Test Results for Digital Data Acquisition Tool:
Image MASSter Solo-3 Forensics; Software Version 2.0.10.23f
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Version 2.0.10.23f
This report was prepared for the National Institute of Justice, U.S. Department of Justice, by the Office of Law Enforcement Standards of the National Institute of Standards and Technology under Interagency Agreement 2003–IJ–R–029.

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Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the National Institute of Justice (NIJ), the Department of Homeland Security (DHS), and the National Institute of Standards and Technology’s (NIST’s) Office of Law Enforcement Standards (OLES) and Information Technology Laboratory (ITL). 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, the 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.


Test results from other tools and the CFTT tool methodology can be found on NIJ’s computer forensics tool testing Web page, http://www.nij.gov/nij/topics/forensics/evidence/digital/standards/cftt.htm.

How to Read This Report

This report is divided into five sections. The first section is a summary of the results from the test runs. This section is sufficient for most readers to assess the suitability of the tool for the intended use. The remaining sections of the report describe how the tests were conducted, discuss any anomalies that were encountered and provide documentation of test case run details that support the report summary. Section 2 gives justification for the selection of test cases from the set of possible cases defined in the test plan for Digital Data Acquisition tools. The test cases are selected, in general, based on features offered by the tool. Section 3 describes in more depth any anomalies summarized in the first section. Section 4 lists hardware and software used to run the test cases with links to additional information about the items used. Section 5 contains a description of each test case run. The description of each test run lists all test assertions used in the test case, the expected result and the actual result. Please refer to the vendor’s owner manual for guidance on using the tool.
Test Results for Digital Data Acquisition Tool

Tool Tested: Image MASSter Solo-3 Forensics
Software Version: 2.0.10.23f
Firmware Versions: 5.0.4.5, 5.0.4.6, and 5.0.4.10

Supplier: Intelligent Computer Solutions, Inc.
Address: 9350 Eton Ave.
Chatsworth, CA 91311
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(818) 998-5805
Fax: (818) 998-3190
WWW: http://www.ics-iq.com/

1 Results Summary

The tool acquired source drives completely and accurately with the exception of four cases: a case where a source drive containing faulty sectors was imaged and the tool was configured to skip sectors in the same block as faulty sectors; a case where the tool was configured to restore an image file to two destination drives; a case where a drive was cloned with the \textit{Lg-XferBlk} option enabled; and a case where the tool was configured to clone a drive that had not been removed from a laptop. The tool reported incorrect hash values in two cases: a case where insufficient space existed on the destination volume and multiple destination volumes were used (i.e., drive spanning) and a case that tested restoring that image to a clone. Two test cases involve creating truncated clones. In one case a truncated clone was created from a source drive and in the other a truncated clone was created from an image file. In both cases the tool did not notify the user that a truncated clone had been created.

The following anomalies were observed:

- Less than 20 percent of source drive sectors were copied accurately when the \textit{Lg-XferBlk} setting was selected (DA-01-SATA48).
- When two drives were selected as targets for a restore from a single image file, one of the clones that was created was inaccurate and incomplete (DA-14-SATA28/DA-14-SATA28-EVIDENCEII).
- Readable sectors that were in the same imaging block as faulty sectors on a source drive were not acquired when the \textit{Skip Block} imaging option was selected. The tool wrote zeros to the target drive in place of these sectors. This is the behavior intended for the tool by the vendor (DA-09-SKIPBLOCK).
- The tool failed to notify the user when a truncated clone was created from a physical device (DA-04).
• The tool failed to give a meaningful error message when creating a truncated clone from an image file (DA-17).
• The hash value reported by the tool was incorrect when insufficient space existed on the destination volume and multiple destination volumes (drive spanning) were used (DA-13).
• When restoring to a clone the image that was created using multiple destination volumes and drive spanning, the hash value reported by the tool was incorrect (DA-14-HOT).
• The tool has a procedure for acquiring a drive without removing the drive from the host computer. An attempt to acquire a drive over the FireWire interface was not successful (DA-01-FWLAP).

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 Image MASSter Solo-3 Forensics and the linked test cases selected for execution. Table 2 lists the features not available in Image MASSter Solo-3 Forensics 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>Destination Device Switching</td>
<td>13</td>
</tr>
<tr>
<td>Create a clone from an image file</td>
<td>14 &amp; 17</td>
</tr>
<tr>
<td>Fill excess sectors on a clone acquisition</td>
<td>19</td>
</tr>
<tr>
<td>Detect a corrupted (or changed) image file</td>
<td>24 &amp; 25</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>Device I/O error generator available</td>
<td>05, 11 &amp; 18</td>
</tr>
<tr>
<td>Create an image file in more than one format</td>
<td>10</td>
</tr>
<tr>
<td>Insufficient space for image file</td>
<td>12</td>
</tr>
<tr>
<td>Create a clone from a subset of an image file</td>
<td>16</td>
</tr>
<tr>
<td>Fill excess sectors on a clone device</td>
<td>20, 21, 22 &amp; 23</td>
</tr>
<tr>
<td>Convert an image file from one format to another</td>
<td>26</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, the type of digital object acquired, and the way that sectors are hidden on a drive. Additional parameters that were varied between test cases were target device port, number of target devices (one device or two), interface to target device(s), use of the `verify` and `Lg-XferBlk` settings, type(s) of hash algorithm calculated, image file segment size and acquisition speed.

The following source access interfaces were tested: ATA28, ATA48, SATA28, SATA48, ESATA, SCSI, FW, and USB. These are noted as variations on test cases DA-01, DA-06, and DA-08.

The following digital source type was tested: compact flash (CF).

The Solo-3 Forensics has two sets of target device ports for connecting target devices (i.e., media storage drive or drive to create clone to): “EVIDENCE DRIVE I” and “EVIDENCE DRIVE II.” Except for two instances, all device acquisitions and restores involved the use of a single target device port. Test cases DA-01-ATA28, DA-01-ATA28-EVIDENCEII, DA-14-SATA28, and DA-14-SATA28-EVIDENCEII document tests that involved the use of two target device ports; DA-01-ATA28 and DA-01-ATA28-EVIDENCEII document the acquisition of an ATA28 device to clones on two target ATA28 drives; and DA-14-SATA28 and DA-14-SATA28-EVIDENCEII document the use of the tool to create clones to two target SATA28 devices from an image file.

The use of the following hash algorithms was tested: md5, sha1, and sha256. It should be noted that the Solo-3 Forensics device reconfigures its firmware based on the hash algorithm selected. Test cases that tested use of the md5 algorithm ran using firmware version 5.0.4.10, cases that tested use of the sha1 algorithm ran using version 5.0.4.5, and cases that tested the use of the sha256 algorithm ran using version 5.0.4.6.

Most tests were run using a standard configuration of the Solo-3 Forensics device and the natively supported drive interfaces; two test cases, DA–01–USB and DA-01-FWLAP, test an alternate configuration. These test cases test the acquisition of drives without
removing them from the desktop or laptop over the USB and FireWire interfaces using the vendor-supplied LinkMASSter 3.0.0.8 boot CD.

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, execution environment 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>26</td>
<td>3.6</td>
</tr>
<tr>
<td>AM-02 The tool acquires digital source DS.</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>AM-03 The tool executes in execution environment XE.</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>AM-04 If clone creation is specified, the tool creates a clone of the digital source.</td>
<td>12</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>26</td>
<td>3.3</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>26</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>3</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>3</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>14</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>14</td>
<td></td>
</tr>
<tr>
<td>AO-06 If the tool performs an image file integrity</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
### Assertions Tested

<table>
<thead>
<tr>
<th>Assertion Description</th>
<th>Tests</th>
<th>Anomaly</th>
</tr>
</thead>
<tbody>
<tr>
<td>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>1</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>1</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>1</td>
<td></td>
</tr>
<tr>
<td>AO-11 If requested, a clone is created during an acquisition of a digital source.</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>AO-12 If requested, a clone is created from an image file.</td>
<td>10</td>
<td>3.2</td>
</tr>
<tr>
<td>AO-13 A clone is created using access interface DST-AI to write to the clone device.</td>
<td>22</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>21</td>
<td></td>
</tr>
<tr>
<td>AO-17 If requested, any excess sectors on a clone destination device are not modified.</td>
<td>13</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>2</td>
<td></td>
</tr>
<tr>
<td>AO-20 If a truncated clone is created, the tool notifies the user.</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>AO-23 If the tool logs any log-significant information, the information is accurately recorded in the log file.</td>
<td>38</td>
<td>3.5</td>
</tr>
<tr>
<td>AO-24 If the tool executes in a forensically safe execution environment, the digital source is unchanged by the acquisition process.</td>
<td>26</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. 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>
</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>
</tr>
<tr>
<td>AO-03 If there is an error while writing the image file, the tool notifies the user.</td>
</tr>
<tr>
<td>AO-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>
</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>
</tr>
<tr>
<td>AO-16 If a subset of an image or acquisition is specified, all of the subset is cloned.</td>
</tr>
<tr>
<td>AO-21 If there is a write error during clone creation, the tool notifies the user.</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>
</tr>
</tbody>
</table>

3.1 Inaccurate Acquire to a Clone

In test case DA-01-SATA48, the Solo-3 Forensics device was configured to use the Lg-XferBlk imaging option to clone a 250GB source drive to a slightly larger destination drive. 97,204,670 sectors (20 percent) of the created clone matched the corresponding sectors on the source drive. The remaining 391,192,498 sectors did not. The test case, DA-01-SATA48, was rerun without Lg-XferBlk as DA-01-SATA48-ALT and the same source drive was acquired completely and accurately.

3.2 Partial and Inaccurate Clone Created on Image Restore

DA-14-SATA28 and DA-14-SATA28-EVIDENCEII document a test where the Solo-3 Forensics device was configured to restore the image of an 80 GB drive to two destination drives in the same restore operation. In this test, Solo-3 Forensics created a complete and accurate clone to the drive that was connected on the EVIDENCE II port (DA-14-SATA28-EVIDENCEII), but the clone it created to the drive on EVIDENCE I (DA-14-SATA28) was both incomplete and inaccurate. First, the clone was incomplete. Solo-3 Forensics only wrote to the first 2,000,000 (approximate) sectors of the EVIDENCE I drive; the size of the EVIDENCE I drive was 156,301,488 sectors. Second, the clone was inaccurate. The content that the Solo-3 Forensics wrote to the clone was from the end of the image. For example, sector 0 of the clone contained the contents for sector 154,431,488 of the image, sector 1 of the clone contained the contents for sector 154,431,489, etc.
3.3 Acquisition of Faulty Sectors

The Solo-3 Forensics device offers three options for treating faulty sectors encountered on the source media:

- **Prompt** – user is given the options to abort acquire or skip faulty sector
- **Continue** – tool automatically skips any faulty sectors
- **Skip Block** – skip entire 256-sector imaging block when a faulty sector is encountered and write 0s (zeroes).

For test case DA-09-SKIPBLOCK, the Skip Block option is specified and some readable sectors are missed. For test cases DA-09-PROMPT and DA-09-CONTINUE, the Prompt and Continue options were specified and all readable sectors were acquired. These are the behaviors intended for the tool by the vendor.

3.4 Truncated Clone Behaviors

DA-04 tests the behavior of the Solo-3 Forensics when asked to acquire a physical device to a truncated clone. DA-17 tests the behavior for creating truncated clones from image files. In DA-04, the tool failed to notify the user (neither prior to acquisition nor upon completion) that a truncated clone was created. The same was true in DA-17. When the acquisition had completed, the tool instead reported that the operation had failed and that the destination drive contained a faulty sector.

3.5 Incorrect Hash Values

Solo-3 Forensics supports destination device switching when acquiring a device to an image file and insufficient space exists on a volume. This capability is referred to as “drive spanning” in vendor documentation. For test case DA-13, where this functionality is tested, the hash value calculated by the tool is incorrect.

In DA-14-HOT, restoring DA-13’s image to a clone, the clone is created correctly but the hash reported is again incorrect.

3.6 Imaging Using the LinkMASSter Boot CD

Two test cases, DA-01-USB and DA-01-FWLAP, test Solo-3 Forensics’ ability to acquire a drive that has not been removed from a PC. The PCs were booted using the LinkMASSter version 3.0.0.8 boot CD and the data was acquired via the USB and FireWire interfaces. Test case DA-01-USB completed without anomaly; DA-01-FWLAP runs did not. These behaviors were observed:

- Test host machine booting into LinkMASSter software, but unable to detect destination (evidence) drive.
- Test host machine booting into the LinkMASSter software and detecting destination (evidence) drive, but aborting with errors either initially or partway through the clone operation.
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.

4.1 Test Computers

Two test computers were used. Bold lettering indicates the computer name (unique identifier) and is followed by the computer’s configuration.

**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

**SamSpade** has the following configuration:

- Intel® D865PERL Motherboard
- BE7X 1.08.00.048 BIOS
- Intel® Pentium™ 4 CPU 2.4GHz
- FE7X 1.05.00.063 Firmware
- 2048 MB RAM
- ABIT R9200SE-T APG graphics adapter
- 3ware ATA RAID Controller: Escalade 7506-4LP
- Lite-On DVDRW SOHW-1234 Drive
- 1.44 MB Floppy Drive
- Four USB ports
- Two slots for removable IDE drives
- One slot for removable SATA drive

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 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), a Host Protected Area, a Device Configuration Overlay 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 that create a clone of a physical device (e.g., DA-01, DA-04, etc.), the destination drive is compared to the source drive with the `diskcmp` program from the FS-TST package; for test cases that create a clone of a logical device, i.e., a partition (e.g., DA-02, DA-20, etc.), the destination partition is compared to the source partition with the `partcmp` program. For a destination created from an image file (e.g., DA-14), the destination is compared, using either `diskcmp` (for physical device clones) or `partcmp` (for partition clones), to the source that was acquired to create the image file. Both `diskcmp` and `partcmp` note differences between the source and destination. If the destination is larger than the source, it is scanned and the excess destination sectors are categorized as either “undisturbed” (still containing the fill pattern written by `diskwipe`), “zero filled” or “changed to something else.”

For test case DA-09, imaging a drive with known faulty sectors, the program `anabad` is used to compare the faulty sector reference drive to a cloned version of the faulty sector drive.
For test cases such as DA-06 and DA-07, any acquisition hash computed by the tool under test 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 Highlights box of the test case details.

