000 | 000000000 | 000/000/00 000/000/00 00 empty entry |

**HPA created BIOS, XBIOS and Direct disk geometry Reporter (BXDR)**

**Log Highlights:**

```
***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
SESSION SETTINGS
Operating Mode: DD Img(4GB) Address Mode: LBA
Verify : MDS-File Speed : UDMA-4
Connection : Direct
AN EXACT DD IMAGE FILE COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!
**************************************************************
Physical Characteristics
```

August 2009 Logicube Forensic Talon 12 14 2009.doc
Test Case DA-08-ATA48 F-TALON V2.43

Drive Model: WDC WD2000JB-00GVC0  
**Cylinders** Heads Sectors Total Sectors Drive Size  
387621 16 63 390721968 186.3 GB  
Understanding DRIVE

Drive Model: WDC WD2500JB-00GVC0  
**Cylinders** Heads Sectors Total Sectors Drive Size  
484521 16 63 488397168 232.9 GB  
Skipped Sectors: 0 Recovered Sectors: 0

**Block Hashes**

<table>
<thead>
<tr>
<th>Block Hash</th>
<th>From</th>
<th>To</th>
<th>Size</th>
<th>MD5 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>08ATA48.001</td>
<td>0</td>
<td>7926229</td>
<td>7807488</td>
<td>E0BE648B0DCD8408BB651049ED08AF2C</td>
</tr>
<tr>
<td>08ATA48.002</td>
<td>7807488</td>
<td>15733717</td>
<td>7807488</td>
<td>EF98DB35796126ABBC04412589FB7932</td>
</tr>
<tr>
<td>08ATA48.003</td>
<td>15614976</td>
<td>23541205</td>
<td>7807488</td>
<td>C8CFFAC6AB449242BD80E98F1F656FDB</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>08ATA48.049</td>
<td>374759424</td>
<td>382685653</td>
<td>7807488</td>
<td>3175264A9003C5D980DDEB83767DFE</td>
</tr>
<tr>
<td>08ATA48.050</td>
<td>382566912</td>
<td>390493141</td>
<td>7807488</td>
<td>D881EE19EA118FE1A53AD2422AE033</td>
</tr>
</tbody>
</table>

**Settings:** error skip speed UDMA-5

**Results:**

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**Analysis:** Expected results achieved

August 2009 Logicube Forensic Talon 12 14 2009.doc 41 of 62 Test Result
5.2.17  DA-08-DCO

Test Case DA-08-DCO  F-TALON V2.43

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-04 If image file creation is specified, the tool creates an image file on file system type FS.
AM-05 All visible sectors are acquired from the digital source.
AM-06 All hidden sectors are acquired from the digital source.
AM-07 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-02 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: Athos
Test Date: Thu Nov 1 14:40:14 2007
Drives: src(92) dst (none) other (13-IDE)

Source
setup: src hash (SHA1): < 63E67BF0D3040A8ADA2CF8FEB6AEB05B76DF10481 >
src hash (MD5): < 5E05DD1BD0B0DD6E603153A3FE1A2F3E >
58633344 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-WMA82H2140350)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 0000000063 058605057 0000/001/01 1023/254/63 Boot 07 NTFS
2 0 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
3 0 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
4 0 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 058605057 sectors 30005789184 bytes

Hashe with DCO in place:
md5:525963C6789423396FE1F3202A8CBD04
sha1.txt:55A3CFE756B7B0034DCCE71F7D7A477D8681B781

Log
Highlights:
***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****
SESSION SETTINGS
- Operating Mode: DD Img(2GB)
- Address Mode: LBA
- Verify : MDs-Disk
- Speed : UDMA-4
- Connection : Direct

AN EXACT DD IMAGE FILE COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!

