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SEPT. 2010

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Test Results for Forensic Media Preparation Tool: Tableau Forensic Duplicator Model TD1 (Firmware version 2.10)

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NIST
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Test Results for Forensic Media Preparation Tool: Tableau Forensic Duplicator Model TD1 (Firmware version 2.10)

NCJ 231622

NIJ

John H. Laub
Director, National Institute of Justice

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.

The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, the Bureau of Justice Statistics, the Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime.

Contents

Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the National Institute of Justice (NIJ), the research and development organization of the U.S. Department of Justice (DOJ), and the National Institute of Standards and Technology's (NIST's) Office of Law Enforcement Standards and Information Technology Laboratory. CFTT is supported by other organizations, including the Federal Bureau of Investigation, the U.S. Department of Defense Cyber Crime Center, U.S. Internal Revenue Service Criminal Investigation Division Electronic Crimes Program, and the U.S. Department of Homeland Security's Bureau of Immigration and Customs Enforcement, U.S. Customs and Border Protection, and U.S. Secret Service. The objective of the CFTT program is to provide measurable assurance to practitioners, researchers, and other 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, for users to make informed choices, and for the legal community and others to understand the tools' capabilities. The CFTT program's 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 website for review and comment by the computer forensics community.

This document reports the results from testing Tableau Forensic Duplicator Model TD1 against the *Forensic Media Preparation Tool Test Assertions and Test Plan Version 1.0*, which is available at the CFTT website.

Test results for other devices and software packages using the CFTT tool methodology can be found on NIJ's computer forensics tool testing web page.

How to Read This Report

This report is divided into four sections. Section 1 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 and provide documentation of test case run details that support the report summary. Section 2 gives a justification for the selection of test cases from the set of possible cases that are defined in the test plan for forensic media preparation tools. The test cases are selected, in general, based on features offered by the tool. Section 3 lists hardware and software used to run the test cases and provides links to additional information about the items used. Section 4 contains a description of each test case. The description of each test run lists all test assertions used in the test case, the expected result and the actual result.

Test Results for Forensic Media Preparation Tool

Tool Tested: Tableau Forensic Duplicator Model TD1
Version: 2.10 Aug 12, 2009
Serial No. 01d130a0 0915
Run Environments: Custom

Supplier: Tableau, LLC
W223 N608 Saratoga Drive
Waukesha, WI 53186
U.S.A.

Tel: 262–522–7890
Fax: 262–522–7899
Email: info@tableau.com
WWW: http://www.tableau.com/

1. Results Summary

The Tableau Forensic TD1 is a multi-function forensic device that performs a variety of forensic functions including: Disk-to-Disk duplication, Disk-to-File duplication, Format Disk, Wipe Disk, Hash Disk (MD5 and SHA–1), HPA/DCO Detection and Removal, View/Save/Print Log Files and Blank Disk Check. This report only covers disk wiping and removal of HPA/DCO for wiping of hidden sectors. For disk wiping, a drive must be attached to the destination side of the unit. A user can then navigate using menu options to enter the disk utility where controls are located for removing an HPA or DCO. This process was used to successfully remove hidden sectors before a drive was wiped using the overwrite command of the unit. In all the test cases run against Tableau Forensic Duplicator Model TD1, all visible and hidden sectors were successfully overwritten.

The following table provides a quick overview of test cases, settings and findings for each test case:

Test Case	Target Fill	Last Sector	Last Sector Overwritten	Unchanged Sectors	
				First	Last
FMP-01-ATA28	00h	156301487	156301487		
FMP-01-ATA48	Random	488397167	488397167		
FMP-01-SATA28	00h	78140159	78140159		
FMP-01-SATA48	Random	312581807	312581807		
FMP-03-DCO	00h	390721967	390721967		
FMP-03-HPA	Random	156301487	156301487		
FMP-03-DCO-HPA	Random	488397167	488397167		

2. Test Case Selection

The Tableau Forensic Duplicator Model TD1 was tested for its ability to overwrite sectors. The prime function of the device is hard drive duplication for cloning a master drive to one target drive. The device optionally supports a secondary function that overwrites destination drives. ***This report covers only the results of testing the overwrite function of the unit.***

The tested device has two work areas for attaching hard drives. A drive attached to the destination bay can be overwritten. A user can overwrite a destination drive using a single (00h), or multiple 3x pass overwrite that consist of the following formula (00h) on the first pass, (FFh) on the second pass and then a final randomly generated constant value in between (01h to FEh). It should be noted that any drive attached to the source bay will not be overwritten.

