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**Test Results for Forensic Media Preparation Tool:  
Darik's Boot and Nuke 1.0.7**

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**JAN. 10**

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Preparation Tool:  
Darik's Boot and Nuke 1.0.7**



**Kristina Rose**

*Acting Director, National Institute of Justice*

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October 2009

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## Introduction

The Computer Forensics Tool Testing (CFTT) program is a joint project of the National Institute of Justice (NIJ), the research and development organization of the U.S. Department of Justice (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 applicable users that the tools used in computer forensics investigations provide accurate results. Accomplishing this requires the development of specifications and test methods for computer forensics tools and subsequent testing of specific tools against those specifications.

Test results provide the information necessary for developers to improve tools, users to make informed choices, and the legal community and others to understand the tools' capabilities. The CFTT approach to testing computer forensic tools is based on well-recognized methodologies for conformance and quality testing. The specifications and test methods are posted on the CFTT Web site (<http://www.cftt.nist.gov/>) for review and comment by the computer forensics community.

This document reports the results from testing Darik's Boot and Nuke 1.0.7, against the *Forensic Media Preparation Tool Test Assertions and Test Plan Version 1.0*, available at the CFTT Web site (<http://www.cftt.nist.gov/fmp-atp-pc-01.pdf>).

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, <http://www.ojp.usdoj.gov/nij/topics/technology/electronic-crime/cftt.htm>.

# Test Results for Forensic Media Preparation Tool

Tool Tested: **Darik's Boot and Nuke 1.0.7**  
Version: **1.0.7**  
Run Environments: Custom

Supplier: **Darik's Boot and Nuke**

Address: Vanadac Corporation  
PO Box 660675 PMB 11493  
Dallas, TX 75266-0675  
United States

Tel: 1-866-969-3226  
Email: [support@dban.org](mailto:support@dban.org)  
WWW: <http://www.dban.org/>

## 1. Results Summary

In all the test cases run against Darik's Boot and Nuke (DBAN) Version 1.0.7, all visible sectors were successfully overwritten. For the test cases that used drives containing an HPA or DCO, the tool behaved as designed by the vendor and did not overwrite hidden sectors.

- HPA remained intact, hidden sectors were not overwritten (FMP-03-HPA & FMP-03-DCO+HPA).
- DCO remained intact, hidden sectors were not overwritten (FMP-03-DCO & FMP-03-DCO+HPA).

## 2. Test Case Selection

Darik's Boot and Nuke software download version 1.0.7 was tested for its ability to overwrite sectors. 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.

All selected test cases were *WRITE* tests (FMP-01 and FMP-03).

Three hidden sector test cases (FMP-03) were included among the cases selected. They were included to measure the tools' behavior in conjunction with hidden sectors. The tool documentation acknowledges that a drive may contain hidden sectors, but that the tool implementation leaves hidden sector content intact.

The following cases were used in testing Darik's Boot and Nuke 1.0.7:

- FMP-01-ATA28
- FMP-01-ATA48
- FMP-01-SATA28
- FMP-01-SATA48
- FMP-01-SCSI
- FMP-03-DCO
- FMP-03-DCO+HPA
- FMP-03-HPA

Since DBAN does not support a secure erase mode test cases FMP-02, FMP-04 and FMP-05 were omitted.

DBAN features an options menu from which a user can alter the test run behavior. Its options include:

- Wipe method
- PRNG (pseudo random number generator) schemes
- verification mode
- number of rounds

The available wipe methods for overwriting the visible sectors of a destination drive are the following:

- Quick Erase
- DoD 5220.22-M Short
- DoD 5220.22-M
- RCMP TSSIS OPS-II
- Guttman Wipe
- PRNG Stream

A test run was conducted by first selecting a wipe method from the options menu, then choosing additional parameters which controlled the length and depth of the run.

*A note on verification mode: our testing methodology cannot detect if verification actually takes place or if the verification process can detect a failure to wipe.*

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

## 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.cfft.nist.gov/>), and **diskwipe** from **FS-TST Release 2.0** (download from <http://www.cfft.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 10GB (19531250 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.

### 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 drive content is analyzed by the **dsumm** program. 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.