*************** SOURCE DRIVE ***************
Physical Characteristics
Drive Model: (WDC WD300BB-00CAA0)
Serial: (WD-WMA82H2140350)
Cylinders Heads Sectors Total Sectors Drive Size
58168 16 63 58633344 28.0 GB

*************** DESTINATION DRIVE ***************
Physical Characteristics
Drive Model: MAXTOR STM3120814A
Serial: 5L566P2S2
Cylinders Heads Sectors Total Sectors Drive Size
232581 16 63 23444168 111.8 GB
Skipped Sectors: 0 Recovered Sectors: 0
* Source Drive From:0, To:58633343, Size:58633344, MD5 Value:
Acquisition Hash
Source Drive From:0, To:58633343, Size:58633344, MD5 Value:
E095DD1BD06D6E603153A3FE1A2F3E
### Test Case DA-08-DC0 F-TALON V2.43

**Settings:**
- error skip
- speed UDMA-5

### Results:

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<tr>
<td>AM-02 Source is type DI.</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>
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<tr>
<td>AM-07 All hidden sectors acquired.</td>
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<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 tested</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-09-RETRY

## 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.

### Setup:
- **Drives:**
  - Source: 120103200 total sectors (61492838400 bytes)
  - Drive with known bad sectors
  - Setup:
    - Known Bad Sector List for ED-CPR-BAD1
    - Manufacturer: Maxtor
    - Model: DiamondMax Plus 9
    - Serial Number: Y27KR6CE
    - Capacity: 60GB
    - Interface: PATA
    - 54 faulty sectors
      - 10069095, 10069911, 12023808, 18652594, 18656041, 18656857, 18660303, 18661119, 19746716-19746717, 2233904, 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, 87856313, 87856922, 97191260-97191261, 100093150-100093151, 103861021, 109706975-109706976, 110347947, 110350122-110350123, 115664758, 115835518

- **Destination setup**
  - 120103200 sectors wiped with 6F

### Log Highlights:
- 120103200 sectors wiped with 6F
- Comparison of original to clone Drive
- Sectors compared: 120103200
- Sectors match: 120103146
- Sectors differ: 54
- Bytes differ: 27594
- Diffs range 10069095, 10069911, 12023808, 18652594, 18656041, 18656857, 18660303, 19746716-19746717, 2233904, 23098370, 23383001, 24102466-24102467, 24104250, 24106656, 24107458, 28959971-28959972, 41825791, 41828995.
Test Case DA-09-RETRY F-TALON V2.43

52654580, 52655185, 60522984, 68643842-68643843, 69973290, 72714626, 72715293, 82148809-82148810, 83810525, 85310861, 85313430, 85314038-85314039, 86321211, 86323780, 87186066, 87856313, 97191260-97191261, 100093150-100093151, 103861021, 109706975-109706976, 110347947, 110350122-110350123, 115664758, 115835518
0 source read errors, 0 destination read errors

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****

SESSION SETTINGS
Operating Mode: Capture Address Mode: LBA Verify : None Speed : PIO-AUTO
Connection : Direct

100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE! No Destination Drive erase required!

************************** SOURCE DRIVE **************************

Physical Characteristics
Drive Model: Maxtor 6Y060L0
Serial: Y27AR6CE
Cylinders Heads Sectors Total Sectors Drive Size
119150 16 63 120103200 57.3 GB
Computed SHA-256 Value: NONE
Recovered Sectors: 0 Unrecovered/Skipped Sectors: 54

************************** DESTINATION DRIVE **************************

Physical Characteristics
Drive Model: Maxtor 6Y060L0
Serial: Y27VJ5SE
Cylinders Heads Sectors Total Sectors Drive Size
119150 16 63 120103200 57.3 GB
Computed SHA-256 Value: NONE
Skipped Sector Addresses:
10069095 10069911 12023808 18652594 18656041 18656857
18660303 18661119 19746716 19746717 22333904 23098370
23132001 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 87856313 87856922
97191260 97191261 100093150 100093151 103861021 109706975
109706976 110347947 110350122 110350123 115664758 115835518
Skipped Sectors: 54 Recovered Sectors: 0

2 different run lengths observed in 44 runs
34 runs of length 1
10 runs of length 2
54 sectors differ
54 zero filled and 0 varying non-zero filled