The test cases selected were limited to only those test cases defined by *Forensic Media Preparation Tool Test Assertions and Test Plan Version 1.0* and applicable to features supported by this tool.

Since Tableau Forensic Duplicator Model TD1 does not support a secure erase mode those tests were omitted. All selected test cases were *WRITE* tests (cases FMP–01 and FMP–03).

Three hidden sector test cases (FMP–03) were included among the cases selected. They were included to measure the tool behavior in conjunction with hidden sectors.

The following cases were used in testing the Tableau Forensic Duplicator Model TD1:

- FMP–01–ATA28
- FMP–01–ATA48
- FMP–01–SATA28
- FMP–01–SATA48
- FMP–03–DCO
- FMP–03–DCO–HPA
- FMP–03–HPA

The source interfaces used in testing included: ATA28, ATA48, SATA28, and SATA48.

3. Test Materials

3.1 Support Software

Several programs were used in the setup and analysis of the test drives. These include **hdat2** (download from: http://www.hdat2.com/download.html), **dsumm** (download from: http://www.cftt.nist.gov/), **ransum** (download from: http://www.cftt.nist.gov/) and **diskwipe** from **FS-TST Release 2.0** (download from: http://www.cftt.nist.gov/diskimaging/fs-tst20.zip).

The **hdat2** program is used to create, remove and document hidden areas on a drive.

The **diskwipe** program initializes a hard drive with known content.

The **dsumm** program analyzes the content of a hard drive. It produces a summary of disk contents in terms of counts for each byte value present on the drive. For example, if a drive can contain 10 GB (19,531,250 sectors of 512 bytes per sector) and the drive is wiped with zero bytes, then **dsumm** reports 10,000,000,000 zero bytes. The program also prints the first sector found with printable ASCII content.

The **ransum** program examines a hard drive and identifies sectors that do not contain the content written to the drive by the **diskwipe** program. The **ransum** output is a list of sector ranges classified as either *overwritten* or *unchanged*.

3.2 Test Drive Creation

The following steps are used to setup a test drive:

1. The drive is initially filled with known content 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 **dsumm** program analyzes the drive contents. This documents the content of the drive. Each sector has unique content after the setup.
3. If the drive is intended for hidden area tests (FMP–03), an HPA, a DCO or both are created.
4. The drive size after creation of a hidden area is recorded.

3.3 Test Drive Analysis

The following steps are used to analyze a test drive after it has been wiped by the tool under test:

1. The size of the drive is recorded. This determines if the tool changes the size of a hidden area.
2. Any hidden areas still present on the drive are removed.
3. The **dsumm** program is run to determine the final content of the drive.
4. The **ransum** program is run to classify sectors as either *overwritten* or *unchanged*.

3.4 Test Drives

The hard drives listed in the following table were used in testing. The column labeled **Test Case** identifies the test case. The column labeled **Sectors** is the size of the drive with no DCO or HPA. The column labeled **Model** is the model of the drive as returned by the ATA IDENTIFY DEVICE command. The column labeled **Serial #** is the serial number as returned by the ATA IDENTIFY DEVICE command.

Test Case	Sectors	Model	Serial #
FMP–01–ATA28	156301488	FUJITSU MHW2080AT	K004T832CK2R
FMP–01–ATA48	488397168	WDC WD2500JB–00GVC0	WD–WCAL78188039
FMP–01–SATA28	78140160	FUJITSU MHW2040BH	K10XT7B278AP
FMP–01–SATA48	312581808	ST9160310AS	9RX7Y1DP
FMP–03–DCO	390721968	SAMSUNG SP2004C	S07GJ1ULC07896
FMP–03–DCO–HPA	488397168	WDC WD2500JB–00GVC0	WD–WCAL78188039
FMP–03–HPA	156301488	FUJITSU MHW2080AT	K004T832CK3G

For FMP–03 test cases the layout of visible and hidden sectors is as follows. The column labeled **Test Case** identifies the test case. The column labeled **Size** is the number of visible sectors presented to the device for the test case. The column labeled **Hidden** is the size in sectors of the hidden area.