#### 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 log files 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 <em>Digital Data Acquisition Tool Assertions and Test Plan Version 1.0</em>.</td>
</tr>
<tr>
<td>Assertions:</td>
<td>The test assertions applicable to the test case, selected from <em>Digital Data Acquisition Tool Assertions and Test Plan Version 1.0</em>.</td>
</tr>
<tr>
<td>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>Test Case DA-01-ATA28</th>
<th>Image MASSter Solo-3 Software Version 2.0.10.23f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Summary:</td>
<td>DA-01 Acquire a physical device using access interface AI to an unaligned clone.</td>
</tr>
<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: none
Test Date: Fri Apr 30 11:50:16 2010

Drives:
src (01-IDE) dst (FC) other (none)

Source
- src hash (SHA1): < A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9 >
- src hash (MD5): < F458F67389475353FA6A0EC88BEC63848E >
- 78165360 total sectors (40020664320 bytes)
- Model (0BB-00JHC0) serial # ( WD-WMAMC74171)

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<th>Start LBA</th>
<th>Length</th>
<th>Start C/H/S</th>
<th>End C/H/S</th>
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<th>Partition type</th>
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<td>020980827</td>
<td>0000/001/01</td>
<td>1023/254/63</td>
<td>0F</td>
<td>Fat32X</td>
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<td>057175335</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
<td>00</td>
<td>extended</td>
</tr>
<tr>
<td>3</td>
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<td>000032067</td>
<td>1023/001/01</td>
<td>1023/254/63</td>
<td>01</td>
<td>Fat12</td>
</tr>
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<td>0000002130</td>
<td>002104515</td>
<td>1023/002/01</td>
<td>1023/254/63</td>
<td>05</td>
<td>extended</td>
</tr>
<tr>
<td>5</td>
<td>000000063</td>
<td>002104452</td>
<td>1023/003/01</td>
<td>1023/254/63</td>
<td>06</td>
<td>Fat16</td>
</tr>
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<td>002136645</td>
<td>004192965</td>
<td>1023/004/01</td>
<td>1023/254/63</td>
<td>05</td>
<td>extended</td>
</tr>
<tr>
<td>7</td>
<td>000000063</td>
<td>004192902</td>
<td>1023/005/01</td>
<td>1023/254/63</td>
<td>16</td>
<td>other</td>
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<tr>
<td>8</td>
<td>006329610</td>
<td>008401995</td>
<td>1023/006/01</td>
<td>1023/254/63</td>
<td>05</td>
<td>extended</td>
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<td>000000063</td>
<td>008401932</td>
<td>1023/007/01</td>
<td>1023/254/63</td>
<td>0B</td>
<td>Fat32</td>
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<td>010490445</td>
<td>1023/008/01</td>
<td>1023/254/63</td>
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<td>Linux</td>
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<td>004209030</td>
<td>1023/010/01</td>
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<td>extended</td>
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<td>14</td>
<td>029431080</td>
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<td>1023/254/63</td>
<td>05</td>
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<td>000000063</td>
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<td>NTFS</td>
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</tr>
<tr>
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<td>0000/000/00</td>
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</tr>
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<td>000000000</td>
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<td>0000/000/00</td>
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<td>020980827</td>
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<td>sectors</td>
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<tr>
<td>20</td>
<td>000032067</td>
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<td></td>
<td></td>
<td></td>
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<td>1077479424 bytes</td>
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<td>008401932</td>
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<td>5371075584 bytes</td>
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<td></td>
<td></td>
<td></td>
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<td>25</td>
<td>029431080</td>
<td>14205026304 bytes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Log

------- Destination drive setup -------
Test Case DA-01-ATA28 Image MASSter Solo-3 Software Version 2.0.10.23f

Highlights: 90069840 sectors wiped with FC

====== Comparison of original to clone drive ======
Sectors compared: 78165360
Sectors match: 78165360
Sectors differ: 0
Bytes differ: 0
Diffs range
Source (78165360) has 11904480 fewer sectors than destination (90069840)
Zero fill: 0
Src Byte fill (01): 0
Dst Byte fill (FC): 11904480
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dst fill range: 78165360-90069839
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

====== Tool Settings: ======
Lg-XferBlk yes
dst-interface ata28
dst-port I

====== Extract from IM Solo III audit01.txt file ======
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.10
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: MD5
Suspect drive's Identity
Model: WDC WD400BB-00JHC0
Serial Number: WD-WMAC7417100
Capacity: 38166MB, 78165360 sectors
Block size: 512

====== Hash of Acquired Data ======
MD5: F458F673 894753FA 6A0EC8B8 EC63848E

====== Source drive rehash ======
Rehash (SHA1) of source: A48BB5665D6DC57C22DB682F723DA98A8DF82B9

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-05 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-17 A clone is created during acquisition.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-18 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-19 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-20 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-21 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.2 DA-01-ATA28-EVIDENCEII

**Test Case DA-01-ATA28-EVIDENCEII Image MASSter Solo-3 Software Version 2.0.10.23f**

<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>

<table>
<thead>
<tr>
<th>Tester Name</th>
<th>brl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Host</td>
<td>none</td>
</tr>
<tr>
<td>Test Date</td>
<td>Fri Apr 30 12:05:10 2010</td>
</tr>
<tr>
<td>Drives</td>
<td>src(01-IDE) dst (6F) other (none)</td>
</tr>
<tr>
<td>Source</td>
<td>src hash (SHA1): &lt; A48BB6565D6DC57C22DB68E2F723DA9A8DF82B9 &gt;</td>
</tr>
<tr>
<td>Setup</td>
<td>src hash (MD5): &lt; F458F673894753FA6A0EC8B6EC63848E &gt;</td>
</tr>
<tr>
<td>Model (0BB-00JUC)</td>
<td>serial # ( WD-WM40C74171)</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></td>
<td>1 P 000000063 020980827 0000/01/01 1023/254/63 0C Fat32X</td>
</tr>
<tr>
<td></td>
<td>2 X 020980890 057175335 1023/000/01 1023/254/63 00 extended</td>
</tr>
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<td></td>
<td>3 S 000000063 000032067 1023/001/01 1023/254/63 01 Fat12</td>
</tr>
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<td>4 X 000032130 002104515 1023/000/01 1023/254/63 05 extended</td>
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<td>5 S 000000063 002104452 1023/001/01 1023/254/63 06 Fat16</td>
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<td>12 X 025222050 004209030 1023/000/01 1023/254/63 05 extended</td>
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<td>13 S 000000063 004209867 1023/001/01 1023/254/63 82 Linux swap</td>
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<td>14 X 029431080 027744255 1023/000/01 1023/254/63 05 extended</td>
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<td>15 S 000000063 027744192 1023/001/01 1023/254/63 07 NTFS</td>
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<td>16 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry</td>
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<tr>
<td></td>
<td>1 020980827 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>2 000000063 sectors 16418304 bytes</td>
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<tr>
<td></td>
<td>3 000032067 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>4 000032130 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>5 000065322 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>6 002136645 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>7 004192895 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>8 008401932 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>9 010490445 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>10 025222050 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>11 030490382 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>12 029431080 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>13 027744192 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>14 027744192 sectors 10742183424 bytes</td>
</tr>
<tr>
<td></td>
<td>15 027744192 sectors 10742183424 bytes</td>
</tr>
</tbody>
</table>

**Log**

| Log Highlights | ------- Destination drive setup ------- |
|               | 120103200 sectors wiped with 6F |
|               | ------- Comparison of original to clone drive ------- |
|               | Sectors compared: 78165360 |
Sectors match: 78165360
Sectors differ: 0
Bytes differ: 0

Diffs range
Source (78165360) has 41937840 fewer sectors than destination (120103200)
Zero fill: 0
Src Byte fill (01): 0
Dst Byte fill (6F): 41937840
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dst fill range: 78165360-120103199
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

----- Tool Settings: ----- 
Lg-XferBlk yes
dst-interface ata28
dst-port II

----- Extract from IM Solo III audit01.txt file ----- 
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.10
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: MD5
Suspect drive's Identity
Model: WDC WD400BB-00JHC0
Serial Number: WD-WMAC7417100
Capacity: 38166MB, 78165360 sectors
Block size: 512

----- Hash of Acquired Data ----- 
MD5: F458F673 894753FA 6A0EC8B8 EC63848E

----- Source drive rehash ----- 
Rehash (SHA1) of source: A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9

<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-05 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 available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.3 DA-01-ATA48

**Test Case DA-01-ATA48 Image MASSter Solo-3 Software Version 2.0.10.23f**

**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:** none

**Test Date:** Tue May 4 09:19:30 2010

**Drives:**
- src(4C) dst (46-SATA) other (none)

**Source**
- src hash (SHA1): < 8FF620D2BEDCCAFE8412EAAAD56C8554F872EF8F >
- src hash (MD5): < D10F763B56D4CEBA2D1311C61F9F8B382 >
- 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)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 0000000000 0000000000 0000/000/00 0000/000/00 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 390700737 sectors 20003877344 bytes

**Log Highlights:**
- 488397168 sectors wiped with 46
- 0 source read errors, 0 destination read errors

--- Tool Settings: ---

--- Destination drive setup ---
488397168 sectors wiped with 46

--- Comparison of original to clone drive ---
Sectors compared: 390721968
Sectors match: 390721968
Sectors differ: 0
Bytes differ: 0
Diffs range
Source (390721968) has 97675200 fewer sectors than destination (488397168)
Zero fill: 0
Src Byte fill (01): 0
Dst Byte fill (6F): 0
Other fill (46): 97675200
Other no fill: 0
Zero fill range:
Src fill range:
Dst fill range:
Other fill range: 390721968-488397167
Other not filled range: 0 source read errors, 0 destination read errors

--- Tool Settings: ---
Lg-XferBlk yes
dst-interface SATA48
dst-port II

Extract from IM Solo III audit01.txt file

Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: SHA1
Suspect drive's Identity
Model: WDC WD2000JB-00KFA0
Serial Number: WD-WMAMR103111
Capacity: 190782MB, 390721968 sectors
Block size: 512

Hash of Acquired Data
SHA1: 8FF620D2 BEDCCAFE 8412EDAA D56C8554 F872EFBF

Source drive rehash
Rehash (SHA1) of source: 8FF620D2BEDCCAFE8412EDAA56C8554F872EFBF

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 available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
### Test Case DA-01-ESATA

**Image MASter Solo-3 Software Version 2.0.10.23f**

| 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-05 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:** none
- **Test Date:** Wed Oct 6 15:50:29 2010

**Drives:**

- **src (07-SATA) dst (83) other (none)**

**Source Setup:**

- **src hash (SHA256):** <CE65CA43C3164D3EAD5D3BB2415D29E60E1F88DC5A131B1C4C9C2945BA9 >
- **src hash (SHA1):** <655E9BBB63A3F9C45C6B85B514AF9F52E >
- **src hash (MD5):** <2EAF712DAD836E30DEA003658B4579B >
- **Model (WDC WD800JD-32HK) serial # (WD-WMAJ91510044) N Start LBA Length Start C/H/S End C/H/S boot Partition type**
  - 1 P 000000063 156280257 0000/001/01 1023/254/63 Boot 07 NTFS
  - 2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  - 3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  - 4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
- **1 156280257 sectors 80015491584 bytes**

**Log Highlights:**

- **156301488 sectors wiped with 83**
- **Comparison of original to clone drive**
  - Sectors compared: 156301488
  - Sectors match: 156301488
  - Sectors differ: 0
  - Bytes differ: 0
  - Diffs range
  - 0 source read errors, 0 destination read errors

- **Tool Settings:**
  - Lg-XferBlk yes
dst-interface ATA28
dst-port I

- **Extract from IM Solo III audit01.txt file**
  - **Unit Settings . . .**
  - **Software Version 2.0.10.23f**
  - **Built on: Jul 30 2009 15:23:21**
  - **Firmware Version 5.0.4.5**
  - **SCSI Module F/W: 1.80**
<table>
<thead>
<tr>
<th>Test Case DA-01-ESATA Image MASSter Solo-3 Software Version 2.0.10.23f</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #: 32520</td>
</tr>
<tr>
<td>Operational mode: SING Capture</td>
</tr>
<tr>
<td>Hashing: SHA1</td>
</tr>
<tr>
<td>Suspect drive's Identity</td>
</tr>
<tr>
<td>Model: WDC WD800JD-32HKA0</td>
</tr>
<tr>
<td>Serial Number: WD-WMAJ91510044</td>
</tr>
<tr>
<td>Capacity: 76319MB, 156301488 sectors</td>
</tr>
<tr>
<td>Block size: 512</td>
</tr>
<tr>
<td>====== Hash of Acquired Data =======</td>
</tr>
<tr>
<td>SHA1: 655E9BDD B36A3F9C 5C4CC8BF 32B8C5B4 1AF9F52E</td>
</tr>
<tr>
<td>====== Source drive rehash =======</td>
</tr>
<tr>
<td>Rehash (SHA1) of source: 655E9BDDDB36A3F9C5C4CC8BF32B8C5B41AF9F52E</td>
</tr>
</tbody>
</table>

| Results: |
|------------------|------------------|
| **Assertion & Expected Result** | **Actual Result** |
| AM-01 Source acquired using interface AI. | as expected |
| AM-02 Source is type DS. | as expected |
| AM-03 Execution environment is XE. | as expected |
| AM-04 A clone is created. | as expected |
| AM-06 All visible sectors acquired. | as expected |
| AM-08 All sectors accurately acquired. | as expected |
| AO-11 A clone is created during acquisition. | as expected |
| AO-13 Clone created using interface AI. | as expected |
| AO-14 An unaligned clone is created. | as expected |
| AO-17 Excess sectors are unchanged. | as expected |
| AO-22 Tool calculates hashes by block. | option not available |
| AO-23 Logged information is correct. | as expected |
| AO-24 Source is unchanged by acquisition. | as expected |

| Analysis: Expected results achieved |

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5.2.5 DA-01-FWLAP

Test Case DA-01-FWLAP Image MASSter Solo-3 Software Version 2.0.10.23f

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: Chip
Test Date: Tue May 11 11:47:34 2010
Drives: src(07-LAP) dst (23-IDE) other (none)

Source Setup:
- Model (A) serial # (SM0Q8)
- src hash (SHA1): < C97EB69418E8FEA0BB70083F62A42DC8902F2340 >
- src hash (MD5): < 266887701A9921484CE78347DD48AF49 >
- 195371568 total sectors (100030242816 bytes)
- 12160/254/63 (max cyl/hd values)
- 12161/255/63 (number of cyl/hd)

Log Highlights:

====== Destination drive setup ======
195813072 sectors wiped with 23
Unable to complete successful test run. The following behaviors were observed: either 1) test host machine booting into LinkMASSter software, but unable to detect destination (evidence) drive or 2) test host machine booting into the LinkMASSter software and detecting destination (evidence) drive, but aborting with errors either initially or part way through the clone (single capture) operation.