Settings: error retry
speed PIO-AUTO

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 XB.</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 tested</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>not checked</td>
</tr>
<tr>
<td>Test Case DA-09-RETRY F-TALON V2.43</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Analysis: Expected results achieved</td>
<td></td>
</tr>
</tbody>
</table>
# Test Case DA-09-RETRY-SATA

## 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 Info

- **Tester Name:** brl
- **Test Host:** Max
- **Test Date:** Tue Nov 6 15:14:35 2007
- **Drives:**
  - **src:** ED-BAD-CPR2
  - **dst:** 22-SATA
  - **other:** (none)

## Source Setup

- **No before hash for ED-BAD-CPR2**
- **Known Bad Sector List for ED-CPR-BAD-2**
- **Manufacturer:** Maxtor
- **Model:** DiamondMax Plus 9
- **Serial Number:** Y22HJL7C
- **Capacity:** 60GB
- **Interface:** SATA

## Faulty Sectors

<table>
<thead>
<tr>
<th>Sector Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>468 faulty sectors</td>
</tr>
<tr>
<td>1344585, 2594747, 2595500, 2599086, 2599839, 2809909, 2809910, 3422895, 3422896, 4116750, 4120336, 4120337, 4121089, 4121090, 4696046, 4698397, 4703710, 4707186, 4708105, 4711580, 4712499, 4714850, 4715770, 4719245, 4723639, 4723640, 4724558, 4724559, 4728034, 4728953, 4731304, 4732223, 4735699, 4740093, 4741012, 4743363, 4745407, 4748677, 4752152, 4756547, 4757466, 4759817, 4761860, 4761861, 4764211, 4764212, 4765130, 4766913, 4768606, 4769525, 4773001, 4773920, 4776271, 4777190, 4780665, 4781584, 5446946, 5448990, 5451341, 5452260, 5620120, 5623595, 5623596, 5623597, 5624514, 5624515, 5624516, 5628986, 5628987, 5629009, 5631260, 5632179, 5635655, 5636574, 5640049, 6021518, 6023869, 6024788, 6028263, 7662307, 8340091, 8340092, 12178157, 12179060, 12181370, 12182273, 12185687, 12186590, 12340277, 13016906, 13049575, 13050477, 13050478, 14000022, 14000762, 14004285, 14041240, 17135988, 17723611, 17876726, 18161032, 18760155, 20090856, 20094289, 20095011, 20661414, 21693295, 21694174, 21697502, 22730717, 22838734, 22838735, 24596104, 24596105, 24596106, 26791779, 27686030, 28080041, 28081995, 28955383, 29655054, 30488210, 30488211, 32215323, 32218669, 33523139, 33991449, 35267814, 37975363, 38134596, 38136734, 38137571, 38137572, 38207258, 38207259, 38542983, 38567425, 38568109, 39421072, 39421909, 39425071, 40273501, 42836488, 42837172, 42843548, 42847497, 42851446, 42854557, 43505180</td>
</tr>
</tbody>
</table>
Test Case DA-09-RETRY-SATA F-TALON V2.43

Test Results for Forensic Talon

Log

Highlights:

- 156301488 sectors wiped with 22
  - Comparison of original to clone Drive
  - Sectors compared: 120103200
  - Sectors match: 120102732
  - Sectors differ: 468
  - Bytes differ: 239148
  - Diffs range 1344585, 2594747, 2595500, 2599086, 2599839,
### SESSION SETTINGS

<table>
<thead>
<tr>
<th>Operating Mode</th>
<th>Capture Address Mode: LBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify Speed</td>
<td>HW-MD5 PIO-AUTO</td>
</tr>
<tr>
<td>Connection</td>
<td>Direct</td>
</tr>
</tbody>
</table>

100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!