Test Case	Size	Total	Hidden (DCO+HPA)
FMP–03–DCO	380721967	390721967	10000000
FMP–03–DCO+HPA	478397167	488397167	25000000 (10000000+15000000)
FMP–03–HPA	141301487	156301487	15000000

4. Test Results

The main item of interest for interpreting the test results is determining the conformance of the tool under test 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 report summary.

4.1 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.

Heading	Description

Heading	Description
First Line:	Test case ID, name and version of tool tested.
Case Summary:	Test case summary from the *Forensic Media Preparation Tool Test Assertions and Test Plan Version 1.0.*
Assertions:	The test assertions applicable to the test case, selected from the *Forensic Media Preparation Tool Test Assertions and Test Plan Version 1.0.*
Tester Name:	Name or initials of person executing test procedure.
Analysis Host:	Host used to setup test drive and analyze final drive state.
Test Host:	Host computer executing the test.
Test Date:	Time and date that test was started.
Test Drive:	Drive erased by the tool under test.
Source Setup:	Report of the native drive size, the size of any hidden areas, the apparent size of the drive (as reported by an ATA IDENTIFY DEVICE command) and an analysis of initial drive contents.
Tool Settings:	Report of tool parameters set for each test run.
Log Highlights:	Report of the state of the drive after executing the tool under test, including the apparent drive size, size of hidden area and analysis of drive contents. The ASCII content of the first non-binary-zero sector is reported.
Results:	Expected and actual results for each assertion tested.
Analysis:	Whether or not the expected results were achieved.

4.2 Test Details

4.2.1 FMP–01–ATA28

Test Case FMP-01-ATA28 Tableau Forensic Duplicator Model TD1 Firmware version 2.10	
Case Summary:	FMP-01. Overwrite visible sectors using WRITE commands.
Assertions:	FMP-CA-01 All visible sectors shall be overwritten with the specified benign data.
Tester Name:	Csr
Analysis host:	Frank
Test host:	None
Test date:	Wed Dec 23 08:33:46 2009
Test drive:	19-LAP
Source Setup:	Initial setup size: 156301488 from total of 156301488 (with 0 hidden) IDE disk: Model (FUJITSU MHW2080AT) serial # (K004T832CK2R) Sector 0 is first sector with printable text ============= Start text ============= 00000/000/01 000000000000 ============= End text Sector 0 ============= 1 <new line> character inserted for readability Totals for all sectors summary format: <count> <hex value> <(actual character if printable)> ... 156301488 00 75907021680 19 156301488 20 ( ) 312602976 2F (/) 1092738319 30 (0) 445157427 31 (1) 274740905 32 (2) 274642393 33 (3) 272159917 34 (4) 262536293 35 (5) 225709546 36 (6) 215483146 37 (7) 215483143 38 (8) 215483135 39 (9)

<table>
<tr><th colspan="2">Test Case FMP-01-ATA28 Tableau Forensic Duplicator Model TD1 Firmware version 2.10</th></tr>
<tr><td></td><td>Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...

80026361856 bytes, 156301488 sectors, 14 distinct values seen
156301488 sectors have printable text</td></tr>
<tr><td>Log Highlights:</td><td>Size after tool runs: 156301488 from total of 156301488 (with 0 hidden)
Analysis of tool result --
Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
 80026361856 00
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...
 80026361856 00

80026361856 bytes, 156301488 sectors, 1 distinct values seen
No sectors have printable text

    Runs of Sectors Unchanged or Overwritten
First Sector   Last Sector   State
           0 --   156301487   Overwritten</td></tr>
<tr><td>Results:</td><td><table><tr><th>Assertion & Expected Result</th><th>Actual Result</th></tr><tr><td>FMP-CA-01 Visible sectors overwritten</td><td>as expected</td></tr></table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