### 3.4 Test Drives

The following hard drives 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	WDC WD800BB-75CAA0	WD-WMA8E2108916
FMP-01-ATA48	488397168	WDC WD2500JB-00GVC0	WD-WCAL78188039
FMP-01-SATA28	78140160	FUJITSU MHW2040BH	K10XT7B278AP
FMP-01-SATA48	312581808	ST9160310AS	5SV092JK
FMP-01-SCSI	71721820	ATLAS10K2-TY367L	163022042046
FMP-03-DCO	488397168	WDC WD2500JB-00GVC0	WD-WCAL78188039
FMP-03-DCO+HPA	156301488	Hitachi HTS541680J9AT00	SB0241HGGAWY8E
FMP-03-HPA	78140160	FUJITSU MHW2040BH	K10XT7B278AP

For test cases FMP-03 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 of the hidden area.

Test Case	Size	Total	Hidden (DCO+HPA)
FMP-03-DCO	24419859	488397168	463977309
FMP-03-DCO+HPA	18756179	156301488	137545309
FMP-03-HPA	3907009	78140160	74233151

## 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
First Line:	Test case ID, name, and version of tool tested.
Case Summary:	Test case summary from <i>Forensic Media Preparation Tool Test Assertions and Test Plan Version 1.0</i> .
Assertions:	The test assertions applicable to the test case, selected from <i>Forensic Media Preparation Tool Test Assertions and Test Plan Version 1.0</i> .



Test Case FMP-01-ATA28 Darik's Boot and Nuke 1.0.7		
	<p>Totals for non-ASCII sectors summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...</p> <p>80026361856 bytes, 156301488 sectors, 14 distinct values seen 156301488 sectors have printable text</p>	
Tool Settings:	<p>Method: DoD Short PRNG: Mersenne Twister Verify: Off Rounds: Default</p>	
Log Highlights:	<p>Size after tool runs: 156301488 from total of 156301488 (with 0 hidden) Analysis of tool result -- Totals for all sectors summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ... 80026361856 00</p> <p>Totals for non-ASCII sectors summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ... 80026361856 00</p> <p>80026361856 bytes, 156301488 sectors, 1 distinct values seen No sectors have printable text</p>	
Results:	<b>Assertion &amp; Expected Result</b>	<b>Actual Result</b>
	FMP-CA-01 Visible sectors overwritten	as expected
Analysis:	Expected results achieved	

## 4.2.2 FMP-01-ATA48

<b>Test Case FMP-01-ATA48 Darik's Boot and Nuke 1.0.7</b>					
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:	frank				
Test date:	Wed Jun 10 08:25:15 2009				
Test drive:	29-IDE				
Source Setup:	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				
Tool Settings:	Method: Quick Erase PRNG: Issac Verify: Last Rounds: 2				
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 00 Totals for non-ASCII sectors summary format: <count> <hex value> <(actual character if printable)> ... 250059350016 00  250059350016 bytes, 488397168 sectors, 1 distinct values seen No sectors have printable text				
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>FMP-CA-01 Visible sectors overwritten</td> <td>as expected</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	FMP-CA-01 Visible sectors overwritten	as expected
Assertion & Expected Result	Actual Result				
FMP-CA-01 Visible sectors overwritten	as expected				
Analysis:	Expected results achieved				