**Operator declined FULL and remainder Destination Drive erase!**

*************** SOURCE DRIVE ***************

### Physical Characteristics

<table>
<thead>
<tr>
<th>Drive Model: Maxtor 6Y060M0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial: Y22HJL7C</td>
</tr>
</tbody>
</table>

### Cylinders Heads Sectors Total Sectors Drive Size

| 119150 | 16 | 63 | 120103200 | 57.3 GB |

Computed MD5 Value: E288054C AA3E56B1 218FBD8E A2EEB940

Recovered Sectors: 0

Unrecovered/Skipped Sectors: 468

### DESTINATION DRIVE

*************** DESTINATION DRIVE ***************

### Physical Characteristics

<table>
<thead>
<tr>
<th>Drive Model: ST380013AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial: 5JVCQ731</td>
</tr>
</tbody>
</table>

### Cylinders Heads Sectors Total Sectors Drive Size

| 155061 | 16 | 63 | 156301488 | 74.5 GB |

Computed SHA-256 Value: NONE

Skipped Sector Addresses:

| 1344585 | 2594747 | 2595500 | 2599086 | 2599839 | 2809909 |
| 2809910 | 3422895 | 3422896 | 4116750 | 4120336 | 4120337 |
| 4121089 | 4121090 | 4696046 | 4698397 | 4703710 | 4707186 |
| 4708105 | 4711580 | 4712449 | 4714850 | 4719245 | 4723639 |
| 4723640 | 4724558 | 4724559 | 4728034 | 4728953 | 4731304 |
| 4731305 | 4732223 | 4735699 | 4740093 | 4741012 | 4743363 |
| 4745407 | 4748677 | 4752152 | 4756547 | 4757466 | 4759817 |
| 4761860 | 4761861 | 4764211 | 4764212 | 4765130 | 4765131 |
| 4768606 | 4769525 | 4773001 | 4773920 | 4776271 | 4777190 |
| 4780665 | 4781584 | 5446946 | 5448990 | 5451341 | 5452260 |
| 5620120 | 5623595 | 5623596 | 5623597 | 5624514 | 5624515 |
| 5624516 | 5626865 | 5626866 | 5626867 | 5628909 | 5631260 |
| 5632179 | 5635655 | 5636574 | 5640049 | 6021518 | 6023869 |
| 6024788 | 6028263 | 6762307 | 8340091 | 8340092 | 12178157 |
| 12179060 | 12181370 | 12182273 | 12185687 | 12186590 | 12340277 |
| 13016906 | 13049575 | 13050477 | 13050478 | 14000022 | 14000762 |
| 14004285 | 14041240 | 17135988 | 17723611 | 17876726 | 18760155 |
| 18760156 | 20090856 | 20094289 | 20095011 | 20661414 | 21693295 |
| 21694174 | 21697502 | 22730717 | 22838734 | 22838735 | 24596104 |
| 24596105 | 24596106 | 26791779 | 27686030 | 28080041 | 28081995 |
| 28055533 | 28055534 | 30488210 | 30488211 | 32215323 | 32218669 |
| 33523139 | 33591449 | 35267814 | 37975363 | 38145969 | 38163734 |
| 38163735 | 38173572 | 38207258 | 38207259 | 38542989 | 38567425 |
| 38568109 | 38568110 | 39421072 | 39421909 | 39425071 | 40273501 |
| 40273502 | 42834354 | 42847497 | 42851446 | 42854557 | 43505180 |
| 43508342 | 43872574 | 43873411 | 45217120 | 45217121 | 45777316 |
Skipped Sectors: 468 Recovered Sectors: 0

3 different run lengths observed in 366 runs
287 runs of length 1
56 runs of length 2
23 runs of length 3

468 sectors differ
- 468 zero filled and 0 varying non-zero filled

Settings: error retry
speed PIO-AUTO

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 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 tested</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>not checked</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.20 DA-09-SKIP-ATA

Test Case DA-09-SKIP-ATA F-TALON V2.43

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: SamSpade
Test Date: Wed Nov 14 10:59:09 2007

Drives:
- src(ED-BAD-CPR1) dst (80) other (none)

Source Setup:
- 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: Y77KR6CE
- Capacity: 60GB
- Interface: PATA