====== Tool Settings: ======
- Lg-XferBlk yes
dst-interface ATA28
dst-port I

====== Source drive rehash ======
Rehash (SHA1) of source: C97EB69418E8FEA0BB70083F62A42DC8902F2340

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>Acquisition failed</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-01-FWLAP Image MAsster Solo-3 Software Version 2.0.10.23f</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>AO-14 An unaligned clone is created. as expected</td>
<td></td>
</tr>
<tr>
<td>AO-17 Excess sectors are unchanged. as expected</td>
<td></td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block. option not available</td>
<td></td>
</tr>
<tr>
<td>AO-23 Logged information is correct. as expected</td>
<td></td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition. as expected</td>
<td></td>
</tr>
</tbody>
</table>

Analysis: Expected results not achieved
## 5.2.6 DA-01-SATA28

### Test Case DA-01-SATA28 Image MAsster Solo-3 Software Version 2.0.10.23f

<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><strong>Assertions</strong></td>
<td></td>
</tr>
<tr>
<td>AM-01</td>
<td>The tool uses access interface SRC-AI to access the digital source.</td>
</tr>
<tr>
<td>AM-02</td>
<td>The tool acquires digital source DS.</td>
</tr>
<tr>
<td>AM-03</td>
<td>The tool executes in execution environment XE.</td>
</tr>
<tr>
<td>AM-04</td>
<td>If clone creation is specified, the tool creates a clone of the digital source.</td>
</tr>
<tr>
<td>AM-06</td>
<td>All visible sectors are acquired from the digital source.</td>
</tr>
<tr>
<td>AM-08</td>
<td>All sectors acquired from the digital source are acquired accurately.</td>
</tr>
<tr>
<td>AO-11</td>
<td>If requested, a clone is created during an acquisition of a digital source.</td>
</tr>
<tr>
<td>AO-13</td>
<td>A clone is created using access interface DST-AI to write to the clone device.</td>
</tr>
<tr>
<td>AO-14</td>
<td>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>AO-17</td>
<td>If requested, any excess sectors on a clone destination device are not modified.</td>
</tr>
<tr>
<td>AO-22</td>
<td>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>AO-23</td>
<td>If the tool logs any log significant information, the information is accurately recorded in the log file.</td>
</tr>
<tr>
<td>AO-24</td>
<td>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>none</td>
</tr>
<tr>
<td>Test Date</td>
<td>Tue May 4 16:18:27 2010</td>
</tr>
<tr>
<td>Drives:</td>
<td>src(07-SATA) dst (04-SATA) other (none)</td>
</tr>
<tr>
<td>Source Setup</td>
<td>src hash (SHA256): CE65C4A3C3164D3EBAD58D33BB2415D29E260E1F88DC5A131B1C4C9C2945B8A9 &gt;</td>
</tr>
<tr>
<td></td>
<td>src hash (SHA1): 655E9BDBB36A3F9C5C5C68888260E1F88DC5A131B1C4C9C2945B8A9 &gt;</td>
</tr>
<tr>
<td></td>
<td>src hash (MD5): 2EAF712DAD80766E30DEA00365B4579B &gt;</td>
</tr>
<tr>
<td></td>
<td>156301488 total sectors (80026361856 bytes)</td>
</tr>
<tr>
<td></td>
<td>Model (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></td>
<td>1 P 0000000063 156280257 0000/001/01 1023/254/63 Boot 07 NTFS</td>
</tr>
<tr>
<td></td>
<td>2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry</td>
</tr>
<tr>
<td></td>
<td>3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry</td>
</tr>
<tr>
<td></td>
<td>4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry</td>
</tr>
<tr>
<td></td>
<td>156280257 sectors 80015491584 bytes</td>
</tr>
<tr>
<td>Log Highlights:</td>
<td>156301488 sectors wiped with 4</td>
</tr>
<tr>
<td></td>
<td>----- Destination drive setup -----</td>
</tr>
<tr>
<td></td>
<td>----- Comparison of original to clone drive -----</td>
</tr>
<tr>
<td></td>
<td>Sectors compared: 156301488</td>
</tr>
<tr>
<td></td>
<td>Sectors match: 156301488</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>0 source read errors, 0 destination read errors</td>
</tr>
<tr>
<td></td>
<td>----- Tool Settings: -----</td>
</tr>
<tr>
<td></td>
<td>Lg-XferBlk yes</td>
</tr>
<tr>
<td></td>
<td>dst-interface SATA28</td>
</tr>
<tr>
<td></td>
<td>dst-port I</td>
</tr>
<tr>
<td></td>
<td>----- Extract from IM Solo III audit01.txt file -----</td>
</tr>
</tbody>
</table>

---

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Test Case DA-01-SATA28 Image MASSter Solo-3 Software Version 2.0.10.23f

- Serial #: 32520
- Operational mode: SING Capture
- Read-Verify: Full
- Hashing: SHA2
- Suspect drive's Identity
- Model: WDC WD800JD-32HKA0
- Serial Number: WD-WMAJ91510044
- Capacity: 76319MB, 156301488 sectors
- Block size: 512

------- Hash of Acquired Data -------
SHA2: CE65C4A3 C3164D3E BAD58D33 BB2415D2 9E260E1F 88DC5A13 1B1C4C9C 2945B8A9

------- Source drive rehash -------
Rehash (SHA1) of source: 655E9BDDDB36A3F9C5C4CC8BF32B8C5B41AF9F52E

<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-05 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 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 available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
### Test Case DA-01-SATA48 Image MASSter Solo-3 Software Version 2.0.10.23f

<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. 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.</td>
</tr>
</tbody>
</table>

### Tester Name: brl

### Test Host: none

### Test Date: Wed May 5 10:36:16 2010

### Drives: src(0D-SATA) dst (2C-IDE) other (none)

### Source

- src hash (SHA1): <BAAD80E8781E55F2E3EF528CA73BD41D228C1377>
- src hash (MD5): <1FA7C3CB60EB9E89863DED2411E40C9>
- 488397168 total sectors (250059350016 bytes)
- 30400/254/63 (max cyl/hd values)
- 30401/255/63 (number of cyl/hd)
- Model (WDC WD2500JD-22P) serial # (WD-WMAEH2678216)

### Log

- ------ Destination drive setup ------

490234752 sectors wiped with 2C

- ------ Comparison of original to clone drive ------

Sectors compared: 488397168

Sectors differ: 391192498

Bytes differ: 947511854


Source (488397168) has 1837584 fewer sectors than destination (490234752)

Zero fill: 0
Src Byte fill (OD): 0
Dst Byte fill (2C): 1837584
Other fill: 0
Other no fill: 0
Zero fill range: 0
Src fill range: 0
Dst fill range: 488397168-490234751
Other fill range: 0
**Test Case DA-01-SATA48 Image MASSter Solo-3 Software Version 2.0.10.23f**

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

------- Tool Settings: -------
Lg-XferBlk yes
dst-interface ATA48
dst-port I

------- Extract from IM Solo III audit01.txt file -------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.10
SCSI Module P/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: MD5+
Suspect drive's Identity
Model: WDC WD2500JD-22FYB0
Serial Number: WD-WMAEH2678216
Capacity: 238475MB, 488397168 sectors
Block size: 512

------- Hash of Acquired Data -------
MD5: 1FA7C3CB E60EB9E8 9863DED2 411E40C9
MD5: C66145F5 9CF4D636 2DA4C224 903619B5

------- Source drive rehash -------
Rehash (SHA1) of source: BAAD80E8781E55F2E3EF528CA73BD41D228C1377

<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>80% of sectors not acquired</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 available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results not achieved
## 5.2.8 DA-01-SATA48-ALT

**Test Case DA-01-SATA48-ALT**

**Image MASSter Solo-3 Software Version 2.0.10.23f**

<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:** none  
**Test Date:** Tue Oct 12 15:14:51 2010  
**Drives:** src(0D-SATA) dst (2C-IDE) other (none)  
**Source**  
src hash (SHA1): `< BAAD80E8781E55F2E3EF528CA73BD41D228C1377 >`  
src hash (MD5): `< 1FA7C3CBE60EB9E89863DED2411E40C9 >`  
488397168 total sectors (250059350016 bytes)  
30400/254/63 (max cyl/hd values)  
30401/255/63 (number of cyl/hd)  
Model (WDC WD2500JD-22F) serial # (WD-WMAEH2678216)  
N Start LBA Length Start C/H/S End C/H/S boot Partition type  
1 P 000000063 488375937 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 488375937 sectors 250048479744 bytes  

**Log**  
**Highlights:**  
490234752 sectors wiped with 2C  

**Comparison of original to clone drive**  
Sectors compared: 488397168  
Sectors match: 488397168  
Sectors differ: 0  
Bytes differ: 0  
Diffs range  
Source (488397168) has 1837584 fewer sectors than destination (490234752)  
Zero fill: 0  
Src Byte fill (0D): 0  
Dst Byte fill (2C): 1837584  
Other fill: 0  
Other no fill: 0  
Zero fill range:  
Src fill range:  
Dst fill range: 488397168-490234751  
Other fill range:  
Other not filled range: 0 source read errors, 0 destination read errors  

**Tool Settings:**
Test Case DA-01-SATA48-ALT Image MASSter Solo-3 Software Version 2.0.10.23f

Lg-XferBlk no
dst-interface ATA48
dst-port I

------- Extract from IM Solo III audit01.txt file -------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.10
SCSI Module P/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: MD5+
Suspect drive's Identity
Model: WDC WD2500JD-22FYB0
Serial Number: WD-WMAEH2678216
Capacity: 238475 MB, 488397168 sectors
Block size: 512

------- Hash of Acquired Data -------
MD5: 1FA7C3CB E60EB9E8 9863DED2 411E40C9
MD5: 1FA7C3CB E60EB9E8 9863DED2 411E40C9

------- Source drive rehash -------
Rehash (SHA1) of source: BAAD80E8781E55F2E3EF528CA73BD41D228C1377

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

Analysis: Expected results achieved
5.2.9 DA-01-SCSI

Test Case DA-01-SCSI Image MASSter Solo-3 Software Version 2.0.10.23f

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-05 All visible sectors are acquired from the digital source.
AM-07 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: jrl
Test Host: none
Test Date: Fri May 7 10:05:47 2010
Drives: src(E0) dst (CC) other (none)
Source src hash (SHA1): < 4A6941F1337A8A22B10FC844B4D7FA6158BECB82 >
Source src hash (MD5): < A97C8F36B7AC9D5233B90AC09284F938 >
Model (ATLAS10K2-TY092J) serial # (169028142436)

Log Highlights:
------- Destination drive setup -------
71687370 sectors wiped with CC
------- Comparison of original to clone drive -------
Sectors compared: 17938985
Sectors match: 17938985
Sectors differ: 0
Bytes differ: 0
Diffs range
Source (17938985) has 53748385 fewer sectors than destination (71687370)
Zero fill: 0
Src Byte fill (EO): 0
Dst Byte fill (CC): 53748385
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dst fill range: 17938985-71687369
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors
------- Tool Settings: -------
Lg-XferBlk yes
dst-interface SCSI
dst-port I
------- Extract from IM Solo III audit01.txt file -------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Test Case DA-01-SCSI Image MASSter Solo-3 Software Version 2.0.10.23f

Firmware Version 5.0.4.10
SCSI Module F/W: 1.00
Serial #: 32520
Operational mode: SING Capture
Hashing: SHA1+
Suspect drive's Identity
Model: QUANTUM ATLAS10K2-TY092JDDD6
Serial Number:
Capacity: 8759MB, 17938985 sectors
Block size: 512

------ Hash of Acquired Data ------
SHA1: 4A6941F1 337A8A22 B10FC844 B4D7FA61 58BECB82
SHA2: 4A6941F1 337A8A22 B10FC844 B4D7FA61 58BECB82

------ Source drive rehash ------
Rehash (SHA1) of source: 4A6941F1337A8A22B10FC844B4D7FA6158BECB82

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-05 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 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 available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.10 DA-01-USB

**Test Case DA-01-USB Image MASSter Solo-3 Software Version 2.0.10.23f**

<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><strong>Assertions:</strong></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:** SamSpade  
**Test Date:** Thu May 13 14:23:36 2010  
**Drives:** src(01-IDE) dst (49-SATA) other (none)  
**Source hash (SHA1):** < A48BB565D6DC57C22DB68E2F723DA9AA8DF82B9 >  
**Setup:** src hash (MD5): < F458F673894753FA6A0ECBBEC63848E >  
78165360 total sectors (40020664320 bytes)  
**Model (0BB-00JHC0 ) serial # ( WD-WMAC74171):**

<table>
<thead>
<tr>
<th>N</th>
<th>Start LBA Length</th>
<th>Start C/H/S End C/H/S</th>
<th>boot</th>
<th>Partition type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>209808827</td>
<td>0000/001/01</td>
<td>1023/254/63</td>
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<tr>
<td>2</td>
<td>0020980890</td>
<td>057175335</td>
<td>1023/000/01</td>
<td>1023/254/63</td>
</tr>
<tr>
<td>3</td>
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<td>1023/000/01</td>
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<tr>
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<td>1023/000/01</td>
<td>1023/254/63</td>
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<td>004192902</td>
<td>1023/001/01</td>
<td>1023/254/63</td>
</tr>
<tr>
<td>7</td>
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<td>023/001/01</td>
<td>1023/254/63</td>
</tr>
<tr>
<td>8</td>
<td>006329610</td>
<td>004208967</td>
<td>023/001/01</td>
<td>1023/254/63</td>
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<td>023/001/01</td>
<td>1023/254/63</td>
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<tr>
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<td>010490445</td>
<td>023/001/01</td>
<td>1023/254/63</td>
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<td>023/001/01</td>
<td>1023/254/63</td>
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<tr>
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<td>004209030</td>
<td>023/001/01</td>
<td>1023/254/63</td>
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<td>023/001/01</td>
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<td>0000/000/00</td>
</tr>
<tr>
<td>1</td>
<td>020980827</td>
<td>sectors 10742183424 bytes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>00032067</td>
<td>sectors 16418304 bytes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>002104452</td>
<td>sectors 1077479424 bytes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>004192902</td>
<td>sectors 2146765824 bytes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>008401932</td>
<td>sectors 5371075584 bytes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>004208967</td>
<td>sectors 1549991104 bytes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>027744192</td>
<td>sectors 14205026304 bytes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Log Highlights:**

====== Destination drive setup ======
156301488 sectors wiped with 49

====== Comparison of original to clone drive ======

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Test Case DA-01-USB Image MASSter Solo-3 Software Version 2.0.10.23f

Sectors compared: 78165360
Sectors match: 78165360
Sectors differ: 0
Bytes differ: 0
Diffs range
Source (78165360) has 78136128 fewer sectors than destination (156301488)
Zero fill: 0
Src Byte fill (01): 0
Dst Byte fill (49): 78136128
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range: 0
Dst fill range: 78165360-156301487
Other fill range:
Other not filled range: 0
0 source read errors, 0 destination read errors