Test Case FMP-01-SATA28 Darik's Boot and Nuke 1.0.7							
156265700	20 ( )	156264777	21 (!)	156272114	22 (")	156280545	23 (#)
156277942	24 (\$)	156290069	25 (%)	156294838	26 (&)	156275629	27 (')
156289816	28 ((	156301590	29 ())	156267521	2A (*)	156280475	2B (+)
156276292	2C (,	156269278	2D (-)	156266320	2E (.)	156263908	2F (/)
156283948	30 (0)	156286228	31 (1)	156272161	32 (2)	156273640	33 (3)
156283157	34 (4)	156296786	35 (5)	156289135	36 (6)	156272958	37 (7)
156310472	38 (8)	156270965	39 (9)	156283348	3A (:)	156277440	3B (;)
156287908	3C (<)	156259095	3D (=)	156277656	3E (>)	156274600	3F (?)
156295306	40 (@)	156267464	41 (A)	156268463	42 (B)	156297526	43 (C)
156286039	44 (D)	156270271	45 (E)	156269838	46 (F)	156282091	47 (G)
156282765	48 (H)	156273927	49 (I)	156289788	4A (J)	156277177	4B (K)
156294918	4C (L)	156291059	4D (M)	156257881	4E (N)	156276620	4F (O)
156280706	50 (P)	156273157	51 (Q)	156282564	52 (R)	156270985	53 (S)
156280018	54 (T)	156284799	55 (U)	156284811	56 (V)	156278781	57 (W)
156275939	58 (X)	156271612	59 (Y)	156284489	5A (Z)	156289751	5B ([)
156268768	5C (\)	156285682	5D (])	156266022	5E (^)	156287220	5F (_)
156282295	60 (`)	156269572	61 (a)	156285984	62 (b)	156284115	63 (c)
156297470	64 (d)	156286337	65 (e)	156298271	66 (f)	156277352	67 (g)
156282912	68 (h)	156265934	69 (i)	156299716	6A (j)	156292547	6B (k)
156288044	6C (l)	156272768	6D (m)	156288398	6E (n)	156279853	6F (o)
156276906	70 (p)	156279836	71 (q)	156262658	72 (r)	156270404	73 (s)
156283598	74 (t)	156276615	75 (u)	156267416	76 (v)	156283893	77 (w)
156304627	78 (x)	156286077	79 (y)	156259167	7A (z)	156277438	7B ({)
156295232	7C ( )	156269730	7D (})	156312324	7E (~)	156284524	7F
156276520	80	156273240	81	156286601	82	156285003	83
156297827	84	156268871	85	156259966	86	156295815	87
156301121	88	156262895	89	156272131	8A	156287971	8B
156292588	8C	156268899	8D	156299772	8E	156308323	8F
156281860	90	156276681	91	156267198	92	156295375	93
156271944	94	156277474	95	156306842	96	156269589	97
156276301	98	156272065	99	156301085	9A	156292547	9B
156300263	9C	156287388	9D	156280600	9E	156287180	9F
156264533	A0	156257819	A1	156278466	A2	156273435	A3
156263302	A4	156291291	A5	156279360	A6	156268677	A7
156272230	A8	156278478	A9	156288166	AA	156273191	AB
156294495	AC	156275514	AD	156288618	AE	156276492	AF
156259571	B0	156287790	B1	156291043	B2	156233538	B3
156265272	B4	156285531	B5	156278565	B6	156296510	B7
156267502	B8	156291093	B9	156289856	BA	156277048	BB
156287020	BC	156261271	BD	156277867	BE	156278196	BF
156300200	C0	156285916	C1	156309929	C2	156289265	C3
156277435	C4	156265953	C5	156263501	C6	156262474	C7
156289045	C8	156278338	C9	156279572	CA	156291648	CB
156271208	CC	156283680	CD	156295155	CE	156287752	CF
156281234	D0	156291897	D1	156270577	D2	156297664	D3
156279095	D4	156282326	D5	156289348	D6	156271537	D7
156277371	D8	156267525	D9	156285857	DA	156267705	DB
156267351	DC	156303317	DD	156275820	DE	156285552	DF
156275852	E0	156314749	E1	156270426	E2	156294172	E3
156284601	E4	156272469	E5	156300845	E6	156287724	E7
156269592	E8	156322495	E9	156274885	EA	156282922	EB
156270865	EC	156270812	ED	156261325	EE	156298407	EF
156290556	F0	156262807	F1	156284291	F2	156247612	F3
156272562	F4	156280839	F5	156303690	F6	156275273	F7
156272033	F8	156286894	F9	156283047	FA	156283442	FB
156279917	FC	156257461	FD	156289933	FE	156269135	FF
Totals for non-ASCII sectors summary format: <count> <hex value> <(actual character if printable)> ...							
40007761920 bytes, 78140160 sectors, 256 distinct values seen 78140160 sectors have printable text							
Results:	<b>Assertion &amp; Expected Result</b>		<b>Actual Result</b>				
	FMP-CA-01 Visible sectors overwritten		as expected				
Analysis:	Expected results achieved						



## 4.2.5 FMP-01-SCSI

Test Case FMP-01-SCSI Darik's Boot and Nuke 1.0.7		
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:	frank	
Test date:	Tue Jun 23 13:14:35 2009	
Test drive:	06	
Source Setup:	<p>Initial setup size: 71721820 from total of 71721820 (with 0 hidden)            Model (ATLAS10K2-TY367L) serial # (163022042046)</p> <p>Sector 0 is first sector with printable text            ===== Start text =====            00000/000/01 000000000000            ===== End text Sector 0 =====            1 &lt;new line&gt; character inserted for readability</p> <p>Totals for all sectors            summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...            71721820 00 34856804520 06 71721820 20 ( ) 143443640 2F (/)            519143675 30 (0) 162528133 31 (1) 149139936 32 (2) 133670254 33 (3)            123349540 34 (4) 113156848 35 (5) 104831312 36 (6) 91849268 37 (7)            90105547 38 (8) 90105527 39 (9)</p> <p>Totals for non-ASCII sectors            summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...            36721571840 bytes, 71721820 sectors, 14 distinct values seen            71721820 sectors have printable text</p>	
Tool Settings:	Method: RCMP TSSIT OPS-II PRNG: Issac Verify: Each Rounds: 1	
Log Highlights:	<p>Size after tool runs: 71721820 from total of 71721820 (with 0 hidden)            Analysis of tool result --            Totals for all sectors            summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...            36721571840 00            Totals for non-ASCII sectors            summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...            36721571840 00</p> <p>36721571840 bytes, 71721820 sectors, 1 distinct values seen            No sectors have printable text</p>	
Results:	<b>Assertion &amp; Expected Result</b>	<b>Actual Result</b>
	FMP-CA-01 Visible sectors overwritten	as expected
Analysis:	Expected results achieved	