54 faulty sectors
- 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, 87856313, 87856922, 97191260-97191261, 100093150-100093151, 103861021, 109706975-109706976, 110347947, 110350122-110350123, 115664758, 115835518

Log Highlights:
- Destination setup
- 156301488 sectors wiped with 80

Comparison of original to clone Drive
- Sectors compared: 120103200
- Sectors match: 120103146
- Sectors differ: 54
- Bytes differ: 27594
- Diffs range 10069095, 10069911, 12023808, 18652594, 18656041, 18656857, 18660303, 18661119, 19746716-19746717, 22233904, 23098370, 23383001, 24102466-24102467, 24104250, 24106656, 24107458, 28959971-28959972, 41825791, 41828995, ...
Test Case DA-09-SKIP-ATA F-TALON V2.43

52654580, 52655318, 60522984, 68643842-68643843, 69973290, 72714626, 72715293, 82148809-82148810, 83810525, 85310861, 85313430, 85314038-85314039, 86321211, 86323780, 87186066, 87856313, 87856922, 97191260-97191261, 100093150-100093151, 103861021, 109706975-109706976, 110347947, 110350122-110350123, 115664758, 115835518

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

Zero fill: 0
Src Byte fill (ED): 0
Dst Byte fill (80): 36198288
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range: 120103200-156301487
Dst fill range: 120103200-156301487
Other fill range:
Other not filled range: 0 source read errors, 0 destination read errors

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****

SESSION SETTINGS

Operating Mode: Capture Address Mode: LBA
Verify : None Speed : PIO-AUTO
Connection : Direct

100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!

Operator declined FULL and remainder Destination Drive erase!

Physical Characteristics

Drive Model: Maxtor 6Y060L0
Serial: Y27KR6CE

Cylinders Heads Sectors Total Sectors Drive Size
119150 16 63 120103200 57.3 GB

Computed SHA-256 Value: NONE
Skipped Sectors: 54

DESTINATION DRIVE

Physical Characteristics

Drive Model: WDC WD800BB-00CAA1
Serial: WD-WCA8E5174999

Cylinders Heads Sectors Total Sectors Drive Size
155061 16 63 156301488 74.5 GB

Computed SHA-256 Value: NONE
Skipped Sectors: 54

2 different run lengths observed in 44 runs
34 runs of length 1
10 runs of length 2
54 sectors differ
54 zero filled and 0 varying non-zero filled
Settings: error skip speed PIO-AUTO

Results:

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<tr>
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<th>Actual Result</th>
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</tbody>
</table>
Test Case DA-09-SKIP-ATA F-TALON V2.43

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<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-08</td>
<td>All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-09</td>
<td>Error logged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-10</td>
<td>Benign fill replaces inaccessible sectors.</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 tested</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>not checked</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
**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.
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- **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:** Athos

**Test Date:** Wed Nov 7 11:27:28 2007

**Drives:**
- src(ED-BAD-CPR2) dst (23-SATA) other (none)

**Source Setup:**
No before hash for ED-BAD-CPR2

Known Bad Sector List for ED-CPR-BAD-2

- Manufacturer: Maxtor
- Model: DiamondMax Plus 9
- Serial Number: Y22HJL7C
- Capacity: 60GB
- Interface: SATA