-------- Tool Settings: --------
dst-interface SATA28
dst-port I

-------- Extract from IM Solo III audit01.txt file --------
Suspect drive's Identity
Drive Position: ATA
Model: WDC WD400BB-00JHC0
Serial Number: WD-WMAMC7417100
Capacity: 38166MB, 78165360 sectors
Block size: 512

-------- Hash of Acquired Data --------
SHA1: 0xA48BB5665D6DC57C22DB68E2F723DA9AA80F82B9

-------- Source drive rehash --------
Rehash (SHA1) of source: A48BB5665D6DC57C22DB68E2F723DA9AA80F82B9

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-05 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 available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.11 DA-04

Test Case DA-04 Image MASSter Solo-3 Software Version 2.0.10.23f

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: none
Test Date: Fri May 14 09:53:22 2010
Drives: src(01-IDE) dst (25-IDE) other (none)
Source src hash (SHA1): <A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9>
Source src hash (MD5): <F458F673894753FA6A0ECB8ECE63848E>
78165360 total sectors (4002064320 bytes)
Model (0BB-00JH0C) serial # ( WD-WMHNC74171)

<table>
<thead>
<tr>
<th>N</th>
<th>Start LBA Length</th>
<th>Start C/H/S End C/H/S</th>
<th>boot Partition type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P</td>
<td>0000000063</td>
<td>020980827 0000/001/01 1023/254/63</td>
</tr>
<tr>
<td>2</td>
<td>X</td>
<td>020980890</td>
<td>057175335 1023/000/01 1023/254/63</td>
</tr>
<tr>
<td>3</td>
<td>S</td>
<td>000032130</td>
<td>002104452 1023/000/01 1023/254/63</td>
</tr>
<tr>
<td>4</td>
<td>X</td>
<td>000032130</td>
<td>002104452 1023/000/01 1023/254/63</td>
</tr>
<tr>
<td>5</td>
<td>S</td>
<td>000000063</td>
<td>020980827 0000/001/01 1023/254/63</td>
</tr>
<tr>
<td>6</td>
<td>X</td>
<td>000032130</td>
<td>002104452 1023/000/01 1023/254/63</td>
</tr>
<tr>
<td>7</td>
<td>S</td>
<td>000000063</td>
<td>020980827 0000/001/01 1023/254/63</td>
</tr>
<tr>
<td>8</td>
<td>X</td>
<td>000032130</td>
<td>002104452 1023/000/01 1023/254/63</td>
</tr>
<tr>
<td>9</td>
<td>S</td>
<td>000000063</td>
<td>020980827 0000/001/01 1023/254/63</td>
</tr>
<tr>
<td>10</td>
<td>X</td>
<td>010490382</td>
<td>014731605 0000/000/00 0000/000/00</td>
</tr>
<tr>
<td>11</td>
<td>S</td>
<td>000000063</td>
<td>014731605 0000/000/00 0000/000/00</td>
</tr>
<tr>
<td>12</td>
<td>X</td>
<td>027744192</td>
<td>027744255 027744192 1023/001/01 1023/254/63</td>
</tr>
<tr>
<td>13</td>
<td>S</td>
<td>000000063</td>
<td>027744192 1023/001/01 1023/254/63</td>
</tr>
<tr>
<td>14</td>
<td>X</td>
<td>027744192</td>
<td>027744192 1023/001/01 1023/254/63</td>
</tr>
<tr>
<td>15</td>
<td>S</td>
<td>000000063</td>
<td>027744192 1023/001/01 1023/254/63</td>
</tr>
</tbody>
</table>

Log Highlights: 58633344 sectors wiped with 25

----- Destination drive setup -----

----- Comparison of original to clone drive -----

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### Test Case DA-04 Image MASSter Solo-3 Software Version 2.0.10.23f

- Sectors compared: 58633344
- Sectors match: 58633344
- Sectors differ: 0
- Bytes differ: 0
- Diffs range

Source (78165360) has 19532016 more sectors than destination (58633344)

0 source read errors, 0 destination read errors

----- Error Message: ----- 
Success!

Hash result:
CRC32: 85E76C48
SHA1: 53A00648 392AB837 FEEF43 BA C32BB954 37153174

for 58633344 sectors.

----- Tool Settings: ----- 
Lg-XferBlk yes
dst-interface ata28
dst-port I

----- Extract from IM Solo III audit01.txt file -------

Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: SHA1
Suspect drive's Identity
Model: WDC WD400BB-00JHC0
Serial Number: WD-WMAMC7417100
Capacity: 38166MB, 78165360 sectors
Block size: 512

----- Hash of Acquired Data ------
SHA1: 53A00648 392AB837 FEEF43 BA C32BB954 37153174

----- Source drive rehash ------
Rehash (SHA1) of source: A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9

<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-05 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 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-12 Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-14 Truncated clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-20 User notified that clone is truncated.</td>
<td>No message indicating incomplete acquire</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results not achieved
### Test Case DA-06-ATA28

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

#### Assertions:
- **AM-01** The tool uses access interface SRC-AI to access the digital source.
- **AM-02** The tool acquires digital source DS.
- **AM-03** The tool executes in execution environment XE.
- **AM-05** If image file creation is specified, the tool creates an image file on file system type FS.
- **AM-06** All visible sectors are acquired from the digital source.
- **AM-08** All sectors acquired from the digital source are acquired accurately.
- **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:
none

#### Test Date:
Wed May 19 15:27:27 2010

#### Drives:
- **src(01-IDE)** 
- **dst (none)** 
- **other (3B-SATA)**

#### Source
- **src hash (SHA1):** < A48BB5665D6DC57C22DB6E82F723DA9AA8DF82B9 >
- **src hash (MD5):** < F458F67389753FA6A0EC89B8EC6384E >

#### Model
(0BB-00JHC0 ) serial # ( WD-WMAMC74171)

#### N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 000000063 020980827 0000/001/01 1023/254/63 0C Fat32X
2 020980890 057175335 1023/000/01 1023/254/63 00 extended
3 000000063 00032067 1023/001/01 1023/254/63 01 Fat12
4 0000032130 002104515 1023/000/01 1023/254/63 05 extended
5 000000063 000104352 1023/001/01 1023/254/63 06 Fat16
6 0000153645 004192965 1023/000/01 1023/254/63 05 extended
7 000000063 004192902 1023/001/01 1023/254/63 16 other
8 0006329610 008401995 1023/000/01 1023/254/63 05 extended
9 000000063 008401932 1023/001/01 1023/254/63 0B Fat32
10 014731605 010490445 1023/000/01 1023/254/63 05 extended
11 000000063 010490382 1023/001/01 1023/254/63 83 Linux
12 000225220 004209903 1023/000/01 1023/254/63 05 extended
13 000000063 004209867 1023/001/01 1023/254/63 82 Linux swap
14 0029411080 027744255 1023/001/01 1023/254/63 05 extended
15 000000063 027744192 1023/001/01 1023/254/63 07 NTFS
16 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
17 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
18 000000000 000000000 0000/000/00 0000/000/00 00 empty entry

#### Log Highlights:

---

**----- Tool Settings: -----**

- Lg-XferBkB no
dst-port I

**----- Image file segments -----**

- 1 68157400 06ata28.001
- 2 68157400 06ata28.002
- 3 68157400 06ata28.003
## Test Case DA-06-ATA28 Image MASSter Solo-3 Software Version 2.0.10.23f

Extract from IM Solo III audit01.txt file

- **Unit Settings**
  - Software Version: 2.0.10.23f
  - Built on: Jul 30 2009 15:23:21
  - Firmware Version: 5.0.4.5
  - SCSI Module F/W: 1.80
  - Serial #: 32520
- **Operational mode:** LinuxDD Capture
- **Fragment size:** 655MB
- **Hashing:** SHA1
- **Model:** WDC WD400BB-00JHC0
- **Serial Number:** WD-WMAMC7417100
- **Capacity:** 38166MB, 78165360 sectors
- **Block size:** 512

---
---

### Hash of Acquired Data

Hash: SHA1: A48BB566 5D6DC57C 22DB68E2 F723DA9A A8DF82B9

### Source drive rehash

Rehash (SHA1) of source: A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9

---

### Results:

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

---

### Analysis:

Expected results achieved
## DA-06-ATA48

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

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

### Tester Name: brl

### Test Host: none

### Test Date: Tue May 18 17:31:11 2010

### Drives:
- **src(4C) dst (none) other (3B-SATA)**

### Source
- **src hash (SHA1):** `<8FF620D2BEDCCAFE8412EDAAD56C8554F872EFBF>`
- **src hash (MD5):** `<D10F763B56D4CEBA20D311C61F9FBB382>`

### Setup:
- **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)
- **N Start LBA Length Start C/H/S End C/H/S boot Partition type**
  - **1 P 0000000063 390700737 0000/001/01 1023/254/63 Boot 07 NTFS**
  - **2 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 390700737 sectors 200038777344 bytes**

### Log Highlights:

**Tool Settings:****

- `Lg-XferBlk yes`
- `dst-port I`

**Image file segments:**

1. 4289724416 06ata48.001
2. 4289724416 06ata48.002
3. 4289724416 06ata48.003
4. 4289724416 06ata48.045
5. 4289724416 06ata48.046
6. 2722324480 06ata48.047

**Extract from IM Solo III audit01.txt file:**

**Unit Settings:**
- **Software Version 2.0.10.23f**
- **Built on:** Jul 30 2009 15:23:21
- **Firmware Version 5.0.4.5**
- **SCSI Module F/W:** 1.80
- **Serial #:** 32520
- **Operational mode:** LinuxDD Capture
- **Fragment size:** 4096MB
- **Hashing:** SHA1
- **Suspect drive's Identity:**
  - **Model:** WDC WD2000JB-00KFA0
  - **Serial Number:** WD-WMAMR1031111
  - **Capacity:** 190782MB, 390721968 sectors
  - **Block size:** 512

---

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Image MASSter Solo-3 Forensics
<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.14 DA-06-ESATA

Test Case DA-06-ESATA Image MASSter Solo-3 Software Version 2.0.10.23f

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

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

Tester Name:
brl

Test Host: none
Test Date: Fri Oct 8 09:18:20 2010
Drives:
src(07-SATA) dst (none) other (3D-SATA)

Source
src hash (SHA256): <CE65C4A3C3164D3EBAD58D33BBB2415D29E260E1F88DC5A131B1C9C2945B8A9>
src hash (SHA1): <6559B9DBB36A3F9C5C4CC98F32B8C5B41AF95F52E>
src hash (MD5): <2EAF712DA80F66E30D8EAO258B4579B>
156301488 total sectors (80026361856 bytes)
Model (WDC WD800JD-32HK) serial # (WD-WMAJ91510044)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 0000000063 156280257 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 156280257 sectors 80015491584 bytes

Log
Highlights: ====== Tool Settings: ======
Lg-XferBlk no
dst-port I

------- Image file segments -------
1 4289724416 06esatal.001
2 4289724416 06esatal.002
3 4289724416 06esatal.003
... 17 4289724416 06esatal.017
18 4289724416 06esatal.018
19 2811322269 06esatal.019

------- Extract from IM Solo III audit01.txt file -------
Unit Settings ...
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Capture
Fragment size: 4096MB
Hashing: SHA1
Suspect drive's Identity
Model: WDC WD800JD-32HKAO
Serial Number: WD-WMAJ91510044
Capacity: 76319MB, 156301488 sectors
### Test Case DA-06-ESATA Image MASSter Solo-3 Software Version 2.0.10.23f

Block size: 512

------- Hash of Acquired Data -------
SHA1: 655E9BDD B36A3F9C 5C4CC8BF 32B8C5B4 1AF9F52E

------- Source drive rehash -------
Rehash (SHA1) of source: 655E9BDDB36A3F9C5C4CC8BF32B8C5B41AF9F52E

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

Analysis: Expected results achieved
5.2.15  DA-06-SATA28

Test Case DA-06-SATA28 Image MASSter Solo-3 Software Version 2.0.10.23f

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

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

Tester
Name: brl
Test Host: none
Test Date: Thu May 20 11:24:13 2010
Drives: src(01-SATA) dst (none) other (3B-SATA)
Source
src hash (SHA256): <1AA01FEAE55F5CD5S158D2B1A1359B3F913E7093FEF1D1ADA220CAC456BA40D8>
src hash (SHA1): <4951236428C36B944E62EB8D65EB6CDEBF05F282C>
src hash (MD5): <0A49B13D91FA35DA85C6E9D906EB6FD6>
156301488 total sectors (8002631856 bytes)
Model (0JD-32HKA) serial # (WD-WMAJ91448529)

Log Highlights:
-------- Tool Settings: --------
Lg-XferBlk yes
dst-port II

-------- Image file segments --------
  1 10684998944 06sata28.001
  2 10684998944 06sata28.002
  3 10684998944 06sata28.003
  
  73 10684998944 06sata28.073
  74 10684998944 06sata28.074
  75 957440000 06sata28.075

-------- Extract from IM Solo III audit01.txt file --------
Unit Settings ... 
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.6
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Capture
Fragment size: 1024MB
Hashing: SHA2+
Suspect drive's Identity
Model: WDC WD800JD-32HKA0
Serial Number: WD-WMAJ91448529
Capacity: 76319MB, 156301488 sectors
Block size: 512

-------- Hash of Acquired Data --------
SHA2: 1AA01FE8E55F5CD5 5185D2B1 A1359B3F 913E7093 FEF1D1AD A220CAC4
56BA4008
SHA2: 1AA01FE8E55F5CD5 5185D2B1 A1359B3F 913E7093 FEF1D1AD A220CAC4
<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
Test Case DA-06-SATA48 Image MASSter Solo-3 Software Version 2.0.10.23f

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

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

Tester Name: brl
Test Host: none
Test Date: Fri May 21 10:12:39 2010
Drives: src(0D-SATA) dst (none) other (3B-SATA)

Source hash (SHA1): < BAAD80E8781E55F2E3EF528CA73BD41D228C1377 >
Setup:
src hash (MD5): < 1FA7C3CBE60B9E89863DED2411E40C9 >
488397168 total sectors (250059350016 bytes)
30400/254/63 (max cyl/hd values)
30401/255/63 (number of cyl/hd)
Model (WDC WD2500JD-22F) serial # (WD-WMAEH2678216)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 000000000 488375937 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 488375937 sectors 250048479744 bytes

Log

Highlights: ====== Tool Settings: ======
Lg-XferBlk yes
dst-port I

====== Image file segments ======
1 4289724416 06sata48.001
2 4289724416 06sata48.002
3 4289724416 06sata48.003
... 57 4289724416 06sata48.057
58 4289724416 06sata48.058
59 1255333888 06sata48.059