### 4.2.6 FMP-03-DCO

Test Case FMP-03-DCO Darik's Boot and Nuke 1.0.7	
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:	frank
Test date:	Tue Jun 16 08:34:04 2009
Test drive:	29-IDE
Source Setup:	Initial setup size: 24419859 from total of 488397168 (with 463977309 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)> ... 24419859 00 24419859 20 ( ) 11868051474 29 ( ) 48839718 2F (/) 194863239 30 (0) 65826577 31 (1) 47412497 32 (2) 37724779 33 (3) 36676881 34 (4) 34378453 35 (5) 31251575 36 (6) 29701060 37 (7) 29701019 38 (8) 29700818 39 (9) Totals for non-ASCII sectors summary format: <count> <hex value> <(actual character if printable)> ...  12502967808 bytes, 24419859 sectors, 14 distinct values seen 24419859 sectors have printable text
Tool Settings:	Method: DoD 5220.22-M PRNG: Issac Verify: Off Rounds: 2
Log Highlights:	Size after tool runs: 24419859 from total of 488397168 (with 463977309 hidden) Analysis of tool result --  Sector 24419859 is first sector with printable text ===== Start text ===== 01520/016/52 000024419859)) )) )) )) )) )) )) )) )) )) )) )) )) ===== End text Sector 24419859 ===== 9 <new line> characters inserted for readability  Totals for all sectors

Test Case FMP-03-DCO Darik's Boot and Nuke 1.0.7										
	<pre>summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ... 2966945117 00          463977309 20 ( ) 225492972174 29 (i)  927954618 2F (/) 2540305971 30 (0)    1213171305 31 (1)  1145393379 32 (2)  895535968 33 (3)  869099030 34 (4)    771487544 35 (5)   718524089 36 (6)  689064420 37 (7) 686858061 38 (8)    678061031 39 (9) Totals for non-ASCII sectors summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ... 2502967808 00  250059350016 bytes, 488397168 sectors, 14 distinct values seen 463977309 sectors have printable text</pre>									
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>FMP-CA-01 Visible sectors overwritten</td> <td>as expected</td> </tr> <tr> <td>FMP-AO-01 Hidden sectors overwritten</td> <td>DCO not overwritten</td> </tr> <tr> <td>FMP-AO-02 Hidden area final state is</td> <td>in place</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	FMP-CA-01 Visible sectors overwritten	as expected	FMP-AO-01 Hidden sectors overwritten	DCO not overwritten	FMP-AO-02 Hidden area final state is	in place	
Assertion & Expected Result	Actual Result									
FMP-CA-01 Visible sectors overwritten	as expected									
FMP-AO-01 Hidden sectors overwritten	DCO not overwritten									
FMP-AO-02 Hidden area final state is	in place									
Analysis:	Expected results not achieved									