4.2.2 FMP–01–ATA48

<table>
<tr><th colspan="2">Test Case FMP-01-ATA48 Tableau Forensic Duplicator Model TD1 Firmware version 2.10</th></tr>
<tr><td>Case Summary:</td><td>FMP-01. Overwrite visible sectors using WRITE commands.</td></tr>
<tr><td>Assertions:</td><td>FMP-CA-01 All visible sectors shall be overwritten with the specified benign data.</td></tr>
<tr><td>Tester Name:</td><td>Csr</td></tr>
<tr><td>Analysis host:</td><td>frank</td></tr>
<tr><td>Test host:</td><td>none</td></tr>
<tr><td>Test date:</td><td>Wed Dec 23 15:47:55 2009</td></tr>
<tr><td>Test drive:</td><td>29-IDE</td></tr>
<tr><td>Source Setup:</td><td>Initial setup size: 488397168 from total of 488397168 (with 0 hidden)
IDE disk: Model (WDC WD2500JB-00GVC0) serial # (WD-WCAL78188039)

Sector 0 is first sector with printable text
============= Start text =============
00000/000/01 000000000000)))))))))))))))))))))))))))))))))))
))
))
))
))
))
))
))
)))))))))))))))))))))))))))))))
============= End text Sector 0 =============
9 <new line> characters inserted for readability

Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
   488397168 00   488397168 20 ( ) 237361023648 29 ())
   976794336 2F (/)   2735169210 30 (0)   1278997882 31 (1)
  1192805876 32 (2)   933260747 33 (3)   905775911 34 (4)
   805865997 35 (5)   749775664 36 (6)   718765480 37 (7)
   716559080 38 (8)   707761849 39 (9)
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...

250059350016 bytes, 488397168 sectors, 14 distinct values seen
488397168 sectors have printable text</td></tr>
<tr><td>Log Highlights:</td><td>Size after tool runs: 488397168 from total of 488397168 (with 0 hidden)
Analysis of tool result --
Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
250059350016 B6
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...
250059350016 B6

250059350016 bytes, 488397168 sectors, 1 distinct values seen
No sectors have printable text

    Runs of Sectors Unchanged or Overwritten
First Sector   Last Sector   State
           0 --   488397167   Overwritten</td></tr>
<tr><td>Results:</td><td><table><tr><th>Assertion & Expected Result</th><th>Actual Result</th></tr><tr><td>FMP-CA-01 Visible sectors overwritten</td><td>as expected</td></tr></table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

4.2.3 FMP–01–SATA28

<table>
<tr><th colspan="2">Test Case FMP-01-SATA28 Tableau Forensic Duplicator Model TD1 Firmware version 2.10</th></tr>
<tr><td>Case Summary:</td><td>FMP-01. Overwrite visible sectors using WRITE commands.</td></tr>
<tr><td>Assertions:</td><td>FMP-CA-01 All visible sectors shall be overwritten with the specified benign data.</td></tr>
<tr><td>Tester Name:</td><td>Csr</td></tr>
<tr><td>Analysis host:</td><td>frank</td></tr>
<tr><td>Test host:</td><td>None</td></tr>
<tr><td>Test date:</td><td>Mon Dec 28 14:48:52 2009</td></tr>
<tr><td>Test drive:</td><td>24-LAP</td></tr>
<tr><td>Source Setup:</td><td>Initial setup size: 78140160 from total of 78140160 (with 0 hidden)
IDE disk: Model (FUJITSU MHW2040BH) serial # (K10XT7B278AP)

Sector 0 is first sector with printable text
============= Start text =============
00000/000/01 000000000000$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$
$$
$$
$$
$$
$$
$$
$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
============= End text Sector 0 =============
9 <new line> characters inserted for readability

Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
    78140160 00   78140160 20 ( ) 37976117760 24 ($)
   156280320 2F (/)   561878293 30 (0)   173598093 31 (1)
   159768433 32 (2)   142914673 33 (3)   139463608 34 (4)
   123744696 35 (5)   114674216 36 (6)   107788836 37 (7)
    98210496 38 (8)   97042176 39 (9)
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...