====== Extract from IM Solo III audit01.txt file ======
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Capture
Fragment size: 4096MB
Hashing: SHA1
Suspect drive's Identity
Model: WDC WD2500JD-22FYO
Serial Number: WD-WMAEH2678216
Capacity: 238475MB, 488397168 sectors
Block size: 512
Test Case DA-06-SATA48 Image MASстер Solo-3 Software Version 2.0.10.23f

-------- Hash of Acquired Data --------
SHA1: BAAD80E8 781E55F2 E3EF528C A73BD41D 228C1377

-------- Source drive rehash --------
Rehash (SHA1) of source: BAAD80E8781E55F2E3EF528CA73BD41D228C1377

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

Analysis: Expected results achieved
**Test Case DA-06-SCSI Image MASSter Solo-3 Software Version 2.0.10.23f**

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

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

**Tester Name:** brl  
**Test Host:** none  
**Test Date:** Tue Jun 22 08:57:45 2010  
**Drives:** src(E0) dst (none) other (1D)

**Source**
- src hash (SHA1): <4A6941F1337A8A22B10FC844B4D7FA6158BECB82>

**Setup**
- src hash (MD5): <A97C8F36B7AC9D5233B90AC09284F938>
- 17938985 total sectors (9184760320 bytes)
- Model (ATLAS10K2-TY092J) serial # (169028142436)

**Log Highlights:**

--- Tool Settings ---

Lg-XferBlk yes
dst-port I

--- Image file segments ---

<table>
<thead>
<tr>
<th>Sector Number</th>
<th>Offset</th>
<th>File Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>99614720</td>
<td>06scsi.001</td>
</tr>
<tr>
<td>2</td>
<td>99614720</td>
<td>06scsi.002</td>
</tr>
<tr>
<td>3</td>
<td>99614720</td>
<td>06scsi.003</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>99614720</td>
<td>06scsi.091</td>
</tr>
<tr>
<td>92</td>
<td>99614720</td>
<td>06scsi.092</td>
</tr>
<tr>
<td>93</td>
<td>20206080</td>
<td>06scsi.093</td>
</tr>
</tbody>
</table>

--- Extract from IM Solo III audit01.txt file ---

**Unit Settings**

Software Version 2.0.10.23f  
Built on: Jul 30 2009 15:23:21  
Firmware Version 5.0.4.5  
SCSI Module F/W: 1.80  
Serial #: 32520  
Operational mode: LinuxDD Capture  
Fragment size: 100MB  
Hashing: SHA1  
Suspect drive's Identity  
Model: QUANTUM ATLAS10K2-TY092JDD6  
Serial Number: 169028142436  
Capacity: 8759MB, 17938985 sectors  
Block size: 512

--- Hash of Acquired Data ---

SHA1: 4A6941F1337A8A22B10FC844B4D7FA6158BECB82

--- Source drive rehash ---

Rehash (SHA1) of source: 4A6941F1337A8A22B10FC844B4D7FA6158BECB82

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

Analysis: Expected results achieved
### Test Case DA-07-CF Image MASSter Solo-3 Software Version 2.0.10.23f

<table>
<thead>
<tr>
<th>Case</th>
<th>DA-07 Acquire a digital source of type DS to an image file.</th>
</tr>
</thead>
</table>

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

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

**Tester**
- **Name:** brl
- **Test Host:** none
- **Test Date:** Wed May 26 12:21:46 2010

**Drives:**
- **src** (Cl-CF) dst (none) other (3B-SATA)

**Source**
- **src hash (SHA256):** `<C7CFU12822DF8D053D3611D6814266C7FA507C13F795AD3D23BB73C1590D80>`
- **src hash (SHA1):** `<5B8235170DF9FA307430C088F91746606638A0B>`
- **src hash (MD5):** `<776DFB84D2589B21DEBCF589EDC16D98>`
- **S03808 total sectors (257949696 bytes)**
  - **Model:** (CF) 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 168689522 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:**
- **----- Tool Settings: ------**
  - Lg-XferBlk yes
dst-port I

  ----- Image file segments ------
  - 1 257949696 May 26 12:26 07cf.001
  - 2 6039 May 26 12:57 07cf.txt

  ----- Extract from IM Solo III audit01.txt file ------

**Unit Settings . . .**
- ** Software Version 2.0.10.23f**
- **Built on:** Jul 30 2009 15:23:21
- **Firmware Version 5.0.4.5**
- **SCSI Module F/W:** 1.80
- **Serial #:** 32520
- **Operational mode:** LinuxDD Capture
- **Fragment size:** 4096MB
- **Hashing:** SHA1
- **Suspect drive's Identity**
  - **Model:** LEXAR ATA FLASH
  - **Serial Number:** 11524644239199094054
  - **Capacity:** 246MB, 503808 sectors
  - **Block size:** 512 bytes
<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Source acquired using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-02 Source is type DS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-05 An image is created on file system type FS.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
**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:** none
**Test Date:** Wed May 26 17:48:19 2010
**Drives:** src(42) dst (none) other (3B-SATA)
**Source**
- src hash (SHA1): < 5A75399023056E0EB905082B35F8FAA1DB049229 >
- src hash (MD5): < F4B9AAB24554E1EB2A962BDA55A49252 >
**Setup**
- 78165360 total sectors (4002064320 bytes)
- 65534/015/63 (max cyl/hd values)
- IDE disk: Model (WD WD400JB-00JJC0) serial # (WD-WCAMA3958512)
- N Start LBA Length Start C/H/S End C/H/S boot Partition type
  1 P 000000063 070348572 0000/001/01 1023/254/63 Boot 07 NTFS
  2 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  3 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  4 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
- 1 070348572 sectors 36018468864 bytes
- HPA created
- BIOS, XBIOS and Direct disk geometry Reporter (BXDR)
- BXDR 128 /S70000000 /P /fbxdrlog.txt
- Setting Maximum Addressable Sector to 70000000
- MAS now set to 70000000
- Hashes with HPA in place
- md5:9BF3C3DEADE47056A1DDC073C5F6B2E2
- sha1:D76F909482B00767B62C295CADE202F92E61CD2E

**Log Highlights:**
- Tool Settings: Lg-XferBlk yes
dst-port I

- Image file segments
  1 4289724416 08ata28.001
  2 4289724416 08ata28.002
  3 4289724416 08ata28.003
  .
  8 4289724416 08ata28.008
  9 4289724416 08ata28.009
  10 1413144576 08ata28.010

- Extract from IM Solo III audit01.txt file
- Unit Settings
- Software Version 2.0.10.23f
- Built on: Jul 30 2009 15:23:21
## Test Case DA-08-ATA28 Image MASSter Solo-3 Software Version 2.0.10.23f

<table>
<thead>
<tr>
<th>Firmware Version</th>
<th>5.0.4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCSI Module F/W</td>
<td>1.00</td>
</tr>
<tr>
<td>Serial #</td>
<td>32520</td>
</tr>
<tr>
<td>Operational mode</td>
<td>LinuxDD Capture</td>
</tr>
<tr>
<td>Fragment size</td>
<td>4096MB</td>
</tr>
<tr>
<td>Hashing</td>
<td>SHA1</td>
</tr>
<tr>
<td>Suspect drive's Identity</td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>WDC WD400JB-00JJC0</td>
</tr>
<tr>
<td>Serial Number</td>
<td>WD-WCAMA3958512</td>
</tr>
<tr>
<td>Capacity</td>
<td>34179MB, 70000001 sectors</td>
</tr>
<tr>
<td>Block size</td>
<td>512</td>
</tr>
</tbody>
</table>

------ Hash of Acquired Data ------
SHA1: 5A753990 23056E0E B905082B 35F8F8AA1 DB049229

------ Source drive rehash ------
Rehash (SHA1) of source: D76F909482B0076762C95CADE202F92E61CD2E

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

Analysis: Expected results achieved
Test Case DA-08-DCO Image MASSter Solo-3 Software Version 2.0.10.23f

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: none
Test Date: Thu Jun 3 11:29:33 2010
Drives: src(15-SATA) dst (none) other (3D-SATA)

Source hash (SHA1): < 76B22DE84CE61F090791DDBB79057529A4F0BE1 >
Source hash (MD5): < 9B49D124107819A9CE6F253FE7DC675 >
156301488 total sectors (80026361856 bytes)
Model (UD-00HMAO ) serial # (WD-WMAJ91513490)
DCO Created with Maximum LBA Sectors = 140,000,000
Hashes with DCO in place:
  md5: E5F8B277A39ED0F49794E9916CD62DD9
  sha1: AC64CF1B3736BB2FE40C14D871E6F07BC432C2F

Log Highlights:

----- Tool Settings: -----  
Lg-XferBlk yes 
dst-port I

----- Image file segments ----- 
  1 4289724416 08dc0.001
  2 4289724416 08dc0.002
  3 4289724416 08dc0.003
  . . .
  17 4289724416 08dc0.017
  18 4289724416 08dc0.018
  19 281132368 08dc0.019

----- Extract from IM Solo III audit01.txt file ----- 
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Capture
Fragment size: 4096MB
Hashing: SHA1
Suspect drive's Identity
Model: WDC WD800JD-00HMAO
Serial Number: WD-WMAJ91513490
Capacity: 76319MB, 156301488 sectors
Block size: 512

----- Hash of Acquired Data -----
Test Case DA-08-DC0 Image MASSter Solo-3 Software Version 2.0.10.23f

SHA1: 76B22DDE 84CE61F0 90791DDB B7905752 9AAF00E1

====== Source drive rehash ======
Rehash (SHA1) of source: 76B22DDE84CE61F090791DDBB79057529AAF00E1

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

Analysis: Expected results achieved
### Test Case DA-08-SATA48 Image MASSter Solo-3 Software Version 2.0.10.23f

**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:** none  
**Test Date:** Wed Jun 2 10:03:14 2010  
**Drives:** src(IK-SATA) dst (none) other (3B-SATA)  
**Source:** src hash (SHA1): < 3E7439D9E99ACD030B969C1BE5B1430BF7183573 >  
**Setup:** src hash (MD5): < 8E1CF5E20E8636E2E0EEACF12EDDEEEF42A6 >  
625142448 total sectors (320072933376 bytes)  
38912/254/63 (max cyl/hd values)  
38913/255/63 (number of cyl/hd)  
Model (ST3320620AS ) serial #: ( 5QF3X4F6)  
HPA created  
HPA Created with Maximum LBA Sectors = 560,000,000  
Hashes with HPA in place  
md5: 3655FA5086B6864154898533DFAE2442  
sha1: EB1045B57DFE7CD828E9504E3FA238DDB5DBC587  

**Log Highlights:**  
----- Tool Settings: ------  
Lg-XferBlk yes  
dst-port I  

----- Image file segments ------  
1 4289724416 08sata48.001  
2 4289724416 08sata48.002  
3 4289724416 08sata48.003  
...  
73 4289724416 08sata48.073  
74 4289724416 08sata48.074  
75 2633326592 08sata48.075  

----- Extract from IM Solo III audit01.txt file ------  
Unit Settings . . .  
Software Version 2.0.10.23f  
Built on: Jul 30 2009 15:23:21  
Firmware Version 5.0.4.5  
SCSI Module F/W: 1.80  
Serial #: 32520  
Operational mode: LinuxDD Capture  
Fragment size: 4096MB  
Hashing: SHA1  
Suspect drive's Identity  
Model: ST3320620AS  
Serial Number: 5QF3X4F6
**Test Case DA-08-SATA48 Image MASSter Solo-3 Software Version 2.0.10.23f**

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
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<tr>
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<td>AM-03 Execution environment is XE.</td>
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<tr>
<td>AM-05 An image is created on file system type FS.</td>
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</tr>
<tr>
<td>AM-06 All visible sectors acquired.</td>
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<tr>
<td>AM-07 All hidden sectors acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
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: none
Test Date: Mon Jun 7 17:05:34 2010
Drives: src (ED-BAD-CPR4) dst (49-SATA) other (ED-REF-CPR4)
Source Setup: No before hash for ED-BAD-CPR4

Known Bad Sector List for ED-BAD-CPR4
Manufacturer: Maxtor
Model: DiamondMax Plus 9
Serial Number: Y23EGSJE
Capacity: 60GB
Interface: SATA
35 faulty sectors
6160328, 6160362, 10041157, 10041995, 10118634, 10209448, 11256569,
14115689, 14778391, 14778392, 14778449, 14778479, 14778517, 14778518,
14778519, 14778520, 14778521, 14778551, 14778607, 14778626, 14778627,
14778650, 14778668, 14778669, 14778709, 14778727, 14778747, 14778772,
14778781, 14778870, 14778949, 14778953, 14779038, 14779113, 14779321

Log Highlights:
------ Destination drive setup ------
156301488 sectors wiped with 49
------ Comparison of original to clone drive ------
Sectors compared: 120103200
Sectors match: 120103165
Sectors differ: 35
Bytes differ: 17885
Diff range 6160328, 6160362, 10041157, 10041995, 10118634, 10209448, 11256569,
14115689, 14778391-14778392, 14778449, 14778479, 14778517, 14778518,
14778519, 14778520, 14778521, 14778551, 14778607, 14778626-14778627,
14778650, 14778668-14778669, 14778709, 14778727, 14778747, 14778772,
14778781, 14778870, 14778949, 14778953, 14779038, 14779113, 14779321
Source (120103200) has 36198288 fewer sectors than destination (156301488)
Zero fill: 0
Src Byte fill (ED): 0
Test Case DA-09-CONTINUE Image MASSter Solo-3 Software Version 2.0.10.23f

```
Dat Byte fill (49): 36198288
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dat fill range: 120103200-156301487
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

------- Tool Settings: -------
Lg-XferBlk yes
dst-interface SATA28
dst-port I

------- Extract from IM Solo III audit01.txt file -------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: SHA1
Suspect drive's Identity
Model: Maxtor 6Y060M0
Serial Number: Y23EGSJE
Capacity: 58644MB, 120103200 sectors
Block size: 512

------- Hash of Acquired Data -------
SHA1: 3DE5F1F54EA84BC87479DCA2B880635D98BDA5D5
Suspect: failed read at LBA=6160328
Suspect: failed read at LBA=6160362
Suspect: failed read at LBA=10041157
Suspect: failed read at LBA=10041995
Suspect: failed read at LBA=10118634
Suspect: failed read at LBA=10209448
Suspect: failed read at LBA=14778870
Suspect: failed read at LBA=14778949
Suspect: failed read at LBA=14779038
Suspect: failed read at LBA=14779113
Suspect: failed read at LBA=14779321
35 Read errors
------ Summary of Sectors not acquired ------
3 different run lengths observed in 28 runs
24 runs of length 1
3 runs of length 2
1 runs of length 5
35 sectors differ
 35 zero filled and 0 varying non-zero filled

Results:

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<td>as expected</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>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>
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<td>AO-05 Multifile image created.</td>
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<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>
```
| Test Case DA-09-CONTINUE Image MASSter Solo-3 Software Version 2.0.10.23f |
|------------------------------------------------|-------------------------|
| AO-24 Source is unchanged by acquisition. | not checked |