468 faulty sectors

- 1344585, 2594747, 2595500, 2599839, 2809909, 2809910, 3422895, 3422896, 4116750, 4120336, 4120337, 4121089, 4121090, 4121099, 4696046, 4698397, 4703710, 4707186, 4708105, 4711580, 4712499, 4714850, 4715770, 4719245, 4723639, 4723640, 4724558, 4724559, 4728034, 4728953, 4731304, 4732223, 4735699, 4740093, 4741012, 4743363, 4745407, 4748677, 4752152, 4756547, 4757466, 4759817, 4761860, 4761861, 4764211, 4764212, 4765130, 4765131, 4766606, 4769525, 4773001, 4773920, 4776271, 4777190, 4780665, 4781584, 5446946, 5448990, 5451341, 5452260, 5620120, 5623595, 5623596, 5623597, 5624514, 5624515, 5624516, 5626865, 5626866, 5626867, 5628909, 5631260, 5632179, 5635655, 5636574, 5640049, 6021518, 6023869, 6024798, 6028263, 7662307, 8340091, 8340092, 12178157, 12179060, 12181370, 12182273, 12185687, 12186590, 12340277, 13016906, 13049575, 13050477, 13050478, 14000022, 14000762, 14004285, 14041240, 17135988, 17723611, 17876726, 18161032, 18760155, 20090856, 20094289, 20095011, 20661414, 21693295, 21694174, 21697502, 22730717, 22838734, 22838735, 24596104, 24596105, 24596106, 25791779, 27686030, 28080041, 28081995, 29555383, 29655054, 30488210, 30488211, 32215323, 32218669, 32523139, 33991449, 35267814, 37975363, 38134596, 38136734, 38137571, 38137572, 38207258, 38207259, 38542983, 38567425, 38568109, 39421072, 39421909, 39425071, 40273501, 42836488, 42837172, 42843548, 42847497, 42851446, 42854557, 43505180.
### Test Case DA-09-SKIP-SATA_F-TALON V2.43

<table>
<thead>
<tr>
<th>Bytes differ: 239148</th>
<th>Sectors differ: 468</th>
<th>Sectors match: 120102732</th>
</tr>
</thead>
</table>

Comparision of original to clone Drive

<table>
<thead>
<tr>
<th>156301488 sectors wiped with 23</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Destination setup</th>
</tr>
</thead>
</table>

Comparison of original to clone Drive

<table>
<thead>
<tr>
<th>Sectors compared: 120103200</th>
</tr>
</thead>
</table>

| Sectors match: 120102732 |

| Sectors differ: 468 |

| Bytes differ: 239148 |

| Diffs range 1344585, 2594747, 2595500, 2599808, 2599839, 26292910 |
Test Case DA-09-SKIP-SATA F-TALON V2.43

<table>
<thead>
<tr>
<th>Test Case DA</th>
<th>09</th>
<th>117251612, 117252102, 117253350, 117254440</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>117246935, 117247426, 117249273</td>
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<td>117240520, 117241011, 117242858</td>
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<td>117236444, 117236934, 117238182, 117239272</td>
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<td>117221766</td>
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<td>117203770, 117204260</td>
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<td>117197846, 117199094, 117199584, 117201432, 117201922</td>
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<td>110072175, 110693660, 107133037, 107276378, 108007258, 109270108</td>
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<td>106123955, 106125419</td>
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<td>88071014, 88755730, 89294003</td>
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Test Case DA-09-SKIP-SATA F-TALON V2.43

117269118, 117269608, 117270856, 117271946-117271947, 117277602, 117277787, 117279361-117279835, 117279609, 11728100, 117281947-117281948, 117282438, 117284286, 117284776, 117286024, 117287114-117287116, 117288362, 117288853, 117290700-117290702, 117291191, 117293039, 117293529, 117295876-117295869, 117297115, 117297606, 117299453-117299455, 119655644

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

Zero fill: 0
Src Byte fill (ED): 0
Dst Byte fill (23): 36198288
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range: 120103200-156301487
Other fill range:
Other not filled range: 0

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****

SESSION SETTINGS

Operating Mode: Capture
Verify: HW-MD5
Address Mode: LBA
Speed: PIO-AUTO
Connection: Direct

100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!
Operator declined FULL and remainder Destination Drive erase!