40007761920 bytes, 78140160 sectors, 14 distinct values seen
78140160 sectors have printable text</td></tr>
<tr><td>Log Highlights:</td><td>Size after tool runs: 78140160 from total of 78140160 (with 0 hidden)
Analysis of tool result --
Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
 40007761920 00
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...
 40007761920 00

40007761920 bytes, 78140160 sectors, 1 distinct values seen
No sectors have printable text

    Runs of Sectors Unchanged or Overwritten
First Sector   Last Sector   State
           0 --   78140159   Overwritten</td></tr>
<tr><td>Results:</td><td><table><tr><th>Assertion & Expected Result</th><th>Actual Result</th></tr><tr><td>FMP-CA-01 Visible sectors overwritten</td><td>as expected</td></tr></table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

4.2.4 FMP–01–SATA48

<table>
<tr><th colspan="2">Test Case FMP-01-SATA48 Tableau Forensic Duplicator Model TD1 Firmware version 2.10</th></tr>
<tr><td>Case Summary:</td><td>FMP-01. Overwrite visible sectors using WRITE commands.</td></tr>
<tr><td>Assertions:</td><td>FMP-CA-01 All visible sectors shall be overwritten with the specified benign data.</td></tr>
<tr><td>Tester Name:</td><td>Csr</td></tr>
<tr><td>Analysis host:</td><td>frank</td></tr>
<tr><td>Test host:</td><td>None</td></tr>
<tr><td>Test date:</td><td>Tue Dec 29 08:44:41 2009</td></tr>
<tr><td>Test drive:</td><td>43-SATA</td></tr>
<tr><td>Source Setup:</td><td>Initial setup size: 312581808 from total of 312581808 (with 0 hidden)
IDE disk: Model (ST3160815AS) serial # (9RX7Y1DP)

Sector 0 is first sector with printable text
============= Start text =============
00000/000/01 000000000000CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
============= End text Sector 0 =============
9 <new line> characters inserted for readability

Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
   312581808 00   312581808 20 ( )   625163616 2F (/)
  1850492169 30 (0)   906528227 31 (1)   696435016 32 (2)
   541016511 33 (3)   522787395 34 (4)   514450557 35 (5)
   478352540 36 (6)   458495114 37 (7)   458481159 38 (8)
   449761088 39 (9) 151914758688 43 (C)
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...

160041885696 bytes, 312581808 sectors, 14 distinct values seen
312581808 sectors have printable text</td></tr>
<tr><td>Log Highlights:</td><td>Size after tool runs: 312581808 from total of 312581808 (with 0 hidden)
Analysis of tool result --
Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
160041885696 CA
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...
160041885696 CA

160041885696 bytes, 312581808 sectors, 1 distinct values seen
No sectors have printable text

    Runs of Sectors Unchanged or Overwritten
First Sector   Last Sector   State
           0 --   312581807   Overwritten</td></tr>
<tr><td>Results:</td><td><table><tr><th>Assertion & Expected Result</th><th>Actual Result</th></tr><tr><td>FMP-CA-01 Visible sectors overwritten</td><td>as expected</td></tr></table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