Analysis: Expected results achieved
5.2.23 DA-09-PROMPT

| 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: none
Test Date: Tue Jun 8 15:00:41 2010
Drives: src(ED-BAD-CPR4) dst (50-SATA) other (ED-REF-CPR4)

Source Setup: No before hash for ED-BAD-CPR4

- Known Bad Sector List for ED-BAD-CPR4
- Manufacturer: Maxtor
- Model: DiamondMax Plus 9
- Serial Number: Y23EGSJE
- Capacity: 60GB
- Interface: SATA

35 faulty sectors
6160328, 6160362, 10041157, 10041995, 10118634, 10209448, 11256569, 14115689, 14778391, 14778392, 14778449, 14778479, 14778517, 14778518, 14778551, 14778607, 14778626, 14778627, 14778650, 14778668, 14778669, 14778709, 1477872, 14778747, 14778772, 14778781, 14778870, 14778949, 14779053, 14779038, 14779113, 14779321

Log Highlights:

====== Destination drive setup ======
156301488 sectors wiped with 50

====== Comparison of original to clone drive ======
Sectors compared: 120103200
Sectors match: 120103165
Sectors differ: 35
Bytes differ: 17885
Diffs range 6160328, 6160362, 10041157, 10041995, 10118634, 10209448, 11256569, 14115689, 14778391-14778392, 14778449, 14778479, 14778517-14778521, 14778551, 14778607, 14778626-14778627, 14778650, 14778668-14778669, 14778709, 1477872, 14778747, 14778772, 14778781, 14778870, 14778949, 14779053, 14779038, 14779113, 14779321
Source (120103200) has 36198288 fewer sectors than destination (156301488)
Zero fill: 0
Src Byte fill (ED): 0
### Test Case DA-09-PROMPT Image MASSter Solo-3 Software Version 2.0.10.23f

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

---

**Test Case Details**

- **Device Details**
  - **Model**: Maxtor 6Y060M0
  - **Serial Number**: Y23EGSJE
  - **Capacity**: 58644MB, 120103200 sectors
  - **Block size**: 512

- **Hash of Acquired Data**
  - **SHA1**: 3DE5F1F5 4EA84BC8 7479DCA2 D880635D 98BDA5D5

- **Failed Reads**
  - LBA=6160328
  - LBA=6160362
  - LBA=10041157
  - LBA=10041995
  - LBA=10118634
  - LBA=10209448
  - LBA=14778870
  - LBA=14778949
  - LBA=14779038
  - LBA=14779113
  - LBA=14779321
  - **Total**: 35

- **Summary of Sectors not acquired**
  - 3 different run lengths observed in 28 runs
  - 24 runs of length 1
  - 3 runs of length 2
  - 1 run of length 5
  - **Total sectors differ**: 35

---

**Note:** The information provided is a summary of the test case results, including device details, hashes, failed reads, and summary of sectors not acquired. The expected and actual results are compared to ensure the accuracy of the software's performance.
<table>
<thead>
<tr>
<th>Test Case DA-09-PROMPT Image MASster Solo-3 Software Version 2.0.10.23f</th>
</tr>
</thead>
<tbody>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
**5.2.24 DA-09-SKIPBLOCK**

<table>
<thead>
<tr>
<th>Test Case DA-09-SKIPBLOCK Image MASSter Solo-3 Software Version 2.0.10.23f</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Case Summary:</strong> DA-09 Acquire a digital source that has at least one faulty data sector.</td>
</tr>
<tr>
<td><strong>Assertions:</strong></td>
</tr>
<tr>
<td>AM-01 The tool uses access interface SRC-AI to access the digital source.</td>
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<td>AM-06 All visible sectors are acquired from the digital source.</td>
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<td>AM-08 All sectors acquired from the digital source are acquired accurately.</td>
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<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>
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<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>
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<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>
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<td>AO-23 If the tool logs any log significant information, the information is accurately recorded in the log file.</td>
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<tr>
<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:** none

**Test Date:** Fri Jun 4 13:01:24 2010

**Drives:** src(ED-BAD-CPR3) dst (04-SATA) other (ED-REF-CPR1)

**Source Setup:** No before hash for ED-BAD-CPR3

**Known Bad Sector List for ED-CPR-BAD-3**

Manufacturer: Maxtor

Model: DiamondMax Plus 9

Serial Number: Y239EQSE

Capacity: 60GB

Interface: PATA

398 bad sectors

67407, 68223, 688162, 1769014, 1772576, 2215215, 2215216, 2215216, 3155361, 3155362, 4788530, 4788531, 4788534, 4772924, 4772925, 8040538, 8040539, 80405854, 80405855, 8049417, 8399861, 8744901, 9125736, 9126552, 9129116, 9191655, 9195963, 9195966, 11269881, 11269882, 11980920, 12842146, 12842147, 12842148, 12992812, 12994673, 12994674, 13243497, 13243498, 13284319, 13284320, 13287790, 15045897, 17124920, 17155941, 17349716, 17350516, 17834576, 17834577, 17834578, 18709199, 18709200, 19141687, 19145086, 19707761, 19707762, 20395235, 21120528, 21502675, 25029932, 23030717, 23035156, 23543974, 24026977, 24030376, 24267176, 24268112, 24894528, 25124195, 25126569, 25128391, 25907287, 27473160, 27729399, 28069828, 28070647, 28070648, 28074024, 28114008, 30169624, 30169625, 30172937, 30714787, 31384365, 32681553, 34743165, 34812327, 35496209, 35488589, 36119007, 36119007, 36181587, 38559078, 38562283, 38563068, 38565313, 38567058, 38569303, 38570088, 38573293, 38574078, 38577283, 38578068, 38580313, 38581098, 38584303, 38585088, 38588293, 38589078, 38591323, 38593068, 38595313, 38596098, 38599303, 38600088, 38602923, 38604078,
Log Highlights:

====== Destination drive setup ======
156301488 sectors wiped with 4

====== Comparison of original to clone drive ======
Sectors compared: 120103200
Sectors match: 120020767
Sectors differ: 82433
Bytes differ: 42123263
Source (120103200) has 36198288 fewer sectors than destination (156301488)
Zero fill: 0
Src Byte fill (ED): 0
Dst Byte fill (04): 36198288
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dst fill range: 120103200-156301487
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

-------- Tool Settings: --------
Lg-XferBlk yes
dst-interface SATA28
dst-port I

-------- Extract from IM Solo III audit01.txt file --------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: SHA1
Suspect drive's Identity
Model: Maxtor 6Y060L0
Serial Number: Y239EQSE
Capacity: 58644MB, 120103200 sectors
Test Case DA-09-SKIPBLOCK Image MASSter Solo-3 Software Version 2.0.10.23f

<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>some sectors skipped</td>
</tr>
<tr>
<td>AM-08 All sectors accurately acquired.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-09 Error logged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AM-10 Benign fill replaces inaccessible sectors.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-01 Image file is complete and accurate.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>not checked</td>
</tr>
</tbody>
</table>

Analysis: Expected results not achieved
Test Case DA-13 Image MASSter Solo-3 Software Version 2.0.10.23f

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

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

Tester Name: brl
Test Host: none
Test Date: Wed Jun 9 15:59:55 2010
Drives: src (01-IDE) dst (none) other (18-SATA)

Source
src hash (SHA1): < A48BB5665D6DC57C22DB68E2F723DA9AA8DF62B9 >
src hash (MD5): < F458F673894753FA6A0EC88EC63848E >
78165360 total sectors (40020664320 bytes)
Model (0BB-00JHC0 ) serial # ( WD-WHARM74171)

Partition Details:
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 057175335 1023/000/01 1023/254/63 0F extended
3 S 000000063 000032067 1023/000/01 1023/254/63 01 Fat12
4 X 00032130 002104515 1023/000/01 1023/254/63 05 extended
5 S 000000063 002104452 1023/000/01 1023/254/63 06 Fat16
6 X 002136645 004192965 1023/000/01 1023/254/63 05 extended
7 S 000000063 004192902 1023/000/01 1023/254/63 16 other
8 X 006329610 008401995 1023/000/01 1023/254/63 05 extended
9 S 000000063 008401932 1023/000/01 1023/254/63 0B Fat32
10 X 014731605 010490382 1023/000/01 1023/254/63 05 extended
11 S 000000063 010490382 1023/000/01 1023/254/63 83 Linux
12 X 025222050 004209030 1023/000/01 1023/254/63 05 extended
13 S 000000063 004208967 1023/000/01 1023/254/63 82 Linux swap
14 X 029431080 027744255 1023/000/01 1023/254/63 05 extended
15 S 000000063 027744192 1023/000/01 1023/254/63 07 NTFS
16 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
17 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
18 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
1 020980827 sectors 10742183424 bytes
2 000032067 sectors 16418304 bytes
5 002104452 sectors 1077479424 bytes
7 004192902 sectors 2146765824 bytes
9 008401932 sectors 4301789184 bytes
11 010490382 sectors 5371075584 bytes
13 004208967 sectors 2154991104 bytes
15 027744192 sectors 14205026304 bytes

Log
Highlights: ===== Tool Settings: =====
Lg-XferBlk no
dest-port I

ICS_Solo3-acquisition-NIJ jlyle v2.doc 65 of 92 Image MASSter Solo-3 Forensics
Test Case DA-13 Image MASSter Solo-3 Software Version 2.0.10.23f

------- Image file segments (First destination) -------
1  681574400 13.001
2  681574400 13.002
3  681574400 13.003
   ...
55  681574400 13.055
56  681574400 13.056
57  480772096 13.057

------- Image file segments (Final destination) -------
1  681574400 Jun 10 08:50 13.058
2  681574400 Jun 10 08:52 13.059
3  8577024 Jun 10 08:53 13.060
4   2257 Jun 10 08:53 13.txt

------- Extract from IM Solo III audit01.txt file -------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Capture
Fragment size: 655MB
Hashing: SHA1
Suspect drive's Identity
Model: WDC WD400BB-00JHC0
Serial Number: WD-WMACC7417100
Capacity: 38166MB, 78165360 sectors
Block size: 512

------- Hash of Acquired Data -------
SHA1: FE2C0A75 BBEE55EB 55B2C577 4758B6D1 F0D6FB99

------- Source drive rehash -------
Rehash (SHA1) of source: A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9

<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-04 User notified if space exhausted.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-05 Multifile image created.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-10 Image file continued on new device.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>Reported hash is incorrect</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results not achieved
5.2.26 DA-14-ATA28

Test Case DA-14-ATA28 Image MASSter Solo-3 Software Version 2.0.10.23f

Case Summary: DA-14 Create an unaligned clone from an image file.

Assertions:
AM-03 The tool executes in execution environment XE.
AO-12 If requested, a clone is created from an image file.
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-23 If the tool logs any log significant information, the information is accurately recorded in the log file.

Tester Name: brl
Test Host: none
Test Date: Thu Jun 24 11:49:19 2010

Drives: src(01-IDE) dst (FD) other (3B-SATA)

Source:
src hash (SHA1): < A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9 >

Setup:
src hash (MD5): < F458F673894753FA6A0ECB8EC63848E >
78165360 total sectors (4002064320 bytes)
Model (BB-00HC0) serial # (WD-WNAMC74171)

<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>
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<td>000000063</td>
<td>020980827</td>
<td>0000/001/01 1023/254/63</td>
</tr>
</tbody>
</table>

Log Highlights:

Source (78165360) has 11904480 fewer sectors than destination (90069840)
Zero fill: 0
Src Byte fill (01): 0
Dst Byte fill (FD): 11904480
Other fill: 0
Other no fill: 0
Zero fill range:

--- Destination drive setup -----
90069840 sectors wiped with FD

--- Comparison of original to clone drive -----
Sectors compared: 78165360
Sectors match: 78165360
Sectors differ: 0
Bytes differ: 0
Diffs range:
Source (78165360) has 11904480 fewer sectors than destination (90069840)
Zero fill: 0
Src Byte fill (01): 0
Dst Byte fill (FD): 11904480
Other fill: 0
Other no fill: 0
Zero fill range:
### Test Case DA-14-ATA28 Image MASSter Solo-3 Software Version 2.0.10.23f

- **Src fill range:** 78165360-90069839
- **Dst fill range:** 78165360-90069839
- **Other fill range:**
- **Other not filled range:**
- **0 source read errors, 0 destination read errors**

#### Tool Settings:
- **Lg-XferBlk**: yes
- **dst-interface**: ata28
- **dst-port**: I

#### Extract from IM Solo III audit01.txt file

### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AM-03</strong> Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AO-12</strong> A clone is created from an image file.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AO-13</strong> Clone created using interface AI.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AO-14</strong> An unaligned clone is created.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AO-17</strong> Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td><strong>AO-23</strong> Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

#### Analysis:
- **Expected results achieved**

---

ICS_Solo3-acquisition-NIJ jlyle v2.doc 68 of 92   Image MASSter Solo-3 Forensics
### Test Case DA-14-ATA48 Image MASSter Solo-3 Software Version 2.0.10.23f

**Case Summary:**
DA-14 Create an unaligned clone from an image file.

**Assertions:**
- **AM-03** The tool executes in execution environment XE.
- **AO-12** If requested, a clone is created from an image file.
- **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-23** If the tool logs any log significant information, the information is accurately recorded in the log file.