## 4.2.7 FMP-03-DCO+HPA

Test Case FMP-03-DCO+HPA Darik's Boot and Nuke 1.0.7		
Case Summary:	FMP-03. Overwrite hidden sectors using WRITE commands.	
Assertions:	<p>FMP-CA-01 All visible sectors shall be overwritten with the specified benign data.</p> <p>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.</p> <p>FMP-AO-02 A hidden area may optionally be removed from the storage device.</p>	
Tester Name:	csr	
Analysis host:	frank	
Test host:	frank	
Test date:	Thu Jun 18 16:01:21 2009	
Test drive:	15-LAP	
Source Setup:	<p>Initial setup size: 18756179 from total of 156301488 (with 137545309 hidden)            IDE disk: Model (Hitachi HTS541680J9AT00) serial # (SB0241HGGAWY8E)</p> <p>Sector 0 is first sector with printable text            ===== Start text =====            00000/000/01 000000000000            ===== End text Sector 0 =====            1 &lt;new line&gt; character inserted for readability</p> <p>Totals for all sectors            summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...            23445223 00 11394378378 15 23445223 20 ( ) 46890446 2F (/)            188316972 30 (0) 63144036 31 (1) 45072570 32 (2) 36017102 33 (3)            34487902 34 (4) 32921277 35 (5) 30077619 36 (6) 28589035 37 (7)            28589035 38 (8) 28579358 39 (9)</p> <p>Totals for non-ASCII sectors            summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...            12003954176 bytes, 23445223 sectors, 14 distinct values seen            23445223 sectors have printable text</p>	
Tool Settings:	<p>Method: PRNG Stream            PRNG: Issac            Verify: Each            Rounds: 1</p>	
Log Highlights:	<p>Size after tool runs: 18756179 from total of 156301488 (with 137545309 hidden)            Analysis of tool result --</p> <p>Sector 18756179 is first sector with printable text            ===== Start text =====            01167/132/09 000018756179            ===== End text Sector 18756179 =====            1 &lt;new line&gt; character inserted for readability</p> <p>Totals for all sectors            summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...            9740708957 00 66847020174 15 137545309 20 ( ) 275090618 2F (/)            895308717 30 (0) 339688267 31 (1) 271636254 32 (2) 241721228 33 (3)            239536603 34 (4) 232605388 35 (5) 209855675 36 (6) 199858160 37 (7)            199694935 38 (8) 196091571 39 (9)</p> <p>Totals for non-ASCII sectors            summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ...            9603163648 00</p> <p>80026361856 bytes, 156301488 sectors, 14 distinct values seen            137545309 sectors have printable text</p>	
Results:	<b>Assertion &amp; Expected Result</b>	<b>Actual Result</b>
	FMP-CA-01 Visible sectors overwritten	as expected
	FMP-AO-01 Hidden sectors overwritten	DCO+HPA not overwritten

<b>Test Case FMP-03-DCO+HPA Darik's Boot and Nuke 1.0.7</b>		
	FMP-AO-02 Hidden area final state is	in place
Analysis:	Expected results not achieved	





Test Case FMP-03-HPA Darik's Boot and Nuke 1.0.7										
	<pre>summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ... 2074621759 00          74233151 20 ( )  36077311386 24 (\$)  148466302 2F (/) 525356360 30 (0)    164311494 31 (1)    152083232 32 (2)    136871318 33 (3) 134501733 34 (4)    118926650 35 (5)    110304875 36 (6)    103668550 37 (7) 94090219 38 (8)     93014891 39 (9) Totals for non-ASCII sectors summary format: &lt;count&gt; &lt;hex value&gt; &lt;(actual character if printable)&gt; ... 2000388608 00  40007761920 bytes, 78140160 sectors, 14 distinct values seen 74233151 sectors have printable text</pre>									
Results:	<table border="1"> <thead> <tr> <th>Assertion &amp; Expected Result</th> <th>Actual Result</th> </tr> </thead> <tbody> <tr> <td>FMP-CA-01 Visible sectors overwritten</td> <td>as expected</td> </tr> <tr> <td>FMP-AO-01 Hidden sectors overwritten</td> <td>HPA not overwritten</td> </tr> <tr> <td>FMP-AO-02 Hidden area final state is</td> <td>in place</td> </tr> </tbody> </table>	Assertion & Expected Result	Actual Result	FMP-CA-01 Visible sectors overwritten	as expected	FMP-AO-01 Hidden sectors overwritten	HPA not overwritten	FMP-AO-02 Hidden area final state is	in place	
Assertion & Expected Result	Actual Result									
FMP-CA-01 Visible sectors overwritten	as expected									
FMP-AO-01 Hidden sectors overwritten	HPA not overwritten									
FMP-AO-02 Hidden area final state is	in place									
Analysis:	Expected results not achieved									

## About the National Institute of Justice

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

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

### Strategic Goals

NIJ has seven strategic goals grouped into three categories:

#### Creating relevant knowledge and tools

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

#### Dissemination

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

#### Agency management

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

### Program Areas

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

In addition to sponsoring research and development and technology assistance, NIJ evaluates programs, policies, and technologies. NIJ communicates its research and evaluation findings through conferences and print and electronic media.

To find out more about the National Institute of Justice, please visit:

<http://www.ojp.usdoj.gov/nij>

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