**************************** SOURCE DRIVE ****************************

Physical Characteristics
Drive Model: Maxtor 6Y060M0
Serial: Y22HL7C
Cylinders: Heads: Sectors: Total Sectors: Drive Size:
119150 16 63 120103200 57.3 GB
Computed MD5 Value: E288054C AA3E56B1 218FBD8E A2EEB940
Skipped Sectors: 468

**************************** DESTINATION DRIVE ****************************

Physical Characteristics
Drive Model: ST380013AS
Serial: 5JVCYJCF
Cylinders: Heads: Sectors: Total Sectors: Drive Size:
155061 16 63 156301488 74.5 GB
Computed SHA-256 Value: NONE
Skipped Sector Addresses:
1344585 2594747 2595500 2599086 2599839 2809909
2809910 3422895 3422896 4116750 4120336 4120337
4120338 4711580 4712449 4714850 4719245
4723639 4723640 4724558 4724559 4728034 4728953
4731304 4732223 4735699 4740093 4741012 4743363
4745407 4748677 4752152 4756547 4757466 4759817
4761860 4761861 4764211 4764212 4765130 4765131
4768606 4769525 4773001 4773920 4776271 4777190
4780665 4781584 5446946 5448990 5451341 5452260
5620120 5623595 5623596 5623597 5624514 5624515
5624516 5626865 5626866 5626867 5628909 5631260
5632179 5635655 5636574 5640049 6021518 6023869
6024788 6028263 7662307 8340091 8340092 12178157
12179060 12181370 12182273 12185687 12186590 12340277
13016906 13049575 13050478 13050479 14000022 14000076
14004285 14041240 17122504 17123611 17876276 18161032
18760155 20034086 20094289 20295011 20661414 21693295
21694174 21697502 22730717 22838734 22838735 24596104
24596105 24596106 26791779 27868030 28008041 28081995
29555333 29655054 30488210 30488211 3215323 32218669
33523139 35991449 35267814 37953563 38134596 38136734
38137571 38137572 38207258 38207259 38542983 38567425
38568109 39421072 39421909 39425071 40273501 42836488
42837172 42843548 42847497 42851446 42854557 4350518
43508342 43872574 43873411 45217120 45217121 45777316

August 2009 Logicube Forensic Talon 12 14 2009.doc 58 of 62
Test Case DA-09-SKIP-SATA F-TALON V2.43

<table>
<thead>
<tr>
<th>Skipped Sectors: 468</th>
<th>Recovered Sectors: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skiped Sector Addresses:</td>
<td></td>
</tr>
<tr>
<td>Skipped Sectors: 468</td>
<td>Recovered Sectors: 0</td>
</tr>
<tr>
<td>3 different run lengths observed in 366 runs</td>
<td></td>
</tr>
<tr>
<td>287 runs of length 1</td>
<td></td>
</tr>
<tr>
<td>56 runs of length 2</td>
<td></td>
</tr>
<tr>
<td>23 runs of length 3</td>
<td></td>
</tr>
<tr>
<td>468 sectors differ</td>
<td></td>
</tr>
<tr>
<td>468 zero filled and 0 varying non-zero filled</td>
<td></td>
</tr>
<tr>
<td>Settings: error skip speed PIO-AUTO</td>
<td></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>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 tested</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>not checked</td>
</tr>
</tbody>
</table>

### Analysis:

Expected results achieved
### Test Case DA-12
**F-TALON V2.43**

#### Case Summary:
DA-12 Attempt to create an image file where there is insufficient space.

#### 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.
- **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-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.

#### Setup:
```
<table>
<thead>
<tr>
<th>Source</th>
<th>Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>src</td>
<td>src hash (SHA1): &lt; 655E9BDDB36A3F9C5C4CCBFBF32B85C5B41AF9F52E &gt;</td>
</tr>
<tr>
<td>src</td>
<td>src hash (MD5): &lt; 2EAF712DA00F96E30DEA00365B4579B &gt;</td>
</tr>
<tr>
<td>Model</td>
<td>156301488 total sectors (80026361856 bytes)</td>
</tr>
<tr>
<td></td>
<td>(WDC WD800JD-32HK) serial # (WD-WMAJ91510044)</td>
</tr>
<tr>
<td></td>
<td>N Start LBA Length Start C/H/S End C/H/S boot Partition type</td>
</tr>
<tr>
<td>1 P 000000006 156280257 0000/001/01 1023/254/63 Boot 07 NTFS</td>
<td></td>
</tr>
<tr>
<td>2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry</td>
<td></td>
</tr>
<tr>
<td>3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry</td>
<td></td>
</tr>
<tr>
<td>4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry</td>
<td></td>
</tr>
<tr>
<td>1 156280257 sectors 80015491584 bytes</td>
<td></td>
</tr>
</tbody>
</table>
```

#### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AM-01</strong> Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AM-02</strong> Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AM-03</strong> Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AM-05</strong> An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AO-04</strong> User notified if space exhausted.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AO-23</strong> Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AO-24</strong> Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

#### Analysis:
Expected results achieved
## Test Case DA-19 F-TALON V2.43

### Case Summary:
DA-19 Acquire a physical device to an unaligned clone, filling excess sectors.

### 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-04** If clone creation is specified, the tool creates a clone of the digital source.
- **AM-06** All visible sectors are acquired from the digital source.
- **AM-08** All sectors acquired from the digital source are acquired accurately.
- **AO-11** If requested, a clone is created during an acquisition of a digital source.
- **AO-13** A clone is created using access interface DST-AI to write to the clone device.
- **AO-14** If an unaligned clone is created, each sector written to the clone is accurately written to the same disk address on the clone that the sector occupied on the digital source.
- **AO-18** If requested, a benign fill is written to excess sectors of a clone.
- **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
- **Test Host:** Max
- **Test Date:** Thu Nov 1 13:11:07 2007
- **Drives:**
  - src(41) dst (22-SATA) other (none)

### Source Setup:
- **src hash (SHA256):** <F8F8E4F6A55A3FB58A3F8B13203FB1D>
- **src hash (SHA1):** <15CA1A307271160837266BF8A03FC45A51CC9>
- **src hash (MD5):** <0A6A8EF7B0BD4E2026710D8C65607C>
- **78125000 total sectors (4000000000 bytes)
  - 65534/0/15 (max cyl/hd values)
  - 65535/0/16/63 (number of cyl/hd)
- **IDE disk:** Model (WD WD400BB-75JHC0) serial # (WD-WM84MC4658355)
- **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 0000000000 0000000000 0000000000 00 empty entry
  - 1 078107967 sectors 39991279104 bytes

### Log Highlights:
156301488 sectors wiped with 22

Comparison of original to clone Drive

Sources compared: 78125000

Sources match: 78125000

Sources differ: 0

Bytes differ: 0

Diffs range

Source (78125000) has 78176488 fewer sectors than destination (156301488)

Zero fill: 78176488

Src Byte fill (41): 0

Dst Byte fill (22): 0

Other fill: 0

Other no fill: 0

Zero fill range: 78125000-156301487

Src fill range:

Dst fill range:

Other fill range:

Other not filled range:

0 source read errors, 0 destination read errors
Test Case DA-19 F-TALON V2.43

***** FORENSIC TALON Serial No.: 15881 Software: V2.43 *****

SESSION SETTINGS
Operating Mode: Capture Address Mode: LBA
Verify : HW-MD5 Speed : UDMA-4
Connection : Direct

100% MIRROR COPY OF THE SUSPECT DRIVE HAS BEEN SUCCESSFULLY EXECUTED ON THE EVIDENCE DRIVE!
Operator declined FULL Dest. Drive erase and erased remainder!

Physical Characteristics
Drive Model: WDC WD400BB-75JHC0
Serial: WD-WMAMC4658355
Cylinders Heads Sectors Total Sectors Drive Size
77504 16 63 78125000 37.3 GB
Computed MD5 Value: 0A6A8EF7 8BDC14E2 026710D8 CCB5607C
Skipped Sectors: 0

Physical Characteristics
Drive Model: ST380013AS
Serial: 5JVCQ731
Cylinders Heads Sectors Total Sectors Drive Size
155061 16 63 156301488 74.5 GB
Computed SHA-256 Value: NONE
Skipped Sectors: 0

Settings: error skip speed UDMA-5

Results:

<table>
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<td>AM-02 Source is type DS.</td>
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</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-04 A clone is created.</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-11 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-18 Excess sectors are filled.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not tested</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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