**Tester Name:** brl

**Test Host:** none

**Test Date:** Thu Jun 17 17:25:08 2010

**Drives:**
- src (4C) dst (1B-LAP) other (3B-SATA)

**Source Setup:**
- src hash (SHA1): `<8FF620D2 BEDCCAFE8412EDAAD56C8554F872EFBF>`
- src hash (MD5): `<D10F763B56D4CBA2D131C61F9FB382>`
- 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)
  - N Start LBA Length Start C/H/S End C/H/S boot Partition type
  - 1 P 0000000063 390700737 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 390700737 sectors 200038777344 bytes

**Log Highlights:**
- 390721968 sectors wiped with 1B
- Comparison of original to clone drive:
  - Sectors compared: 390721968
  - Sectors match: 390721968
  - Sectors differ: 0
  - Bytes differ: 0
  - Diffs range
  - 0 source read errors, 0 destination read errors

**Tool Settings:**
- Lg-XferBlk yes
dst-interface sata48
dst-port I

**Extract from IM Solo III audit01.txt file:**
- Unit Settings...
- Software Version 2.0.10.23f
- Built on: Jul 30 2009 15:23:21
- Firmware Version 5.0.4.5
- SCSI Module F/W: 1.80
- Serial #: 32920
- Operational mode: LinuxDD Restore
- Hashing: SHA1
- Suspect drive's Identity
- Model: Hitachi HDS721010KLA330
- Serial Number: GTH000PAHOLW8H
- Capacity: 953869MB, 1953525168 sectors
- Block size: 512

**Hash of Acquired Data:**
- SHA1: `<8FF620D2 BEDCCAFE8412EDAAD56C8554F872EFBF>`
Test Case DA-I4-ATA48 Image MASSter Solo-3 Software Version 2.0.10.23f

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</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-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.28 DA-14-CF

Test Case DA-14-CF Image MASter Solo-3 Software Version 2.0.10.23f

<table>
<thead>
<tr>
<th>Case Summary:</th>
<th>DA-14 Create an unaligned clone from an image file.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assertions:</td>
<td>AM-03 The tool executes in execution environment XE.</td>
</tr>
<tr>
<td></td>
<td>AO-12 If requested, a clone is created from an image file.</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-23 If the tool logs any log significant information, the information is accurately recorded in the log file.</td>
</tr>
</tbody>
</table>

Tester Name: brl
Test Host: none
Test Date: Wed Jun 30 10:29:08 2010
Drives: src(C1-CF) dst (C2-CF) other (3B-SATA)

<table>
<thead>
<tr>
<th>Source</th>
<th>Setup:</th>
</tr>
</thead>
<tbody>
<tr>
<td>src hash (SHA256): &lt;C7CF0218222DF80D5316511DE814266C7FA507C13F795AD3D323BB73C1590D80&gt;</td>
<td>src hash (SHA1): &lt;5B8235178DF9F9FFA307430C088F8174660638A0B&gt;</td>
</tr>
<tr>
<td>src hash (MD5): &lt;776DF884D2589E21DEBCF589EDC16D78&gt;</td>
<td>503808 total sectors (257949696 bytes)</td>
</tr>
<tr>
<td>Model (CF) serial #: ()</td>
<td>N Start LBA Length Start C/H/S End C/H/S boot Partition type</td>
</tr>
<tr>
<td>1 P 778135908 1141509631 0357/116/40 0357/32/45 Boot 72 other</td>
<td>2 P 168889522 1936028240 0288/115/43 0367/114/50 Boot 65 other</td>
</tr>
<tr>
<td>3 P 1869881465 1936028192 0366/114/50 0357/32/33 Boot 79 other</td>
<td>4 P 2885681152 0000055499 0372/097/50 0000/010/00 Boot OD other</td>
</tr>
<tr>
<td>1 1141509631 sectors 584452931072 bytes</td>
<td>2 1936028240 sectors 99124658880 bytes</td>
</tr>
<tr>
<td>3 1936028192 sectors 99124643404 bytes</td>
<td>4 0000055499 sectors 28415488 bytes</td>
</tr>
</tbody>
</table>

Log Highlights: 503808 sectors wiped with C2

-------- Comparison of original to clone drive --------
Sectors compared: 503808
Sectors match: 503808
Sectors differ: 0
Bytes differ: 0
Diffs range
0 source read errors, 0 destination read errors

-------- Tool Settings: ------
Log-XferBlk yes
dst-port I

-------- Extract from IM Solo III audit01.txt file --------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Restore
Hasing: SHA1
Suspect drive's Identity
Model: Hitachi HDS721010KLA330
Serial Number: GTH000PAH0LW8H
Capacity: 953869MB, 1953525168 sectors
Block size: 512
<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</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-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.29 DA-14-ESATA

Test Case DA-14-ESATA Image MASSter Solo-3 Software Version 2.0.10.23f

Case Summary: DA-14 Create an unaligned clone from an image file.

Assertions:
- AM-03 The tool executes in execution environment XE.
- AO-12 If requested, a clone is created from an image file.
- 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-23 If the tool logs any log significant information, the information is accurately recorded in the log file.

Tester Name: brl
Test Host: none
Test Date: Fri Oct 8 10:04:54 2010
Drives: src(07-SATA) dst (1A-SATA) other (3D-SATA)

Source Hash:
- SHA256: CE65c4A53C164D3EBA5D83BB2415D29E260E1F88DC5A131B1C4C9C2945B8A9
- SHA1: 655E8BDBB36A5F9C5C4CC8BF32B8585B41AF9F52E
- MD5: 2EAF712DAD8B0F66E30DEA00365B4579B

Model: WDC WD800JD-32HK
Serial #: WD-WMAJ91510044

Setup:
- N Start LBA Length Start C/H/S End C/H/S
- 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

Log Highlights:
- 234441648 sectors wiped with 1A

Comparison of original to clone drive:
- 156301488 total sectors (80026361856 bytes)
- Source (156301488) has 78140160 fewer sectors than destination (234441648)
- Zero fill range: 156301488-234441647
- Other fill range: 0
- Other not filled range: 0
- 0 source read errors, 0 destination read errors

Tool Settings:
- Log-XferBlk no
dst-interface esata
dst-port I

Extract from IM Solo III audit01.txt file:
- Unit Settings . .
- Software Version 2.0.10.23f
- Built on: Jul 30 2009 15:23:21
- Firmware Version 5.0.4.5
- SCSI Module F/W: 1.80
<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</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-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
# Test Case DA-14-HOT

**Image MASSter Solo-3 Software Version 2.0.10.23f**

## Case Summary
DA-14 Create an unaligned clone from an image file.

## Assertions
- **AM-03** The tool executes in execution environment XE.
- **AO-12** If requested, a clone is created from an image file.
- **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-23** If the tool logs any log significant information, the information is accurately recorded in the log file.

**Tester Name:** brl  
**Test Host:** none  
**Test Date:** Thu Jun 10 09:42:26 2010  
**Drives:** 
- **src(01-IDE)** 
- **dst (FC)** 
- **other (18-SATA)**

### Source Setup
- **src hash (SHA1):** < A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9 >
- **src hash (MD5):** < F458F673894753FA6A0ECB8SEC63848E >

**Model (0BB-00JHCI) serial # ( WD-WMAE74171)**

| N Start LBA Length Start C/H/S End C/H/S boot Partition type |
|-----------------|--------------------------|----------------|-------------------|
| 1 P 000000000 20980827 0000/001/01 1023/254/63 | 00 Fat32X | |
| 2 X 000000000 057175335 1023/000/01 1023/254/63 | 00 Fat12 | |
| 5 S 000000000 000032067 1023/001/01 1023/254/63 | 00 Fat16 | |
| 6 X 000000000 001419265 1023/001/01 1023/254/63 | 00 Fat32X | |
| 7 S 000000000 001419290 1023/001/01 1023/254/63 | 16 other | |
| 8 X 000000000 008401995 1023/001/01 1023/254/63 | 00 Fat32 | |
| 9 S 000000000 008401932 1023/001/01 1023/254/63 | 00 Fat12 | |
| 10 X 014731605 014904445 1023/001/01 1023/254/63 | 00 Fat16 | |
| 11 S 000000000 01490382 1023/001/01 1023/254/63 | 83 Linux | |
| 12 X 002522050 004209030 1023/001/01 1023/254/63 | 00 Fat16 | |
| 13 S 000000000 004208967 1023/001/01 1023/254/63 | 82 Linux swap | |
| 14 X 029431080 027744255 1023/001/01 1023/254/63 | 00 Fat16 | |
| 15 S 000000000 027744192 1023/001/01 1023/254/63 | 07 NTFS | |
| 16 S 000000000 000000000 0000/000/00 0000/000/00 | 00 empty entry | |
| 17 P 000000000 000000000 0000/000/00 0000/000/00 | 00 empty entry | |
| 18 P 000000000 000000000 0000/000/00 0000/000/00 | 00 empty entry | |

### Log Highlights:

----- Destination drive setup ------

90069840 sectors wiped with FC

----- Comparison of original to clone drive ----- 

Sectors compared: 78165360

Sectors match: 78165360

Sectors differ: 0

Bytes differ: 0

Diffs range

Source (78165360) has 11904480 fewer sectors than destination (90069840)

Zero fill: 0

Src Byte fill (01): 0

Dst Byte fill (FC): 11904480

Other fill: 0

Other no fill: 0

Zero fill range:
Test Case DA-14-HOT Image MASSter Solo-3 Software Version 2.0.10.23f

Src fill range:
Dst fill range: 78165360-90069839
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

------- Tool Settings: -------
Lg-XferBlk yes
dst-interface ata28
dst-port I

------- Extract from IM Solo III audit01.txt file -------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Restore
Hashing: SHA1
Suspect drive's Identity
Model: WD1200JD-00GBB0
Serial Number: WD-WMAES2057710
Capacity: 114473MB, 234441648 sectors
Block size: 512

------- Hash of Acquired Data -------
SHA1: FE2C0A75 BBEE55EB 55B2C577 4758B6D1 F0D6FB99

Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</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-23 Logged information is correct.</td>
<td>Reported hash is incorrect</td>
</tr>
</tbody>
</table>

Analysis: Expected results not achieved
**Case Summary:**
DA-14 Create an unaligned clone from an image file.

**Assertions:**
- AM-03 The tool executes in execution environment XE.
- AO-12 If requested, a clone is created from an image file.
- 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-23 If the tool logs any log significant information, the information is accurately recorded in the log file.

**Tester Information:**
- **Name:** brl
- **Test Host:** none
- **Test Date:** Fri Jun 25 09:53:56 2010
- **Drives:**
  - src(01-SATA) dst (1B-SATA) other (3B-SATA)

**Source Setup:**
- src hash (SHA256): <1AA01FEA55F5CD55185D2B1A1359B3F913E7093EF1D1ADA20C456BA40D8>
- src hash (SHA1): <4951236428C36B944E62E8D5862DC8EF0SF22C>
- src hash (MD5): <0A49B13D91FA8D6A87CEEE9D006CB6FD6>
- 156301488 total sectors (80026361856 bytes)
- Model (0JD-32HKAO ) serial # (WD-1MAJ91448529)

**Log Highlights:**
- **Destination drive setup**
  - 234441648 sectors wiped with 1B
- **Comparison of original to clone drive**
  - Sectors compared: 156301488
  - Sectors match: 0
  - Sectors differ: 156301488
  - Bytes differ: 74984051179
  - Diffs range 0-156301487
  - Source (156301488) has 78140160 fewer sectors than destination (234441648)
  - Zero fill: 0
  - Src Byte fill (01): 0
  - Dst Byte fill (1B): 78140160
  - Other fill: 0
  - Other no fill: 0
  - Zero fill range:
  - Src fill range:
  - Dst fill range: 156301488-234441647
  - Other fill range:
  - Other not filled range:
  - 0 source read errors, 0 destination read errors

**Tool Settings:**
- Lg-XferBlk yes
dst-interface sata28
dst-port I

**Extract from IM Solo III audit01.txt file**
- Unit Settings ... Software Version 2.0.10.23f
- Built on: Jul 30 2009 15:23:21
- Firmware Version 5.0.4.5
- SCSI Module F/W: 1.80
- Serial #: 32520
- Operational mode: LinuxDD Restore
- Hashing: SHA1
- Suspect drive's Identity
- Model: Hitachi HDS721010KLA330
- Serial Number: GTH000FAHOLW8H
## Test Case DA-14-SATA28 Image MASSter Solo-3 Software Version 2.0.10.23f

**Capacity:** 953869MB, 1953525168 sectors  
**Block size:** 512

---- Hash of Acquired Data -----
SHA1: 49512364 28C36B94 4E62E8D6 5862DCBE F05F282C

### Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</td>
<td>Clone does not match source</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-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

### Analysis:
Expected results not achieved
**Test Case DA-14-SATA28-EVIDENCEII**

<table>
<thead>
<tr>
<th>Case Summary</th>
<th>DA-14 Create an unaligned clone from an image file.</th>
</tr>
</thead>
</table>
| Assertions: | AM-03 The tool executes in execution environment XE.  
AO-12 If requested, a clone is created from an image file.  
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-23 If the tool logs any log significant information, the information is accurately recorded in the log file. |

<table>
<thead>
<tr>
<th>Tester Name</th>
<th>brl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Host</td>
<td>none</td>
</tr>
<tr>
<td>Test Date</td>
<td>Fri Jun 25 10:07:24 2010</td>
</tr>
<tr>
<td>Drives</td>
<td>src(01-SATA) dst (30-SATA) other (3B-SATA)</td>
</tr>
</tbody>
</table>

**Source Setup:**
- src hash (SHA256): `<1AA01FEAE55F5CD55185D2B1A1359B3F913E7093EF1D1ADA220C456BA40D8>`
- src hash (SHA1): `<4951236428C36B946286365862DCBEF05F282C>`
- src hash (MD5): `<0A49B13D91FA8DA87CEE9D06CB6FD6>`
- 156301488 total sectors (80026361856 bytes)
- Model (OJD-32HKA0 ) serial # (WD-WMAJ91448529)

**Log Highlights:**
- 156301488 sectors wiped with 30
- Comparison of original to clone drive
- Sectors compared: 156301488
- Sectors match: 156301488
- Sectors differ: 0
- Bytes differ: 0
- Diffs range
- 0 source read errors, 0 destination read errors

**Tool Settings:**
- Lg-XferBlk yes
- dst-interface sata28
- dst-port II

**Extract from IM Solo III audit01.txt file:**
- Software Version 2.0.10.23f
- Built on: Jul 30 2009 15:23:21
- Firmware Version 5.0.4.5
- SCSI Module F/W: 1.80
- Serial #: 32520
- Operational mode: LinuxDD Restore
- Hashing: SHA1
- Suspect drive's Identity
- Model: Hitachi HDS721010KLA330
- Serial Number: GTH000PAH0LW8H
- Capacity: 953869MB, 1953525168 sectors
- Block size: 512
- Hash of Acquired Data
- SHA1: 49512364 28C36B94 4E6286D6 5862DCBE F05F282C

**Results:**

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</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-14-SATA28-EVIDENCEII</td>
<td>Image MASSter Solo-3 Software Version 2.0.10.23f</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-17 Excess sectors are unchanged.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
### Test Case DA-14-SATA48 Image MASSter Solo-3 Software Version 2.0.10.23f

**Case Summary:**
DA-14 Create an unaligned clone from an image file.

**Assertions:**
- AM-03 The tool executes in execution environment XE.
- AO-12 If requested, a clone is created from an image file.
- 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-23 If the tool logs any log significant information, the information is accurately recorded in the log file.