4.2.5 FMP–03–DCO

Test Case FMP-03-DCO Tableau Forensic Duplicator Model TD1 Firmware version 2.10	
Case Summary:	FMP-03. Overwrite hidden sectors using WRITE commands.
Assertions:	FMP-CA-01 All visible sectors shall be overwritten with the specified benign data. FMP-AO-01 If there is a hidden area present and the tool supports overwriting sectors contained in a hidden area, then all sectors contained in the hidden area shall be overwritten with the specified benign data. FMP-AO-02 A hidden area may optionally be removed from the storage device.
Tester Name:	Csr
Analysis host:	Frank
Test host:	None
Test date:	Wed Mar 31 08:27:54 2010
Test drive:	33-SATA
Source Setup:	Size with DCO: 380721968 194.93 GB (10000000 sectors in DCO) Initial setup size: 380721968 from total of 390721968 (with 10000000 hidden) IDE disk: Model (SAMSUNG SP2004C) serial # (S07GJ1ULC07896) Sector 0 is first sector with printable text ============= Start text ============= 00000/000/01 00000000000033333333333333333333333333333333333 333333333333333333333333333333333333333333333333333333333333 333333333333333333333333333333333333333333333333333333333333 333333333333333333333333333333333333333333333333333333333333 333333333333333333333333333333333333333333333333333333333333 333333333333333333333333333333333333333333333333333333333333 333333333333333333333333333333333333333333333333333333333333 333333333333333333333333333333333333333333333333333333333333 3333333333333333333333333333333 ============= End text Sector 0 ============= 9 <new line> characters inserted for readability Totals for all sectors summary format: <count> <hex value> <(actual character if printable)> ... 380721968 00 380721968 20 ( ) 761443936 2F (/) 2196468178 30 (0) 1065666424 31 (1) 897239892 32 (2) 185762461772 33 (3) 633593182 34 (4) 624635322 35 (5) 580892631 36 (6) 555053803 37 (7) 545751335 38 (8) 544997205 39 (9) Totals for non-ASCII sectors summary format: <count> <hex value> <(actual character if printable)> ... 194929647616 bytes, 380721968 sectors, 13 distinct values seen 380721968 sectors have printable text
Log Highlights:	Size after tool runs: 390721968 from total of 390721968 (with 0 hidden) Analysis of tool result -- Totals for all sectors summary format: <count> <hex value> <(actual character if printable)> ... 200049647616 00 Totals for non-ASCII sectors summary format: <count> <hex value> <(actual character if printable)> ... 200049647616 00 200049647616 bytes, 390721968 sectors, 1 distinct values seen No sectors have printable text Runs of Sectors Unchanged or Overwritten First Sector Last Sector State 0 -- 390721967 Overwritten

Test Case FMP-03-DCO Tableau Forensic Duplicator Model TD1 Firmware version 2.10		
Results:	**Assertion & Expected Result**	**Actual Result**
	FMP-CA-01 Visible sectors overwritten	as expected
	FMP-AO-01 Hidden sectors overwritten	as expected
	FMP-AO-02 Hidden area final state is	removed
Analysis:	Expected results achieved	

4.2.6 FMP–03–DCO–HPA

Test Case FMP-03-DCO-HPA Tableau Forensic Duplicator Model TD1 Firmware version 2.10	
Case Summary:	FMP-03. Overwrite hidden sectors using WRITE commands.
Assertions:	FMP-CA-01 All visible sectors shall be overwritten with the specified benign data. FMP-AO-01 If there is a hidden area present and the tool supports overwriting sectors contained in a hidden area, then all sectors contained in the hidden area shall be overwritten with the specified benign data. FMP-AO-02 A hidden area may optionally be removed from the storage device.
Tester Name:	Csr
Analysis host:	Frank
Test host:	None
Test date:	Thu Apr 1 13:07:15 2010
Test drive:	29-IDE
Source Setup:	Size with DCO: 478397168 244.94 GB (10000000 sectors in DCO) Size with HPA: 463397168 237.26 GB (15000000 sectors in HPA) Initial setup size: 463397168 from total of 488397168 (with 25000000 hidden) IDE disk: Model (WDC WD2500JB-00GVC0) serial # (WD-WCAL78188039) Sector 0 is first sector with printable text ============= Start text ============= 00000/000/01 000000000000)))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))) ============= End text Sector 0 ============= 9 <new line> characters inserted for readability Totals for all sectors summary format: <count> <hex value> <(actual character if printable)> ... 478397168 00 478397168 20 ( ) 232501023648 29 ()) 956794336 2F (/) 2679617860 30 (0) 1259613274 31 (1) 1171634074 32 (2) 911352306 33 (3) 882058700 34 (4) 792405432 35 (5) 737463673 36 (6) 705127217 37 (7) 694715795 38 (8) 690749365 39 (9) Totals for non-ASCII sectors summary format: <count> <hex value> <(actual character if printable)> ... 244939350016 bytes, 478397168 sectors, 14 distinct values seen 478397168 sectors have printable text
Log Highlights:	Size after tool runs: 488397168 from total of 488397168 (with 0 hidden) Analysis of tool result -- Totals for all sectors summary format: <count> <hex value> <(actual character if printable)> ... 250059350016 1A Totals for non-ASCII sectors summary format: <count> <hex value> <(actual character if printable)> ... 250059350016 1A 250059350016 bytes, 488397168 sectors, 1 distinct values seen No sectors have printable text Runs of Sectors Unchanged or Overwritten First Sector Last Sector State 0 -- 488397167 Overwritten