**Tester Name:** brl

**Test Host:** none

**Test Date:** Wed Jun 16 10:08:05 2010

**Drives:**
- src(0D-SATA) dst (46-SATA) other (3B-SATA)

**Source Setup:**
- src hash (SHA1): <BAAD80E8781E55F2E3EF528CA73BD41D228C1377>
- src hash (MD5): <1FA7C3CBE60EB9EB9863DED2411E40C9>
- 488397168 total sectors (250059350016 bytes)
- 30400/254/63 (max cyl/hd values)
- 30401/255/63 (number of cyl/hd)
- Model (WDC WD2500JD-22F) serial # (WD-WMAEH2678216)

**Log Highlights:**

<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 Partition type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0000000063</td>
<td>488375937</td>
<td>0000/001/01</td>
<td>1023/254/63</td>
<td>Boot 07 NTFS</td>
</tr>
<tr>
<td>2</td>
<td>P 000000000 000000000 0000/000/00</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00 empty entry</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>P 000000000 000000000 0000/000/00</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00 empty entry</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>P 000000000 000000000 0000/000/00</td>
<td>0000/000/00</td>
<td>0000/000/00</td>
<td>00 empty entry</td>
<td></td>
</tr>
</tbody>
</table>

1 488375937 sectors 250048479744 bytes

488397168 sectors wiped with 46

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

Tool Settings:
- Lg-XferBlk yes
dst-interface sata48
dst-port II

Extract from IM Solo III audit01.txt file

Unit Settings...
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Restore
Hashing: SHA1
Suspect drive's Identity
Model: Hitachi HDS721010KLA330
Serial Number: GTH000PAH0LW8H
Capacity: 953869MB, 1953525168 sectors
Block size: 512

Hash of Acquired Data

SHA1: BAAD80E8 781E55F2 E3EF528C A73BD41D 228C1377
<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</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-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.34 DA-14-SCSI

Test Case DA-14-SCSI Image MASSter Solo-3 Software Version 2.0.10.23f

Case Summary: DA-14 Create an unaligned clone from an image file.

 Assertions: AM-03 The tool executes in execution environment XE.
 AO-12 If requested, a clone is created from an image file.
 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-23 If the tool logs any log significant information, the information is accurately recorded in the log file.

Tester Name: brl
Test Host: none
Test Date: Tue Jun 22 17:05:37 2010
Drives: src(E0) dst (CC) other (1D)

Source Setup: src hash (SHA1): < 4A6941F1337A8A22B10FC844B4D7FA6158BECB82 >
src hash (MD5): < A97C8F3687AC9D5233B90AC09284F938 >
17938985 total sectors (9184760320 bytes)
Model (ATLAS10K2-TY092J) serial # (16902814236)

Log Highlights: 71687370 sectors wiped with CC

Comparison of original to clone drive
Sectors compared: 17938985
Sectors match: 17938985
Sectors differ: 0
Bytes differ: 0
Diffs range
Source (17938985) has 53748385 fewer sectors than destination (71687370)
Zero fill: 0
Src Byte fill (E0): 0
Dat Byte fill (CC): 53748385
Other fill: 0
Other no fill: 0
Zero fill range:
Src fill range:
Dat fill range: 17938985-71687369
Other fill range:
Other not filled range:
0 source read errors, 0 destination read errors

Tool Settings: Lg-XferBlk yes
dst-port I

Extract from IM Solo III audit01.txt file

Unit Settings ...
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Restore
Read-Verify: Full
Hashing: SHA1
Suspect drive's Identity
Model: QUANTUM ATLAS10K3_18_SCA020K
Serial Number: 342125051401
Capacity: 17537MB, 35916548 sectors
Block size: 512
Test Case DA-I4-SCSI Image MASSter Solo-3 Software Version 2.0.10.23f

------ Hash of Acquired Data ------
SHA1: 4A6941F1 337A8A22 B10FC844 B4D7FA61 58BECB82

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</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-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.35 DA-17

Test Case DA-17 Image MASSter Solo-3 Software Version 2.0.10.23f

Test Description:
DA-17 Create a truncated clone from an image file.

Summary:

Assertions:
AM-03 The tool executes in execution environment XE.
AO-12 If requested, a clone is created from an image file.
AO-13 A clone is created using access interface DST-AI to write to the clone device.
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-23 If the tool logs any log significant information, the information is accurately recorded in the log file.

Tester Name: brl
Test Host: none
Test Date: Fri Sep 24 16:25:38 2010
Drives: src(0D-SATA) dst (50-SATA) other (3D-SATA)
Source src hash (SHA1): < BAAD80E8781E55F2E3EF528CA73BD41D228C1377 >
Setup:
src hash (MD5): < 1FA7C3CBE60EB9E89863DED2411E40C9 >
488397168 total sectors (250059350016 bytes)
30400/254/63 (max cyl/hd values)
30401/255/63 (number of cyl/hd)
Model (HDC WD2500JD-22P) serial # (WD-WMAEH2678216)
N Start LBA Length Start C/H/S End C/H/S boot Partition type
1 P 000000063 488375937 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

Log:

--------- Destination drive setup ---------
156301488 sectors wiped with 50

--------- Comparison of original to clone drive ---------
Sectors compared: 156301488
Sectors match: 156301488
Sectors differ: 0
Bytes differ: 0
Diffs range
Source (488397168) has 332095680 more sectors than destination (156301488)
0 source read errors, 0 destination read errors

--------- Tool Settings: ---------
Lg-XferBlk yes
dst-interface sata28
dst-port I

--------- Extract from IM Solo III audit01.txt file ---------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: LinuxDD Restore
Hashing: SHA1
Suspect drive's Identity
Model: ST3750330AS
Serial Number: 3QK01GB4
Capacity: 715404MB, 1465149168 sectors
Block size: 512

--------- Hash of Acquired Data ---------
<table>
<thead>
<tr>
<th>Test Case DA-17</th>
<th>Image MASSter Solo-3 Software Version 2.0.10.23f</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-12 A clone is created from an image file.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-13 Clone created using interface Al.</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>No message to user</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results not achieved
### Test Case DA-19 Image MASSter Solo-3 Software Version 2.0.10.23f

**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.
- AM-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:** none
- **Test Date:** Tue Sep 28 12:48:06 2010
- **Drives:** src(07-SATA) dst (1E-LAP) other (none)

**Source Setup:**
- src hash (SHA256): `<CE65C4A3C3164D3EBAD58D33BB2415D29E260E1F88DC5A138C4C9C2945B8A9>`
- src hash (SHA1): `<655E9BDB36A3F9C5C4CCBBF32B0C5B41AF9F52E>`
- src hash (MD5): `<2EAF712D80F66E30DEA00365B4579B>`
- 156301488 total sectors (80026361856 bytes)

**Log Highlights:**
- Source (156301488) has 78140160 fewer sectors than destination (234441648)
- Zero fill: 78140160
- Src Byte fill (07): 0
- Dst Byte fill (1E): 0
- Other fill: 0
- Other no fill: 0
- Zero fill range: 156301488-234441647
- Src fill range:
- Dst fill range:
- Other fill range:
- Other not filled range:
  - 0 source read errors, 0 destination read errors

**Tool Settings:**

---

ICS_Solo3-acquisation-NIJ jlyle v2.doc 87 of 92  Image MASSter Solo-3 Forensics
Test Case DA-19 Image MASSter Solo-3 Software Version 2.0.10.23f

```
Lg-XferBlk yes
dst-interface SATA28
dst-port I

-------- Extract from IM Solo III audit01.txt file --------
Unit Settings . . .
Software Version 2.0.10.23f
Built on: Jul 30 2009 15:23:21
Firmware Version 5.0.4.5
SCSI Module F/W: 1.80
Serial #: 32520
Operational mode: SING Capture
Hashing: SHA1
Suspect drive's Identity
Model: WDC WD800JD-32HKA0
Serial Number: WD-WMAJ91510044
Capacity: 76319MB, 156301488 sectors
Block size: 512

-------- Hash of Acquired Data --------
SHA1: 655E9BDD B36A3F9C 5C4CC8BF 32B8C5B4 1AF9F52E

-------- Source drive rehash --------
Rehash (SHA1) of source: 655E9BDDB36A3F9C5C4CC8BF32B8C5B41AF9F52E

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-18 Excess sectors are filled.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-22 Tool calculates hashes by block.</td>
<td>option not available</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-24 Source is unchanged by acquisition.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
5.2.37 DA-24

Test Case DA-24 Image MASSter Solo-3 Software Version 2.0.10.23f

Case: DA-24 Verify a valid image.

Summary:

Assertions:

AM-03 The tool executes in execution environment XE.

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.

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

Tester: brl

Name:

Test Host: none

Test Date: Thu Sep 30 11:31:34 2010

Drives:

- src (01-IDE) dst (none) other (3B-SATA)

Source:

- src hash (SHA1): < A48BB56665D6DC57C22DB68E2F723DA9AA8DF82B9 >
- src hash (MD5): < F458F67389475F5FAAB6E8CB60C5840E >

Model (0BB-00JIC0) serial # ( WD-WMAMC74171)

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 057175335 1023/000/01 1023/254/63 0F extended
3 X 000000063 00032067 1023/001/01 1023/254/63 01 Fat12
4 x 000032130 002104515 1023/000/01 1023/254/63 05 extended
5 S 000000063 02104452 1023/001/01 1023/254/63 06 Fat16
6 x 002136645 004192902 1023/001/01 1023/254/63 05 extended
7 S 000000063 04192902 1023/001/01 1023/254/63 16 other
8 x 006329610 008401995 1023/001/01 1023/254/63 05 extended
9 S 000000063 008401932 1023/001/01 1023/254/63 0B Fat32
10 x 014731605 014903445 1023/001/01 1023/254/63 05 extended
11 S 000000063 01490382 1023/001/01 1023/254/63 83 Linux
12 x 025222050 004209030 1023/001/01 1023/254/63 05 extended
13 S 000000063 04208967 1023/001/01 1023/254/63 82 Linux swap
14 x 029431080 027744255 1023/001/01 1023/254/63 05 extended
15 S 000000063 027744192 1023/001/01 1023/254/63 07 NTFS
16 S 000000063 002104452 1023/001/01 1023/254/63 01 Fat12
17 P 000000063 000000000 0000/000/00 0000/000/00 00 empty entry
18 P 000000063 000000000 0000/000/00 0000/000/00 00 empty entry
1 020980827 sectors 10742183424 bytes
3 00032067 sectors 16418304 bytes
5 002104515 sectors 1077479424 bytes
7 004192902 sectors 2146765824 bytes
9 008401932 sectors 4301789184 bytes
11 01490382 sectors 5371075584 bytes
13 004208967 sectors 2154991104 bytes
15 027744192 sectors 14205026304 bytes

Log

Highlights:

- Extract from IM Solo III audit01.txt file

Unit Settings . . .

Software Version 2.0.10.23f

Built on: Jul 30 2009 15:23:21

Firmware Version 5.0.4.5

SCSI Module F/W: 1.80

Serial #: 32520

Operational mode: LinuxDD Hash

Hashing: SHA1

Suspect drive's Identity

Model: Hitachi HDS721010KLA330

Serial Number: GTH000PAH0LW8H

Capacity: 953869MB, 1953525168 sectors

Block size: 512

Hash of Acquired Data

SHA1: A48BB566 56DC57C 22DB68E2 F723DA9A A8DF82B9

Results:
<table>
<thead>
<tr>
<th>Test Case DA-24 Image MASстер Solo-3 Software Version 2.0.10.23f</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-01 Execution environment is XE.</td>
</tr>
<tr>
<td>AO-06 Tool verifies image file unchanged.</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
</tr>
</tbody>
</table>

Analysis: Expected results achieved
DA-25 Detect a corrupted image.

**Asserts:**

AM-03 The tool executes in execution environment XE.

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.

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.

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

**Tester Name:** brl

**Test Host:** none

**Test Date:** Thu Sep 30 13:44:17 2010

**Drives:**

- **src hash (SHA1):** <A48BB5665D6DC57C22DB68E2F723DA9AA8DF82B9>
- **src hash (MD5):** <F458F673894753FA6A0EC8B8EC63848E>
- **78165360 total sectors (40020664320 bytes)**
- **Model (0BB-00JHC0) serial # (WD-WHAMC741711)**
- **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 057175335 1023/000/01 1023/254/63 0F extended
  3 S 000000063 00032067 1023/001/01 1023/254/63 01 Fat12
  4 x 000032130 002104515 1023/001/01 1023/254/63 05 extended
  5 S 000000063 002104452 1023/001/01 1023/254/63 06 Fat16
  6 x 002135645 004192965 1023/000/01 1023/254/63 05 extended
  7 S 000000063 004192902 1023/001/01 1023/254/63 16 other
  8 x 006329610 008401995 1023/000/01 1023/254/63 05 extended
  9 S 000000063 008401932 1023/001/01 1023/254/63 0B Fat32
  10 x 014731605 010490445 1023/000/01 1023/254/63 05 extended
  11 S 000000063 010490382 1023/001/01 1023/254/63 83 Linux
  12 x 025222050 004209030 1023/001/01 1023/254/63 05 extended
  13 S 000000063 004208967 1023/000/01 1023/254/63 82 Linux swap
  14 x 029431080 027744255 1023/000/01 1023/254/63 05 extended
  15 S 000000063 027744192 1023/001/01 1023/254/63 07 NTFS
  16 S 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  17 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  18 P 000000000 000000000 0000/000/00 0000/000/00 00 empty entry
  1 020980827 sectors 10742183424 bytes
  2 002104452 sectors 16418304 bytes
  3 004192902 sectors 10744924 bytes
  4 004209030 sectors 4301789184 bytes
  5 027744192 sectors 14205026304 bytes

**Log Highlights:**

- Image file corrupted for test run: ~
- Change byte 544 of file /media/floppy1/06ata28/06ata28.001 from 0x01 to 0x00
- Extract from IM Solo III audit01.txt file ~

**Unit Settings:**

- Software Version 2.0.10.23f
- Built on: Jul 30 2009 15:23:21
- Firmware Version 5.0.4.5
- SCSI Module F/W: 1.80
- Serial #: 32520
- Operational mode: LinuxDD Hashing: SHA1
- Suspect drive's Identity

**Model:** Hitachi HDS721010KLA330
**Serial Number:** GTH000PAH01N8H
**Capacity:** 953869MB, 1953525168 sectors
## Test Case DA-25 Image MASSter Solo-3 Software Version 2.0.10.23f

<table>
<thead>
<tr>
<th>Block size: 512</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Hash of Acquired Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHA1: CEF2B545 E049650B 51F8252A F41ED55C 21D13E01</td>
</tr>
</tbody>
</table>

## Results:

<table>
<thead>
<tr>
<th>Assertion &amp; Expected Result</th>
<th>Actual Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM-03 Execution environment is XE.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-07 User notified if image file has changed.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-08 User notified of changed locations.</td>
<td>as expected</td>
</tr>
<tr>
<td>AO-23 Logged information is correct.</td>
<td>as expected</td>
</tr>
</tbody>
</table>

## Analysis:

Expected results achieved
About the National Institute of Justice

A component of the Office of Justice Programs, 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.

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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.

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