Test Case FMP-03-DCO-HPA Tableau Forensic Duplicator Model TD1 Firmware version 2.10		
Results:	**Assertion & Expected Result**	**Actual Result**
	FMP-CA-01 Visible sectors overwritten	as expected
	FMP-AO-01 Hidden sectors overwritten	as expected
	FMP-AO-02 Hidden area final state is	removed
Analysis:	Expected results achieved	

4.2.7 FMP–03–HPA

<table>
<tr><th colspan="2">Test Case FMP-03-HPA Tableau Forensic Duplicator Model TD1 Firmware version 2.10</th></tr>
<tr><td>Case Summary:</td><td>FMP-03. Overwrite hidden sectors using WRITE commands.</td></tr>
<tr><td>Assertions:</td><td>FMP-CA-01 All visible sectors shall be overwritten with the specified benign data.
FMP-AO-01 If there is a hidden area present and the tool supports overwriting sectors contained in a hidden area, then all sectors contained in the hidden area shall be overwritten with the specified benign data.
FMP-AO-02 A hidden area may optionally be removed from the storage device.</td></tr>
<tr><td>Tester Name:</td><td>csr</td></tr>
<tr><td>Analysis host:</td><td>frank</td></tr>
<tr><td>Test host:</td><td>none</td></tr>
<tr><td>Test date:</td><td>Tue Mar 30 08:15:28 2010</td></tr>
<tr><td>Test drive:</td><td>18-LAP</td></tr>
<tr><td>Source Setup:</td><td>Size with HPA: 141301488 72.35 GB (15000000 sectors in HPA)
Initial setup size: 141301488 from total of 156301488 (with 15000000 hidden)
IDE disk: Model (FUJITSU MHW2080AT) serial # (K004T832CK3G)

Sector 0 is first sector with printable text
============= Start text =============
00000/000/01 000000000000
============= End text Sector 0 =============
1 <new line> character inserted for readability

Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
   156301488 00   75907021680 18   156301488 20 ( )
   312602976 2F (/)   1092738319 30 (0)   445157427 31 (1)
   274740905 32 (2)   274642393 33 (3)   272159917 34 (4)
   262536293 35 (5)   225709546 36 (6)   215483146 37 (7)
   215483143 38 (8)   215483135 39 (9)
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...

80026361856 bytes, 156301488 sectors, 14 distinct values seen
156301488 sectors have printable text</td></tr>
<tr><td>Log Highlights:</td><td>Size after tool runs: 156301488 from total of 156301488 (with 0 hidden)
Analysis of tool result --
Totals for all sectors
summary format: <count> <hex value> <(actual character if printable)> ...
 80026361856 A6
Totals for non-ASCII sectors
summary format: <count> <hex value> <(actual character if printable)> ...
 80026361856 A6

80026361856 bytes, 156301488 sectors, 1 distinct values seen
No sectors have printable text

    Runs of Sectors Unchanged or Overwritten
First Sector   Last Sector   State
           0 --   156301487   Overwritten</td></tr>
<tr><td>Results:</td><td><table>
<tr><th>Assertion & Expected Result</th><th>Actual Result</th></tr>
<tr><td>FMP-CA-01 Visible sectors overwritten</td><td>as expected</td></tr>
<tr><td>FMP-AO-01 Hidden sectors overwritten</td><td>as expected</td></tr>
<tr><td>FMP-AO-02 Hidden area final state is</td><td>removed</td></tr>
</table></td></tr>
<tr><td>Analysis:</td><td>Expected results achieved</td></tr>
</table>

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).

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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.

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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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7. Ensure professionalism, excellence, accountability, cost-effectiveness and integrity in the management and conduct of NIJ activities and programs.

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